



on the move
partnership

Labour Mobility in Northern BC

Final Report

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From 2013 to 2017, our research team explored the pathways, experiences, and supports provided to mobile workers at three study sites: New Gold's Blackwater Exploration Project, BC Hydro's Site C construction project, and Taseko's Gibraltar mine. We wish to thank all of the mobile workers who took the time to help out and to answer our many questions.

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<http://www.onthemovepartnership.ca>.

Laura Ryser, Greg Halseth, and Sean Markey
Prince George, Winter 2018

Availability

Copies of this report have been provided to Taseko, New Gold, BC Hydro, and Peace River Hydro Partners, as well as municipal offices and public libraries in Vanderhoof, Williams Lake, and Fort St. John. At UNBC, copies have been provided to the Geoffrey Weller Library. Copies of the report have also been provided to participants upon request. Reports have also been posted on the website of the Canada Research Chair in Rural and Small Town Studies: <http://www.unbc.ca/greg-halseth/canada-research-chair-rural-and-small-town-studies>.

Project reports about this project include:

- A Review of Socio-Economic Characteristics in Mackenzie
- A Review of Socio-Economic Characteristics in Williams Lake
- On the Move: Community Impacts of Long Distance Labour Commuting Summary Report for Mackenzie
- On the Move: Community Impacts of Long Distance Labour Commuting Summary Report for Williams Lake
- On the Move: Mitigating Impacts – A Local Workers’ Perspective in Williams Lake
- On the Move: Mitigating Impacts – A Mobile Workers’ Perspective 2013
- On the Move: Mitigating Impacts – A Mobile Workers’ Perspective 2015

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On the Move: Labour Mobility in Northern BC

INTRODUCTION

More than three decades of restructuring has transformed the nature of work and community relationships in resource producing regions. Rapid industrial activity is expected to increase the influx of mobile workers to address labour shortages, particularly during project construction periods. With a very competitive labour landscape provincially, nationally, and globally, labour shortages are anticipated for many phases of resource-based infrastructure and development projects. Labour mobility can have important implications for workers, work environments, and can reshape family and community relationships. It is important for stakeholders to understand these impacts in order to inform strategic investments in infrastructure and supports for workers and their families throughout all phases of large-scale industrial projects.

The purpose of this research is to examine key issues impacting mobile workers across the exploration, construction, and operational phases of industrial development as part of the On the Move: Employment-Related Mobility in the Canadian Context (E-RGM) project in northern BC. This seven year nation-wide research partnership about labour mobility launched in 2012 is led by Memorial University, with over 40 researchers from 22 universities participating (www.onthemovepartnership.ca). In northern BC, our research is focused on:

- Understanding the experiences of, and provision of support available to, mobile workers;
- How mobile labour has shaped the work place culture / environment;
- How commuting has impacted mobile workers' family and social networks;
- How communities have seized opportunities presented through the presence of a mobile workforce; and
- Factors that influenced pathways for mobile work.

The project work reported here was carried out by a research team from the Canada Research Chair of Rural and Small Town Studies at the University of Northern British Columbia (UNBC), and the School of Resource and Environmental Management at Simon Fraser University (SFU) since the summer of 2013.

KEY MESSAGES

Recruitment and Retention

Workforce recruitment and retention is increasingly shaped by competition locally, regionally, nationally, and globally. Life cycle and lifestyle choices, and the presence of an aging workforce are accentuating these pressures.

Key recruitment strategies drew upon human resource companies, First Nations band offices, employment websites, co-op postings, job fairs, unions, newspapers, contractor / industry websites, tours of industry sites, and informal networks of current and former co-workers.

Commuting

Longer commutes reflected the remoteness of sites, the scattered nature of the workforce, the multiple transportation methods used to reach staging areas and industry sites, and unfavourable flight connected with smaller communities.

Factors shaping impacts of commuting on mobile workers included travel conditions and supports, transition to night shifts, transition to dayshifts, financial costs and supports, family needs, compounded fatigue, nutrition, challenges pursuing recreation, and structure of shift rotations.

Commodity fluctuations not only impact industry operations, they also create tenuous circumstances for benefits that are provided to mobile workforces (i.e. travel support, living allowances, work camp amenities, etc.).

Commuting supports included travel costs to staging sites, carpools, provision of extra financial supports when travel delayed due to weather, and chartered flights. Extra baggage fees were also covered during first commute to transport tools / equipment.

Commuting safety protocols continue to be underdeveloped and adopted in mobile workplace environments.

Rest spaces are needed to allow workers to recover from last shift before driving home.

Processes for making travel arrangements and obtaining reimbursement should be clearly addressed in orientation programs.

Mobile Workforces and the Workplace

Mobile workforces have transformed workplace environments, requiring more attention to the design of shift rotation schedules, as well as communication protocols; clear regulations,

standards, and procedures; conflict resolution protocols; problem-solving skills; fatigue management training; nutrition and well-being; and mental health programs.

Aboriginal people's participation with industry has been strengthened through cultural sensitivity training and extended leaves for bereavement.

Youth recruitment in industry has been enhanced through internships and mentoring.

Training is needed at all levels to understand the warning signs of fatigue, substance abuse, and mental health stress in the workplace.

The future workforce not only needs to be educated about potential jobs, but also about extended work camp living lifestyles. Job fairs and education programs that provide students with experiences involving shift rotation work and work camp accommodations is a step in the right direction.

Accommodations

It is important to conduct routine surveys of workers living in work camp accommodations in order to inform ongoing planning, management, and investments that will strengthen recruitment and retention rates in a globally competitive labour market.

Work camp standards have improved to ensure workers have a personal room with a washroom, access to high speed Internet, and quality nutritional food to sustain them through long shifts.

Healthy living programs, such as fitness plans, spiritual rooms, and massage therapy have been provided to mobile workers.

Dining facilities, services, and recreational spaces need to be accessible for both dayshift and nightshift workers.

Consistent shuttle service that is appropriately coordinated after each shift is needed to connect mobile workers with nearby community amenities and supports.

Family and Networks

Investment in communications infrastructure is key to reduce isolation for workers and to connect them with on-line supports.

Improvements in the range and evening access to high speed Internet can help mobile workers to stay in touch with family and network supports.

Community

Access to community services and facilities was impacted by lack of time, fatigue, strict security protocols, curfews, and inconsistent shuttle operations.

Orientation packages and programs should be used to introduce and integrate workers and their families with community networks, activities, services, and amenities.

Pathways

Key benefits associated with mobile work included financial incentives, job stability, career development opportunities, opportunities to expand networks and relationships, proximity to the outdoors, and the provision of camp services.

Key concerns associated with mobile work included extended periods away from home, family and household pressures, travel conditions, fatigue, and stress.

Factors influencing decisions to continue with mobile work included future employment prospects, availability of jobs in home town, market conditions, opportunities for career development, structure of shift rotation, personal finances, family needs, financial incentives, job security, personal health / fatigue, camp / housing conditions, and provision of commuting supports.

METHODOLOGY

The data and information for this report was conducted using a variety of methods, including document analysis, surveys, and key informant interviews with mobile workers who engage in long distance labour commuting (LDLC) to three resource-based industry projects, each representing a different phase of development.

In mobile labour settings, the quality of social interaction between researchers and interviewees can enhance reliability; although, such interactions require a constant reflection of the researcher's position (Stringer 1996). Rigour and validity of studies conducted by researchers can be shaped by their knowledge about the social and cultural settings of targeted communities, and thus impact their potential to produce knowledge that can lead to meaningful change (Cargo and Mercer 2008). This is shaped by the characteristics of both the researcher and the interviewee and may include their age, gender, education, experience, beliefs and biases, income, dress attire, etc., all of which play an important role to shape the credibility and trust in the researcher, how the researcher will pose questions and interpret data, and the degree to which the interviewee is willing to share information (Berger 2015). As such, our research team was strategic in hiring researchers who were experienced and familiar with the research setting. This allows researchers to assemble a team that understands the work and family pressures experienced by mobile workers, improve the credibility of the research team when seeking permission for the study, and improve recruitment efforts.

Exploration Phase: New Gold's Blackwater Project

New Gold's Blackwater Exploration Project is located 110 kilometres southwest of Vanderhoof, BC. Interviews were conducted during August 2015. Participants were recruited with the assistance of New Gold who circulated a poster and sign-up sheet to workers at the exploration site. A total of 13 workers who engage in long distance labour commuting were interviewed. Participants reside in smaller communities and cities in northern BC, as well as in larger or more distant cities, such as Kamloops, Vancouver, Victoria, and Montreal. We spoke with new (less than 2 years) and longer-term (more than two years) employees working at the New Gold Blackwater site. Most participants reported working a 2-2 week shift rotation schedule, although, 19-2-7 (days), 3-2 (weeks), 3-3 (weeks), and Monday-Friday were also noted.

Figure 1: Case study locations



Map credit: Kyle Kusch.

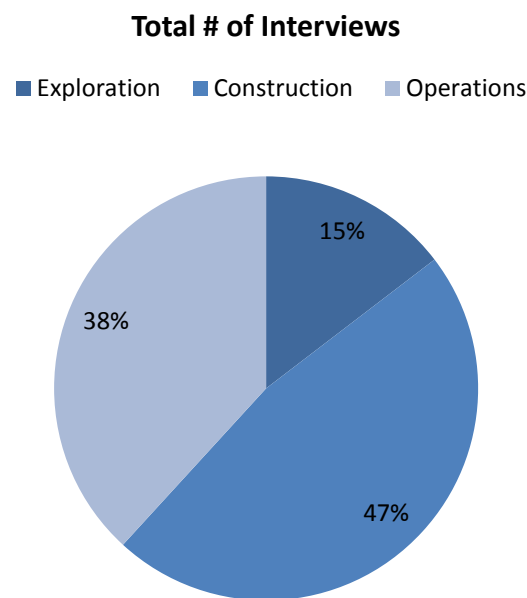
Construction Phase: BC Hydro's Site C Project

BC Hydro's Site C Project is located adjacent to the town of Fort St. John, BC. A total of 42 interviews were conducted during July 2017. A poster was distributed by e-mail by Peace River Hydro Partners. Permission was provided by Two Rivers Lodging Camp to recruit and interview workers in the seating area near the Starbucks outlet and dining hall. Permission was also obtained from North Cariboo Air to interview workers at the airport. These participants come from a range of communities all over BC, as well as throughout Alberta and Newfoundland. We spoke with workers who were on their first shift commuting to Site C, as well as workers who had more than 30 years of experience commuting in the construction industry. All of the people we spoke with worked the 2 weeks on, 1 week off rotation.

Operations Phase: Taseko's Gibraltar Mine

Taseko's Gibraltar Mine is located roughly 65 kilometres north of Williams Lake, BC. Interviews were conducted during May and June 2013. Participants were recruited using publicly available lists of workers at Gibraltar, as well as through the assistance of the mine's Senior Coordinator for Community and Aboriginal Affairs in order to recruit participants who live in distant

communities, as well as participants who represent different genders and roles at the mine. A total of 25 local workers and 9 workers who engage in long distance labour commuting were interviewed. These participants come from nearby communities such as Quesnel and 100 Mile House, as well as from distant regional centres such as Prince George and Kamloops. We spoke with both new (less than two years) and longer term employees in the mining sector. Two types of shift rotation schedules were reported by participants, including 5 on and 4 off and 4 on and 5 off, and 5-2.



Research conducted by the Canada Research Chair in Rural and Small Town Studies at UNBC and at SFU is bound by university protocols that require all survey or interview guides be submitted to both university Research Ethics Boards for review. A key component to this protocol is to provide research participants with a copy of the consent form (Appendix B) that outlines the purpose of the study, how the research process will protect their anonymity and confidentiality, and that their participation is voluntary.

The purpose of this project was to understand the experiences and impacts that long distance labour mobility can have on workers and their families. This report is a summary of key topics identified from our interviews with workers. A detailed description of each question asked in the sections of the interview guide is provided in Appendix C. In general, participants were asked questions about:

- recruitment and retention,
- experiences with commuting,
- operations,
- housing and camp design,
- access to services,
- impacts on family and social networks,
- sense of community,

- benefits and concerns with commuting for work, and
- factors that will influence their decision to continue commuting long distances for work.

During each interview, comments were audio recorded and the draft text was provided to interviewees for review to ensure accuracy. We then evaluated responses through latent and manifest content analysis by two members of the research team (Krippendorff and Bock, 2009). To improve consistency and reliability, members of the research team worked in the same office to code and categorize themes emerging from interviews in order to develop a common coding approach. As new codes and themes emerged, they were shared and discussed across the coding team and evaluated against the interview texts during the course of multiple rounds of coding. In terms of manifest content analysis, the research team consolidated information about mobile work experiences for a range of subject areas. By highlighting key words, the research team was able to create a series of categories and sub-categories (Andersen and Svensson, 2012). In terms of latent content analysis, the research team explored deeper meanings and connections across themes.

Due to the in-depth exploratory nature of these interviews, our intention is not to provide a foundation for understanding mobile work (and its impacts and benefits), and the development of policies and services to support an increasingly mobile workforce in resource regions. Our findings, though, must be placed within some study limitations. Our research team faced challenges to obtain permissions from various industry partners due to constantly changing conditions surrounding resource-based industry projects (Hollander 2011). These challenges affected the overall timing of fieldwork conducted at each site.

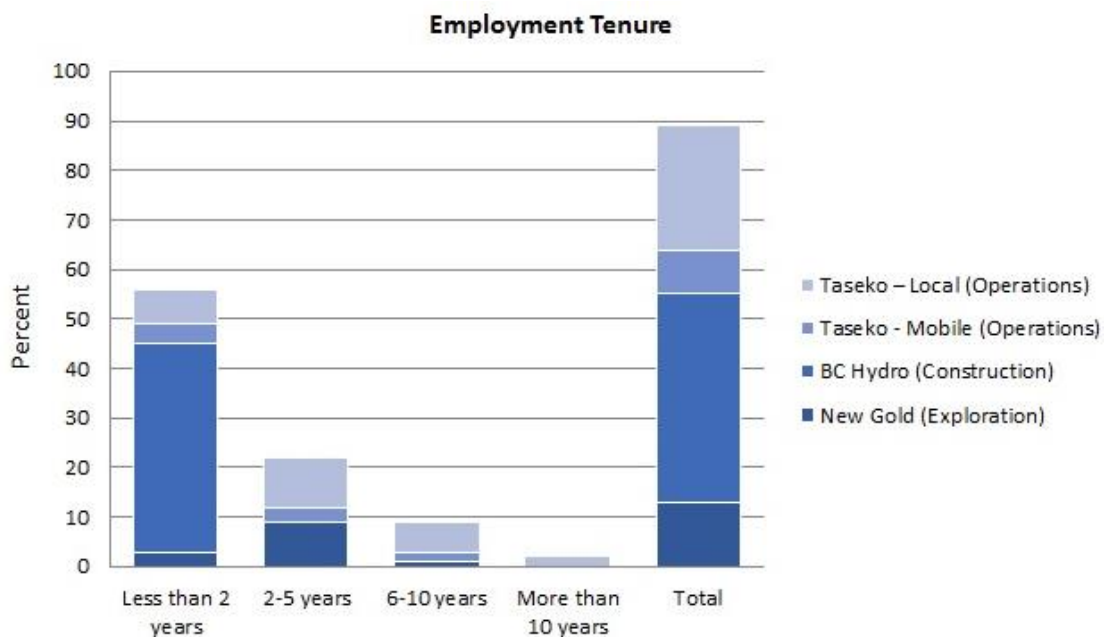
The nature of mobile work can present many challenges regarding the sampling and recruitment of participants. These challenges often revolve around rotational work schedules, commutes, and fluctuations with contractors and mobile workers following the boom and bust cycles associated with resource development projects (Barber 2016; Major and Winters 2013; Jenkins et al. 2015). Access to work sites or camps was also restricted to a one day pass in order to minimize the impact on industry operations and limit any liability concerns with having visitors on site. This can produce selection bias from the convenience sampling during a particular shift rotation at the job site, the results of which can impact the external validity of the issues identified through these interviews (Reed et al., 2003).

Given a range of opinions about resource development projects, some mobile workers expressed concerns about the research team's motives. Communicating our permission from industry management was instrumental to obtaining worker consent and participation. Trust also improved as we were able to reaffirm our interest in the experiences of mobile workers rather than the merits of a particular resource development project. In some cases, the capacity of mobile workers to provide good quality data during interviews was impacted by their knowledge and interest in their contract, their understanding of human resource department processes for arranging commuting supports, their knowledge and use of camp facilities, and non-disclosure agreements. Combined, however, these approaches provide a more nuanced portrait of mobile worker experiences, as well as more insight into how the rural labour market in this region is changing in response to resource restructuring pressures.

BACKGROUND ON MOBILE WORK

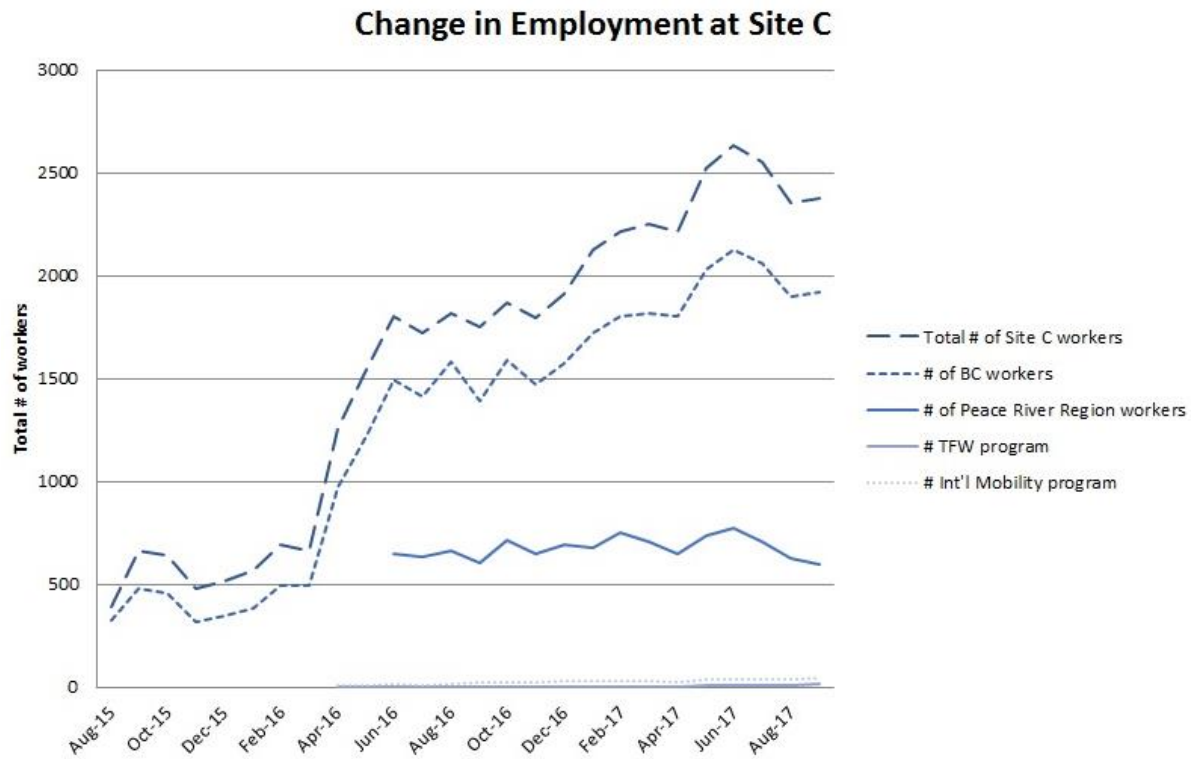
Industry use of mobile workforces has been accelerating since the 1980s (Measham *et al.* 2013). While industry was once grounded in localized and traditional labour markets, restructuring of these industries, declining job benefits, trends towards short employment contracts, improvements in transportation and communication, access to a larger supply of qualified workers, and limited access to forest fibre and mineral deposits nearby, has reinforced mobile labour in competitive regional, national, and global labour markets (Ryser *et al.*, 2016).

Much of the workforce that participated in our study had been with industry projects for less than five years. The employment tenure of workers we spoke with is a reflection of the development stage of each project. New Gold’s Blackwater Project has hosted exploration activities since 2009, thus explaining why most workers had been commuting to the site for no more than five years. Given that the construction of Site C only began in 2015, it is not surprising that the mobile construction workers participating in our study worked on this project for less than two years. Mobile workforces have been increasingly used to support short, intensive labour needs associated with construction and maintenance where the short-term nature of work makes it impractical for workers and their families to move repeatedly across various rural and remote locations (Creating Communities 2012). However, most mobile workers had also been commuting to Taseko’s Gibraltar mine for less than 5 years – a mine that had been operating under Taseko since 2004. This reflected changes in workforce opportunities and competition for labour across northern BC and Canada. Some local and mobile workers at Taseko had recently moved from working on the construction of the Mount Milligan mine near Mackenzie, BC.



As both capital and labour become more fluid, employment statistics can provide insights into how these global trends are playing out in major industrial projects. The figure

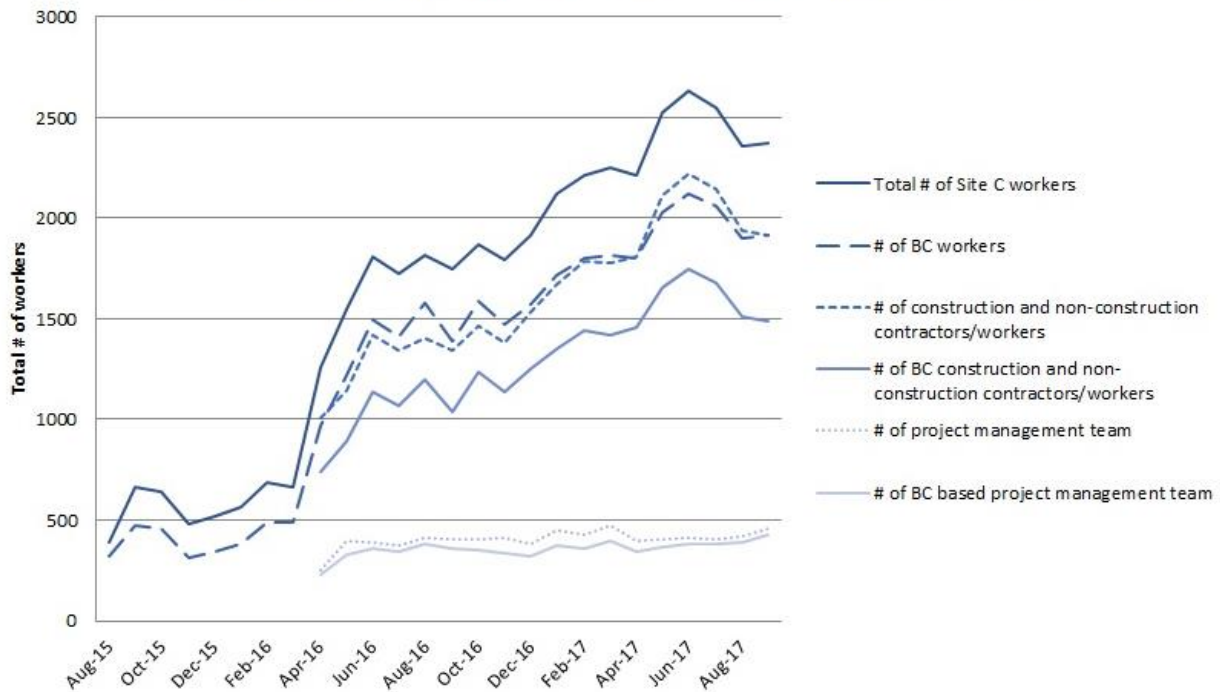
below shows the monthly change in employment at BC Hydro’s Site C Project since 2015. After starting construction with 392 workers, employment figures peaked with 2,633 workers in 2017. This workforce was largely BC-based, with limited use of global labour supplies. The proportion of workers from BC varied on a monthly basis, ranging from 65.1% to 87%, and averaging overall of 78.2% of the total workforce over the two year period. More detailed statistics about employment in the Peace River region, as well as the use of mobile workers from the Temporary Foreign Worker Program and the International Mobility Program were not collected until 2016. This data shows that monthly employment figures for workers from the Peace River Region varied from 25% to 38.1%, and overall averaged 32.3% of Site C’s total workforce. On average, three workers were drawn from the temporary foreign worker program each month, reaching a peak of 13 TFWs in September 2017. By comparison, a monthly average of 26 management and specialized professionals engaged with the project through the International Mobility Program, reaching a peak of 42 IMP workers in September 2017.



Source: BC Hydro. 2015-2017. Site C Clean Energy Project: Employment Statistics. Available online at: <https://www.sitecproject.com/document-library/employment-statistics>.

Over this two year period, the project management team accounted for 20% of the total workforce, with the remaining 80% consisting of construction and non-construction (i.e. environment and office staff) contractors and workers. Most of the project management team consisted of BC-based workers (88% average). Similarly the construction and non-construction workforce was largely BC-based (80% average) over this same period.

Change in Site C Employment: Construction vs Management Team



Source: BC Hydro. 2015-2017. Site C Clean Energy Project: Employment Statistics. Available online at: <https://www.sitecproject.com/document-library/employment-statistics>.

Shift Rotations

Resource-based workforces have been transformed by changes to shift rotations which have generally ranged from 4 days on and 4 days off to rotations that exceed 70 days at work with 14 days off (McDonagh 2010; Peetz *et al.* 2012). Rotation schedules have been changed to reduce overtime costs, accidents, fatigue, absences, and labour turnover, as well as to better support 7-day operations (Beach *et al.* 2003; Davis and Aguirre 2009). Shorter shifts and rotations are recommended to reduce fatigue and labour turnover in extreme work environments that expose workers to extreme temperatures, loud noises, chemicals, and heavy physical labour (Oliver and Capshaw n.d.). Shorter shift rotations, however, can increase commuting time and travel costs (Parkins and Angell 2011).

While longer shift rotations tend to be a more common feature of workplace practices during the construction phase of industry projects, we found that longer shift rotations were used during the exploration phase of New Gold's Blackwater Project. Most workers were on a 2 weeks on, 2 weeks off rotation, but rotations for some workers required 3 weeks on site, prompting workers to question the reasons for varied schedules. As one person told us:

Even within the company too, there are different schedules [...] like mine site geologists: they work two weeks in, two weeks out. I know for some of the

members of the group that didn't return, that was something that they wanted to know... why it was different for us compared to other groups (NG Participant #9, 2015).

Extended shift rotations were also used at our study's construction site. Peace River Hydro Partners responded to worker concerns about these schedules and reduced its shift rotation from 21 days on / 7 days off to 14 days on / 7 days off. Shorter rotations were used to support operations at Taseko's Gibraltar mine with those in administration and management working 5 and 2, Monday to Friday, while trades workers would rotate from 5 days on, 4 days off to 4 days on, and 5 days off.

PATHWAYS INTO MOBILE WORK: RECRUITMENT AND RETENTION

In a competitive labour market, worker retention is a key issue to keep industry projects on track. Research suggests that annual turnover rates for FIFO workforces, for example, range from 10-28%, with higher turnover rates reported for contractors, management, and professional staff (Beach *et al.* 2003). Reports also suggest that turnover rates can be high for field workers, operators, and labourers, often exceeding 50% (Petroleum Human Resources Council of Canada 2013b). As Atkinson and Hargreaves (2014, p. 3) note, “this can lead to cycling through the same group of workers and an increase in the temporary movement of workers, especially those who have the desired skills and experience”. Labour turnover can be costly for both companies and contractors. According to Beach *et al.* (2003), the cost of labour turnover for a FIFO mine operation of 300 workers is approximately \$2.8 million each year due to separation costs (processing loss of employees), recruitment and training costs, and loss of productivity. Given the breadth of these issues, we explored how recruitment and retention strategies of mobile workers unfold across different stages of resource development.

Recruitment Strategies

Generic recruitment and retention strategies will no longer be successful in a competitive labour landscape. Industry has strengthened recruitment approaches by investing in websites to promote employment and business opportunities, establishing community human resource networks, engaging with regional workforce tables, and promoting tailored recruitment and retention packages for both a local and mobile workforce (BC Hydro 2011; Ministry of Jobs, Tourism, and Innovation and Ministry of Advanced Education 2012). In our study, we asked participants about how they heard about employment opportunities in these mobile labour settings.

Exploration

To start, participants at our exploration site heard about employment opportunities through informal and formal recruitment processes, as well as through technology applications. Informal strategies revolved around conversations with former co-workers. This often complimented formal mechanisms as jobs were promoted through human resource companies and First Nations band offices. In terms of technology, mobile workers also relied upon Internet searches of industry and employment websites to learn about these employment opportunities.

Construction

Moving onto our construction site, mobile workers not only used former co-workers, but also family and friends as informal assets to learn about employment opportunities. More formal strategies that supported recruitment revolved around co-op job postings, job fairs, unions, and

contractors. Internet searches of industry and employment websites, as well as newspaper searches helped to expose participants to emerging opportunities.

Operations

At our operations site, participants learned about employment opportunities through their informal networks of current and former co-workers and tours of mine sites. As one mobile worker from our operations site explained:

A previous co-worker that worked here. I was just chatting with her and I asked by chance if she had something suitable for me and she said absolutely something just came up, you would be perfect for. I had an interview within a couple weeks (Gibraltar Participant #6, 2013).

This often complimented formal mechanisms as jobs were promoted through human resource companies, First Nations band offices, procurement bid websites, unions, contractors, job fairs, former job sites, and co-op job postings at universities. Technology applications, including websites, media, and on-line newspapers, were also used to promote employment opportunities.

Entry Requirements

Given the challenges that strict entry requirements can pose for those seeking mobile work in the mining and construction industries (Atkinson and Hargreaves 2014; Mills and St. Amand 2015), we also asked these construction workers about any residency or regulatory requirements that were outlined during the hiring process. Initially, there was a strong push to recruit BC residents; although, many mobile workers from Alberta were also hired for the project. Perhaps more significantly, though, is that the Carpenters and Maintenance Allied Workers of Canada required mobile workers to have red seal certification. This restricted the number of apprentices that were brought on site and limited opportunities to develop the next generation of trades workers. One participant explained:

The one thing with CMA (Carpenters and Maintenance Allied Workers of Canada), you can't get on unless you're a red seal carpenter. First time I've been on site where they don't have apprentices which would be nice for guys like me with red seal and more experience to be able to teach younger generations. But it's like we only want red seals. That's one thing that kind of bothers me. How are you going to develop the next generation now if they can't start on certain projects. Contractors should look at it like okay I need 3,000 people to build this job site. I

need 1,000 red seal carpenters to train 2,000 people. Why pay all that money just for one red seal person cause that generation is just going to fade out (Site C Participant LR#6, 2017).

Pressures to minimize the use of apprenticeships are often associated with concerns about aggressive construction schedules, safety, costs, skills, reduced productivity, and quality of work; although, research has demonstrated that apprentices can be equally productive and cost-effective (Fayek et al. 2006).

EXPERIENCES WITH COMMUTING

Travel arrangements shape the recruitment and retention of mobile workers by reducing the commuting distance and time can help to manage fatigue. This is particularly critical given that some workers travel and check-in to work camps on the same day that they start their rotation. Industry use of mobile workforces has been supported by a combination of fly-in, fly-out (FIFO), bus-in, bus-out (BIBO), and drive-in, drive-out (DIDO) approaches to transportation (Beach et al. 2003; House of Representatives 2013). Longer commutes have been associated with construction periods when industry experiences labour market pressures. In one study, 61% of the workforce commuted over 1,000 kilometres between home and the work site (Barclay *et al.* 2013). Given the combined impacts of fatigue associated with both commuting and long shift rotations, participants were asked questions concerning their experiences with commuting.

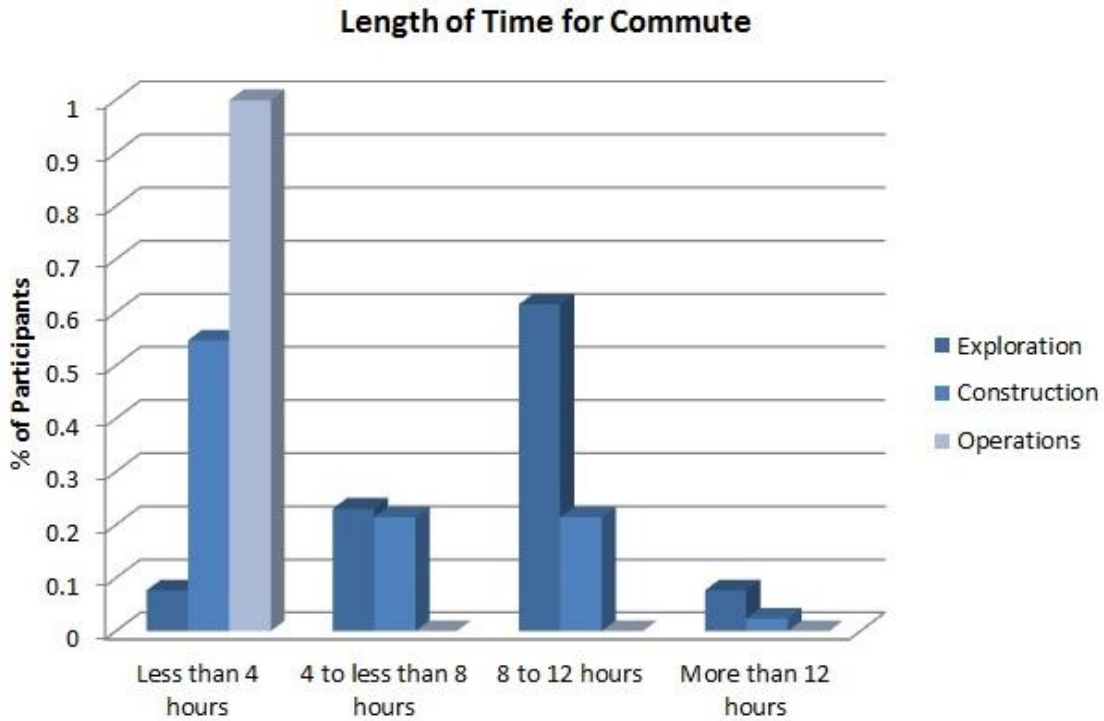
Experiences with Commuting

Almost 90% of all the mobile workers we spoke with across the three sites had previous experience with commuting long distances for work. These participants came from a variety of small communities across BC; although, there were also a number of people who commuted from medium-sized cities and metropolitan Vancouver. There were also some who commuted from a number of communities in Alberta, Quebec, Newfoundland and Labrador, and Australia. In our study, a combination of FIFO (fly-in/fly-out) and BIBO (bus-in/bus-out) have been used to support travel arrangements for mobile workers; although, personal transportation (drive-in/drive-out) was also used.

Home Location of Mobile Workers at Exploration, Construction, and Operation Sites

100 Mile House, BC	Fort St. James, BC	Port Coquitlam, BC
108 Mile Ranch, BC	Hope, BC	Port Moody, BC
Anahim Lake, BC	Kamloops, BC	Prince George, BC
Armstrong, BC	Kelowna, BC	Quesnel, BC
Australia	Kispiox, BC	Red Deer, AB
Calgary, AB	Kitimat, BC	Squamish, BC
Campbell River, BC	Lumby, BC	Surrey, BC
Cedric, AB	Malcolm Island, BC	Terrace, BC
Chetwynd, BC	Mission, BC	Tumbler Ridge, BC
Chilliwack, BC	Montreal, QC	Vancouver Island, BC
Clareville, Nfld	New Hazelton, BC	Vancouver, BC
Comox Valley, BC	Parksville, BC	Victoria, BC
Edmonton, AB	Pemberton, BC	West Kootenays, BC
Field, BC	Penticton, BC	Williams Lake, BC

Source: OTM Interviews 2013-2017.



Source: OTM Interviews 2013-2017.

Exploration

During exploration, mobile workers were required to commute by personal vehicle or by air to a staging area where a company shuttle was used to transport workers to and from the mine site. Longer commutes exceeding 8 hours were strongly associated with the exploration phase. This reflects pressures surrounding the remoteness of the exploration site and a smaller, scattered workforce who also reside in smaller, remote communities. It is also shaped by the multiple transportation methods that are used, as well as unfavourable flight connections to smaller, remote communities. As one exploration site participant described:

It's a long day and it's a longer day home. I don't get home until eight pm at night, so I leave at six in the morning and I get home at eight, so it's a very long day of travel. It's just the way the flights are. The connections aren't good so I have to wait around a lot (NG Participant #11, 2015).

Construction

Almost all of the construction workers used air travel to commute to Site C, with many also using personal vehicles, transit, and ferries to commute to nearby staging areas. Longer commutes exceeding 8 hours were also experienced during Site C's construction period when industry typically experiences labour market pressures. The longer commutes during this

construction phase were also associated with mobile workers who reside in smaller, remote communities and travel to airport staging areas. As some construction workers explained:

I wake up at 3:30. I get on a plane at 6. I do all my travel and get here at 1:30 pm and then I got to go on night shift from 7 to 7, so you're up for 26 or 28 hours (Site C Participant LR#7a, 2017).

Terrible. Up at 4 am and in camp at 2:30. Night shift is probably worse because you're up at 4 am, travel and then work all night. So it's like 30 hours up. And travelling out is not much better on night shift (Site C Participant LR#10, 2017).

However, in this case, shorter commutes of less than four hours were possible where mobile workers resided near airport staging areas in Vancouver, Kelowna, Prince George, Calgary, and Edmonton. There were recommendations to develop a sixth staging area in Terrace to accommodate mobile workers in the northwest region of BC.

Operations

Air travel was not used to support transportation for mobile workers engaged in operations. This reflects the use of a largely local labour force with the recruitment of a small number of mobile workers within 300 km of the mine site, making personal and company vehicles more practical.

Impacts of Commuting

Initially, commuting impacted mobile workers in eight key ways (see summary table below); although, there was considerable variation in how these were observed across different stages of resource development.

Factors Shaping Impacts of Commuting on Mobile Workers

Factors	Description
Travel	Road conditions, crossing wildlife, distance to site, familiarity with routes, scenery, travel supports for reaching muster sites, reduced travel time through chartered flights, extra baggage charges, anxiety maneuvering airports, flight delays, time zone changes, fear of flying, uncertain processes for making travel arrangements, reduced time off by travel days
Transition to Night Shifts	Early fatigue after quickly starting night shift, flexibility to delay start of night shift
Transition to Day Shifts	Full day to rest before first shift, difficult to clean up with early checkouts before last shift, fatigue after commuting home following last shift
Financial	Varied coverage of travel / accommodation costs, delays obtaining mileage, increased flight costs during summer
Family	Limited or more time with family / friends, depending on shift rotation; difficulty addressing family issues remotely; anxiety about household issues; recovery time strains relationships
Health	Exhaustion and compounded fatigue from travel / long shift rotations; fatigue affecting workplace friction / enthusiasm for work; mental health improved through outdoor work, difficulty maintaining healthy nutrition habits
Recreation	Sense of excitement / adventure; difficulties pursuing recreational activities within rotation schedule and during time off
Personal Development	Structure of shift rotations improved punctuality

Exploration

At the exploration site, travel induced concerns about road conditions to the remote site. Such issues became easier to cope with as participants became more familiar with travel routes, road conditions, and stayed overnight at staging sites to break up the commute. Some noted that they enjoyed the scenery during the drive. Secondly, there were mobile workers who struggled with managing the exhausting extended periods of time away from home and the limited time they had with family and friends. One participant emphasized:

When you take the job, you think 'well I'll do it for a while. Whatever. I won't necessarily be doing it forever.' Then I think it was probably year and a half of twenty-one and nines straight like when I first signed up here [...] It's absolutely grueling. Devastatingly gruelling. The work-life balanced is completely screwed with a twenty-one – nine in my opinion and in the opinion of most people I know who do the same schedule. It might not sound bad; and if you're doing it for three months, it's absolutely fine. Four months? No problem. Eighteen straight months of twenty-one and nine is fucked (NG Participant #13, 2015).

As participants continued to engage in mobile work, this became more challenging as they struggled to address family issues from distant work sites and to cope with anxieties about household issues. There were others, however, that felt that their rotation provided them with more time with family.

Many also experienced compounded fatigue as the time required for travel and long shift rotations affected the health of mobile workers. Overtime, fatigue affected workplace conditions through friction and less enthusiasm for the work. As one participant noted:

I would say there was not a lot of concern for the first year. I would say six months to a year it was okay. I mean it was a tough schedule, basically only being home a quarter of the time. But there was still the initial excitement of a new job. It was go, go, go and there was lots going on. You felt part of a dynamic team. It sort of carried you through that first year. I think it has had much more serious problems or effects on me than I know. I am starting to realize it more. After the first year, it's 'oh man this is a drag,' but you keep going and hoping and hoping. Then after that year, it's like this is just never going to end. This is not sustainable. It doesn't seem sustainable. I can't keep doing this. Being away has made me hate what I used to love. It's contributed to my dislike and my disinterest in my career (NG Participant #11, 2015).

This contrasts from early experiences where the outdoor nature of looking for minerals during the exploration phase provided some mobile workers with a sense of excitement and adventure. Over time, some participants felt it was more difficult to pursue recreational activities.

Construction

At the construction site, participants reflected on both positive and negative impacts associated with travel. Chartered flights from staging areas, for example, were direct to reduce travel time and allowed workers to rest during the commute. On the other hand, there were still stresses

associated with packing to avoid extra baggage charges, maneuvering airports, flight delays, fear of flying, and time zone changes. As one construction worker told us:

Back in the day, it was a longer drive, but sure relaxing. Now it's the hustle bustle of a plane and the boarding and the unboarding and making sure you're there on time and have the right amount of luggage because you don't want to have too much luggage or you have to pay fees (Site C Participant LR#9, 2017).

These issues became easier to deal with over time as workers learned how long it took to get organized, how long it took to commute to the airport, and as they became more familiar with the airport's layout. Other workers we spoke with, however, also needed to catch a number of commercial flights to these staging airport areas. Some were initially uncertain about the company process for making travel arrangements. As one participant explained:

Just not knowing where to go and what the procedure is. Where to go and who to talk to. But once you do it once or twice... (Site C Participant LR#5a, 2017).

Travel days were also structured outside of the work rotation; thereby, reducing the time off.

Secondly, there were pressures associated with the transition to night shifts as workers were required to begin their rotation a few hours after arriving. This resulted in early fatigue at the end of the first night shift. To address these concerns, some participants were provided with the flexibility to start their first night shift later to reduce fatigue. In contrast, the transition to dayshift was easier as workers had a full day to rest before starting their first shift. However, dayshift workers experience fatigue when travelling long distances to their home community. On this turnover day, workers typically work and check out early, making it difficult to clean up before departing. This was described by one participant who told us:

The fatigue part would really be on dayshift. I think we should be able to keep our rooms at camp until the same time as night shift. See for dayshift, we have to get up for dayshift when we're leaving on our last day, we have to check out at 7 in the morning; whereas with night shift, we get to keep our rooms til 1 pm so you can go back in and shower and that kind of stuff. Dayshift, you check out at 7, they bring you up, you have time to change and then catch the bus to the airport. So there's no freshen up time to come here (Site C Participant LR#2, 2017).

The next most prominent issue concerned the compounding health impacts of fatigue by the end of the shift rotation. Peace River Hydro Partners responded to this concern by

reducing the rotation from 3 week on, 1 week off to 2 weeks on, 1 week off. Mobile workers within the region also experienced fatigue and burnout that compounded over time as a result of driving to Fort St. John. As workers switched between night and day shift rotations, they found it difficult to maintain healthy nutrition habits.

Financially, these construction site workers had most costs associated with travel and accommodations covered; although, some reported delays obtaining mileage when personal travel was necessary. Employees of camp contractors, however, did not have flight costs covered. This posed financial challenges when there were fewer flights, as well as periods with increased flight costs such as during the summer.

Similar to other stages, participants at this construction site noted the difficulties that mobile work posed for families. As participants returned home, the recovery time required after working the two-week shift rotation strained relationships. Given the time spent commuting to the work site, there were difficulties completing household tasks in the remaining five days at home.

Furthermore, the structure of the shift rotation impacted workers' recreation in two ways. Despite better camp facilities, workers had limited time to engage in exercise and other recreational activities while working 12 hour shifts. They also then had limited time for recreation when they returned home to catch up with family, friends, and other tasks.

Operations

At our study's operations site, mobile workers expressed travel concerns about driving to the site due to crossing wildlife; thereby, prompting some to opt for bus transportation. For some, the distance to commute was just enough to require them to rent accommodations in Williams Lake; thereby, increasing the financial costs associated with mobile work. Similar to other stages, there were mobile workers who felt that they saw their family less frequently. Despite shorter rotations, their health was also impacted by fatigue that was associated with long shifts and limited sleep between shifts. Over time, stress intensified as some participants were unable to rest during their time off. As one participant explained:

Well after you do it for an extended period of time it really cuts down your weekends. When you have 2 days off and you're spending 8 hours of that driving, it's not very fun. It does wear on you, and when you don't have the rest that you need, it impacts your health and your mental well-being as well (Gibraltar Participant #6, 2013).

There were also participants that felt their emotional health had improved through their enjoyment with working outdoors. Others became used to the conditions of commuting and working shift rotations. In terms of personal development, the structure associated with shift rotations was noted to improve the punctuality of mobile workers.

In all stages of resource development, there were also mobile workers who felt they did not experience any impacts associated with long distance labour commuting.

Travel Supports

Travel costs and arrangements are usually addressed in collective agreements where travel zones specify areas eligible for mileage, living out allowances, or no financial support (Barber 2016). In some cases, workers may be required to cover their own costs to travel to designated airports or staging areas for bus or car pool transportation. Companies then cover travel costs from these designated airports and staging areas to the work site (Storey 2010). Some companies consider one or both journeys to work as work time (Beach *et al.* 2003). With commodity fluctuations, however, travel allowances and living subsidies are no longer certain. During less favourable market conditions, companies may cancel charter flights and require workers to cover their own travel expenses (Ferguson 2011). As such, we asked participants about the types of travel supports that were provided to them to make commuting easier.

Exploration

At the exploration site, commuting supports included work camp meals and accommodations, travel costs to drive or, in some cases fly, to staging points, as well as access to company trucks and shuttles to travel from staging sites to the work site. In some cases, participants arranged carpools to staging points with other mobile workers. No personal vehicles were permitted at the work site. When participants encountered bad weather or prolonged travel times due to highway construction, New Gold assumed extra costs associated with getting workers to the site, such as accommodations and meals following immediate communication with the administrative office and the provision of appropriate documentation and receipts. As one participant stated:

If there's road closures or the weather is bad and I can't make it on time, we contact John, who is our camp manager and inform him. They will figure something out for our schedule along with arriving times and transportation to get into camp. Bad weather hasn't really been an issue. I've had a couple of trips in during the summer where I got stuck in road construction or a car accident, and I just called ahead of time to let them know that I wasn't going to be able to make it on time. So, they arranged other transportation for me (NG Participant #5, 2015).

In some cases, mobile workers were permitted to commute to staging sites the day before shuttles transported workers to the work site in order to avoid bad weather. New pick-up times were arranged for staging points.

Construction

By comparison, travel supports for those working at the construction site included work camp meals and accommodations. It also included allowances to help cover taxis, transit, ferries, airport parking, and some of the mileage¹ while commuting to staging areas or the work site, as well as coverage of charter and commercial flights. However, as one participant described, it does not always address all of the expenses incurred by mobile workers:

They have it set up in a way that so many kilometers away from your place of residence, they give you X amount of dollars. If you are 50 km, you get X amount of dollars, X amount of dollars if you are 200km, or 300km it goes up a little bit. But I'm in the max, they'll pay you 125 dollars if you live more than 275 km away. That is the max that you will get, \$125 for every shift cycle. So that works out to \$81 dollars every 2 weeks. And yeah I drive a truck, a pick-up truck, it costs me a hundred plus bucks in fuel, and then its 135 or 140 dollars for an airport parking fee. So there is a cost to us (Site C Participant MD-2(A), 2017).

Extra baggage fees were also covered during the first commute to the work site to allow participants to transport tools and equipment. To get to staging areas, some used carpools, family, and friends to commute to airports. If travel was interrupted or not possible due to bad weather, the contractor incurred additional costs related to accommodations, meals, etc. If travel was interrupted or missed for personal reasons, however, mobile workers would be responsible for any additional costs for travel and accommodations. One participant explained:

If it was my fault, regardless of the reason, if it was my fault, I would have to reimburse them for the flight that I missed plus my room. That's my understanding. Now if you called and say 'hey look I have absolutely no way of getting there, there was a road washout', it would be a different story. If you miss your flight due to your own reasons, you pay for this room too (Site C Participant LR#12, 2017).

Despite the potential for flight delays and repairs to chartered planes, mobile workers are also not permitted to acquire additional travel expenses without pre-approval.

¹ Mileage rates varied according to distance to staging areas and the work site, but include \$75.00 for workers commuting 50 and 100 km to a staging airport; \$100.00 for commutes between 100 and 150 km; and \$125.00 for commutes beyond 150 km to designated travel hubs (Petrowest BC Construction Ltd. 2015). Mileage for workers that provide their own transportation to the work site varies and starts from \$125 for commutes between 250 km – 500 km, to a maximum of \$350 for commutes exceeding 1,000 km (Petrowest BC Construction Ltd. 2015). No mileage is provided for workers within 250 km of Site C.

Unfortunately, such delays can impact additional travel logistics to commute home from staging areas, compound fatigue, as well as reduce time at home. This was explained by one participant who noted:

When the plane was broken, which was fine, I went next door here and bought a flight so I could catch my connecting flight and they wouldn't reimburse me. We only have a week off so of course we're going to book those flights... The way it was explained to me was even though they left at 8 o'clock instead of 2:30 they still provided transportation, which was their excuse. Which is unfair. Not a good excuse no. You don't have much time (Site C Participant MD-1, 2017).

Some noted that they had limited awareness of the processes for making arrangements to access commuting supports and travel allowances through human resource departments. Mobile workers are required to fill out forms to allow the company to make flight arrangements. There were delays to learn about reimbursement processes for those who were driving, which generated difficulties to pursue back pay for travel supports. Others felt that information about the coverage of extra baggage costs during the first trip was not provided early enough, resulting in missed opportunities for mobile workers to be reimbursed for such fees. At the construction site, human resource departments were also changing the mechanisms for sending paystubs and travel stipends. These would no longer be sent in paper form, but workers were required to track it using their smart phones. Some workers found this process confusing and difficult to track. As one participant noted:

You know [they] changed the way they send their paycheck stub. It doesn't come out in paper form anymore. I track it on my phone and it's really hard to track now. But I was supposed to be getting a \$120 extra because of how far I travel to their airport. I really don't know what's going on anymore (Site C Participant LR#12, 2017).

Some mobile workers were also unaware of the personnel contacts and processes that they needed to work through with their human resource departments to apply for travel allowances. The process for making travel arrangements and receiving travel supports was not covered during orientation programs.

Operations

Similar to the exploration site, travel supports for operations focused largely on access to company trucks, shuttles, and carpooling arrangements. Travel allowances were also provided to cover costs for those driving to Williams Lake.

Fatigue Management

Research has explored the relationship between fatigue and the length of shifts and rotations. The impact of shiftwork on fatigue levels will be influenced by the duration of shifts, the number of consecutive day vs. night shifts, the direction of rotation (i.e. from days to nights, nights to days), and the nature of work (physical vs. sedentary) (Smith *et al.* 1998). It can also be impacted by the number of overtime hours worked, the commuting distance to work, diet (i.e. too much high fat, high sugar foods), coping mechanisms for stress, and access to wellness and childcare programs (Westfall-Lake 1997). Commuting and worker safety should be considered through investments in fatigue management training and workplace policies (Di Milia, 2006; Westfall-Lake 1997). As such, we posed a series of questions concerning fatigue management training and the structure of shifts and rest periods at various work sites.

Overall, just over 18% of the participants in our study felt that had received fatigue management training during orientation, safety meetings, and tool box meetings. Despite these low figures, the research team observed one work camp where the posters about fatigue management displayed on bulletin boards became white noise due to the abundance of other notices and ads. Workers are encouraged to obtain a minimum of eight hours of rest, but these notions can become quickly complicated by travel and shift rotation schedules, as well family or household needs.

Exploration

At the exploration site, participants explained that they were able to rest for five hours before beginning their night shift. While some participants noted that dayshift workers were required to start upon arrival, others noted that they were able to rest before starting their first shift the following day. As one participant stated:

It depends on if we are going on night or day shift. If we go on day shift, we can go to work right away. If we go on night shift, we need to have a certain rest period before we go out to shift. I believe we have to be in here before noon to go to work on night shift, so that gives us 5 hours of rest (NG Participant #2, 2015).

However, there also did not appear to be a clear, consistent policy in place that was broadly communicated and implemented, prompting confusion across mobile workers. As one participant suggested:

That hasn't been made clear in the past. Usually when we were arriving, it was four o'clock. Usually when we would get here, we would unpack our bags and stuff. There was some friction with management with whether it's still considered

a work day, so the expectation was that people would come down to work. But there was the afternoon. Hasn't been too much of an issue at this site but I know at the XX site, there was some friction with regards to the travel day: ends at twelve o'clock in the afternoon and the crews were expected to work for the rest of the afternoon. Seems to be a site by site kind – the way it's handled.... Essentially, it's inconsistent. There's no policy across the board (NG Participant #9, 2015).

As some coped with the fatigue associated with travel, there were also occasions where mobile workers were allowed to stay at a hotel near the staging site the night before being shuttled to the work site.

Construction

For our participants at our construction site, rest periods were frequently interrupted by phone calls from home, with time zone changes and anxieties about work also impacting their quality of sleep. As one participant stated:

The girls.... They phone me usually on night shift and the afternoon when I'm sleeping, so it's a pain in the ass, but it's nice to talk to the grandkids (Site C Participant LR#10, 2017).

As noted earlier, at the construction site, there were pressures associated with the transition to night shifts as workers were required to begin their rotation a few hours after arriving, prompting early fatigue in their rotation. Some participants in our study noted that supervisors encouraged them to rest before starting night shifts if necessary. As such, while night shifts begin at 7 pm, some delayed this start until 10 pm on the first shift. As some participants told us:

On the night shift it does. Because you're supposed to have 8 hours off between shifts. Between when you travel in and when you start. So some people go to work right away and some people don't start until 10 or 10:30 or they take the night off (Site C Participant LR#1, 2017).

Some of the foremen that we have are really good about it. If you are tired, come back, lay down, have a little rest. As long as they know about it. They're not going to push you. As soon as you get pushed, that's when accidents happen. Safety (Site C Participant LR#2, 2017).

It was also possible for mobile workers to take the first night off without pay; although, participants preferred to begin their nightshifts immediately to avoid cutting into time off. There was also a general sense that workers feel guilty if they choose to avoid working the first night shift after arrival. In contrast, the transition to dayshift was easier as workers had a full day to rest before starting their first shift. However, dayshift workers experience fatigue and heightened safety risks when travelling long distances to their home community immediately after their last shift (Parkes 2002). For dayshift workers at our construction site, the commute home begins after working four hours before departing. There is no access to rooms to rest before departure. By comparison, nightshift workers have access to their rooms for four hours before departing home. As one participant explained:

It's the same as flying back after your shift right. We're lucky we fly. Some people drive right. So I just got off a night shift today. After I got off, I went to my room and slept for two hours if I'm lucky. So it's a little easier because I'm going to fly to Calgary, but for the guys who drive on two hours sleep and then you're behind the wheel of a vehicle (Site C Participant LR#4a, 2017).

In previous studies, there does not seem to be any agreement about which types of rotations are best suited to address fatigue. Shorter rotations (i.e. 4 and 4) are less likely to produce accumulated fatigue and can improve gym participation to better prepare the body to cope with fatigue; however, longer rotations (i.e. 14 and 14) provide longer periods for recovery (Parkes 2010; Peetz *et al.* 2012). Research suggests, however, that more time is needed to recover from night shift rotations (Parkes 2002).

THE IMPACT OF COMMUTING ON THE WORK ENVIRONMENT

Mobile work has shaped workplace safety and operations in several ways. In addition to several physical stresses, workers can be exposed to overcrowded work areas, poor or infrequent inspections, inadequate communication, lack of procedures, and changes in foremen / supervisors that can produce unsafe working conditions for largely mobile workforces (Jergeas 2009). A constant influx and change of contractors and work crews can introduce many individuals who are not familiar with the work site and there can be little time for them to develop effective working relationships with permanent employees (Beach *et al.* 2003). Mobile workers may be reluctant to express concerns about health and safety issues due to employment uncertainty (Major and Winters 2013). Cultural differences can also impact what is perceived as important safety practice (Tharaldsen *et al.* 2010). Under such conditions, it is important to ensure a careful screening approach is in place for people seeking mobile work in these constantly changing work environments. As Atkinson and Hargreaves (2014, p. 21) argue, “ensuring that prospective employees have the right qualifications, experience and attitude, in terms of fitting in with the culture of a mining or construction site and undertaking FIFO, is paramount”.

To understand how labour mobility has shaped workplace safety and operations in different phases of resource development, we asked people about how commuting has changed their approach to their workplace. Based on this inquiry, ten topic areas emerged; although, the prevalence of these topic issues varied across the sites representing different phases of resource development.

Key Work Environment Issues Impacted by Mobility

Factors	Description
Hiring procedures	Mobility not discussed, experience with mobility / work camp lifestyle rarely assessed, resumes highlight experience with mobile work, fears mobile workers easily replaced
Training	Focused on job details / equipment, commuting / camp life not covered in school programs, training, or orientation
Shift rotation structure	Impacts views about shift rotations / recovery time, demands for shorter shift rotations
Operations	Exposure to different beliefs, cultures, personality types
Monitoring / evaluation	Varied monitoring / evaluation, inconsistent practices guiding monitoring / evaluation
Wages	Higher wages
Work / life balance	Time off for family events / emergencies, paid bereavement leave, differentiate work / home time management, daily communication with family
Worker development	Working with different people to obtain skills development, cultural sensitivity training, eligibility for extended bereavement leave by Aboriginal mobile workers, time more structured /

	productive, development of social skills / adaptable skills, professional disinterest from prolonged stress
Health / safety	Workplace anxieties, varied safety consciousness, cumulative fatigue prompting accidents towards end of shift / rotation, anticipation of rotation end affects attention levels for safety, inconsistent communication of fatigue management protocols, fear of job loss, commuting safety protocols underdeveloped
Communication	Impacted by fatigue, limited sharing of information, cross-over shift meetings, varied work camp orientations, restricted access to high speed Internet, communication varied across supervisors / foremen, increased use of smartphones / radios for routine communication

Exploration

Starting with our exploration site, long distance commuting changed how participants viewed workplace safety and operations through communications, worker development, and health and safety. Communications, for example, had been impacted by fatigue, resulting in some information not being passed between workers despite having cross-over shift meetings in place. As one participant told us:

The people have been here for three weeks and are typically quite tired, unfocused, by the time they leave. So they can often forget to communicate things. Often, at the very worst, don't care and just drop and go. Typically, we have good people who won't do that. They'll leave some instructions or pass something on. But often that is the problem. That can be a problem. Things get missed. Lots gets missed. It's not like it's life and death stuff but people don't know how to pass the baton (NG Participant #11, 2015).

Supervisors have adapted by keeping closer tabs on workers and maintaining an information folder for cross-shift meetings. As mobile workers check into camp, they are also provided with information sheets that outline expectations, rules, and regulations as a part of their orientation.

Secondly, there was a sense that mobile work provided opportunities for workers to develop skills to work with different people. Additional cultural sensitivity training was also provided to foster a collaborative and more understanding work environment between Aboriginal and non-Aboriginal mobile workers. This cultural sensitivity training, however, was not just transforming how mobile workers engaged with Aboriginal colleagues, but it was also changing how sensitive they were to the needs and pressures faced by the broader workforce. As one participant explained:

I just never had any exposure to First Nations. Never made friends with anybody. And I just didn't understand the culture. I had a bit of a culture shock. They do give us training on the needs of Aboriginal workers. Sensitivity and more understanding. For most of us, we're out working, making money, buying food. For them they go, they hunt, they fish, they freeze, and they can and that's how they get their food. They train us on that. And if someone needs to leave because the oolichan are running, they are allowed to. I ran into situations that I never ran into before. Like we discussed their communities are smaller and very, very close with each other. So for me, you know, when people have to leave because somebody is sick or something small, I would be like 'well who is it?' Well a very distant relative or a relative of a friend or a relative of a co-worker. I'd be like, 'well you don't know them, why are you going as well?' Their community is very supportive of each other and very tight with each other. And it doesn't matter if they weren't close with that person. They're close with everybody else who is hurting. So I came into situations, like I was saying, where I had to let people leave work. I didn't really understand how to deal with that because I am from the atmosphere where if people are sick or dying, you still have to work. But it definitely made me more sensitive to people's needs and more understanding (NG Participant #10, 2015).

The circumstances framing the eligibility for extended bereavement leave by Aboriginal workers covers not only immediate family members, but often broader members of their community (Mills and St. Amand 2015).

As mobile workers sought a better balance between work and family life, participants benefitted from rest periods, time off for major family events and emergencies, and paid time off for bereavement. Working away from home for extended periods also prompted participants to seek a better balance between work and their personal lives, leading to more efforts to differentiate between work and home time. More thought was invested in time management while at both work and home; although, some felt that they were still planning for their return to work 2-3 days in advance. Efforts were made to contact home on a daily basis. To maintain better communications with family while away from home, participants were more likely to insist on better communication infrastructure for their job and work camp sites. This exploration site was equipped with a cell phone tower, remote desktops, and laptops for workers to use; although, access was restricted.

Thirdly, long distance commuting impacted worker development in varied ways. While some felt that it helped them to develop more routines and become more extroverted, others felt that the stresses associated with labour mobility had created disinterest in their profession. Furthermore, mobile work has led to greater anxieties in the workplace, prompting many people we spoke with to be more safety conscious.

Construction

For participants at our construction site, eight thematic topic areas were used to describe how mobile work affected how they approached their workplace. To start, labour mobility was reflected in hiring processes in varied ways. Despite labour turnover, many noted that only job details were discussed during the hiring process. There were a few exceptions where some were asked about their experience with shift rotation work and camp life. As one participant noted:

They asked if you had experience with camp life. They asked if you had experience with shift work. Something besides 9 to 5. Have you had stints in the workforce for 3 weeks at a time (Site C Participant LR#5b, 2017).

Some had strategically highlighted their experience with commuting and working long rotations on their resume. As another participant stated:

No, but it's right in my resume that I don't mind being away from home and I'm used to working long hours and I enjoy it (Site C Participant LR#12, 2017).

Furthermore, the downturn in the oil and gas sector in Alberta has resulted in a decrease in opportunities for more unemployed workers. This invoked fears that commuting means workers are not valued, but easily replaced by the next influx of mobile workers – an issue that has been highlighted in other industry studies of the construction sector (Construction Sector Council 2005). There was a perception that the use of mobile workforces increases competition amongst labour and allows industry to keep wages lower. A re-emergence of activity in Alberta's Oil Sands, however, could lead to a loss of mobile labour at Site C with workers returning to Alberta. As one participant told us:

I think we are valued but at a minimum point that ... I mean we complain and come up with questions and stuff. But if we are being hard on Or a pain in the mmm for a company, they will let us go. They know there's lots of people who want to come, especially from the Oil Sands. But at the same time, they got to understand that all the people here are just waiting for the Oil Sands to be up again (Site C Participant LR#4a, 2017).

While many already felt that they had accumulated adequate experience and coping skills for commuting, participants were also looking for issues related to labour mobility to be incorporated in training and orientation programs. Often, training focused on new equipment and job details related to specific construction site roles. Commuting and camp life was often

not covered in school programs or training and orientation on site. Instead, supervisors would discuss commuting arrangements and processes after orientation. As one participant noted:

No, no. When I was interviewed, it was straight up about my skills and resume about the job itself. Experience. It was definitely 98 or 99 percent job related. And afterwards, when it was my first day here and I got my orientation, after the orientation was when I got more clues from my supervisor. My supervisor was actually was the one who would pretty much in the department that I work for... who mentored you To explain how things works in terms of travelling in and out, how to set up your flights, how to request your flights. But that happened after the orientation (Site C Participant LR#4a, 2017).

In terms of communications, participants explained how large mobile work crews exceeding 60 people can impede communication. Shift rotation changes were supported with daily tool box debriefings to strengthen crew safety and bonds across crew members. Effective and consistent communication in these circumstances was heavily dependent upon the supervisor; although, some felt that there was good communication across the foremen who then stay to communicate changes and issues for the next rotation. The diverging experiences from the following two participants demonstrates the inconsistent approach to communications in these constantly changing work environments:

In my department where I am at, things change right? You come back in a week and because they are working 24 hours a day, hundreds of guys on the ground, hundreds of pieces of equipment... things change fast. So they let us know, okay there is no road here no more. There are ramps over here now. Be careful, this has changed... That is again at our toolboxes and our lower level bosses, like our front line bosses, that is who tells us... (Site C Participant MD-2(A), 2017).

Our communication when we get back is not very good. Because the roads change, and everything changes on site. It would be nice if we had a little bit more communication so when we get out there we know what we are doing... There is nothing' there really isn't. We actually need to be reoriented back to the site. Everything changed. I think we should have a short orientation for 5 minutes or something. There is nothing. Like even if when we get in at the morning it would be nice if we had something when we get back to our regular shift, our foreman's, you know, tell us where the new roads are and blah blah blah and this is the way it is now. But we just get back to work... (Site C Participant MD-11, 2017).

Concerns were raised that such toolbox meetings don't cover all of the changes on site. This can produce a work environment where experience becomes increasingly important to avoid serious incidents. In their investigation of mobile workers in mining and construction industries, Atkinson and Hargreaves argue (2014, p. 23),

Experience is used as a risk-mitigation strategy. The number one emphasis is safety but productivity and compliance are also influenced by experience...means employing only those with an appropriate track record. It is primarily driven by the sheer magnitude of investment (billions of dollars) in mega-scale projects.

Smaller groups were still deemed, however, to better support communication. There were weekly safety meetings that discussed case studies and best practices. Smart phones and radios were also used to facilitate routine communication and provide regular updates throughout the day.

Commuting long distances for work also changed views about shift rotations, with many seeking more time off to support recovery and family time. Participants appreciated recent changes to the shift rotation from 3 weeks on / 1 week off, to 2 weeks on / 1 week off; although, some felt that cumulative fatigue was still prompting incidents towards the end of the rotation. As mobile workers approach the end of their rotation, there was a perception that this anticipation leads workers to worry less about safety. As one participant explained:

You wear out. I think it's a brain psychological thing because I used to work for the last six years for 24, 25 days rotation fourteen hours a day and now that I'm doing 14 days, which is almost 9 days less than all the years that I've been working, it's your brain that knows you're going off. That slow down...the last three days...I'm going off in two days... I'm going off in one day...And all the people you see here travelling right now, we worked today. And it is our travel day. It's a travel and work day. And I can tell you that for most people... like the last day... like today, I don't give a shit. I just do whatever has to be done to get out of here. I wouldn't say complacency. I wouldn't say laziness. But yeah, I just want to get outta here (Site C Participant LR#4a, 2017).

Despite these pressures, few had sought out, or received requests for, advice about managing commuting; although, there were participants who noticed fatigue management and safety warnings posted on bulletin boards. There was also a desire to have shorter shifts to allow more time to fit exercise into daily routines.

Commuting has positively impacted operations as participants were more exposed to different beliefs, cultures, and personality types in their work environment. Mobile contractors that frequently commute to different job sites also felt that they acquired more skills to adapt to the limited resources available as it is not always easy to order additional materials and equipment. As one participant stated:

When I worked up on the North Coast, we had very limited resources. So you learned to make do with what you had in hand. You can't just go to the store and buy something or order a truck of this or a truck of that. A lot of that adaptability can be applied to pretty much everything else you do (Site C Participant LR#13, 2017).

The experiences with monitoring and evaluation varied across the mobile workers we spoke with. There were people who observed routine feedback from supervisors in day-to-day operations. Site evaluations were completed for groups, and individual evaluations were also completed following incidents. There were some participants, however, who had never received an evaluation. Some felt that feedback and evaluations varied across foremen. Practices guiding monitoring and evaluation can have important implications for health and safety of mobile workforces.

Despite their fear of accidents, some participants also noted that fear of job loss has prompted unsafe work practices. In this respect, supervisors routinely monitored fatigue and asked if workers were fit for duty. Fatigue related to long hours and shift rotations is identified as a hazard at safety meetings, and managers allow workers to leave the site if needed. As some participants told us:

Not training, but they do have a talk on the first night on night shift. Some of the foremans that we have are really good about if you are tired, come back, lay down, have a little rest. As long as they know about it. They're not going to push you. As soon as you get pushed, that's when accidents happen. Safety (Site C Participant LR#2, 2017).

You have to be fit for work. If you're sluggish or not ready, if you're ill prepared and just here for the almighty dollar, you're not only going to put yourself in harm's way, but you're going to hurt everyone else around you, so you're better off to take the day off or go home (Site C Participant LR#9, 2017).

There were some concerns that such safety procedures are not consistently pursued or implemented. Instead, workers also check on each other informally. With management focused on developing on site safety protocols, attention to safety while commuting has been limited.

Being away from home for extended periods of time prompted participants to seek more balance between their work and home lives. Some vowed not to commute for work if they had a young family. In this way, unions were providing more support to workers to address stress and family related issues. Participants also felt that Peace River Hydro Partners was flexible to allow mobile workers to respond to family emergencies, special occasions, and emergencies related to summer forest fires. There were some construction site participants

who did not experience a change in how they approached their work environment as a result of commuting long distances for work.

Operations

At our operations site, participants highlighted three topic areas that shaped how they approached their workplace. In this case, participants talked about how commuting influenced their decision to pursue higher wages. Secondly, labour mobility provided better exposure to worker development. Because of the time spent commuting, participants wanted to be more productive while working. They searched for more ways to adapt on the job to support that productivity. This helped mobile workers to acquire more confidence in their job skills. They became more aware of their own needs and the needs of their colleagues. They also felt that they appreciated the positive parts of the job more. Lastly, in terms of health and safety, there was a general sense that while commuting can generate more safety concerns at mine operations, workers were also more safety conscious. While this operations site had few mobile workers, participants felt that the mine would adapt policies and operations to reflect mobile workers if it would improve the quality of the product. There were some, however, that felt commuting had no impact in how they approached their workplace.

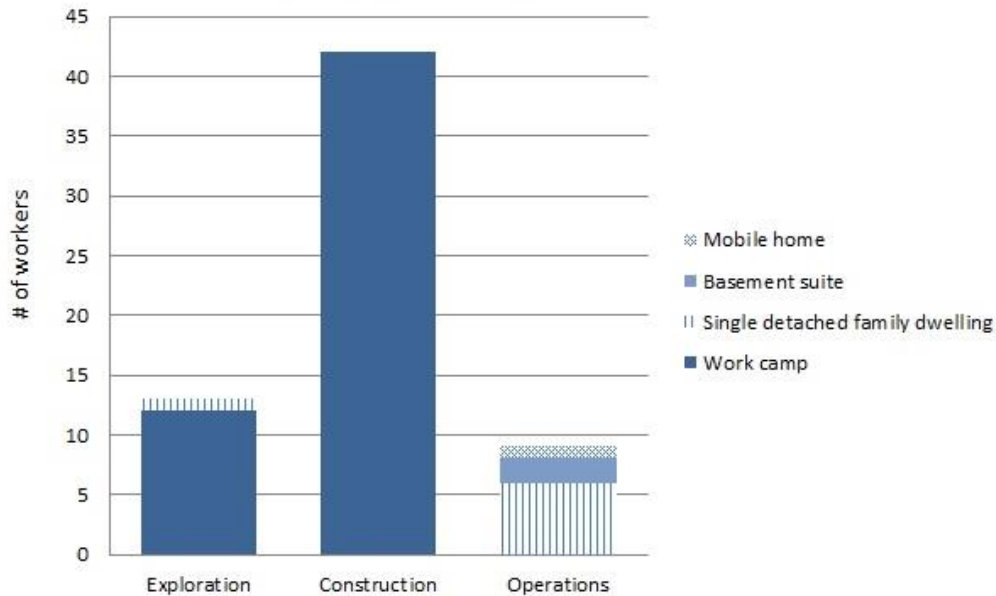
ACCOMMODATIONS

Workforce accommodations have evolved significantly over time to reshape workforce recruitment and retention strategies. Many different forms of workforce accommodations have been used by industry, including the provision of homes, construction of neighbourhoods, caravan parks, campgrounds, hotels, cabins, bed and breakfasts, boarding rooms, and the use of barges, boats, or floatels (Province of Alberta 2006; Sommers and Cullen 1981; URS Australia 2012; Wanjek 2013). The diverse range of housing options for a mobile workforce has prompted important, but controversial, questions about the best strategy to house workers during different phases of resource development. Work camp operators have also added new services and recreational programs in order to be competitive to attract and retain workers for industry projects (Australia Pacific LNG 2012; Canadian Business 2012; Nichols Applied Management 2003; Wittmeier 2014). There have also been efforts to structure accommodations to provide privacy and reduce disruptions between shifts (Misan and Rudnik 2015). In our study, we explored housing issues related to housing type, design, available supports, and improvements needed to better support mobile workers during different phases of resource development.

Housing Type

The type of accommodations used by industry at our three study sites was influenced by the remote location of the site, the size of the workforce, and anticipated duration of the phase of resource development. Almost all of the participants at the exploration and construction sites were accommodated in the work camp. In the case of New Gold's exploration site, this reflects the remote location of their operations, with exploration activities concentrated in the summer. The large mobile workforce at Site C was placed in a work camp to avoid overwhelming the local rental and housing markets and displacing residents. At our operations site, the small size of the mobile workforce meant that these workers relied upon local housing in nearby communities. The different types of housing used by this small mobile workforce included single detached family homes, basement suites, and mobile homes.

Mobile Workforce Accommodations



Design of Accommodations

There were nine key issues that shaped the design and operations of work camps to support mobile workforces. These included accommodations, food and nutrition, communications, entertainment, services, recreation, storage, operations, and transportation.

Key Issues Shaping Work Camp Design and Operations

Factors	Description
Accommodations	Range / quality of bedroom furnishings, laundry facilities / services, satellite / cable tv, couple rooms, private rooms, hallway lighting, separation of dayshift / nightshift floors, weather protection for entrances / walkways
Food / nutrition	Quality / quantity of food, healthy options, vending machines, variety of coffee shops / pub, convenience store, provision of lunch orders, options for special dietary needs, limits on alcohol drinks, special meal nights, access to dining room during poor weather, access to breadth of food services during both shift rotations
Communications	Quality of high speed Internet, restrictions on Internet access, investments in cell phone towers
Entertainment	Space for games, socializing, movie nights, satellite television, art, spiritual activities; access to entertainment facilities during both shift rotations
Recreation	Range of indoor recreational / gym equipment, programs, and facilities; range of outdoor courts and facilities; access to fitness

	staff; liability issues impeding access to nearby wilderness
Services	Range of facilities / services for health care, therapy, personal grooming, security, and business
Storage	Availability of storage for gear / personal items
Transportation	Provision and schedule of shuttle, consistency of shuttle, size of shuttle
Operations	Camp cleanliness, efficient maintenance and repairs, organization / efficiency of camp operations, quality of staff, availability of camp tours

Exploration

The work camp at our exploration site was equipped with a smaller range of facilities and services for mobile workers. Participants emphasized, however, that New Gold set a high standard for providing quality accommodations at exploration sites where mobile workers have typically stayed in tents with few amenities (Misan and Rudnik 2015). As some participants told us:

Having a private room. I mean that may sound kind of ridiculous but it was a bit of a luxury when I first came here. When I used to work for other companies, we used to share tents. So it was a tent camp and we would be four to a tent, two to a camp. Usually, it was rare if you had some privacy (NG Participant #9, 2015).

This camp in particular is incredible – our rooms are awesome rather than staying in tents, it’s pretty good. My room is good and cozy. This camp is second to none (NG Participant #2, 2015).

Each mobile worker was provided with a private room equipped with a bed, dresser, closet, desk and chair, cable tv, air conditioning, and baseboard heaters. There were shared bathrooms. Storage was provided through access to a lock system. Provisions were provided to allow married couples to share rooms. Private rooms allowed mobile workers to have privacy and appropriate downtime to recover from each shift. When we asked how accommodations may be improved to better support mobile workers, participants recommended bigger beds and dimmer, quieter hallway lights. As one participant explained:

The old dorms, they have nice, muted lights. The corridors are dim in there. In your room, the reading lamp is dim and doesn’t make any noise. For some reason they have us in the new dorms which have these awful, buzzing lights for reading by which is not nice. Not nice at all.... like right behind your head, and bright and it

sucks. I like to read in bed at night. The corridors are [...] as bright as this and bright all night. So if you wake in the middle of the night [...] you go out and it's horrible. It sounds like a minor thing but it sucks. The old dorms: dim-lit corridors; quiet, dim lights in the rooms. Way, way better. That's just me (NG Participant #13, 2015).

Participants felt that the quality and quantity of food provided in the dining hall had improved with a change in the catering contractor. There were more diverse and healthier meal options. Such changes improved worker morale and capacity to engage in a physically challenging work environment. There was an interest to have access to vending machines in the future in order to access snacks outside of dining hall hours.

The camp was also equipped with both high speed Internet at designated computer stations and cell phone service as part of its communications infrastructure. Similar to experiences at other exploration sites (Misan and Rudnik 2015), however, access to communication was restricted, prompting people to recommend expanding Internet service during the evenings. Participants also advocated for computer stations with sign-in times or the provision of Internet access in private rooms. As some participants noted:

Other years, we have had unlimited Internet, but it was slow and we had Internet in our rooms. This year to cut costs, it's only Internet in this area and down at the geo offices (Wi-Fi). They didn't get enough band width or data plan for it because it is running off the cell tower, so now they shut it off here in the evenings. There is no Internet in the evenings, unless you have a data plan on your cell phone, which gets expensive (NG Participant #1, 2015).

For Internet, here we are shut off at 5:00PM, so if you are not up before 5:00, it makes it a little more difficult for e-mails and such (NG Participant #2, 2015).

There was designated space for entertainment equipped with games, a pool table, a ping-pong table, and a common area for socializing and watching satellite television. Game nights were recommended to encourage more comradery and foster ideas for organizing social activities. An indoor recreation room contained cardiovascular and weight lifting equipment; although, participants hoped that the gym could be expanded with a squat rack. Mobile workers were also able to play basketball in an outdoor court. Additional recommendations for outdoor recreational equipment included bocce ball and horse shoes. Many mobile workers we spoke with, however, have a strong interest in outdoor activities. Liability concerns have restricted the movement of workers to within the worksite; thereby, preventing workers from commuting to nearby areas to go fishing, canoeing, or hiking. As some participants told us:

The only thing I would change about the camp lifestyle is the ability to go for a drive after work or to just go hang out outside, after work. There's a lake right down the road there. I'd love to just go down there for swims... go there to get some sun. Just relax. Because of safety, they can't allow that (NG Participant #12, 2015).

I think there is a policy, but I'm not sure if it exists still; you can't just go out and wander around outside. That might be challenging for some people if they think they are going to be out in the bush and in nature, but you can't have that free will to go out and roam around, due to bear safety and tracking people (NG Participant #6, 2015).

While there were a number of recreational and entertainment facilities, there were no additional services provided in camp. Overall, participants felt that the camp was operated well by camp staff who were organized, kept the camp clean, and attended to maintenance and repairs quickly.

Construction

With a substantially larger mobile workforce, the construction site offered a greater range of facilities and services in the work camp. Mobile workers were provided with private rooms each equipped with its own bathroom, a bed, dresser, flat screen tv, storage space, and an air conditioning and heating unit. Within these private spaces, some requested softer mattresses and pillows. There were also laundry facilities in each dorm area for personal use, with camp staff providing cleaning services for rooms and bedding. Given the large workforce in camp, there were recommendations to expand the number of laundry units placed in each dorm. The work camp opted for co-ed facilities; although, there were different floors for dayshift and nightshift workers to provide workers with appropriate quiet spaces for rest periods. The separation of dayshift and nightshift workers was reinforced with security cards to segregate people to specific wings.

The construction camp provided a variety of food services, including a dining hall, a Starbucks coffee shop, a pub, and a convenience store. Workers were able to order sandwiches for their lunch the following day, and special provisions were provided for people with special dietary needs. Despite general satisfaction with food services, there were some concerns that the quality of food has deteriorated. Due to the high volume of food needed to feed a large workforce, some felt there was too much emphasis on pasta, frozen, and deep-fried foods. There were other concerns about the level of sodium in meals, as well as the lack of complex carbohydrates, high protein foods, and low fat options. Although the camp is designated as a wet camp, workers are allowed a maximum of four drinks. There were also special occasions when barbeques would be hosted on site. Moving forward, there were a number of recommendations proposed to improve food services. To start, there were requests to have the

soup and sandwich bar in the dining hall open during rain days, as well as to provide access to desserts during late night hours. Some felt there was a need for more frequent cleaning of the dining hall area, as well as better hygiene education for workers entering the dining hall. Participants also asked for fruits and vegetables in lunch packages that were easier to eat while working. Others expressed interest to have a Tim Horton's in camp. Furthermore, there were requests for longer hours for the commissary, and access to the pub for workers coming off of nightshift.

Entertainment facilities and programs were well supported by the mobile workers we spoke with. The camp was equipped with a movie theatre, a games room, painting sessions in the spiritual room, and pay per view fights in the lounge. The movie theatre, however, is not accessible to people coming off nightshift. With a large mobile workforce, the work camp was able to offer a range of recreational facilities and programs. Workers had 24 hour access to a weight room, yoga room, and multi-purpose rooms that were supported with fitness trainers who delivered a variety of gym and cross-fit classes and developed fitness plans for workers. As one participant noted:

They got two, sometimes three trainers per shift and all night. So if you are day shift and you cannot sleep... you're topsy turning and you want to go at 5 am or 3 am.... gym's open. Instructor's there. He'll do a plan for you. We have a basketball court. There's four rooms dedicated to cross-fit and things like that (Site C Participant LR#4a, 2017).

An indoor gymnasium supported activities such as basketball, volleyball, and floor hockey. Outdoor recreational facilities included basketball courts and tennis courts. When participants were asked about ways to improve recreational facilities, some suggested additions of a rock climbing wall and opportunities to play golf.

In comparison to the exploration camp, the construction site camp was equipped with a range of services to support workers' needs. These included health care services such as a medical clinic, a nurse practitioner, a pharmacy, and massage therapy. Physiotherapy was the only health care service missing that was further recommended by participants. There was also a hair salon, spiritual room, and ATMs. As one participant stated:

One of the top two best camps I've ever been in. Neat. Tidy. Clean. This is the first one that we actually have a hair salon. The site clinic inside has a nurse practitioner for 24 hours. One paramedic 24 hours. Most places are first aid. But this is nurse practitioner 24 hours. So you don't have to waste time going to the hospital (Site C Participant LR#4a, 2017).

While participants appreciated the breadth of services in camp, some felt that services such as massage therapy and haircuts needed to be included in the benefit plan. Mobile workers were also able to obtain personal items through the commissary; however, some were looking for a greater variety of brands. There were also concerns about the high costs for personal items, prompting participants to commute to town to purchase more affordable items.

Security also had a strong presence throughout the camp. Workers were also tracked by the required use of swipe security cards to gain access to different areas of the camp. At times, this impacted how comfortable participants felt in camp. Smoking was permitted at designated points outside of the main camp entrance.

A shuttle provided transportation between the camp and the City of Fort St. John on a nightly basis to connect mobile workers with local services and recreational facilities. Some felt that these shuttles were too small to accommodate the large crews. The shuttle departure times were planned too soon following the end of shifts, making it difficult for some to catch the shuttle to town. As one participant explained:

Yes. Getting out to camp. There was a shuttle service. They started one up and then they shut it down. And then they started it back up again, so I guess it's going again. But before that... so we all get in about 7:30 and the bus leaves at 7 o'clock. So there's no friggin fore thought into when....and the next bus is at 10. There's no thought process put into it. It's routine, but again, we all get off at 7:30 and the bus leaves at 7 o'clock, so we don't get on the bus. So it's really hard to go to town and get.... Like I'm almost out of shampoo. They have it there for you, but it's grossly overpriced. And I prefer my own stuff (Site C Participant LR#1, 2017).

In terms of communication infrastructure, mobile workers felt that they had good access to cell phone service and high speed Internet. Requests to improve communications infrastructure focused upon faster computers in the main reception area for worker use. Storage space was provided for each worker to clean and store their gear. There were a couple of recommendations to improve the overall exterior design of the camp, including more smoke pits and a breezeway from the main gate to the main entrance to protect mobile workers in poor weather conditions.

Participants at the construction site spoke positively about the operations of the camp, often highlighting friendly staff who were well organized and responded quickly to requests. Camp tours were provided to quickly familiarize mobile workers with the layout of facilities. Mobile workers we spoke with also liked coming into a new camp where everything is new and clean. Many felt the camp was designed to reduce worker stress through the separation of sleeping quarters; the breadth of entertainment and recreational facilities; and the provision of food, health, and cleaning services on site that allowed workers to use their time wisely.

Operations

Lastly, the mobile workers at our operations site lived in the nearby communities of Quesnel, Williams Lake, and surrounding rural areas. Almost half of the people we spoke with were able to obtain housing for less than \$1,000 per month. There were some who struggled with high housing costs; at times, exceeding one-third of their income. Mobile workers at the operations site were not provided with a living allowance in order to encourage workers to move to the region. Most participants lived in a single detached family home; although other accommodations included basement suites, apartments, and shared facilities. When we asked participants what they liked most about their living arrangements, key factors included good landlords, quiet neighbourhoods, and being located in a community close to the mine site with lots of services. Some workers we spoke with, however, felt disconnected and lonely while staying in Williams Lake. Basement suites did not offer mobile workers with much access to sunlight. As one participant noted:

As you're well aware of, most basements are in the ground with very little windows so you get very little sunlight, so you always have to have the lights on. And it's cool in the winter, and to heat the upstairs, the people [upstairs] had the furnace on high, so it was hot. Summer was nice because it was cool (Gibraltar Participant #2, 2013).

Shared facilities were also less desirable to provide workers with appropriate recovery time. There were also participants who were commuting from their own home within the region, allowing them to return home each night to be with their families. They were able to commute to the staging areas, reducing the burden of driving to the mine site. The extended commutes each day to work, however, left limited time for home activities.

ACCESS TO SERVICES

Mobile work may increase demands for many community services, such as couples / family counselling, mental health, unemployment services, occupational therapy, women's resources, and health programs. For mobile workers, long shifts, extended rotation schedules, and repeated moves have increased social stresses, such as isolation, depression, suicide, and strained household / family relationships (Lawrie *et al.* 2011; Schafft *et al.* 2013). Some research estimates that mental health can cost a mine between \$300,000 and \$400,000 per year (Macgroarty and Pfaender n.d.). To alleviate boredom and stress, mobile workers may also seek recreational activities that are time flexible and individual rather than group oriented, such as hunting, fishing, snowmobiling, and other backcountry activities (Baker *et al.* 2003; Nichols Applied Management 2003); although, industry has often endorsed the provision of on-site recreational facilities and programs in work camps in order to improve worker well-being and satisfaction, as well as to reduce demands on nearby community facilities (Stantec Consulting and Keith Storey Consulting 2011). In this context, access to services can help workers to cope with the demands of their mobile work environments and to improve their quality of life that will help to retain workers throughout the life cycle of the industry project (Fahys-Smith 1983). Strategic investments in services and infrastructure, however, have been impeded by the lack of information about the actual demand and impact that mobile workforces have on local services and infrastructure (House of Representatives 2013).

We posed a series of questions to participants to learn more about their service needs and how they access those services. We began by asking participants what types of services they needed to access since they began working at the exploration site. The most frequently needed services included recreation, health services, professional services, and food, followed by business, communications, and transportation services. Workers we spoke with talked about a broad range of services available on site or at camp, such as recreation, communications, and food services. Some workers stated they also accessed education and training (i.e. safety training), business services, transportation, and health services (via emergency aid) on the work site or in camp.

Exploration

When we asked workers at our exploration site about the types of services accessed nearby in Vanderhoof, their needs mostly focused on food (i.e. convenience stores and restaurants), transportation, and business needs (i.e. parts / equipment, clothing, etc.). Workers addressed the broadest range of their service needs in their home communities. Due to the mobile nature of their work, a number of supports were accessed online, including banking, investment planning, counselling, life coaching, professional education, and government services through Service Canada. Workers also accessed services in regional hubs and key staging points such as Prince George, Quesnel, Vancouver, Williams Lake, Smithers, Terrace, and Victoria. When asked if there were barriers to access supports on site or in Vanderhoof, most of the participants responded 'no,' but some talked about barriers such as the distance to town, limited hours of New Gold's Vanderhoof office, and limited Internet access in the evenings.

Some participants faced challenges to accessing services in their home community due to work scheduling changes, limited access to daycare for shift workers, difficulty arranging follow-up appointments, and challenges attending to home renovations. As one participant stated:

It's difficult. I try to pre-plan as much as I can before I return to Vancouver... so doctors' visits, dentist visits. It's usually follow-up visits that are difficult. Luckily, I haven't had to deal with that yet; but say I had a dental visit and they need you to follow up in three days. You can't fit it all in within your nine days. It can be challenging. Like right now I'm trying to plan renovations but I can't always be there. Trying to explain – typically I spend a lot of time explaining what I do, why I'm away, why I can't be there. I'm even trying to pay a contractor right now and they want me to show up to their office with a cheque, which I can't do. So I have to coordinate a lot of things through my wife, if I can (NG Participant #9, 2015).

Participants at the exploration site provided a number of recommendations to support mobile workers and their families, including more time off between rotations, improved Internet access, expanded on site health and recreation services, daycare for shift workers, and shuttle transportation to communities throughout the region.

Construction

Aside from the services and facilities that mobile workers used in camp, people we spoke with at our construction site would travel to Fort St. John between their shifts to shop for work gear, parts and supplies, personal supplies, snacks, and eat at restaurants and pubs. Visits to town were also made to pursue recreational opportunities by visiting the leisure pool, fitness gym, the movie theatre, golf courses, rock climbing areas, and parks. Tanning and post office services were also used.

Access to services and facilities were impeded by four key issues. First, personal constraints made it difficult to commute to Fort St. John given the lack of time and fatigue experienced by workers between shifts. Some coped by giving money to friends and colleagues to purchase items in town on their behalf. Strict security protocols and curfews also made it difficult to commute to town. If workers returned to camp late, supervisors were notified by e-mail and workers were then evaluated to be fit for duty. In terms of transportation, there were concerns with inconsistent shuttle operations that were cancelled with short notice and generated uncertainty about when they would be operational again. As one participant told us:

When we went into town once, they cancelled the shuttle, so we had to take a cab. So it was like fifty, sixty bucks each way (Site C Participant LR#3a, 2017).

There were also difficulties with the ability of workers to return to camp and shower before attempting to catch the shuttle as it departs 30 minutes after the end of the shift. Some were able to use department trucks and taxis to commute to town when needed; although, taxi fares were deemed to be costly for routine trips. Furthermore, services in town had restrictive hours of operation that made it difficult for mobile shift workers to get to before closing. There were also long wait times to access health care supports such as dentistry.

Most of the participants at our construction site did not experience any barriers to accessing supports in their own home town. In fact, some felt that the camp offered more services than their small home towns. However, mobile workers from small communities did feel challenged to connect with regionalized services during their time off. There were also challenges matching appointments with the shift rotation schedule.

Operations

When we asked participants at our operations site about the types of services they accessed since they began working at the mine, the most prominent services included training, recreation, banking, health, professional, and transportation. Of the services that mobile workers used, only training, health care supports (i.e. hearing and sight testing, first aid, etc.), and professional services (i.e. human resources) were accessible on the job site.

When we asked if participants accessed any of these services in Williams Lake, most said 'no'. For those who said 'yes', key services that were accessed in Williams Lake included dental services, groceries, hearing services, and recreation. Given the limited use of services in Williams Lake, we asked participants if there were any barriers impeding their access to supports in the community. While a number of participants said 'no', others cited restricted hours of operation, lack of choices, and shift schedule conflicts as key constraints.

All of the participants commuting from our operations site noted that they access most of the services when they are in their home community. Again, most participants did not feel there were any barriers impeding their access to services in their home community; although, some talked about shift schedule constraints and traffic volumes, as well as limited recreation services. Furthermore, we asked participants at the operations site to talk about any additional changes that they felt were needed to respond to the needs of mobile workers. In this case, participants recommended more attention to services, including outreach supports, daycare supports that are commensurate to worker shift schedules, and extended business hours of operation. They also advocated for more buses to connect workers with the mine, as well as the construction of camp housing at the mine for out-of-town workers. Furthermore, there was a recommendation to establish a cafeteria at the mine in order to nurture networks and relationships that can support mutual sharing of information and problem-solving in the workplace.

FAMILY AND SOCIAL NETWORKS

Previous research highlights several ways in which mobile work can impact family and social networks. Household responsibilities and activities are often restructured to accommodate the irregularities associated with extended shift rotations, with spouses, children, and extended family often assuming additional responsibilities for domestic responsibilities (Newhook et al., 2011). Children can be stressed by the absence of a parent, influencing their behaviour, preparedness, and performance in school and other activities (Hiew, 1992; Morrice et al., 1985; Wray, 2012). Stresses associated with commuting and long, extended shift rotations can also have more serious implications for relationships, such as spousal stress, family dislocation, substance abuse, conflict, and divorce (Construction Sector Council 2005; Houghton, 1993; Kinnear et al., 2013; Kuyek & Coumans, 2003). In contrast, however, some research suggests that mobile workers have more positive experiences coping with family life because they had more time at home (Hanoa et al., 2011), as well as more discretionary income to support family engagement in recreational activities (Torkington et al., 2011). Mobile work has also been associated with a decline in community engagement as workers and family members are unable to participate in organised sports and other community activities (Kinnear et al., 2013; Torkington et al., 2011). As such, we explored the impact long distance labour commuting had on participants' families and social networks.

Exploration

Starting with our exploration site, when we spoke with mobile workers, positive impacts to workers' family lives included being able to see family in the region more often. There was also a sense that mobile work can bring spouses closer together as they work through the challenges of mobile work and reunite for periods between shift rotations. In some cases, mobile work was viewed to produce positive impacts for the remaining household spouse to expand their role in the household and learn to do new things. As one participant suggested:

Cause I like to micromanage everything in my house, everything at house. The awesome thing is she's had the opportunity to do all the things that I would usually do, so she has grown as a person, which is amazing. It has been really good for us (NG Participant #10, 2015).

Negative impacts to workers' family lives included issues such as strained family relationships, difficulty resolving conflicts from a distance, less time with family, and limited ability to support their spouse with household needs. As other participants explained:

Every couple has a little argument or something like that. It's hard to work it out being so far away. So I'd have to say conflict resolution, it really slows it down. It's hard to focus on work when you know that something is happening there. It's only been a couple of times that it has happened. If one of us it made at the other one it's easy to hang up the phone and then not just talk to that other person. Whereas when we're at home, we have to work it out (NG Participant #10, 2015).

The most difficult thing early on was the schedule; only being home for five days and having to travel so far. My wife was going to school and she needed somebody to be there with her because we moved there and she had only one cousin that lived there. Just being alone all the time for her was hard (NG Participant #5, 2015).

Mobile work has also limited the ability of workers to join sports teams and community organizations. Others talked about the deterioration of friendships as a result of being away for extended periods of time. As some explained:

Sure I have friends but it's just like 'oh hey, I'm back for a week. Let's watch the hockey'. 'Oh sure, let's get a drink,' or whatever but it's not the same as to see someone every couple of days. Girlfriends, friends, whatever. It doesn't matter (NG Participant #13, 2015).

Well I guess after a while it became difficult, after the first few years. You lose contact with close friends. You miss out on lots of family events and friends events. Birthdays. Even your own birthday on occasion. So that made the job more challenging, especially when I was single as well. Trying to maintain a relationship was difficult. I tended to have numerous shallow relationships (NG Participant #9, 2015).

In order to stay in contact with family members, participants predominately used cell phone calls, email, programs and apps such as Skype or FaceTime, and texting. At this exploration site, participants suggested improving the range and evening access to the Internet, as well as allowing scheduled family visits or days on site as ways to help them stay connected with family. Other resource-based regions in Australia have also been working on initiatives such as Mining Family Matters and FIFO Families to strengthen communication and support for family members (Atkinson and Hargreaves 2014).

Participants were also asked if they had formed new social networks while commuting to the Blackwater exploration site. Most of the workers responded positively to having new social networks that were used for socializing, job mentoring, industry networking, learning about First Nations culture and the impacts of the residential school system, grief support, and personal / professional advice. As one participant told us:

This is a good network here to listen about jobs elsewhere. Everyone is always listening. They're well-connected. So jobs elsewhere. Maybe helping me with direction: like skills I need to acquire. Mentorship: I've definitely had mentorship here. And just general friendship. A lot of that. That's really rewarding (NG Participant #12, 2015).

There was also a group of geologists who had formed a strong social network, with many sharing the experiences of working from site to site. These common experiences meant that they had formed this strong social network separate from the rest of the workforce. As one participant explained:

From the standpoint of my own profession – the geologists – we get moved around from site to site quite a bit. So we don't get particularly tied down to any particular location. I myself have worked at Site X, Site X. Worker X has worked at Site X, Site X, and Site X. Some of us have worked at other sites so we tend to be our own group within the group. Hence why we tend to socialize with each other as well (NG Participant #9, 2015).

However, mobile workers who were engaged in management or supervisory roles were less likely to have formed social networks locally or throughout the global company structure. As one participant stated:

Not in me. I'm a manager [...] so I have unfortunately been wrangled into this position in the last couple of years. So I am a geologist but I am also a manager. So there really is no one else here within my area. And so I try to keep not a distance but you have to keep a special relationship with the people you supervise. So I can't be all buddy-buddy with them. It just isn't going to work. I'm not a jerk and I'm probably friendlier than many people are. There really is no one for me to talk to, you know, at my level. I'm really the only one here, unfortunately. We have workers in similar positions in Ontario and in California, I think. But I don't call them to ask for morale support. They'd probably just laugh or something. Think

you're an idiot. But unfortunately there isn't that network kind of stuff. It just isn't there (NG Participant #11, 2015).

Overall, over two-thirds of participants at the exploration site keep in touch with these social networks while at home, predominately by getting together to socialize in-person and through social media.

Construction

At our construction site, commuting for work had positive implications for many of our participants' families. It provided mobile workers with the opportunities to provide a better life for their families. They were able to have more quality time with their family between rotations. For some with dispersed family in various places, this quality time would not have been possible without having extended time off between rotations. In some cases, people had other family members who worked at Site C. There were also some participants who had no family or children, and thus did not experience any related impacts at home. Extended periods of time away from home, however, had negative impacts for a number of workers from our construction site who missed their families and pets, were less involved in the routine activities of their children's lives, and often missed out on key family moments. Similar to other industry studies (Construction Sector Council 2005), there were also challenges allocating time for aging parents. Mobile work invoked strains on spousal and other family relationships, and at times, resulted in separation or divorce. In households where both spouses commuted for work, it became very difficult to consider having a family. Such relationship pressures mean that workers must assume considerable responsibility for maintaining a balance in their relationship by focusing much of their time on spousal or family activities during their time off. As one participant argued:

This job takes a special...well not special.. but kind of a special breed of workers that ... like I'm proud of being around some of these people... some only once... some I don't like. But all the people you see around here are hard workers. These guys bust their ass off. I'm proud of that. I'm proud that they really want to make it for their families. And our wives, yeah, that would probably take a special kind of breed of women to understand what we're doing out here which is just trying to improve our lives, get rid of the mortgage as soon as possible. Have a better life. Some people do it because they like it. Most just for the money, not because they like it or love it. But we do it for our families.... Some people don't understand that you are responsible to keep the balance in your family. So right now, for example, I just come back for seven days. You know what I'm going to do. I'm gonna settle down. I'm gonna chill out. But I'm going to take my wife out for dinner and we're going to go mountain biking. I'm going to make it up for her in those days so she

understands that she is valuable to me and why I'm working hard. And even so she knows that I get settled down and take naps and recover, but she will appreciate it more that I have to do that so I can take her out to the cinema, for dinner, mountain biking, to hit the river, or anything to just keep in the relationship because that's the toughest thing, right, is to keep the relationship (Site C Participant LR#4a, 2017).

Participants also felt that they struggled with household maintenance, resulting in placing more responsibility on spouses for household tasks. As another participant stated:

Well yeah because now I've had to – my wife has taken on a pile of things that have to be done right. Everything from owing the loan, to looking after the banking, to paying the pills. Which she did a lot of everything, but now because we have been together so long it's all just shared. She has taken on quite a bit of that. It's hard... It causes stress, it causes stress on a relationship, on a marriage. We should have my wife here, she'd tell you all about it... (Site C Participant MD-16, 2017).

Technology has allowed some participants to help with household financial and maintenance tasks remotely. Others have relied on family to provide assistance with household maintenance, childcare duties, and looking after pets.

Participants at the construction site used a number of strategies to stay connected with family and friends, including cell phones / texting, Facetime, Skype, e-mail, Facebook, Messenger, and What's App. As a result, most did not feel that any additional supports or services were needed to help mobile workers stay connected with family and friends. Some, however, recommended the provision of phone stations for those who do not have cell phones, as well as workshops to help workers learn to use Skype and Facetime. Concierge services were also requested to help workers obtain items for their family.

Almost all of the participants (95%) at our construction site formed new social networks since commuting to Site C. These networks were used to obtain advice about job tasks and career development, job site regulations, time management, nutrition, camp arrangements, commuting and making travel arrangements, and negotiating travel supports. As one participant told us:

Talking with your bosses and how they did that as well and how they set that up is something I definitely want to look into for my next job (Site C Participant LR#5a, 2017).

Networks were used by some for personal support to seek advice about relationships and obtaining a balance between work and home life. They were also used for social and recreational activities. Female workers also formed support networks, but these were not gender specific as these participants would turn to anyone for advice concerning operating equipment or other job related issues. Almost two-thirds of the participants at the construction site do not keep in touch with their social networks when they are home, citing the need to focus on family and school during that time, as well as challenges maintaining those networks due to frequent turnover amongst workers. As one participant explained:

We got a really wicked crew. And I know in three years, there might be one or two guys on that crew. Cause the turnaround is almost 200 to 1. Two hundred guys hired, one guy stays. And I think it has to do a lot with the way the construction industry works. A person will come on a site and work really hard for a year and put their work in. It's not that they don't like their work. They just want to try something different (Site C Participant LR#6, 2017).

Those who do maintain contact often do so for work matters and to meet other families.

Operations

When we asked participants at our operations site how working out-of-town impacts their family life, some appreciated having a shift rotation schedule that provided them with more extended time to spend with family on their days off. Others, however, expressed concerns about having less time to spend with family, including aging parents. As one participant noted:

I don't get to see my parents and grandparents as often which is difficulty. I will have to see like one set, and I have 3 sets of parents in Prince George and one set of grandparents. So I kind of have to space them out (Gibraltar Participant #6, 2013).

There were also concerns about strained spousal relationships and additional duties that needed to be assumed by spouses. Participants used a range of strategies to stay connected with their family during extended shift rotation schedules, including phone calls through landlines and cell phones, e-mail, Skype, and texting. When we asked participants at the operations site if there were any other supports needed to help them stay connected with their family, some recommendations included better cell phone and Internet connections, bus service to other nearby communities, and daycare.

Participants at the operations site were also asked if they formed any new social networks since they began working at Gibraltar. In this case, two-thirds of the respondents said 'yes'. These social networks were used for socializing, obtaining advice and mentoring, carpooling, and access to tools and equipment. Most of the people we spoke with continued to keep in touch with their social networks when they returned to their home community through phone conversations, social visits, and recreation.

SENSE OF COMMUNITY

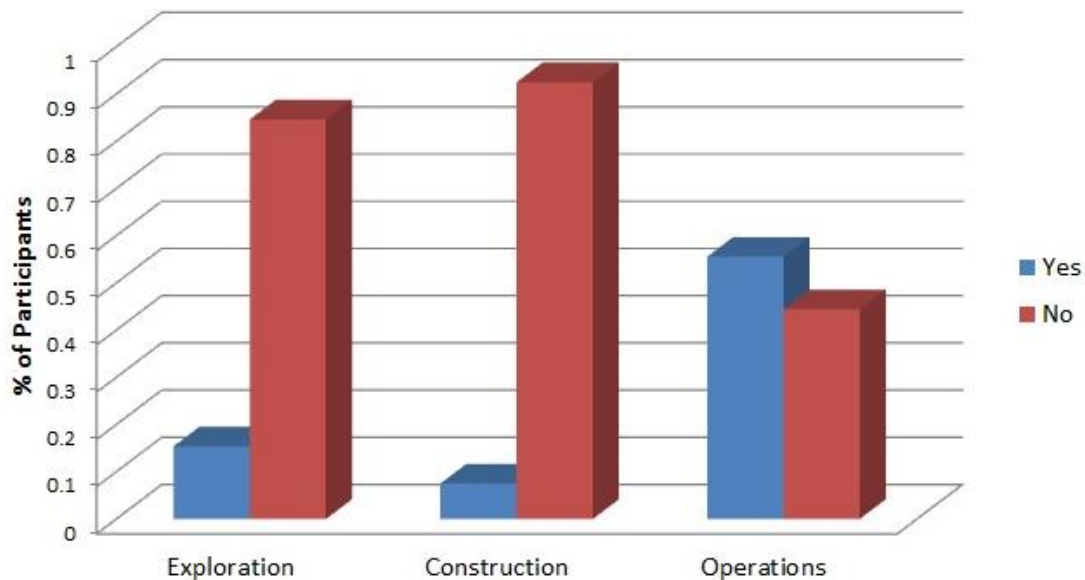
While mobile work can impact the sense of community between workers and their home communities as they have less time to engage in community activities and organizations, it can also strengthen bonds as people come together to cope with the stresses of having a household member away for extended periods of time (Markey et al. 2015). Inclusion of workers in camp programs or a nearby community can help foster a sense of community and play an important role in the recruitment and retention strategies for future phases of resource development. It can also benefit nearby communities by attracting users of services and providing nearby communities with a new source of professional skills and external networks; although, this has been largely contingent upon the presence of a social contract between industries and those communities (Kilpatrick et al. 2011). The precariousness of mobile work, however, can restrict bonds with host communities near these industrial projects, resulting in a “lack of social attachment and a preparedness to forego social pleasures” (Foster and Taylor 2013, p. 173).

Exploration

When workers at our exploration site were asked if there were camp programs or activities that helped foster a sense of community, almost all participants said ‘yes’; although, these activities were largely organized informally. A variety of in-camp activities took place in the games room, the gym, and through eating meals together. All of the workers in the exploration camp participated in camp activities, such as gym workouts, movie nights, games, and playing music.

We also asked workers at the exploration site about their interactions in the Vanderhoof area. Vanderhoof is the location of New Gold’s community office and is the last staging point before workers travel to camp. In this case, just under 85% of respondents stated that they do not participate in Vanderhoof events or activities during their off-work hours. Those workers who do spend off-work hours in Vanderhoof visit family, purchase clothing and food, and take part in recreational activities such as fishing. Based on the feedback provided by workers we spoke with, efforts to connect mobile workers with activities in Vanderhoof are limited to brochures in camp as well as hunting guide signs along Kluskus Forest Service Road.

Participation in Community Events



Source: On the Move Interviews 2013-2017.

Construction

A range of programs were developed to foster a sense of community in the camp near Site C's construction site. A significant portion of these programs focused on fitness and recreation programs, such as gym classes, sports teams, golf and baseball tournaments, soccer, badminton and tennis, yoga, and a walking club. Entertainment facilities provided focal points for theatre / movie nights, game nights, and pay per view events, which included draws for jerseys and hats. There were also food events such as barbeques, steak nights, pub events, and informal gatherings near the Starbucks coffee shop. Some participated in painting sessions hosted in the spiritual room. Maintenance crews also organized activities for themselves informally in camp.

Approximately three-quarters of the mobile workers we spoke with also spend time off work in Fort St. John. As noted earlier, this time was often spent eating at pubs and restaurants, such as Mr. Mike's, Boston Pizza, and Tim Horton's. They would also commute to town to purchase clothing, supplies, and personal items at Walmart, Mark's Work Warehouse, Shopper's Drug Mart, and various grocery stores. Leisure time in Fort St. John was spent using the swimming pool, movie theatre, golf course, and fitness gyms. Some participants appreciated the opportunity to spend time in a different environment by walking or driving around town, as well as rock climbing in nearby areas.

There were a number of initiatives to connect mobile workers in the construction camp with activities in Fort St. John. Workers from camp were provided with passes to the recreation centre, skating rink, and leisure pool, as well as discounts to town events. A shuttle service was provided to transport workers to and from town, with stops at Walmart, the casino, and the mall. Camp staff were also quick to arrange taxis when needed. Camp orientation, bulletin boards, community television channels, flyers, Facebook, BC Hydro's website, and word of

mouth were used to promote services, events, and activities to camp workers. Local workers would also share information about events with mobile workers in camp. Just over one-quarter of mobile workers we spoke with, however, were not aware of any efforts to connect them with activities in Fort St. John. Most (92.5%) do not participate in any community events in Fort St. John. There were a few mobile workers we spoke with who attended drag races and cross country ski events.

There are some challenges connecting mobile workers with the community in Fort St. John. To start, there are concerns about residents who have negative feelings towards Site C workers. Some feared the loss of flight privileges if they stayed in the community longer beyond their rotation. Others noted that they never received an orientation to town. As a result, most of the people we spoke with (88%) did not have any sense of belonging in Fort St. John. For those who did develop a sense of belonging, they were able to do so through the development of new friendships and business opportunities in town, as well as through the positive feelings they had about the local climate and culture. With the 2 and 1 shift rotation, there was also a feeling that being near Fort St. John longer than their home town had shifted their sense of belonging to this community.

Operations

When we asked mobile participants at the operations site how they spend their off work hours, a number were able to commute to their home community where they spent time on household maintenance, visiting family, and recreation activities. For those who remained in Williams Lake between their shifts, key activities included walking, swimming, grocery shopping, and visiting with co-workers. Mobile workers cited, however, a number of efforts made to connect them with the community, including golf tournaments, a Christmas party, family day, company picnics, parades, trade shows, and community fundraising events. When we asked them if they participated in any community groups, activities, or events, most participants said 'no'. In response, we asked participants at the operations site to describe what works, or would work, well to connect workers with the community. In this case, this group appreciated events, groups that made an effort to reach out and include mobile workers in programs and activities, and recreational opportunities.

Furthermore, we asked mobile workers if they had a sense of belonging in Williams Lake. Some did not have a sense of belonging in Williams Lake as they were commuting back to their home community after each shift. Key factors that influenced their sense of belonging in a community included experience living in the community, having community connections, as well as having family in the community. However, there was also a sense of disconnection with the home community due to the length of time away and interrupted routines in the community. In Williams Lake, some participants from the operations site felt that their sense of community was influenced by recreational opportunities and a slower pace of life.

BENEFITS AND CONCERNS

Research has also explored many of the benefits associated with mobile work, such as greater flexibility of where to spend their leisure time and where to live, maintaining dual income households, and career development (Di Milia and Bowden, 2007; Sandow and Westin, 2010). Through participation and interaction in new networks and workplace environments, mobile workers can be exposed to new processes and experiential learning opportunities (Lukic et al., 2010; Olsson et al., 2008) that can enhance their capacity. These benefits, however, are often weighed against many concerns that emerge with mobile work. Fatigue associated with long commutes and shift rotations, additional financial costs associated with commuting and living away from home, lack of routine feedback and communication in chaotic work environments, and the difficulty completing the length of time required for workers to obtain employment benefits in contract environments are just some of the factors that are complicating decisions to continue to engage in these mobile work settings (Ryser et al. 2016). As such, we continued to explore the range of benefits and concerns that can influence workers' decision to continue to engage in mobile work.

Exploration

At our exploration site, participants talked about financial incentives that focused upon good wages, benefits, and paid travel. Participants also talked about job stability, work experience, and career development opportunities, such as obtaining new skills and experience, as key positive benefits of commuting to work. As one participant told us:

Employment is the biggest one. Also, learning the industry, the mining industry; it's pretty big. So, there are other options out there. Diversifying my mining skills. Some new skills I picked up here that I didn't have before are soil sampling, going out mapping with a couple of geologists, and navigation skills with a map and GPS and a compass. I knew the gist of it, but I have fully learned how to understand all of it now (NG Participant #5, 2015).

Some workers at our exploration site were interested in their project due to its likelihood to be a successful project. Being associated with successful projects was noted to be instrumental to develop one's professional reputation. As one mobile worker at our exploration site told us:

Actually, I took a pay cut to come here. I was looking for... I guess being a geologist, professionally, we look for being associated with projects that are successful. So even though I was being paid more at my old job, the project itself was not that attractive (NG Participant #9, 2015).

There was also a sense that the time spent commuting allowed individuals to wind down from work before returning home. Once in camp, the short commute to nearby work areas was also appreciated compared to long daily commutes experienced in metropolitan centres. As another participant explained:

My Lower Mainland job, my concerns there are it always takes forever and you are stuck in traffic wasting gas and time. After working the Lower Mainland job all winter long, it makes me appreciate this job so much more; because instead of spending 20 hours a week in traffic, here my commute is literally walking down the hill to that shack on a day-to-day basis. There is a big commute on either end to get up to camp, but once you are in camp there is no commute at all. I'll probably keep doing this as long as I can. It depends on the economy a lot and the price of gold (NG Participant #1, 2015).

In terms of networks and relationships, mobile work provide opportunities to meet a variety of people, build close friendships, and appreciate personal / family relationships. Others noted that they have acquired opportunities for personal growth through self-reflection and the need to become more extroverted in order to communicate and engage in this type of work setting. As one participant stated:

I've noticed that I'm not as shy anymore 'cause you have to try and get over that; otherwise you won't talk to people, and if you need to get ahold of somebody you don't know, you kind of have to be like, 'hey! I need to talk to you about this. This is what's happening in our shift.' You have no choice but to be a bit extroverted (NG Participant #8, 2015).

A final key benefit was the ability to enjoy the scenery of the surrounding area by working outdoors. For example, an exploration worker told us:

The job is good because I get to participate in a lot of cool things, being a part of a very exciting drill program, working outdoors and indoors, a large variety of work, doing all sorts of things that I would never get a chance to do in the city, and getting paid to hike around and look for rocks (NG Participant #1, 2015).

Participants at our exploration site also discussed a number of concerns associated with long distance labour commuting. Most notable were concerns associated with family and household pressures, including less time with family, concerns about family health, and being

away during times of family stress. There were also concerns associated with the commute itself, such as vehicle maintenance, road safety, wildlife hazards, and travel delays. Furthermore, there were concerns about the negative impact that commuting was having on workers through fatigue, stress, and overall mental well-being. Unfortunately, first aid programs at the time did not address mental health. As one participant explained to us:

Even while I was taking my first aid class when I brought it [mental health] up, it seemed kind of taboo. They were like; you just treat it like a normal situation. You package them and take them to the hospital. But I think that it could be addressed more. Not just in camps but everywhere. In camps because I think, not that they should screen people for any sort of mental health issues, but at least make the door open to let them. Know that they do have these issues and here's what to do if they seem manic, or if they seem depressed, or they seem out of their own control. I think there should be a lot of training on how to treat those people (NG Participant #10, 2015).

Construction

As we moved to our construction site, mobile workers identified seven key benefits associated with commuting for work. The first focused on the financial incentives provided through good wages, benefits, and paid travel, but also through access to pension benefits and paid internships. Since accommodations and meal costs in camp are covered by the principal contractor, mobile workers are able to save more money. These financial benefits allowed mobile workers to provide for their family, pay off mortgages more quickly and pursue other luxuries such as upgrading vehicles and taking vacations.

The process of commuting was also made easier as all the travel arrangements were made for mobile workers travelling to the construction site by charter. It allowed many participants to rest since they did not have to drive long distances to the work site. Another benefit was the provision of services in camp that allowed participants to focus on work and recovery without having to worry about making meals or cleaning. As one participant noted:

The thing I like about camp is you don't have to think about anything. You just go to work. And there's always food there. Basically, you can get them to do your laundry if you want (Site C Participant LR#3a, 2017).

The 2 and 1 shift rotation also provided extended time off with family. In terms of career development, participants felt that mobile work expanded their experiences working in different places, provided opportunities to develop different levels of responsibility, and

exposed them to different mentors that provided advice about career development. As one construction worker noted:

Definitely experience. Especially when we're this young. It's nice to have that, especially when you're trying to find jobs in the future (Site C Participant LR#5a, 2017).

People also spoke about the social benefits associated with mobile work as they were able to meet a variety of people. Some benefitted from the hiring of family members and couples that made it easier to be away from home for extended periods of time. A final benefit stemmed from a strong interest to be part of building Site C, a project of significant investment for the province.

At this construction site, the concerns raised about mobile work focused on four topic areas. The most prominent issue was the impact that mobile work had on families as workers were absent for extended periods of time. This absence made it difficult for workers to be present to detect problems or to be there for family during times of need, a pressure that became accentuated during the 2017 summer forest fire season that prompted a number of workers' families to be evacuated from their communities. As one person explained:

I know that commuting is hard on guys. Like being away from home. Like I know a lot of guys will drop out of shifts to get home. And with these fires it is even worse. People are just leaving shifts to hop on a plane and go home (Site C Participant MD-13, 2017).

The extended rotation also made it difficult for some participants to develop and maintain relationships.

Secondly, there were several transportation issues that made commuting more difficult. As mobile workers are required to travel on their days off, limited flexibility with flights, flight delays, and late flight arrivals were frustrating for a number of participants. As one participant told us:

You get cranky because you want to get home and it's a long commute to get home. We've had a few delays where there have been mechanical things where we've sat in an airport for hours. You get in at 12 o'clock. There was one circumstance where we didn't leave the airport till 10:30 that night. So now you get back home and its 12 like at the airport. I didn't get home until like 2 or 2:30 that morning. And it is just lucky my wife was there to pick me up at 4 or 4:30.

We're just lucky we had friends who were home, who weren't usually home (Site C Participant MD-16, 2017).

Others expressed a fear of flying. For participants commuting within the region, the distance to drive to the site was also a concern. Another topic concerned employment issues, with some fearing the elimination of the Site C project given the lack of employment opportunities in their home communities. Others talked about the impact that worker turnover had on their work environment, as well as limited flexibility to obtain time off. The last topic area identified included the impact of mobile work on health as participants experienced a lack of sleep and long-term fatigue that required more recovery time. Almost one-quarter of the mobile workers we spoke with, however, did not have any concerns with mobile work.

Operations

After reflecting upon a range of issues, key positive attributes that were identified by mobile workers at the operations site included financial benefits, such as good wages and benefits, and then extended to include conversations around living out allowances and paid moving expenses. People also spoke about opportunities for career changes and promotion, the importance of company / worker relations, time with family, and worker networks of support. Short shift rotations were also deemed to be an important part of positive working conditions.

In terms of key concerns, Mobile workers mostly talked about the duration and experience of commuting, as well as safety issues associated with wildlife, road conditions, industrial traffic, and weather. As some explained:

Very dangerous: two words. You're hitting all kinds of inclement weather and animals. I felt that every day you were travelling, and so did many others, that the commute was more dangerous than actually working. We hit deer on the highway, and we could have been severely injured very easily. We were also passing lots of trucks. Do you know how many chip trucks and logging trucks are on the road in the morning and at night? A lot. And if one of those goes sideways or something, you're lucky if there's a 50-50 chance you're going to live. I would've preferred a 4-3 camp at Gibraltar and if they had it, I still would be there, but they won't do it because they are so close to town even though it would make it easier on a lot of people (Gibraltar Participant #2, 2013).

There's certainly a risk with driving every day... like truckers on cell phones. I've had to hit the ditch more than a couple times because of truckers in my lane that are clearly on their cell phones. That's one of the big ones. I'm not too concerned about icy conditions, I'm concerned about the other people with the icy conditions. I just make sure I'm in four-wheel and a long way from another vehicle. That's

what I try to do. If it's getting tight in icy conditions, I'll pull over and let them all go by and then keep going again. So that would be my biggest concern. And the deer on the highway, there's a lot of them. I haven't hit anything going to Gibraltar yet, but there's a lot of deer on the highway that will take you right off the road (Gibraltar Participant #4, 2013).

There were also concerns expressed about health and financial impacts for workers, limited career development opportunities, and less time with family.

FUTURE PATHWAYS

Pathways into and out of mobility can be influenced by not only structural changes in the industry and economy, but also by several other factors such as the availability of job opportunities in other communities, high salaries, provision of pension and benefits, career development opportunities, workplace culture, stage of life and family development, fatigue, and length of shift rotation (Angel 2014; Atkinson and Hargreaves 2014; Construction Sector Council 2005; Misan and Rudnik 2015; Ryser et al. 2016). Following the discussion of the benefits and concerns of long distance labour commuting with each worker, we asked participants what factors may influence their decision to continue to engage in mobile work.

Exploration

When we talked with mobile workers at our exploration site, the most prominent issue influencing decisions to continue to engage in commuting long distances for work concerned future employment prospects in volatile market conditions and finances. As one participant explained:

It's based on the work availability right now, I think. Almost entirely it's based on the job market. The fact that there's very few jobs in mineral exploration and mining right now. There's been a slump for two years or so. Three maybe. There's no sign of getting any better and so folks are basically, I think they are just biting their time and just staying with it until something better comes along (NG Participant #11, 2015).

Participants also placed importance on the extent to which their shift rotation schedule could support personal well-being and time with family. After exploring factors that may influence workers' decisions to continue commuting, we asked participants if they had considered moving to Vanderhoof to be closer to the exploration site. Roughly one third had considered relocating to Vanderhoof. Major factors preventing relocation were family considerations (i.e. spouse's career, proximity to family, etc.) and limited social and recreational opportunities nearby. In addition to the seasonality of work, there was also a sense that relocating would not offer any cost savings, particularly since New Gold covers travel and camp expenses.

Construction

Participants at our construction site identified seven key factors that were influencing their decision to continue to be engaged in mobile work. Starting with financial incentives, good salaries, pension, and free flights influenced people's decision to continue with mobile work. In particular, good salaries enabled participants to eliminate debt and accumulate savings prior to

retirement. In terms of employment, opportunities for career development, job security associated with the continued construction of Site C, the availability of jobs with other contractors, and the availability of jobs closer to home would also affect decisions to continue commuting long distances for work. People we spoke with were also looking for a positive work environment with good communication. Good quality housing and camp conditions were vital. This could be demonstrated through affordable housing prices or through camp facilities, such as a bar, coffee shop, showers with quick access to hot water, and a well-equipped gym. As one participant explained to us:

The one thing that helps with what we do is the camp conditions and living conditions. That's major because it's hard enough being away from home. It's hard enough doing long shifts for long periods of time. It's the little things when you get back to camp... Hey you got a gym if you want. You got a bar if you want. You got a coffee shop if you want. We got a Starbucks. You got a little bit of normality. It makes you feel less institutionalized. It makes you more not a robot. When you're at work, you're a robot, when you're back at camp, you want to be normal. You know if someone brings coffee. Real coffee. Not coffee that's been sitting in a canister for three hours. They made it just for me. Really good coffee makes your day (Site C Participant LR#4b, 2017).

There is also the potential for transportation to impact these types of decisions, depending upon the distance to commute, flight delays, and access to financial supports for commuting. Decisions were also being informed by health factors, such as access to health benefits and massage therapy services. These pathways will also be shaped by the cumulative impacts of mobile work on families and the individual's ability to handle the lifestyle.

Few of the participants at the construction site (10%), however, have considered moving to Fort St. John. For those who had considered a move, these individuals were interested in opportunities to obtain work experience. They were also people who enjoyed the climate and culture. Others preferred to remain in their home community or consider opportunities for moving further south. People spoke about their preference for medium-sized cities, as well as other types of small town lifestyles. When considering Fort St. John as a place to live, participants expressed concerns about high housing costs and long cold winters. The absence of a program facilitating worker contributions to community groups also impeded the type of connection needed to entice people to move to the community. Some were reluctant to move their families away from family and friend networks.

Operations

After considering both the positive benefits and concerns associated with commuting long distances for mobile work, participants from the operations site also discussed factors that will influence their decision to continue to commute for work at the mine. Career development

was identified as the most prominent factor, followed by commuting pressures and supports, and financial incentives. Fatigue, worker relations and networks, safety, and shift schedule were also important. As workers reflected on more personal factors, proximity to family and health became key considerations. As one participant explained:

I was happy to be home cause I was happy to be home with my wife. But it wore on me. It was one of the big reasons I left the mine. As you get older, it's tougher to do. I'm not twenty, I'm 59 years old. For a 20 year old fella, it's not so bad, but for a guy my age, it's a long day. And again, it can play havoc on your health, which it was starting to (Gibraltar Participant #2, 2013).

Finally, for participants at the operations site who had considered a move, key motivating factors included a desire to be closer to work and the age and stage of life of their children. Others noted that they had strong roots in their home community.

SUMMARY

Mobile work is a common phenomenon in remote, resource-based regions, particularly during the exploration and construction phases of industry projects. With several large-scale industrial projects being constructed or proposed, there have been concerns about labour needs and about broader implications for worker families, communities, and work environments. Many of the policy and program approaches have long been designed to reflect labour that is rooted in place and need to be updated to reflect this mobile labour landscape.

Most of the mobile workers who participated in our study had previous experience with commuting long distances for work. The nature of commuting varied across our three sites. While both drive-in, drive-out (DIDO) and fly-in, fly-out (FIFO) were used to support mobile work at our exploration and construction sites, only DIDO was used by workers engaged in our operations site. In this mobile landscape, longer commutes reflected pressures surrounding the remoteness of resource development sites, the multiple transportation methods used to commute to staging areas, road conditions, weather, flight delays, and unfavourable flight connections for those who reside in smaller, remote communities.

The state of global markets influenced the provision of financial stipends to support long distance labour commuting. In a competitive labour market, more competitive recruitment and retention strategies have been pursued. The construction of Site C, however, unfolded during a time when other LNG, mining, and Oil Sands projects have either been postponed or whose production has been downgraded. As other studies have also shown (Ferguson, 2011; Krings et al., 2011), when resource development projects have been postponed or whose production has been downgraded, other industries and projects can be placed in a favourable bargaining position with unions and other contractors. As a result, while mobile workers living in staging areas have all of their costs covered, workers who reside in smaller and remote locations may find that travel stipends do not always cover all of their travel costs. Yet mobile workers may not always critically evaluate their receipts and travel stipends to ascertain if all of their travel expenses are covered.

Despite many opportunities for mobile work to impact and shape work environments, mobile work has not strategically influenced education, hiring, training, and orientation processes. An important exception involved cultural sensitivity training that was not just transforming how mobile workers engaged with Aboriginal colleagues, but it was also changing how sensitive supervisors and colleagues were to the needs and pressures faced by the broader workforce.

Cumulative fatigue was affecting job satisfaction, failed opportunities to pass along information, and less attention to detail while completing job tasks towards the end of the shift rotation. In this context, transitions into and out of daytime and night time shift rotations were critical to establish successful work periods and recovery while at home. More purposeful and consistent approaches, however, are needed to address fatigue management. Posting information on bulletin boards is not enough. More efforts are needed to address discrepancies across different supervisory approaches to fatigue management. While some mentor new mobile workers about commuting and fatigue management during daily briefings, or even encourage workers to rest, these best practices are not broadly applied. Unfortunately, under

volatile market conditions, fear of job losses can prompt unsafe work practices. A clear, consistent fatigue management policy needs to be broadly communicated and implemented. Effective and consistent communication in these circumstances was heavily dependent upon the supervisor; leading to inconsistent approaches to communications in these constantly changing work environments. The experiences at our construction site show, however, that major contractors can be quite responsive to mobile worker concerns about fatigue by reducing shift rotation schedules. Despite concerns about the negative impact that commuting was having on workers through fatigue, stress, and overall mental well-being, mental health issues continue to be underdeveloped in first aid and work place programs.

Good quality, affordable housing and camp conditions were vital to reduce the stress associated with mobile work and extended shift rotations. This was achieved through the separation of sleeping quarters; the breadth of entertainment and recreational facilities; and the provision of food, health, and cleaning services on site that allowed workers to use their time wisely. Improvements to food services will only strengthen worker satisfaction. Most notably, access to snacks outside of dining room / café hours, as well as the provision of more prepared fruits and vegetables in lunch packages will more appropriately reflect work settings and rotation schedules. Operational hours for camp facilities and services also need to be expanded to provide access for both nightshift and dayshift workers.

Mobile work has provided people with the opportunity to maintain stable employment, to be exposed to different cultures, personalities, and job environments, and acquire new skills to perform and adapt to constantly changing needs. Often earning higher wages, workers could not only provide a better life for their families, but they could also eliminate debt and accumulate retirement savings much faster. As workers consider their future career pathways, however, these benefits must be weighed against other pressures associated with the restructuring or sharing household responsibilities or even caring for aging parents. Good site coverage and access to Internet infrastructure outside of shift rotations, as well as workshops to use communication platforms, will help mobile workers to maintain contact with families and reduce such concerns.

Exploration and construction work is seasonal and temporary, making it unlikely that mobile workers will move to nearby communities. It does not appear, however, that communities have fully seized opportunities associated with the presence of a mobile workforce. Camp and work site barbeques that were hosted by either local non-profits or businesses were well received and provided good opportunities to promote the community. Site visits to camps to promote local art, services, and products, however, were rare. Poor and inconsistent shuttle schedules and limited business hours of operation are only further constricting opportunities for workers to connect with local businesses, services, and amenities outside of their long shift rotation schedule. Another issue that needs attention concerns workers' access to regionalized services. In this context, there is a need to understand the cumulative impact of fatigue on workers who must both commute for work and then also commute to access regionalized services outside of their shift rotation.

Moving forward, a better understanding is needed about how the issues raised throughout this study intersect and impact each other across a broader range of exploration, construction, and operations sites in these constantly changing and competitive mobile labour markets. A broader investigation of these issues is necessary to distinguish which mobile labour

issues transcend across different market conditions and boom and bust periods associated with resource development as industries respond to market fluctuations (Atkinson and Hargreaves 2014; Barber 2016; Jenkins et al. 2015).

APPENDIX A: INTERVIEW MATERIALS FOR TASEKO'S MOBILE WORKERS

1. Consent form
2. Interview guide

On the Move: Labour Mobility and Community Capacity in Northern BC – LDLC Workers

Purpose – A key change in Canada’s northern resource towns has been the growth of long distance labour commuting (LDLC). Labour mobility presents numerous opportunities and challenges for workers and communities in rural and small town settings. Comparing Mackenzie and Williams Lake, this project will examine workers’ experiences with long distance labour commuting and being away from home. As a part of this work, we will assess the supports that are provided to both local workers and workers who commute from out-of-town, as well as any additional investments in programs, infrastructure, and supports that may be needed to help support workers and their families.

How Respondents Were Chosen - The interview participants were contacted through individual mining companies and selected from local suggestions of people with an interest in, or experience with, LDLC. Interview participants were selected for their potential to provide information that can help to better understand the experiences and impacts that LDLC can have on workers, their families, and their communities.

Anonymity And Confidentiality - The names of participants will not be used in any reporting, nor will any information which may be used to identify individuals. All information shared in this interview will be held within strict confidence by the researchers. All records will be kept in a locked research room at UNBC and will be accessible only to the research team. The information will be kept until the final project report is complete. After which time, shredding and file erasure will destroy all information related to the interview.

Potential Risks and Benefits - This project has been assessed by the UNBC Research Ethics Board. The project team does not consider there to be any risks to participation. We hope that by participating you will have a chance to provide input into issues relevant to long distance labour commuting and its impacts.

Voluntary Participation - Participation in the interview is entirely voluntary and, as such, interviewees may choose not to participate. Interviewees may choose not to answer any questions that make them uncomfortable, and they have the right to end their participation in the interview at any time and have all the information they provided withdrawn from the study and destroyed. The interview will be audio recorded and a summary of key themes will be created. A key thematic summary of the interview will be sent to the interviewee, and they will have two weeks to provide any edits or corrections back to the research team. The interview should take about 45 minutes to complete.

Research Results - In case of any questions that may arise from this research, please feel free to contact Dr. Greg Halseth (250-960-5826; halseth@unbc.ca) in the Geography Program at UNBC. The final project report will be distributed to all participants.

Complaints - Any complaints about this project should be directed to the Office of Research, UNBC (250) 960-6735, or email: reb@unbc.ca

**I have read the above description of the study and I understand the conditions of my participation.
My signature indicates that I agree to participate in this study.**

(Name -please print)

(Signature)

(Date)

**Mitigating Impacts – A LDLC Worker’s Perspective
Interview Guide**

Participant name: _____

Contact information: _____

Interviewer: _____

Date: _____ Place: _____

Interview Time: Start _____ Finish _____

TOPIC AREAS:

- Background Questions
 - Recruitment and Retention
 - Worker Development
 - Operations
 - Experiences with Commuting
 - Housing
 - Worker Access to Services
 - Family and Social Networks
 - Sense of Community
 - Benefits and Concerns
 - Pathways
 - Concluding Question
-

A. Background Questions

1. Where do you live?
2. How long have you been working at Gibraltar?
3. How long have you been commuting to Gibraltar for work?
4. Do you work for Gibraltar or a contract company?
5. What type of shift schedule do you have?

B. Recruitment and Retention

1. How did you hear about the job opportunity at Gibraltar?
2. Were there any incentives provided to recruit you to work at Gibraltar?

C. Worker Development

1. What types of certifications / training did you have before you came to work at Gibraltar?
2. Do you have opportunities to apply these skills in your current job?
3. Have you received new training or learned new skills through your LDLC job? If yes, please explain.
4. What role / responsibilities did you have with your previous employment experiences?
5. Today, what role / responsibilities do you have working in the X mine?

D. Operations

1. Did any of these previous employment experiences change how you view / approach your workplace environment in Gibraltar today?
2. Has the mine been willing to adapt to new ways of operations or production to incorporate the experiences of LDLC workers? If yes, please explain.

E. Experiences with Commuting

1. Do you have previous experience with working out-of-town for extended periods of time? If yes, please explain.
2. What sector(s) did you work in before commuting to Gibraltar for work?
3. Can you explain how you commute to Gibraltar for work?
4. How long does it take you to commute to Gibraltar for work?
5. How did commuting impact you initially?
6. Did the impacts of commuting change (i.e. become easier or more intense) over time? If yes, please explain.
7. Did you have any access to supports to make commuting easier?
8. Have you ever received any fatigue management training?

F. Housing

1. When working at Gibraltar, what type of housing do you have?
2. If you do not live in camp, please identify which community you live in.
3. When you are working at Gibraltar, how much does your housing cost each month?
4. Do you receive a living allowance?
5. Is this living allowance adequate to cover your living expenses? If no, please explain.
6. How many people do you live with?
7. Can you describe how your accommodations are set up?
8. What do you like the most about your living arrangements?
9. What does not work well with your living arrangements?

G. Worker Access to Services

1. What types of services (i.e. health, counseling, training, housing, transportation, recreation, professional, banking, etc.) did you need to access since you began working at Gibraltar for work?
2. Were these services available to you on the job site? If yes, specify which ones were available on the job site.
3. What services are available on the job site?
4. Did you access any of these services in Williams Lake? If yes, please explain.
5. Were there any barriers that impeded your access to supports in Williams Lake?
6. Did you access any of these services in your home community? If yes, please explain.
7. Were there any barriers that impeded your access to supports your home community?
8. What additional changes do you think is needed to respond to the influx of workers at the mine?

H. Family and Social Networks

1. How has working out-of-town impacted your family life?
2. What types of strategies do you use to stay connected with your family?
3. Are there any supports / services that you would like to see improved to help you stay connected with your family? Please explain.
4. Since commuting to work in Gibraltar, have you formed new social networks?
5. Do you use your social networks for any support? If yes, please explain.
6. Do you keep in touch / spend time with these social networks when you are at your home community? If yes, please explain.

For female LDLC workers only:

7. Do you have female support networks? If yes, how does the support from these female support networks differ from other networks of support?

I. Sense of Community - Workers

In camp:

1. Are there any camp programs or activities to foster a sense of community? If yes, please explain.
2. Are these social programs / activities concentrated in one location or available in each mess hall?
3. Do you participate in any camp activities? If yes, please explain.

Outside of camp:

4. Do you spend your off-work hours in Williams Lake?
5. Are there any efforts to connect LDLC workers with community activities in Williams Lake?
6. Do you participate in any community groups, activities, or events? If yes, please explain.
7. What do you think works well to connect workers with the community?
8. Do you feel you have a sense of belonging with Williams Lake? Please explain.
9. What factors have influenced your sense of belonging in Williams Lake?

J. Benefits / Concerns

1. In commuting to Gibraltar, what do you think have been some of the positive benefits with LDLC?
2. What do you think have been some of the concerns with LDLC to Gibraltar?

K. Pathways

1. What factors will influence your decision to continue to commute to work in Gibraltar?
2. Have you considered moving to Williams Lake? Why or why not?

L. Digital Storytelling

1. You have been interviewed about your experiences with long distance labour commuting. Is there one story that you would be willing to share with a broader audience? We are hoping to develop a series of short 4-5 minute digital stories for the public. Would this interest you?

M. Concluding Question

1. From the experiences you have had with LDLC, do you have anything else that has not been touched on here that you would like to comment on?

APPENDIX B: INTERVIEW MATERIALS FOR NEW GOLD'S MOBILE WORKERS

1. Consent form
2. Interview guide

On the Move: Labour Mobility and Community Capacity in Northern BC – LDLC Workers

Purpose – A key change in Canada’s northern resource towns has been the growth of long distance labour commuting (LDLC). Labour mobility presents numerous opportunities and challenges for workers and communities in rural and small town settings. This project will examine workers’ experiences with long distance labour commuting and being away from home. As a part of this work, we will assess the supports that are provided to both local workers and workers who commute from out-of-town, as well as any additional investments in programs, infrastructure, and supports that may be needed to help support workers and their families.

How Respondents Were Chosen - The interview participants were contacted through individual mining companies and selected from local suggestions of people with an interest in, or experience with, LDLC. Interview participants were selected for their potential to provide information that can help to better understand the experiences and impacts that LDLC can have on workers, their families, and their communities.

Anonymity And Confidentiality - The names of participants will not be used in any reporting, nor will any information which may be used to identify individuals. All information shared in this interview will be held within strict confidence by the researchers. All records will be kept in a locked research room at UNBC and will be accessible only to the research team. The information will be kept until the final project report is complete. After which time, shredding and file erasure will destroy all information related to the interview.

Potential Risks and Benefits - This project has been assessed by the UNBC Research Ethics Board. The project team does not consider there to be any risks to participation. We hope that by participating you will have a chance to provide input into issues relevant to long distance labour commuting and its impacts.

Voluntary Participation - Participation in the interview is entirely voluntary and, as such, interviewees may choose not to participate. Interviewees may choose not to answer any questions that make them uncomfortable, and they have the right to end their participation in the interview at any time and have all the information they provided withdrawn from the study and destroyed. The interview will be audio recorded and a summary of key themes will be created. A key thematic summary of the interview will be sent to the interviewee, and they will have two weeks to provide any edits or corrections back to the research team. The interview should take about 30 minutes to complete.

Research Results - In case of any questions that may arise from this research, please feel free to contact Dr. Greg Halseth (250-960-5826; halseth@unbc.ca) in the Geography Program at UNBC. The final project report will be distributed to all participants.

Complaints - Any complaints about this project should be directed to the Office of Research, UNBC (250) 960-6735, or email: reb@unbc.ca

I have read the above description of the study and I understand the conditions of my participation. My signature indicates that I agree to participate in this study.

(Name -please print)

(Signature)

(Date)

**Mitigating Impacts – A LDLC Worker’s Perspective
Interview Guide**

Participant name: _____

Contact information: _____

Interviewer: _____

Date: _____ Place: _____

Interview Time: Start _____ Finish _____

TOPIC AREAS:

- Background Questions
 - Recruitment and Retention
 - Experiences with Commuting
 - Housing
 - Worker Access to Services
 - Family and Social Networks
 - Sense of Community
 - Benefits and Concerns
 - Pathways
 - Concluding Question
-

A. Background Questions

1. Where do you live?
2. How long have you been working at X?
3. How long have you been commuting to X for work?
4. Do you work for X or a contract company?
5. What type of shift schedule do you have?
6. Do you belong to a union or do you work through a contract?

B. Recruitment and Retention

1. How did you hear about the job opportunity at X?
2. Were there any incentives provided to recruit you to work at X?
3. Are residency requirements being imposed for your position?
4. What kinds of expectations did you have before you engaged in mobile work?

5. Did these expectations change after you were engaged in mobile work for an extended period of time?
6. As a mobile worker, what types of choices or options were available to support extended shift work? Prompt: rotation length, living allowances, housing options, training allowances, transportation, etc.
7. How were these options presented or negotiated? Prompt: union contract, standard contract, through RFPs, variance according to type of position, etc.

C. Experiences with Commuting

1. Do you have previous experience with working out-of-town for extended periods of time? If yes, please explain.
2. Can you explain how you commute to X for work?
3. How long does it take you to commute to X for work?
4. How did commuting impact you initially?
5. Did the impacts of commuting change (i.e. become easier or more intense) over time? If yes, please explain.
6. Did you have any access to supports to make commuting easier?
7. Have you ever received any fatigue management training?
8. How are employers' and employees' responsibilities clarified with regard to commuting conditions?
9. Under what circumstances does the employer provide transportation support or compensation? Prompt: beyond specific distance.
10. When weather conditions affect the workers' ability to arrive on time or require different departure times from the regular shift schedule, who bears the cost of bad weather?
11. Are there any stipulations in collective agreements / contracts to provide for a rest period before starting work when travelling long distances / across several time zones?

D. Operations

1. Has long distance commuting changed how you view / approach your workplace environment today?
2. Has X been willing to adapt operations in response to the needs of mobile workers? If yes, please explain.

E. Housing

1. When working at X, what type of housing do you have?
2. If you live in camp, how is the camp designed and operated to best support LDLC worker shift schedules and lifestyles?
3. What types of improvements do you feel are necessary in order to better support LDLC worker shift schedules and lifestyles?
4. If you do not live in camp, please identify which community you live in.

5. When you are working at X, how much does your housing cost each month?
6. Do you receive a living allowance?
7. Is this living allowance adequate to cover your living expenses? If no, please explain.
8. How many people do you live with?
9. Can you describe how your accommodations are set up?
10. What do you like the most about your living arrangements?
11. Would you like to see any changes to improve your living arrangements?

F. Worker Access to Services

1. What types of services (i.e. health, counseling, training, housing, transportation, recreation, professional, banking, etc.) did you need to access since you began working at New Gold for work?
2. Were these services available to you on the job site? If yes, specify which ones were available on the job site.
3. What services are available on the job site?
4. Did you access any of these services in Vanderhoof? If yes, please explain.
5. Did you access any of these services in your home community? If yes, please explain.
6. Were there any barriers that impeded your access to supports in Vanderhoof?
7. Were there any barriers that impeded your access to supports your home community?
8. What additional changes do you think is needed to support workers at the mine?

G. Family and Social Networks

1. How has working out-of-town impacted your family life?
2. What types of strategies do you use to stay connected with your family?
3. Are there any supports / services that you would like to see improved to help you stay connected with your family? Please explain.
4. Since commuting to work in X, have you formed new social networks?
5. Do you use your social networks for any support? If yes, please explain.
6. Do you keep in touch / spend time with these social networks when you are at your home community? If yes, please explain.

For female LDLC workers only:

7. Do you have female support networks? If yes, how does the support from these female support networks differ from other networks of support?

H. Sense of Community - Workers

In camp:

1. Are there any camp programs or activities to foster a sense of community? If yes, please explain.

2. Are these social programs / activities concentrated in one location or available in each mess hall?
3. Do you participate in any camp activities? If yes, please explain.

Outside of camp:

4. Do you spend your off-work hours in Community X?
5. Are there any efforts to connect LDLC workers with community activities in Community X?
6. Do you participate in any community groups, activities, or events? If yes, please explain.
7. What do you think works well to connect workers with the community?
8. Do you feel you have a sense of belonging with Community X? Please explain.
9. What factors have influenced your sense of belonging in Community X?

I. Benefits / Concerns

1. In commuting to X, what do you think have been some of the positive benefits with LDLC?
2. What do you think have been some of the concerns with LDLC to X?

J. Pathways

1. What factors will influence your decision to continue to commute to work in X?
2. Have you considered moving to Community X? Why or why not?

K. Concluding Question

1. From the experiences you have had with LDLC, do you have anything else that has not been touched on here that you would like to comment on?

APPENDIX B: INTERVIEW MATERIALS FOR SITE C'S MOBILE WORKERS

1. Consent form
2. Interview guide

**Mitigating Impacts – A LDLC Worker’s Perspective
Interview Guide**

Participant name: _____

Contact information: _____

Interviewer: _____

Date: _____ Place: _____

Interview Time: Start _____ Finish _____

TOPIC AREAS:

- Background Questions
 - Recruitment and Retention
 - Experiences with Commuting
 - Housing
 - Worker Access to Services
 - Family and Social Networks
 - Sense of Community
 - Benefits and Concerns
 - Pathways
 - Concluding Question
-

A. Background Questions

1. Where do you live?
2. How long have you been working at X?
3. How long have you been commuting to X for work?
4. Do you work for X or a contract company?
5. What type of shift schedule do you have?
6. Do you belong to a union or do you work through a contract?

B. Recruitment and Retention

1. How did you hear about the job opportunity at X?
2. Were there any incentives provided to recruit you to work at X?
3. Are residency requirements being imposed for your position?

C. Experiences with Commuting

1. Do you have previous experience with working out-of-town for extended periods of time? If yes, please explain.
2. Can you explain how you commute to X for work?
3. How long does it take you to commute to X for work?
4. How did commuting impact you initially?
5. Did the impacts of commuting change (i.e. become easier or more intense) over time? If yes, please explain.
6. Did you have any access to supports to make commuting easier?
7. Have you ever received any fatigue management training?
8. How are employers' and employees' responsibilities clarified with regard to commuting conditions?
9. Under what circumstances does the employer provide transportation support or compensation?
10. When weather conditions affect the workers' ability to arrive on time or require different departure times from the regular shift schedule, who bears the cost of bad weather?
11. Are there any stipulations in collective agreements / contracts to provide for a rest period before starting work when travelling long distances / across several time zones?

D. Operations

1. Has long distance commuting changed how you view / approach your workplace environment today?
2. Has X been willing to adapt operations in response to the needs of mobile workers? If yes, please explain.

E. Housing

1. When working at X, what type of housing do you have?
2. If you live in camp, how is the camp designed and operated to best support LDLC worker shift schedules and lifestyles?
3. What types of improvements do you feel are necessary in order to better support LDLC worker shift schedules and lifestyles?
4. If you do not live in camp, please identify which community you live in.
5. When you are working at X, how much does your housing cost each month?
6. Do you receive a living allowance?
7. Is this living allowance adequate to cover your living expenses? If no, please explain.
8. How many people do you live with?
9. Can you describe how your accommodations are set up?
10. What do you like the most about your living arrangements?

11. Would you like to see any changes to improve your living arrangements?

F. Worker Access to Services

1. Have there been any services not available in camp that you need? Please explain.
2. Were there any barriers that impeded your access to supports in Community X?
3. Were there any barriers that impeded your access to supports your home community?
4. What additional changes do you think is needed to support workers at the X?

G. Family and Social Networks

1. How has working out-of-town impacted your family life?
2. What types of strategies do you use to stay connected with your family?
3. Are there any supports / services that you would like to see improved to help you stay connected with your family? Please explain.
4. Since commuting to work in X, have you formed new social networks?
5. Do you use your social networks for any support? If yes, please explain.
6. Do you keep in touch / spend time with these social networks when you are at your home community? If yes, please explain.

For female LDLC workers only:

7. Do you have female support networks? If yes, how does the support from these female support networks differ from other networks of support?

H. Sense of Community - Workers

In camp:

1. Are there any camp programs or activities to foster a sense of community? If yes, please explain.
2. Are these social programs / activities concentrated in one location or available in each mess hall?
3. Do you participate in any camp activities? If yes, please explain.

Outside of camp:

4. Do you spend your off-work hours in Community X?
5. Are there any efforts to connect LDLC workers with community activities in Community X?
6. Do you participate in any community groups, activities, or events? If yes, please explain.
7. What do you think works well to connect workers with the community?
8. Do you feel you have a sense of belonging with Community X? Please explain.
9. What factors have influenced your sense of belonging in Community X?

I. Benefits / Concerns

1. In commuting to X, what do you think have been some of the positive benefits with LDLC?
2. What do you think have been some of the concerns with LDLC to X?

J. Pathways

1. What factors will influence your decision to continue to commute to work in X?
2. Have you considered moving to Community X? Why or why not?

K. Concluding Question

1. From the experiences you have had with LDLC, do you have anything else that has not been touched on here that you would like to comment on?

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