

# **Long-Term Care Worker Experience during the Pandemic: Explorations in Visual Storytelling**

*BY*

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## **Abstract**

The Coronavirus Disease of 2019 (COVID-19) drastically impacted the nature of work within Ontario's long-term care (LTC) homes as regulatory bodies moved to protect LTC residents through protocols designed to reduce the risk of transmission. This research aims to reveal a view of these impacts from the perspective of employees working in LTC homes. The study utilized a work experience questionnaire and a series of semi-structured interviews to generate both quantitative and qualitative data to pair with existing recommendations within the sector. As a part of the research process, I combined perspectives and expertise from the discipline of journalism with design research practices to explore and reflect on the use of visual storytelling within the field of design. The result of this exploration in storytelling is a prototypical information architecture and visualization that attempts to combine quantitative and qualitative research data in an honest, engaging, and accessible way.

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## **List of Acronyms**

AHP – Allied Health Professional

BREB – Bruyère Continuing Care Research Ethics Board

BRI – Bruyère Research Institute

CLRI – Ontario Centres for Learning, Research and Innovation in Long-Term Care

CUPE – Canadian Union of Public Employees

CUREB-B – Carleton University Research Ethics Board – B

HCW – Healthcare Worker

IPAC – Infection Prevention and Control (Sometimes referred to as just IPC)

LTC – Long-Term Care

MSW – Multi-Site Worker

OMLTC – Ontario Ministry of Long-Term Care

PPE – Personal Protective Equipment

PSW – Personal Support Worker

SSWO – Single Site Work Order

VQD – Visualized Questionnaire Data

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# Chapter 1: Introduction

The Coronavirus Disease of 2019 (COVID-19) caused by the SARS-CoV-2 virus has drastically impacted the nature of work within long-term care (LTC) homes in Ontario. Work within LTC homes in Ontario has been affected by legislation and protocols designed to mitigate the transmission of the COVID-19 virus. These pieces of legislation and protocols include the Ontario Regulation 146/20: Limiting work to a single long-term care home (Government of Ontario, 2020a), as well as directives from the Government of Canada that outlined rigorous Infection Prevention and Control (IPAC) protocols (Government of Canada, 2020).

The impact of the COVID-19 pandemic has led to research examining the relationship between work processes and conditions within LTC homes and the health outcomes of residents. International researchers began raising the alarm at the beginning of the pandemic, pointing out that the structural devaluation of nursing home staff could be “Fuelling the Next Health Care Crisis” (McGilton et al., 2020, p. 1). The structural devaluation of LTC or nursing home staff encompasses but is not limited to LTC work that is poorly compensated, poorly supported, and not reflective of the needs of contemporary LTC residents. Employees working within LTC may work under a traditional hierarchical organizational model, where division of labour based on job-title has been found to cause employee stress (Syed et al., 2016). Studies of Ontarian LTC worker experience during the pandemic found that inconsistencies in policy, a lack of healthcare worker (HCW) agency, psychological distress, and poor government support were all contributing to healthcare worker burnout during the pandemic and could be responsible for further crises

within the LTC sector beyond the pandemic (Brophy, Keith, Hurley, & McArthur, 2021). Literature supports the idea that within the healthcare sector, employees in LTC facilities are facing a difficult time in their careers and are at risk of feeling undervalued and unsupported. These risks coupled with changes to what was previously a relatively regimented set of work tasks have manifested in employee burnout and continued staffing shortages throughout the sector (Ontario Ministry of Long-Term Care, 2020).

This thesis focuses on communicating the impacts of these protocols from the perspective of front-line LTC employees through the exploration of creative data visualizations and self-depictions of worker experience drawn from their narratives. Sharing the perspectives and experiences of LTC workers visually may make the research more accessible for a general audience. The existing literature discusses the range of challenges facing the sector and the impacts of the pandemic in detail. However, through my initial review, I found that the existing literature is typically presented within academic mediums such as research papers and conference proceedings. In exploring the design of materials that could communicate the valuable information and personal narratives shared by LTC workers in this study, I hope to translate these findings in a way that makes them more visual and potentially appropriate for a general audience.

Through this study, I learned about multi-site, and later, single-site LTC workers, their characteristics, and experiences during the pandemic. I wanted to hear how LTC workers talked about their unique experiences during the pandemic and share the insights from Ontario's front-line long-term care workers in a compelling way that could potentially engage the public. These areas of interest make up my guiding research questions (see section 1.2).

This research aims to collect data and tell stories through the combination of self-reporting methods followed by quantitative and qualitative visualized data to explore the combination of design and journalism techniques. Although beyond the scope of this study, such approaches may be further explored for community uptake, public appeal, and access. With regards to COVID-19 and its impact on the LTC system in Ontario, this research may support the voices calling for reform within the LTC system through visual mediums, which may be an alternative and more accessible means of communicating qualitative and quantitative research findings.

## **1.1 Rationale**

I pursued an education in design to equip myself with the skills and knowledge to improve others' lives. Early on, that might have been through designing better physical products, more efficient systems, or facilitating novel user experiences. However, the more I have learned and seen, the more I have come to believe that design should be an activity that emphasizes human experience. The writings of Cheryl Buckley (1986), whose feminist analysis of women and design deeply impacted me and the way I think about design, and design history, caused me to reconsider the role of designers beyond that of finding solutions. In a contemporary context, the criticism of popular design frameworks as Eurocentric and problematic by authors Akama, Hagen & Whaanga-Schollum (2019) compelled me to reflect upon design research as a practice and the ethical implications of solution-focused design methodologies. Akama et al.'s (2019) work problematizes the Eurocentric origins of design due to how it detaches knowledge, people, and relationality from design contexts. When Akama et al. (2019) talk about the detachment of knowledge,

people and relationality from contexts, they are voicing concerns surrounding the isolation of design methods to make them reproducible and how that isolation may end up separating method from context in a harmful way. The author's comment on the prevalence of 'sticky-note' exercises, criticizing the fact that in some cases, design research tools have become outputs that falsely indicate design work has taken place (Akama et al., 2019). When it comes to working within LTC during the COVID-19 pandemic, the context's unprecedented and often chaotic nature are inseparable from the research itself, and as a researcher, I cannot claim to be an unbiased objective observer. To address my growing unease, I have been exploring branches of learning and methods that may bring forward the voices of those less privileged and emphasize the people possessing the knowledge within a specific context.

When I started to work towards ways of doing design that I felt were more in line with my desire to bring forward voices that are not my own through research communication, I encountered yet another source of tension in my practice. This tension is rooted in barriers arising from bottom-up design and putting those most adversely affected by complex situations at the forefront of your efforts. My anecdotal experience is that this work may result in a list of further research and exploration recommendations. I resolved to further explore this tension by completing this master's thesis, exploring how design research findings could better serve their subject of inquiry.

This thesis aims to: 1) improve our understanding of how design and journalistic perspectives and techniques may combine to develop a research plan; 2) apply this exploration to provide insight into the experiences of long-term care employees during the COVID-19 pandemic; and 3) experiment with interdisciplinary techniques to communicate

findings with an emphasis on visualization. I chose to explore these areas as I believe they will help me to engage with the tension between knowledge generation and knowledge sharing that has become prevalent throughout my experience as a designer.

Designers are not strangers to using visuals and narratives to communicate research findings (Grimaldi, Fokkinga, & Ocnarescu, 2013; Parrish, 2006). However, the inclusion of journalistic knowledge may help foster a more explicit connection between knowledge generation and sharing for design communication. Journalism professionals convey information that can be complex, breaking down the information and telling the story for a more general audience. As journalism and design both use storytelling to communicate information, there may be synergies between the two branches of knowledge that allow for well-designed, visual communication that is interesting and engaging for a general audience. I explored different methods to gather information, including a sector-wide questionnaire aimed at LTC workers, and semi-structured interviews that explored the impacts of the pandemic in more depth. I then explored data visualization and the creation of visual narratives to represent quantitative and qualitative information about the experiences of long-term care workers in Ontario during the COVID-19 pandemic. The purpose of this exploration was to develop materials for more general audiences that may not be familiar with or interested in traditional academic approaches to knowledge sharing.

Design as a field has been criticized for popularizing Design Thinking methodologies, with critics pointing out that design thinking practices can be exclusive, limiting problem-solving to only those who "...self-consciously follow a specialized methodology." (Iskander, 2018). Criticisms like this pushed me to explore design methodologies as a means of communication instead of problem-solving. I have

endeavoured to place myself alongside the people I've worked with throughout this research. My role is not an objective, rational finder of truth or problem solver, but that of an individual who believes these stories and this context are essential and that it is important to share multiple, sometimes conflicting narratives in a way that respects their source.

In experimenting and exploring different ways of communicating, visualizing, and connecting quantitative and qualitative information, I hoped to provide design researchers with techniques for sharing their research findings using visual mediums combining design and journalistic methods. I started by establishing a sense of the 'context' and specific areas to study related to LTC worker experience through discussions with long-term care workers, and literature focused on work design in healthcare, retirement homes and long-term care contexts (André, Sjøvold, Rannestad, & Ringdal, 2014; Carayon & Smith, 2000; Hall & O'Brien-Pallas, 2000; Lilly, 2008). I would like this work to pair existing recommendations with human perspectives and stories. Through this activity, I generated five areas of inquiry focused on LTC worker experience, which included questions around: their job in LTC; the financial impacts of the pandemic on these workers; the changing nature of their work under these conditions; their perspectives on infection prevention and control (IPAC) within the context of the pandemic; and the emotional impact of COVID-19. I used these domains as a starting point for collecting data from LTC employees in Ontario. I structured my follow-up interviews and knowledge communication plan around highlighting compelling narratives across these aspects of LTC work design.

My motivation for this thesis is to explore ways of translating knowledge through techniques used in design and journalism and my desire to provide insight into the

experience of a group of healthcare workers during a catastrophic event. While COVID-19 was emerging as I started this thesis work in the fall of 2019, I had already begun to explore the possibility of working in long-term care research with a focus on the design and renovation of care stations in an existing home. As the so-called ‘first wave’ of the pandemic hit in March 2020, the anticipated burden of LTC staff participating in this study and ensuing access restrictions to work with participants on-site made this project unfeasible.

Despite these disruptions to site research in LTC, various other critical areas of concern with LTC work emerged that required immediate attention, which I could research remotely. For example, the multi-site worker order had been put in place, limiting LTC employees to a single place of work. Prior to these measures, LTC employees may have been working at multiple locations. As this was a new work order with unknown consequences on worker experience, it became a focal point for researchers in LTC to study this experience. The rapid deployment of continual changes and ‘communication’ during the pandemic on the state of affairs in LTC homes, IPAC protocols, and people’s experiences posed significant challenges for homes and the public in trying to understand what was going on. Making the nuances of this experience more accessible to a broader audience through alternative mediums to disseminate research seemed like a reasonable response to the ongoing uncertainty. Communicating the impacts of the COVID-19 pandemic on LTC employees was particularly important considering the negative press LTC was experiencing during the pandemic (CBC, 2020; Welsh, 2020). Collaborating with the Bruyère Research Institute (BRI), I was supported with appropriate clinical expertise to engage in this work. To further refine my inquiry, I found a co-supervisor that would

complement my exploration in public-facing, non-fiction narratives from Carleton University's School of Journalism.

## 1.2 Research questions

From this new beginning, I developed a study that could generate information on the experiences of a wide range of multi-site LTC workers working under the single-site order while also engaging LTC workers in more in-depth discussions around their work during the pandemic. I then sought to communicate the findings and insights from this study in a way that honoured the voices and perceptions of LTC health workers going through this experience while packaging their narratives and experiences for more general audiences. Through this work, I explored ways to share information and stories of LTC worker experiences during the COVID-19 pandemic to a public-facing audience to support greater uptake and comprehension. With this overview, there are two research questions I aimed to explore:

*RQ1. In general, what can we learn about multi-site LTC worker characteristics and their work experiences during pandemic conditions?*

*RQ2. How do LTC workers talk about their unique experiences during the pandemic? Are there similarities across all experiences?*

The design of the study, data collected, analysis and visualized synthesis from this work are valuable in that the work illustrates 1) an exploration in communicating complex contexts through interdisciplinary methods; and 2) attempts to translate the perspectives of workers in a sector experiencing considerable adversity and rapid change to mediums that may better translate dense information to a public audience.

## 1.3 Thesis structure

This thesis consists of six chapters, with support material in Appendices. Figure 1 provides an overview of my research approach.

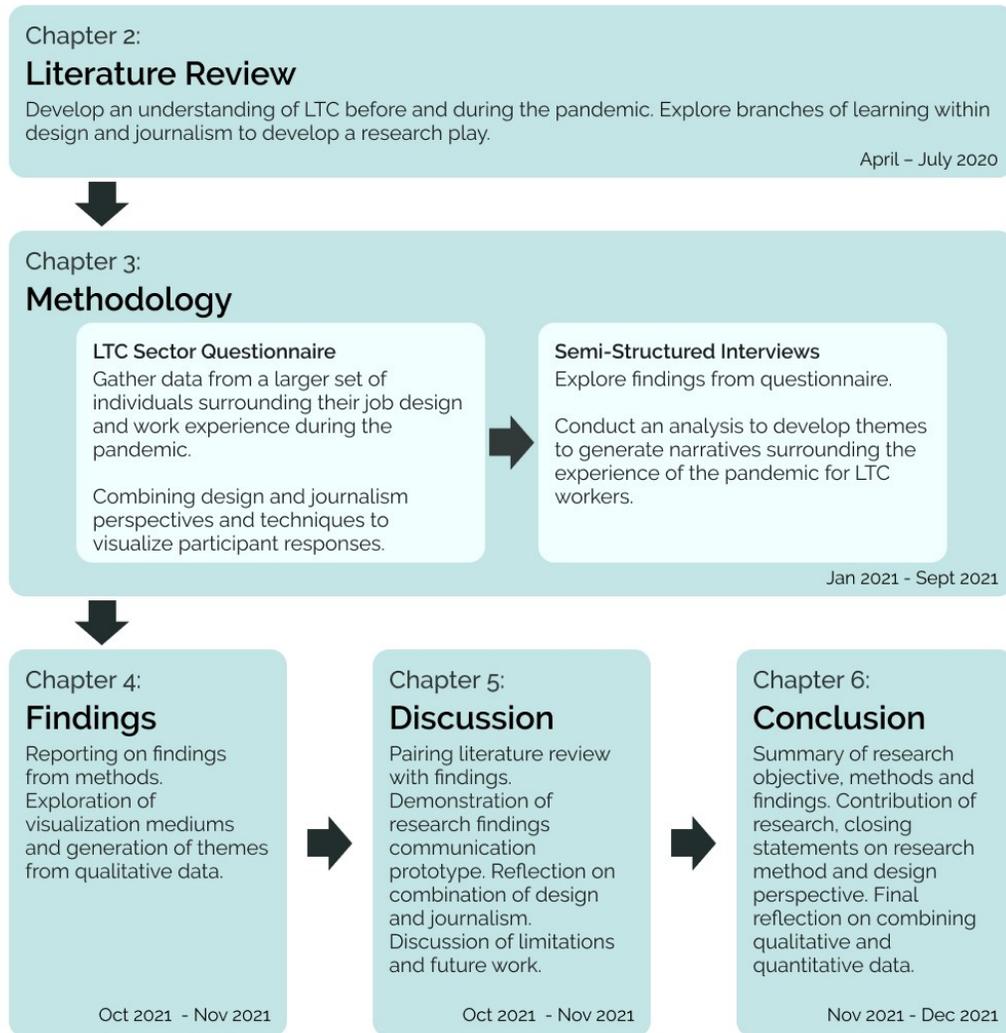


FIGURE 1 MAP OF THESIS STRUCTURE

In *Chapter 1 – Introduction*, I discuss the context of this work and provide the personal and disciplinary background to justify this inquiry while outlining the potential contribution of my methodological and communication approach. *Chapter 2 – Literature Review* includes further information on the state of long-term care in Ontario and the

measures implemented due to the COVID-19 pandemic to set the context for participant experience and the data that was collected. I also take this as an opportunity to outline the specific areas of design and journalism that influenced and shaped my methodological approach. *Chapter 3 – Methods* outlines the design and implementation of a province-wide LTC sector questionnaire with a specific focus on the experience of multi-site workers, followed by semi-structured interviews with both multi-site and single-site LTC workers, and the synthesis of the content generated from these two methods into communication materials. I also discuss the approach used for analysis and visualization and how the design of the interview, theming and visualization techniques were further developed based on information generated from the questionnaire. In *Chapter 4 – Findings*, I present the research results with quantitative data visualizations, qualitative themes, and role-specific narratives. In *Chapter 5 – Discussion*, I map the results of my research findings to pre-existing recommendations within the LTC sector, reflecting on the perspectives of my research participants and these recommendations. I then present the design of a communication design prototype, a dashboard that combines qualitative and quantitative data. The discussion section also includes reflections on the combination of design and journalism within this research and finishes with my thoughts on the contribution, limitations, and potential for future work. Finally, in *Chapter 6 – Conclusion*, I summarize the research objective, question, methods, and subsequent findings, leaving the reader with my final reflections on combining qualitative and quantitative research data for the purposes of knowledge communication.

## 1.4 Contribution

The contribution of this work is two-fold and relates directly to the research questions the study investigates. Firstly, this work contributes to extant literature surrounding the state of work in Ontario's LTC system, both before and during the pandemic, with a specific focus on highlighting the lived experience of front-line workers and their perception of changes made to the design of their work during the COVID-19 pandemic. This lived experience takes the form of:

I. Data visualizations exploring how work experience changed due to the pandemic.

II. Data visualizations exploring how measures implemented due to the pandemic were perceived by the participants in this study.

III. Themes related to the lived experience of Ontario LTC workers during the pandemic.

IV. Stories and individual experiences highlighting the pandemic's impact on LTC workers within a large and complex system.

Secondly, this work contributes more broadly to the field of design and design research by exploring emergent research methods to facilitate work in complex and remote research contexts where healthcare worker engagement can be challenging under times of duress. The work also demonstrates an attempt to incorporate journalistic methods of inquiry and communication with design techniques to combine quantitative and qualitative data for the purpose of knowledge translation. Reflecting on ways of knowledge collection, analysis and communication in complex and rapidly changing contexts may provide future design researchers with a starting point in the creation of their own studies and explorations.

# Chapter 2: Literature Review

## 2.1 Overview of long-term care in Ontario

In the province of Ontario, long-term care homes provide 24/7 nursing care, supervision, primary medical care and assistance with daily activities to resident senior citizens. The vast majority of them have some form of cognitive impairment and physical frailty, coupled with compromised health due to chronic health conditions (Ontario Long Term Care Association, 2019b). As of February 2019, there were 626 registered long-term care homes in Ontario, providing care to more than 115,000 seniors (Ontario Long Term Care Association, 2019a, 2019b). Long-term care organizations are licensed and funded by the Ontario Ministry of Health and Long-Term Care. However, they operate under different models including, not-for-profit, privately owned, and municipally owned. Residents of long-term care homes also pay accommodation fees set by the government. As of 2019, those fees were between \$1,850 and \$2,640 per month (Ontario Long Term Care Association, 2019b).

Long-term care homes' effective operation requires the division of healthcare and operational tasks among several professions. In Ontario, the largest percentage of long-term care employees are personal support workers (PSWs), making up 59% of all long-term care employees, or around 50,000 individuals. Registered nursing staff (including registered practical nurses, registered nurses, and nurse practitioners) account for 25% (23,701 individuals) of all employees. Allied Health Professionals (such as activity assistants, dietitians, physical therapists, and social workers) are the third-largest group, representing 12% (9,700 individuals) of long-term care employees. Besides these three

majority groups, long-term care homes also employ physicians, administrators, and facility support staff (Ontario Ministry of Long-Term Care, 2020).

Ontario's LTC serves as an essential aspect of Ontario's overall public health system, providing care and services beyond what is possible in a home-based setting (Ontario Long Term Care Association, 2019b). While elder-care has existed in some form in Ontario since the first half of the 20<sup>th</sup> century, LTC in the province continues to be one of the most commercialized healthcare sectors (outside of pharmaceutical manufacturing) (Daly, 2015). This commercialization persists today and is a contributing factor to the current state of LTC.

## **2.2 Long-term care work and staffing in Ontario**

Research outlining recommendations for improving long-term care is substantial, with much of it focusing on adequate staffing (Block & Dhunna, 2020). Contemporary perspectives emphasize the positive link between the quality of resident health outcomes and key staffing factors, such as job satisfaction, adequate staffing, and employee empowerment. (André et al., 2014; Caspar & O'Rourke, 2008; Tourangeau, Cranley, Spence Laschinger, & Pachis, 2010). Organizations, such as the 'Worldwide Elements to Harmonize Research in long-term care liVing Environments' (WE-THRIVE), call for structural and transformational changes to staffing, operations, training and leadership within LTC (McGilton et al., 2020). The Government of Ontario's Long-Term Care Staffing Study Advisory Group characterized the current state of staffing as 'in crisis' and outlined recommendations for the sector under five key themes:

1. The number of staff working in long-term care needs to increase, and more funding will be required to achieve that goal.
2. The culture of long-term care needs to change – at both the system and individual home level.
3. Workload and working conditions must get better to retain staff and improve the conditions for care.
4. Excellence in long-term care requires effective leadership and access to specialized expertise.
5. Attract and prepare the right people for employment in long-term care, and provide opportunities for learning and growth.

McGilton characterizes the LTC workforce as '*stretched too thin and de-valued to the point of crisis*' (McGilton et al., 2020). Brophy et al. (2021) claim that understaffing within LTC is one of the factors that has exacerbated exhaustion and burnout amongst healthcare workers (HCWs) working in long-term care homes. A lack of staffing resources is a well-documented and pre-existing matter of concern within LTC, and the pandemic has emphasized its impact.

## **2.3 COVID-19 measures implemented in long-term care**

Through the Ministry of Long-Term Care, the Government of Ontario introduced several measures to combat the spread and impact of COVID-19. For this research, I have organized the measures into the following sections in an attempt to simplify the description of complex procedures, rules, and processes into more digestible concepts related specifically to this thesis:

1. The Single Site Work Order (SSWO)
2. Increased and changing Infection Prevention and Control Protocols (IPAC)

### 3. Increased use of Personal Protective Equipment (PPE)

#### **2.3.1 The single site work order (SSWO)**

Prior to the pandemic, it was not uncommon for LTC workers in Canada, particularly those in PSW and contracted roles, to work multiple part-time jobs in place of a single full-time position (Duan et al., 2020). Part-time positions within LTC are common within the industry, within both for-profit and non-profit homes (Duan et al., 2020; McGilton et al., 2020). When front-line healthcare workers hold more than one job, they pose a greater risk for transmitting viruses, such as COVID-19, between their places of work (Liu et al., 2020).

In the early stages of the Pandemic, the Government of Ontario passed Ontario Regulation 146/20: Order Under Subsection 7.0.2(4) of the Act – Limiting work to a single Long-Term Care home (Government of Ontario, 2020a). This legislation applied to people who performed work as an employee of a long-term care provider within the province of Ontario. The legislation was designed to prevent individuals working in an LTC home from working in another LTC home, for another health service provider, or as an employee of a retirement home from April 22, 2020, to April 23, 2021. Functionally, this meant that anyone working in the long-term care sector could only work at a single site during this period. As of April 23, 2021, regulation 146/20 now states that immunized employees are no longer limited in their worksites unless otherwise directed by a medical officer of health (Government of Ontario, 2020b, 2021). The purpose of this legislation was to reduce the risk of multi-site workers (MSWs) carrying the COVID-19 virus among vulnerable and highly congregated populations and contributing to outbreaks across LTC homes (Chen, Chevalier, & Long, 2020). However, for the greater course of the pandemic, this legislation

meant that individuals who made their living by holding multiple part-time jobs across the LTC sector had to choose a single job.

Once the legislation, referred to from here on out as the ‘Single Site Work Order’ (SSWO), was enacted, staff mobility among long-term care homes dropped by 80% (Jones et al., 2021). Exemptions to the SSWO included temporary agency staff and other contract staff who were not employees of nursing homes. These exemptions ensured homes could access emergency staffing pools (Jones et al., 2021).

### **2.3.2 Increased IPAC protocols**

Infection Prevention and Control (IPAC) protocols are processes and procedures designed to prevent healthcare-associated infections within healthcare settings (Lee, Lee, Lee, & Park, 2019). Within the LTC environment, IPAC influences how residents and staff interact with each other and with the built environment. Care tasks, meal times, recreational activities, visitor policies, new resident intake, and off-site visits are just some of the areas in which IPAC plays a role in the operation of LTC homes, and even more so during the pandemic. Within Ontario, IPAC practice had been implemented inadequately compared to acute care hospitals, and thus outbreaks in LTC homes were “persistent and devastating” (Stall et al., 2021 pg.23). To mitigate the risk to residents, LTC homes across the province began the implementation of stricter and more robust IPAC protocols. Operational changes within LTC homes included the removal of communal meal times, the restriction of multi-bed rooms, limited caregiver and visitor access, quarantine protocols for residents who left the facility for appointments, increased testing and screening protocols for employees and residents, and revised cleaning and personal protective equipment (PPE) protocols (see section 2.3.3) (Government of Canada, 2020).

### **2.3.3 Increased use of personal protective equipment**

Of particular focus for this research was the increased use of personal protective equipment (PPE) due to the new IPAC protocols. In LTC homes, employees used different kinds of PPE to mitigate the risk of infection for COVID-19 including disposable gloves, gowns, medical masks, eye protection and N95 or equivalent respirators (Government of Canada, 2020). With the introduction of more stringent IPAC protocols, LTC employees were putting on (donning), using, and taking off (doffing), depending on their job role. This use pattern could be happening multiple times a shift. Due to the highly contagious nature of COVID-19, PPE procedures were, by necessity, more encompassing and had to be followed closely to provide adequate protection. These requirements increase the cognitive load when donning and doffing PPE, with a high cognitive load linked to errors in performance (Díaz-Guio et al., 2020). These errors then increase the risk of infection between LTC employees and residents. Although not specific to LTC, Diaz-Guio et al. (2020) have found that checklists, scenario-based training, and assisted donning and doffing have helped to reduce cognitive load amongst ER and ICU healthcare staff.

In the qualitative interviews completed by Brophy et al. (2021), participants perceived policy changes and messaging surrounding the pandemic as erratic and ever-changing. This perception amongst LTC workers, coupled with the demanding working environment of LTC homes during the pandemic and the inordinate amount of change due to the rapidly evolving nature of protocols and practices, exemplifies the dire situation LTC workers faced in Ontario (Brophy et al., 2021).

## 2.4 Design in the context of this thesis

This thesis work takes a relatively broad view regarding the concept of ‘design.’ This decision was a conscious one, made to reflect the fluid nature of design as a professional discipline, means of knowledge generation and research praxis. Through this thesis, I have used perspectives and knowledge from the field of job design (Grant, Fried, & Juillerat, 2011) and, narrative design (Grimaldi et al., 2013). Of course, these varying fields are a subset within the broad field of ‘design’ and represent my attempt to treat the concept of design throughout this thesis as an interdisciplinary pursuit. The following paragraphs will provide a brief overview of these fields and explain how they are relevant to this work.

Job and/or work design is a field of design practice concerned with creating work environments, processes, power structures and tasks (Morgeson, 2012.) Within the context of Ontario’s LTC system, staff retention, performance, and job satisfaction are directly related to how those workers perceive their work environments and the quality of their work-life (Berta et al., 2018). Contemporary perspectives on job design outline five categories of job characteristics (Grant et al., 2011):

1. Task Characteristics: These characteristics relate to the significance, identity, variety, autonomy, and feedback on actual job tasks.
2. Knowledge Characteristics: These characteristics are related to the complexity, problem-solving, skill variety and information-processing aspects of a job.
3. Social Characteristics: These relate to support, interdependence, interactions with members outside the organization and feedback from others.

4. Physical Characteristics: Work conditions, ergonomics, physical demands, workload, and activity level are part of the physical aspect of job design.

5. Other Characteristics: These elements include scheduling, time pressures, skill and ability requirements, and virtual work.

These job characteristics serve as a helpful starting point in understanding work within LTC and how measures that were taken due to COVID-19 may change or alter employee perception of those characteristics. The increase of uncertainty within LTC worker jobs due to the rapidly evolving nature of COVID-19 may have impacted the attitudes of workers within LTC. Researchers Wright and Cordery (1999) found a positive relationship between job uncertainty and the benefits of individual job control. Their study of production operators within wastewater treatment companies found that job control is most likely to offer psychological help to employees when they work in environments characterized by high levels of uncertainty (Grant et al., 2011). This finding and job design characteristics allowed me to develop research tools aligned with pre-existing knowledge to understand a job from an employee's perspective.

The creation of narratives is something that some designers may do throughout their process, with their purposes varying based on the designer's goals. Designers use narratives to communicate their ideas, share knowledge with potential users, evoke reflection with their research participants, and enhance memorability through the use of narratives to communicate research insights. (Grimaldi et al., 2013). Researchers have recognized the importance of narrative creation within design pedagogy as a useful meta-skill that pushes students towards establishing a deeper context and greater understanding of their work (Hunsucker & Siegel, 2015). While designers create and use narratives to explore and

explain their work, this process is often not done through a formal narrative lens (Grimaldi et al., 2013). When Danko (2006) did an exploratory study by formally integrating narrative inquiry practices with 28 senior-level interior design students, they found that the design process was more humanistic, driven by empathy, and engendered a stronger connection with the person at the center of the design activity, rather than a product or interior space. Sharing narratives is also recognized as a knowledge translation strategy amongst qualitative researchers. Telling stories out of research can help the audience form a connection with the research and grasp the usefulness of the research results through appeals to both emotion and reason (Bourbonnais & Michaud, 2018). Scott, Hartling, & Klassen (2009) work with creating and sharing narratives to communicate complex healthcare concepts to patients and stakeholders during the treatment process. They believe that stories can personalize, illustrate and transfer research information in an engaging way, though they do warn that storytelling on it's own may be seen as juvenile and not serious enough. To address issues of validity in narrative research, Polkinghorne (2007) recommends narrative researchers anticipate questions of acceptability and be prepared to defend their work through the following strategies:

- provide sufficient context to the story to allow for meaning-making on the part of the reader;
- delineate between what the author refers to as narrative truths (truths held evident by the storyteller) and historical truths (truths held evidence by the record of fact); and
- pay careful attention to the unexpected and unusual participant responses, ensure their voice is heard and not erased.

The use of narratives by designers is not particularly new, however the practice is often not considered from a strictly narrative perspective. Understanding how to build

narratives in an academically honest and engaging way may help with knowledge translation activities during research communication.

## 2.5 Journalistic perspective and influences

In their book ‘Normative Theories of the Media: Journalism in Democratic Societies’, authors Christians, Glasser, McQuail, Nordenstreng and White (2009) outline four roles of contemporary journalism: monitorial, facilitative, radical, and collaborative.

Table One expands on these four roles:

<b>Four Roles of Journalism from (Christians et al., 2009)</b>	
<i>Role</i>	<i>Description</i>
Monitorial Role	Collect and publish information of interest to the audience. Distribute information on behalf of sources and clients such as governments, commercial interests, or private individuals.
Facilitative Role	Provide access for legitimate claimants to public attention. Support and strengthen participation in civil society outside the state and the market. Promote diverse cultures and worldviews.
Radical Role	Serve as a voice of criticism towards power structures. Recognize that power holders can impede the flow of information. Expose the conflicts of interest between those who dominate political-economic conditions and those who do not.
Collaborative Role	Support authority or societal development, based on necessity, independence and journalistic ethics.

*TABLE 1 FOUR ROLES OF JOURNALISM (CHRISTIANS ET AL., 2009)*

Telling the stories of LTC workers who had to adapt their way of working during the pandemic in a manner accessible to the general public may fit within the facilitative role of journalism. The calls for changes to LTC (such as increased staffing) by researchers such as McGilton et al. (2020) may be strengthened by treating LTC workers as ‘legitimate claimants’ to public attention and ensuring that their perspectives are brought into the public consciousness. Continuing along this thread of LTC worker experience there’s an opportunity to facilitate the telling of their experiences when it comes to changes to their work design imposed due to the pandemic. The impacts of the SSWO, changes to work

experience related to following IPAC protocols, and perceptions of health and safety when it comes to the use of PPE are all areas of LTC employee ‘job design’ that could be shared with the public for the purpose of sharing the worldview of LTC workers.

The other key aspect of journalism for this research was the incorporation of journalistic perspectives on visualizing information. According to Cairo (2016), “[a] visualization is any kind of visual representation of information designed to enable communication, analysis, discovery, exploration, etc.” Visual data can take various forms, including graphs, charts, maps, illustrations, and any combination thereof. In the design of graphs and charts, there has been a push towards removing ‘chart junk,’ utilizing colour-blind friendly palettes, and clearly defining scale and scope within the visualization (Boers, 2018). When comparing categorical subdivisions along a particular variable (nominal data), Few (2004) suggests vertical or horizontal bars as they allow for the quickest visual comparison across categories. This finding has been discussed as far back as Cleveland and McGill (1985) in their seminal work on graphical perception and data analysis, where they found that data points that are comparable across a common scale allow for the quickest estimation of trends and relationships. Minimizing the cognitive load on viewers can increase the likelihood that the visualized data is understood and decrease the risk of dis-engagement (Huang, Eades, & Hong, 2009). Understanding what constitutes practical and accessible visualization of quantitative information is an essential consideration in translating knowledge about LTC worker experience during the pandemic beyond traditional academic publications to a larger public audience.

The visualization of qualitative data is an entirely different matter. A search through Google Scholar and the MacOdrum Library Website for relevant literature using the terms

“Qualitative Data Visualization; Qualitative Visualization AND Design; Qualitative Visualization; and Qualitative Visualization Healthcare” returned four results (as of September 2021) that I found applicable to my explorations. Based on this search, current means of qualitative data visualization rely on visualizing the connections between codes, units of meaning or the mapping of relationships (Luther, 2017; Pokorny et al., 2018). Figure 2 demonstrates the kind of graphic generally found when searching for existing examples of qualitative data visualization. Another common means of visualizing qualitative data is the use of ‘word clouds’ (Figure 3). Word clouds organize common words within a data set by creating a collage, emphasizing repeated words through a larger type size. While they can provide a high-level understanding of a specific text (DePaolo & Wilkinson, 2014) they do not provide a suitable level of contextual information for the viewer to understand relationships between words and contexts within the text (Harris, 2011). Harris (2011) criticizes word clouds as inappropriate for anything but the most basic of textual analyses. He frames them as wholly unsuitable for complex contexts and situations as they are divorced from any meaningful narrative. Thus, it becomes the audience's responsibility to generate a narrative without crucial information.

A team of researchers from OCAD university approached the visualization of qualitative data within a healthcare setting through their project titled “*Fostering Insight and Collaboration in Long-Term Healthcare through Collection and Visualization of Qualitative Healthcare Data.*” Their prototype explored using a tablet-based visual tool for collecting, structuring and analyzing informal and qualitative healthcare data (Diamond, Pridham, Stevens, Szigeti, & Arunachalan, 2014). This data, related to how patients felt about particular care treatments, was paired with caregiver notes and more

structured observations to assist collaboration between residents and HCW's in LTC settings. While the purpose of qualitative data analysis is often to find connections between un-quantifiable data sets, the visualization of those connections may not tell a digestible narrative. However, as Knigge and Cope (2016) noted, researchers must find a balance when communicating the complexities, and contradictory realities of the real world. Too much synthesis and researcher bias can lead to research communication that is exploitative. At the same time, too little may lead to difficult-to-understand findings that are not engaging for a general audience (Knigge & Cope, 2016).

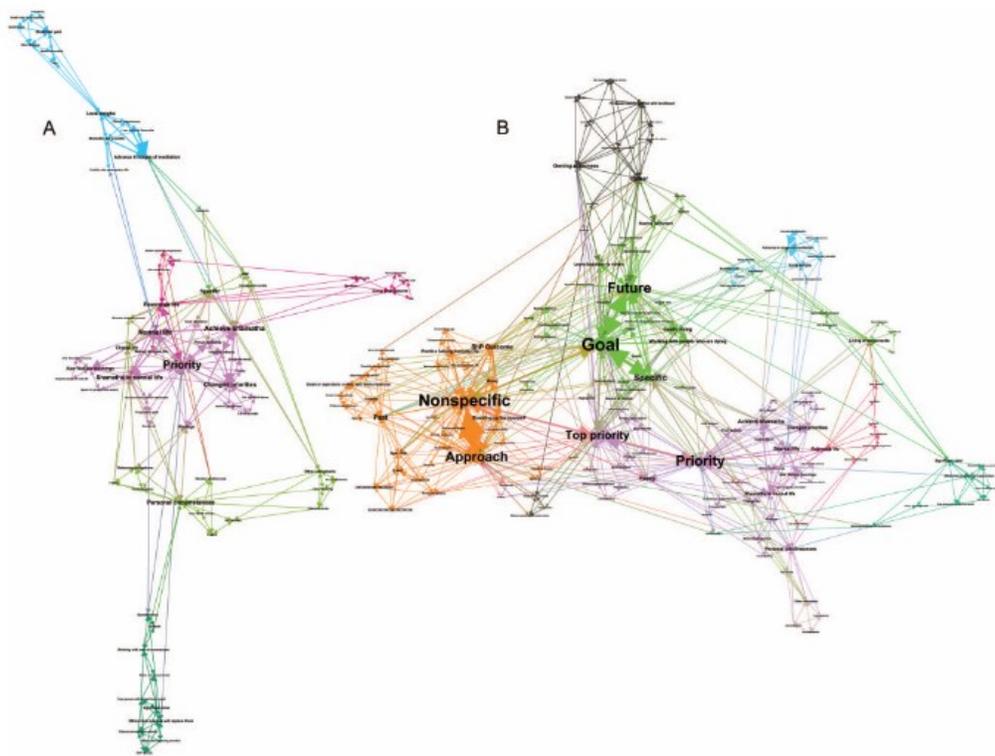


FIGURE 2 EXAMPLE OF A QUALITATIVE DATA VISUALIZATION (POKORNY ET AL., 2018).



effective leadership, and long-term growth and employment strategies (McGilton et al., 2020). Measures to prevent the spread of the COVID-19 virus within LTC included limiting LTC employees to a single site of work (Government of Ontario, 2020b), as well as more stringent IPAC and PPE protocols. These changes have impacted job design and work experience for LTC employees, and it may be worth trying to understand these impacts from their perspective.

I engaged with job design literature to explore design disciplines for structuring my research approach. Job design provided me with knowledge and ways of thinking about work characteristics and how those characteristics may impact work experience. This understanding was crucial for creating the sector questionnaire in the next section. I also investigated the use of narratives by designers in their work, based on my misgivings that designers may develop narratives for communication but that the process is often informal and may benefit from the influence of journalism.

Finally, I began to scratch the surface of journalism and understand the different roles for communicating information. I was particularly interested in journalism's facilitative role for sharing differing perspectives from specific groups of individuals. In my initial investigation into the roles of journalism I felt that my research would land within either the facilitative or radical role of journalism. While the radical role was intriguing, I felt that telling the stories of those impacted by the pandemic more closely aligned with the facilitative role. Positioning this research within the radical role of journalism would also require a direct critique of the power structures and hierarchy of long-term care in Ontario, adding significant scope to the study. The radical role of journalism is also

relatively complex. As I was just starting my exploration of the discipline, it felt disingenuous to claim such an advanced perspective through my research.

I also identified potential synergies between design and journalism in exploring job design through the perspective of long-term care workers, using narratives to tell stories, and the principles of designing easy-to-understand data visualizations. Exploring job design provided me with a framework for structuring questions and conversations with long-term care workers to package those findings through the facilitative role of journalism. Here, the synergy required disciplinary knowledge from design framed to generate and share the worldviews of participants. Understanding how designers tend to tell stories within their process allowed me to connect narrative strategies I was familiar with to journalistic principles for communicating with a general audience. This connection allowed for a more considered approach to using narratives within this research. The final possible synergy between journalism and design that emerged through this literature review was common design principles for knowledge communication. As both fields are interested in communicating visually, I found that the methods and principles for journalistic visualizations were the same that I was taught for visual design communication. This similarity provided a starting point of shared knowledge that allowed me to explore information visualization through both disciplines. Through this literature review, I found that there is a potential for collaboration between the fields of design and journalism. I set out to explore this potential in the design and communication of my study.

# Chapter 3: Methods

## 3.1 Research plan overview

Exploring the combination of design research and journalistic principles requires understanding where the two disciplines converge and diverge in their perspective. When combining journalism and design, the initial hypothesis was that natural synergies may emerge because both fields are human-centric and concerned with synthesizing lived experience. Thus, I explored the relationships between and relative contributions of design-research and journalistic techniques in developing the research plan. At the highest level, the research plan's initial intention was to collect relevant data from a large cross-section of LTC workers. This data would then guide follow-up interview questions. The final aspect of the research was then combining this data into non-fiction narratives, illustrating visually and textually the impact of changes to work design within Ontario's LTC homes. Given the fluid nature of the COVID-19 pandemic, one of the primary goals of the research plan was built-in flexibility to account for situational changes in LTC. Achieving this flexibility was done in part through incorporating emergent design research principles in the research design.

### 3.1.1 Emergent design in qualitative research

Emergent design in terms of qualitative research is the practice of allowing questions, data-collection methods, and participants to shift as the researcher learns more about the scenario under investigation (Creswell, 2007). This principle was particularly valuable due to the emergent nature of COVID-19 and the limited access to participants due to pandemic protocols. The results of the literature review and piloting of the sector

questionnaire with 2 LTC workers drove the final question design, which in turn drove the questions discussed with participants during the interview. Both methods heavily influenced the form of the third and final research exploration, a design concept that combined and illustrated data from the first two methods. Emergent design research also aligns with what I feel are humanistic research principles. It can reflect, and to some extent, cope with the ‘messy’ nature of research in fluid scenarios.

### 3.2 Method one: sector questionnaire

Developing a questionnaire to investigate how the pandemic and subsequent changes in LTC work design and those change’s impact on workers’ experiences was not a trivial task. Approaching the sector as a whole, it was immediately apparent that changes to work design would impact different roles in different ways. Of particular concern was the impact that the SSWO would have on LTC positions more likely to be working multiple jobs. In order to capture data surrounding multi-site workers, the questionnaire allowed for and gathered data about individuals holding more than one job, both before and after the SSWO. With these high-level requirements in mind, the questionnaire began to take shape, with a primary domain of investigating the consequences of measures imposed due to COVID-19 on LTC workers and five supporting sub-domains (Table 2). The table outlines the reasoning for including each sub-domain in terms of data collection and intention for analysis.

<b>Questionnaire Sub-Domains and Justifications for Inquiry</b>	
<i>Sub-Domain</i>	<i>Justification</i>
Role in LTC System	Collecting data on the role of respondents within LTC allows for the comparison of impacts across professional boundaries.

Changing Financial Situation	Programs such as Ontario’s ‘Hero-Pay’ <sup>1</sup> and wage top-ups for particular roles and hour situations may impact participants’ sense of financial well-being
Changing Nature of Work	The verbiage of the SSWO did not preclude LTC employees from holding positions outside of the healthcare sector (e.g., in retail). It may be worth trying to understand why individuals chose to stay in LTC.
Navigating COVID-19 IPAC	Understanding how work tasks changed during the pandemic due to IPAC protocols and how LTC workers adapted to those changes may shed light on areas of improvement for the design and implementation of future IPAC protocols.
Emotional Impact of COVID-19 on LTC workers	Rapidly changing work environments and the added stress of COVID-19 presumably impacted the mental health of LTC workers. Can we measure and communicate this in a meaningful way?

*TABLE 2 LTC SECTOR QUESTIONNAIRE SUB-DOMAINS AND JUSTIFICATION*

Outside of these sub-domains, the questionnaire also contained questions to collect relevant demographic information to compare responses across demographic axes. Demographic information, including the respondents' year of birth, gender they identified as, citizenship status, and level of education, were considered useful in generating a dataset that could be compared across other ongoing research efforts in long-term care and to support a possible extension of this work. The questionnaire also included questions about demographic data that may be useful in understanding the cultural and situational impacts of the COVID-19 pandemic. This data included asking about racial categories due to the documented racialized workforce in LTC (Brophy et al., 2021) with guidance from the province of Ontario’s anti-racism data standards (Government of Ontario, 2018),

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<sup>1</sup> Ontario’s Hero Pay program was a wage top-up subsidy for frontline staff during the pandemic, the amount and consistency of these top ups varied across LTC jobs (Office of the Premier, 2020)

particularly standards 14 and 15 regarding the collection of personal information about race (Appendix B). Participants were also asked to disclose the number of individuals with whom they lived and their relationship to those individuals, to compare participants' perceptions of IPAC measures and health and safety relative to their living situation. Research supports the idea that neighbourhoods with a higher level of people per dwelling were more susceptible to COVID-19 diagnoses (Watson, Kwong, Kornas, Mishra, & Rosella, 2021). Therefore, it made sense to understand respondents' living situation and how that may have impacted their work experience. The following sub-sections break down the items within the sector questionnaire and illustrate some of the challenges of developing a broad scope questionnaire.

### **3.2.1 Ethical considerations and participants**

“This research was reviewed and provided clearance by the Bruyère Continuing Care Research Ethics Board (BREB) (Appendix A.1) and Carleton University Research Ethics Board – B (CUREB-B) (Appendix A.2). Participants for the sector questionnaire were recruited through recruitment posters in LTC homes, as well as through outreach in newsletters distributed by the Ontario Centres for Learning, Research and Innovation in Long-Term Care (CLRI), the long-term care wing of the Canadian Union of Public Employees (CUPE), as well as through internal recruitment emails sent to employees at the Résidence Élisabeth Bruyère in Ottawa, Canada. Participants were compensated with a \$10 online giftcard upon completion of the questionnaire. I used this approach to collect as many respondents within Ontario's LTC system as possible. I would also like to acknowledge that this approach would not have been possible without assistance from each of the recruitment channels.

Eligibility for the sector questionnaire required participants to have been working in LTC both before and after measures were imposed due to COVID-19. Participants also had to be of 18 years of age or older, and able to complete the questionnaire in either English or French. Of the 250 collected responses, 128 were considered eligible, complete, and agreed to participate in the questionnaire. Responses were not used if the respondent had not completed the questionnaire (bouncing off before clicking submit) or if they'd answered no to any of the preliminary eligibility questions, as per the ethics application. Of the 128 eligible responses, 108 were female, 16 male, with two indicating that they would prefer not to say. A more in-depth breakdown of respondent demographics is presented visually in the Results section.

### **3.2.2 Questionnaire items by subdomain**

The following section breaks down the questionnaire items by their relevant subdomain (Appendix C). Due to the potential for respondents to have multiple jobs before and after the pandemic, the questionnaire had to incorporate a substantial amount of logic to ensure that respondents were presented with relevant questions that would capture the nature of their experiences during the pandemic, and more specifically, impact of the SSWO on their work experience.

#### **3.2.2.1 Role in the LTC System**

Understanding each respondent's role within the LTC system is critical when comparing and contrasting data across the sector. Every role within long-term care may have responsibilities that differ across homes, health regions and shifts. Developing this list in conjunction with healthcare research experts was imperative as the roles had to be familiar to respondents and match the terminology used in the LTC sector (Ontario

Ministry of Long-Term Care, 2020). Selectable roles included and were presented to participants as:

- Support Staff
- Personal Support Workers
- Registered Nurse
- Registered Practical Nurse
- Physician
- Director of Care
- Administrative
- Allied Health Professional (ie. Physical Therapist, Respiratory Therapist, Dietitian etc.) (Please Specify)
- Other (Please Specify)

While not an exhaustive list, this was a suitable baseline, while still providing flexibility in the form of open-ended options if a participant did not feel represented. To reduce the cognitive load of the questionnaire in terms of an overwhelming number of response options, Allied Health Professionals (AHPs) further defined their role through their response. The order of appearance for the list of roles was also a conscious questionnaire design decision. Based on my understanding of staffing levels in LTC, I ordered the responses roughly in order of the highest number of workers within LTC (outside of Allied Health Professionals due to the textbox required for their response).

### **3.2.2.2 Changing Financial Situation**

The challenge of asking a broad sector of the workforce questions about their financial situation has several facets:

1. How do different roles conceptualize their compensation (salary vs. hourly)?
2. How much math is reasonable to ask of a questionnaire respondent when inputting their compensation?
3. How willing will the average respondent be to answering questions regarding their compensation?

4. How can different working situations such as full-time hours, part-time hours, and contract work be represented?
5. How can compensation outside of monetary (e.g., benefits, holidays, bonuses) be captured across broad employment levels?

Incorporating these facets into questions surrounding financial and compensatory situations for LTC workers lead to two different kinds of financial question: actual monetary versus perceptions of finance status. The two monetary questions in the questionnaire asked participants to estimate their *take-home* income from all jobs across two time periods. The first period, considered to be pre-pandemic (at least in Ontario), covered the months of January-March 2020, while the second period, from March-July 2020 was chosen to represent early-pandemic compensation. The goal of this phrasing was to generate similar cognitive loads for calculating income across compensation structures. Respondents compensated with a yearly salary would have to divide that salary across the three-month periods and incorporate any changes due to the pandemic or their work situation. Respondents paid hourly would have to sum their pay-stubs across those same periods. This approach could provide valuable data to compare compensation across roles and time-frames. However, it runs the risk of being too high of a cognitive load for questionnaire respondents. It would also require a large sample size across respondent roles to be statistically relevant.

Thus, to mitigate this risk, the questionnaire included questions that asked about their perception of the financial impact of the pandemic. Instead of asking about discrete numbers and time periods, these questions focused on the respondent's perception of their compensation rather than the actual numbers. These perceptive questions involved a 5 point rating scale with the following response options:

- Increased a lot
- Increased a little
- Has not changed
- Decreased a little
- Decreased a lot

Respondents were also asked to gauge how the following aspects of their financial situation changed with the onset of COVID-19 (March 2020):

- Take-home pay
- Benefits received
- Overall financial health

The decision to ask participants to respond to these types of questions through rating scales reflects the intention to understand LTC worker perception of changes to their work. Rating scales also provide a balance between easy to visualize discrete data and qualitatively rich but challenging to visualize open-ended questions across larger participant samples (Sharples & Cobb, 2016).

### **3.2.2.3 Changing nature of work**

This subdomain focused on the differences in the nature of the participant's work 'before' (before March 2020) and 'after' (after April 2020) the single site work order. Accounting for participants who were working multiple jobs was done primarily within this sub-domain by using questionnaire logic. The initial question for this sub-domain asked participants to indicate the number of jobs they'd held before the SSWO. This response then dictated the following blocks of questions. However, to not put an undue burden upon participants who may have held many jobs, responses were limited to 'one job', 'two jobs' and 'three or more jobs.' Therefore participants were only required to enter information for a maximum of three positions held before the SSWO. Respondents were

asked the same question regarding the total number of jobs held after the SSWO. The name and location of second or third jobs held after the SSWO was not requested from participants to encourage honest answers free of fear of repercussion. With this caveat in mind, respondents provided the following information to understand how the nature of their employment changed:

- Number of jobs held before and after the SSWO.
- The sector of second or third jobs (with the assumption that their primary job was in LTC).
- If the second or third job was in LTC the name of the home and city of operation.
- General hours per week worked at the second or third job.
- In the case of jobs held before the SSWO, if the respondent was still doing this job.

My intent behind these questions was to understand the number of questionnaire respondents who were multi-site workers and compare their questionnaire responses with respondents who were not multi-site workers. I asked specific questions about their primary LTC job to understand their current work experience as well, including questions about hours worked before and after the SSWO, commute time, and commute method. With concerns surrounding the transmission of COVID-19 on public transit (Zhen et al., 2020) and the hypothesis that MSW's may be spending more time on public transit than their single-site counterparts, the intention was to see if commute time/method and work experience were changing due to pandemic protocols.

#### **3.2.2.4 Navigating COVID-19 IPAC**

This subdomain of the questionnaire consisted of items addressing participants' perceptions of procedural changes made to their work design due to the pandemic. These items include rating scales investigating perceptions of effectivity for IPAC protocols,

potential impacts of IPAC protocols, and PPE concerns. I paired each of these rating scales with open-ended responses to better capture front-line perspectives regarding these changes to the work design of participants (Sharples & Cobb, 2016). To provide further context and another axis for differentiation, I also asked participants if they had worked in a long-term care home that experienced a COVID-19 outbreak. For this question, the definition of an outbreak was “a single laboratory-confirmed case of COVID-19 in a resident or staff of a long-term care home” (Government of Canada, 2020). The Government of Canada has since updated this definition. One laboratory-confirmed case now constitutes a ‘suspected outbreak’ and two laboratory-confirmed cases to declare an outbreak. However, at the time of questionnaire dissemination, an outbreak was defined as a single laboratory-confirmed case. The three rating scale question sections for this subdomain all used a seven-answer scale ranging across:

- Strongly Disagree
- Mostly Disagree
- Somewhat Disagree
- Neither Agree nor Disagree
- Somewhat Agree
- Mostly Agree
- Strongly Agree

I chose to use seven ordinal answers for these rating scales to allow for a larger range of opinions and to account for respondent tendencies to avoid extreme end-points (Sharples & Cobb, 2016). The initial intention of these question types was to triangulate the rating scale answers with open answer qualitative analysis and future interview response coding. Respondents responded to each of the three rating scale sections (Table 3) by indicating their level of agreement with first-person statements related to the area of concern (IPAC Communication, Impacts of IPAC, PPE Concerns).

<b>List of statements as presented to each participant, with scale answers removed for clarity.</b>
IPAC Protocols during the pandemic...
<p>... were communicated to me on time.</p> <p>...were easy for me to understand.</p> <p>...made me feel safe at work.</p> <p>...protected my coworkers.</p> <p>...protected the residents.</p> <p>...were an effective means of protection for my household.</p>
The following questions were first-person statements related to IPAC related factors with the LTC home
<p>The way IPAC protocols are communicated helps me to understand how to do my daily work under these conditions.</p> <p>I can complete my daily work tasks while following IPAC protocols.</p> <p>The design of the physical space supports my ability to follow IPAC protocols (e.g., layout of spaces, equipment, cleaning of high touch surfaces, etc.).</p> <p>My job tasks increased to follow IPAC protocols.</p>
The following questions are first person statements concerning personal protective equipment (PPE).
<p>There was enough PPE for me to do my job effectively.</p> <p>I was provided with adequate training about putting on and taking off PPE for my tasks and responsibilities.</p> <p>If I had questions about PPE, I knew how to get the right answers.</p>

*TABLE 3 NAVIGATING COVID-19 IPAC SUBDOMAIN – RATING SCALE QUESTIONS*

I wrote the rating scale questions using first-person language to aid in question comprehension and to encourage participants to consider their own lived experiences when responding to the questionnaire.

### **3.2.2.5 Emotional impact of COVID-19 on LTC workers**

The final subdomain of the questionnaire covers the emotional impact of the COVID-19 pandemic on LTC workers. Measuring emotional impact through a tool like a questionnaire is not an easy task. Emotional experience differs from person to person, and it can be challenging to analyze discrete questions based on emotional experience. To collect data surrounding emotional impact, I used a rating scale covering an increase or

decrease in the experience of particular bundled sets of moods (Table 4). This item was inspired by the work of Hussen, Saloniki, Turnpenny et al. (2020) who asked LTC employees in the UK a similar questions using bundled moods. For my questionnaire I chose to add a response item aimed at understanding energy levels by asking participants how often they felt lively, active, or energized during the pandemic. Each bundle of moods ties back to a larger emotion or overall emotional experience. I chose to bundle the moods based on the tool developed by Hussein et al. (2020) to provide several options for participants to consider and respond to, rather than asking them to indicate how often they were feeling higher-level emotions.

<b>Higher Level Emotional Experience and Set of Moods Presented to Questionnaire Participants</b>		
<i>Higher Level Emotional Experience: Fear</i>		
Tense	Uneasy	Worried
<i>Higher Level Emotional Experience: Security</i>		
Calm	Contented	Relaxed
<i>Higher Level Emotional Experience: Sadness</i>		
Depressed	Gloomy	Miserable
<i>Higher Level Emotional Experience: Happiness</i>		
Cheerful	Enthusiastic	Optimistic
<i>Higher Level Emotional Experience: Energy</i>		
Lively	Active	Energized

TABLE 4 EMOTIONAL EXPERIENCE – EMOTION AND MOOD SUBSETS

The specific text of the question asked participants to indicate how the frequency of their experience of the illustrated moods changed on a scale ranging across:

- Increased a lot
- Increase a little
- Has not changed
- Decreased a little
- Decreased a lot

I selected this five-item scale as respondents would be familiar with the rating-scale type questions by this point in the questionnaire. Also, the question did not require the nuance that a seven-point scale could provide. An early iteration of this sub-domain was a relatively extensive list of moods, with a prompt for the participant to select ‘all that applied.’ However, pilot studies with the questionnaire demonstrated that respondents would likely use their mobile devices to respond. Therefore, I abandoned the extensive list in favour of the rating scale as it would read more clearly on mobile screens and, due to the use of rating scales previously, would be more familiar to respondents. Lastly, I placed an open question asking if the participant had anything else they’d like to share directly after the mood-based rating scales. I put the question in this position to capture any reflections or stories that may have come to the respondent’s mind when considering mood-based questions.

### **3.2.3 Questionnaire analysis plan**

The analysis plan for the questionnaire was dependent on several factors but primarily hinged upon the overall response rate. However, I designed the questionnaire to serve four potential emergent research opportunities:

1. Establishing a base of understanding for LTC worker experience and more in-depth development of interview questions.
2. Qualitative analysis of open-ended responses to triangulate with later interviews.
3. Providing data for exploring the intersection between journalistic data-visualization and design as communication.
4. Descriptive statistics across LTC roles and multi-site vs. single-site workers based on sub-domain findings.

I will touch more upon the relative success of each of those opportunities in the discussion.

Still, due to the pandemic and relative uncertainty about questionnaire response rates, the

questionnaire needed to serve not only as a method of data generation but as a tool to drive further research activity.

While the closed questionnaire responses could be analyzed through data visualization, the open-ended responses required a qualitative coding strategy. To code the open-ended questionnaire responses I decided to use descriptive coding (Saldana, 2012) for a first round to generate categories and then applied a more in-depth values-based coding (Saldana, 2012) approach to better understand how LTC workers felt about their experiences during the pandemic. Descriptive coding, defined by Saldana (2012, p. 87) is the process of analyzing passages of data for their topic. Descriptive coding was chosen as a first cycle coding method for the open-ended responses as it is helpful for the creation of basic categories that organize further rounds of coding (Saldana, 2012, p. 88). The second round of coding was done using elements of Saldana's 'Values Coding' (Saldana, 2012, p. 110) whereupon passages are broken down into three categories:

1. Values that reflect the importance a participant attributes to oneself, another person, thing, or idea
2. Attitudes as the way participants think about themselves, another person, thing, or idea
3. Beliefs that reflect a combination of attitudes and values, coupled with knowledge and personal experience.

However, I chose to approach the text more holistically. Rather than trying to split responses up into the three categories, I focused on responses that revealed how respondents perceived their world or situation through their values. Through not splitting participant responses up into further categories I felt that I had a better understanding of the 'big-picture' they were trying to communicate. This is a feature of values coding that Saldana mentions in the chapter:

*“Values Coding does not necessarily have to code for all three or differentiate between them unless the study’s goals include determining participant motivation, agency, causation, or ideology.” (Saldana, 2012, p. 111)*

As I was more concerned with how participants perceived the world around them rather than their motivations, agency, causation or ideology, I feel that the holistic approach was a more effective means of understanding participant responses. I chose this approach as it aligned with my second research question (How do LTC workers talk about their unique experiences during the pandemic?) and would influence the questions I was developing for the individual follow-up interviews.

### **3.3 Method two: individual interviews**

The sector questionnaire results allowed me to develop a semi-structured interview plan aimed at generating stories of lived experience from my participants. I developed this aspect of the research plan with considerable input from my journalism co-supervisor whose expertise in interviewing helped me develop six questions that would touch upon how LTC workers experienced the changes to their job design due to the pandemic. We designed the questions to reflect the ‘Sawatsky Method’ (Paterno, 2000). The Sawatsky method prescribes that questions should be specific, neutral, and open-ended to allow for the respondent to fill in the gaps. An example of this would be, instead of asking participants if they were stressed due to changes in their job design, simply asking how they felt about changes to their work design and following up with relevant questions as they reply.

### **3.3.1 Ethical considerations and participants**

As this aspect of the work went beyond the scope of research with BRI, this part of the study was reviewed and provided clearance by CUREB-B (Appendix A.3). Participants were recruited from the questionnaire respondents (provided they consented to be contacted for a follow-up interview at the end of the questionnaire), as well as through internal staff emails at the Résidence Élisabeth Bruyère in Ottawa, Canada. I conducted eight interviews with LTC workers between April and September of 2021. Of the eight participants, seven were female, and one was male. Interview respondent roles were self-identified and broken down as such:

- 2 Registered Nurses that identified as middle management
- 1 Cook
- 1 Personal Support Worker
- 1 Social Service Worker
- 2 Recreation Planners
- 1 Activity Aide

Participants were compensated with \$20 online gift certificates for their participation in the interview, with each interview lasting around 45 minutes over the phone or online meeting (Zoom, Microsoft Teams, etc.). Interviews were recorded for the purposes of transcription, with all personal information redacted or removed from the transcription. Participants provided verbal consent which was recorded by the researcher and stored on password-protected file servers. Participants were recruited across roles in LTC to better share stories across jobs and positions.

### **3.3.2 Interview question breakdown**

The interview consisted of six questions (Appendix D). During the interviews, I would follow up with participants if they spoke to a unique aspect of their experience or

mentioned that they had a story they wished to tell. This semi-structured interview method allowed me to collect information that could be compared across jobs while staying true to the participant's experience and allowing them to talk about the changes to their job design without being cut off by the strict boundaries of a structured interview. Table 5 outlines the six questions asked to each participant and their order. The justification and goal of each question are expanded on in the following paragraphs.

<b>Semi-Structured Interview Questions</b>	
<i>Question Number</i>	<i>Question Text</i>
1	At your job, can you describe what a typical day is like for you?
2	When the single-site order was enacted, can you describe some of the ways your work and your schedule changed?
3	If you could change any aspects of your job, what would you change and why?
4	Could you describe some of the reasons you chose to stay in long-term care during the pandemic?
5	What are some of the things you would like members of the public to know about your work (that you think they may not understand)?
6	How do you feel about the future of work in long-term care?

*TABLE 5 SEMI-STRUCTURED INTERVIEW QUESTIONS*

*Question 1 - At your job, can you describe what a typical day is like for you?*

I placed this question at the beginning of the interview. It set the tone for the rest of the interview by introducing participants to the open-ended style while prompting them to speak primarily to their own experiences. To support this question, I developed a list of follow-up questions (What kind of tasks do you typically do? How frequently? How long do they take? Can you take us through the specifics on a couple of the tasks you perform most frequently?) that I could lean on to encourage the respondent to provide more detail in a specific area. My intent when asking this question was for the participant to respond narratively by telling me about their work day in a narrative manner (from beginning to

end). As I was interviewing individuals with different jobs in long-term care, it was also important to gather information about their specific job tasks to contextualize their responses within the context of an LTC home.

*Question 2 - When the single-site order was enacted, can you describe some of the ways your work and your schedule changed?*

Based on the literature (Jones et al., 2021) and the results of the sector questionnaire, the SSWO was an area of concern within LTC pandemic responses. Thus I determined it should be explicitly included in the semi-structured interview questions. Through asking participants to comment on how their work and schedule changed due to this order, I wanted to discover how front-line workers felt about its impacts. While each respondent may not have been working multiple jobs before the pandemic, I suspected the knock-on effect on staffing levels of the order would be worth understanding from a worker's perspective.

*Question 3 – If you could change any aspects of your job, what would you change and why?*

I designed this question to try and understand pain points within the new reality of each respondent's job design. From my perspective as a designer, it's often worth trying to understand *what* someone might change about their situation before attempting to understand *why* they may want it changed. From a narrative generation perspective, this question was also helpful because it prompted stories and justifications on the part of participants as they explained what was frustrating about their job.

*Question 4 – Could you describe some of the reasons you chose to stay in long-term care during the pandemic?*

The impetus for this question came through the analysis of the sector questionnaire. Many respondents indicated that they were suffering from burnout or that their coworkers were leaving the industry, leading to staffing issues. While it would have been interesting to talk to individuals who had decided to leave the LTC industry, we determined it would be too difficult to reach them in terms of recruitment. Therefore, I decided to try and understand the mindset of individuals who stayed in or chose their primary LTC position when facing the pandemic's stressors in their work experience. Understanding why someone would remain in LTC when faced with the challenges and difficulties associated with COVID-19 may provide insights when recruiting new employees and designing their jobs in a post-pandemic world.

*Question 5 – What are some of the things you would like members of the public to know about your work (that you think they may not understand)?*

Question five was another question that arose through the analysis of the sector questionnaire. Some questionnaire respondents stated their frustration with the portrayal of LTC homes in the media during the pandemic. However, instead of asking how each interview respondent felt about a generic (and nebulous) media portrayal, I chose to investigate what they thought the general public didn't understand about their role. As the literature indicated, many long-term care professionals in a similar position felt undervalued or misunderstood (Brophy et al., 2021). I thought it would be useful to let

interview participants communicate their stories as if they were talking to a general audience. This approach also allowed participants to talk about times they were misunderstood or had interactions with the public related to their role in LTC that they wanted to share with me.

*Question 6 – How do you feel about the future of work in long-term care?*

With the final interview question, I asked participants to reflect on our discussion and tell me how they felt about the future of work in the sector. Asking about the industry's future was an effort to understand what LTC employees perceived as potential risks, opportunities and prospects within the industry. While respondents may not have a full picture of the detailed scope and context within LTC (no one does), I wanted to see if their feelings echoed the findings of researchers examining the same future-focused questions.

### **3.3.3 Interview analysis plan**

I transcribed the participant interviews to perform qualitative analysis through two rounds of coding. The purpose of the coding was to generate themes, insights, and narratives surrounding the experience of each interview participant. I could then combine the interview analysis with the findings from the sector questionnaire to tell the story of my participant's experience through their own words, with visual data accompanying their story.

The first coding round was a descriptive pass (Saldana, 2012, p. 87), with the categories that emerged from the analysis of the sector questionnaire in mind (but not copied directly to allow for emergent themes and differences between the data-sets). I chose descriptive coding for the first round of analysis to develop a base of understanding

regarding the topics discussed in each interview, keeping an eye out for trends that might connect disparate jobs and outliers that may provide unique insights into a particular position or work task.

For the second coding round, my goal was to understand the perspective and story of each participant based on the stories they told me about their experience. I chose holistic coding as it allowed me to grapple with a substantial amount of transcript data and forced me to consider broader ‘chunks’ of information, rather than the previous descriptive coding exercise where statements were split and contained less context (Saldana, 2012, p. 142). Holistic coding is also helpful for analyzing stories and anecdotes, which my research questions were designed to generate with the participants. By developing broader themes with more context through holistic coding, I could be more confident about the synthesized narratives I wanted to prepare.

### **Method three – synthesis through storytelling: combining quantitative and qualitative data through a creative narrative**

This final method represents an emergent and reflective and interpretative process that occurred through the collection and analysis of the first two methods. When I started this work, I knew that I wanted to tell the stories of front-line long-term care workers in an engaging and accessible way for a general audience. I did not know what those stories might look like, how they would be structured or how I would combine the different kinds of data that arose through my work. This research method took the form of a design prototyping exercise where I mapped out the information architecture of a potential storytelling structure (Figure 4)

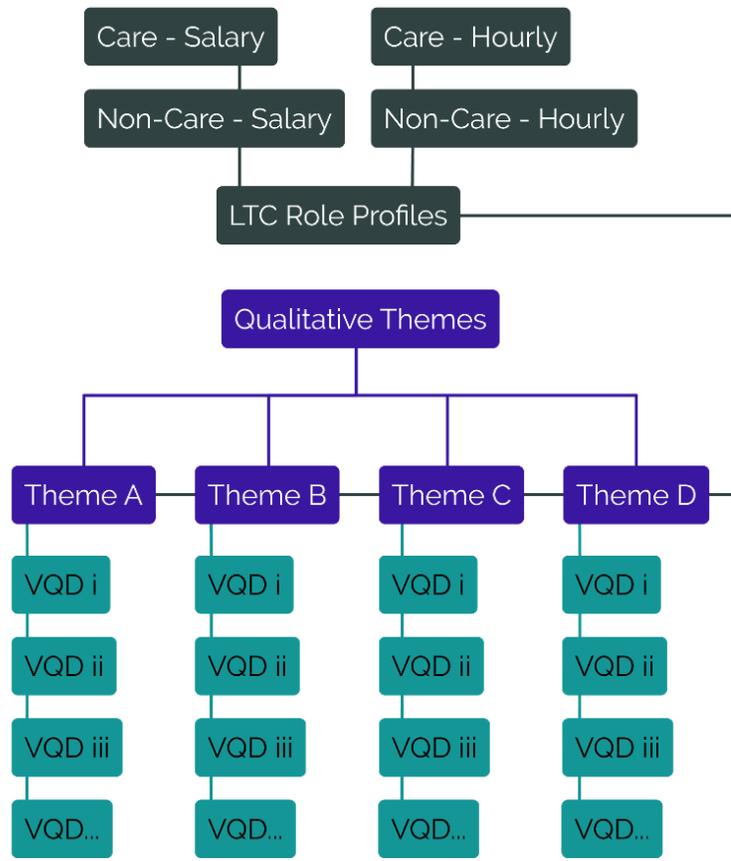


FIGURE 4 INFORMATION ARCHITECTURE FOR COMMUNICATION PROTOTYPE

The information architecture illustrates the connection between LTC worker profiles and themes that emerged through the qualitative analysis of the sector questionnaire and interviews (including stories and personal experiences from interview participants). I then positioned relevant visual questionnaire data (VQD) within each theme. It should be noted that the visual questionnaire data doesn't support or contradict each theme explicitly; instead it provides another medium of knowledge translation for the audience and encourages them to compare the emergent theme with what a larger subset of respondents may feel about the area of concern.

### 3.4 Summary of methods

The methods described above were developed by embracing emergent design principles. Each method maps to a research question as per figure 5.

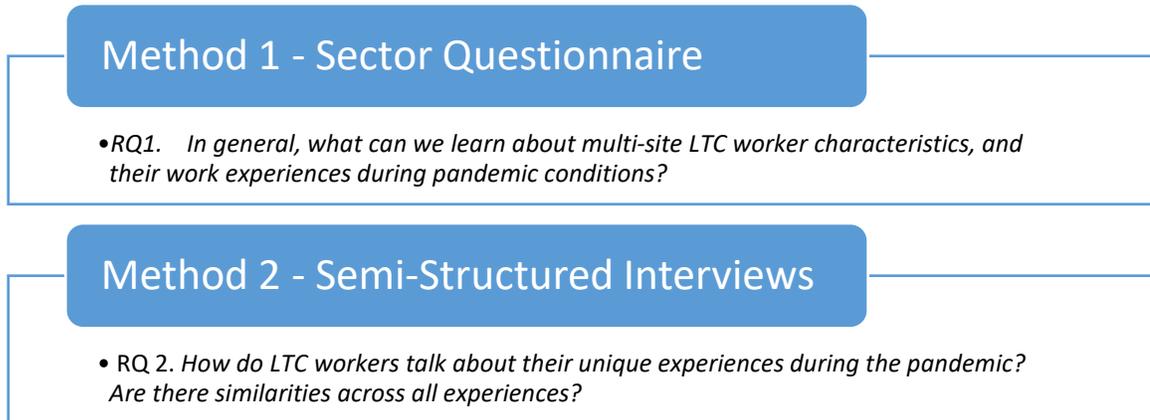


FIGURE 5 RESEARCH METHODS MAPPED TO RESEARCH QUESTION

While the nature of the pandemic made working with LTC workers more challenging than it may have been, the multi-method nature of this research allowed for the collection of different kinds of data to tell the stories of front-line LTC workers.

# Chapter 4: Findings

## 4.1 Findings overview

The impact of the pandemic on LTC workers' experiences in Ontario is a broad and complex phenomenon. The following results provide a snapshot from a subset of those workers during the winter, spring, and summer of 2021. The purpose of these results is not to generalize the results to a larger population but to provide some context and visibility for some of the employees working in LTC during this time. The following sections represent the results of the research activity and my effort to format them in visual ways that clearly communicate information to support a written narrative. I will discuss and reflect on this process of visualizing this data in the Discussion section.

## 4.2 Sector questionnaire

One hundred and six participants responded to the questionnaire described in section 3.2. Their responses were used to guide the direction of the follow-up interviews, which focused on LTC workers' perception of changes to their job design during the pandemic. The questionnaire primarily addressed *RQ1: In general, what can we learn about multi-site LTC worker characteristics and their work experiences during pandemic conditions?*

Data generated from the sector questionnaire was synthesized in four ways depending on the kind of data:

- I visualized demographic and sector data through charts broken down by role in the LTC system and relevant demographics. Where there is existing demographic data available on the sector, I have included it for reference (e.g., OMLTC data).

- Participants' reports of changes to their work experience were visualized to demonstrate differences in work experience 'before' and 'after' the SSWO and 'during' the first year of the pandemic.
- Rating scale question responses were displayed to quickly indicate the extent to which participants agreed or disagreed on various topics related to their job design during the pandemic.
- Short answer responses were qualitatively coded, first 'descriptively', then through a 'values coding' process to highlight what respondents perceived about their situation.

#### **4.2.1 Results from closed questions**

The closed-ended questions focused primarily on demographic and job-design factors, with rating scales measuring items focused more on people's perceptions. Demographic data is displayed in a chart format that share similarities (colour-coding, data organization) across different breakdowns. At the same time, I experimented more with job design factors and used a stacked bar approach for rating-scale type questions. In figure 6, I illustrate the respondent's self-reported role in LTC. A majority of respondents indicated that they were PSW's (37.7%), though this proportion is lower than the 58% of LTC workers that are PSW's according to the Ontario Ministry of Long Term Care's Staffing Study (Ontario Ministry of Long-Term Care, 2020).

As the questionnaire was distributed across the LTC sector, it was essential to understand the demographic breakdown of respondents in comparison to more official figures from the Ontario Ministry of Long-Term Care (OMLTC). As a respondent's role in the LTC system was a significant subdomain of this inquiry, demographic data is also broken out. While the long-term care staffing study did not publish complete gender breakdowns, it stated that 90% of the PSW workforce is female (Ontario Ministry of Long-Term Care, 2020). Questionnaire respondents were primarily female (85.5%) though a

slightly higher percentage of self-identified males responded (14.5%) to the questionnaire, than the 10% suggested by the Ministry Report (Figure 7). However, the high proportion of female respondents is relatively in line with the sector.

I also captured demographic data regarding the self-identified ethnicity of the respondents. As the literature review and discussions with subject matter experts revealed that LTC employees, mainly PSW's, were a diverse and racialized workforce (Stall et al., 2021), I felt it was important to collect this data in the name of transparency regardless of the results. Figure 8 shows that most respondents, including PSW's, identified as 'white.' While other ethnicities were represented, it does not appear that the questionnaire respondents reflect the true diversity of the LTC sector.

The demographic and role data collected through the questionnaire respondents pointed to a variety of professions engaging with the study. While the questionnaire demographics do not fully reflect the reality of LTC, they do show that there was interest in the research across a wide gamut of LTC employees.

Much of the questionnaire explored how respondents' work experience and job design may have changed due to pandemic protocols. As the SSWO was of primary concern during the questionnaire design, I've visualized the number of self-reported jobs that respondents held both before and after the single site work order.

Before the SSWO, around a third of respondents held two, three, or more jobs. While most roles represented in the questionnaire had more than one job, more PSW's than any other role were working two jobs before the SSWO (Figure 9). It is also notable that upon the implementation of the SSWO, some respondents continued to have two or three jobs, something that was legal so long as the second or third job wasn't in healthcare,

though no PSW's maintained a second job after the SSWO (Figure 10). The impact of the SSWO was evident within the questionnaire sample, with all but eight respondents answering that they now only worked in their primary LTC job.

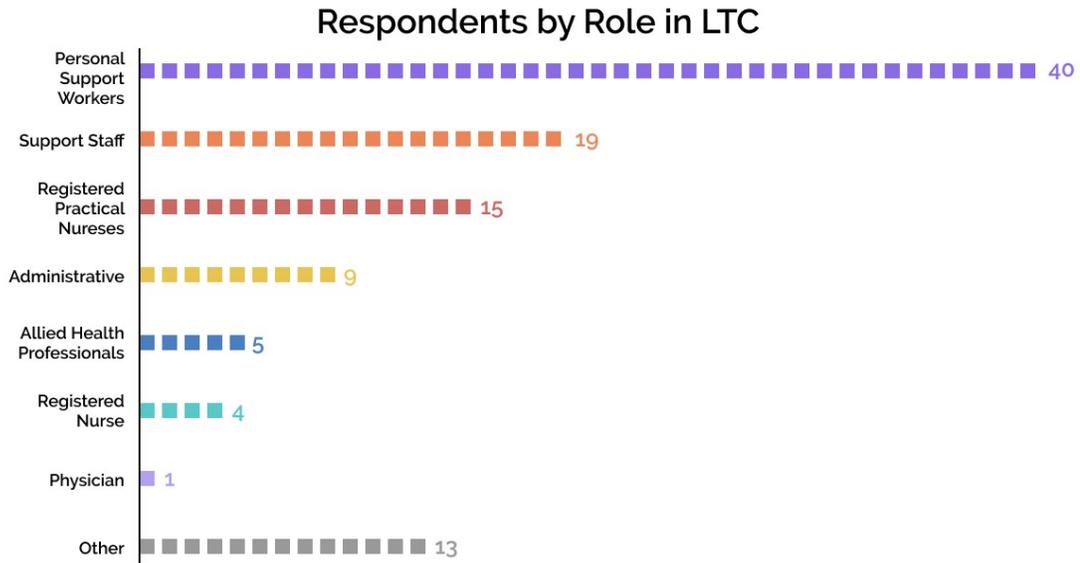


FIGURE 6 SELF-REPORTED ROLE IN LTC SYSTEM

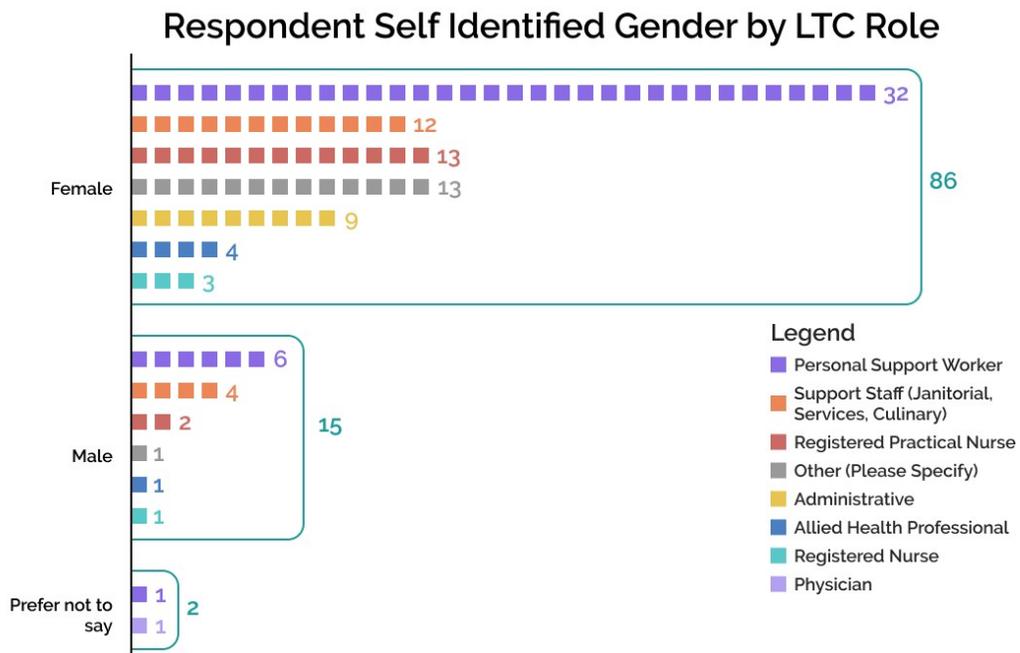


FIGURE 7 RESPONDENT'S BROKEN DOWN BY SELF-IDENTIFIED GENDER

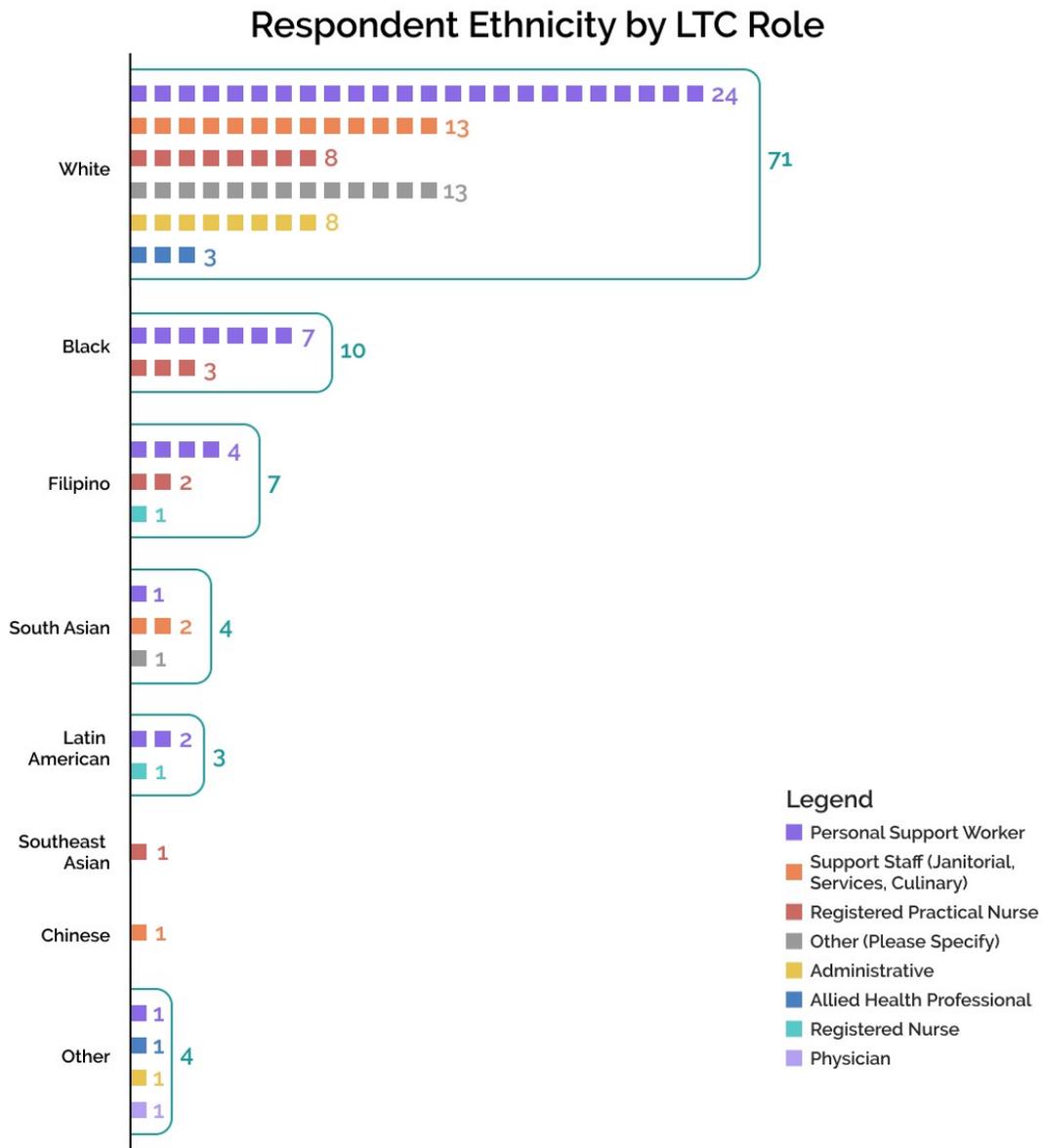


FIGURE 8 RESPONDENT ETHNICITY BY ROLE IN LTC SYSTEM

Another ‘before’ and ‘after’ change that I explored through the questionnaire was the number of hours worked at the respondent’s primary LTC job. To illustrate this information, I customized a Sankey style chart (Figure 11). The primary customization of the chart was aligning hourly ranges before and after the SSWO so that increases and decreases in hours were apparent. Cases where the hours worked stayed relatively constant

‘before’ and ‘after’ the pandemic show the flow going more horizontally across the visualization, with little to no change in slope.

While this visualization did not separate each respondent like the demographic and role-based visualizations, it does show the proportions of workers’ relative experiences with hours worked using line width. I also employed colour coding to indicate instances in which hours increased, decreased, or stayed the same. The questionnaire data showed that many respondents did see an increase in their working hours, though those who were already working full-time or near full-time hours were likely to continue working those hours as well. Out of 106 responses, only two individuals worked fewer hours after the SSWO.

### Number of Jobs Held by Respondents Prior to the Single Site Work Order By Role

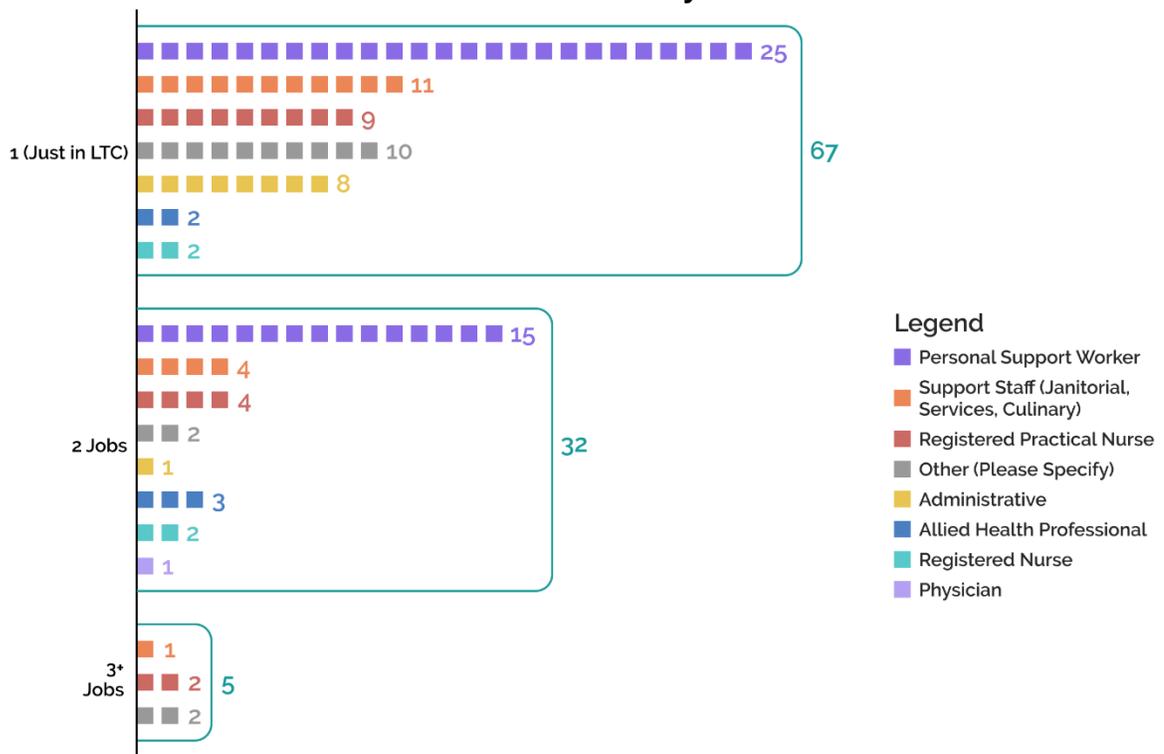
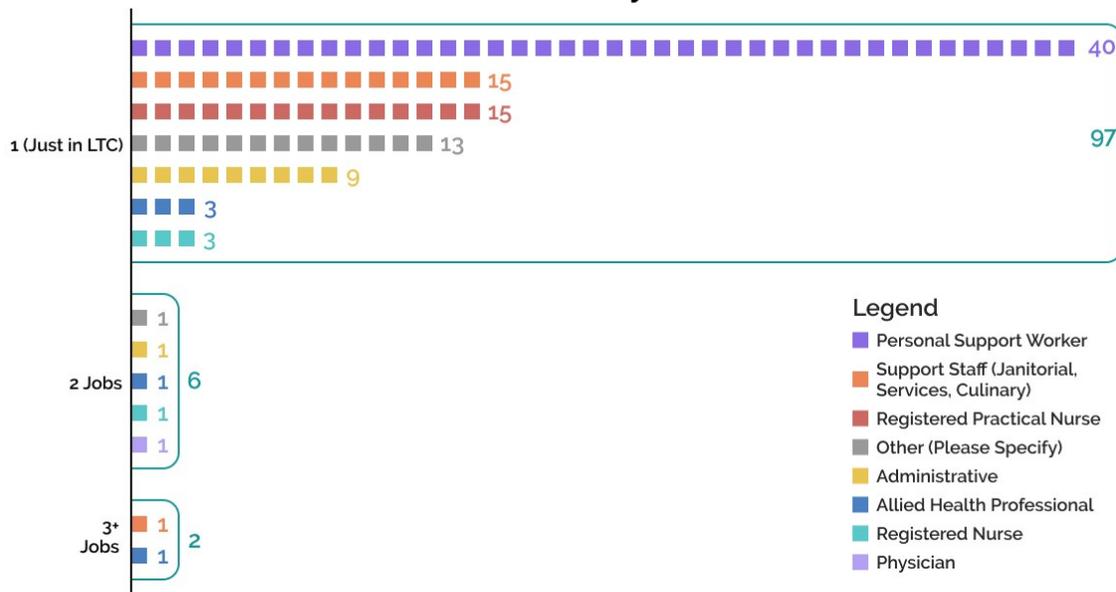


FIGURE 9 NUMBER OF JOBS HELD BY RESPONDENTS BEFORE SSWO BY ROLE

As I dedicated an entire section of the questionnaire to the subdomain of pay and compensation, I created three different data visualizations to illustrate questionnaire responses for this subdomain. The wide variety of roles with varying scales of pay and hours of working meant that it was challenging to calculate exact monetary values due to the small sample sizes available for analysis. Figure 12 illustrates an attempt to calculate the average monthly income change broken down by LTC role.

**Number of Jobs Held by Respondents After the Single Site Work Order By Role**



**FIGURE 10 NUMBER OF JOBS HELD BY RESPONDENTS AFTER SSWO**

I estimated this average change by subtracting the participant's average monthly income three months after the SSWO by their average monthly income three months before the SSWO. Due to outliers in the data set, only monthly income values falling within two standard deviations of the mean response were used in the calculation.

. To mitigate the shortcomings of the questionnaire, I chose to also measure their perception of their compensation, benefits, and overall financial health through a rating-

scale type question (Figure 14) and investigate the change in respondent’s income (did it increase or decrease?) (Figure 14). While not showing discrete financial information, these visualizations do show simple discrete data in terms of an increase or decrease in monthly take-home pay and revealing how respondents felt about their compensation and financial health. The questionnaire responses show that despite initiatives like hero-pay and the increased availability of overtime for LTC employees, around a third (36.3%) felt that their financial health had been negatively impacted by the pandemic. The previous finding is interesting when paired with the fact that more respondents had their take-home pay increase after the SSWO than decreased.

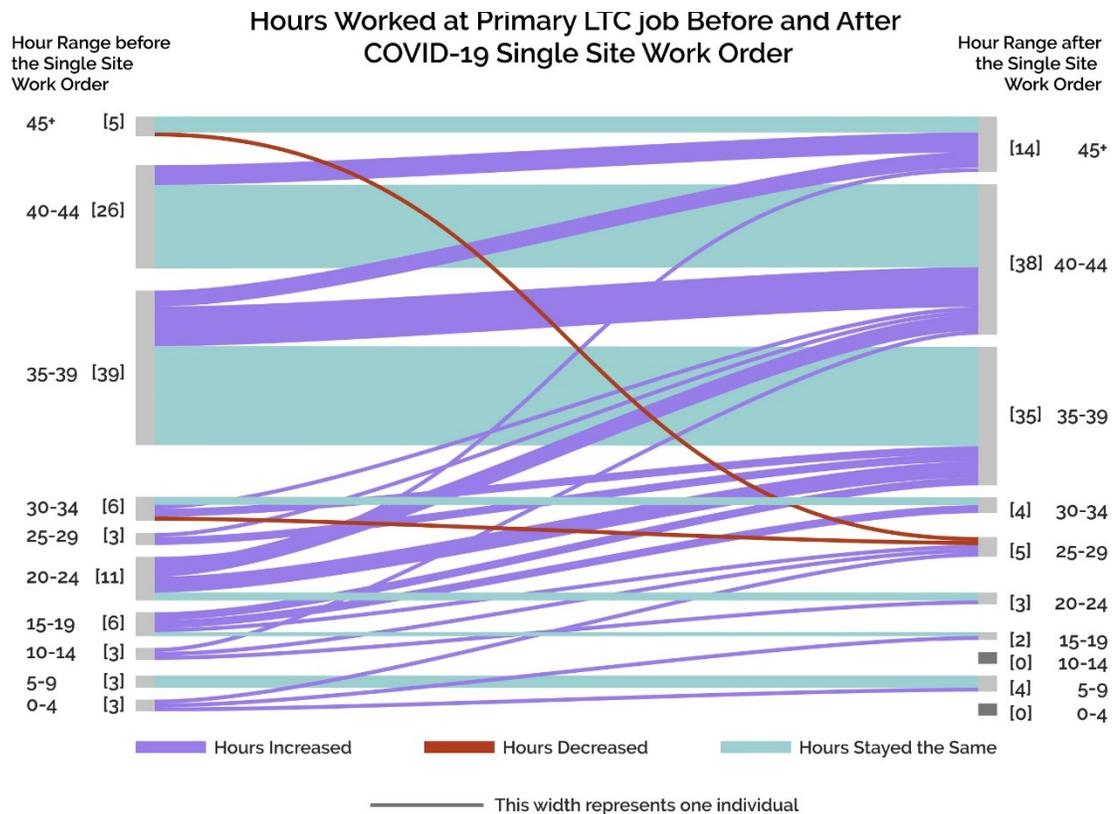


FIGURE 11 HOURS WORKED AT PRIMARY LTC JOB BEFORE AND AFTER SSWO

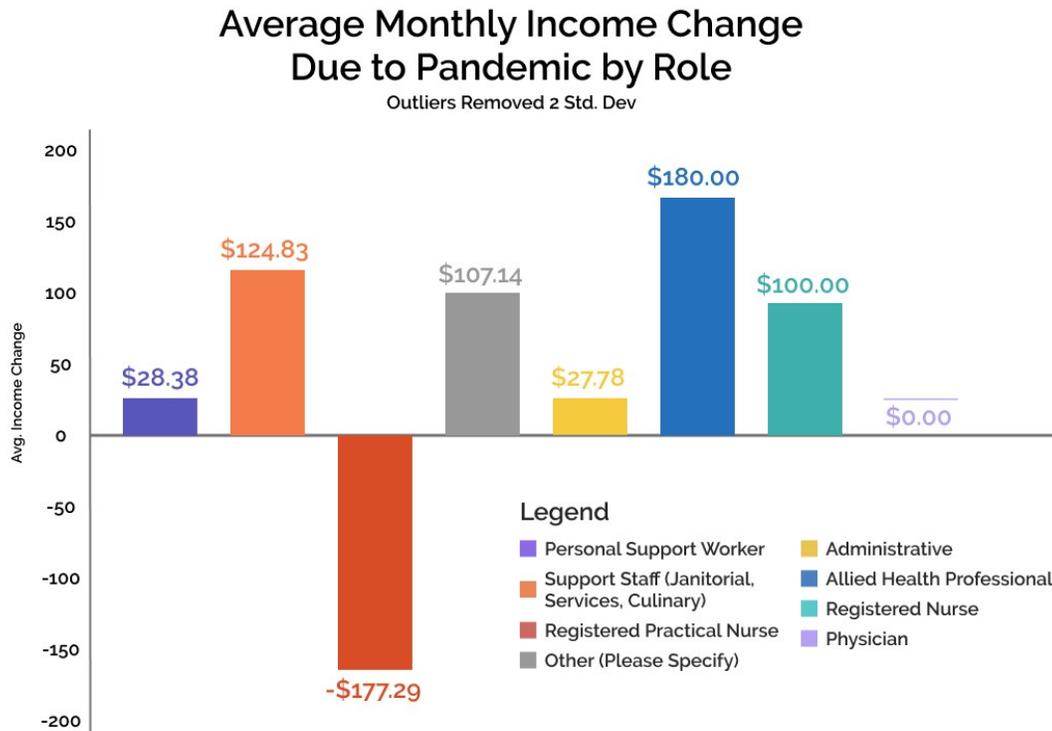


FIGURE 12 AVERAGE MONTHLY INCOME CHANGE DUE TO THE PANDEMIC BY ROLE

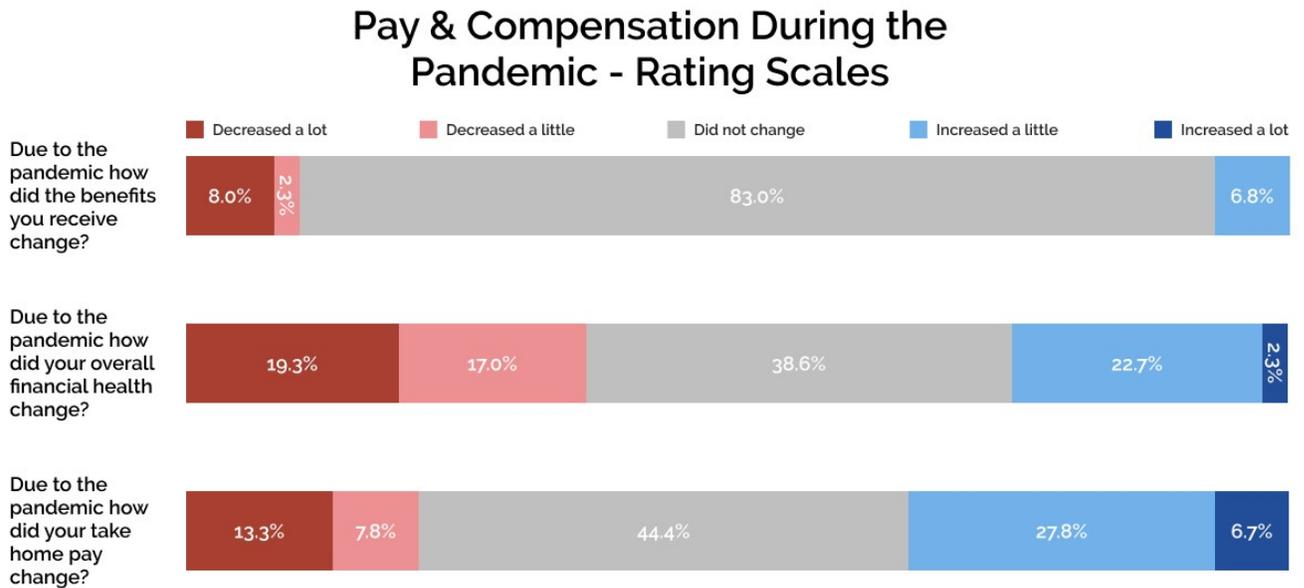


FIGURE 13 PAY & COMPENSATION DURING THE PANDEMIC – RATING SCALES

## Base Income Change before and after the SSWO



FIGURE 14 BASE INCOME CHANGE BEFORE AND AFTER SSWO

To explore LTC employee perceptions of pandemic protocols, I used several groups of rating-scale questions (Section 3.2.2). The first of this kind of question examined employees' perceptions of IPAC in protecting themselves and others during the pandemic, as well as their perceptions of the communication and understandability of IPAC protocols (Figure 15). While most participants did feel that IPAC protocols during the pandemic were effective and easy to understand, these feelings were not always echoed in the short answer responses (discussed later in this section) that accompanied this group of questions.

To better understand LTC worker perceptions of IPAC protocols brought in by the pandemic, a second set of questions queried the impact of IPAC protocols on the work

experience of LTC employees (Figure 17). The results of this set of rating scales were similar to those in Figure 13, with most respondents agreeing that IPAC protocols were communicated clearly and allowed them to complete their work tasks. However, there was considerable sentiment amongst respondents that their job tasks had increased to follow IPAC protocols. This finding influenced follow-up questions during the interview (What kind of tasks do you typically do? How frequently? How long do they take?). Although most participants indicated that their physical space supports them in following IPAC protocols, it was disagreed with most often of the four questions in this set. The final rating scales regarding IPAC, job design and work experience explored how LTC employees felt about the effectiveness of PPE measures at their LTC home (Figure 16). In this group of questions, participants were generally confident about training and getting questions answered about their PPE requirements during pandemic protocols. However, the category with the highest level of disagreement concerned the quantity of PPE available for respondents to do their job.

The final rating scale set of questions during the questionnaire investigated the moods and emotional state of LTC workers during the pandemic (Figure 18). Participants generally reported a decrease in positive moods (calm, contented, relaxed, cheerful, enthusiastic, optimistic, lively, active, or energized) during the pandemic, and the number of times they experienced negative moods (depressed, gloomy, miserable, tense, uneasy, or worried) tended to increase.

## Perception of IPAC Effectivity During the Pandemic- Rating Scales

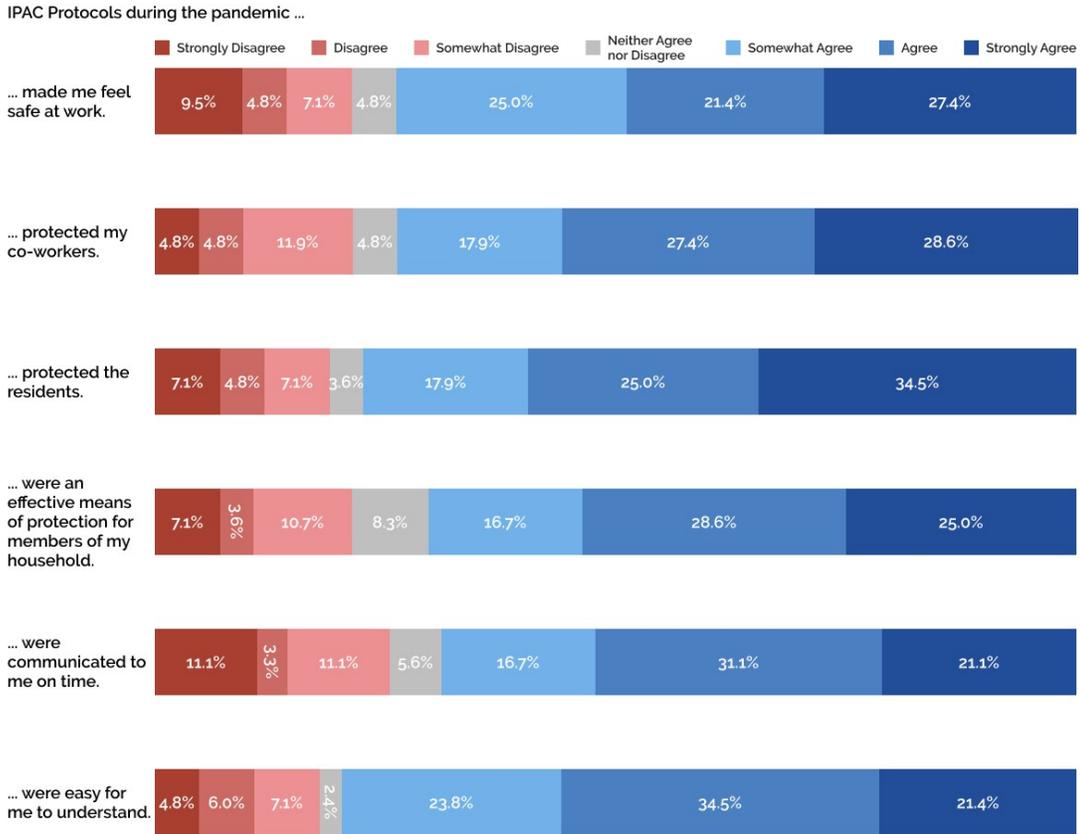


FIGURE 15 PERCEPTION OF IPAC EFFECTIVITY DURING THE PANDEMIC

## Perception of PPE Effectivity During the Pandemic - Rating Scales

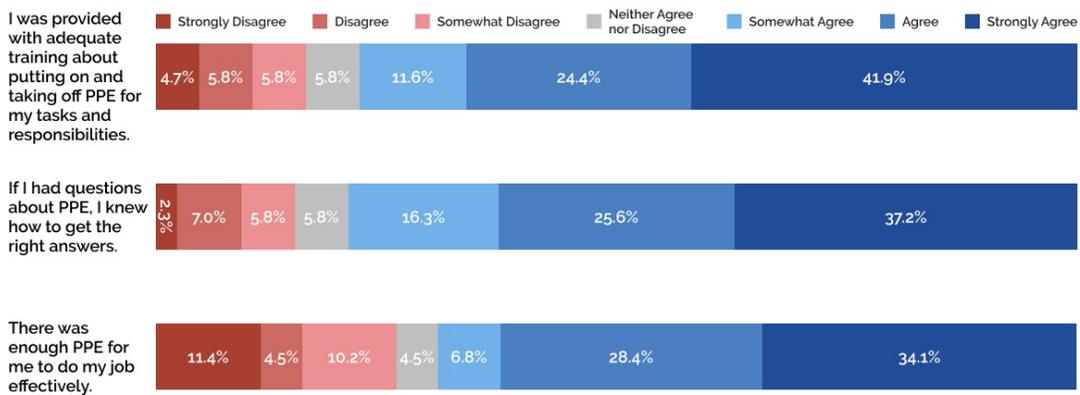


FIGURE 16 PERCEPTION OF PPE EFFECTIVITY RATING SCALES

## Perception of IPAC Job Design During the Pandemic - Rating Scales



FIGURE 17 PERCEPTION OF IPAC JOB DESIGN RATING SCALES

## Perception of Well-Being During the Pandemic - Rating Scales

Since the onset of COVID-19 has your experience of the following moods increased, decreased or remained unchanged at your current job? (Since March 2020)

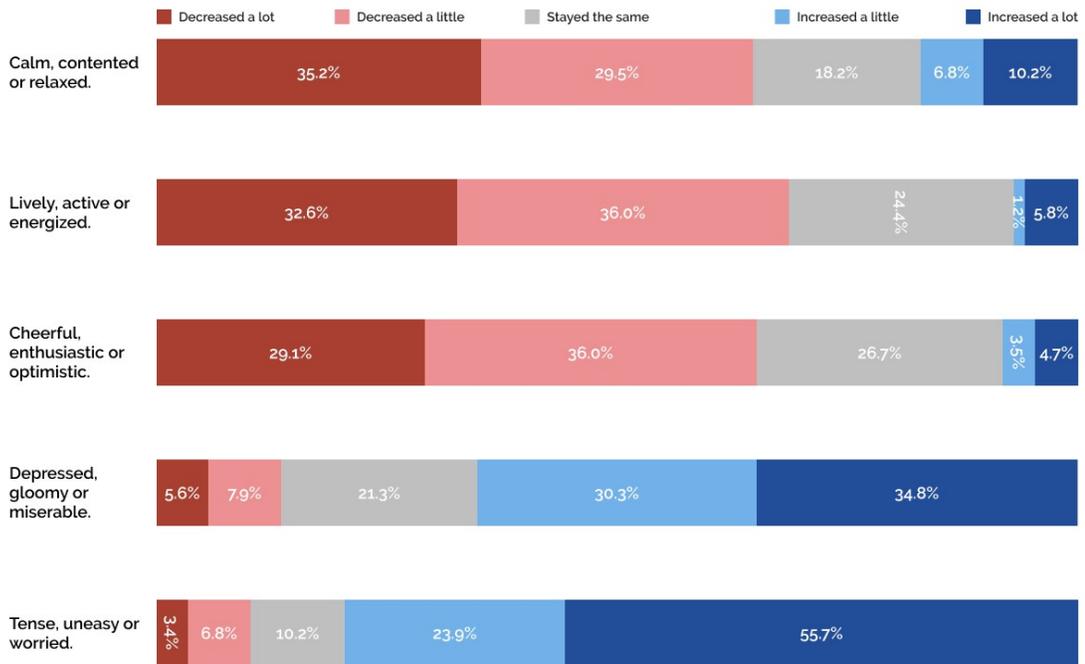


FIGURE 18 PERCEPTION OF WELL-BEING DURING THE PANDEMIC RATING SCALES

#### 4.2.2 Results from open questions

Upon completing each group of rating-scale questions, participants had the option to expand on their responses or tell more of their story in optional short-answer questions. In total, the open-ended questions generated 7,660 words of data, Table 6 breaks down these words by profession.

<b>Words of Data from Open Questionnaire Items Broken down by Respondent Job</b>	
<i>Self-Reported Job</i>	<i>Words of Data</i>
Personal Support Worker	2,767
Support Staff	1,620
Registered Practical Nurse	1,230
Other	886
Administrative	556
Allied Health Professional	523
Registered Nurse	78
Physician	0

**TABLE 6** *WORDS OF DATA BY SELF-REPORTED JOB FROM OPEN QUESTIONNAIRE ITEMS*

To analyze the short-form questions, I used two qualitative coding methods to develop a better understanding of LTC employee perceptions of their work experience during the pandemic. The first coding method for the questionnaire responses was descriptive (Section 3.2.3). During this round, I looked for mentions of work-experience factors, organizations, expressions of gratitude, frustrations, and recurring themes. This led to the development of nine categories focused on descriptions of job design and work experience. Appendix B contains an overview of these nine categories and the codes that made up these categories. Codes with numerous references included: *Mentions of Finances, Mental Health, Mentions of PPE, Mentions of Residents, and Suggestions for*

*Improvement.* This categorization process was helpful because it helped organize my second round of coding on the short-answer responses where I focused on participants’ perceptions or expressions related to ‘values’ in the data.

The second values-based coding exercise (Section 3.2.3) generated 51 codes, with differing frequencies of codes occurring. However, to not force quantitative analysis (counting the number of codes) on qualitative data, I chose to thematically organize the codes under questions related to work experience and job design during the pandemic. This exercise resulted in twelve thematic questions that contained the list of associated codes. Table 7 outlines the 12 thematic questions and provides a sample code for each question.

<b>Thematic Questions and Sample Value Code</b>	
<i>Thematic Question</i>	<i>Sample Value Code</i>
How do LTC workers feel about staffing?	There is not enough staff.
What do LTC workers think about communication and information?	Communication within the home is inadequate.
What do LTC workers think about PPE?	Access to PPE was inadequate.
What do LTC workers think about changes to their jobs due to the pandemic?	Processes and rules are changing often.
Why are LTC workers staying in LTC?	They have a passion for their work and find satisfaction in it.
What do LTC workers think about residents and clients?	They have a responsibility to care for residents.
What do LTC workers think about those they perceive as managers?	Communication with management is inadequate.
What do LTC workers think about their perception?	LTC workers are not appreciated.
What do LTC workers think about the public?	The general public is not 'doing their part'.
How do LTC workers feel about their compensation?	Full-time hours are desirable.
How do LTC workers feel about vaccines?	There is not enough information about the vaccines.
What do LTC workers think about those they perceive as co-workers?	Staff and Co-workers support each other.

*TABLE 7 THEMATIC QUESTIONS AND EXAMPLE VALUE CODES*

In organizing the codes into thematic questions, I realized there was a significant overlap among certain perceptions and the questions that they were inspiring which would inform the design of the interview questions. Rather than attempt to tie each code within only one question, I chose to embrace the potential complexity and map out the relationships between the thematic questions and related codes (Appendix F outlines the relationships between these codes and the two or three primary questions they are mapped to). This second round of coding helped structure how LTC worker perceptions about their situation related to questions about their work experience. In trying to understand how certain perceptions might link to different questions regarding LTC worker experience, I aimed to ensure that my interview questions would cover enough ground, while still respecting participant time.

<b>Overlapping Thematic Questions and Value-Related Codes</b>
<p><i>Primary Question: What do LTC workers think about changes to their jobs due to the pandemic?</i></p> <ul style="list-style-type: none"> <li>• The pandemic has had a negative impact on mental health</li> <li>• Workload is increasing</li> <li>• Their LTC job is dangerous</li> <li>• The physical environment and design of homes may not support IPAC protocols</li> <li>• Misinformation is dangerous and prevalent</li> <li>• IPAC protocols increase workload</li> <li>• The Single-Site Order allowed them to focus on their work</li> <li>• LTC needs to change in the future</li> </ul>
<p><i>Overlapping Questions:</i></p> <p><i>What do LTC workers think about those they perceive as co-workers?</i></p> <ul style="list-style-type: none"> <li>• Protocols are keeping LTC workers safe</li> <li>• Burnout is prevalent among staff</li> <li>• Some staff aren't following the rules</li> </ul> <p><i>What do LTC workers think about PPE?</i></p> <ul style="list-style-type: none"> <li>• PPE Quality was inadequate</li> <li>• Access to PPE was inadequate [24 references]</li> <li>• Supply of PPE was adequate [2 references]</li> <li>• PPE made the completion of work tasks more difficult</li> </ul> <p><i>How do LTC workers feel about staffing?</i></p> <ul style="list-style-type: none"> <li>• There is not enough support for staff</li> <li>• Increased staffing would help</li> </ul> <p><i>How do LTC workers feel about their compensation?</i></p> <ul style="list-style-type: none"> <li>• COVID-19 has negatively impacted their finances</li> </ul> <p><i>What do LTC workers think about residents and clients?</i></p>

<ul style="list-style-type: none"> <li>Residents aren't being taken care of properly</li> <li>Processes and procedures aren't protecting residents [combined with question below as well]</li> </ul> <p><i>What do LTC workers think about communication and information?</i></p> <ul style="list-style-type: none"> <li>Rules and processes were inadequate</li> <li>Processes and rules are changing often</li> </ul>
<p><b>Primary Question:</b> <i>Why are LTC workers staying in LTC?</i></p> <ul style="list-style-type: none"> <li>Their LTC job supports their livelihood</li> <li>They've put in too much time to leave</li> <li>They've put in the time and can adapt</li> <li>They don't have other employment options</li> <li>They care about other people</li> <li>They have a passion for their work and find satisfaction in it</li> <li>Working in LTC is valuable career experience</li> </ul>
<p><b>Overlapping Questions:</b></p> <p><i>How do LTC workers feel about their compensation?</i></p> <ul style="list-style-type: none"> <li>Full time hours are desirable</li> </ul> <p><i>What do LTC workers think about residents and clients?</i></p> <ul style="list-style-type: none"> <li>They have a responsibility to care for resident</li> </ul> <p><i>What do LTC workers think about the public?</i></p> <ul style="list-style-type: none"> <li>They are safer in a LTC home than working in the community</li> </ul> <p><i>What do LTC workers think about changes to their jobs due to the pandemic?</i></p> <ul style="list-style-type: none"> <li>Processes and rules are changing often</li> <li>Rules and processes were inadequate</li> </ul>
<p><b>Primary Question:</b> <i>What do LTC workers think about communication and information?</i></p> <ul style="list-style-type: none"> <li>There is a need to know what's 'going on'</li> <li>There is information and resources available</li> <li>Information from the ministry is unclear</li> <li>There is a lack of transparency within homes</li> <li>Communication within the home is inadequate</li> </ul>
<p><b>Overlapping Questions:</b></p> <p><i>What do LTC workers think about those they perceive as managers?</i></p> <ul style="list-style-type: none"> <li>Communication with management is inadequate</li> </ul> <p><i>How do LTC workers feel about vaccines?</i></p> <ul style="list-style-type: none"> <li>There is not enough information about the vaccines (early January 2021)</li> </ul> <p><i>What do LTC workers think about changes to their jobs due to the pandemic?</i></p> <ul style="list-style-type: none"> <li>Processes and rules are changing often</li> <li>Rules and processes were inadequate</li> </ul> <p><i>What do LTC workers think about residents and clients?</i></p> <ul style="list-style-type: none"> <li>Processes and procedures aren't protecting residents [shared with question above]</li> </ul>
<p><b>Primary Question:</b> <i>What do LTC workers think about the public?</i></p> <ul style="list-style-type: none"> <li>The general public is not 'doing their part'</li> </ul>
<p><b>Overlapping Questions:</b></p> <p><i>What do LTC workers think about their perception?</i></p> <ul style="list-style-type: none"> <li>LTC workers are not appreciated</li> </ul> <p><i>Why are LTC workers staying in LTC?</i></p> <ul style="list-style-type: none"> <li>They are safer in a LTC home than working in the community</li> </ul>
<p><b>Primary Question:</b> <i>What do LTC workers think about their perception?</i></p>
<p><b>Overlapping Questions:</b> <i>What do LTC workers think about the public?</i></p> <ul style="list-style-type: none"> <li>LTC workers are not appreciated</li> </ul>

<p><b>Primary Question:</b> <i>What do LTC workers think about those they perceive as co-workers?</i></p> <ul style="list-style-type: none"> <li>• Staff and co-workers support each other</li> <li>• There is a difference between full-time and part-time workers</li> </ul>
<p><b>Overlapping Questions:</b>  <i>What do LTC workers think about changes to their jobs due to the pandemic?</i></p> <ul style="list-style-type: none"> <li>• Protocols are keeping LTC workers safe</li> <li>• Burnout is prevalent among staff</li> <li>• Some staff aren't following the rules</li> </ul>
<p><b>Primary Question:</b> <i>How do LTC workers feel about staffing?</i></p> <ul style="list-style-type: none"> <li>• There is not enough staff</li> </ul>
<p><b>Overlapping Questions:</b>  <i>What do LTC workers think about changes to their jobs due to the pandemic?</i></p> <ul style="list-style-type: none"> <li>• Increased staffing would help</li> <li>• There is not enough support for staff</li> </ul>
<p><b>Primary Question:</b> <i>How do LTC workers feel about their compensation?</i></p> <ul style="list-style-type: none"> <li>• They need multiple jobs to support themselves</li> <li>• LTC pay is insufficient</li> </ul>
<p><b>Overlapping Questions:</b>  <i>What do LTC workers think about changes to their jobs due to the pandemic?</i>  <i>Why are LTC workers staying in LTC?</i></p> <ul style="list-style-type: none"> <li>• COVID-19 has negatively impacted their finances</li> <li>• Full time hours are desirable and something that some LTC workers want</li> </ul>
<p><b>Primary Question:</b> <i>What do LTC workers think about residents and clients?</i></p> <p><b>Overlapping Questions:</b>  <i>Why are LTC workers staying in LTC?</i>  <i>What do LTC workers think about changes to their jobs due to the pandemic?</i>  <i>What do LTC workers think about communication and information?</i></p> <ul style="list-style-type: none"> <li>• They have a responsibility to care for residents</li> <li>• Residents aren't being taken care of properly</li> <li>• Processes and procedures aren't protecting residents</li> </ul>
<p><b>Primary Question:</b> <i>What do LTC workers think about those they perceive as managers?</i></p> <ul style="list-style-type: none"> <li>• The relationship between staff and managers is adversarial at times</li> <li>• Management is not doing enough to support staff</li> <li>• Management can help with situations</li> </ul>
<p><b>Overlapping Questions:</b>  <i>What do LTC workers think about communication and information?</i></p> <ul style="list-style-type: none"> <li>• Communication with management is inadequate</li> </ul>
<p><b>Primary Question:</b> <i>How do LTC workers feel about vaccines? (early January 2021)</i></p> <ul style="list-style-type: none"> <li>• Vaccines are dangerous</li> </ul>
<p><b>Overlapping Questions:</b>  <i>What do LTC workers think about communication and information?</i></p> <ul style="list-style-type: none"> <li>• There is not enough information about the vaccines</li> </ul>
<p><b>Primary Question:</b> <i>What do LTC workers think about PPE?</i></p>
<p><b>Overlapping Questions:</b>  <i>What do LTC workers think about changes to their jobs due to the pandemic?</i></p> <ul style="list-style-type: none"> <li>• PPE quality was inadequate</li> <li>• Access to PPE was inadequate [24 references]</li> </ul>

- Supply of PPE was adequate [2 references]
- PPE made the completion of work tasks more difficult

TABLE 8 OVERLAPPING THEMATIC QUESTIONS AND LINKED VALUE CODES

### 4.2.3 How the questionnaire results formed the interview structure

Through the analysis of the closed and open-ended questions, patterns in the results began to emerge that would drive my interview questions. In particular, there was an apparent contradiction between some of the rating-scale data, which seemed to suggest LTC workers were coping well with changes to the pandemic, and the strong language used in the open-ended questions that tended to skew more negatively and outlined the challenges these same workers were facing. Therefore, the interview questions surrounding job tasks, public perception of the LTC sector, and changes in job design changes were designed to probe the differences between the quantitative and qualitative data.

## 4.3 Individual interviews

In this method, eight participants took part in a follow-up interview (covered in section 3.3). The purpose of this interview was to address the questions generated by the first method and provide further qualitative data to create creative concepts that may help translate this knowledge. Table 9 outlines the participants and provides the word count for the transcribed audio interview. Of the eight participants, I was only able to talk to one who had been a multi-site worker before the pandemic, however, most participants were able to discuss the single site work order and how it impacted their job design and work experience. In total, the interviews comprised of 47,192 total words. The interviews addressed *RQ2: How do LTC workers talk about their unique experiences during the pandemic? Are there similarities across all experiences?*

<b>Interview Participant Breakdown and Words of Data</b>			
<i>Participant Number</i>	<i>Participant Profession</i>	<i>Word Count</i>	<i>Multi-site Worker</i>
P1	Registered Nurse (Management Role)	5,893	No
P2	Registered Nurse (Management Role)	5,159	No
P3	Social Service Worker	5,616	No
P4	Cook	5,052	Yes
P5	Personal Support Worker	6,049	No
P6	Recreation Planner	7,019	No
P7	Activity Aide	6,010	No
P8	Recreation Planner	6,394	No

*TABLE 9 INTERVIEW PARTICIPANTS WITH TRANSCRIPT WORD COUNT*

Interview responses went through two levels of coding (descriptive and holistic) before I organized them into themes. While the descriptive coding pass was similar in execution to what I'd done on the open-ended questionnaire data, the holistic pass was a new approach to work with a large amount of interview data (Section 3.3.3).

Like the short-answer section of the questionnaire, the first round of interview coding was a descriptive exercise, focusing on smaller data units (lines or sentences instead of whole passages). This process mapped similarly to the descriptive and values coding from the responses to the open questions in the questionnaire. In analyzing the interview data, I let the similarities between the two qualitative data sets (questionnaire and interview data) guide me but kept in mind the responses to the rating-scale type questions within the interview. This exercise allowed me to reflect on similarities and differences between the two qualitative data sets. Through the descriptive coding of interviews, I generated 24 different codes (Table 10).

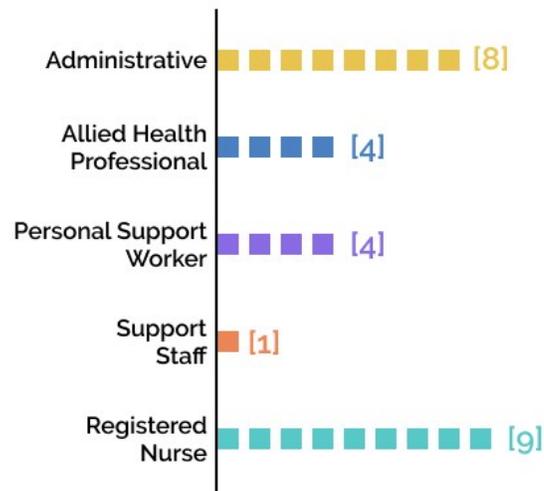
<b>Descriptive Codes Generated through Interview Analysis</b>		
Addressing residents' needs	Individual strategies	Personal beliefs
Communicating with family and caregivers	Lack of support	Personal consequences of pandemic

Community support	LTC home as 'family'	Processes internal to organization
Expression of gratitude	Mention of extra work tasks	Reason for increased workload
Feelings on 'public' perception	Mention of staffing	Responsibility and duty
Hours of work changing	Mention of 'things' changing	Standards, checking, scrutiny
Impacts of wearing PPE	Mourning loss of LTC as they know it	Thoughts & feelings on IPAC protocols
Increased uncertainty	Perception of roles within LTC	Thoughts about future of LTC

TABLE 10 DESCRIPTIVE CODES GENERATED THROUGH INTERVIEW ANALYSIS

During this coding exercise, I created an initial visualization by illustrating the coding frequency across participant roles. With this visualization I tried to convey which LTC roles were more likely to talk about certain descriptive codes. However, due to the small number of participants, and the semi-structured nature of the conversation, the

### Mention of Extra Work Tasks [26 References]



quantifying of qualitative data didn't seem useful and lead me to reconsider this approach (discussed in Chapter 5). However, the splitting nature of my initial descriptive pass led me towards a holistic coding approach that took larger units of data with a more significant amount of context or narrative behind each code.

FIGURE 19 INITIAL QUALITATIVE VISUALIZATION OF INTERVIEW DATA

As described, the holistic coding exercise considered entire passages, stories, or responses from the interview respondents. Changing my approach from the initial discrete method used in the descriptive process allowed me to start developing themes that could help us better understand how LTC workers discuss their experiences during the pandemic. To holistically code the interviews, I first summarized participant responses to each question and then applied holistic codes to these summarized pieces of data for each interview. As the semi-structured nature of the interview gave participants the space to talk about multiple things within one response, some of the initial summaries generated more than one holistic code. I then compared the holistic codes across interviews to see where similarities and differences arose through different lived experiences.

This holistic coding exercise resulted in a simplified list of 14 higher-level codes that I organized into emergent themes (Table 11).

<b>Holistic Codes Mapped to Emergent Themes</b>	
<i>Related Holistic Codes</i>	<i>Emergent Theme</i>
<ul style="list-style-type: none"> <li>• Changing job tasks and roles</li> <li>• Increased uncertainty</li> <li>• Challenges adhering to standards of work</li> </ul>	The current job design of the Ontario long-term care system is not compatible with dynamic scenarios such as COVID-19.
<ul style="list-style-type: none"> <li>• Sense of duty</li> <li>• Staffing shortages</li> <li>• Not feeling valued</li> <li>• Home as family</li> </ul>	Long-term care employees perceive their place of work as ‘like a family’ and feel a sense of duty towards each other and residents. Because of this, they feel that their efforts are the only thing between the current situation and an even greater tragedy.
<ul style="list-style-type: none"> <li>• Internal/informal processes</li> <li>• Lack of support</li> </ul>	The interpretation of protocols by management can have a significant effect on long-term care employee perceptions of their job design.
<ul style="list-style-type: none"> <li>• Feeling overwhelmed/information overload</li> <li>• Communication disconnects</li> </ul>	There is a desire for more transparency and communication across long-term care. This desire for communication is evident between employees, residents, families, management, and regulatory bodies.

<ul style="list-style-type: none"> <li>• Loss of LTC ‘as they know it’</li> <li>• Poor mental health</li> <li>• Changing LTC residents</li> </ul>	<p>Long-term care is changing, due to the pandemic and the state of the sector, long-term care workers are grappling with this change and unsure about the future.</p>
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*TABLE 11 EMERGENT THEMES MAPPED TO HOLISTIC CODES*

By organizing the holistic codes into emergent themes, I was able to create a structure for sharing how LTC workers talked about their work experiences during the pandemic. These emergent themes are outlined below, with supportive quotes provided for each theme in Table 12.

***Theme 1 - Current job designs in the Ontario long-term care sector are not compatible with dynamic and sustained emergency scenarios such as COVID-19.***

Long-term care employees across the sector found themselves in a new reality seemingly overnight. Though training and procedures were in place for localized outbreaks, such as influenza, the scale of COVID-19 presented and continues to present a unique challenge. Employees reported turning to one another to protect their residents and peers, developing informal processes with their collective knowledge and ability. The sector’s rigorous and standardized nature contributes to employees’ difficulty when confronted with constantly changing situations such as COVID-19. To keep up with working regulations in the face of job tasks that have increased in time and complexity while coping with substandard staffing levels, LTC workers reported working longer hours and taking on job tasks outside of their standard job description. A prime example of this phenomenon during the pandemic was the extent to which mealtime processes affected the workflow of LTC employees. Meals must be prepared and served at regulated temperatures, and resident isolation meant that dietary service took considerably longer than usual. This led to people working other jobs also helping with mealtimes, such as

recreation planners and activity aides. Cooks also had to work more closely with serving staff to ensure that meals didn't fall below safe consumption temperatures before their delivery.

***Theme 2 – Long-term Care employees perceive their place of work as 'like a family' and feel a sense of duty towards each other and residents. Because of this, they feel that their efforts are the only thing between the current situation and an even greater tragedy.***

Long-term care workers discussed increased workload or taking on extra hours or tasks as a common experience. The sense of duty and responsibility that LTC workers expressed in these interviews towards their residents cannot be understated. Regardless of their role within the LTC system, there was a recurring concept captured by phrasing such as this: "You [pauses] You know, grow accustomed to these residents, you grow attached, you're not about to leave them now. There is just that dedication I guess. You care about them, yeah, and if you don't show up, who's going to?"(P7). Discussions revolved around employees within the LTC system being highly aware of their importance to the health and well-being of residents. Several participants expressed the feeling that a lack of staffing resources was contributing to care environments that were unacceptable within LTC. Several participants also highlighted the difficulty of attracting competent and qualified care workers, as well as issues such as compensation, benefits, and prestige all highlighted as barriers to attracting workers before and during the pandemic. The other element of this theme was the recurring concept of the LTC home as a family. Several participants acknowledged that they felt like residents and coworkers became their family both before the pandemic and during this time of shared stress.

***Theme 3 - The interpretation of protocols by management can have a significant effect on long-term care employee perceptions of their job design.***

Interview respondents indicated that their day-to-day perception of changes to their job design resulted from internal processes and practices within the LTC home to follow and adapt to pandemic protocols. An example of this perception are the expressions of gratitude (or frustration) with both formal and informal policies and practices within the home. Some participants were grateful for in-home flexibility that allowed them to use extra caution when applying IPAC protocols. At the same time, another was frustrated by what they felt were overbearing restrictions imposed by their manager. This theme also relates to perceptions amongst LTC employees relating to management support. Despite homes receiving the same high-level directives from the Ministry of Long-Term Care, the numerous regulatory bodies (unions, LTC home networks, provincial health units) meant that each home's management team had to implement protocols and address challenges internally.

***Theme 4 – There is a desire for more transparency and communication across long-term care. This desire for communication is evident between employees, residents, families, management, and regulatory bodies.***

Communication is a topic that came up both in the open questionnaire responses and during the follow-up interviews. Some participants expressed frustration at what they perceived as a disconnect between front-line employees and upper management. However, several interview participants expanded on the strategies they and their teams used to improve communication with their coworkers, residents, and families. These strategies included newsletters within the home, using technology to connect residents and their

families, and establishing working groups to decipher and relay information from regulatory bodies. This theme also reflects the feelings of being overwhelmed by information from multiple sources, which relates to the overall ad hoc design and implementation of communication. While formalized processes and procedures were developed and shared with LTC homes, several participants expressed that the nature of these communications was not clear nor concise to inform changes to their work design. Participants mentioned that special working groups or partnerships with local hospitals were dedicated to making sense of the new rules from the Ministry of Long-Term Care. As some staff members worked more to make up for lost co-workers due to the single site work order, this also meant that there were fewer people to decipher complex rules and processes.

***Theme 5 - LTC is changing, due to the pandemic and the state of the sector, LTC workers are grappling with this change and unsure about the future.***

The final theme that emerged from the interviews captures many of the responses from the final interview question (How do you feel about the future of work in LTC?), but also reflects conversations around how LTC won't return to how it was before the pandemic and the impacts of the pandemic on workers in the present. All participants acknowledged that they felt differently about their jobs than before the pandemic, indicating their intent to retire early, accept a new position, or expressing frustration with the current state of their job design. The changing nature of LTC residents also emerged as a matter of concern for some respondents. Those involved with care tasks commented on increased resident acuity, and higher levels of cognitive impairment or decline, particularly for residents living with dementia. Of those participants engaged in activity and recreation

planning, many noted that they had to adjust programming due to pandemic protocols and their residents' decreased abilities. While there was some hope for the future of LTC, many respondents commented on issues in LTC being present before the pandemic and were unsure if things would change. Table 12 provides quotes supporting each theme.

<p><i>Theme 1 - The current job design of the Ontario LTC system is not compatible with dynamic scenarios such as Covid-19</i></p>
<p>“I would typically have ordered [PPE and Supplies] only once a month before, now I'm ordered to get three times a week, you know, up to five times a week, just depending on whether we're an outbreak or not.” (P2)</p> <p>“You know, things that have changed are more related to the pandemic, like doing things on Zoom or over the phone or like yelling through the window to get paperwork signed. I mean, we were stalled on admissions for a very long time because our home is older. So, we just didn't have any beds for people to move into.” (P3)</p> <p>“The only thing that's changed is the delivery system, They don't come in the place anymore. They drop at the loading dock, which is another pain in the butt which adds more time to us. And one of the cooks usually has to work a little bit of overtime and bring the stuff in, though, as opposed to it being brought in. Because they don't want to enter the building.” (P4)</p> <p>“So, we stopped doing it [documentation] because we were just [pauses] the government said it was not required anymore. So that was another job duty that changed for a few months. And then all of a sudden, we had to do that.” (P6)</p> <p>“So, the difference between when we actually were in outbreak and my normal job, excuse me, was hugely different. I felt like I was a PSW not in activities because the residents had to stay in their room. They weren't allowed to wander and come to the dining room and that kind of thing. So, there was tray service for everybody in the room. So, we obviously helped with that, and that took up a huge amount of our time just getting all the trays out of the kitchen and bringing one by one these trays down to the folks, and helping if you need to feed someone.” (P7)</p>
<p><i>Theme 2 - LTC Employees perceive their place of work as 'like a family' and feel a sense of duty towards each other and residents, because of this, they know that their efforts are the only thing between the current situation and an even greater tragedy.</i></p>
<p>“Well, I... I'm an extremely, I've always been a very responsible person, and I would feel very, very guilty if I was to leave.” (P2)</p> <p>“You get to know these people that well. You may not hang around with them outside of work like I do, like maybe the odd one I do, but not everybody. But when you get there, it feels like family.” (P4)</p> <p>“I did know that I had a lot of work, and I could work overtime basically almost every other day of the week.” (P5)</p> <p>“And, yes, our residents become kind of a part of our family, and we care for them. And some of them, we're their only family. So, you know, that's OK.” (P6)</p>

“[Hesitates] You, [pauses] You know, grow accustomed to these residents, you grow attached, you're not about to leave them now. There is just that dedication I guess. You care about them, yeah, and if you don't show up, who's going to?” (P7)

“But I think there was also a sense of ‘I wanted to help and protect people’. I didn't want anyone to get this. Like there was this [pauses] and then we are very proud that it never got into our home and that, you know, as staff, you know people didn't see their family and didn't travel and didn't do anything for the longest time because we felt that overwhelming sense of protecting the people that we worked with.” (P8)

*Theme 3 - The interpretation of protocols by management can have a significant effect on LTC employee perceptions of their job design.*

“I would look at the staff member and say, OK, I know I'm questioning this too. Well, how would we make you feel safe? What do you think needs to be done? And we're just, you know, better safe than sorry.” (P1)

“Oh, yeah, definitely. And, you know, I'm not a senior manager, I'm low on the totem pole. So, you know, I don't get extra help like some of the, you know, some of the other people would get.” (P2)

“But when I contacted the homes on my own, they were doing things as normal. Our home was not. They were taking advantage of Bill 195.” (P6)

“[Discussing challenges for employees quarantining in hotels] Like, what do you think they're going to do? The management knew. The workers knew, you know, that the employer knew where they were. They were putting up the bill. They were paying the bill for them to stay at a hotel. So, they knew they were there and sick, or some of the folks who actually didn't want to go home, even if they weren't sick then we would put them up in a hotel. But same situation. Who's providing them food? Like you can't cook in a hotel room. So, you know, that kind of support was not there and not thought of at all, which was horrific.” (P7)

“No, not at all. And my argument has been we've, we've (sic) been all forced into like a managerial role, like a supervisor role, especially on the weekends when there's no management in the building, they say, well, the RN's in charge, but the poor RN is trying to keep people from being sick or trying to put out fires on the floor, you know, and am I going to go and say we have a difficult person downstairs, can you come and deal with it? Well, no, 90 percent of the time, we as our programs department deal with it, because we're mostly on the main floor and there's no management. And why would we go get nursing when they're busy? They're doing important work.” (P8)

*Theme 4 - There is a desire for more transparency and communication across LTC. This desire for communication is evident between employees, residents, families, management and regulatory bodies.*

“You're given a 30-page document with all this mumbo jumbo instead of just saying this is what we want you to do. They just they made everything sound, you know, really fancy or they complicated things.” (P1)

“Well, I've been working on one schedule to put out you know, it's taken me seven days to complete it. I mean, you've got to contact people. You work this shift and then we try to ask people to give me their availability so that I can just go ahead and go down the line. But some people forget to give their availability. And according to their union contract, if they forget, I'm supposed to use the availability that they had. But sometimes they intentionally don't give their availability. So, you know, it's really, really difficult. So, then that means you end up having to contact people and that can take, you know, a couple of hours to a day for people to respond back to you. You know, it's like I could have done a schedule in two days before, you know, complete and filling out all the appropriate paperwork. And it's probably taking 5 to 6 days now to do a schedule.” (P2)

<p>“So, we're getting staff newsletters which come through our email by phone, which is something new. We never used to get that. So that is something that's positive. So, everybody can stay up to date on changes that might be taking place because there could be a change from day to day. ‘You have nobody positive.’ And then you get a newsletter, that says, ‘Oh I’m sorry, but, you know, we've had a change and somebody now has tested positive’. And so, it's up and down. You never know what's going to happen from day to day. That's part of the uncertainty.” (P5)</p> <p>“I think the whole like, how I said about rules and how the rules changed, and then you say to a family member, ‘You have to wear a mask’ and then the next time they come in or whatever, whatever it is, whatever the detail is, I would want the public to know that it's tough to keep it all straight and to know all the rules for everything and then try and educate families and and (sic) stuff about that, and I would want them to be like patient and don't shoot the messenger because of the times we're telling them stuff. And like even that guy I told you about a couple of weeks ago, he was like, ‘It's unscientific.’ And I'm like, ‘Yeah, I guess it's unscientific, but it is what it is.’ Right? So, I think that would be something I would want people to, like, be patient with us as we try to enforce rules.” (P8)</p>
<p><i>Theme 5 – LTC is changing, due to the pandemic and the state of the sector, LTC workers are grappling with this change and unsure about the future.</i></p>
<p>“It's never going to be the same. It's sad because we're...you're just getting everybody in, they're emptying the hospitals, your homes are so different now. It's going to be hard to plan activities to keep the residents occupied. I don't know, just long-term care in the future, I think is it's depressing. They're coming here, people are being really isolated.” (P1)</p> <p>“Yeah, well, part of it is and I'm trying my best as I feel like I just don't have a passion for the residents anymore, and that sounds so bad to say out loud. But I think it's because I tried to distance myself a little bit from the residents to not get hurt because there's been a lot of not great things that have happened during this pandemic.” (P3)</p> <p>“Cause our homes are old, they're 30 years old and set up like that. I worked at one, the one that I worked at and had to leave, it had a different setup, a setup that worked better than the one I have here. So, the consistency maybe, I don't know. They have to work on making it more effective, I guess.” (P4)</p> <p>“So physically, they are not as mobile. There's multiple issues instead of maybe one issue going on, that kind of thing, and dementia as well. On top of it all, you're seeing a lot, a lot more of that. So, the acuity level is hugely different from when I first started working in long-term care to now.” (P7)</p> <p>“Now, will we all be the same? I don't know about that, but like we're not as maybe bubbly and cheerful as we all used to be, like we try, but whether we'll be the same, maybe our job might go back, but whether we'll all be the same. I don't know. I hope so, but...” (P8)</p>

TABLE 12 EMERGENT THEMES AND SUPPORTIVE QUOTES

#### 4.4 Summary of results

The use of this mixed-method approach generated a large amount of quantitative and qualitative data. The emergent nature of the research process supported by iterative rounds of quantitative and qualitative analysis led to the development of data visualizations and five key themes that provide insight into the experiences of LTC workers during the

pandemic. I also explored synthesizing the data generated through these methods through a 'communication' or 'information design' prototype. The aim of this 'storytelling prototype' was to experiment with synthesizing the data across methods to create an accessible and engaging means of communicating the knowledge generated from this study.

# Chapter 5: Discussion

## 5.1 Relating Study Findings to existing LTC recommendations

As part of my literature review, I discovered several recommendations for the LTC sector from before and during the pandemic. While I didn't specifically ask participants about these recommendations in the questionnaire or interview, I want to revisit three of these recommendations that map to my study findings.

*Recommendation 1 – Staffing Levels and Capacity must Increase (Brophy et al., 2021; Ontario Ministry of Long-Term Care, 2020)*

Unsurprisingly, staffing levels were a recurring theme through the questionnaire and the interviews. Each round of qualitative coding for the closed-ended questionnaire and the follow-up interviews generated a category relevant to staffing levels. LTC workers are aware that they are spread thin and believe that more staff could help. However, beyond the general impression that there aren't enough workers in LTC, employees also brought forward their own beliefs regarding staffing levels. One interview participant in charge of scheduling stated that filling staffing shortages is difficult due to the relationships between union contracts, temporary workers, home staffing levels and workforce shortages. Other participants mentioned hiring initiatives from the Government of Ontario. They expressed doubts about the efficacy of door-knocking campaigns and free-tuition initiatives in finding the 'right' kind of LTC workers. Thus, the study results mirror this recommendation providing additional personal perspectives on the challenges and difficulties of staffing that may be helpful when strategizing ways to address the LTC staffing crisis.

*Recommendation 2 – Culture within LTC homes needs to change to ensure HCW's concerns are heard, respected and addressed (Brophy et al., 2021; Ontario Ministry of Long-Term Care, 2020)*

In contrast to the previous recommendation, the concept of 'culture' within LTC home was not named as such across the closed questionnaire items or in any of the eight interviews. Interestingly, the word 'culture' was not a part of LTC employees' vocabulary across all of my research outreach. Of course, this doesn't mean that LTC workers are unaware of the concept, but it may suggest that they don't think of it in such terms. Interview respondents tended to talk about the social structure within the LTC home as familial, implying that coworkers and residents became like family members in their work. Despite not using the phrase 'work culture' LTC workers in both the questionnaire and interviews were not shy about expressing their desire for increased autonomy, better communication, and more support from management, which could imply a desire for better work 'culture.' Themes related to better communication of pandemic protocols, more significant support for staff mental health, and greater collaboration when it came to job-design changes all show a desire for a shift in work culture amongst LTC workers. Understanding that LTC workers may perceive the structure of their homes as something akin to a family and that they may not implicitly grasp the concept of 'work culture' may help design future outreach to probe more directly at this recommendation.

*Recommendation 3 - Excellence in long-term care requires effective leadership and caring supervisors (Brophy et al., 2021; Ontario Ministry of Long-Term Care, 2020)*

This recommendation maps to my research due to the prevalence of responses relating to 'management' as an entity. However, due to the different jobs that the

questionnaire and interview targeted, one respondent's manager might be another respondent's subordinate. Of the 19 items coded as 'Management' in the open-ended questionnaire responses, around 15 of them expressed some level of dissatisfaction with those they perceived as managers. This dissatisfaction was primarily related to communication issues between front-line workers and management, with a clear desire for faster two-way communication. However, there was also frustration at the perception that administration was not doing enough to help out during the pandemic. Inversely, open questionnaire responses that spoke positively of management mentioned feeling supported and good communication. When this topic came up during the interviews, findings were similar. As the third theme developed in this thesis stated:

***'The interpretation of protocols by management can have a significant effect on long-term care employee perceptions of their job design.'***

In particular, respondents who perceived their management as taking advantage of Bill 195 expressed frustration at losing holidays, work-life balance, and personal freedoms despite their hard work during the pandemic. While not all of these job design facets are under the control of supervisors, participants were generally more positive when discussing management that supported their decisions and had their back when it came to navigating COVID-19 IPAC protocols. One participant expressed this by saying, "*We weren't going to be in trouble for doing those things [Using extra precaution and PPE]. So, we knew that the senior management supported us, and they were going to let us do basically, what we felt we needed to do to keep ourselves and our residents safe.*" In terms of mapping my study findings to the recommendations of existing research, it appears that LTC employees do look more favourably on collaborative management styles. However, some LTC

participants feel that there are a lot of managers within the structure of the LTC hierarchy as demonstrated by the following quote from participant five: “So everything has become much more, I guess, micromanaged, if you will, and there's lots of management to do that. (P5)”. Therefore, it may be helpful to keep in mind that several roles and positions may require management or team-lead style training to ensure leadership competency throughout LTC. However, more work must be done to understand better how the design of LTC power structures relates to the reality of day-to-day work in LTC homes.

## **5.2 Sharing the experiences of LTC workers through communication design**

This discussion section covers the prototype I developed to combine relevant quantitative data with qualitative themes to accompany narratives about LTC worker's experience of COVID-19. As part of the discussion, the ‘communication’ prototype represents my effort to add to our knowledge regarding LTC workers' experiences during the pandemic by providing a snapshot of a moment in time within LTC.

### **5.2.1 The ‘findings’ communication prototype**

The prototype takes the form of an interactive web application. For this thesis, I’ve represented the prototype through screenshot-style mock-ups of an applet that could be made available on the web (Figure 20) (<https://bit.ly/communicationprototype>). The prototype displays one theme at a time and allows for the audience to change the theme by clicking on the relevant button along the top row. For each theme, the reader sees a summary paragraph describing the theme, short narratives for different roles in LTC, and quantitative data related to the current theme.

In the current prototype, the narratives represent four different categories of employees. Table 13 outlines these groups, demonstrating how workers are divided between primarily care and non-care jobs and hourly or salaried compensation scales. I chose to split employees up this way due to the response rates to the questionnaire and the job breakdown of my interview participants.

<b>Employee Groups as Broken Down in Communication Prototype</b>	
Hourly, Non-Care	Hourly, Care
Salaried, Non-Care	Salaried, Non-Care

*TABLE 13 EMPLOYEE GROUPS AS BROKEN DOWN IN THE COMMUNICATION PROTOTYPE*

In the interest of participant anonymity, the narratives are created based on the closed-ended questionnaire items and the interviews but contain no direct quotes. This approach also allows for the creation of narratives that fit within the space permitted while still exploring the theme through the perspective of a particular role within LTC. Changing role-specific narratives is done by clicking on the relevant illustration. Figure 21 demonstrates the difference between the ‘Hourly, Non-Care Employee’ and the ‘Salaried, Care-Employee’ selection states.

Similar to the role specific narratives, the prototype also allows the user to cycle between quantitative rating scale data using the blue arrows to the left and the right of the scale bar (Figure 21). This allows for specific quantitative data to be shown as it relates to each theme, particularly as the questionnaire sub-domains and the initial groupings of the rating scale questions don’t align exactly with the themes that were generated from analyzing the interviews.

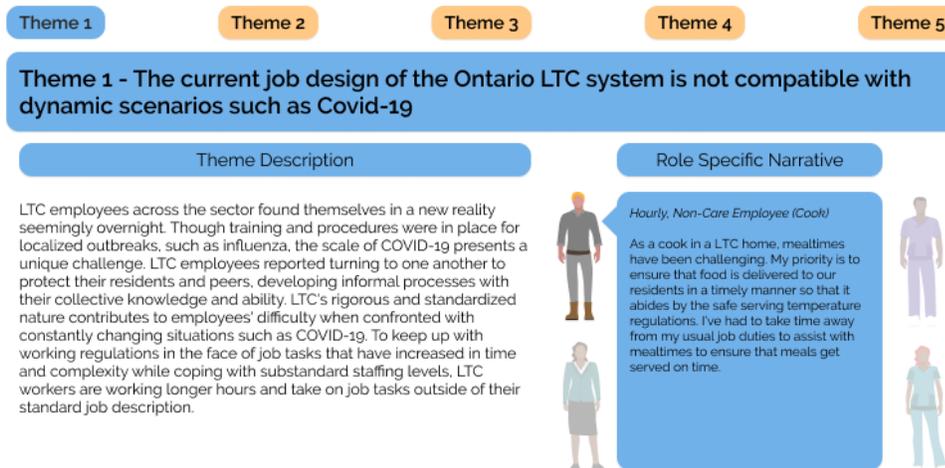


FIGURE 20 RESEARCH COMMUNICATION PROTOTYPE – SCREEN 1

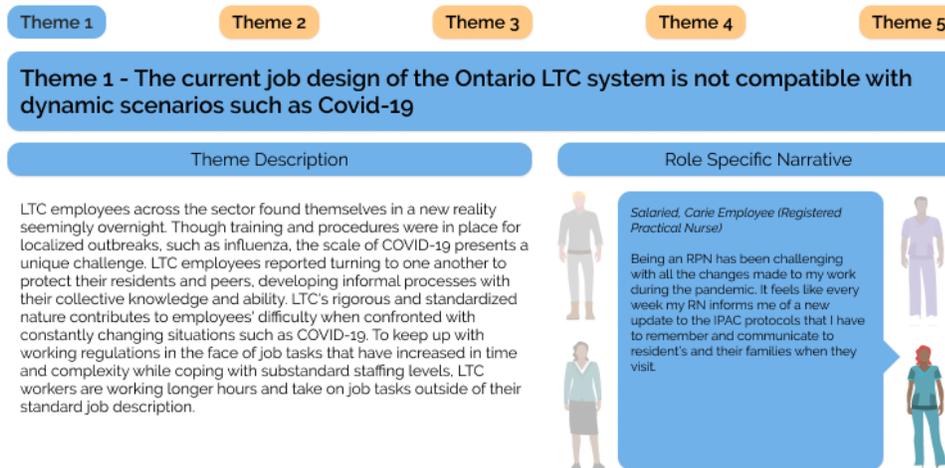


FIGURE 21 RESEARCH COMMUNICATION PROTOTYPE – SCREEN 2

In cases where relevant data visualizations need to be larger than what the bottom section showing a single rating-scale allows, the section expands into a shelf with dimensions better suited for showing large scale charts and visualizations (Figure 22). Once expanded the shelf is collapsible using the 'x' button at the top right of the screen, or through dragging the handle at the top of the shelf downwards.

Through the design of this prototype, I allow for the audience to explore the information at their own pace and to follow their interests, rather than creating a linear narrative or overwhelming them with large tables of data and numerous options upon first glance. Future iterations for the prototype may include options to exclude or include specific jobs or groups of employees that are represented by the active visualization. The current layout of the prototype is more relevant for desktop or tablet devices in landscape mode, but the information architecture would allow for elements to be displayed in a format more friendly for mobile devices too.

While creating a fully functional version of this prototype may require technical skills outside my realm of expertise when it comes to coding and packaging interactive data for the web, platforms like Tableau may also allow for a less stylized version of this prototype to be shared with larger audiences for the purpose of feedback and further iteration. In presenting quantitative and qualitative data side-by-side and allowing the audience to engage with it at their own pace and through their own interest, I believe this prototype is a good first step or exploration in communicating research data in an accessible and engaging manner.

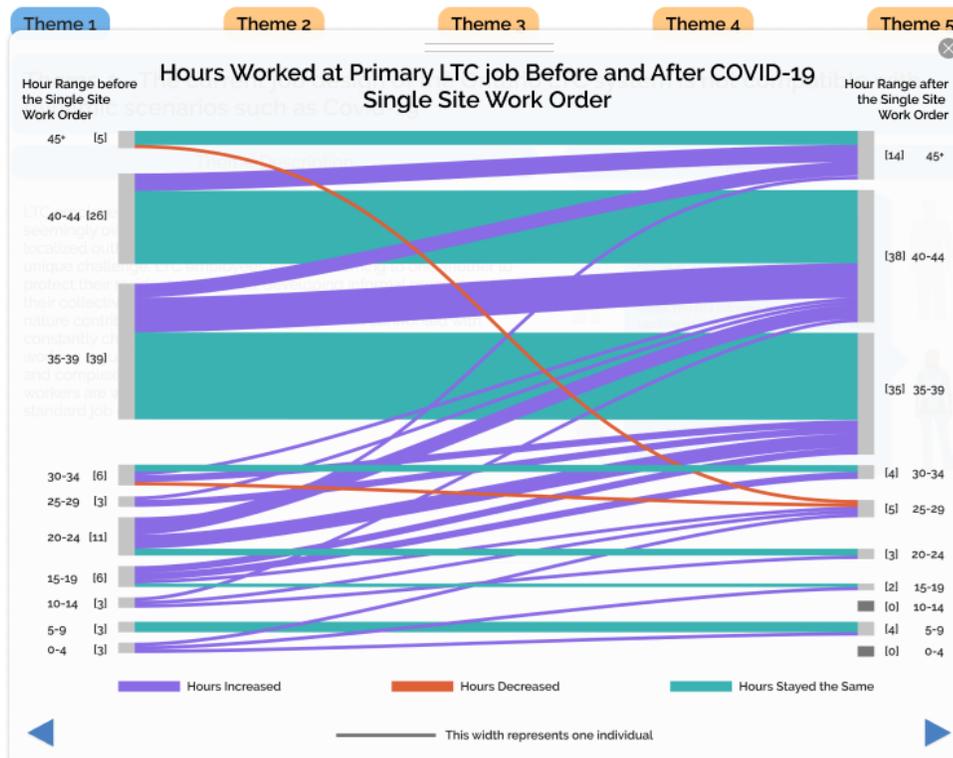


FIGURE 22 RESEARCH COMMUNICATION PROTOTYPE – SCREEN 3

### 5.3 Design meets journalism - design and use of methods

The combination of design and journalism was not something that came immediately to my mind when I started this journey. The all-encompassing nature of the COVID-19 pandemic and my desire to try and share the stories of LTC workers led me to consider journalism as a complementary discipline to my research. After working with the two branches of learning I believe that there are more opportunities to be found in combining their methods and perspectives for the purpose of communication. The following section contains my reflections on exploring the field of journalism in combination with design for the design and communication of research.

The constraints of the pandemic on research activities, particularly within the realm of LTC, where potential respondents may not have much time for outreach, necessitated remote research strategies that could surface and communicate valuable information, information that might serve to capture a record during a significant time in our history. The questionnaire and follow-up interviews provided a better understanding of LTC employee experience during the pandemic, both from a broad perspective across different jobs and larger sample, and through a more intimate sharing of personal experience. The point of these research methods was to share the experiences of employees working in LTC during the pandemic. The design of data visualizations was an essential factor in sharing those experiences in an approachable way that did not hand-wave the reality of the situation.

### **5.3.1 Designing questionnaires - journalism and design perspectives**

By using a questionnaire to gather a relatively large number of participants (N=106), I collected data across numerous jobs and positions in LTC. The downside of this approach was the relative stratification of respondents across demographic and professional axes. Ideally, the questionnaire would have received more responses so that I could perform comparative statistical analyses between different job roles. However, this would have required far more respondents, and it is essential to keep in mind the workload and reported levels of burnout amongst LTC workers during the pandemic. Question clarity coupled with ease of use to support a range of participant characteristics and conditions was top of mind in the development of these tools.

Another challenge of designing a sector-wide questionnaire was ensuring that the language of the questions covered the range of respondents. For example, when creating

questions about financial compensation, I had to design a query that imposed an equal and not too significant cognitive load on hourly and salaried employees with different compensation structures and ways of thinking about their pay (Section 3.2.2.2). The other language-based challenge for the questionnaire was ensuring questions were worded in plain language as much as possible. A simple language questionnaire would not have been possible without the help of two pilot participants whom both spoke English as a second language. Their early participation allowed me to feel relatively confident that most participants would understand the questionnaire. They also both completed the pilot questionnaire using their mobile devices; because of this, I used questionnaire preview tools within the Qualtrics questionnaire design suite to ensure that items would show up clearly for mobile participants. The questionnaire also played an essential role in the recruitment of participants for the follow-up interviews. However, of the 68 questionnaire respondents who indicated that they would participate in follow-up research activities and were contacted, only seven made themselves available upon receiving the formal invitation. While the response rate for the follow-up interview was only about 10%, it was the most successful means of recruitment for the follow-up interviews, with seven of the eight respondents interviewed being recruited through the questionnaire.

In terms of design research and considering the limitations imposed by the pandemic on more in-situ research activities, I feel that the questionnaire was a practical means of reaching LTC employees across their different jobs. The information gathered in the questionnaire influenced the follow-up interviews and provided enough data to create preliminary visualizations and simple descriptive statistics. While more participants could have provided more data points, the use of discrete questions, rating scales and open-ended

questions provided a mix of data that contributed directly to my understanding of the situation within LTC.

### **5.3.2 Designing interviews – journalism and design perspectives**

The follow-up interviews used for this research faced the same pandemic-imposed constraints requiring digital and distanced communication techniques. The influence of journalism on the design and order of the questions directly contributed to the richness of the interview responses and the range of topics covered. While participant interviews are not a rarity in design research, expanding my understanding of creating questions and conducting a conversation during the interview through exploring journalism was something new to me. From an interdisciplinary perspective, it makes sense for designers to take a cue from journalists, mainly when asking questions that generate stories, elaboration, and further questions.

The semi-structured nature of the interviews was advantageous because it allowed participants to talk about what was important to them. Furthermore, this approach allowed for a qualitative analysis that considered what was important to the participant. During the interviews, seven out of the eight participants experienced high levels of emotion, demonstrated by either apologizing for their emotional state or taking a short break to collect their thoughts as they explained how the pandemic had impacted them. I think this speaks to the importance of the work and the extent of the impact of the pandemic on LTC employees' emotional state. I felt the emotional impact of the pandemic much more clearly through the interview process than the questionnaire items that inquired about moods and emotions during the pandemic. The relative openness of the interview process was more

conducive to these deeply personal stories that emphasized the distinctiveness of each participant's experience.

### **5.3.3 Data visualization – journalism and design perspectives**

I was struck by the similarities in principles to support data visualization across industrial design and journalism throughout this work. Furthermore, when considering storytelling and design, the use of data visualizations aligns closely with several of the narrative functions identified by design researcher Silvia Grimaldi (2013), namely the functions of Conveying Information, Evoking Reflectivity, and Empathy and Identification. This is echoed by Alberto Cairo (2016) in his definition of 'candid information graphics':

*“The purpose of infographics and data visualizations is to enlighten people—not to entertain them, not to sell them products, services, or ideas, but to inform them. It's as simple—and as complicated—as that.”*

Cairo's definition implies honesty, one that I believe the design discipline would do well to consider more thoughtfully. Creating data visualizations is an act of synthesis. Those who make data visualization for design communication must decide on the information they share and the insights they emphasize. Designers are not strangers to using graphics to convey information, but it is tempting and sometimes easier to add levels of abstraction that support the designer's point of view rather than striving to 'enlighten' the audience.

In creating my data visualizations and communication materials for this research, I did my best not to shy away from messy data, contradicting opinions and unclear scenarios. In combining my design knowledge and the principles I discovered in researching the

creation of infographics from a journalistic point of view, I determined that there is value in clearly communicating complexity. The context I was working in was complex. Multiple jobs, differing backgrounds and rapidly changing situations are not done justice by visualizations that abstract away the contradictions and complexities that arose throughout my research. I believe that there is value in helping audiences understand that what happened in Ontario's LTC homes was not experienced the same by every job role, let alone every employee.

#### **5.3.4 Design tools and data visualization**

In completing this research, I explored two software packages dedicated to working with and displaying data. The first package, Tableau, is a data visualization software designed to work with primarily quantitative data. It can display interactive data through dashboards that consist of supported charts and graphs. The second software, NVivo, is more focused on handling qualitative data, in the case of this study, I used NVivo for analyzing the open-ended questionnaire items and the interview transcripts. NVivo also has tools for visualizing qualitative data, codes, and connections.

While I found Tableau useful for working with the exported closed-ended questionnaire data, I quickly ran into limitations with its visualization tools. I should clarify here that these limitations were not without their workarounds, but with a background using graphic tools such as Adobe Illustrator and Figma, it was frustrating to format and quickly test visualization ideas within Tableau. My personal pain points include a lack of copy and paste functionality when laying out dashboards and unintuitive tools for visual display and layout editing charts. Due to these frustrations, I used Tableau to generate preliminary visualizations and then exported these visualizations or related tabular data to Illustrator

and Figma to finalize the formatting and tweak the layout where I needed to. An example of this hybrid approach is the modified Sankey diagram in Section 4.2.1. I deemed the effort, and learning curve to create the chart in Tableau as not worth it and instead used vector editing software and data tables (from Tableau) to create the graphic manually. In researching different means of visualizing quantitative data, I found that the Tableau platform was missing some of the flexibility I would need to create the visualizations I desired. There are several ways to mitigate this inflexibility: increased training, experience with 'R,' a programming language centred around statistical computing and graphics that integrates with Tableau, or a larger interdisciplinary research team with individuals specializing in Tableau and visualization design. However, there may also be an opportunity to better understand the needs of design researchers and develop flexible and easy-to-use data visualization platforms.

NVivo presented an even less flexible interface than Tableau. The impression that I got from the platform was that it heavily encouraged users to work entirely within the NVivo ecosystem. This perspective quickly began to clash with how I wanted to represent qualitative data. The tools that NVivo provides for visualizing qualitative data reveal the connections and quantities of codes defined within the app in various ways, including word clouds, tree diagrams and cluster analyses. While these tools can be useful for understanding existing data from the researcher's perspective, I did not find them effective or customizable enough for communicating with a general audience. In reflecting on my use of NVivo, I believe that with more time spent setting up the research to integrate with the application's ecosystem better, I may have had more success using the tool to compare

qualitative data sets. For the most part, I ended up exporting transcripts and code lists into other pieces of software so that I could work with them in less limiting ways.

Reflecting on the software I explored for this research, two personal insights come to mind. Firstly, as a formally trained industrial designer familiar with graphics packages and visual design tools, it can be frustrating to work with applications that prioritize informational organization over visual design. While the purpose of this prioritization is clear, it does make me wish for a hybrid software package that allows for greater flexibility in connecting pieces of data to visual design. The second personal conclusion is the importance of research teams with various skills contributing to the project over a singular researcher. Appendix G contains further discussion regarding my use of software and challenges encountered. While I enjoy the challenge of learning new software and expanding my skill set, I must acknowledge that despite the training and tutorials I engaged with beforehand, the learning curve for each app was steep and took up considerable time as I learnt what each tool could and could not do effectively.

## **5.4 Research contribution**

This study explored how a group of LTC workers experienced the pandemic and their perception of the protocols and changes to their work design that resulted in the LTC sector's pandemic response. The findings of this research offer a perspective on the pandemic that emphasizes the unique experiences across jobs, contexts, and situations within LTC and the desire for treatment that LTC workers perceive as 'fair.' The methods used in this study may provide a starting point for further research into exploring the experience of workers in long-term care or other health-related sectors. Techniques used

to communicate the knowledge generated during research activities may also provide future researchers with a framework for sharing datasets with a mix of qualitative and quantitative data. Finally, the incorporation of journalism as an interdisciplinary influence on the design of research methodologies presents an opportunity for professionals from both disciplines to share their knowledge and collaborate on future knowledge generation and communication projects.

Through the sector-wide questionnaire, this research shows that the experience and perception of the pandemic and its related protocols are not identical across job roles or backgrounds. While personal experience is unique, common threads across LTC workers did begin to emerge, particularly when it came to wanting to feel valued, both through compensation and treatment within the sector and by the larger public. This is important when considering future research within LTC or in crafting future policies and protocols that may change the job design of LTC workers. The inter-relatedness of roles within LTC means that employees can perceive protocols or programs (such as the Government of Ontario's Hero Pay) as unfair or not reflective of the contributions of every person working within a LTC home.

The use of rating scales and analysis focusing on participants' perceptions may also contribute to further research in contexts such as LTC. "*Every system is perfectly designed to get the results it gets,*" is a well-known adage within the system design domain, though its exact origins are unknown. In looking at job design and worker perception of the impact of the pandemic, this research sheds light on the results of the current LTC system from the perspective of LTC employees. Questions that ask participants to rate their perception of a situation allow respondents to reflect on their personal experience and provide a basis

for creating more in-depth research methods that probe the reasoning behind that perception. Instead of focusing on objectively measurable responses, this research serves as a research contribution in that it explores the potential of collecting and analyzing perceptual, firsthand experiences.

One of the purposes of this research was to explore the combination of quantitative and qualitative data for research communication. By establishing a framework that ties quantitative type-data to relevant qualitative themes, this research contributes to other researchers working in complex contexts with different kinds of data looking to package their findings for communicative purposes. While there is an opportunity to validate this framework further (Section 0), its existing form with accompanying examples provides an opportunity for iteration and refinement within other knowledge-sharing contexts.

To my knowledge, the explicit combination of design research efforts with perspectives and expertise from journalism is a novel contribution of this research. The inclusion of journalistic perspectives in the creation of research activities such as interviews and the design of accessible data visualizations serves as a contribution by opening the door for future researchers to consider working with members of the journalism community. In particular, there may be opportunities for designers and journalists to collaborate on creating interactive, contextually complex visualizations that take into account facets of user experience design such as prototype testing and stakeholder feedback. Collaboration between the two disciplines may lead to more strategies for collecting rich qualitative data and sharing that data with a general audience.

## 5.5 Limitations

The COVID-19 pandemic posed a challenge to many research projects, particularly within long-term care. My methods and approach to research had to consider limitations posed by technology, mainly when it came to one-on-one research activities. While I may have liked to include a workshop-style research method with a larger group of participants, the realities of the pandemic and the ensuing schedules of LTC workers made this an unrealistic research approach.

I also believe that the questionnaire respondents do not accurately reflect the demographic makeup of LTC employees. I have accounted for this by focusing on the unique experiences of my research participants and not making claims about entire professions or groups within LTC. Reflecting on the design of the questionnaire, and the number of jobs within the LTC environment, a much larger sample size is required before any statistically relevant claims could be made about the experiences of a particular profession. Another challenge related to the relatively small sample size that I encountered was that certain questionnaire items did not receive sufficient responses for further analysis. In particular, this impacted questions surrounding different jobs held by multi-site workers, questions surrounding home location, and commute time/method. Reflecting on this limitation, I believe a more focused study about multi-site workers and their jobs and commuting patterns may be more effective.

The rapidly changing nature of the pandemic and the subsequent protocols and practices implemented within LTC were also a challenge within this study. The initial questionnaire was open for four months between January and April of 2021, with the interviews occurring between April and September of 2021. Recruitment for the

questionnaire was more difficult than initially anticipated and led to a greater length of time between interviews than would have been ideal. In this time, things like vaccine roll-outs, third and fourth waves, public health measures and rules for LTC all occurred and changed. While I've attempted to acknowledge and account for this by making it an integral aspect of my research findings, there is a chance that a participant interviewed in April would have different responses if they'd participated in September or vice versa.

## **5.6 Future work**

This study serves as an exploratory effort to share and make accessible the experiences of workers living in LTC. The most pressing follow-up work to this exploration is sharing the communication materials with stakeholders, industry representatives, and the general public. At the time of this writing, opportunities are available to share this research with members of CUPE and to package the data synthesis into an article aimed at a general audience. In sharing these frameworks and stories with different audiences, there is an opportunity to better understand how the research is understood and incorporate feedback to develop further a framework for combining quantitative and qualitative data.

The timing of this study represents a unique snapshot of experiences during the pandemic. Participant outreach occurred across January – September of 2021, and the changing nature of the pandemic means that even within the limits of this research, respondents were living in different realities when it came to protocols, vaccination status and public health measures. There is an opportunity as vaccination rates rise and the prevalence of outbreaks continues to revisit the experience of individuals within LTC. A

concentrated effort to distribute a second version of the sector-wide questionnaire with the goal of larger sample sizes may allow for further statistical analysis, though may be hampered by the need for considerable recall if participants are asked to comment on their experience throughout the pandemic. Nevertheless, as recommended by Brophy et al. (2021), an effort must be made to ensure LTC workers are heard and feel that their concerns are addressed as the sector continues to transform as a result of the pandemic.

Finally, while this research combined perspectives from journalism in the design of its research and communication, the two fields may provide further opportunities for collaboration between disciplinary professionals. The similarities between design principles and the creation of data visualizations show that there are shared values between the two fields when communicating with broad audiences, and a shared appreciation for revealing how things are and explaining complexity using graphics is simply the tip of the iceberg.

In exploring the discipline of journalism and trying to understand how it might relate to the field of design, I came across the concept of journalistic communication that ‘enacts solidarity’ in favour of ‘instilling empathy’ in the audience (Varma, 2019). To ‘Enact Solidarity’ in communication, as described by Anita Varma, one must emphasize the systemic factors that affect entire communities (Varma, 2020). Within the context of Varma’s argument, ‘solidarity’ is considered a “commitment to social justice that translates into action” (Scholz, 2008; Varma, 2020). In contrast to solidarity, evoking empathy occurs through the ‘personalization’ of an individual outside of the relevant social and institutional contexts (Varma, 2019). The issue with empathy as a humanizing technique is the documented occurrence of empathic fatigue (Höijer, 2004), wherein individuals inundated

with personalized stories of pain and suffering tend to disengage. The goal of enacting solidarity is to provide the contextual information necessary for the audience to transcend concern for an individual and recognize the power structures at work. This concept is something that I think would contribute to the discussion of design thinking as a conservative tool that ‘mines empathy’ for impact, rather than trying to contribute to social change (Iskander, 2018). While the scope of this work and the constraints of the pandemic and time meant that I was unable to explore further and understand this relatively complex and nuanced perspective on journalism, I found its criticisms of empathic approaches mirrored some of my misgivings regarding design activities (Section 1.1). As designers attempt to use the tools we know to tackle increasingly complex social contexts, there’s a need for reflection and responsibility, which may require outside perspectives to fully understand the implications of a design approach to knowledge communication.

# Chapter 6: Conclusion

This research explored the experiences of LTC workers during the COVID-19 pandemic through the combination of design and journalism methods. The impact of processes introduced to the LTC working environment, such as the SSWO and flexible IPAC protocols, were examined through the experiences and stories of LTC workers. I conducted a literature review to understand the current state of job design within LTC and get an idea of what changes experts in the field recommended. The literature review also shaped my approach to creating the research methodology by identifying perspectives on knowledge generation and communication within design and journalism suitable for research within LTC. Through a sector questionnaire distributed across multiple jobs within LTC and a series of semi-structured interviews with LTC workers, I generated sets of qualitative and quantitative data that I could combine to explore the accessible communication of research data. Through the research analysis, I found five themes that can map to existing recommendations within the field. I also explored research communication through designing an interactive dashboard using knowledge from both design and journalism and through experimentation with software specific to data visualization and synthesis.

Through an interdisciplinary exploration into the use of narratives, worldview sharing, and visual research communication, I laid a foundation for future collaboration between the fields of design and journalism. I used the facilitative journalistic role to shape my design research narrative in a considered and thoughtful way. The facilitative role

allowed me to question if a research activity would meet the goal of sharing the perspectives of my research participants, exposing potential audiences to differing worldviews. By applying the shared principles between design and journalism to create visual communication, I determined that both disciplines could work together to develop data communication materials. This collaboration may be significant for interactive visualizations where user experience is critical to the overall communication effort. I found that design and journalism present many opportunities for future collaboration, both in terms of combining disciplinary knowledge and the potential for cooperation between individuals due to the shared language, principles and goals surrounding visual communication.

This research aimed to add human experiences and stories to the existing research within LTC during the COVID-19 pandemic. I hope that this research succeeded in capturing a unique and unprecedented snapshot of a moment in time where professionals in LTC were asked to step up and change nearly everything about their work experience for the good of their residents.

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# Appendices

# Appendix A Research clearance certificates

## Appendix A.1 Sector questionnaire ethics clearance Bruyère Continuing Care Research Ethics Board (BREB)

www.bruyere.org

  
*Bruyère pour des soins continus.  
Bruyère Is Continuing Care.*

Hôpital Élisabeth-Bruyère Hospital  
43, rue Bruyère St.  
Ottawa ON K1N 5C8  
Tél./Tel.: 613-562-6262  
Télec./Fax: 613-562-6367

Hôpital Saint-Vincent Hospital  
60, rue Cambridge St. N.  
Ottawa ON K1R 7A5  
Tél./Tel.: 613-562-6262  
Télec./Fax: 613-782-2785

Résidence Élisabeth-Bruyère Residence  
75, rue Bruyère St.  
Ottawa ON K1N 5C8  
Tél./Tel.: 613-562-6262  
Télec./Fax: 613-562-4223

Résidence Saint-Louis Residence  
879, ch. Hiawatha Park Rd.  
Ottawa ON K1C 2Z6  
Tél./Tel.: 613-562-6262  
Télec./Fax: 613-683-5001

Village Bruyère Village  
879, ch. Hiawatha Park Rd.  
Ottawa ON K1C 2Z6  
Tél./Tel.: 613-562-6262  
Télec./Fax: 613-683-5001

Centre de médecine familiale Bruyère  
Bruyère Family Medicine Centre  
75, rue Bruyère St.  
Ottawa ON K1N 5C8  
Tél./Tel.: 613-241-3344  
Télec./Fax: 613-241-1971

Centre de médecine familiale Primrose  
Primrose Family Medicine Centre  
35, rue Primrose St.  
Ottawa ON K1R 0A1  
Tél./Tel.: 613-230-7788  
Télec./Fax: 613-230-7778

Institut de recherche Bruyère  
Bruyère Research Institute  
43, rue Bruyère St.  
Ottawa ON K1N 5C8  
Tél./Tel.: 613-562-6045  
Télec./Fax: 613-562-4266

Fondation Bruyère Foundation  
43, rue Bruyère St.  
Ottawa ON K1N 5C8  
Tél./Tel.: 613-562-6319  
Télec./Fax: 613-562-6023

Affilié à / Affiliated with  
  
U Ottawa

January 4, 2021

**Dr. Amy Hsu,**

**Re :** "The Impact of Covid-19 on Workforce Psychology Compensation and Sense of Wellbeing in Multisite Workers in Long-Term Care" (Bruyère REB Protocol # M16-20-66)

**Final Approval**

Dear Dr. Amy Hsu,

The Bruyère Continuing Care Research Ethics Board (REB) is pleased to give you ethical approval for the above noted study for the period of January 4, 2021 to January 4, 2022.

The following documents have been approved:

- BREB version date: December 17, 2020;
- Appendix A Survey (FR);
- Appendix B Newsletter Recruitment v1 (FR);
- Appendix D Recruitment Flyer (FR);
- Study Protocol version date: December 17, 2020;
- Informed Consent Form, version date: December 21, 2020;
- Recruitment Emails, version date: December 17, 2020;
- Budget;

**The following documents have been acknowledged:**

- TCPS2 certificates;
- Pledges of Confidentiality;
- Signed departmental approval from BRI
- Service Agreement

The Bruyère Continuing Care REB complies with the membership requirements and operates in compliance with the Tri-Council Policy Statement 2: Ethics Conduct for Research Involving Humans; the International Conference on Harmonization - Good Clinical Practice: Consolidated Guideline; the provisions of the Personal Health Information Protection Act 2004; and the Food and Drug Act of Health Canada and its applicable Regulations.

Please be advised that any complaints made by participants must be reported to the REB. All changes to the approved protocol must be approved by the REB.

*À Bruyère, nous vous promettons... bonté • sécurité • bienveillance  
At Bruyère, we promise you... Kind • Safe • Care*

Please complete an Annual Project Update/Notification of Termination form 6 weeks prior to the approval end date as noted above.

We wish you the best of luck with your research endeavors.

Sincerely,  
  
Gordon DuVal, SJD  
Chair, Bruyère Research Ethics Board  
Bruyère Continuing Care  
gduval@bruyere.org

# Appendix A.2 Administrative review Carleton University Research Ethics Board – B (CUREB-B)



Office of Research Ethics  
4500 ARISE Building | 1125 Colonel By Drive  
Ottawa, Ontario K1S 5B6  
613-520-2600 Ext: 4085  
[ethics@carleton.ca](mailto:ethics@carleton.ca)

## CERTIFICATION OF INSTITUTIONAL ETHICS CLEARANCE

This document is an administrative clearance corresponding to approved protocol #**M16-20-66** from the **Bruyère Continuing Care** Research Ethics Board. The Carleton University Research Ethics Board-B (CUREB-B) has granted administrative clearance for the research project described below and research may now proceed. CUREB-B is constituted and operates in compliance with the *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans* (TCPS2).

**Ethics Protocol Clearance ID:**Project # 115117

**Research Team:** **Prof. Chantal Trudel (Primary Investigator)**  
Aneurin Bosley (Principal Investigator (External))  
Dawson Clark (Student - MA student)

**Project Title:** The impact of COVID-19 on workforce psychology, compensation and sense of wellbeing in multisite workers in long-term care

**Funding Source** (If applicable):

Effective: **January 14, 2021**

Expires: **January 31, 2022.**

### **Restrictions:**

**This certification is subject to the following conditions:**

1. Clearance is granted only for the research and purposes described in the application.
2. Any modification to the approved research must be submitted to CUREB-B via a Change to Protocol Form. All changes must be cleared prior to the continuance of the research.
3. An Annual Status Report for the renewal or closure of ethics clearance must be submitted and cleared by the renewal date listed above. Failure to submit the Annual Status Report will result in the closure of the file. If funding is associated, funds will be frozen.

4. During the course of the study, if you encounter an adverse event, material incidental finding, protocol deviation or other unanticipated problem, you must complete and submit a Report of Adverse Events and Unanticipated Problems Form.
5. It is the responsibility of the student to notify their supervisor of any adverse events, changes to their application, or requests to renew/close the protocol.
6. Failure to conduct the research in accordance with the principles of the *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans 2nd edition* and the *Carleton University Policies and Procedures for the Ethical Conduct of Research* may result in the suspension or termination of the research project.

**Special requirements for COVID-19:**

If this study involves in-person research interactions with human participants, whether on- or off-campus, the following rules apply:

1. The study requires prior approval of the relevant Dean's Office. See [Principles and Procedures for On-campus Research at Carleton University](#) and note that this document applies both to on- and off-campus research that involves human participants. Please contact your Dean's Office for information about obtaining this approval.
2. You must submit a copy of that approval to the Office of Research Ethics prior to starting any in-person research activities.
3. If the Dean's approval requires any significant change(s) to any element of the study, you must notify the Office of Research Ethics of such change.

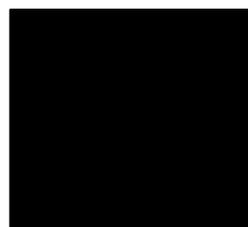
Upon reasonable request, it is the policy of CUREB, for cleared protocols, to release the name of the PI, the title of the project, and the date of clearance and any renewal(s).

Please email the Research Compliance Coordinators at [ethics@carleton.ca](mailto:ethics@carleton.ca) if you have any questions.

**Date: January 14, 2021**



Bernadette Campbell, PhD, Chair, CUREB-B



Natasha Artemeva, PhD, Chair, CUREB-B

## Appendix A.3 Semi-structured interview clearance Carleton University Research Ethics Board B (CUREB-B)



Office of Research Ethics  
4500 ARISE Building | 1125 Colonel By Drive  
Ottawa, Ontario K1S 5B6  
613-520-2600 Ext: 4085  
ethics@carleton.ca

### CERTIFICATION OF INSTITUTIONAL ETHICS CLEARANCE

The following research has been granted clearance by the Carleton University Research Ethics Board-B (CUREB-B). CUREB-B is constituted and operates in compliance with the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS2).

**Ethics Clearance ID:** Project # 115115

**Project Team Members: Dawson Clark (Primary Investigator)**

Aneurin Bosley (Research Supervisor)

Chantal Trudel (Research Supervisor)

**Study Title: Exploring the Impact of the Covid-19 Pandemic on Long-Term Care Employee's Work Experience through the intersection of Journalistic Approaches and Design Research Techniques**

**Effective:** March 02, 2021

**Expires:** March 31, 2022

**This certification is subject to the following conditions:**

1. Clearance is granted only for the research and purposes described in the application.
2. Any modification to the approved research must be submitted to CUREB-B via a Change to Protocol Form. All changes must be cleared prior to the continuance of the research.
3. An Annual Status Report for the renewal or closure of ethics clearance must be submitted and cleared by the renewal date listed above. Failure to submit the Annual Status Report will result in the closure of the file. If funding is associated, funds will be frozen.
4. During the course of the study, if you encounter an adverse event, material incidental finding, protocol deviation or other unanticipated problem, you must complete and submit a Report of Adverse Events and Unanticipated Problems Form.
5. It is the responsibility of the student to notify their supervisor of any adverse events, changes to their application, or requests to renew/close the protocol.
6. Failure to conduct the research in accordance with the principles of the *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans 2nd edition* and the *Carleton*

*University Policies and Procedures for the Ethical Conduct of Research* may result in the suspension or termination of the research project.

**IMPORTANT: Special requirements for COVID-19:**

If this study involves **in-person research interactions with human participants**, whether on- or off-campus, the following rules apply:

1. Upon receiving clearance from CUREB, please seek the approval of the relevant Dean for your research. Provide a copy of your CUREB clearance to the Dean for their records. See [Principles and Procedures for On-campus Research at Carleton University](#) and note that this document applies both to on- and off-campus research that involves human participants. Please contact your Dean's Office for more information about obtaining their approval.
2. Provide a copy of the Dean's approval to the Office of Research Ethics prior to starting any in-person research activities.
3. If the Dean's approval requires any significant change(s) to any element of the study, you must notify the Office of Research Ethics of such change(s).

Upon reasonable request, it is the policy of CUREB, for cleared protocols, to release the name of the PI, the title of the project, and the date of clearance and any renewal(s).

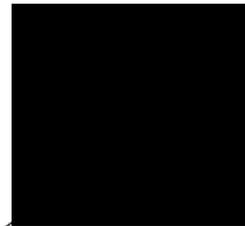
Please email the Research Compliance Coordinators at [ethics@carleton.ca](mailto:ethics@carleton.ca) if you have any questions.

**CLEARED BY:**

**Date: March 02, 2021**



Bernadette Campbell, PhD, Chair, CUREB-B



Natasha Artemeva, Co-Chair, PhD, Vice Chair, CUREB-B

# Appendix B Data standards for the identification and monitoring of systemic racism

Link to full standard (must be copy-pasted into browser):

<https://bit.ly/antiracismdatastandards>

ANTI-RACISM DATA STANDARDS

help identify need for increased access to services in an Indigenous language, or offering basic spiritual supports appropriate to a specific community.

**Collection of Personal Information about Race**

**Standard 14. Race Question**

PSOs must collect personal information about race using a preamble and question that enables individuals to self-report race as a social description or category. The following preamble and question are consistent with this approach:

Pre-ample: In our society, people are often described by their race or racial background. For example, some people are considered "White" or "Black" or "East/Southeast Asian," etc.

Question: "Which race category best describes you? Select all that apply."

**Rationale**

Systemic racism is shaped by how society categorizes individuals into racial groups. Race is a social construct, not a reflection of personal identity (as distinct from individual, ethnic or cultural identity). The approach to "race" reflected in the Standards best serves the purpose of identifying and monitoring systemic racism.

**Guidance**

PSOs should use the preamble and question provided in this Standard unless there is strong evidence that a more plain language version is appropriate and improves the collection of race information.

Wherever feasible, a preamble should be placed immediately before the race question to help respondents understand what the question will be asking. If collecting information online, PSOs may choose to provide the preamble and category descriptions or examples as an "info tip" or "tool tip" (text that appears when a cursor hovers over the item without clicking) to make the question clearer.

For the purposes of identifying and monitoring systemic racism barriers and disadvantages, it is important to recognize race as a social construct. Ideas about race are often ascribed to or imposed on people, and individuals and groups can be racialized by others in ways that affect their experiences and how they are treated. Race as a social category is distinct from but may overlap with how people identify themselves, which can be much more varied and complex.

The race question provided in this Standard aligns with how researchers and organizations in other jurisdictions ask questions about race. Using race categories that measure and reflect how an individual may be described by others helps to better identify Indigenous, Black, and racialized communities' experiences and treatment in society.

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**Standard 15. Race Categories**

PSOs must collect personal information about race using the race categories and applying the response rule set out in the table below.

PSO must present the categories in alphabetical order unless there is evidence that a different order might increase response rates, such as most to least frequent responses to reflect local demographics or individuals most likely to access a program, service, or function.

Wherever feasible, online surveys, forms, and interviews must include the examples or descriptions provided to help individuals select the appropriate responses. Organizations must not introduce subcategories under the required race categories, except where noted in Table 1.

Table 1. Valid Values for Race Categories

Race categories*	Description/examples
1. Black	African, Afro-Caribbean, African-Canadian descent
2. East/Southeast Asian  (Optional**: May collect as two separate categories – East Asian and Southeast Asian)	Chinese, Korean, Japanese, Taiwanese descent  Filipino, Vietnamese, Cambodian, Thai, Indonesian, other Southeast Asian descent
3. Indigenous (First Nations, Métis, Inuk/Inuit) ***	First Nations, Métis, Inuit descent
4. Latino	Latin American, Hispanic descent
5. Middle Eastern	Arab, Persian, West Asian descent, e.g. Afghan, Egyptian, Iranian, Lebanese, Turkish, Kurdish, etc.
6. South Asian	South Asian descent, e.g. East Indian, Pakistani, Bangladeshi, Sri Lankan, Indo-Caribbean, etc.
7. White	European descent
8. Another race category	Another race category not described above [optional to allow write-in response]
Prefer not to answer (Optional value)	Permitted only in oral interview processes to record that the question was asked and the respondent chose not to answer.

**Response rule:** Respondents may select all that apply.

## ANTI-RACISM DATA STANDARDS

### Notes:

\* A separate standard for race categories applies for POI data (Section 7 Standards for Participant Observer Information).

\*\* Organizations may collect 'East/Southeast Asian' as two separate categories, with appropriate examples provided, where there is evidence this would improve data quality.

\*\*\* If providing examples on the form, then "First Nations, Métis, Inuit" need only be included once.

### Rationale

The race categories reflect how people generally understand and use race as a social descriptor in Ontario. These are considered commonly used categories, but individuals may describe their racial backgrounds in ways that are not equivalent to the categories above. Therefore, the open text or "Another race category" option is included.

Some people have more than one racial background. Allowing multiple selection instead of a generic "mixed race" option provides more accurate information.

### Guidance

Race categories are used to identify and track the impacts of potential systemic racism, including how individuals may be racialized and may experience inequitable treatment or access to programs, services, and functions as a result.

PSOs choosing to provide an open text response option for "another race category," should give additional instructions to respondents that they should not to write in "mixed" or "bi-racial" but rather select as many categories as apply.

East Asian and Southeast Asian may be separated into two response options instead of one. This should only be done if the PSO has evidence that presenting them separately is more responsive to clients' needs and would improve the accuracy of responses.

"Indigenous" refers to people who are indigenous to North America (First Nations, Métis, Inuit), and is included to help with understanding how Indigenous peoples may be racialized as a group. This is distinct from the question about whether an individual self-identifies as First Nations, Métis, and/or Inuit, which is collected separately.

### Identifying race categories used in Ontario

The categories in this Standard are the main race categories commonly used as social descriptors in Ontario. They are not based on science or biology but on differences that society has created (i.e. is "socially constructed"). Over time, stereotypes and biases associated with racial categories can function to produce and maintain unequal levels of

## ANTI-RACISM DATA STANDARDS

power between social groups on the basis of perceived differences, often based on physical appearance, with unfair advantages for some and disadvantages for others.

Race is distinct from ethnic origin and religion. For example, "Black" is a racial category that includes people of diverse cultures and histories. "Jamaican," on the other hand, is an ethnic group with a widely shared heritage, ancestry, historical experience, and nationality. Some Ontarians with Jamaican origins may self-report as White, South Asian, or East/Southeast Asian. Similarly, people from many different racial backgrounds can share the same or similar religion, and people can share a racial background but hold different religious beliefs.

Race categories are distinct from geographic regions. Names of geographic regions are used in this Standard (East/Southeast Asian, Middle Eastern, and South Asian) to refer to groups of people perceived to belong to a racial group with common ancestral origins in that particular region of the world.

Individuals described by some categories, such as "Black," "East/Southeast Asian," "South Asian" and "White" may currently live anywhere in the world.

### Collection of Race-Related Personal Information

#### Standard 16. Collecting Personal Information about Religion

PSOs must collect personal information about religion using the question and response rules below to identify and monitor systemic racism and racial disparities in outcomes that people may experience on the basis of religion.

Religion refers to an individual's self-identification or affiliation with any religious denomination, group, or other religiously defined community or system of belief and/or spiritual faith practices.

PSOs may include examples for the values below, or subcategories as needed, to be responsive and inclusive and help individuals select the appropriate response. However, responses must be mapped to the nine categories below for analyses and reporting under the ARA.

Religion Question and Categories

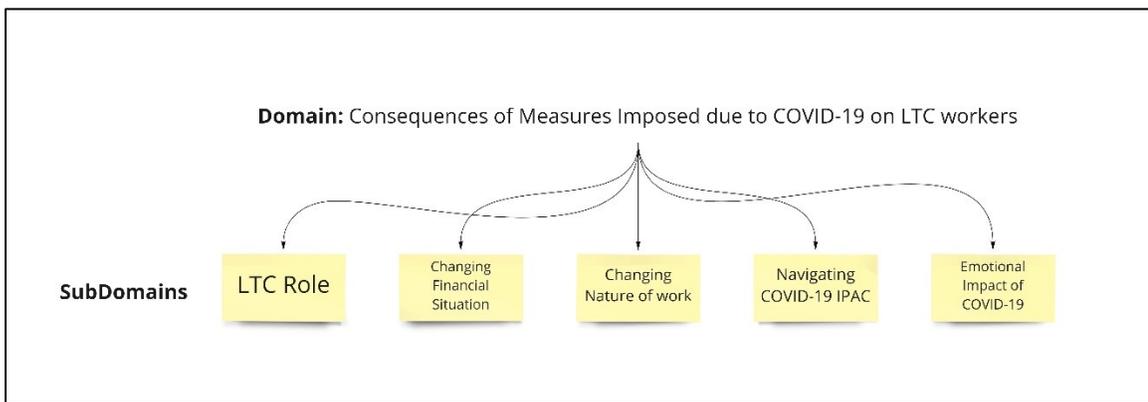
**Question:** What is your religion and/or spiritual affiliation? Select all that apply.

**Values (valid code list):**

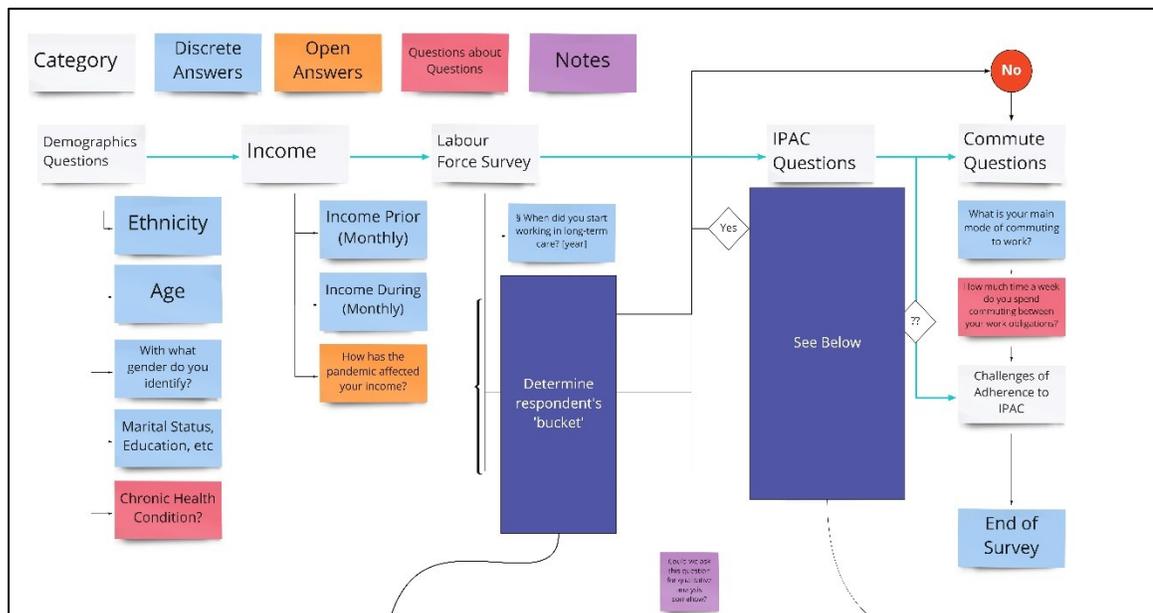
# Appendix C The questionnaire design

## Appendix C.1 Using Miro to design the questionnaire

Miro was a useful tool for early questionnaire development activities. The platform gave me the ability to visualize and connect concepts and areas of inquiry, and attempt to understand the respondent journey through visualizing the survey flow.

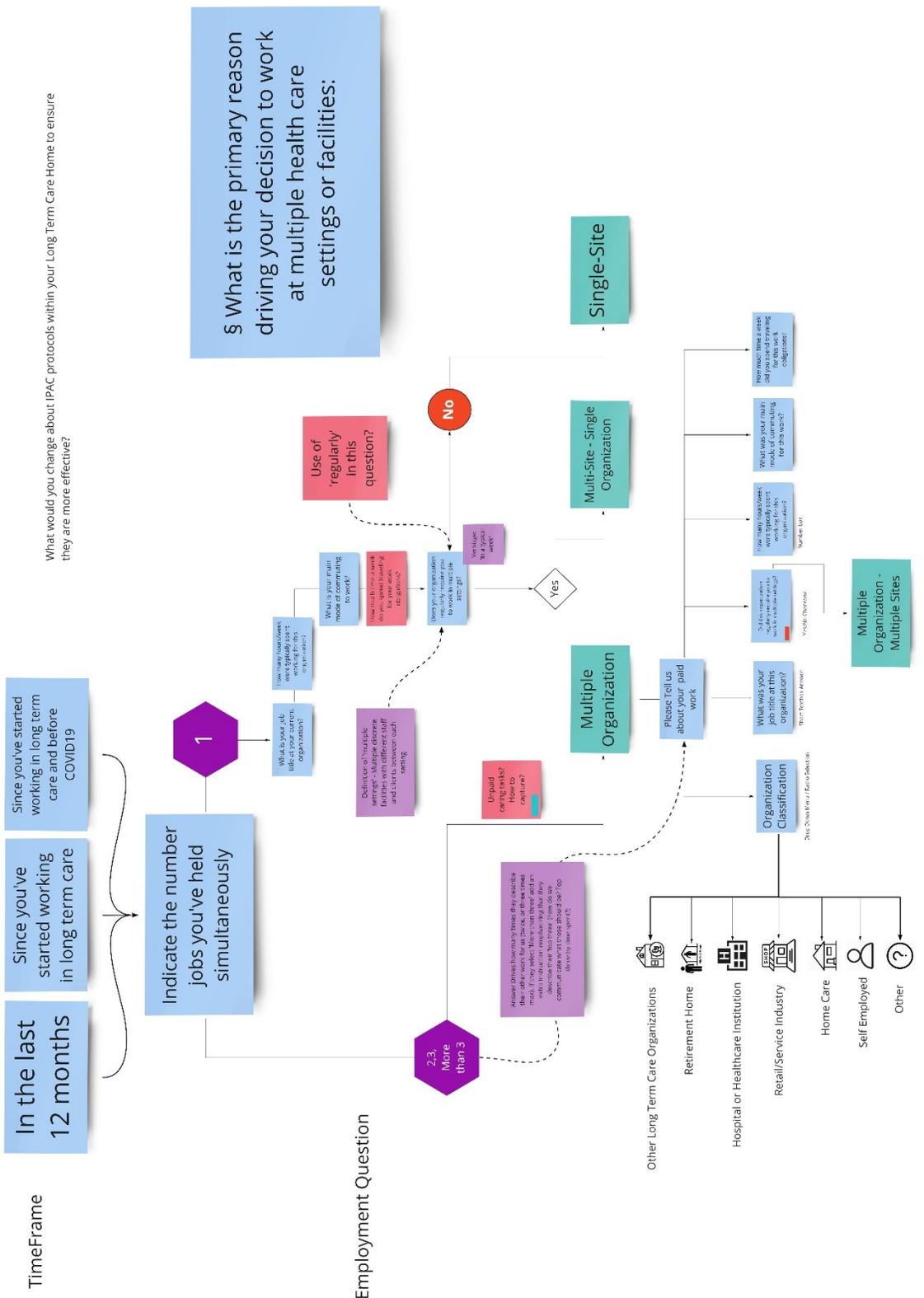


**Above:** Connecting ideas and concepts with Miro



**Below:** Organizing the survey into sections and flows

**Next Page:** The ‘infinite’ canvas of Miro allows for the mapping of complex flows or user journeys.



What would you change about IPAC protocols within your Long Term Care Home to ensure they are more effective?

## Appendix C.2 Copy of questionnaire

### Long-Term Care - Work Survey V3

---

Start of Block: Intro to Survey

#### Exploring the Impact of the COVID-19 Pandemic on Long-Term Care Workers

As a long-term care employee, we hope you can help us understand your experience of the COVID-19 pandemic and the impact it has had on you and your work. This online survey, which should take no more than 15 minutes to complete, is being conducted as part of a Masters Thesis by Dawson Clark of the Carleton University School of Industrial Design. This study is taking place under the supervision of Dr. Amy Hsu of Bruyère Research Institute, Chantal Trudel, Associate Professor in the School of Industrial Design and Aneurin Bosley, Assistant Professor in the School of Journalism at Carleton University. We do not think there are any risks to you in taking this survey. However, some questions inquire about your physical, mental, and financial health. These questions may be sensitive and may make you feel uncomfortable. If you feel you could benefit from counselling after taking this survey, please contact a professional counselling service, the following link may be a good place to start: [The Royal - COVID Frontline Wellness](#) Your personal information will be protected and kept confidential. However, absolute privacy cannot be guaranteed. Research records identifying you may be reviewed by the Bruyère Continuing Care Research Ethics Board and Carleton University Research Ethics Board to monitor the research. The results of this study may also be published. The information you provide in this survey will be presented so that it will not be possible to identify you. This anonymous information may be shared with other researchers for them to assess or build on this study.

The information we collect will be password protected. The survey data will be stored on a secure website called Qualtrics. Qualtrics has multiple layers of security to make sure that the data we collect remains private and secure. Only the researchers with authorized access to our survey account can download the data from this server. Researchers will disable the option in Qualtrics to collect IP addresses. After the study is completed, we will retain your data for 10 years. The Qualtrics server is located in the U.S. and subject to U.S. laws on data privacy. If you would like to know more about Qualtrics' security, their security statement can be found [here](#).

Your participation in this survey is voluntary and you are free to decline. You will be compensated through a \$10 electronic gift card for doing this survey. If you decide to withdraw after you submit the survey, we will remove your responses if you notify the researcher within one month of taking the survey.

This project has been reviewed and approved by the Bruyère Research Ethics Board (**Protocol #\*\*\*\*\***). If you have any ethical concerns about the study or the way it is conducted, please contact the Bruyère Research Ethics Board at (613) 562-6262 Ext. 4003 or [REB@bruyere.org](mailto:REB@bruyere.org).

By clicking 'I Agree' you agree to participate in this survey

---

Do you agree to participate in this survey?

- I agree
- I do not agree

End of Block: Intro to Survey

---

Start of Block: Verification of Eligibility

The following questions will make sure you are eligible to complete this survey.

---

Do you currently work in a Long-Term Care Home?

- Yes
  - No
- 

Did you work in a Long-Term Care Home before the COVID-19 single site legislation passed on April 22nd, 2020?

- Yes
- No

End of Block: Verification of Eligibility

---

Start of Block: Number of Jobs

The next questions are about the number of jobs you have held before and after the 'Limiting Work to a Single Long-Term Care Home' legislation passed by the government of Ontario

The legislation states that as an employee of a long-term care provider working in a long-term care home, you may not work:

(a) in another long-term care home operated or maintained by the long-term care provider; (b) as an employee of any other health service provider; or (c) as an employee of a retirement home. Throughout this survey this legislation will be referred to as the 'COVID-19 single site restriction'

---

How many jobs did you have at the same time in the twelve months **BEFORE** the 'COVID-19 single site restriction' legislation?

- 1 (Just in one long-term care home)
  - 2 jobs
  - 3 or more jobs
- 

The following questions are about your **second and/or third job(s)**, *before* the COVID-19 single site restriction. We will ask some more in-depth questions about your primary long-term care job later.

---

What did you do for your **second** job **before** the COVID-19 single site restriction?

- I worked in a long-term care home
- I worked in a retirement home
- I worked for a hospital or another health service provider
- I worked in home care
- I worked in retail
- I worked in the service industry
- I worked in an office
- I worked in manufacturing / at a factory
- I worked in food service / at a restaurant
- I was self employed
- I did something else (please specify)

---

---

About how many hours **per week** were you working for your **second job before** the COVID-19 single site restriction? (Before March 2020)

- 0 - 4
- 5 - 9
- 10 - 14
- 15 - 19
- 20 - 24
- 25 - 29
- 30 - 34
- 35 - 39
- 40 - 44
- 45+

---

Please enter the name and town/city of the long-term care home that you worked at for your **second job**

- LTC Home Name \_\_\_\_\_
- LTC Home City \_\_\_\_\_

---

Are you still doing this job?

- Yes
  - No
-

What was your **third job before** the COVID-19 single site restriction?

- I worked in a long-term care home
- I worked in a retirement home
- I worked for a hospital or another health service provider
- I worked in home care
- I worked in retail
- I worked in the service industry
- I worked in an office
- I worked in manufacturing / at a factory
- I worked in food service / at a restaurant
- I was self employed
- I did something else (Please Specify)

---

---

About how many hours **per week** were you working for your **third** job **before** the COVID-19 single site restriction? (Before March 2020)

- 0 - 4
- 5 - 9
- 10 - 14
- 15 - 19
- 20 - 24
- 25 - 29
- 30 - 34
- 35 - 39
- 40 - 44
- 45+

---

Please enter the name and town/city of the long-term care home that you worked at for your **third** job

- LTC Home Name \_\_\_\_\_
- LTC Home City \_\_\_\_\_

---

Are you still doing this job?

- Yes
  - No
-

The following questions ask about your jobs after April 22nd 2020

---

How many jobs do you now have, **AFTER** the 'Covid-19 single site restriction' legislation?  
(Since April 22, 2020)

- 1 (Just my current position in a long-term care home)
  - 2 jobs
  - 3 or more jobs
- 

The following questions are about your **second and/or third job(s)**, *after* the COVID-19 single site restriction. We will ask some more in-depth questions about your primary long-term care job later.

---

What is your **second** job **after** the COVID-19 single site restriction?

- I work in a long-term care home
- I work in a retirement home
- I work for a hospital or another health service provider
- I work in home care
- I work in retail
- I work in the service industry
- I work in an office
- I work in manufacturing / at a factory
- I work in food service / at a restaurant
- I am self employed
- I do something else (please specify)

\_\_\_\_\_

-----

About many **hours per week** are you working for your **second** job? (Since April 2020)

- 0 - 4
- 5 - 9
- 10 - 14
- 15 - 19
- 20 - 24
- 25 - 29
- 30 - 34
- 35 - 39
- 40 - 44
- 45+

What is your **third job after** the COVID-19 single site restriction?

- I work in a long-term care home
- I work in a retirement home
- I work for a hospital or another health service provider
- I work in home care
- I work in retail
- I work in the service industry
- I work in an office
- I work in manufacturing / at a factory
- I work in food service / at a restaurant
- I am self employed
- I do something else (please specify)

---

---

About many hours **per week** are you working for your **third** job? (Since April 2020)

- 0 - 4
- 5 - 9
- 10 - 14
- 15 - 19
- 20 - 24
- 25 - 29
- 30 - 34
- 35 - 39
- 40 - 44
- 45+

End of Block: Number of Jobs

---

Start of Block: Current Long-Term Care Job

The following questions are about your **current** long-term care job.

---

Please select the role that best describes your current long-term care job

- Support Staff (Janitorial, Services, Culinary)
  - Personal Support Worker
  - Registered Nurse
  - Registered Practical Nurse
  - Physician
  - Director of Care
  - Administrative
  - Allied Health Professional (ie. Physical Therapist, Respiratory Therapist, Dietitian etc.)  
(Please Specify) \_\_\_\_\_
  - Other (Please Specify) \_\_\_\_\_
- 

Please enter the name and town/city of your current long-term care home

- LTC Home Name \_\_\_\_\_
  - LTC Home City \_\_\_\_\_
-

About how many **hours per week** were you working at this job **BEFORE** the single site order?  
(Before March 2020)

- 0 - 4
  - 5-9
  - 10-14
  - 15-19
  - 20-24
  - 25-29
  - 30-34
  - 35-39
  - 40-44
  - 45+
-

About how many **hours per week** are you working at this job **AFTER** the single site order?  
(Since April 2020)

- 0 - 4
  - 5-9
  - 10-14
  - 15-19
  - 20-24
  - 25-29
  - 30-34
  - 35-39
  - 40-44
  - 45+
- 

How do you travel to your current long-term care job? (Select all that apply)

- I walk
  - I ride a bike
  - I take public transit
  - I take a car service (Uber/Lyft/Taxi)
  - I drive
  - I carpool with others
-

About how much total time do you spend each day travelling to work and back home again?  
(Add the time it takes for you to get to and from work on a normal day)

Everyday I spend about...

- 15 minutes commuting
- half an hour commuting
- an hour commuting
- an hour and a half commuting
- two hours commuting
- three hours commuting
- more than three hours commuting

End of Block: Current Long-Term Care Job

---

Start of Block: Working during the pandemic

In the following section, we will ask you questions about what it has been like working in your current long-term care job after the single site order was put in place. (Since April 2020)

---

Did you work in a long-term Care home that had a COVID-19 Outbreak? (A single laboratory confirmed case of COVID-19 in a resident or staff of a long-term care home is considered a confirmed COVID-19 outbreak).

- Yes
  - No
- 

The following questions are about your perception of **Infection Prevention and Control (IPAC) protocols** during the COVID-19 Pandemic.

Please indicate the extent to which you agree or disagree with the following statements.

IPAC Protocols during the pandemic...

	Strongly disagree	Mostly Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly Agree	Strongly agree
... were communicated to me on time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... were easy for me to understand	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... made me feel safe at work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... protected my co-workers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... protected the residents	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... were an effective means of protection for members of my household.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please indicate the extent to which you agree or disagree with the following statements.

	Strongly disagree	Mostly Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly Agree	Strongly agree
The way IPAC protocols are communicated helps me to understand how to do my daily work under these conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can complete my daily work tasks while following IPAC protocols	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The design of the physical space supports my ability to follow IPAC protocols (e.g., layout of spaces, equipment, cleaning of high touch surfaces, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My job tasks increased to follow IPAC protocols	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What changes, if any, would you make to your working conditions to support infection prevention and control (e.g., management, communication, implementation, process, task transfer, physical environment, etc.) and why?

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The following questions are designed to capture your experience surrounding Personal Protective Equipment (PPE) during the early stages of the pandemic (March - June 2020).

Please indicate the extent to which you agree or disagree with the following statements.

	Strongly disagree	Mostly Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly Agree	Strongly agree
There was enough PPE for me to do my job effectively	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was provided with adequate training about putting on and taking off PPE for my tasks and responsibilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I had questions about PPE, I knew how to get the right answers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please describe any challenges you experienced during the pandemic due to PPE (quality, quantity, ability to complete job tasks, etc.)

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The following questions are designed to understand **your personal well-being** during the early stages of the pandemic (March - June 2020)

*Since the onset of COVID-19 has your experience of the following moods increased, decreased or remained unchanged at your current job? (Since March 2020)*

	Increased a lot	Increased a little	Has not changed	Decreased a little	Decreased a lot
Tense, uneasy or worried	<input type="radio"/>				
Calm, contented or relaxed	<input type="radio"/>				
Depressed, gloomy or miserable	<input type="radio"/>				
Cheerful, enthusiastic or optimistic	<input type="radio"/>				
Lively, active or energized	<input type="radio"/>				

---

Is there anything else you'd like to share about your experience during this pandemic?

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End of Block: Working during the pandemic

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Start of Block: Income

The following questions relate to your monthly income before and after the pandemic.

Please estimate your combined **take-home** income from **all jobs** for the following questions.

\*

Roughly, what was your **monthly** take-home income, **from all jobs**, in the **January to March 2020** period, prior to the COVID-19 pandemic?

\_\_\_\_\_

\*

Roughly, what was your **monthly** take-home income, **from all jobs**, in the **May to July 2020** period, during the COVID-19 pandemic?

\_\_\_\_\_

The following questions are designed to understand **your perception of pay and compensation** as a result of the pandemic

*How have the following aspects of your pay or compensation changed since the onset of COVID-19? (Since March 2020)*

	Increased a lot	Increased a little	Has not changed	Decreased a little	Decreased a lot
Your take home pay	<input type="radio"/>				
The benefits you receive	<input type="radio"/>				
Your overall financial health	<input type="radio"/>				

End of Block: Income

---

Start of Block: Reasons for Multi-Site Work

*Thank you for continuing to complete this survey. The good news is, you're almost done! We are wrapping up with some simple demographic questions. These following questions are very important to us, so please take your time while answering. Every detail helps!*

---

What were the reasons behind your decision to work multiple jobs **before** the COVID-19 single site work restriction? Please select all that apply, and if possible, let us know why in the space provided.

- Financial (Feel free to tell us why in the space below)  
\_\_\_\_\_
  - Professional (Feel free to tell us why in the space below)  
\_\_\_\_\_
  - Personal (Feel free to tell us why in the space below)  
\_\_\_\_\_
  - Other (Please Specify) (Feel free to tell us why in the space below)  
\_\_\_\_\_
- 

After the COVID-19 single site work restriction was put in place, why did you choose to continue working at your current LTC home?

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What were the reasons behind your decision to work multiple jobs **after** the COVID-19 single site work restriction? Please select all that apply, and if possible, let us know why in the space provided.

Financial (Feel free to tell us why in the space below)

---

Professional (Feel free to tell us why in the space below)

---

Personal (Feel free to tell us why in the space below)

---

Other (Please Specify) (Feel free to tell us why in the space below)

---

End of Block: Reasons for Multi-Site Work

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Start of Block: Demographic Information

The following questions will conclude the survey, and provide a clearer picture of Long-Term Care workers in Ontario and how their work experience may differ along demographic labels.

What year were you born?

2005 ...

... 1930



Please select your country of birth

- Afghanistan
  - ...
  - Zimbabwe
- 

With which gender do you identify?

- Male
  - Female
  - Non-Binary
  - Prefer not to say
-

Including yourself, how many people live in your immediate household?

- 1 (Just Me)
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- More than 10

---

Who do you live with? (Select all that apply)

- Children
  - Partner/Husband/Wife
  - Parents
  - Other family
  - Unrelated Roommates
  - Other (Please Specify)
-

---

In our society, people are often described by their race or racial background. For example, some people are considered "White" or "Black" or "East/Southeast Asian," etc.

---

Which race category best describes you? Select all that apply

- Arab
  - Black
  - Chinese
  - Filipino
  - Indigenous North American
  - Japanese
  - Korean
  - Latin American
  - South Asian
  - Southeast Asian
  - West Asian
  - White
  - Other
- 

Are you now, or have you ever been a landed immigrant of Canada?

- Yes
- No

---

In what year did you first become a landed immigrant?

- 2020
- 2019...
- ... 1930

---

What is the highest level of education (certificate, diploma or degree) you have obtained?

- No certificate diploma or degree
- Secondary (high) school diploma or equivalency certificate
- Apprenticeship or trades certificate or diploma
- College, CEGEP or other non-university certificate or diploma
- University certificate or diploma below bachelor level
- Bachelor's degree
- University certificate, diploma or degree above bachelor level



In which country did you receive training for your current position?

- Afghanistan
- ...
- Zimbabwe

End of Block: Demographic Information

---

Start of Block: End of Survey

Thank you for completing this survey. To collect the \$10 electronic gift card, please enter your email or phone number below.

\_\_\_\_\_

Can we contact you for follow-up studies led by this research team? You will have the opportunity to decline our request later on if you are no longer interested. If you are not interested in being contacted at all, please select "Do not contact me further".

- Do not contact me further
- I would be interested in participating in a follow-up study

Please provide us with your contact information so that we can follow-up with you

- Name \_\_\_\_\_
- Preferred contact email \_\_\_\_\_
- Preferred contact phone number (leave blank if you would prefer to only be contacted by email) \_\_\_\_\_
- Is there anything we should know about contacting you? (preferred method, time, availability, etc.) \_\_\_\_\_

End of Block: End of Survey

## Appendix D The interview design

Interview Guide: Exploring the Impact of the COVID-19  
Pandemic on Long-Term Care Professionals Work Experience

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**Question 1. At your job, can you describe what a typical day is like for you?**

(Possible follow-up: What kind of tasks do you typically do? How frequently?  
How long do they take? Can you take us through the specifics on a couple of the  
tasks you perform most frequently?)

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**Question 2. When the single-site order was enacted, can you describe some of  
the ways your work and your schedule changed?**

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**Question 3. If you could change any aspects of your job, what would you change  
and why?**

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**Question 4. Could you describe some of the reasons you chose to stay in long-  
term care during the pandemic?**

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**Question 5. What are some of the things you would like members of the public to  
know about your work (that you think they may not understand)?**

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**Question 6. How do you feel about the future of work in long-term care?**

## Appendix E Open questionnaire items – first cycle descriptive categories

First Cycle Descriptive Coding Organization	
<i>Categories</i>	<i>Codes[references]</i>
Organization	<ul style="list-style-type: none"> <li>• Mention of Union [3]</li> <li>• Mention of Government [5]</li> </ul>
Job Design	<ul style="list-style-type: none"> <li>• Reasons for Leaving [3]</li> <li>• Support [3]</li> <li>• Getting to Work [3]</li> <li>• Physical Environment [9]</li> <li>• Co-Workers [13]</li> <li>• Management [19]</li> <li>• Hours [20]</li> <li>• Staffing [20]</li> <li>• Workload and Tasks [25]</li> <li>• Communication [25]</li> <li>• Reasons for Staying [91]</li> </ul>
Multi-Site Work	<ul style="list-style-type: none"> <li>• Mention of Multiple Sites [1]</li> </ul>
Desire for Change	<ul style="list-style-type: none"> <li>• Mention of Change [2]</li> <li>• Overt Frustration [7]</li> <li>• Suggestions for Improvement [21]</li> </ul>
Health Concerns	<ul style="list-style-type: none"> <li>• Mental Health [45]</li> <li>• Mention of Health [2]</li> <li>• Mention of Vaccine [2]</li> <li>• Personal COVID experience [2]</li> <li>• Family and COVID concerns [8]</li> </ul>
The Public	<ul style="list-style-type: none"> <li>• Mention of People Outside of LTC [6]</li> </ul>
IPAC	<ul style="list-style-type: none"> <li>• Mention of IPAC [10]</li> <li>• Mention of PPE [65]</li> <li>• Cleaning consumables [2]</li> </ul>
Residents	<ul style="list-style-type: none"> <li>• Mention of Residents [27]</li> </ul>
Finances	<ul style="list-style-type: none"> <li>• Mention of Finances [35]</li> </ul>



## Appendix G Further commentary on software used

As mentioned in the body of this thesis, I used several pieces of software to collect, analyze and visualize results. This section further expands on that software and outlines potential requirements for visualization software targeted at designers.

<b>Summary of Software Used for Thesis</b>			
<i>Software Name</i>	<i>Software Purpose</i>	<i>Advantages</i>	<i>Disadvantages</i>
Miro	<ul style="list-style-type: none"> <li>• Brainstorming</li> <li>• Survey flow design</li> <li>• Visual note taking</li> <li>• Qualitative data organization</li> </ul>	<ul style="list-style-type: none"> <li>• Flexible</li> <li>• Quick to work in</li> </ul>	<ul style="list-style-type: none"> <li>• Low fidelity</li> <li>• Limited graphic design toolset</li> </ul>
Qualtrics	<ul style="list-style-type: none"> <li>• Questionnaire design</li> <li>• Data collection</li> </ul>	<ul style="list-style-type: none"> <li>• Design and dissemination in one place</li> <li>• In-platform basic visualizations</li> </ul>	<ul style="list-style-type: none"> <li>• Limited data analysis tools</li> </ul>
Tableau	<ul style="list-style-type: none"> <li>• Quantitative data analysis</li> <li>• Quantitative data visualization</li> </ul>	<ul style="list-style-type: none"> <li>• Powerful quantitative data analysis</li> <li>• Ability to link data and graphical elements through dashboards</li> </ul>	<ul style="list-style-type: none"> <li>• Steep learning curve</li> <li>• Graphic tools missing features visual designers may be used to</li> </ul>
NVivio	<ul style="list-style-type: none"> <li>• Qualitative data analysis</li> <li>• Interview transcription</li> </ul>	<ul style="list-style-type: none"> <li>• Existing frameworks for managing qualitative data elements (interviews, participants, images, etc.)</li> <li>• Transcription capabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Limited visualization tools</li> <li>• Difficulty exporting data outside of application for further visualization or use</li> </ul>
Adobe Illustrator	<ul style="list-style-type: none"> <li>• Data visualization</li> <li>• Illustration</li> </ul>	<ul style="list-style-type: none"> <li>• Powerful illustration tools</li> </ul>	<ul style="list-style-type: none"> <li>• Limited data visualization capabilities</li> </ul>
Figma	<ul style="list-style-type: none"> <li>• Data visualization</li> <li>• Digital prototyping</li> </ul>	<ul style="list-style-type: none"> <li>• Intuitive software for creating digital prototypes</li> <li>• Simple illustration tools that allow numeric input</li> </ul>	<ul style="list-style-type: none"> <li>• No automated data visualization capabilities</li> </ul>

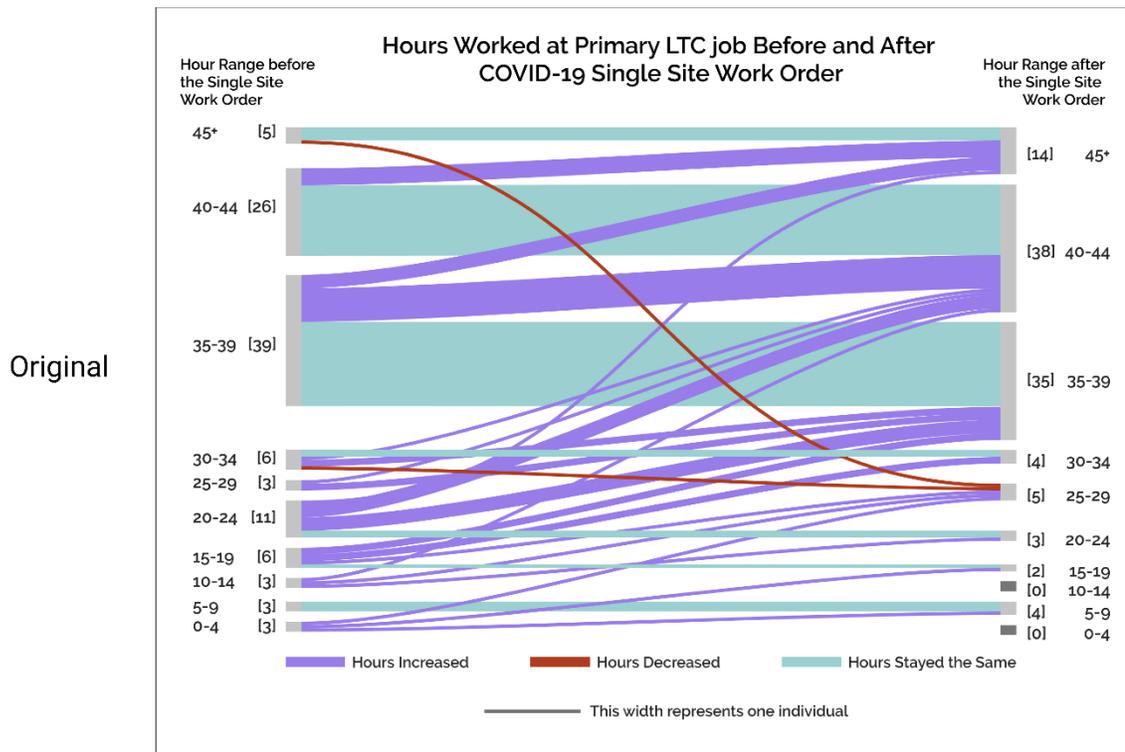
*TABLE 14 SOFTWARE SUMMARY*

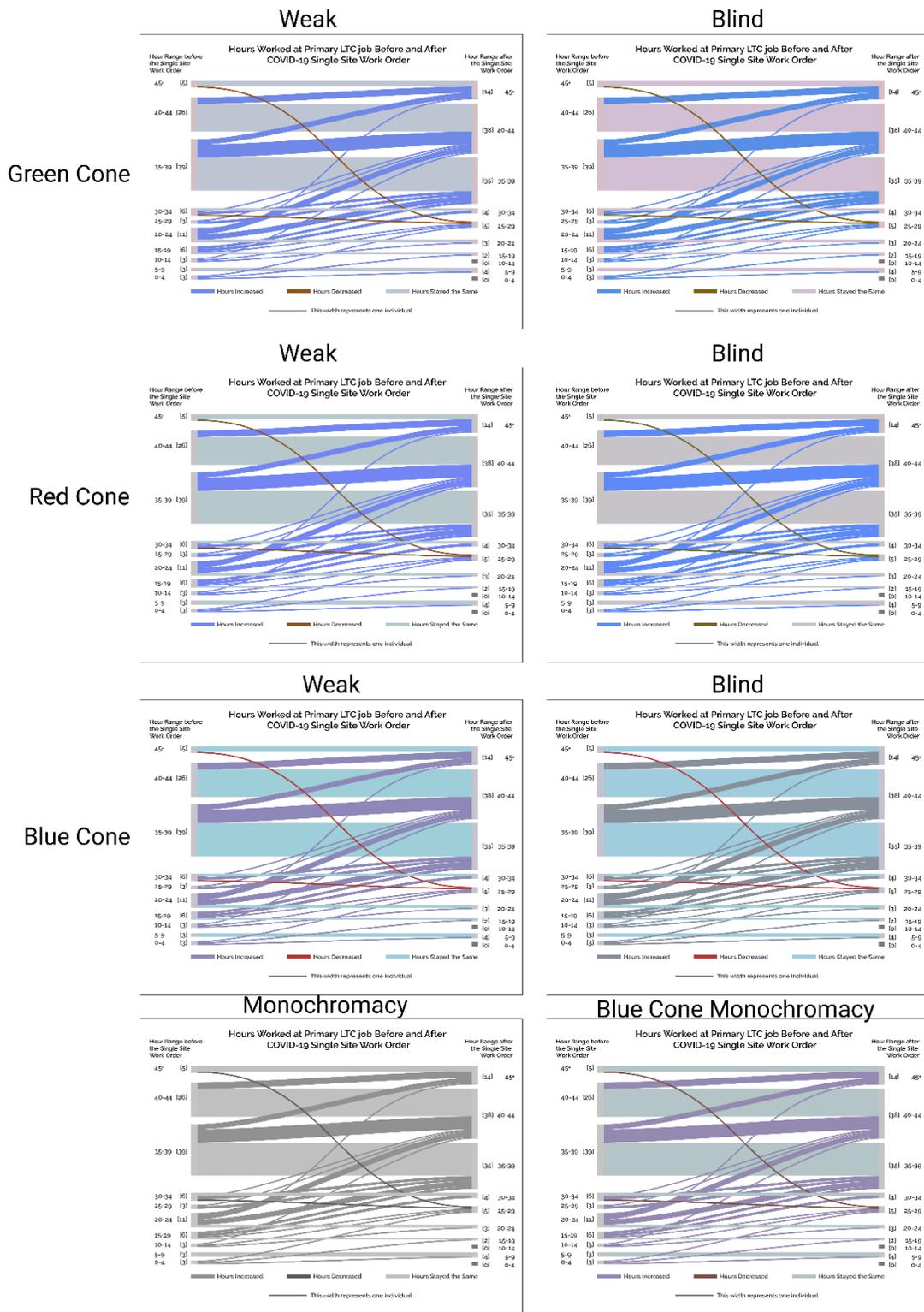
While I don't believe that one tool should be able to do everything in the above list, it would be nice to see a data visualization software suite that feels more intuitive to individuals with a graphic design background. In using Tableau's tools, it would often feel

clunky or more difficult than it should be to tweak text formatting, or link a specific piece of data to a specific visual expression (ie. Linking the number of respondents with more than one job to a display of individual marks for each respondent). When trying to create multiple visualizations with the same general format, differing values would often override the visual formatting and create graphics that were inconsistent. It's for this reason that many of the data visualizations in this thesis were created using data exported from tableau as a table and manually recreated in Adobe Illustrator or Figma. A hybrid-type software that allows for intuitive linking of a shape or object's 'visual variables' (ie. count, length, colour, diameter, area) to specific data like Tableau, while still allowing the designer to tweak and adjust positions, typefaces, and details like Illustrator could prove to be a powerful data visualization tool.

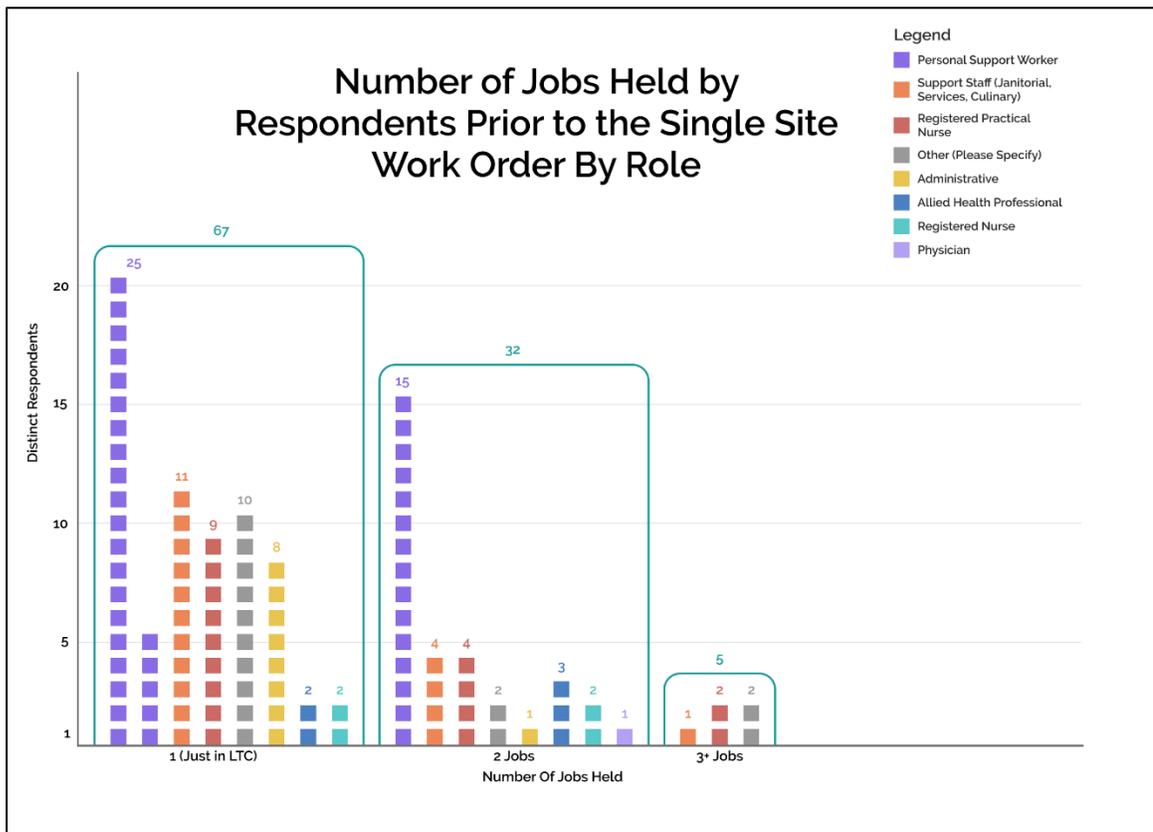
## Appendix H Accessibility considerations in visualization design

My data visualizations attempted to reflect principles of accessibility that I learned through my graduate certificate experience in the Research and Education in Accessibility, Design and Innovation (READi) program. The first example demonstrates how the colour palette used for the Sankey diagram appears for individuals living with different kinds of colorblindness. The palette uses both hue and saturation to differentiate between the three signifier colours across different visual abilities.

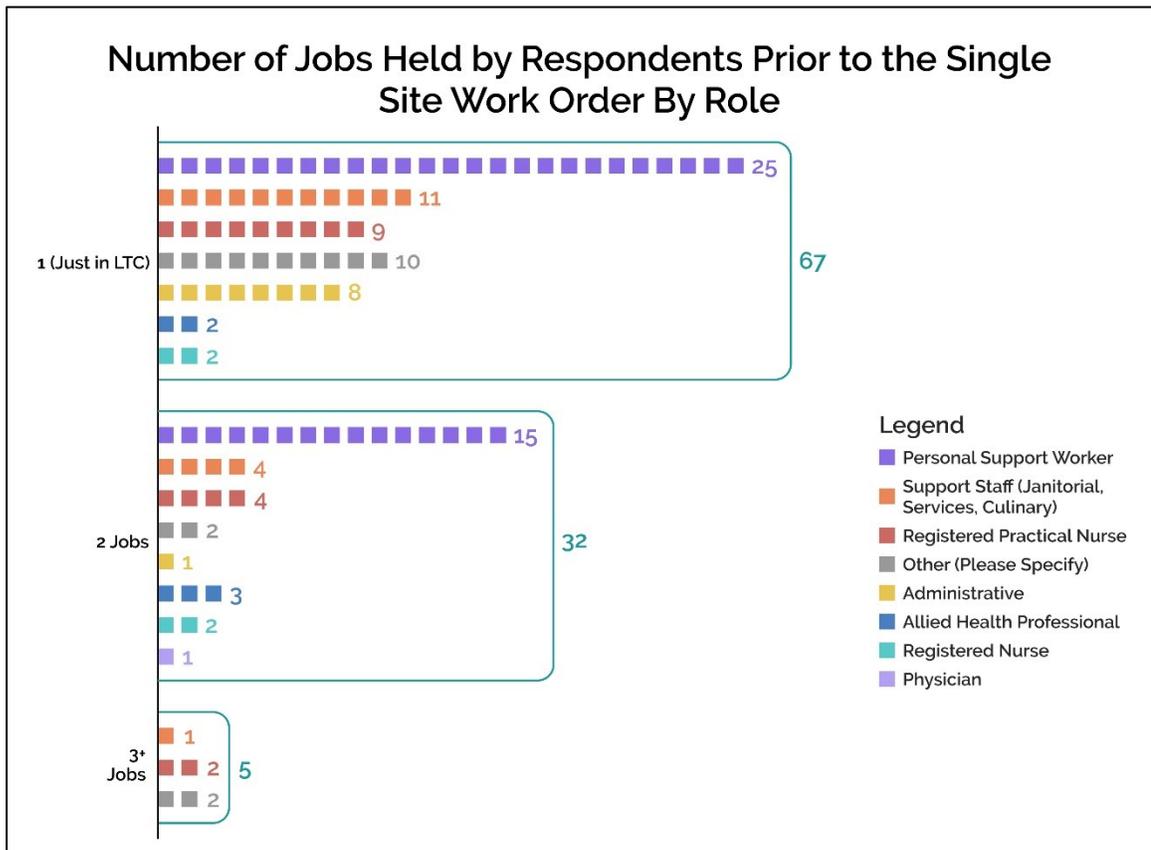




Another aspect of the visualizations that incorporated perspectives on accessibility and data communication was the horizontal orientation of elements for the demographic style visualizations. This orientation occurred after feedback on the first round of visualizations, with the initial vertical orientation and the subsequent horizontal orientation pictured. In terms of accessibility displaying comparable categories using length allows for easier to understand comparison's as opposed to something like a pie chart that uses area. The horizontal orientation works better for the portrait layout of a document as categories can flow down the page and make better use of available real-estate.



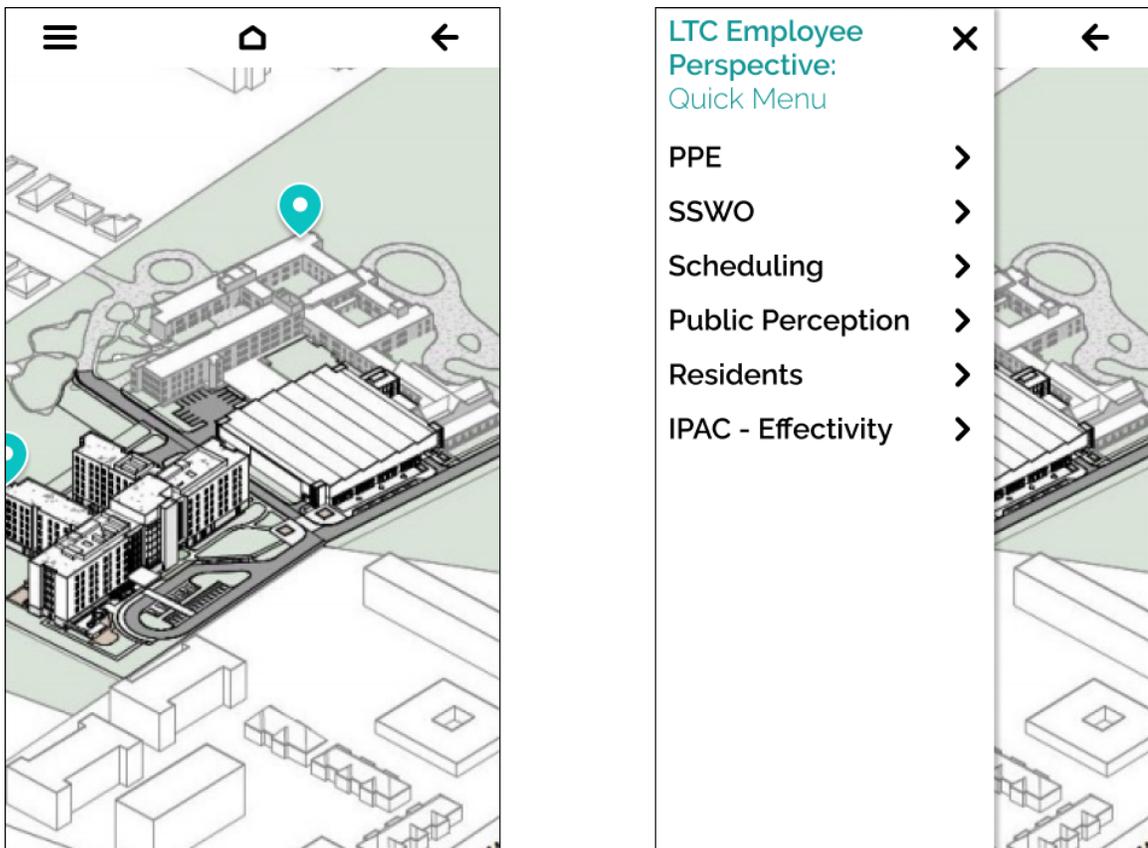
**Initial vertical orientation:** Note the need for columns to wrap around, smaller type sizes and less efficient use of real estate.



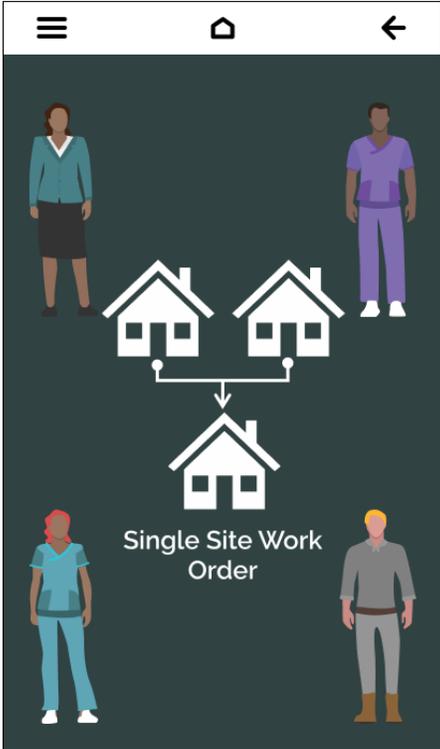
**Refined horizontal orientation:** Allows for larger typefaces, more efficient use of real estate, and easy to compare columns.

## Appendix I Communication prototype iterations

This section contains other concepts and layouts that I explored for the communication prototype. These concepts were designed as a mobile app rather than as a desktop dashboard. I found that during the pilot process for the questionnaire that both participants used their mobile devices to respond to the questionnaire, therefore I wanted to explore how to communicate the data in a mobile format. While I think it's important to consider communicating on mobile devices, I decided to focus on the desktop dashboard as it provided more flexibility for working out the information architecture framework.



**Above:** Map-based menu navigating areas of concern within LTC, and helper menu surrounding research subdomains.



**Above:** Role based narratives surrounding a particular subdomain.

**Below:** Data related to the role based narrative above

