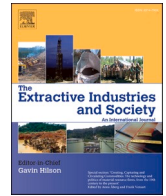


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Original article

Pathways to nickel mining employment among Inuit women in Nunavik, Canada and Kanak women in New Caledonia: A comparative study

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ABSTRACT

This paper compares Inuit and Kanak women's participation in nickel mining employment in Canada and New Caledonia through a focused examination of three nickel mines: two in Nunavik, Quebec, Canada and one in the Northern Province of New Caledonia. Since the recent construction of two new nickel refineries, New Caledonia has experienced a dramatic feminization of its mining workforce across traditional mining employment and service-related employment. In Canada, meanwhile, despite targeted efforts by industry and community organizations to facilitate Inuit women's entry into nickel mining, women's participation in mining remains relatively low and stagnant. This paper first presents a comparison of employment data at all three mines to illustrate the dramatic divergences in demographic composition of the workforces. Second, drawing on interviews with key informants and historical context, we explore key factors that explain this divergence in Indigenous women's employment. We argue that Kanak women's access to mining employment is enabled by, one, the central place of mining in Kanak struggles for self-determination and, two, the daily commuting structure at the mine. In Nunavik, by contrast, limited Inuit control over mining development and the fly-in fly-out employment structure limit Inuit women's access to mining jobs. Despite these divergences, however, Indigenous women in both contexts face gendered expectations related to social reproduction that pose logistical and social barriers to their long-term participation in the industry.

1. Introduction

Globally, women are underrepresented in industrial mining employment (Jenkins 2014; Lahiri-Dutt and Macintyre 2006; Perks and Schulz 2020). Particularly in regions where mining is taking place on Indigenous territories, mining employment is often positioned as a pathway to economic prosperity for Indigenous communities and a prerequisite for self-governance and sovereignty. Given this context, inequality in mining employment is a problem, not only because it contributes to gendered economic inequality, but also because it can contribute to deepening gender inequality in political and social realms. Despite the industry's increased attention to women's under-representation and the rise of targeted recruitment, barriers to women's participation in mining remain poorly understood.

Research about women and mining has often explored the impacts of mining on women rather than women's participation in mining. Critically documenting the gendered social, economic, and environmental

impacts of mining for Indigenous communities, this research often overlooks women's participation in mining as workers (Mills et al. 2018). With some exceptions (Kotsadam and Tolonen 2016), studies about women's employment in mining have often been limited to case studies and have failed to apply a detailed demographic and intersectional analysis accounting for linked and compounding factors including gender, race and indigeneity, age, and family status (Brain 2017; Jenkins 2014; Lahiri-Dutt and Macintyre 2006; Manning et al. 2018). While case studies have usefully pointed to gendered barriers to mining employment, they are limited in their ability to capture broader trends and to identify factors that might lead to shifting gender relations in mining.

This article builds on recent publications in this journal focused specifically on gender and employment in mining (Perks 2020) by addressing two areas that remain under-researched. In their introduction to a recent special issue on mining and gender, Perks and Schulz note that international comparisons of women's employment in

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extractive industries has been hindered by a lack of quality disaggregated data (Perks and Schulz 2020). More recently, Lahiri-Dutt notes that, while recent years have garnered increased attention to women's employment in mining, her review of this research suggests that intersectional analyses focused on industrial mining employment remain somewhat rare (Lahiri-Dutt 2022). This paper seeks to address these gaps using a mixed methods international comparative approach to better understand factors that help or hinder Indigenous women's participation in nickel mining.

We compare Indigenous women's employment in nickel mining in three mines across two regions with divergent gendered employment outcomes: Nunavik, Canada, where Inuit women comprise less than three percent of the workers in Raglan and Canadian Royalties Nickel mines, and the Northern Province of New Caledonia where Kanak women comprise almost one in five workers in the Koniambo Nickel project. Since mining is tied to anti-colonial struggle and is located on traditional Indigenous territories in both regions, all three mines have employment and training programs to encourage the participation of Inuit, in the case of Nunavik and local residents, in the case of New Caledonia.

After reviewing the literature on gender, indigeneity, and participation in mining, we draw on detailed employment data to compare the demographic breakdown of each workforce, including the number of Inuit and Kanak women employed; the types of positions they occupy; and the duration of their employment. Drawing on key informant interviews and historical contexts, we then describe three key factors that explain the divergence in Indigenous women's employment in two contexts: the connection between mining and anti-colonial struggle, the spatial arrangement of the mines, and gendered expectations related to social reproduction.

2. Indigenous women's encounters with mining

Literature about gender and mining has often focused on mining's impact on women in nearby communities rather than on women as workers (Jenkins 2014; Lahiri-Dutt and Macintyre 2006; Lozeva and Marinova 2010; Nightingale et al. 2017). Research about women's participation in mining often generalizes from specific cases, treating women as a uniform group without attention to distinctions among women or to range of roles women play in mining economies (Brain 2017; Jenkins 2014; Lutz-Ley and Buechler 2020; Manning et al. 2018). This call for attention to difference and context is particularly critical given the different colonial and socio-economic conditions in the Global south and Global north.

Numerous case studies in diverse geographic contexts have documented the negative impacts of industrial mining on women, their families, and communities. These span violence, harassment, and discrimination (Amnesty International 2016; Kaggwa 2020; Kudloo et al. 2014); systematic exclusion from decision-making and resource governance (Dalseg et al. 2018; Horowitz 2017); increased social conflict and decline in community cohesion; overburdened and insufficient housing, infrastructure, and social services; loss of cultural practices; and the exacerbation of pre-existing socio-economic inequality (Manning et al. 2018; Nightingale et al. 2017; Sincovich et al. 2018), including through the process of mine closures (Sesele et al. 2021).

While attention to mining's impacts on women as workers has increased in recent years (Lahiri-Dutt 2022), this area remains understudied. In particular, detailed empirical research on industrial mining's local employment benefits remains somewhat scarce (Caron and Asselin 2020; Cox and Mills 2015; Kaggwa 2020; Parmenter and Barnes 2021; Salomon 2015). Research on women mineworkers in the Global South often focuses on artisanal and small-scale mining (Jenkins 2014; c.f. Kotsadam and Tolonen 2016), where women are employed in much higher numbers (up to one third globally, according to a 2002 estimate from Hilson) and face greater health and safety risks and a general lack of regulation and protection, relative to the industrial mining sector.

Meanwhile, in industrial mining, where jobs are generally understood to be more secure, stable, and safe, women are estimated to comprise less than 10 percent of the global workforce (Eftimie and Heller 2009). Many scholars have linked this under-representation to the gender typing of mining and other natural resource work as masculine: associated with male traits, imagined as 'men's work,' and characterized by gender segregated employment patterns (Miller 2004; Mills 2011; Pugliese 2021; Tallichet 2000). Across contexts, women face harassment and discrimination and challenges to being hired, trained, and promoted (Jenkins 2014; Kansake et al. 2021; Lahiri-Dutt 2022; Pauktuutit Inuit Women of Canada 2021). These dynamics may be particularly acute in fly-in fly-out operations: a recent study of the Alberta oil sands found that two thirds of women participants had experienced sexist discrimination at work (Dorow et al. 2021). Research on Indigenous and Indigenous women workers' experiences in mining, meanwhile, outlines unique, overlapping, and compounding challenges to being hired and staying in the industry: racism and discrimination, structural barriers to accessing training and education, language barriers, lack of employment security, and family responsibilities (Nightingale et al. 2017; Parmenter 2011; Cox and Mills 2015).

Indigenous women's experiences in mining are not uniform. Rates of Indigenous employment, generally, vary widely across contexts. In their study of post-colonial settings, Horowitz et al. (2018) found that rates of Indigenous employment spanned from 4.6 to 51 percent. Importantly, the qualitative details of this employment remain understudied, including how the organization of work or socio-cultural context affect Indigenous women's employment. Understanding the participation of Indigenous women in mining employment therefore requires an intersectional approach attentive to the contextual factors that shape Indigenous women's participation in mining and the disparate ways groups are impacted by these industries (Manning et al. 2018). Furthermore, a lack of quality disaggregated data about women in extractive industries has hindered international comparisons and made it difficult to accurately understand Indigenous women's participation in mining employment globally (Perks and Schulz 2020).

This research responds to calls for more detailed employment data, intersectional analyses, and international comparison of women's employment in mining through a comparison of Nunavik, Canada and Northern Province, New Caledonia. This research compares two settler colonial mining economies with different colonial histories, social and economic geographies, and rates of Indigenous women's employment, to understand how contextual factors affect Indigenous women's participation in mining. By focusing specifically on Indigenous women's participation in mining employment, this research contributes to a more intersectional analysis of mining's gendered impacts.

3. Study regions

New Caledonia is an archipelago in the in the southwest Pacific Ocean and the homelands of the Kanak people. New Caledonia was a French overseas territory until decades of independence struggle resulted in a gradual transfer of power beginning in 1998 (Kowasch et al. 2015). Our study mine, the Koniambo Nickel project, is located in the Northern Province (population of approximately 50,000), which is majority (72 %) Kanak and has historically been a centre of independence politics (Rivoilan 2019). In 2017 the provincial unemployment rate was 12.8%, slightly above the national rate of 11.6. Unemployment among Kanak is higher (18.6% in 2017), but this number is dropping (14.9% in 2019) (ISEE et al. 2017; ISEE et al. 2019). Since the 1980s, women, including Kanak women, have increased their participation in the formal workforce (Rivoilan and Broustet 2011). The labour force participation rates for Kanak men (62.8%) and women (57.4%) are below the national averages (69.5% and 60.7%), but the gap is much larger for men (ISEE et al. 2019).

In the past decade the nickel-dominated extractive sector accounted for about 90 percent of total exports (Filer et al. 2017). Three corporate

entities dominate nickel mining: Société Le Nickel (SNL), the oldest nickel company in the territory and the largest private employer; Vale, which operates the Goro mine in the south; and a partnership between Caledonian state-owned company Société Minière du Sud Pacifique (SMSP) and Glencore, called Koniambo Nickel SAS (KNS), which operates the Koniambo project. The Koniambo project began partial production in 2014 with an expected life of 30 years (ISEE 2015; Sourisseau et al. 2017). The project includes an open-pit mine, pyro-metallurgical plant, power station, deep-water port, automatic conveyor, and various other structures (Sourisseau et al. 2017). The project employs approximately 1,466 people, 1061 directly (SMSP 2020). Workers are mostly represented by the largest union in the territory, L'Union des Syndicats des Ouvriers et Employés de Nouvelle-Calédonia (secteur nickel). Services contracted out include towing, security, welding, boiler-making, and revegetation.

The mine complex is located between three municipalities that comprise the Voh-Koné-Pouembout Region (VKP). Workers commute to the mine daily by road (Filer et al. 2017). While there is no overarching local hiring provision, a collection of laws and agreements prioritize local and Kanak employment. The company has also committed to training and hiring Caledonian citizens and has signed agreements with local communities and clans that outline commitments to hiring and subcontracting (Le Meur et al. 2012). The project is largely under Kanak control since the Kanak-majority Northern Province is a majority shareholder in SMSP.

Nunavik is the region of Inuit Nunangat—the Inuit homelands—that is situated north of the 55th parallel, in northern Quebec. Nunavik has a population of 13,188 of which approximately 90% or 11,800 identify as Inuit (Statistics Canada 2017). The population is distributed among 14 villages without road access along the coasts of the Hudson Strait, Hudson Bay, and Ungava Bay. The region's unemployment rate of 15.4 percent is twice the average rate for Quebec (7.2 percent). Unemployment is much more prevalent among men than women: 17.7 and 12.9 respectively, compared with 8.0 and 6.3 for Quebec (Statistics Canada 2017).

There are currently two active nickel mine sites that operate on a fly-in, fly-out basis. Both mines share an airstrip and port facility since they are located approximately 100 and 120km south of Deception Bay. The Raglan mine, which began production in 1997, consists of four underground mines and a concentrator and directly employs approximately 1,200 employees (Glencore Canada 2021). It is owned by privately traded transnational company, Glencore Ltd., which is now claimed to be “the largest mining company the world” (Mining Technology 2020). In 2013, a second mine began production just 24km south of the Raglan site. This project is owned by Canadian Royalties, a subsidiary of the Jilin Jien Nickel Industry Co. Ltd. The site includes two open pit mines and two underground mines in different stages of development and a concentrator and currently employs approximately 600 direct and 400 indirect employees (Canadian Royalties Inc. 2021). Both companies have signed Impact and Benefits Agreements with Inuit organizations and specific local communities. Neither agreement has Inuit employment targets though both establish an order of preference based on Inuit Beneficiary status and commit the companies to affirmative action programs (Benoît 2004; 'Raglan Agreement' 1995). Glencore subsequently developed an Inuit employment program for the Raglan mine that did contain specific Inuit employment targets. For reasons of anonymity, we refer to the Nunavik mines in the remainder of the article as Mine 1 and Mine 2. Some services at each mine are contracted out, including various construction and maintenance services and, in the case of Mine 1 catering, housekeeping, and transportation services. Direct employees and most subcontracted employees at both mines are unionized.

4. Methods

We compared Indigenous women's employment across our study

mines by drawing on workforce demographic data and key informant interviews with employers, Indigenous organizations and worker organizations. We supplemented this information with relevant reports, collective agreements and articles. We obtained employment data for direct employees at Koniambo and one Nunavik mine from the companies, while data for direct employees at the other Nunavik mine was obtained from the United Steelworkers. Anonymous lists of employees included gender, indigeneity, position title, department, and seniority. The data represented employment for February 2018 for Nunavik Mine 1; June 2020 for Mine 2; and December 2017 for the New Caledonia Mine. Though these dates span more than three years, the data is comparable because employment numbers have not fluctuated dramatically over this period and small fluctuations are unlikely to impact overall demographic trends within the mine. This data was consolidated into four organizational units for comparability: mining, concentrator/plant, administrative/other, and catering and housekeeping. Catering and housekeeping data was excluded from comparisons because it was only available for one mine. Student and internship positions and, for the Canadian mines, positions based outside of Nunavik were also excluded.

We conducted key informant interviews to understand the factors influencing Indigenous women's employment in the mines. In Nunavik, we interviewed three employees who worked in Inuit recruitment and training; the Mining Development Manager at the Inuit land claim organization, Makivik Corporation; one staff member at a not-for-profit that works with Inuit women; and the president of the local union. Four of the six interviewees were Inuit. Interviewees were recruited by email and phone. Interviews were conducted over the phone and included questions about barriers and pathways to Inuit women's employment, recruitment, training and retention, the working environment, and measures to support Inuit women. Interviews were conducted between December 2019 and September 2020.

In New Caledonia, we conducted 32 key informant interviews. Of these, seven were with representatives of subcontractors and 25 were with current and formers representatives of the study mine, including: seven individuals from the human resources and communication department, the head of the department responsible for liaising with local communities and subcontractors, six plant operators and agents, and ten mine operators. Twenty-four of the interviewees were Kanak. Interviewees were recruited by word of mouth and phone and all interviews were conducted in person between September to December 2018 and carried out outside the workplace (at the participants' homes, in coffee shops, etc.). Interviews focused on interviewees biographical trajectories, hiring at KNS, daily working conditions, and the articulation between professional and personal life.

It should be noted that there were some divergences in the interview respondents, context, and analysis between study sites that posed some challenges for comparison. The research in New Caledonia took place prior to establishing this collaborative project. Notably, while both interview sets include comparable key informants, the New Caledonia interview set also includes workers with questions and analysis emphasizing their life and work trajectories. Divergences in disciplinary backgrounds and broader research agendas between the two study sites meant that interview questions and the focus of analysis at each site differed slightly. In an attempt to honor the distinct context of each site, language differences between French and English, and the slightly different respondent sets, interviews were analysed by the respective research teams. For both sites analysis and comparison were qualitative: neither team used a coding strategy, nor did we attempt a structured comparison of these qualitative data sets. Given the divergences between the sites, the language differences, and the different interview questions and respondents, a standardized process of comparison would have been both difficult and lacking nuance. Rather, working in both French and English, we compared interview themes through discussions of our findings during virtual meetings and a collaborative writing process. This discussion-based, iterative process allowed each team to continually place their interview content in context, helping the co-

authors to learn the nuances of the other site and to place this data in relation to their own. This matter of consistency and comparability is an inherent challenge in international comparative research. For this project, rather than attempt a systematic comparison, we placed a premium on placing the interview data in context, helping all researchers to understand the nuances of both sites, and working collaboratively to distill where themes converged and diverged across these different contexts. That is, we sacrificed some level of standardized comparability in order to prioritize accurate meaning and representation of the interview content.

5. Results: Workforce demographics

Indigenous men and women comprised a much larger share of the workforce at the mine in New Caledonia than at either Canadian mine (Table 1). In 2019, fewer than 12% of the workforce (excluding catering and housekeeping) at each Nunavik mine were Inuit. When catering and housekeeping workers were included in the calculations, this number increased to approximately 20% of the workforce at Mine 2. In contrast, Kanak workers comprised the majority of the workforce at the Koniambo mine. The representation of women was also much greater at Koniambo than that at either Canadian mine (Table 1). Discrepancies in the employment of Indigenous women is even more striking. While Kanak women comprise almost one in five employees and 63% of all women workers at Koniambo, Inuit women comprise less than 3% of total employees and 20% and 30% of all women workers at the Nunavik Mine 1 and Mine 2.

Occupational segregation by gender and indigeneity is more pronounced in Nunavik than in New Caledonia. Women working at Mine 2 are overrepresented in catering and housekeeping positions: 80% of Inuit women and 56.9% of non-Indigenous women work in these positions (Fig. 1c). Wages for catering and housekeeping are much lower than for higher skilled jobs and traditionally male jobs in operations. In 2021 wages in the kitchen department ranged from \$24.40, (dishwasher and general aide) to \$37.00 (sous chef). Meanwhile, wages in the concentrator ranged from \$32.12 to \$42.65, wages for heavy equipment operation ranged from \$33.17 to \$39.04, and wages for different classifications of miner ranged from \$33.23 to \$39.04 (Glencore Corporation Canada - Mine Raglan et le Syndicat des métaux, section locale 9449 2017). At both Nunavik mines, Inuit and women are present in such small numbers outside of catering and housekeeping that interpreting their representation across these departments is less reliable. Inuit men are concentrated in mining jobs followed by catering and housekeeping.

In contrast, in New Caledonia, Kanak women are equally represented across departments, and are present in substantial numbers in mining (18% of the department) and the plant/concentrator (20% of the

department). These positions are more likely to be permanent and to hold possibilities for advancement (Fig. 1a). We do not have data on wages at the Koniambo mine but the nickel sector pays high salaries compared to the rest of the private sector in New Caledonia: the average salary for full-time equivalents is nearly 20 euros/hour, or one-third more than in the private sector as a whole (ISEE et al. 2019).

Catering and housekeeping employment is more substantial in fly-in, fly-out mines than mines where workers commute daily, such as Koniambo. While we do not have data on catering and housekeeping for the New Caledonia mine, Kanak women are accessing other forms of mining employment in significant numbers. Their presence across departments suggests that there is less segmentation in the mining workplace by gender and Indigeneity. In Nunavik, conversely, the combined absence of Inuit women in traditional mining alongside their concentration in catering and housekeeping suggest a workplace and is deeply segmented by gender and Indigeneity.

6. Analysis: The importance of context

Key informants in both locations described mining jobs as desirable since wages and benefits are often better than those of comparable local employment. Moreover, companies in both regions have endeavoured to hire Indigenous workers and women to meet their community commitments. Understanding the divergent employment patterns described above requires looking beyond workplace level factors and company attitudes to the historical, economic, spatial, and social context shaping mining development. We illustrate the relation between context and Indigenous women's employment in mining through a discussion of the history of anti-colonial movements and mining and the spatial organization of mining in each region before describing how broader patriarchal social relations limit women's employment in both regions.

6.1. History of anti-colonial movements and mining

The first factor influencing the discrepancy in Indigenous women's employment between Nunavik and New Caledonia is the different relationship between mining and Indigenous struggles for self-determination. Below, we emphasize five key differences: the historical links between mining and anti-colonial movements; externally versus internally driven development; degrees and structures of political authority; mechanisms for exercising control over these specific mines; and the meaning and social value attached to mining and mining employment.

6.1.1. Nunavik

In Nunavik, mining development has been driven by external corporate and state interests. As the northern region of the province of

Table 1

Employment as percent of total workforce by demographic group and department, excluding catering and housekeeping

| Region, Mine | Total | | Total women | | Total Indigenous | | Indigenous women | | Indigenous men | |
|-------------------------------|-------|---|-------------|------|------------------|------|------------------|------|----------------|------|
| | no | % | no | % | no | % | no | % | no | % |
| Nunavik, Canada, Mine 1 | | | | | | | | | | |
| Total | 419 | | 40 | 9.5 | 50 | 11.9 | 8 | 1.9 | 42 | 10.0 |
| Mining | 268 | | 17 | 6.3 | 36 | 13.4 | 4 | 1.5 | 32 | 11.9 |
| Plant/Concentrator | 107 | | 8 | 7.5 | 11 | 10.3 | 2 | 1.9 | 9 | 8.4 |
| Administrative/Other | 44 | | 15 | 34.1 | 3 | 6.8 | 2 | 4.5 | 1 | 2.3 |
| Nunavik, Canada, Mine 2 | | | | | | | | | | |
| Total | 908 | | 76 | 8.4 | 99 | 10.9 | 23 | 2.5 | 76 | 8.4 |
| Mining | 632 | | 31 | 4.9 | 85 | 13.4 | 16 | 2.5 | 69 | 10.9 |
| Plant/Concentrator | 127 | | 6 | 4.7 | 3 | 2.4 | 1 | 0.8 | 2 | 1.6 |
| Administrative/Other | 149 | | 39 | 26.2 | 11 | 7.4 | 6 | 4.0 | 5 | 3.4 |
| North Province, New Caledonia | | | | | | | | | | |
| Total | 967 | | 282 | 29.2 | 576 | 59.6 | 179 | 18.5 | 397 | 41.1 |
| Mining | 311 | | 73 | 23.5 | 230 | 74.0 | 58 | 18.6 | 172 | 55.3 |
| Plant/Concentrator | 423 | | 104 | 24.6 | 282 | 66.7 | 85 | 20.1 | 197 | 46.6 |
| Administrative/Other | 233 | | 105 | 45.1 | 64 | 27.5 | 36 | 15.5 | 28 | 12.0 |

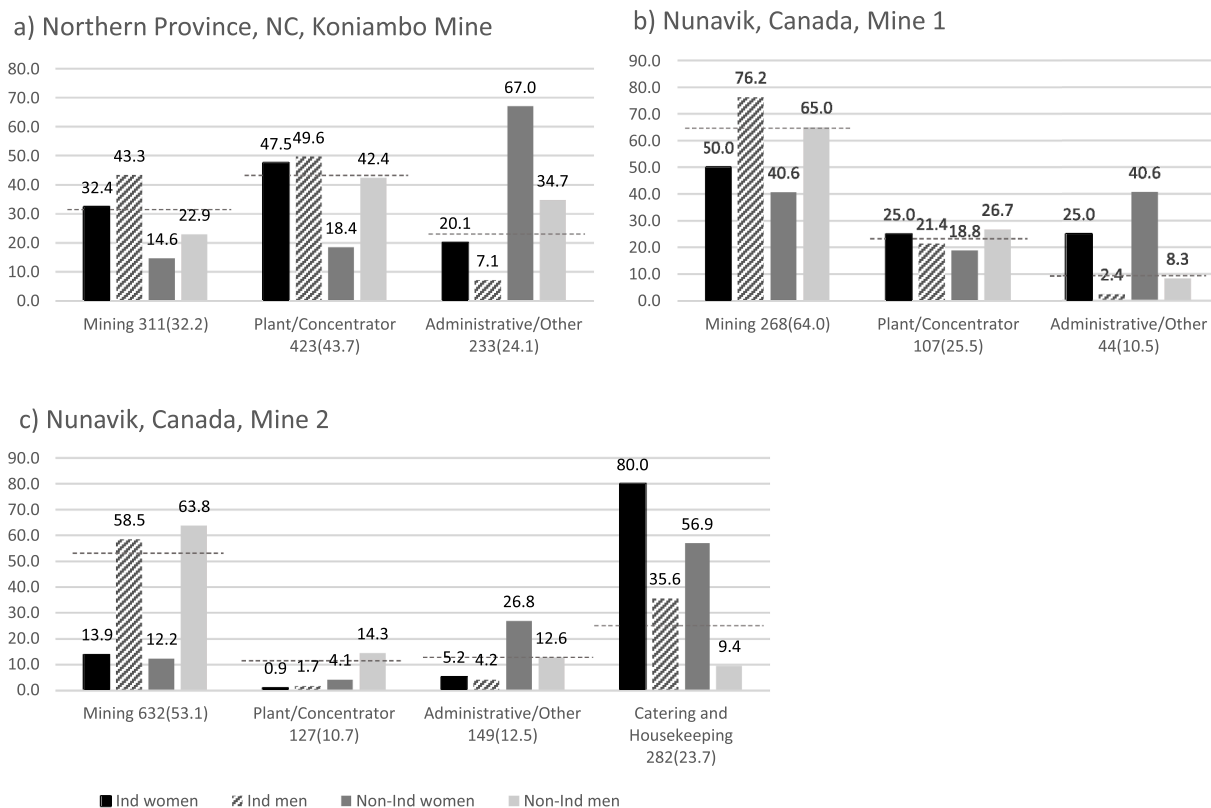


Fig. 1. Distribution of total employment of each demographic group employed across departments in a) Northern Province, NC, b) Nunavik, Canada, Mine 1; and c) Nunavik, Canada, Mine 2. Catering and housekeeping employment not included for a and b.

Quebec, Nunavik has limited powers of self-government and no rights to mineral deposits. Inuit influence over mining and mining employment is limited to participating in environmental assessments and negotiating benefit agreements. Although Inuit have gained some influence over and harnessed some benefits from mining as a result of land claims and Impact and Benefit Agreements (IBAs) over the past 50 years, participation has been limited to employment, royalty payments to two communities and to the Nunavik region, and subcontracting agreements and Inuit have not been the drivers of mineral development (Rodon 2018).

Throughout northern Canada, resource development has often served as impetus for protest, litigation and ultimately the resolution of comprehensive claims and negotiation of IBAs. Modern day treaties and IBAs, however, have often stopped short of providing sub-surface rights to profitable mineral deposits or to altering the ownership structure of resource companies to include Indigenous communities and governments, leading to a power imbalance between extractive capital and Indigenous nations (Cain and Krogman 2010). Instead, IBAs have been used to minimize risk for proponents by exchanging ‘license to develop’ for a narrowly prescribed list of benefits, including employment. This narrow framing of benefits positions resource extraction as the dominant form of economic development, often overshadowing the concerns of local communities and women’s groups (Dalseg et al. 2018).

In Nunavik, as in much of the Canadian Arctic, interest in developing mineral deposits and other resources only began in earnest after World War Two. Development was driven by the collective desires of southern settlers as enacted by national and multinational companies and the Quebec government. As Desbiens argues, the Quebec government, which had limited presence in Nunavik until the post-war period, saw resources in Nunavik as theirs to develop. This assertion of state entitlement was closely connected into a vision of unified Quebec nationhood (Desbiens 2004).

After World War Two, the federal government’s delivery of comprehensive social services in Nunavik was contingent on the settlement and relocation of Inuit into permanent communities. This entailed a dramatic disruption to Inuit livelihoods. As development began, Inuit employment was viewed paternalistically, as an opportunity for Inuit to become westernized through industrial work (Rodon and Lévesque 2015). The first mine in Nunavik, an asbestos mine that operated from 1972-1980, was developed without any consultation with Inuit (Carney 2016). Asbestos Hill mine operated on a fly-in, fly-out basis and employed a substantial number of Inuit from communities across Nunavik among a predominantly southern non-Indigenous workforce. Though mining work brought higher incomes to many Inuit families, it also contributed to language loss, increased alcohol use, and a greater reliance on wage income rather than subsistence activities (Carney 2016).

This pattern shifted after Inuit and Cree opposition to the Quebec government’s plans to develop a large hydroelectric project on unceded Cree and Inuit territories without consultation. The legal challenge that ensued, and the Calder v. Attorney-General of British Columbia [1973] ruling recognizing Aboriginal title, prompted governments to negotiate the first land claim in Canada in 1975: the James Bay and Northern Quebec Agreement (JBNQA). The land claim instituted compensation for lands, land rights, shared management over resource development, and the creation of Cree and Inuit governance institutions. IBAs were not stipulated in the agreement, though they have been signed for all mine development proposals, including our two study mines. These agreements provide for employment programs, preferential hiring for beneficiaries, preferred contracting for Inuit businesses, and redirecting profits to affected communities and Nunavik as a whole. Rodon concludes that while the mines have generated some wealth, “Benefits are... largely confined to the creation of short-term wealth” (2018, 130) as

insufficient infrastructure and educational capacity has limited the mine's capacity to develop fully.

Although land claims and IBAs have provided some say over development, development continues to be an external force. Accordingly, key informants felt that, where Inuit were able to access mining employment, mining provided good opportunities for Inuit workers because of the individual opportunities that it provided. In contrast to New Caledonia, interviewees rarely made overt connections between the mines, as they exist today, and Inuit political empowerment tied to anti-colonial struggle. They did not describe a sense of Inuit ownership over the Nunavik mines nor did they explain Inuit participation in the workforce in these terms. Rather, they emphasized mining as a pathway to individual employment opportunities and other wealth transfers and explained successful Inuit participation in the workforce as flowing from individual outreach and recruitment efforts, IBAs, and company policy.

In this way, while employment can bring tangible benefits, nickel mining in Nunavik plays out as an instrumentalized relationship of exchange within the narrow hiring requirements of the IBA. A past staff who worked in Inuit recruitment described this dynamic as follows: "I find there's more of a resistance [at Mine 1]...I feel like they just have Inuit employees because they have to have them in order to be here, kind of feeling... I kind of feel like they always had lingering at the back of their heads, where 'we have no choice but to have them, so we have them,' kind of thing."

6.1.2. New Caledonia

In contrast to Nunavik, mining development in the Northern Province of New Caledonia has been internally driven as part of the broader history of Kanak anticolonial struggle. Since the 1970s, control over mining has been seen as a tool to pursue Kanak economic and political independence (Néaoutyine 2006; Tjibaou 1996). Kanak control of mining development has been possible in part because Kanak have more formal political power in the Northern Province than do Inuit in Nunavik: a coalition of pro-independence political parties holds power in the provincial assembly. For this reason, the Koniambo project is also majority Kanak-owned. While the project is operated by a global mining company, the majority shareholder is a Caledonian mining company (SMSP) owned largely by the Northern Province (Filer et al. 2017). These companies share mining rights to the Koniambo deposit. These dynamics have translated into more Kanak control over development and the distribution of mining benefits.

Mining has been central to Kanak independence movements since the 1970s, but generations of anti-colonial struggle form the backdrop to the Koniambo project. From 1887 to 1946, Kanak lived under the *Régime de l'indigénat*, which seriously curtailed Kanak rights, including by confining Kanak to small, arbitrary reserves (Merle and Muckle 2019). Kanak political rights subsequently expanded, but the radical aspects of the independence movement aspired to more profound change. On this basis, land remained at the centre of Kanak anti-colonialism.

Historically, Kanak were peripheral to mining development. They remained quite outside the market economy and, from the 1930s until the turn of the century Société Le Nickel (SNL) operated the only refinery in the southern capital city of Nouméa (Filer et al. 2017). Kanak who were employed were generally relegated to low-wage and low-skill positions (Connell 1987; Horowitz 2004). But this began to shift in the 1970s when the nickel boom coincided with a radicalized Kanak independence movement that emphasized economic autonomy as necessary for meaningful independence (Connell 1987).

The independence movement reached an apex in the 1980s, leading to several state-negotiated agreements aimed at economic rebalancing between regions, economic development of the Northern Province, and devolution of political power to the provinces. These agreements brought mining into focus as the pathway to Kanak self-determination. In 1990 a holding company owned by the Northern Province purchased the mining company SMSP (Horowitz 2004). In a key development several years later, the Front de Libération Nationale Kanak

Socialiste (FLNKS) negotiated access to the mineral rich Koniambo Massif for SMSP and its original corporate partner, Falconbridge, creating the conditions of possibility for the development of the Koniambo mine (Kowasch et al. 2015; Le Meur et al. 2013).

Under the 1998 Nouméa Accord, France transferred legislative powers to the territory, including over environmental laws and resource exploitation; created a Customary Senate; promised training and economic development programs; and required a referendum on independence within ten years (Horowitz 2004; Kowasch et al. 2015). The Accord also established provincial authorities that largely mirrored existing ethnic divisions, meaning that the new Northern Province came under Kanak majority control (Kowasch et al. 2015). This has translated into Kanak ownership of the Koniambo project through state-owned mining company, SMSP.

The Koniambo project received widespread local support because it was seen as a Kanak project that would bring economic benefit and independence to Kanak people, including through employment (Sourisseau et al. 2017; Kowasch 2017). Kanak leaders believed the project also promised economic rebalancing, distance from metropolitan France, and economic self-sufficiency (Horowitz 2004).

In place of royalty payments, the Northern Province's development strategy facilitates Kanak participation in mining through direct employment and business contracts (Rosner 2018; Kowasch 2017). Kanak workers have entered the industry in high numbers on account of local hiring provisions (Country Law No. 2012-9 of 27 July 2010 on the protection, promotion and support of local employment) and commitments to customary agreements to target recruitment in local communities. This emphasis on local recruitment is framed in part by Kanak political parties' general aversion to the notion that Kanak belong to separate "Indigenous communities" out of fear that this would weaken the case for national independence (Filer et al. 2017). Recruitment happens in a concentric circle around the plant: first the tribes and villages in the immediate vicinity, followed by the Northern Province, the rest of New Caledonia, and finally abroad. The company is also bound by controversial national laws that prioritize hiring citizens and long-term residents.

The collective social value and pride in the project have further contributed to local recruitment. Because the project is seen as contributing to independence, mining employment is socially valued in Kanak society, including for women workers. This association, alongside intensive early recruitment campaigns that brought a critical number of Kanak women into the workforce helped to normalize the employment of Kanak women. Even if younger generations of Kanak workers may be less overtly motivated by political factors, this early normalization supports the ongoing employment of Kanak women at the mine. As one human resources representative explained: "Now, since 2014, I've been in human resources; the motivation has changed a lot. Back then, when you would speak with them [recruitment candidates] about Koniambo Nickel, many of them knew about Koniambo Nickel, so during the interview, you would ask them, 'What does Koniambo Nickel mean to you? Have you heard of it?' and they would answer, 'Yes, I've heard of it, it's a big company, uh... it's job security.' And now when you ask young people, 'Do you know Koniambo?' they say, 'No.' You see, they don't have the, uh... the same motivation anymore. What they're really looking for is work. They know that Koniambo Nickel offers training, so in most cases, that's what draws them, you know? But it's not a desire to work for a national project like we used to have, you see."

During the initial recruitment phase, the company did not anticipate the widespread entry of Kanak women. Interviewees reported that Kanak women attended recruitment calls because they were more likely to have the minimum qualifications than were men (Vadot et al. forthcoming) and because they saw this as a promising employment option after experiences of short-term employment elsewhere (Salomon 2015 167). During the construction phase, women were concentrated catering operations (Salomon 2015), but some were able to benefit from training programs, particularly in machine driving and mining (Testenoire 2012,

21; Vadot et al. forthcoming). That is, the general policies of local employment and training combined with the sheer number of workers needed created opportunities for women to develop skills and to move into more specialized and traditionally male jobs.

6.2. Spatial structure and social infrastructure of mining employment

The second factor influencing the discrepancy in Indigenous women's employment is the spatial arrangement of the mining operations, associated shift and commuting structures, and the relative presence or absence of the social infrastructure to support these arrangements. Namely, the fly-in fly-out (FIFO) rotational work structure used at the Nunavik mines poses a barrier to Inuit women's employment.

6.2.1. Nunavik

In Nunavik, the closest community is almost 100 kilometers from the mine sites. The mines are accessible only by plane because there is no integrated road network connecting them to local communities. These spatial and infrastructural realities have normalized the use of FIFO at both mines with a standard rotation of three weeks at work and three weeks at home, though there are provisions at both mines that allow most Inuit workers to work 2:2. Our key informants emphasized three ways that FIFO poses a barrier to Inuit women's employment: language and cultural conflicts; experiences and fears of racism and gender-based discrimination and harassment; and an incompatibility between FIFO and care responsibilities.

Non-Inuit comprise the majority of workers at both Nunavik mine: Mine 1 is 88.1% non-Inuit while the Mine 2 workforce with catering and housekeeping excluded and included is 89.1% and 80.4%, respectively. Non-Inuit workers travel to the mines from largely French-speaking parts of southern Canada meaning that the dominant workplace language is French, which is often a third language for Inuit workers.

The Mining Development Manager for the Makivik Corporation emphasized that stories and stereotypes about southern workers and the working environment can exacerbate workplace conflict and deter Inuit women from applying for jobs. Language barriers further exacerbate these misconceptions: "There's a big culture shock there, like, having French speaking language workers working alongside with the Inuit. So, both populations speak a language that they're not fully...fluent. So, it provokes some culture shock or some issues sometimes. There's many, there's many stories, like Inuit, they hear francophone swearing after a tool, but the Inuit thinks it's directed toward himself, so then he'll go 'I'm not respected' or 'I'm not welcome on my worksite, so I quit'.... I believe women may be impacted by those kinds of situations as well."

Key informants recounted that fears and experiences of racism and gender-based harassment are another reason why Inuit women might avoid or leave the industry. These are male-dominated, isolated workplaces and Inuit and women workers are concentrated in lower-status, service positions where they come into contact with men in their domestic environments. While the mines have zero tolerance policies regarding harassment, key informants reported that *fears* of discrimination and harassment may keep Inuit women from seeking work in mining. These anxieties about workplace safety may also discourage women from activating reporting mechanisms if they do experience discrimination or harassment. In their recent study of Inuit women workers in extractive industries, Pauktuutit Inuit Women of Canada (2021) found that a lack of Inuit human resources staff is a barrier to reporting. Broader structural conditions can reduce Inuit women's capacity to respond to these experiences and fears. If, for example, mining is the only or most lucrative way to earn a living close to home for some women, they might remain in these jobs even if they are not safe or comfortable. These dynamics are made worse by a lack of cultural and mental health supports on site.

The third and most recurrent barrier discussed in our interviews is an overarching incompatibility between FIFO and care responsibilities.

There is no childcare at the work site, so workers must arrange care for dependents at home while they are at work. Key informants explained that people may be unwilling to part from children for two or three weeks, may not want to put responsibility for their care on someone else, or may simply not have access to this type of childcare. These challenges are compounded for single mothers. One key informant who used to work in Inuit recruitment for one of the mines explained, "I think there are a lot of Inuit women who are single mothers. So, for them, they would love to go work at the mines, but who can watch their kids? But at the same time, it's not somebody else's responsibility to raise my kids." She explained that the childcare problem is exacerbated by the rigidity of travel to and from the mine site. "In the case of an emergency, for example, workers must wait for the next departing flight to be able to return to their communities. There aren't flights every single day that go to the mine. So sometimes you're stuck. Let's say something happens while you're gone, then you can't go until two or three days later.... So that, I noticed that brought a lot of barriers to women. It's really childcare. Where can my child stay? They're the main caretakers, so putting it on somebody else is, you know, not that easy."

The challenge of childcare is exacerbated by the length of the work rotation and a lack of flexibility in shift scheduling. While there are provisions in the IBAs for Inuit workers to access a shorter two-week rotation, some interviewees suggested that more women may be willing to try mining work if they had access to a different schedule (e.g., a one-week rotation). Beyond scheduling, our interviews suggested a general lack of initiative to retain women workers with young children.

In addition to the problem of recruitment and hiring, FIFO makes it challenging to retain Inuit employees, including women. While companies have developed training and recruitment strategies targeting Inuit workers, key informants reported that the long periods away from home and the rigidity of the schedule contribute to high turnover rates among Inuit workers. Again, childcare figured centrally here: even for women who successfully enter the industry, childcare responsibilities can make it difficult for Inuit women to stay in these jobs. Key informants reported that the young age of women workers reflects this. While some women workers successfully return after taking leave or once their kids are older, many do not. Interviewees also explained that other factors related to FIFO contribute to Inuit workers leaving their positions: not being able to return home for important occasions, challenges in their families, wanting to participate in the hunting season, or a desire to return home for the winter, for example. The fact that alcohol is prohibited in the work camps poses a barrier for some workers. In addition to the mere loss of employment, these patterns of short-term employment make it difficult for Inuit and Inuit women workers to advance into more secure and well-paying positions.

6.2.2. New Caledonia

In contrast to the reliance on FIFO at the Nunavik mines, the Koniambo mine's proximity to local communities, its integration into quality road networks, and the spatial concentration of production sites allow most workers to commute daily by road (Filer et al. 2017). FIFO was used during construction, when the company recruited internationally (Filer et al. 2017; Kowasch 2017), but most workers subsequently employed in operations commute daily from the surrounding communities. There is no workforce housing at the mine site.

Experiences and fears of overt harassment seem to be less of a factor shaping women's experiences than at the Nunavik mines. Workers did report first instances of sexism and harassment at the plant site and in the work camps during the construction phase, when a more FIFO-like work structure was in place. However, according to interviews with human resources and communication agents, reports of sexism and harassment have diminished since the FIFO-like structure was replaced by daily commuting and the camps were dismantled. The company has also taken a number of preventive measures to address harassment, including listening to radio stations to limit sexist comments and promoting women's careers in the newsletter and press of the works council

and on the company website.

However, women's experiences in the workplace are still shaped by gender. Kanak and non-Kanak women workers report having to show resistance, "not let themselves be taken advantage of" and, generally adopt masculine behaviour to successfully integrate into this male environment. As in Nunavik, women may also fear activating reporting mechanisms: reports of harassment risk being minimized by supervisors, regardless of gender and whether the employee is then isolated or moved to another department or team. But the risk of harassment does not seem to be a barrier to recruitment. The mine represents an opportunity for more stable employment and income in a place where such opportunities can be scarce, and the targeted communication and training policies encouraging women to enter so-called male occupations (construction, mining, etc.) have been successful (Testenoire 2012).

The more regularized daily shift structure at Koniambo does not pose the same challenge to workers with care responsibilities as does the rotational structure at the Nunavik mines. However, some interviews did reflect the more general impact of gendered responsibilities for family care work, regardless of commuting structure. Several former employees reported leaving their jobs by choice for reasons related to care responsibilities and expectations: to satisfy a maternity need or to have more time for their families. For these workers, combining work and parenting proved possible but demanding for the whole family (husband, sister, mother, etc.). While childcare is less of an obstacle to women entering mining jobs, it can make it difficult for women to stay in the industry. Women employees benefit from the daily support of other women in their families who live nearby but, in the long term, the effort made by family, pressure from the husband, or even comments from male colleagues that real women take care of their children, may lead some women to leave their jobs after five or six years, towards the end of their forties (Vadot et al. forthcoming).

Finally, the daily commuting structure has allowed Kanak workers to remain closely connected to their communities, with social and economic implications. Workers are able to attend important events like marriages and deaths and participate in traditional land-based activities. Research carried out on rural household strategies in 2010 (three years after the opening of the New Caledonian mine) and in 2018 shows that agricultural activities remained relatively unchanged (Bouard et al. 2020; Sourisseau et al. 2020). The most recent study even shows a reinvestment in agriculture after the plant construction phase, illustrating that agriculture can serve as a shock absorber. These studies suggested that, even if the workdays are long, Kanak workers have been largely able to make their waged work schedules work with agricultural, fishing, and hunting activities. Additional research is needed to determine whether this has remained the case a decade on in the mine's life.

6.3. Broader politics of gender and social reproduction

While the historical context and the spatial arrangement of mining explain much of the divergence in Inuit and Kanak women's employment, Indigenous women in both contexts face some more general shared barriers to long-term, secure employment in mining: namely, gendered expectations for work and social reproduction and patriarchal dynamics in the household.

Key informants in Nunavik pointed to the intersection of patriarchy at work and at home as sometimes incentivising Inuit women to leave the mining industry. One key informant who works in Inuit recruitment explained that spousal jealousy and distrust—related to long periods spent in a male-dominated work environment—causes some women workers to leave their jobs at the mines. As she explained, for women, "some will say that the reason they quit their job is because their spouse is not really fond that they go to work in a men's environment." This has helped spur the company to host multi-day visits to the site for spouses to better understand the operations.

At Koniambo, meanwhile, despite the high rates of Kanak women's

employment, recent surveys realized in the Knowledge Network on Mining Encounters and Indigenous Livelihoods (<https://www.mineral.ulaval.ca/>) show that women, especially blue-collar workers, also find it difficult to continue working at KNS over the long run (Vadot et al. forthcoming). Like in Nunavik, women exit the workforce for a variety of reasons spanning childcare responsibilities, gendered expectations and spousal pressure, a desire to prioritize family, and challenges associated with this male-dominated working environment. That is, even without FIFO, the gendered relationship between professional and family life remains problematic for women at the Koniambo mine. Maintaining employment over the long term requires solidarity between women (mothers, sisters, aunties) for the care of children. As in Nunavik, Kanak women also face spousal jealousy related to the male work environment. Despite the company's efforts to integrate women through radio surveillance and a women's day, some women surveyed chose to quit their jobs, sometimes after several years. They did so in order to privilege family life, but also because, by reinhabiting gender stereotypes they are able to avoid endless remarks about their life decisions and the need to justify for their choices within their professional and family circles.

7. Conclusion

Overall, this research contributes to efforts to center difference and context in research on gender and mining. Through a comparative study of Indigenous women's participation in nickel mining employment in Nunavik, Canada and Northern Province, New Caledonia, this article addresses under-researched themes in mining research: how mining's gendered impacts flow through multiple sites and relationships (e.g., workplace, home, and community), how differently positioned women are differently impacted by mining development; and the role of broader historical, geographical, and political economic context in shaping patterns and experiences of employment.

By examining two settler colonial contexts with dramatically different rates of Indigenous women's employment in mining, this article shows that Indigenous women's access to mining employment is shaped not only by company policies, hiring priorities, and community benefits agreements, but also by broad political and historical context: colonial structures and histories, anti-colonial movements, Indigenous and settler state governance structures, local political economies, gender norms and expectations, infrastructure and transportation geographies, and social infrastructure. Understanding this context is crucial to understanding patterns of women's employment and the factors that shape these patterns.

By extension, when considering the low rates of Inuit women's employment in Nunavik, our findings imply that Inuit employment initiatives, hiring provisions in the IBAs, and the individual efforts of Inuit staff are not sufficient to address the underrepresentation of Inuit women in mining in Nunavik. One mine has invested considerably in Inuit recruitment and training and received praise from many of our key informants for the quality of these programs. Some of our key informants who worked in Inuit recruitment at either mine described their own arduous efforts and initiative to encourage Inuit employment and retention. However, our research makes clear that Inuit women continue to face barriers to accessing mining jobs, staying in these jobs over the long term, and advancing into higher-skilled and better paying positions. While company policy can go some distance toward making mining work more accessible (e.g., by offering shorter rotations) the most formidable barriers (e.g., childcare, infrastructure, workplace culture and discrimination) cannot be meaningfully addressed without broader structural change.

While insufficient, interviewees did emphasize that tangible company and public policy measures would help improve Inuit women's access to mining employment. Flexibility in rotational scheduling and better investment in childcare services in the communities, for example, would help women with the challenge of integrating family life with

mining employment. Our emphasis here on the imperative of structural change is not meant to downplay the role that Inuit-specific and gender-based policy measures can play in reducing barriers to Inuit women's access to mining employment. Ultimately, however, as is stressed in the recent report published by Pauktuutit Inuit Women of Canada, policies to address Inuit women's unequal access to mining employment must be developed by and for Inuit women (Pauktuutit Inuit Women of Canada 2021). While the focus of their report is on workplace sexual violence and harassment in extractive industries, this principle applies to the broader range of barriers identified here and in the supporting literature (see Nightingale et al. 2017).

Importantly, this research also highlights that FIFO is not the sole cause of gender-based inequities in mining workplaces. In both contexts the structure of mining work remains a barrier for women's long-term participation because it is largely incompatible with care responsibilities, even when workers are able to return home daily. Turn-over among women workers is high at all three mines and key informants report women workers leaving the workforce to start a family or care for young children. In this sense, while our data clearly indicates that mining employment is more accessible to Kanak women in Northern Province than to Inuit women in Nunavik, these high rates of participation must be qualified by the reality that it is still difficult for women to stay in these positions over the long term.

Among the factors shaping Indigenous women's employment, the degree of Indigenous control over mining development and associated benefits is the most striking difference between these contexts. Our comparison between these two contexts suggests that Indigenous ownership and control holds promise for deepening the employment benefits that flow to Indigenous communities in contexts where mining is taking place. The New Caledonia case suggests that Indigenous control of mining development and operations could help to create more equitable distribution of employment benefits in Nunavik by reducing other barriers that stem from Inuit, and especially Inuit women's underrepresentation and segregation in the workplace. But, as the New Caledonia example also illustrates, greater Indigenous control of mining development and operations holds perhaps even greater potential for collective benefit, including by financially undergirding the potential for greater self-determination.

Ultimately, our research suggests that absent some of these structural changes that would redistribute control of mining development and improve social infrastructure, the potential for equitable access to mining employment benefits remains limited, especially in a FIFO context. In this sense, FIFO itself is not the problem, but rather, a feature of much Canadian mining that dramatically exacerbates already-existing barriers and disparities disproportionately impacting Indigenous women. By quantitatively illustrating the reality of this employment inequity and placing it in context, this paper highlights one of mining's major limitations as an economic development strategy: that absent more fundamental change to address the ongoing legacies of colonialism, mining benefits and harms will continue to be unevenly distributed by gender and Indigeneity.

Finally, while this research highlights several key factors that shape the distribution of employment benefits from mining, the specific barriers that Indigenous women face to accessing quality employment can only be fully understood by speaking directly with women workers. This paper lays the groundwork for this in-depth qualitative research: ongoing interviews with Inuit and Kanak women workers will reveal more about the specific barriers they face to accessing quality employment and what might be done to reduce them.

Declarations of Competing Interest

None

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