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Encouraging the continuation of work-from-home practices in a post-pandemic world

Authors

Akshay Vij
Senior Research Fellow
Institute for Choice, University of South Australia
vij.akshay@gmail.com

Helen Barrie
Senior Research Fellow
UniSA Business, University of South Australia
helen.barrie@unisa.edu.au

V. Anilan
Research Assistant
UniSA Business, University of South Australia
v.anilan@gmail.com

Ilke Onur
Associate Professor
College of Business, Government and Law, Flinders University
ilke.onur@flinders.edu.au

Flavio Souza
Founder, Arbitrium
flavio@arbitrium.com.au

Ian Goodwin-Smith
Director: The Australian Alliance for Social Enterprise
UniSA Business, University of South Australia
ian.goodwin-smith@unisa.edu.au

Andrew Beer
Executive Dean
UniSA Business, University of South Australia
andrew.beer@unisa.edu.au

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EXECUTIVE SUMMARY

Prior to the COVID-19 pandemic, uptake of remote working arrangements has been low. Based on the 2016 Census, we estimate that on average, roughly 2-8 per cent of the Australian workforce were working remotely on any given day. As a consequence of the COVID-19 pandemic, there has been an unprecedented upsurge in the adoption of remote working arrangements. Based on surveys conducted by the ABS during the pandemic, at least 40 per cent of the Australian workforce reported working remotely one or more times a week during the peak of the pandemic, and 30 per cent reported working remotely most days.

The pandemic has offered a unique opportunity to test the viability of remote working practices across different jobs and industries; to assess their economic, social and environmental impacts; and to examine if and how these practices could and should be continued in the future.

Viability of remote working

Roughly 51 per cent of employees working in large Australian urban areas (populations greater than 100,000) believe that some of their jobs tasks and activities could be done remotely. However, only 16 per cent have formalised remote working arrangements with their employers.

Ability to work remotely tends to be highest across white-collar sectors, such as information, media and telecommunications, and financial and insurance services, and white-collar occupations, such as professionals, managers, and clerical and administrative workers. Not all businesses are able to adopt remote working arrangements. For example, firms working in construction, manufacturing, warehousing and agriculture reported little change in workplace practices even during the peak of the pandemic.

Larger firms are more able to adopt remote working arrangements. Smaller businesses frequently do not have the resources to build the requisite technical infrastructure and organisational processes to enable remote working.

The relationship between income and ability to work remotely is U-shaped, such that the proportion that are able to work remotely is high for individuals employed in low and high-paying jobs, and comparatively lower for individuals employed in medium-paying jobs.

Impacts of remote working arrangements

Most employees, managers and employers do not see significant negative impacts of remote working on productivity. While hour-for-hour, quantity and quality of work done remotely is reported to be lower on average, the majority of employees and managers agreed that they were still able to achieve their job objectives and outputs as expected when working remotely, likely due to increased flexibility, greater autonomy, and the ability to work longer hours if needed. However, 40-50 per cent of employees and 60-70 per cent of managers expressed concern about impacts on supervision, coordination, performance appraisal, career advancement, organisational loyalty and other aspects of human relations.

Impacts on health and wellbeing are more ambiguous. While roughly one-in-two employees see clear benefits, in terms of impacts on work-life balance and general life satisfaction, an equal proportion also express concern around finding it difficult to separate work and home life. Other studies find that remote working can exacerbate feelings of isolation, and create greater conflict between work and home life.

In terms of transport impacts, we estimate that remote working arrangements could reduce weekday commute travel by car by 12-17 per cent and by public transport by 22-31 per cent across large urban areas. Impacts are likely to be greatest for commute trips made to workplaces in CBD locations. Remote working arrangements could additionally move roughly 5 per cent of commute trips outside the morning peak period, and 10-20 per cent of commute trips outside the evening peak period. Reductions in travel are likely to be greatest on Mondays and Fridays.

Increased adoption of remote working arrangements could have a profound impact on the distribution of economic activities within urban areas, and consequently, the shape and structure of our cities. We find that 42 per cent of employees in our sample agreed that they would consider living further away from their current workplace, 72 per cent of managers agreed that their company would consider reducing its office space, and 68 per cent of managers agreed that their company would consider renting cheaper office space in a different location.

Future of work

Future workplaces are likely to adopt one of two hybrid approaches to incorporate remote working within their existing practices.

First, individual employees might be offered increased flexibility to work remotely some workdays and/or workhours. Roughly 34 per cent of employees reported wanting a mix of working on-site and remotely. For the average employee, the flexibility to work remotely some days is worth $6,000 in annual full-time wages, or roughly 10 per cent of their wages, but for some it is worth as much as $24,000. Similarly, 35 per cent of managers saw their companies prioritising offering more flexibility to their employees.

Second, companies may significantly increase their remote workforce, while maintaining a sizable fraction of on-site only workers. 45 per cent of managers in our sample saw their companies focusing more on hiring remote workers. In this case, the hybrid model is likely not to apply to individual employees, but to the workforce as a whole. We find that post-pandemic, roughly 58 per cent of employees don't have the ability to work remotely or want to work completely on-site, and 8 per cent want to work remotely entirely.

Together, these findings suggest that future workplaces are likely to comprise a mix of both arrangements. Based on our findings on the viability and uptake of remote working arrangements across different sectors, occupations, etc., we estimate that roughly half of existing jobs will continue to be done completely on-site, up to 50 per cent of existing jobs could have flexible arrangements that allow individual employees some ability to work remotely, and 10 per cent or more of existing jobs could transition to permanent remote working arrangements.

1. INTRODUCTION

Working from Home (WfH), telecommuting and other flexible working arrangements have been used as travel demand management strategies for over two decades now (e.g., Mokhtarian, 1991; Salomon, 1990). The transport benefits of these alternative working arrangements are many, through their impacts on congestion, emissions, energy use, etc. For example, “small reductions in the number of cars travelling at peak times can lead to big improvements in traffic flow... the NRMA estimates that when traffic on congested roads [in Australian cities] reduces by 5 per cent, traffic speeds increase by 50 per cent” (Kelly and Donegan, 2015). Similarly, in their analysis of the impacts of home-based telecommuting in Chicago, US on travel behaviour and personal vehicle emissions, Shabanpour et al. (2018) find that more flexible working arrangements have the potential to decrease vehicle emissions by roughly one per cent.

Despite these benefits, historic uptake of WfH arrangements has been low. In a 2012 study of WfH arrangements across Australia of 400 mature-aged workers (45-64 years old), DAE (2012) found that 13 - 16 per cent of employees have a formalised arrangement with their employer to work from home on a regular basis, and an additional 18 - 32 per cent have an ad hoc arrangement based on requesting permission from their employer. In terms of actual take-up, DAE (2012) found that 24 - 33 per cent chose to work from home at least once a week or more, while 57 per cent worked from home less than one day per month.

There are many reasons for low adoption of WfH practices. From the perspective of employees, WfH practices can offer beneficial impacts on physical and mental health and wellbeing through a greater sense of personal autonomy and better work-life balance (Gajendran and Harrison, 2007). However, WfH practices can also lead to greater social isolation; missed professional development and career advancement opportunities from ad hoc interactions with other employees and managers; and increased out-of-pocket expenses on work-related activities (DAE, 2012).

From the perspective of employers, as Mokhtarian (1991) writes, “businesses typically do not establish telecommuting programs just because reducing congestion is good for society, except in response to policies ... requiring them to reduce peak-period travel. Rather, companies implement telecommuting when they find it is an answer to human resources problems (recruitment, retention, staffing flexibility and customer service, helping employees cope with domestic demands, productivity); facilities issues (office space, parking); and, sometimes, emergency preparedness/disaster response.”

As a consequence of the COVID-19 pandemic, there has been an unprecedented upsurge in the adoption of WfH practices. Employers have had to develop the necessary infrastructure and protocols to support these changes; employees have had to adapt their work practices to manage these changes. Despite these challenges, the pandemic has offered a unique opportunity to test the viability of WfH practices across different jobs and industries, and to assess their economic, social and environmental impacts. Cities across the world have reported significant improvements in air quality due to reduced private car use. In some cases, worker productivity has increased during the pandemic as a direct result of working from home. Many employees report greater overall work and life satisfaction and are eager to continue these practices after the pandemic.

In Australia, the number of new cases of infection from the COVID-19 virus have been in decline in multiple jurisdictions, and governments in different jurisdictions are in differing stages of reopening local economies. There is a danger that some of the unintended positive impacts of the pandemic, due to the adoption of WfH practices, may be lost, as employers seek to return to old employment arrangements and workplace practices. This project examines the viability of continuing WfH

practices in a post-pandemic world, and identifies ways in which both industry and government can support and encourage appropriate adoption.

This research aims specifically to answer the following three research questions:

1. From the perspective of both employees and employers, what are the benefits and drawbacks of WfH arrangements?

2. How do these benefits and drawbacks vary as a function of employment characteristics, such as nature of job; employer characteristics, such as firm size and industry sector; and employee characteristics, such as age, gender and household structure?

3. What policies and practices can be used to encourage continuation and greater adoption of different WfH arrangements?

We used a mixed methods approach to address these research questions. In particular, our methodology comprised four stages. First, we undertook a review of the relevant academic and grey literature on remote working arrangements, their impacts on productivity, health and wellbeing, and transport, energy and land use behaviours, and policies that could be used to support and enable their adoption. Second, we undertook an analysis of relevant Australian labour market data collected by the Australian Bureau of Statistics and other organisations before and during the pandemic, to examine how uptake of remote working arrangements has varied historically. Third, we collected and analysed qualitative data from different employers drawn from across the country to understand their experiences with remote working arrangements. Finally, we collected and analysed quantitative data from a large-scale nationwide online survey of employees and managers to understand their attitudes and preferences towards remote working arrangements.

Over following chapters, we present detailed findings from each of these stages of our analysis. **Table 1** summarises the structure of the remainder of the report.

Table 1: *Report structure*

#	Chapter	Description
2	Background & definitions	Provides a formal definition of WfH, and how it relates to other forms of flexible working arrangements
3	Benefits & challenges to WfH	Findings from literature review on benefits and challenges from WfH
4	Policies & practices to promote WfH	Findings from literature review on how government could support adoption of WfH practices through appropriate policies targeted at employees, employers and other stakeholders
5	Historic uptake of WfH arrangements	Findings from analysis of labour market data before and during the pandemic to assess the feasibility of WfH arrangements across different job and employee characteristics
6	Qualitative analysis of employer preferences for WfH	Findings from qualitative engagement with 39 employers across Australia
7	Quantitative analysis of employee & manager preferences for WfH	Findings from survey of 3,853 employees and managers across Australia
8	Conclusions	Synthesis of key findings from all four stages of our analysis

2. BACKGROUND & DEFINITIONS

The COVID-19 pandemic has thrust Working from Home (WfH) as a business continuity solution for most organisations not just in compliance with movement restrictions but also out of safety considerations for their employees even when restrictions have been eased. Employers who have not had any prior experience with WfH have had a steep learning curve and those who have already been using such tools have ramped up the support for WfH. Despite all the challenges of implementing WfH on short notice and to such large extent, COVID-19 has offered employers and employees an opportunity to test bed the practice across different jobs and industries. Cities all over the world have reported many positive outcomes from these measures such as reduced air pollution and, in some cases, increased productivity. (Bojovic et al.,2020; OECD, 2020; ILO, 2020; Budd and Ison, 2020; Beck et al., 2020).

To understand how WfH can be continued and expanded even after the lockdown in Australia, it is important to have a clear definition of WfH. It is perhaps axiomatic to say that there is no universal definition of WfH. Definitions have tended to vary over time, with advances in technology and expanded application and along dimensions of interest to the organisational or industrial sector defining it. For an exhaustive review of the different definitions used previously within the literature, we refer the reader to Allen et al. (2015). For the purposes of this study, we adopt the following definition:

> *We define WfH as an organised work arrangement whereby some or all of the work that would normally have been done at a place of work such as an office, factory or institution is done at some other place such as home, café, or an airplane, at conventional hours or at other times, and usually enabled by information and communication technologies (ICTs).*

Early precursors to modern-day WfH arrangements include the related concepts of telework and telecommuting that emerged in the 80s and 90s, and first offered employees the ability to leverage ICTs to work outside centrally located work spaces. As Bailey and Kurland (2002) write about these early flexible work arrangements, “In many respects, telework is emblematic of recent changes in our ideas of work and the workplace. Defined as working outside the conventional workplace and communicating with it by way of telecommunications or computer-based technology (Nilles, 1994; Olson and Primps, 1984), telework constitutes an early form of virtual work. Long before cellular phones, laptop computers, and other wireless devices transformed hotels and airport lounges into workspaces for a force of mobile employees, teleworkers were completing work away from the office. In the process, they redefined our images of how and where work can be performed, and caused managers to re-examine how they evaluate performance and supervise employees. Additionally, telework presaged changes in the labour contract between employees and firms.”

While the Australian Public Service (APS) was an early pioneer of working from home, as evidenced by the creation of the 1994 Australian Public Service Interim Home-Based Work Award, twenty years later in 2013 only 10 per cent of APS employees worked from home to some degree. By 2019, this had increased to around 15%, albeit the usage was twice as high amongst executive levels and senior managers than for APS-level employees. The slow uptake of working from home is largely due to uncertainty about the productivity and performance effects. This resistance from managers and organisations is longstanding, from the earliest evaluations of “telecommuting” (Colley and Williamson, 2020).

Over recent decades, both researchers and practitioners have showed increasing attention towards innovative working models performed outside spatial and temporal organisational boundaries and

enabled by ICTs (Erichiello and Pianese, 2016). Taxonomies of WfH have included, in addition to spatial and temporal dimensions, technology, employees, organisations, environment and even cultural factors (see, for example, Garrett and Danzinger, 2007; Campbel and Macdonald, 2007; Messenger and Gschwind, 2015; Erichiello and Pianese, 2016). As Stacey et al. (2018) write, "there is therefore a potential confluence of factors whereby the use of ICT-ETs [ICT-enabled technologies] drives rapid changes in not only the technologies used at work but also the nature of work, business structures, employment status, hierarchies and relationships… ICT-ETs allow work to be done virtually anywhere and at any time, and, for many workers, this is expected to fundamentally change the traditional employer-employee relationship. This also results in a blurring of the boundaries between work and private life. The impact of ICT-ETs on the location of work could also make defining work as the place where a person is employed problematic."

While cognizant of the aforementioned multidimensional changes taking place with the workforce, within and outside the workplace, antecedent to an unprecedented pandemic and its compounding effects, we have tried to disentangle this complex web to focus our study on WfH in a post pandemic world. We note that we have based our definition of WfH around spatial constraints, or lack thereof. Based on our definition, anyone who is confined to a specified place from which to work, other than their home, would not be deemed to be working from home. Jobs such as an A&E ward nurse or a retail assistant at a store have very little spatial flexibility in respect of where they have to be performed. These are jobs that offer very little scope for WfH. Even a postman who may be on the move most of their work day has very little spatial flexibility, and hence limited scope for WfH.

However, in order to understand the continued viability of different WfH arrangements, it is useful to examine broader flexible working arrangements that may offer flexibility along other dimensions, most importantly temporal. This is especially relevant for assessing the transport impacts of WfH, because peak hour congestion on road and public transport networks is frequently driven by inflexible work arrangements that oblige too many individuals to travel to and from work at the same time. Consequently, throughout this study, we adopt a framework based on spatial and temporal constraints to examine the viability of WfH and other forms of flexible working arrangements across different contexts. As an illustration, **Figure 1** plots different professions in terms of their degree of spatial and temporal flexibility.

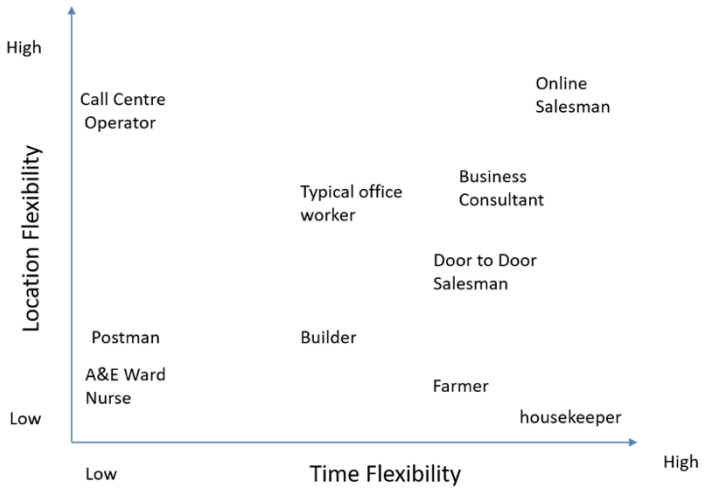


Figure 1: *Spatial and temporal flexibility of different professions*

While different occupations have differing ability to work from home, and thus different preferences toward remote working, it is interesting to also note that in every occupation there are some respondents who like to do some of their jobs from home. Given this desire, it might be possible for employers to work together with employees to apportion some work to be done at home where feasible. For instance, Beck and Hensher (2020) find that even amongst workers least expected to WfH, such as machine operators and drivers, 20 per cent of respondents had worked between 2 to 5 days at home in the preceding week (occurring between 23rd May and 15th June 2020) and at least 21 per cent would like to WfH between 1 to 3 days a week in the future.

Similar patterns also emerge based on the type of work environment, with the work place policy differing, the number of days worked from home in aggregate differing, and the number of days respondents would like to work from home moving forward also differing by work environment. Again, while some employees may like to work from home, it may not be feasible, but where some component of the work could be done from home for some respondents, employers could think innovatively about how they assign work and the location in which that work is done.

Technology is viewed as an enabler in response to push and pull forces from employees, organisations, environmental and cultural interests with regards to the adoption of WfH practices. We adopt an economic definition of technology, where it is used to denote all factors separate from capital and labour that impact the production process. Technology may include ICTs, such as e-commerce platforms and video conferencing applications, that have enabled WfH practices across many ‘white collar’ jobs. Technology could also include other forms of changes in the production process. For example, changes in supply chains and distributional networks have enabled small-scale manufacturing in WfH settings by allowing jobs such as a seamstress or watch repairer to be performed at home.

3. BENEFITS & CHALLENGES TO WFH

In this chapter, we identify the benefits and challenges associated with implementing WfH and other flexible working arrangements, based on a review of the existing academic and grey literature. In subsequent stages of our analysis, we will examine the salience of different benefits and challenges based on additional primary qualitative and quantitative analyses of our own.

Based on our review, we have developed the two-dimensional framework shown in **Table 2**, where we list potential benefits and challenges from the perspective of different actors, namely employees, employers and the broader society, and in terms of their impacts across different areas, namely productivity, health and wellbeing, transport, environment and energy, and land use. **Table 2** summarises the key points across different actors and impact dimensions. Over subsequent sub-sections, we discuss these points in greater detail.

3.1 Productivity

While there is no universal definition of productivity for WfH, the most basic definition of workplace productivity could be “spending more time on the right work” (Mackay, 2020). Bosua et al. (2012) put forward a more nuanced definition: “The measurement of productivity is complex since there are a number of variables that need to be considered such as: the type of task(s) to be completed, level of skills and/or expertise required to complete one or more tasks, and resources available and required to support successful completion of tasks (Baker, Avery and Crawford, 2006). Productivity can relate to an individual or a team and is a measure of how effectively and efficiently assigned tasks are completed over time. More specifically in terms of telework, it can be described as the attainment of measurable goals within time and on budget.”

3.1.1 Employees

Benefits & opportunities

Mello (2007) has contributed to this knowledge immensely. He observed, “In Australia, 2.8 million Australians were engaged in telework at the end of 2004. This number is expected to increase to 3.4 million by the beginning of 2008 (Vidal 2004). Telework among Australians is also becoming increasingly network-centered rather than isolated. Initial interest in telework was based on the employee benefit dimension, however, more recent interest in telework has been driven by environmental and traffic concerns (Vidal 2004). Productivity among Australians engaged in telework averages 20% more than their productivity in the office (Garner and Dick 2007)”. Relatedly, a survey of 10,000 workers conducted by the Australian Council of Trade Unions found that 48 per cent of the workers reported that they were more productive (Karp, 2020).

Most employees who engage in telework experience increased productivity (Crandall and Gao, 2005), some of which may be attributable to their increased job satisfaction and the sense of pride that comes from having greater autonomy. (Baruch, 2000). Jobs or assignments which require extended periods of concentration benefit from having lesser distractions at work site. Productivity gains can also be attributed to less exposure to and involvement with office politics (Sander, 2019; Felstead and Henseke, 2017; Manochehri and Pinkerton 2003; Robertson et al. 2003) and the resultant effects politics can have on behaviour and performance. “Increased productivity can result in enhanced career opportunities within the organization” (Mello, 2007).

Table 2: *Summary of different benefits and challenges to WfH from the perspective of employees, employers and society*

	Employees	Employers	Society
Productivity			
Potential benefits & opportunities	Less distractions compared to workplace Greater flexibility Commute time savings More training opportunities Better career prospects Improved accessibility to employment	Improved employee productivity Increased employee retention Better customer service Reduced overheads Improved firm resilience Opportunities to recruit from disadvantaged groups	Improved productivity in some cases Increased labour force participation
Potential challenges & concerns	More distractions at home Need for greater self-discipline Reduced opportunities for knowledge spillovers Absence of separate physical workspace Need for ICT support and training	Decreased employee productivity Performance measurement and appraisal Coordination across employees Provision of additional ICT support Information security	Decreased productivity in some cases
Health & wellbeing			
Potential benefits & opportunities	Greater life satisfaction Higher morale Better work-life balance Time and cost savings	More trust and loyalty Less sick and lost days	Improved worker health & wellbeing in some cases Better care for those in need Growth in telemedicine
Potential challenges & concerns	Feelings of isolation Increased stress, anxiety and depression Difficulty separating work and life	Hard to maintain corporate spirit and culture Compliance with occupational safety and health	Decline in worker health & wellbeing in some cases
Transportation			
Potential benefits & opportunities	Fewer work trips Fewer peak hour trips Reductions in private car ownership	Reduced business travel	Reductions in network congestion Increased public transport efficiency
Potential challenges & concerns	More non-commute travel		Decline in public transport revenue Decline in provision of essential services Increase in commute distances
Environment & energy			
Potential benefits & opportunities	Reduced exposure to air and noise pollution	Reduction in workplace energy consumption	Reduction in vehicle emissions Reduction in noise pollution Reduction in building emissions
Potential challenges & concerns	Increased home energy consumption		Increased energy consumption
Land Use			
Potential benefits & opportunities	Ability to live further away from CBDs	Decline in CBD business space needs and costs	Reduced rents in cities Growth in suburban and regional centres
Potential challenges & concerns	Need for more home workspaces	Negative impacts on retail and other supporting service businesses in CBD	Increased urban sprawl Loss of asset value and hollowing of CBD Increased real estate prices in regional areas

The spillover benefits of colocation have declined substantially, as better communication and transportation technology enables ideas to circulate more widely, many firms and workers seem to agree with this assessment, as the extent of remote collaboration is rising (Clancy, 2020). The employee is also able to save time and money on commute through WfH arrangements. The savings can be significant to those with long commute times and/or with high costs of entry into highly congested CBDs at peak hours. There could be further out-of-pocket cost savings from WfH in terms of clothing and meal expenses. (Baruch, 2000; Mello, 2007).

Employees working from home could also potentially better manage and supervise housework and possibly save money on home maintenance and repairs, etc. (Baard and Thomas, 2010).

WfH can offer accessibility to new employment opportunities for physically challenged and socially vulnerable individuals. "Telework has the potential to facilitate employment for people with disabilities by removing barriers presented in traditional work environments and replacing the need to be physically at a specific location with ICT (Hesse, 1995). This exchange removes architectural and transportation barriers for those with physical, sensory, and cognitive limitations by allowing them to work in their home environment which, ideally, has been optimized to their functional abilities (Anderson, 2001; Baker et al. 2006; West and Anderson, 2005)". (Linden, 2004).

Challenges & concerns

The first productivity challenge for employees is whether they are able to perform as anticipated from home or other alternatives to an employer allocated office space. Not everyone is able to harness the necessary self-discipline in the first place when permitted autonomy and flexibility. For many, having the necessary space, family circumstances and supporting environment would be a challenge. Setting up the environment is one thing but maintaining the boundaries of the work space necessary to concentrate is another, and can be a leading cause for wanting to return to office hours. Full-time working from home may be problematic for three reasons: it is hard to be creative at a distance, it is hard to be inspired and motivated at home, and employee loyalty is strained without social interaction (Bloom, 2020).

One of the reasons often cited by employees who are apprehensive about WfH is the sense of loss of influence over the proceedings in the office including any fortuitous developments. The reduced physical interaction with supervisors and colleagues and the loss of office visibility or "out-of-sight, out-of-mind" problem may be perceived as impediments to promotions and favourable assignments. (Mokhtarian, 1991; Church, 2015; Gajendran and Harrison, 2007; Mahler 2012).

Golden & Eddleston (2020) compared the career success of telecommuters and non-telecommuters using a sample of 405 employees matched with corporate data on promotion and salary growth and then examined the relationship between extent of telecommuting and career success as well as the moderating influence of contextual factors. The results indicated that telecommuters and non-telecommuters did not differ in number of promotions, but telecommuters experienced lower salary growth. Additionally, extent of telecommuting was negatively related to promotions and salary growth, indicating it is not simply telecommuting per se that effects career success, but rather the extent of telecommuting. Moreover, work context played a highly influential role. A greater number of promotions were received by extensive telecommuters when they worked where telecommuting was highly normative, and when they engaged in higher supplemental work. Extensive telecommuters with higher supplemental work and higher face-to-face contact with their supervisor also received greater salary growth. Together, results challenge previous research that has tended to portray telecommuting as harmful to one's career success by providing a more informed understanding of how to harness its benefits.

As Bloom (2020) writes, “For WFH to succeed, it is essential to have an effective performance review system. If you can evaluate employees based on output - what they accomplish - they can easily work from home. If they are effective and productive, great; if not, warn them, and if they continue to underperform, haul them back to the office.”

WfH can adversely affect the benefits of knowledge spillovers that take place in the office, especially for newer members of the workforce to an organisation or trade (Frakes & Wasserman, 2017).

Another important challenge individual employees face which affects productivity is the ICT set up and network reliability. Computers and laptops are ubiquitous in 2020 and COVID-19 has accelerated the development and growth of sharing platforms and other supporting ICT solutions. While these have improved both the cost and effectiveness of connectivity, network reliability remains a source of concern. Loss of connection affects productivity and can also be a source of acute stress.

3.1.2 Employers

Benefits & opportunities

“The first benefit that employers have realized from telework is increased productivity. This has been realized through teleworkers having fewer distractions than they normally have in the office combined with their willingness to work longer hours. In most cases the time that employees normally spend in traffic and/or commuting to the office is returned to the employer in the form of additional work hours. While estimates do vary, studies have found that the average productivity gains of employees who engage in telework are 10–40% over that which they experience in an office environment (Nie 1999)”. (Mello, 2007). In a large experiment with 16,000 participants and using expansive productivity measurements, Bloom et al. (2015) reported that “Home working led to a 13% performance increase, of which 9% was from working more minutes per shift (fewer breaks and sick days) and 4% from more calls per minute (attributed to a quieter and more convenient working environment).”

“A second documented employer benefit of telework is improved morale and motivation of employees (Kurland and Bailey 1999). Telework arrangements involve a display of trust and confidence in employees. Because there is no direct supervision of employees, telework also encourages independence and autonomy, which is highly valued by many employees. One study found that employees of employers with telework programs perceive greater psychological job control, resulting in significantly lower turnover intentions, family-work conflict and depression (Kossek et al. 2006)”. (Mello, 2007).

Firm productivity is also enhanced through improved customer and client service which a flexible work scheduled employee is able to deliver not just by transcending the geographical and time clock boundaries in their operations but also through the virtual teams that can be formed to provide services. (Mello, 2007).

Productivity gains are experienced through reduced absenteeism and turnover mainly because of the greater flexibility employees are accorded to attend to personal matters as long as work is done on time. (Gibson et al. 2002; Potter 2003; Solomon 2000). The reputation garnered as a “caring” organisation with WfH arrangements also reduces the cost of recruitment, retention and replacement. Mello, 2007. WfH policies increase employee morale and productivity and will in the long run significantly reduce organisational costs. (Bernandino, 2017; Shabanpour, 2018).

“Perhaps the main benefit that has influenced employers to implement telework programs is the documented reduced operating costs offered by telework programs. Telework programs often result

in cost savings relative to office rent and occupancy needs, real estate taxes and property maintenance expenses. Cost savings that be incurred from consolidation of space can be significant. Sun Microsystems saved $69 million in real estate costs in 2005 through its telework program (Arnold 2006). AT&T reported that it has saved $25 million annually since it formally implemented a telework program in 1992 Arnold 2006)". (Mello, 2007).

"A more newly-documented and realized benefit of telework programs is that they provide resilience to employers when faced with unexpected circumstances or events that might interrupt business operations, such as a transport strike, severe weather, act of nature or natural disaster". (Mello, 2007). COVID-19 has served to reiterate this lesson. "Related to the benefit of resilience, another employer benefit of telework programs is that they can provide geographical dispersion that can reduce vulnerability in the case of a terrorist attack (Potter 2003")". (Mello, 2007).

Challenges & concerns

"While employers can reap many significant benefits from telework programs, there are some important issues that need to be addressed to ensure success of any such program. The first of these is devising a way to measure performance. This is an overwhelming concern of many managers who oversee employees who engage in telework (Crandall and Gao 2005). Managers may have reservations over whether employees are actually being as productive away from the office as they would be if physically present, may feel powerless in providing employees with more meaningful feedback (Manochehri and Pinkerton 2003) and also struggle with performance appraisals and assessments without a greater presence of the employee in the workplace (Crandall and Gao 2005)". (Mello, 2007) "Among studies with U.S. samples, scholars have investigated issues of trust and control. Management's trust of employees, or lack thereof, appears to shape a firm's decision to adopt telework (Harrington & Ruppel, 1999). Trust also may influence which employees in a firm can telework. (Bailey and Kurland, 2002)

"A second employer-issue related to telework is its impact on the development of a strong sense of teamwork within the work group that is increasingly important in organizations (Baruch 2001; Gibson et al. 2002; Mills et al. 2001). Much of this concern is anecdotal at this point as no published empirical research, as of yet, has focused on how virtual work might alter work relationships and affect important work outcomes (Golden 2006). Ironically, telework has been seen as somewhat of a paradox by some in that its flexibility allows employee and employer demands to be met simultaneously but it also fragments collectivity and produces exclusion (Taskin and Devos 2005"). (Mello, 2007).

A critical tool for WfH for the organisation is the ICT infrastructure and ensuring that resources are adequate, (Harpaz, 2002). Since remote access to networks and data is critical to ensuring and maintaining productivity, providing the necessary technical support to all WfH employees would be a productivity challenge for organisations.

A related productivity issue is data security of the organisation's system as well as for WfH employees. Lost laptops and other security breaches can have serious financial and operational implications. (Crandall and Gao, Joyce, 2006). The Australian Cyber Security Centre, for instance has been issuing regular reports updating organisations on the status of threats and urging them to beef up cyber security. The 2019 security breaches in parliament, COVID-19 related scams and phishing emails have brought these issues into sharp focus. The organisation advises organisations and employees to remain vigilant and observe sound cyber security practices incorporating recommendations.

3.1.3 Society

Benefits & opportunities

The productivity gains for the nation would be the aggregate of the gains of its individuals and organisations. One of the most productive outcomes for society from WfH is being able to offer meaningful and practicable jobs to those who have not been able to work in the past due to their inability to commute to work, owing to physical, social or psychological challenges.

Perhaps one of the most significant impacts of WfH is how it has empowered women who had erstwhile been unable or unwilling to sacrifice time at home as mothers to commute for work. In developing countries with greater cultural pressures on women to stay at home, WfH has enabled women to gain financial independence and a greater sense of wellbeing. Even in developed countries like the UK, studies have been encouraging for women. “We find some suggestive evidence that flexible working can help women stay in employment after the birth of their first child. More evidence is found that mothers using flexitime and with access to teleworking are less likely to reduce their working hours after childbirth. This contributes to our understanding of flexible working not only as a tool for work–life balance, but also as a tool to enhance and maintain individuals’ work capacities in periods of increased family demands. This has major implications for supporting mothers’ careers and enhancing gender equality in the labour market”. (Chung and Van de Horst, 2017).

Articles on the impact of COVID-19 on women in the workforce have found mixed results, though most agree that WfH has the potential to level the playing field for women. For example, in their analysis of the impacts of workplace attributes on changes in depressive symptoms among working women with young children, Shepherd-Banigan et al., (2016) found that “women who worked from home reported a statistically significant decrease in depression scores over time.” In their analysis of Australian employees’ perceptions of productivity and autonomy during the COVID-19 pandemic, Colley and Williamson (2020) found that “Nearly two-thirds felt that they had more autonomy over when they did their work, with slightly higher levels reported by men. Nearly two-thirds (64.3%) felt that they got more work done than when at the office. More women than men agreed they got more done at home, and results were higher than average for women with children aged 5-17 years old.” Conversely, in their analysis of the capability to balance work with non-work in double-earner families with dependent children, Kurowska (2018) find that “in a relatively gender equal society (Sweden) the negative impact of home-based work on the capability to balance work with non-work affects both genders. On the contrary, in a more traditional society (Poland), men are able to ‘escape’ the trap of double burden of paid and unpaid work when working from home while women do not.”

Challenges & concerns

No reported challenges to society as a whole in respect of productivity have been found in the literature as a result of WfH. However, in particular cases, WfH arrangement may lead to decrease employee and firm productivity, which may have broader societal ramifications. One possible concern society as a whole must confront is the unrestricted accessibility to employees that WfH might lead to and how it might impact other aspects of societal life such as sporting, cultural and spiritual spaces.

3.2 Health and Wellbeing

3.2.1 Employees

Benefits & opportunities

“The first benefit employees who engage in telework receive is increased job satisfaction (Manochehri and Pinkerton 2003; Tremblay 2002). Employees who engage in telework often feel less pressure to produce and give the appearance that they are “busy,” allowing them to enjoy their work more than when it is performed in an office environment. This increased job satisfaction is also a by-product of having more control over the balance of work-family life (Crandall and Gao, 2005)”. (Mello, 2007).

The flexibility of working at times best suited to the individual will not only be a source of personal satisfaction but affords the opportunity to better attend to emergency and non-emergency needs of family members, e.g., a sick child or parent, which will bring greater sense of family satisfaction. (Mello, 2007; Baruch, 2000).

The time saved from commuting and diverted to WfH or other personal activities, ranging from longer sleep to quality time with family during meals, will contribute to improved morale not just for the individual but for the whole family. (Baard and Thomas, 2010).

WfH arrangements could lead to better diets and contribute to healthier lifestyles. Better eating habits were reported by respondents in the study by Baard and Thomas (2000). Many studies have shown reduced sick days reported by WfH employees (Mohktarian, 1991). The time flexibility afforded by WfH can make it possible for the individual to go to the gym, meditate or pray when its most appropriate, with positive impacts on their physical and mental health and wellbeing. Henke et al. (2020) found that “telecommuting health risks varied by telecommuting intensity. Non-telecommuters were at greater risk for obesity, alcohol abuse, physical inactivity, and tobacco use, and were at greater overall risk than at least one of the telecommuting groups. Employees who telecommuted ≤8 hours per month were significantly less likely than non-telecommuters to experience depression. There was no association between telecommuting and stress or nutrition." Other studies, like Tavares (2017), have also found generally a positive overall effect of telework on health and wellbeing.

“Telework allows employees to control their own schedules, thereby accommodating fatigue, stamina, and pain-related barriers to traditional fulltime work [Anderson, 2001; West and Anderson, 2005, Bricout, 2004). It allows access to medically related personal care services during the workday (West and Anderson, 2005, Bricout, 2004). In many cases, these services are only covered by insurance if they are provided in the home. Finally, it is thought that telework may benefit employees with disabilities by reducing disability-related bias and discrimination (Anderson, 2001)” (Linden, 2004).

Telecommuting could offer potential benefits in terms of workplace diversity and inclusivity. Timmers-Miet and Schaarbeek (2020) find that “teleworking offers many opportunities for inclusion, for example for people with disabilities. The flexibility of a home office can bring a lot of opportunities here (Igeltjorn & Habib, 2020). The COVID-19 crisis made this even more obvious. A survey among the Flemish population showed that people with a migration background experienced the COVID-19 teleworking period more positively than people without a migration background. Their relationship with employer and colleagues improved and they experienced fewer conflicts. One explanation could be that teleworking makes diversity characteristics less visible, which reduces discrimination by colleagues or managers (Baert et al., 2020)”

Challenges & concerns

There have been various reports of the challenges to the social and mental wellbeing of WfH employees. For some employees, telework has been shown to result in feelings of isolation, uncertainty over the employee's relationship with those at the physical work site and frustration over potential doubts of co-workers over the employee's credibility as a serious employee (Baruch 2000; Baruch and Nicholson 1997; Scott and Timmerman 1999). The resultant stress might offset any potential gains in productivity the employer realizes as well as cause the employee to feel insecure about her or his "place" and security in the organization, having a detrimental impact on retention. (Mello, 2007).

WFH can result in social and professional isolation when workers are away from the traditional social environment of work (Golden et al., 2008; Maruyama & Tietze, 2012; Bentley et al., 2016). Social isolation has been highlighted by the COVID-19 pandemic as people were not only isolated from their work but also their friends, wider family and recreational activities. Social isolation was found to be a negative outcome of WfH after the Christchurch earthquakes (Green et al., 2020), even when other social interactions were still permitted. Bentley et al. (2016) found that social isolation is moderated by organisational social support. Technology can play a significant role in this through the use of rich communication technologies, such as videoconferencing, as we have seen during the pandemic as Zoom has become part of our vernacular (Green et al. 2020).

Molino et al. (2020) conducted a study to investigate the role of three techno-stressors, namely techno-overload, techno-invasion and techno-complexity, in relation with two relevant wellbeing outcomes, work–family conflict and behavioural stress, controlling for the condition of remote working. "Among the main findings, results highlighted positive associations between the three techno-stressors and the two outcomes, confirming the necessity to deal with the massive use of technologies for work purposes and its negative consequences. Moreover, the study indicated both workload and remote working as antecedents of technostress creators. Interventions on working cultures and in the human resource management field were deemed necessary to prevent negative consequences of technology use and to foster a positive implementation of remote working. One of the main limitations the study pointed out is that it was cross sectional, and the data collection period intersected with the start of the COVID-19 pandemic, which could be a confounding factor.

Bentley et al. (2016) found that teleworker support was found to positively influence job satisfaction and reduce psychological strain, although only a weak, yet statistically significant, relationship was observed between teleworker support and psychological strain. Consistent with previous research (Cooper and Kurland, 2002; Perez et al., 2002; Morganson et al., 2010), social isolation decreased perceived job satisfaction and increased psychological strain, partially mediated by the organisational social support-telework outcome relationships. Thus, insufficient provision of organisational social support reduces job satisfaction and increases psychological strain, due to the resulting social isolation of telework. In the teleworking context, social isolation is considered a potential product of a person-environment mismatch (Belanger et al., 2012; Haines et al., 2002), due to insufficient or ineffective support for the teleworker, resulting in inadequate social interaction, task support, and feelings of isolation. This indicates that opportunities for social interaction with co-workers through the provision of regular face-to-face contact opportunities would seem important for reducing the extent of isolation experienced when teleworking (Mann and Holdsworth, 2003).

Song & Gao, (2018) in their study found that "well-intentioned telework with the aim of increasing flexibility actually results in more stress for employees. The higher level of stress associated with telework is probably due to increased conflicting demands of work versus the home. This result is consistent with a new finding on remote work, which was published jointly by Eurofound and the International Labour Office (ILO) in 2017 and has received wide coverage in the Media."

A qualitative study by Eddleston & Mulki (2017) revealed that working from home creates unique challenges for remote workers because the work role becomes embedded in the family domain such that their home comes to be associated with the work role. Work physically and psychologically intrudes upon their family, and habits and norms form that induce remote workers to be preoccupied with work when home.

Moving to a WFH work arrangement can lead to work intensification for managers. This was seen following the earthquakes in Christchurch where Donnelly & Proctor-Thomson (2015) found significant variation in the experiences and perceptions of team leaders compared to team members, with greater demands on team leaders to control and coordinate operations and support staff in challenging circumstances, which required enhanced communication. (Green et al., 2020)

3.2.2 Employers

Benefits & opportunities

Studies indicate employers could benefit from telework through improved employee morale and motivation (Kurland and Bailey 1999). Telework arrangements involve a display of trust and confidence in employees. Because there is no direct supervision of employees, telework also encourages independence and autonomy, which is highly valued by many employees. One study found that employees of firms with telework programs perceive greater psychological job control, resulting in significantly lower turnover intentions, family-work conflict and depression (Kossek et al., 2006). In general, fewer sick days, higher personal and job satisfaction of employees, and greater motivation are likely to contribute positively to firm morale, as well as productivity.

Challenges & concerns

“A major employer concern is employee safety and any resultant liability for injury that may occur at the employee’s home or any off-site work location. In addition, because many state worker compensation laws do not distinguish between employer offices and employee home-based offices, it is critical for employers to document whether an injury that occurred at the employee’s home was work-related, took place at the home-based worksite and happened within the course of actually completing the employee’s work-related responsibilities as fraudulent worker’s compensation claims can increase the employer’s costs of doing business” (Mello, 2007). A major challenge of WfH for the application of OSH prevention principles and of workers’ health and safety legislation is related to the difficulties faced by employers regarding the supervision of the working environment and the working conditions of their employees’ place of work when it is outside the employer’s premises. (Eurofound & ILO, 2017).

WfH is heavily dependent on ICT and the provision of safe and adequate ICT is essential. “However, outside of telework agreements, employees often have to rely on their private ICT, which is a grey area not only in terms of product safety but, also, in terms of information security. The latter might be limited if employees are forced to fall back onto less professional options. The company-driven provision of ICT for mobile work should offer advantages regarding product safety and information security. In sum, interventions, such as the implementation of new technologies or new ways of work organization, cannot only be considered in isolation but cover the entire company and should, therefore, be carefully monitored.” (Robelski & Sommer, 2020).

“Another employer-related issue that needs to be addressed in a telework program is the selection of eligible employees. In order to fully realize the benefits of telework, an employer needs to ensure that employees who engage in telework be self-disciplined and motivated to allow them to appropriately manage the potential numerous distractions that may present themselves at home. A

given employee's home may not lend itself to telework due to problems with space, technology, security, and family/lifestyle issues. More so, not all tasks can be performed as effectively away from the office". (Mello, 2007). This can also be a source of stress for supervisors and managers especially if it leads to recrimination and or industrial action. This has been one of the reasons cited by some organisations for not adopting WfH arrangements.

One of the indicators of an organisation's wellbeing is its corporate culture. WfH arrangements could have a negative impact on the corporate culture (Ellison, 1999), but recent evidence is mixed. A survey of 2,100 workers globally by Quartz and Qualtrics (2020) found that 48 per cent of respondents thought that their company's culture has stayed the same since the pandemic began, 37 per cent said it had improved and 15 per cent said it has deteriorated. However, those who felt company culture was bad before the COVID-19 pandemic were more likely to say it had worsened. A similar survey conducted by Telus International (2020) finds that the best ways to maintain a strong office culture is through increased virtual workshops, continued learning opportunities, weekly staff meetings and one-on-one meetings with managers, and schedule flexibility.

3.2.3 Society

Benefits & opportunities

WfH arrangements can facilitate improved care for those in need. Drawing from a larger study of teleworkers from a Canadian financial corporation, 18 mothers employed in professional positions discussed work, leisure and their perceptions of work–life balance in in depth interviews. Telework was viewed positively because flexible scheduling facilitated optimal time management. A key factor was the pervasiveness of caregiving, which could result in on-going tensions and contradictions between the ethic of care and their employment responsibilities. The ideology of 'intensive mothering' meant that work schedules were closely tied to the rhythms of children's school and leisure activities. The different temporal demands of motherhood and employment resulted in little opportunity for personal leisure. Time 'saved' from not having to commute to an office was reallocated to caregiving, housework or paid employment rather than to time for their self. The women also experienced a traditional gendered division of household labour and viewed telework as a helpful tool for combining their dual roles. Time flexibility enhanced their sense of balancing work and life and their perceived quality of life. At the same time, they did not question whether having the primary responsibility for caregiving while engaged in paid employment at home was fair or whether it was a form of exploitation. (Hilbrecht et al., 2008).

Curtis (2020) shows how virtual work and WfH will alter the provision of health services, with better access particularly to rural areas through Telemedicine. "The use of telework in the health care industries will not diminish in its amplitude, but rather it will crescendo into a climax in the next decade" (Au et al. 1995).

Challenges & concerns

Based on an analysis of official labour market data, "it was found that only one-third of the increase in remote working can be explained by compositional factors such as movement to the knowledge economy, the growth in flexible employment and organisational responses to the changing demographic make-up of the employed labour force. This suggests that the detachment of work from place is a growing trend. The article also shows that while remote working is associated with higher organisational commitment, job satisfaction and job-related well-being, these benefits come at the cost of work intensification and a greater inability to switch off". (Felstead and Henseke, 2017).

One of the concerns at the society level is about the loss of physical contact whereby individuals find themselves increasing isolated from society. "Even at the society level teleworking has possible disadvantages and problems. One of them is the prospect of isolation and exclusion of teleworkers from other members of the society, where virtual organisations and extended WfH arrangements may further detach individuals from each other (Baruch, 2000).

3.3 Transport

3.3.1 Employees

Benefits & opportunities

Increased opportunities for remote working can offer obvious benefits to employees in terms of reduced vehicle operating and parking costs and public transport fares (Zhu & Mason, 2014; Obrien & Aliabadi, 2020). Mohktarian (1991) gives a good summary of the potential transport benefits of WfH arrangements to employees. In particular, "given the flexibility to do so, [work] trips may be shifted to off-peak periods to avoid congestion delays, and/or to different days of the week… [Additionally, they] may be made to a local centre rather than a downtown office building… In the medium term, the ability to telecommute may eliminate the need for a car - or, more likely, a second car."

Kim et al., (2015) find that WfH can be a complement not least when it can release the household car from mandatory work travel for non-commute trips. Also, studies have shown that that work schedule flexibility such as WfH arrangements can effectively alleviate peak-period work commutes (e.g., Shabhanpour et al. 2018). With WfH becoming increasing widespread post COVID-19, more employees will be reassessing the need for cars, or reduce the number of cars to one car in the family, and use more public and active transport (OECD, 2020).

Challenges & concerns

We did not find any evidence of potential negative transport impacts of WfH on employees directly in the literature.

3.3.2 Employers

Benefits & opportunities

Direct transport benefits to employers are likely to be few. Firms have, in the past, offered company cars and other travel-related benefits as perks to recruit and retain talent. For example, employers in CBDs frequently offer free or subsidised parking spaces to some of their employees. These transport costs to the firm may no longer be incurred as more workers adopt WfH arrangements.

The COVID-19 pandemic has forced conferences and seminars to be replaced by virtual forums that can offer the same opportunities for knowledge exchange and networking. Consequently, employers have had potential savings in terms of reduced employee travel to attend these events in person. Some of these benefits are likely to persist after the pandemic, as event organisers look to virtual offerings as a more cost-effective and accessible way to run these same events.

Challenges & concerns

We did not find any potential negative transport impacts of WfH on employers directly. However, increased adoption of WfH may negatively impact firms in the passenger transport sector, such that

"carpools and vanpools might dissolve if telecommuters drop out, and transit operators may lose revenue" (Jovani, 1983).

3.3.3 Society

Benefits & opportunities

The concept of WfH was borne out of a necessity to do something about the debilitating congestion in many US cities in the 70s, following incessant growth in the motor vehicle population, associated increase in air pollution, and further exacerbated by oil price hikes as a result of the 1973 oil crisis at the time. As has been argued extensively, greater adoption of WfH and other related flexible working arrangements has the potential to reduce road and public transport network congestion during peak periods (e.g., Shabhanpour et al., 2018; Mokhtarian, 1991). The societal benefits could be immense. The Bureau of Infrastructure, Transport and Regional Economics estimated that congestion cost Australia $16.5 billion in 2015 (BITRE, 2015).

With more people returning to work following the easing of COVID-19 related movement restrictions, it remains to be seen what the impact will be on transport pattens. Based on early survey work by Beck et al., (2020) in Australia, there is an intention from respondents to work at home, on average, more days in the future than they did prior to COVID-19, along with a shift in the time of day of some car trips.

The growth in WFH translates into some important positive changes in the performance of the transport network, particularly in larger cities. For example, Beck and Hensher (2020b) "anticipate at least a 10–15 per cent improvement in metropolitan transport networks due to reduced traffic congestion on the roads and crowding on public transport. We suggest that WFH promises to be the greatest "transport" lever for policy makers to reduce congestion and crowding that the sector has ever had. What we are seeing in our tracking surveys to date since March 2020 (Beck & Hensher, 2020a, 2020b) is that the increase in WFH in Australia is spread evenly throughout the five weekdays. This is important, since infrastructure and service capacity is typically determined by peak demand, and if this can be flattened as it suggests it might, then the implications for prioritising and deferring funds and planning in transport are potentially significant, even going forward over many years."

WfH could prompt changes in individual and household trip-making patterns. "Pendyala et al. (1991) conducted an in-depth analysis of three-day travel diaries completed before and after telecommuting by 219 telecommuters, control group members, and driving-age household members in the State of California pilot project. They report the following three conclusions, among others: First, telecommuters make proportionately fewer linked trips. However, this is not a consequence of less-efficient trip-making activity; it simply reflects that fewer trips are being made altogether (an average of two on telecommuting days, one of which is a return-home trip). Second, telecommuters tend to shift activities to destinations closer to home. Interestingly, after telecommuting has begun, this "contraction of activity space" is observed on commuting days (once the work destination is accounted for) as well as telecommuting days. This suggests a learning process in which new destinations, closer to home, are discovered and more or less permanently adopted. Telecommuter household members also show a contracted activity space, indicating that they are not making the longer-distance trips formerly engaged in by the telecommuter. Third, proportionately fewer peak-period trips are made when telecommuting. However, this tends to be due simply to the elimination of the two commute trips. Non-work trips do not exhibit significant shifts in time". (Mokhtarian, 1991)

Changes in trip-making patterns may prompt increased uptake of non-motorized modes. For example, "trips made closer to home may shift to non-motorized modes such as bicycle and walk"

(Jovani, 1983). However, with fewer days commuting due to remote working arrangements, Beck and Hensher (2020) argue that there may be “greater use of the private car in general, but specifically for commuting, since commuters who were previously public transport users might be more prepared to put up with traffic congestion and parking costs for two to three days a week, but not necessarily for five days. This has important implications for public transport patronage.”

Reductions in public transport use during peak hours might reduce operating costs and increase cost recovery of these services. “If telecommuting helps flatten the peak for use of transit modes, greater operational economies may result” (Jovani, 1983).

Challenges & concerns

“One can envision a variety of ways in which the ability to telecommute can affect individual and household travel patterns. These potential impacts are by no means always positive from a transportation policymaker's point of view… Non-commute trips may increase, due to a psychological need for mobility, the availability of a vehicle to another household member, or the direct stimulation of travel for work-related activities (e.g., to the post office, or neighbourhood office supply store) … In the long term, telecommuting may stimulate movement farther from work to housing in more desirable and/or affordable outlying locations. The additional miles travelled on commuting days may or may not outweigh the miles saved on telecommuting days” (Mokhtarian, 1991). Some studies have indicated that there may be an increase in total travel as a result of rising non-commute trips by WfH individuals or their family members (e.g., Zhu, 2012).

3.4 Environment & energy

3.4.1 Employees

Direct benefits and concerns to employees are not as tangible. Reduced commute travel into CBDs may reduce fuel consumption and exposure to air and noise pollution for some employees. Conversely, increased time spent at home might increase domestic energy consumption. However, evidence on these direct impacts is ambiguous, and more research is needed to draw definitive conclusions.

3.4.2 Employers

Reduced employee time in firm/company allocated office space will reduce workplace energy consumption, which could potentially directly benefit employers. There is little evidence of this in the current literature. As highlighted by Perez (2004), “Regarding the consumption of fuel in office buildings, there are very few empirical studies that have analysed this issue. For example, Nilles (1998) found there were not statistically significant differences between teleworkers and non-teleworkers, regarding the consumption of energy at work. However, if we take into account the energy savings from the reduction of commuting, then the energy balance is positive in favour of home-based teleworking or telecentres. To avoid the company saving energy cost at the expense of the teleworker, the teleworking agreement must specify which costs (energy, stationery, etc.) will be paid by the company (Nilles, 1998).

3.4.3 Society

Environmental impacts will accrue from the impacts of WfH and other flexible working arrangements on transport use. If WfH does lead to reduced travel, and consequently, reduced emissions from transport, then the environmental impact will be positive, and vice versa. Early studies by Kitamura et al. (1990), Hamer et al. (1991) and Mokhtarian (1990) indicate WfH leads to a net reduction in

travel not just for workers but their family members as well. However, more recently, Zhu (2012) find that there may be an increase in total travel due to greater number of non-commute trips.

“Home working represents a valuable energy saving policy option, even in a small country such as Ireland. Whilst the energy reduction from home working in smaller countries such as Ireland may be comparatively less than for larger countries, the net saving sum of at least 9.33 kW h average per work from home day remains positive and considerable, particularly so in light of manifold constraints in respect of energy, emissions and efficiency targets in a European context. Our estimate of the potential of home-working energy savings is believed to be a lower bound estimate of potential savings due to conservative assumptions outlined in the analysis. M. Fu et al (2012)

Giovannis (2018) study the impacts of telecommuting using data derived from the Swiss Household Panel (SHP) Survey and traffic volume data over 12 waves from 2002-2013. The survey interviewed respondents older than 15 years about different aspects of their lives, such as household conditions, household composition, residential mobility, education, health and usage of health services, employment, socio-economic values, income from employment, benefits and other sources, marriage, cohabitation, children and parenting, ageing, retirement, quality of life and well-being measures among others. The main conclusion from the study is that teleworking has a positive impact on air quality, even if this effect is low, in a European country like Switzerland. Results may vary across countries, due to differences in cultural factors, socioeconomic characteristics, and other regional factors. However, their findings suggest that teleworking should be considered within urban planning and development and air quality improvement.

Overall, by implementing teleworking, the number of people driving alone is decreased, which is a key for traffic and air pollution reduction, and a factor that reduces fuel consumption. In this case teleworking can be a viable short- and long-term solution to emissions, fuel consumption and traffic congestion reduction, especially in the urban areas and an important tool for the quality of life improvement. (Giovanis, 2018)

Similarly, studies on the impact of WfH on energy consumption have reported mixed results. A report by Hook et al. (2020) is informative. “The paper synthesizes the results of 39 empirical studies, identified from a comprehensive search of 9000 published articles. Twenty six of the 39 studies suggest that teleworking increases or has a neutral impact on energy use. However, differences in the methodologies, scope and assumptions of the different studies make it difficult to estimate ‘average’ energy savings. The main source of savings is the reduced distance travelled for commuting, potentially with an additional contribution from lower office energy consumption. However, the more rigorous studies that include a wider range of impacts (e.g., non-work travel or home energy use) generally find smaller savings. Despite the generally positive verdict on teleworking as an energy-saving practice, there are numerous uncertainties and ambiguities about its actual or potential benefits. These relate to the extent to which teleworking may lead to unpredictable increases in non-work travel and home energy use that may outweigh the gains from reduced work travel. The available evidence suggests that economy-wide energy savings are typically modest, and in many circumstances could be negative or non-existent”. (Hook et al., 2020).

As was pointed out in a BBC report on the findings of a study in UK, the nett energy consumption at homes, particularly during winter in colder countries, would offset any savings from not commuting. But this could vary for countries. “Energy management in buildings is generally more sophisticated than at individual homes,” says David Symons, Future Ready Lead and Director of Sustainability at WSP UK. Because each individual remote worker keeps the heating on and tends to heat the entire house, working in a single office building ends up having a lower impact – even with the commute added in. In the summer, however, working from home makes environmental sense because consumption of energy is far lower than in the winter. “We don’t have air con in the UK, so as a

result it's much more carbon efficient to work from home in the summer because you haven't got heating" (Symons, 2020).

The fact that different regions of the world derive energy from various sources and have different levels of public and private transport usage, add to the complications of determining the net benefits of WfH to emission challenges. The work of Fu et al., (2012) is encouraging in this regard. "This paper finds that home working represents a valuable energy saving policy option, even in a small country such as Ireland. Whilst the energy reduction from home working in smaller countries such as Ireland may be comparatively less than for larger countries, the net saving sum of at least 9.33 kW h average per work from home day remains positive and considerable, particularly so in light of manifold constraints in respect of energy, emissions and efficiency targets in a European context". With the increasing use of solar energy in homes across Australia, the negative impact if any must surely be limited. "There were 287,504 rooftop solar installations in 2019, which was the most installs since 2012 and the third-highest number ever. However, the continued growth in average system size, which again increased to 7.62 kW in 2019, meant that the industry's 2.2 GW of installed capacity was more than 35 per cent higher than last year's record." (Clean Energy Australia Report, 2020).

3.5 Land use

3.5.1 Employees

As Delventhal et al. (2020) write, "A lasting increase in working from home could have far-ranging consequences for the distribution of economic activity inside urban areas. One of the critical factors driving workers' location choices is the need to commute between their job and their residence." Based on simulations generated using a computable general equilibrium (CGE) model of land use in Los Angeles, US, they find that "workers who are able to switch to telecommuting enjoy large welfare gains by saving commute time and moving to more affordable neighbourhoods. Workers who continue to work on-site enjoy modest welfare gains due to lower commute times, improved access to jobs, and the fall in average real estate prices" (ibid.). Based on a similar simulation analysis using a CGE model of land use in Australian urban areas, Lennox (2020) conclude that "within cities, workers choosing WFH occupations opt for longer, but less frequent commutes from residential locations that are more attractive or have cheaper housing."

However, actual empirical evidence on the impact of remote working on residential relocation is mixed (Nilles 1991; Mokhtarian 1991b). "In the two-year data collection period of the State of California pilot project, 6% of the telecommuters indicated moving, or considering moving, 45 or more miles further from work since beginning to telecommute. Of all those who moved or were considering moving, 28% reported that the ability to telecommute played a significant or decisive role in the choice. It is important to note, however, that there was no significant difference between actual moves of the telecommuters and those of a control group - suggesting that on the whole, the moves that did occur would have taken place anyway. In this particular study, any net increases in vehicle-miles travelled due to long-distance moves were more than compensated for by travel savings on the part of others. However, these are only short-term results (for a relatively small sample); long-term residential relocation trends are likely to be more pronounced" (Mokhtarian, 1991).

3.5.2 Employers

One of the most often cited benefits of WfH is the savings to organisations on cost of office space. Increased adoption of WfH arrangements by employees will reduce the need for office space and

accrue potential savings for businesses. “Telecommuting may also make it feasible to move a corporate facility without either relocating or losing some employees” (Mokhtarian, 1991).

However, studies have argued that increased adoption of remote working arrangements is likely to lead to a further centralization of employment. As Delventhal et al. (2020) explain, “There are three main factors driving this reallocation. First, the flipside of a telecommuter being able to access jobs even if they live far away, is that employers can access the labour of telecommuters even if they are located far from where they live. Therefore, employment shifts from locations which are less productive but closer to workers’ residences, toward locations closer to the core which have higher exogenous productivity and benefit from greater productivity spillovers. Second, the reallocation of residents increases demand for floorspace in peripheral locations and reduces it in the core, creating a cost incentive for jobs to move in the opposite direction. Third, the fact that telecommuters require less on-site office space further increases the cost-efficiency of firms in core locations with high productivity but high real estate prices.”

3.5.3 Society

Benefits & opportunities

In urban areas, WfH could be an enabler for more compact forms of development. As Bojovic et al., (2020) narrate on the Barcelona experience “The lockdown experience, however, seems to have recaptured the collective imagination and could lead to a more coordinated, global transformation of cities in the post-pandemic world. We are reinvigorating concepts such as connected, compact and healthier neighbourhoods: the so called “15-minute city” concept where everyone can reach their work, home, and any amenity within a 15-min walk or bike ride”.

In rural areas, WfH could be an enabler for greater economic development (Mokhtarian DAE 2012, Martino 1990. Tsiligirdes 1993, Soren 2000, Simpson et al. 2003). Simpsons (2003) did research in the outback of Australia and observed “The participants in this research identified a range of benefits associated with rural telework, both at an individual level, and for their communities more generally. On a personal level, the teleworkers often echoed the views of urban teleworkers (e.g., Nilles, 1997; Knight and Westbrook, 1999; Meyers, 1999), in that they enjoyed the freedom of working from home and the capacity to be in charge of planning their day. One BridgIT project trainer explained she would find it hard to go back to a ‘normal’ job, while another commented that ‘at this stage nothing can top it’. The satisfaction of having both increased career prospects and the opportunity to commit to the lifestyle choice of living in and contributing to a rural community was highly valued. Telework enables families to remain in their communities, with the consequent benefits of established support and social systems. Further, off-farm income derived from telework often provides a welcome injection of funds for partners who are rural producers without other forms of supplementary income. Broader social benefits were also seen to be important and, particularly, the benefits they believed could be accrued by their rural communities”. (Simpson et al., 2003)

Getting the under-employed segments of the community into employment through WfH and getting the affordance of WfH into rural areas will go some way in addressing one of the most growing concerns in the world, before and beyond COVID-19, that of growing income inequalities. “Telework can provide employment for the disabled, poor, people in remote locations and other disadvantaged groups. As other opportunities may be limited, this can prevent them from falling below the poverty line. However, the small percentage of the population teleworking limits the overall impact. Poor need an active policy stance covering use, training, and teleworking development aimed specifically at the poor. If not, it is possible that teleworking will also be a force for income divergence”. (Kanellopoulos, 2010)

Challenges & concerns

WfH, telecentres and other forms of flexible working are likely to exacerbate urban sprawl (Mokhtarian, 1991; Keonig, 1996, de Vos, 2018, Budd and Ison, 2020; Delventhal et al., 2020; Lennox, 2020). However, the evidence is not clear, with some reports affirming and others contesting this idea. There have been concerns raised by retailers in the city that efforts to move offices away from the CBD would severely affect business. Sydney's efforts to have multiple CBDs have shown mixed results. There were plans in Melbourne to have up to 8 CBDs (ABC News, 16 Oct 2018) as part of the "20-minute cities" concept. While the hollowing out of inner Australian city neighbourhoods may be an extreme scenario at this stage, there are many US cities that have undergone similar processes during earlier waves of suburbanisation that were enabled at the time by improvements in transport technologies. Improvements in ICTs that facilitate the adoption of WfH practices could precipitate a similar way of suburban migration.

Based on their CGE models of land use in Australian cities, Lennox (2020) find that "increased WfH in selected occupations causes labour supply to shift towards these occupations at the expense of others. This is particularly favourable for many business services industries, which use the WfH occupations most intensively. Within cities, workers choosing WfH occupations opt for longer, but less frequent commutes from residential locations that are more attractive or have cheaper housing. Although this depresses house prices in inner areas, attracting workers choosing non-WfH occupations and non-working households, the net effects are flatter residential density gradients and increased urban sprawl. Jobs become more centralised within cities and increase overall in the largest and most productive cities. Smaller cities and towns close to large employment centres attract more residents who commute out, but the majority of Australian cities and towns shrink, relative to the baseline."

4. POLICIES & PRACTICES TO PROMOTE WFH

In this chapter, we review the academic and grey literature to identify policies and practices that could be used to support and promote WfH. Much of this work has been informed by the following three publications: (1) *Teleworking during the COVID-19 pandemic and beyond: A Practical Guide* (ILO, 2020); (2) *An employers' guide to working from home in response to the outbreak of Covid -19* (ILO 2020b); and (3) *Productivity gains from teleworking in the post COVID-19 era: How can public policies make it happen?* (OECD, 2020). In addition, our review has included recent reports of policies and practices that have been announced and or implemented in various jurisdictions to harness the best of the WfH phenomenon and mitigate any fallouts.

Section 4.1 reviews the broader literature on policy recommendations to identify a general framework of good principles. Subsequent sections look at ways to promote WfH from a federal or state government perspective by reviewing measures taken or being considered across the world. Section 4.2 reviews relevant laws, regulations and standards. Section 4.3 examines incentives and support mechanisms. Section 4.4 concludes with a review of public Information and education options.

4.1 Good principles for policy design

Given that the impact of WfH is complex, often with concurrent benefits and challenges, it is imperative that policies factor in different trade-offs and take a multi-faceted approach. The success of any telecommuting program will depend on aspects of the person (e.g., self-regulation skills), the job (e.g., degree of task interdependence), and the organization (e.g., support from supervisors). For example, the extent to which the job is interdependent and depends on collaboration with others is an important consideration. "External-facing" jobs (e.g., sales) may be well suited for extensive telecommuting, while those that require close collaboration internally with others may be less so. Telecommuters should be provided with quality technology, and social richness can be incorporated into communication mechanisms to reduce social isolation. It cannot be assumed that every individual has the skills or the self-efficacy needed to effectively telecommute (Raghuram, Wiesenfeld, & Garud, 2003). Support and training from supervisors can facilitate the adjustment to a telecommuting work arrangement (Montreuil & Lippel, 2003). Allen et al., (2015).

Public policy can play a role in using telework as a tool to expand opportunities. Public policy can be used to facilitate work opportunities for those with disabilities and increase the civil rights of disabled workers (P. M. A. Baker et al., 2006). In addition, the ability to telecommute can be a key source of support for the parents of children with special needs (E. M. Brennan, et al., 2016). Individuals with disabilities and those associated with them (e.g., parents) often face stigmatization (E. M. Brennan et al., 2016). Moreover, those who seek flexible work options may also be stigmatized (Vandello, Hettinger, Bosson, & Siddiqi, 2013). The normalization of telecommuting through policy and practice can help reduce such stigmas (Allen et al., 2015).

Kwon and Jeon (2017) find "that various contextual factors such as municipal climate protection efforts, citizen participation, population diversity, political institutions, and support from state legislators play a significant role in a city government's decision to permit telework for city employees."

OECD (2020) summarise the key challenges facing policy makers as follows: "The ways in which telework may affect worker productivity and well-being carve a role for policies aimed at maximising its economic benefits. The crucial role of worker satisfaction in achieving productivity gains from teleworking implies that such gains and improvements in worker well-being go hand-in-hand, a sort of 'divine coincidence'. Policies can exploit this 'divine coincidence' by facilitating the attainment of a

level of telework closer to the optimal level (moving along the curve) and by improving worker satisfaction (or compensating the costs of diminished in-person interactions) at any given amount of telework (shifting the curve upwards). To this end, a number of policy challenges need to be addressed.

“First, policies should ensure that teleworking remains a choice. This is to prevent that remote working arrangements are 'overdone'. The importance of in-person communication especially for complex tasks and innovation implies that too much telework can decrease worker efficiency and long-term productivity growth. Indeed, the high importance given to clusters of entrepreneurship and the high geographical concentration of high-tech firms in the ICT sector (e.g., Silicon Valley) and the role of labs and departments in academia strongly suggest that sharing the same physical space is essential for innovation (Chatterji, Glaeser and Kerr, 2013). Workers also vary in their personal preferences or their ability to work independently, so that some workers may experience more or less satisfaction from teleworking (Financial Times, 2020). In that sense, their ability to telework may also depend on their skills (Grundke et al., 20181). Skill gaps among different worker groups, combined with the fact that jobs requiring high skills already appear to be most prone to telework, suggest that more widespread telework may exacerbate existing disparities in working conditions. Policies targeted at increasing the capacity for telework of disadvantaged worker groups, e.g., low skilled, older or rural workers, may help avoiding that they fall further behind and are excluded from the benefits telework offers. An additional risk is that telework may erode working time arrangements and lead to 'hidden overtime' becoming the norm, as with telework managers may primarily observe outputs but not time spent working. The ability to choose whether and how much to telework may therefore be crucial for achieving productivity gains. Indeed, the call-centre study mentioned above (Bloom et al., 2015113) concluded that those workers who chose telework achieved an improvement in output per worker nearly twice as compared to those who were simply being forced to do it. Yet, letting workers choose in itself does not guarantee an optimal level of telework, as they are unlikely to fully take into account the negative implications on innovation in the long-run when making their decision. It is therefore important to prevent that, e.g., in an attempt to save costs for office space, firms impose telework or reduce opportunities for personal encounters beyond what is optimal.

“Second, policies should encourage arrangements that provide workers with an appropriate working environment. The adaptability of workers, and thus the efficiency gains stemming from improved worker satisfaction, depend crucially on working conditions while teleworking, e.g., in terms of ICT equipment, office space, or childcare. Worker satisfaction and thus efficiency may also decrease to the extent that some of the costs of teleworking are not provided for by firms but are shifted onto workers, e.g., if workers needed to compensate with more expensive housing or higher electricity bills. The supporting infrastructure may need to be adjusted to more widespread teleworking, e.g., childcare may need to be offered closer to the home. In fact, the double pressure of work and household and care duties while teleworking during the crisis may have fallen disproportionately on women or single parents, even though as a result of the crisis an increasing number of men took on caretaker tasks when their partners were engaged in 'essential' jobs (Donadio, 2020). Offering inappropriate or more limited childcare due to a higher incidence of employees working from home may thwart career advancement, especially for women, and jeopardise the potential improvement in equal opportunities inherent in the changing norms on caretaker duties during the crisis (Alon et al., 2020).

“Third, policies should facilitate the diffusion of best practice managerial practices developed in response to the increased use of telework. Managers need to adapt to the opportunities and challenges posed by telework. Adherence to outdated managerial practices may prevent managers from adopting telework, thus foregoing the benefits inherent in the use of telework. The attendant reduction in direct oversight may require managers to shift from a culture of presenteeism to an

output-oriented assessment of worker performance; lest they prevent workers from teleworking out of fear of being stigmatised (Eurofound and International Labour Office, 2017), or they overcompensate and disrupt workers by excessive 'checking in', e.g., with virtual meetings (Financial Times, 2020.) The lack of workplace interactions resulting from increased telework may make worker representation more difficult and degrade intangible capital such as firm-specific innovations or a company culture fostering the workers' identification with the firm's goals. Better managed firms may be better able to establish a trusting relationship between managers and subordinates, making oversight less important in the first place. Management can also compensate for the lack of 'chance encounters' due to increased telework by deliberately creating opportunities for knowledge sharing, thereby counteracting the potential negative effect of telework on long-term productivity growth.

“Finally, policies should support the provision of access to a fast, reliable and secure ICT infrastructure for firms and workers. The readiness of the ICT infrastructure, which often varies across regions and tends to be less well-developed in more rural areas, is a key pre-requisite for enabling telework and its quality matters greatly for the efficiency of teleworking. Its first and foremost feature is to provide efficient means of communication, preferably by means of video conferencing, for which reliable and fast internet connections are necessary. This points to the quality of the broadband and wireless network between the firm and its workers' homes (OECD, 2020; Andrews, Nicoletti and Timiliotis, 2018, Bajgar et al., 2019). In addition, however it also needs to accommodate security and privacy requirements, ranging from protection from cyber-attacks to setting transparency standards transparency on data collection from employees. For instance, working from home may require secure remote access to confidential data, e.g., in hospitals or banks; management support systems that provide information on task distribution and monitoring can facilitate managerial oversight (Viete and Erdsiek, 20181), but may also lead to fears of "surveillance" and the data collected in the process can raise demands for privacy protection. Finally, conducting more tasks remotely may require more public services being offered online, which in turn may entail changes to the legal framework, e.g., notaries accepting digital signatures.

“Policies addressing these challenges can help maximise the potential productivity gains from effective teleworking while protecting workers from negative side effects and assuring innovation in the long-run. Besides productivity improvements, such policies also promise additional benefits for a range of other policy areas, such as contributing to gender equality, improving job opportunities in rural areas and reducing congestion and housing costs in urban areas as well as better work-life balance in general.”

4.2 Laws, regulations and standards

In this section we look at the most important levers to effectively implement and efficiently manage WfH policies through laws, regulations and the setting of standards.

We review appropriate teleworking regulations, which may include improved protection standards for remote workers, references to flexibility in work schedules, the ability to disconnect from work at times specified for rest and personal life, and collective rights.

4.2.1 Remote working and its regulation in Australia

As a result of the adoption of remote working as a strategic government objective in the National Digital Economy Strategy, the Department of Broadband, Communications and the Digital Economy (DBCDE) commissioned Deloitte Access Economics to undertake an international literature review of remote working as it is understood today (DAE, 2012). At the time, the Federal Government's goal was that by 2020, Australia will have doubled its level of remote working so that at least 12 per cent of Australian employees report having a remote working arrangement with their employer. The report made some of the following policy recommendations to increase the adoption of remote working practices:

"Government should lead in its own operations through the adoption of telework in government agencies. This will provide a signal to the private sector and examples of how to best introduce telework. Further, given the size of government as an employer, widespread telework through government agencies will make the practice significant enough that it will directly impact labour markets.

"Government can play a role in helping organisations to establish how they can make the most of telework. Many of the current challenges of telework are based around perceptions rather than reality, and can be overcome through careful planning and execution of a telework strategy for each business' unique circumstances. Government provision of information for businesses may assist with this.

"The range of potential outcomes means that there are merits in pursuing telework across a range of government agencies. Those agencies engaged in workplace relations and participation, environment and climate change, transport and infrastructure, and regional development, as well as those responsible for budget bottom lines are potential stakeholders."

It is also possible that institutional detractors could have had a role in the slow take up rate of WfH in Australia prior to the pandemic. "The influence of being a union member is to reduce the likelihood of working from home. If one believes that unions act to protect employees' conditions of employment and increase their members' bargaining power with their employer, then this points to the conclusion that working from home is something that detracts from the quality of working conditions: something employees are 'protected' against by their union. An alternative hypothesis is that unions discourage working from home because it undermines their ability to mobilise and recruit workers as members" (Dockery & Bawa, 2014)

The Australian Fair Work Act 2009 provides employees in the national workplace relations system with a legal right to request flexible working arrangements. Employees need to have worked for the employer for at least 12 months on a full-time or part-time basis. Long term casual employees who have a reasonable expectation of ongoing employment are also eligible. Employees are eligible to request flexible working arrangements in the following circumstances, and employers must seriously consider a request for flexible working arrangements but may refuse on reasonable business grounds.

- the employee is a parent, or has responsibility for the care of a child who is of school age or younger
- the employee is a carer (within the meaning of the Carer Recognition Act 2010)
- the employee has a disability
- the employee is 55 or older
- the employee is experiencing violence from a member of the employee's family or
- the employee provides care or support to a member of their immediate family or household who requires care or support because they are experiencing violence from the member's family.

In response to the COVID-19 pandemic, the Australian government made temporary changes to the Fair Work Act. In addition to the job keeper scheme, the Fair Work Commission has varied a number of provisions in awards to give employers and employees extra flexibility to agree on alternative working arrangements.

In a post-pandemic world what are the policy challenges? What laws, regulations and standards would be needed that would help maximise productivity benefits?

4.2.2 The German right to remote working

OECD 2020 recommends promoting a 'right to telework' for at least some hours per week in suitable occupations, or by directly subsidising telework, as done by the metropolitan government in Tokyo, Japan (The Japan Times, 2020). Framework arrangements for telework as part of collective agreements among social partners can play a crucial role to facilitate the use of telework.

The German Federal Minister of Labour launched a legislative initiative for a legal regulation on mobile work on October 5, 2020. It may be informative to explore the implications of this draft law bearing in mind the complexities of the German and EU regulations. The proposed Mobile Work Act aims to provide legal entitlement for employees to at least 24 days of mobile work per year. However, this has yet to be passed into law, and is obviously intended for jobs and industries where it is practicable. Key aspects of the draft law include:

- **Legal entitlement to remote working:** The draft law provides legal entitlement to at least 24 days of remote work per year. It is not clear if the act covers both working from home and mobile work but according to the Federal Minister, the right to 24 days is to be understood as 'the minimum'. In practice, it will likely also be the upper limit wherever companies do not already proactively offer mobile working.

  Legislators recognise that it is virtually impossible to work remotely in some jobs, such as a bakery or a car parts workshop. Therefore, there will be a possibility for employers to put forward compelling operational reasons in order to be able to reject the claim. However, this may not be so straightforward and may be a particularly heavy burden for small businesses. It would make sense to exclude businesses and companies up to a certain size from the scope of the law. It is opined that having to provide additional office work equipment for homes would increase financial burden on businesses already struggling under the strain of the pandemic.

- **Codetermination:** "According to the Federal Labour Ministry, trade unions and work councils should have an enforceable co-determination right with regard to the introduction and organisation of mobile work. Instead of leaving it up to the parties in the company to develop tailor-made solutions where it makes sense for all parties involved, an enforceable 'duty to regulate' is now being introduced." Detailed provisions are pending.

- **Working time**: “The Mobile Work Act is intended to oblige employers to record working time ‘digitally’, following concerns that employees tend to work more rather than less outside the workplace. In its judgment of 20 February 2020 (2Ca94/19), the Emden Labour Court (ArbG Emden) took the view that Article 31 (2) of the EU Charter of Fundamental Rights contained an obligation to establish an ‘objective’, ‘reliable’ and ‘accessible’ system for recording daily working time. Infringements could already lead to fines under current German law. The new draft law would provide for fines of up to EUR 30,000 for employers who fail to comply with the obligation to ‘digitally’ monitor working time. It is not yet known what the minimum requirements for monitoring working time should be, nor to which groups of staff it should apply.”

  “It is true that constant working from a mobile or teleworking workplace can lead to a lack of discipline, which can lead to the blurring of boundaries and a blurring of working life and private life. However, it is debatable whether an imposed obligation to use a ‘digital time clock’ corresponds to the needs of today's working world or rather could be perceived as coercion or a step backwards is in the eye of the beholder. Companies in which mobile working is part of everyday life, typically have no difficulties in this area.”

- **Health & Safety:** “Until now, occupational health and safety law has differentiated between mobile working and teleworking. Only the latter is subject to extensive obligations, in particular the obligation to carry out a risk assessment. The logic behind this is clear: if the employer does not know where an employee is working from, it is difficult for it to assess the risks posed by the mobile workplace (on the train, in a café, by a lake, etc.).”

  “However, doubts already existed in the past as to whether this distinction was in line with European law (in particular the Display Screen Equipment Directive 90/270/EEC), according to which the ‘provision’ of display screen equipment (without further furnishing of the workplace) is sufficient.”

- **Insurance:** “The Federal Social Court has taken a clear line on the legal situation that has applied up to now: accidents in a ‘home office’ are only subject to statutory accident insurance protection under very strict conditions. In particular, accidents in the ‘border regions’ between private and working life are often not insured.

  In practice, well-advised employers who ‘proactively’ offer mobile working have tried to make up for this by offering private group insurance to cover accident insurance, disability benefits and daily sickness benefits. The draft law now intends to close the existing gap in protection and extend statutory accident insurance to employees who suffer an accident while they are on their way from their home workplace to a day care centre, for example.

  This logic may be conceivable for teleworking jobs, but how this problem can be solved for ‘real’ mobile working without a fixed workstation will be very difficult to map from a regulatory point of view, if this is the aim of the law at all.”

  Hoffmann-Remy (2020) argues that communication is short on what employers have been complaining about for years now; if increased flexibility of working time and place is to be achieved, then the rigid and impracticable provisions of the German Working Time Act (ArbZG) must also be changed. “In particular, the legally regulated rest periods and maximum daily working hours are no longer up to date.”

  “According to the information available to date, a ‘good mobile working law’ (which would be in line with the official language of the BMAS) is not on the cards. Instead, there is a threat of

further decreased flexibility and increased bureaucracy. This bears little relation to the current understanding of 'mobile working' and the increasing trend to self-determination by employees, which has long since become established in practice. It is to be hoped that the pending departmental coordination process will once again lead to significant adjustments to the draft law."

4.2.3 Other relevant legal frameworks to enable and regulate WfH

There are other less comprehensive measures that government actors have taken to enable remote working arrangements during the COVID-19 pandemic. It is possible that many of these legal actions will be continued after the pandemic.

For example, multiple countries have adapted their legal and regulatory systems to accept the use of digital signatures more broadly, as introduced during the lockdown for French notaries (Atkinson et al., 2020). In a statement, the Ministry of Territorial Cohesion explained: "This will allow the French public to continue with their property moves. This decree makes it possible to have an electronic signature for the sales of new-build properties, for which the use of a power of attorney is not permitted as the signature must be carried out before a *notaire*. Similarly, Australian Federal and State Courts have also implemented various measures during the pandemic to include acceptance in some cases of electronic signatures as a temporary measure. The experience garnered should help regulators review some of the regulations which still call for in person appearance to move to the digital age.

Another legal measure could be the lightening of health and safety reviews of the home office environment, in order to allow the immediate implementation of remote working, provided that each worker carries out a self-evaluation of their own workplace. Similarly, there could be greater offering of flexibility and relaxing of existing regulations as appropriate (e.g., the obligation of the employer to provide ergonomic seating or to sign a teleworking agreement before the start of the teleworking period).

To counter the risk that remote working leads to "hidden" overtime, the French post and telecom sector instituted a "right to disconnect" sector via collective agreements among social partners. There is currently no European legal framework directly defining and regulating the right to disconnect. The Working Time Directive (2003/88/EC), however, refers to a number of rights that indirectly relate to similar issues: in particular, the minimum daily and weekly rest periods that are required in order to safeguard workers' health and safety. Furthermore, the right to disconnect could be considered in relation to attaining a better work–life balance, an objective that has been at the core of recent European initiatives – for example, Principles 9 (work–life balance) and 10 (healthy, safe and well-adapted work environment and data protection) of the European Pillar of Social Rights, as well as the directive on work–life balance for parents and carers – although they do not refer specifically to the right to disconnect.

On a national level, France is considered to be a pioneer in legally recognising this new right. As early as 2013, a national cross-sectoral agreement on quality of life at work encouraged businesses to avoid any intrusion on employees' private lives by defining periods when devices should be switched off. This right was subsequently made law on 8 August 2016 and is now regulated by Article L.2242-17 of the Labour Code. According to this text, the mandatory negotiations about equality between men and women and quality of life at work – which are to be carried out at company level only and therefore not systematically – have to plan, under specific conditions 'the terms for the full exercise by the employee of [their] right to disconnect and the setting up by the company of devices to regulate the use of digital tools, in order to ensure the respect of the rest and leave periods as well as that of personal and family life'.

France's approach has gone some way to inspire other EU countries. While a few EU countries have some form of the right to disconnect included in their law, in some cases it is present in the policy of many large companies. In Italy, the right to disconnect is dealt with by Article 19 of Law No. 81/2017, which specifies that the written agreement between worker and employer must also regulate the rest periods of the employee and indicate the technical and organisational measures taken by the parties to guarantee the worker's right to disconnect from company devices. In Luxembourg, the introduction of a legal right to disconnect is the subject of debate, exemplified by a public petition (petition 1057) launched in July 2018.

Some countries like Singapore have adopted a nuanced approach to the same concerns. To address the blurring of work-life boundaries, the International Advisory Panel for WSH in Singapore in November 2020, supported the Government's approach of developing guidelines on how companies can support their workers' mental health. In particular, the IAP suggested that companies should set clear expectations on after-hours work communication norms, taking into account the work-life patterns and preferences of employees, rather than prohibit emails or messages after certain hours. Such rigidity may inadvertently add stress, and does not account for the diversity of work or care arrangements among different employees. This was the approach taken for the new Tripartite Advisory for Mental Well-being at Workplaces.

As telework is associated with new technologies to monitor the performance and behaviour of workers, additional regulation on data protection and cyber security may be necessary. "Clearly, there is a pressing need for improved corporate cybersecurity practices and planning for teleworkers. More definitive and enforceable regulations will drive better security protocols, and more rigorous compliance requirements will force more effective privacy practices (Keizer, 2012). Per the CyberArk Report (Bourne, 2018), 83% of IT security professionals say new privacy requirements and security recommendations such as the EU General Data Protection Regulation (GDPR) implemented in 2018 and the US National Institute of Standards and Technology (NIST) Cybersecurity Framework released in 2019 (promulgated in the U.S. Cybersecurity Enhancement Act of 2014) are enhancing our overall security and privacy posture. Reforming the organizational security culture remains a top priority but is often overlooked or neglected, misperceived as a cost factor or necessary evil rather than a differentiating factor or competitive advantage. Rather than viewing security simply as a cost, digital business champions should recognize it as a key aspect of every project and activity, then use it to differentiate themselves from their less-secure competitors (Elgar, 2019).

To successfully enforce the new inclusive WFH culture, cyber security training and monitoring has to be a major plank of the new platform. Adequate technology must be assessed and acquired, routinely patched, and the organization's leaders must re-assess the business continuity and infrastructure plans to operationalize WFH as a normal (not a-typical) practice. We recommend that employees are consistently motivated with innovative training programs, communication media, and incentives. Furthermore, organizations may opt to develop and perform a WFH Cybersecurity Knowledge Management Program, starting with an audit to learn both the explicit and tacit information already established for remote employees. It is imperative to learn what is known and not known, prior to commencing the development of an important new WFH enterprise-wide initiative. Borkovich & Skovira (2020).

Offering bilateral tax agreements, e.g., as done between France and Belgium, facilitates working across borders and increases the effective skill supply to firms; similar adjustments may be required to accommodate the specific circumstances for cross-border workers on retirement benefits and health care provision. Additional regulation may be necessary to prevent that teleworking across borders undermines national labour standards and wage agreements (Baldwin, 2019).

4.3 Incentives and support programmes

Based on our review, we have compiled the following list of incentives and support programmes to promote WfH. Many of these policy measures are based on the OECD report, *Exploring policy options on teleworking: Steering local economic and employment development in the time of remote work* (Peña-López, 2020).

Financial incentives to support remote working arrangements

There is a need to ensure firms do not impose costs for office space and IT equipment on workers, and workers remain free to choose whether or not to telework, e.g., by promoting restrictions on imposed telework and stimulating allowances provided by employers for home office equipment.

Offering a one-time, lump-sum payment or cash support for SMEs for the purchase of equipment to enable workers to work from home and offering subsidies to purchase training services to support switching to teleworking would certainly help. The Australian federal government has set aside $255 billion in response to the pandemic and to support the recovery of the economy, including a $101 billion job keeper programme to help companies keep people in jobs, even if employees can only work from home. Additionally, the state governments have been spending billions as part of the business resilience and post pandemic growth support plans. For instance, the Victorian government is investing $3 billion to assist businesses impacted by on-going restrictions and prepare for COVID normal business. Business Victoria. Budget 2020-21. In light of the growing evidence that most workers who operationally can, want to work at least a few days of the week at home, and the conviction that if managed effectively it will lead to more benefits for everyone, it is incumbent upon the government to invest in WfH policies conspicuously.

Further government support could be offered to support the adoption and continuation of remote working arrangements after the pandemic. Mercer's Global Survey of about 8,000 participants through a series of surveys from March to October 2020 showed that 55% of employers will provide financial support for laptops and 33% for mobile phones, 26% for printers and 26% for ergonomic office equipment. Introducing tax relief and financial support measures, such as deferral of payments, rate reductions, or paying in instalments to ease the financial burden on employers, with the condition that their workers are permitted and encouraged to work from home.

As Peña-López (2020) write, "A number of jurisdictions across the OECD and beyond showed awareness of the challenges met by SMEs in the adoption of teleworking, and enacted dedicated policy instruments. The most typical example is the provision of grants to reduce the costs of IT investment incurred by micro- and small firms… Several national examples provide subsidies and access to IT services for SMEs. The Japanese government introduced subsidies for SMEs adopting teleworking, up to 50% of the costs for uptaking IT solutions, creating or changing work rules and training workers, etc. In Spain, the Acelera PYME programme provides grants and loans to support SMEs in financing investments in digital equipment or remote working solutions. Outside the OECD, China supports SMEs cloud computing and purchase of cloud technology and for online working such as remote office, home office, video conferencing, online training, collaborative R&D and e-commerce.

Investments in information and communication technologies

Enhance the capability and resilience of the communication infrastructure and contribute to bridge the geographical divide with high-speed ICT. In particular, Peña-López (2020) discuss the importance of access to the appropriate technologies and services to support uptake of remote working arrangements, and how governments can help facilitate this access. "Several national

governments have created online platforms to foster firm and citizen access to digital tools for teleworking during COVID-19. Such initiatives are particularly relevant for SMEs, as these often lag behind larger firms in terms of the access to digital technologies… Two prominent examples come from Austria and Italy. The Austrian Federal Ministry for Digital and Economic Development encouraged the set-up of "Digital Team Austria", a group of IT companies that commit to offering digital services to SMEs free of charge, such as solutions for video conferencing and online meetings, virtual workspaces, cyber security, and digital training among others, which are specifically designed to support teleworking. Information on Digital Team Austria is gathered on a website, where SMEs can learn about the IT firms participating and get in touch with them directly. Similarly, the Italian Minister of Innovation launched an initiative called “Digital Solidarity”. This includes the creation of an online portal where companies (in particular SMEs and the self-employed) can register to access for free digital services provided by large private sector companies in fields such as teleworking, video conferencing, access to mobile data, and cloud computing, to enable them to cope with restrictions to movement and work.

Support for home-based businesses

Increased adoption of remote working arrangements is likely to lead to growth in home-based businesses. As Peña-López (2020) write, “The home-based business community is highly diverse. Challenges may vary depending on the concerned industry, geographic location, and business owner features. Public policies can foster the creation and growth of home-based businesses in a number of ways… Access to business advice, mentoring and entrepreneurial networks is one policy area. Policy makers can also remove hindrances to home-based business in regulations, policies and urban design, by adjusting mono-functional building classification systems, rules on tenancy agreements and property taxation… Policies and programmes supporting work-life balance are also relevant for many home-based entrepreneurs.” With regards to their final point, the provision of supportive infrastructure, for instance childcare, should also be reassessed. Increased telework should not lead to childcare being reduced. Increasing telework without complementary policies to improve supportive infrastructure could increase the burden especially on women from competing work and caretaker duties (Alon et al., 2020).

Develop and support shared working spaces

The risk for innovation due to the lack of in-person interactions and knowledge sharing could be compensated for by deliberately creating opportunities for exchange. For instance, promoting co-working spaces across the country can foster innovation while saving commuting time and decrease regional inequalities (Clancy, 2020). OECD (2020).

Thus, a mobilization of social support seems necessary in coworking spaces as observed by Gerdenitsch et al. 2019. “In the last couple of years, increasing numbers of independent professionals have opted to work in coworking spaces. This emerging office type appears to provide a resourceful environment for this particular target group because it provides opportunities for social support in addition to flexible business infrastructure.”

The study of localized spaces of innovation, like CWS, show that collective processes of innovation require platforms that allow the different involved actors to effectively communicate, share knowledge and cooperate. In our research, we show that places, spaces, projects and events facilitate crucial activities for the emergence and development of processes of innovation like, for instance, tacit knowledge sharing, diffusion of innovation, or coordination of diverse and complementary knowledge bases. Through these mechanisms, CWS contribute to the dynamics of innovation at different levels. First, at the individual level, members of CWS help each other and collaborate to advance in their professional activity. Second, at the community level, CWS represent

specialized innovation communities that combine exploration and exploitation. As we have shown, in some cases these communities are able to compete with firms by coordinating heterogeneous knowledge bases. Third, at the firm level, the results of the explorative practices that take place in CWS can represent an external source of inspiration, ideas and talent for organizations. Fourth, at the local level of the district or city, CWS are platforms that bring together distributed knowledge around specific themes. CWS can also contribute to integrate the citizenship in collective innovation processes and acting as intermediary in top-down and bottom-up innovative initiatives. Fifth, at the global level, CWS host events that can represent “temporary clusters” were external actors can participate, sharing external knowledge and dynamizing the “local buzz”. CWS also welcome foreign workers, facilitating their professional and social integration in the local environment while offering local actors opportunities to get in contact with an external source of knowledge. Capdevila, (2015).

With the ongoing flexibilization of work, new trends concerning work outside the company’s premises such as coworking spaces are on the rise. Coworking spaces are designed to offer collaboration and community in furnished and equipped workspaces on a rental base. There is a growing body of scientific literature on coworking spaces with empirical results of qualitative and quantitative research. The present study adds to the latter by examining psychosocial demands experienced by co-workers in Germany based on a quantitative survey (n = 112). Among co-workers the home office was or still is another frequently used workplace. However, can the coworking space be seen as a better alternative to the home office in terms of work- and performance-related, social, environmental and health-related aspects? Results showed moderate to low psychosocial demands regarding quantitative workloads. Compared to the home office, the coworking space proved to be the preferred work arrangement. Results are discussed with regard to current literature and workplace design. In conclusion, coworking spaces can be seen as an alternative to the home office that was highly valued in the present sample. It is recommended to further emphasize aspects of work environment and ergonomics in order to create health-promoting and satisfying workplaces. Robelski et al., (2019).

Investment in worker training

Most of the policies identified previously focus on support for businesses. However, to promote telework across all segments of society, particularly individuals that are disadvantaged and/or live in regional Australia, requires investments in relevant skills especially among workers currently less able to telework. As many workers already possessing skills necessary for telework, e.g., in knowledge-intensive services, are largely concentrated in urban areas, large gains in skill supply may be obtained by up-skilling workers in rural areas. Promoting online education is particularly suited to provide training opportunities beyond the reach of large cities (Clancy, 2020).

4.4 Public information & education

A cultural shift may be achieved through information campaigns on successful transitions and highlighting the broader societal benefits beyond productivity, such as reducing the environmental impact and improving work-life balance. Adapting the public sector to remote work could serve to showcase the benefits of telework and may ease bureaucratic burdens. Mercer Global Survey reported that as companies move to increasing flexible working, among the changes made or are being considered relating to policies, people programmes and infrastructure the most popular change is creating a more supportive culture for flexible working (60% of participants picked this)

The Australian federal and state governments have throughout the COVID-19 crisis, and after easing of restrictions in the respective states, continuously reviewed their position and maintained effective communication with all stakeholders, business and people with regular updates across all media and with fiscal and other support. The comcare and fairwork ombudsman are but to name a

few of the various channels of information at federal level. This has not only allowed Australia to bring the pandemic under control effectively, but has also helped Australians keep jobs, keep the economy afloat and put the country on the road to recovery.

The Telework Kit published in 2015 provided very useful guide on telework for employers, employees and HR practitioners. It specified that it did not cover organisational policies or industrial agreements that vary across organisations and the States of Australia, including Work Health and Safety (WHS) rights and responsibilities or specific advice on IT infrastructure and collaborative tools, which require consultation with IT professionals, vendors and staff. An updated and upgraded WfH kit filling the void and promulgating the best practices would be timely. Information should include issuing advice or guidance on the minimum required equipment necessary for teleworking (including computers and software applications). Safework NSW for instance offers a very useful checklist for setting up a safe workstation at home. Also included should be concise information and awareness-raising on health and safety, including correct ergonomics. (Strangely while there is much discussion in the literature and the media about the importance of ergonomics and health concerns, many of the images accompanying reports and surveys show people working at home happily but in poor ergonomic postures and at times in bohemian settings, which is likely to do more harm than good for all concerned)

Comcare, the Australian national work health and safety and worker's compensation authority, has, in addition to all the information available on the Safe Work Australia's Informational Hub, published a checklist of considerations for short-term working from home arrangements. This includes workers that enter the 14-day isolation period for COVID-19. Also included are separate guidelines for employees and employers on how to make WfH a productive and healthy experience.

Public information and education would be the appropriate tool to tackle excessive telework. Employers need to engage in discussions on offering teleworkers additional flexibility around working hours and control of their work schedules (e.g., the teleworker's working day may start earlier or finish later based on individual needs, such as care responsibilities and home-schooling obligations) through these campaigns.

It is imperative for policymakers to involve social partners in reviewing the lessons learned from the current phase of pandemic regarding how management and workers transitioned to teleworking, and then use these experiences to adjust, as needed, existing teleworking policies or initiate new policies. It is important to leverage the influence and reach of social partners, such as trade unions and business chambers, to inform their members of the benefits of teleworking, offer assistance in transitioning to working remotely, share experiences, empower each other, and spread important government information regarding WfH.

The ACTU has already called for actions to ensure that home-workers are provided the same rights and benefits as if they were working at their employers' site, including equality of treatment in remuneration and other working conditions. "Our work indicates that there are five key areas that should be addressed in securing efficient and sustainable working from home arrangements. They are: 1. Workers' rights at home 2. Work health and safety 3. Work life balance 4. Connection and support 5. Job quality across all workplaces. To protect home workers, Australia needs a new Working from Home Charter". Australian Council of Trade Unions, (2020).

The Australian Government announced $1.67 billion over 10 years, the largest commitment to cyber security to date in its report on the Australian cyber security strategy 2020. The Australian Government will invest $58.3 million to enhance customer engagement channels and $12.3 million to extend the 24/7 cyber security helpdesk to SMEs and families. This will enhance the provision of cyber security advice and technical assistance to all Australians, improve the ReportCyber incident

reporting tool, and provide additional online resources, and practical, tailored advice and information for all Australians. This also complements the Australian Government's $26.0 million investment to support the ACSC to expand its assistance to the SMEs and the community. The Australian Government will also provide $6.1 million to bolster services to victims of identity and cybercrime.

The importance of constant and continuous communication about cyber security cannot be overemphasized. Issuing recommendations on how to prevent cyber security threats while workers are working from home, as well as offering guidance on how employers can comply with data protection and privacy regulations is in the national interest. Towards this end, perhaps a federal agency should spearhead the development of an application that can help to keep every worker abreast of all cyber threats just like the BOM.

5. HISTORIC UPTAKE OF WFH ARRANGEMENTS

In this section, we report preliminary findings from our analysis of existing datasets to examine the feasibility and uptake of WfH arrangements across different sectors and job types. Our initial goal is to understand the landscape of WfH in Australia before the pandemic. This is crucial since it provides us with a baseline and enables us to observe the change in working from home practices during COVID-19. As expected, these practices show considerable variation by sector, job type and also geographical location, which will be the focus of our analysis. Lastly, we will examine the prospect of working from home after the pandemic. To this end, we will present the average likelihood of working from home for jobs in different sectors and locations. Such an exercise is useful in terms of providing us with an upper bound for the possibility of occupations for which the work can be performed from home.

In terms of data sources, Section 5.1 uses data from the 2016 Australian Census to examine pre-pandemic uptake. Section 5.2 uses the Household Impacts of COVID-19 Survey datasets collected by the ABS in 2020 to examine the adoption of WfH practices during the pandemic. Finally, Section 5.3 uses a combination of US and Australian datasets and analyses undertaken by other studies to determine the future feasibility of WfH in a post-pandemic world.

5.1 Pre-pandemic uptake

This section uses the 2016 Census data to examine the working from home practices by geographical location, education, income, industry, and occupation. During the collection of the census, workers were asked how they got to work, and one of the answers to this question was ‘work from home’. It is this specific question which we make use of in the current section to understand how working from home practices showed variation before COVID-19.

Figure 2 plots the proportion of the local workforce across the 17 largest Australian cities that worked from home. Note that these 17 cities have populations close to or more than 100,000 and constitute the geographic scope of our analysis throughout this study. Across the capital cities, WfH uptake seems to vary between 3 and 4 percent. However, for urban areas that are in close proximity to a major capital city, such as Sunshine Coast and Gold Coast in relation to Brisbane, and Central Coast in relation to Sydney, the percentages are significantly higher. Given that a number of residents in these surrounding cities actually work in the central urban area, the higher uptake of WfH indicates that WfH arrangements can drive population decentralization, where workers are able to live increasingly further away from their workplace.

Figure 3 plots the proportion of the workforce that worked from home by education. Higher levels of education are typically more likely to have higher WfH uptake, but the correlation is likely driven by the nature of the occupation. For example, individuals with Certificate III or IV as their highest level of education are more likely to be in vocational jobs that require them to be physically on-site. Conversely, individuals who have university degrees are more likely to be in white-collar jobs that are easier to do remotely.

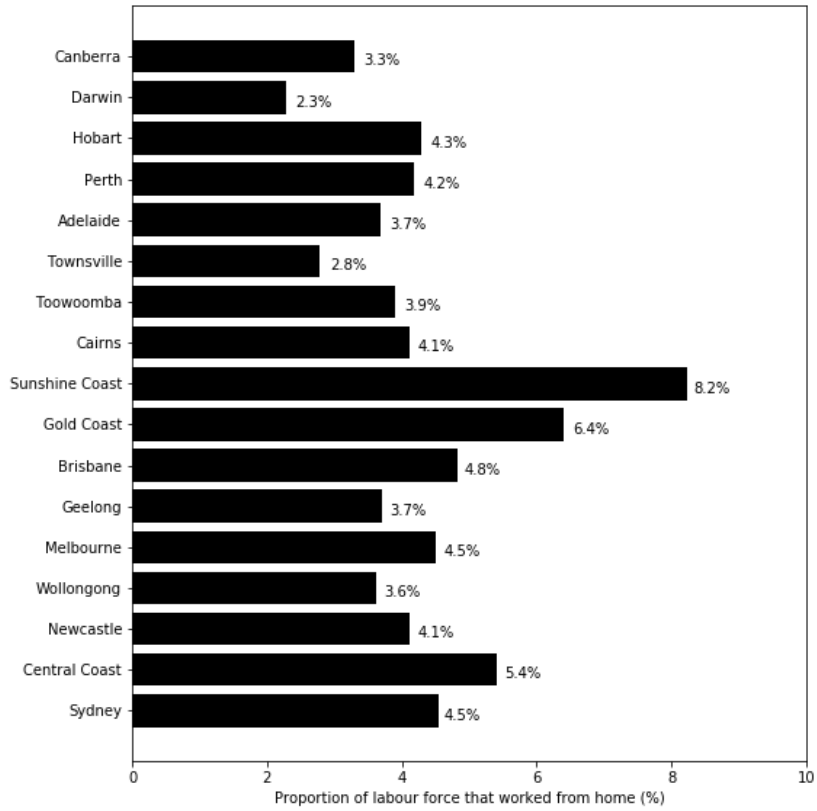


Figure 2: *Proportion of workers by city of residence that worked from home per the 2016 Census*

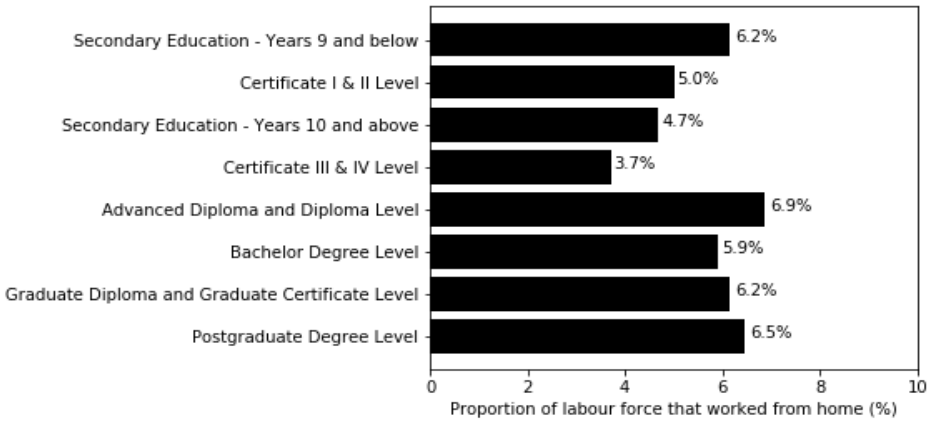


Figure 3: *Proportion of workers by highest level of education that worked from home per the 2016 Census*

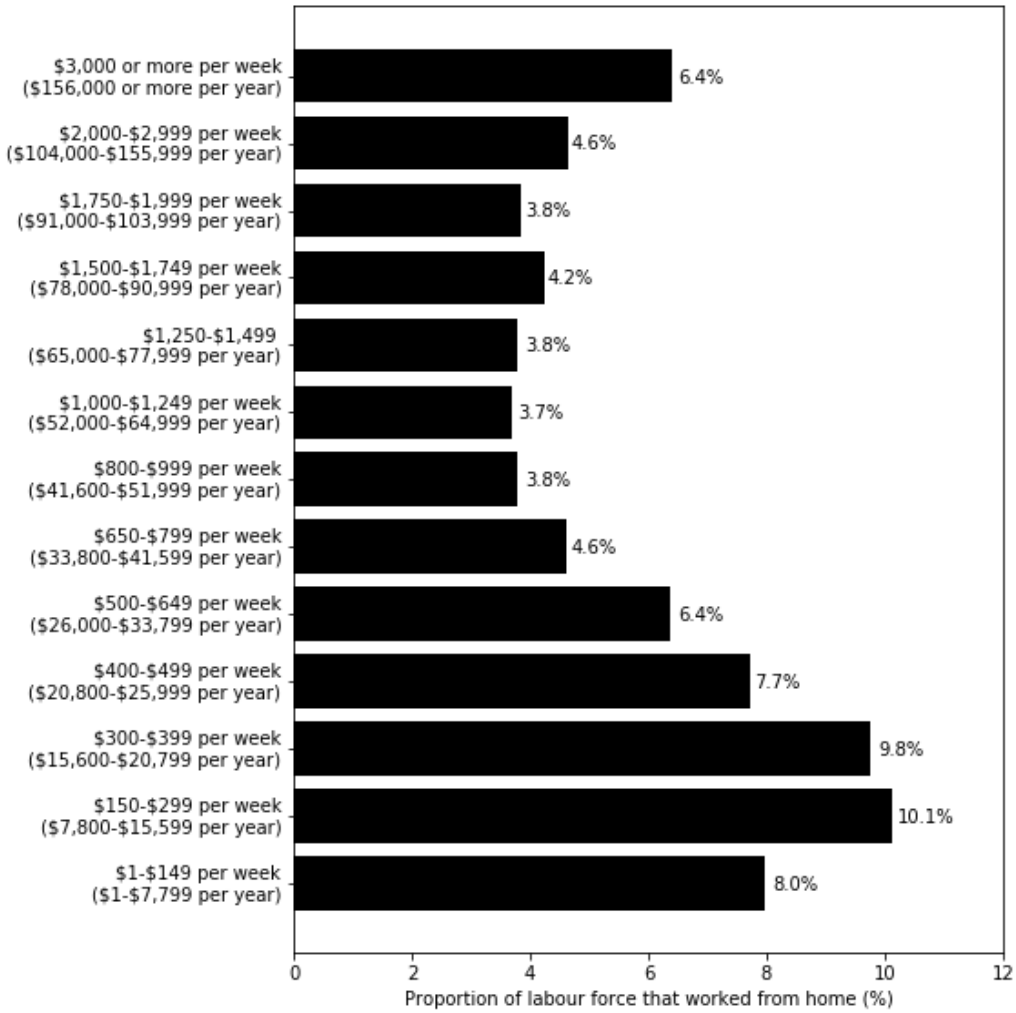


Figure 4: *Proportion of workers by personal income that worked from home per the 2016 Census*

Figure 4 plots the analogous proportions by different income groups. In general, the graph has a U-shape, where the proportion that do work from home is high for individuals employed in low and high-paying jobs, and low for individuals employed in medium-paying jobs. This is consistent with findings from other developed countries. For example, in their analysis of the correlation patterns between different wage deciles and WfH uptake in the US, Bloom et al. (2015) report a similar U-shaped relationship.

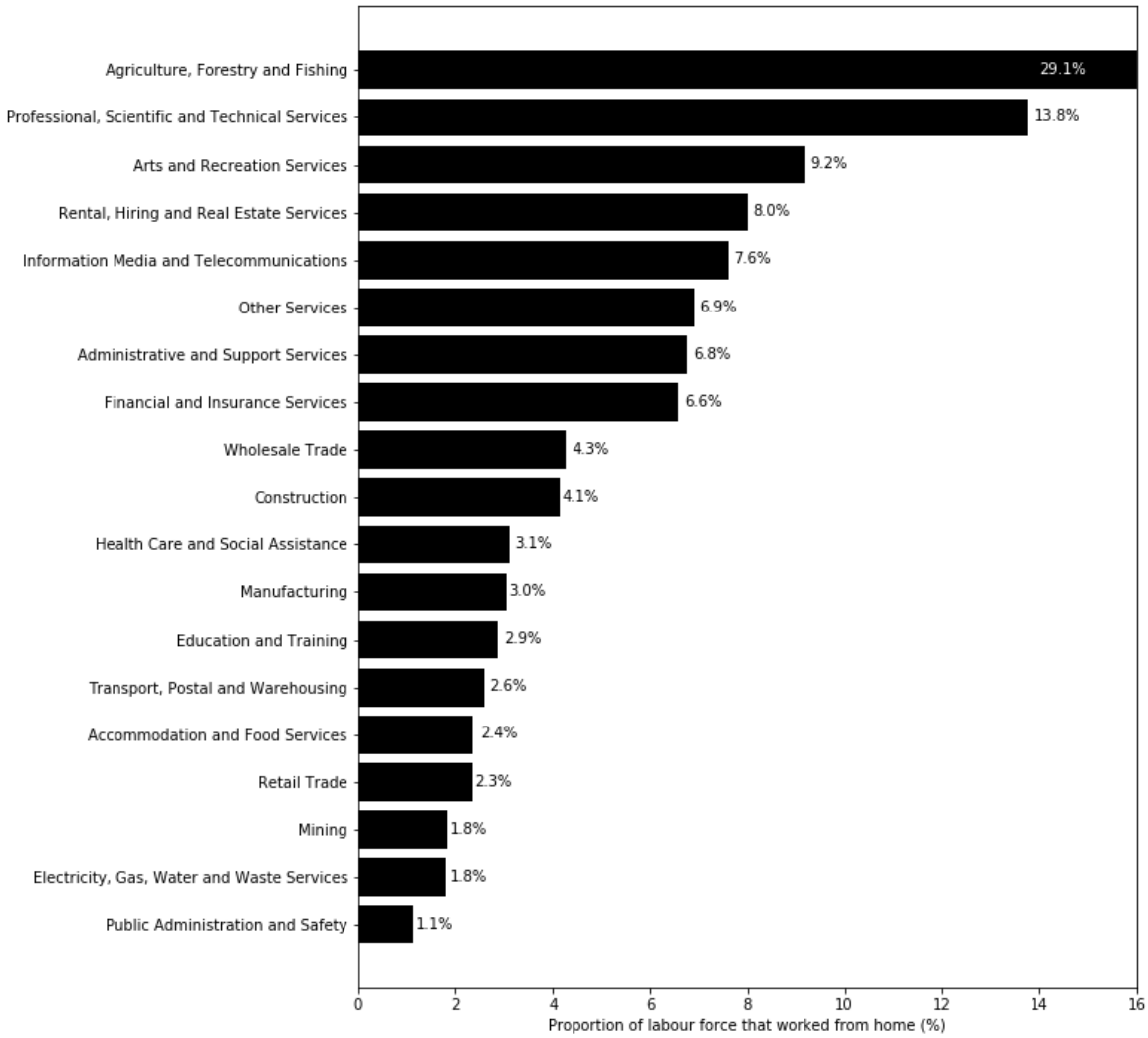


Figure 5: *Proportion of workers by industry sector that worked from home per the 2016 Census*

Figure 5 plots WfH uptake by industry sector. WfH uptake is greatest in the agriculture, forestry and fishing sector, but this is due to the fact that most farmers live and work on their farms. Across other sectors, as one would expect, white collar sectors such as Professional, Scientific and Technical Services; Rental, Hiring and Real Estate Services; Information Media and Telecommunications; and Administrative and Support Services have high proportions. In contrast, blue collar sectors, such as Transport, Postal and Warehousing; Construction; and Mining all have low proportions. An exception is the Public Administration and Safety sector which has the lowest percentage even though it is a predominantly white-collar sector. This is possibly due to the workplace culture and the reluctance to enable employees to work from home, and not necessarily due the nature of the work. This can also be observed in **Figure 2** showing Canberra with the third lowest proportion after Darwin and Townsville.

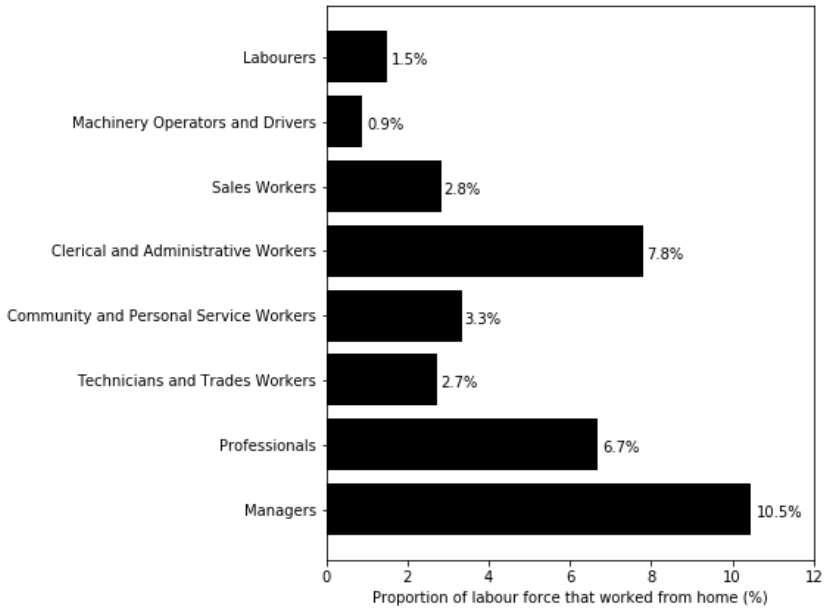


Figure 6: *Proportion of workers by occupation that worked from home per the 2016 Census*

Figure 6 plots WfH uptake by occupation type. Again, as one would expect, uptake is greatest for 'white collar' jobs such as managers, clerical and administrative workers, and professionals. Conversely, uptake is lowest for 'blue collar' jobs such as machinery operators and drivers, and labourers.

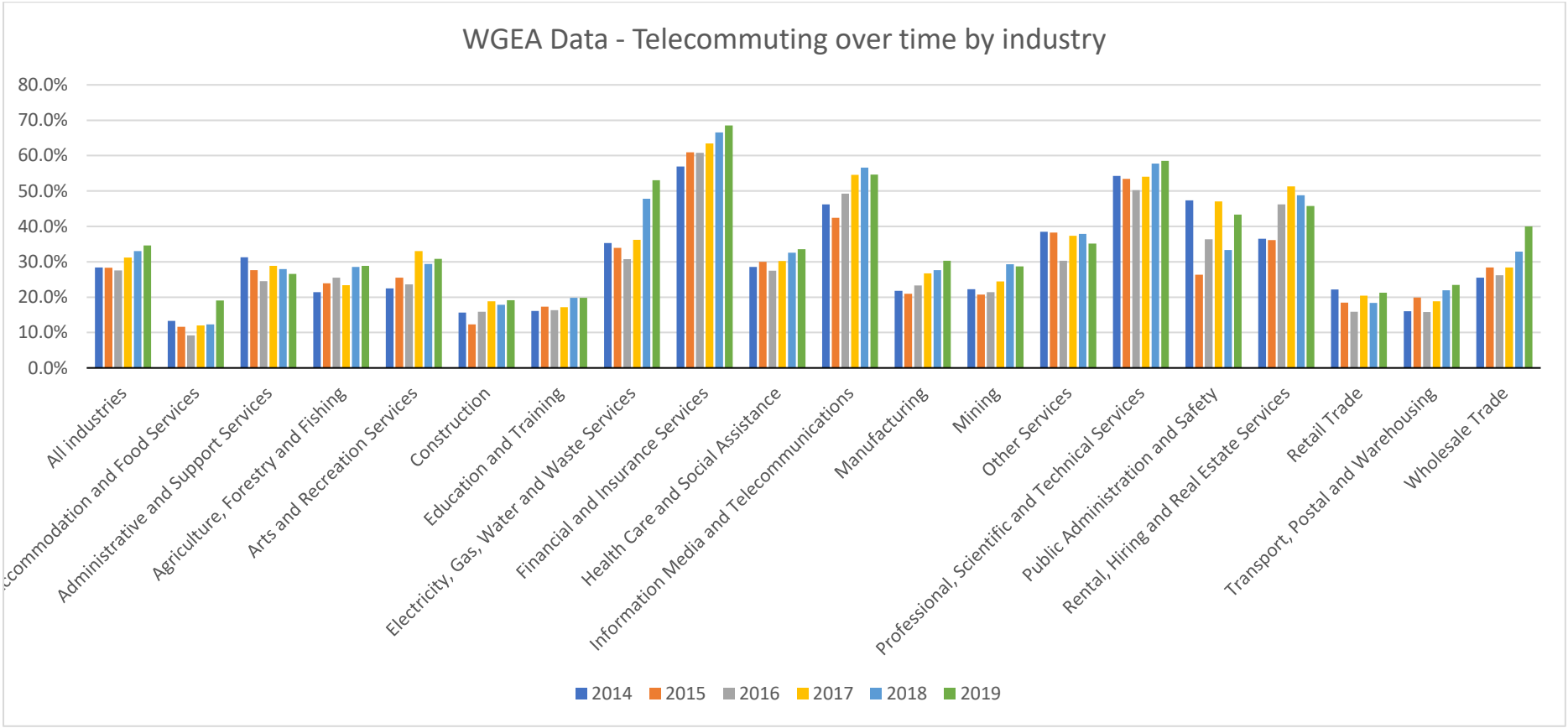
Lastly, instead of the uptake of WfH practices, which we have scrutinised using the 2016 census data, we focus on the WfH opportunities offered formally by sector, and the variation it shows over time. To this end we make use of the data collected by the Workplace Gender Equality Agency (WGEA). The data have been collected for 6 years (2014 to 2019) both from employees and employers. In total, there are more than 4.3 million employees and close to 5,000 organisations who have participated in the surveys.

Figure 7 shows, by industry, the percentages of survey respondents answering 'telecommuting as an option' to the question regarding the types of flexible work offered formally.

Overall, we see a rising trend over time in terms of offering telecommuting as an option to the employees. Some industries, such as financial and insurance services, have consistently increased their relative percentage year on. However, some other industries such as education and training do not show a significant variation over the six years. More interestingly, industries such as public administration and safety do not present us with a clear pattern. The associated percentages can differ significantly from one year to another, and while it might increase in one year, it might decrease the year after.

In summary, in this section we examined the opportunity and uptake of WfH practices before COVID-19. The data showed that while WfH opportunities were being formally offered, the uptake before the pandemic was not sizeable. While we observed a significant amount of variation depending on location, industry, occupation and income, there were very few cases in which the uptake proportion exceeded 10 percent. In some instances, the uptake was as little as 1-2 percent. This can be considered as a lower bound for the proportion of jobs which can be performed from home. In contrast, the next section will focus on the uptake of working from home practices throughout the pandemic in 2020. This will offer us an upper bound for the percentage of jobs which can be performed from home.

Figure 7: *Proportion of workers by industry who were offered telecommuting as an option*



5.2 Uptake during the pandemic

In this section we concentrate our efforts on the measures of people who have worked from home during the COVID-19 pandemic. To this end, we make use of the Australian Bureau of Statistics (ABS) Household Impacts of COVID-19 Surveys. The first one of these surveys took place between the 31st of March and 6th of April 2020. ABS collected information from 1,059 people, via telephone, throughout Australia. The latest iteration of the survey was conducted between 16 October and 26 October 2020. It was done via online forms and telephone interviews. Information from around 1,500 people were collected in the latest wave. In between the two waves mentioned above, there are eleven others that have been conducted, with two out of these eleven being detailed surveys.[1]

Figure 8 presents the percentages of workers who worked from home. The sample population comprises all people aged 18 years and over with a job. In the survey the respondents listed working from home as a response to the question regarding precautions taken. As expected, the proportion of those working from home steadily declined from April to June as the number of COVID-19 cases and related deaths have diminished. During the early and late April surveys, ABS also identified those who were 18 years and over with a job working paid hours. Among this specific sub-sample, those who were working from home formed 51 percent of the respondents in the early April survey and 46 percent in the later one.

Focusing on the detailed survey conducted in May, **Figure 9** shows the distribution of the percentages of people working from home by states. The state with the highest percentage is the combination of NT and ACT, which we believe is primarily due to nature of the jobs in ACT that can be performed from home. This is followed by VIC and NSW, with SA listed as the state with the least proportion of people working from home. **Figure 10** represents the distribution of states for the detailed survey conducted in June. While we observe significant decline in the proportions of working from home in NT/ACT, TAS, QLD and VIC, the numbers have not changed much for the other states.

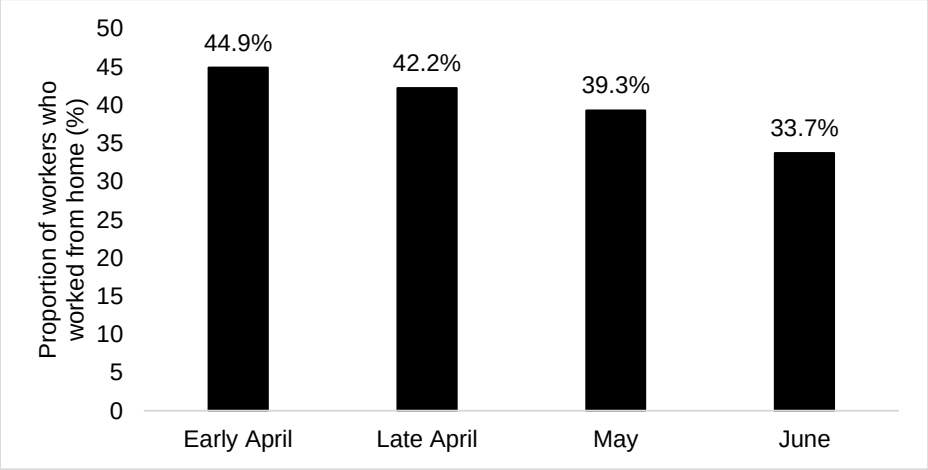


Figure 8: *Proportion of individuals that reported working from home during the COVID-19 pandemic; Source: Household Impacts of COVID-19 Survey, April, May, June 2020.*

[1] For a list of all the releases with specific dates and corresponding links, please see: https://www.abs.gov.au/statistics/people/people-and-communities/household-impacts-covid-19-survey

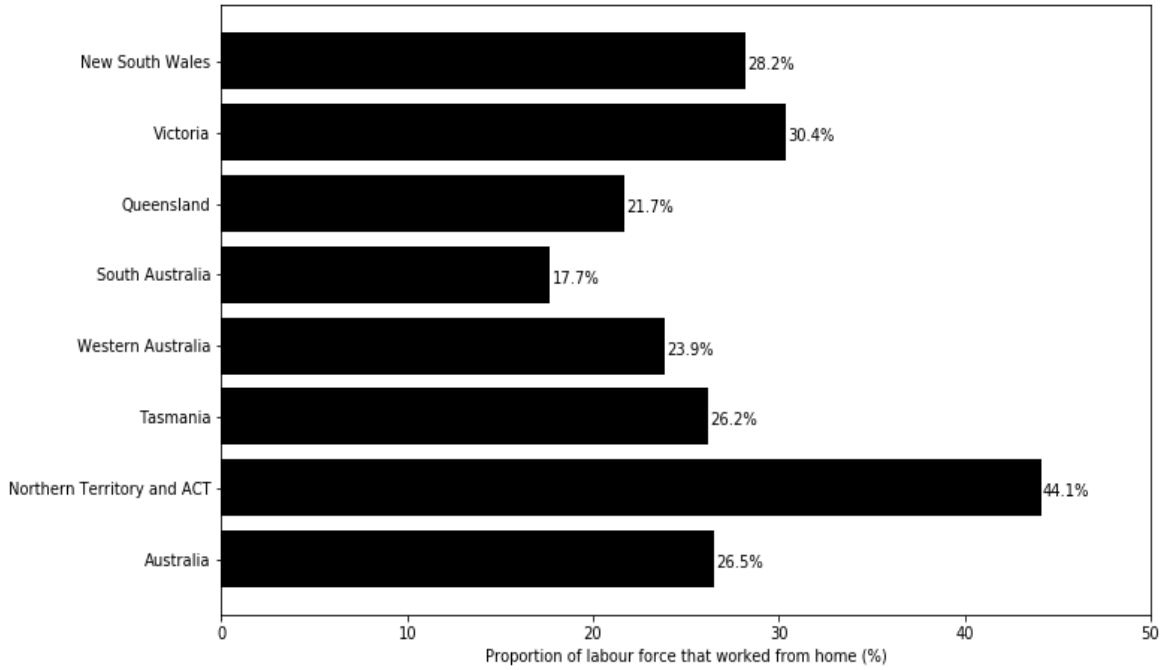


***Figure 9**: Proportion of persons aged 18 years and over who reported working from home during the last 4 weeks; Source: Household Impacts of COVID-19 Survey, Detailed Release, May 2020*

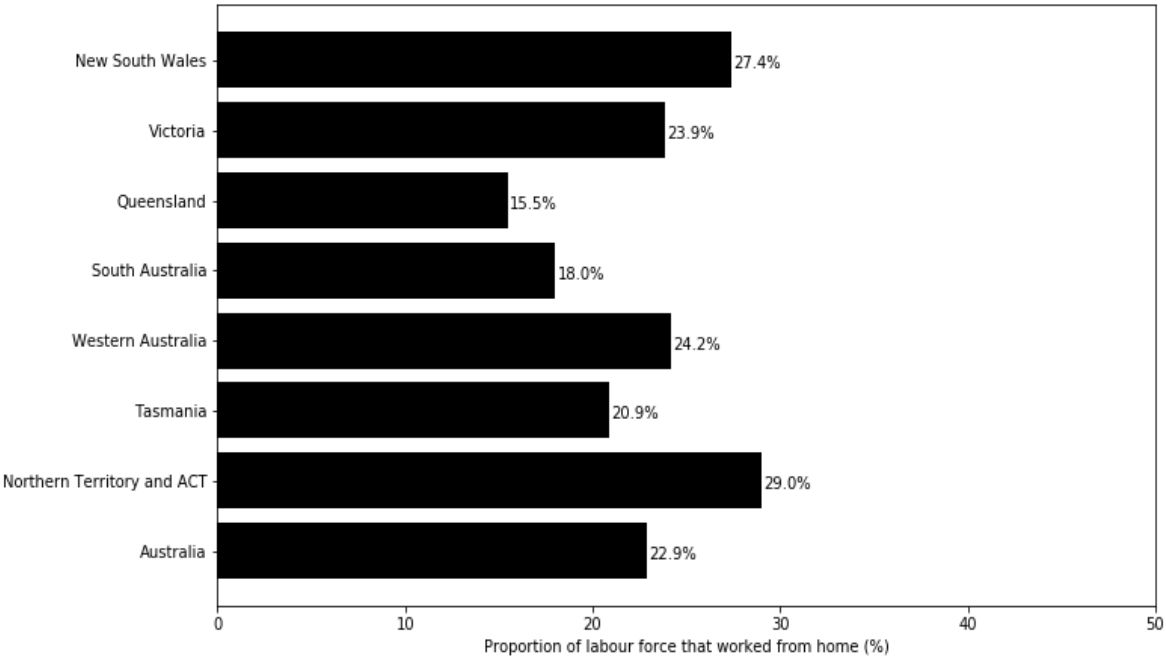


***Figure 10**: Proportion of persons aged 18 years and over who reported working from home during the last 4 weeks; Source: Household Impacts of COVID-19 Survey, Detailed Release, June 2020*

Next, in **Table 3**, we analyse the survey responses for those who have a job. The proportions for the survey conducted at the beginning of May show that 46 percent of the respondents were working from home when the data were collected. While majority of those working from home report working the same amount of hours since COVID-19, more than a third of those working from home said they work more hours from home since COVID-19. 54 percent of those respondents with a job, however, said they do not work from home or never worked from home. When asked the reason, overwhelming majority of the respondents replied that their job cannot be performed from home.

Around the second week of June ABS conducted the survey again but this time asking if the respondents have started attending at their workplace since the easing of the COVID-19 restrictions. While close to 60 percent of the respondents suggested they have attended their workplace, 17.5 percent said they have not attended yet, but they intend to attend. Only 15.6 percent responded saying they do not intend on attending their workplace.

Another interesting observation from **Table 3** is the gender differences between the responses. The results suggest females are more likely to be working from home compared to males in the May survey, while they are also less likely to have returned to their workplace in the June wave

.

Table 3: *Uptake of WfH during April, May and June 2020 as a function of gender*

Household Impacts of COVID-19 Survey, 29 April - 4 May			
Whether currently working from home	**Male**	**Female**	**All**
Working from home	37.5%	55.6%	46.0%
Working more hours from home since COVID-19	9.4%	26.0%	17.1%
Working less hours from home since COVID-19	3.9%	4.0%	3.9%
Working same amount of hours from home since COVID-19	24.3%	25.6%	24.9%
Not currently working from home / Have never worked from home	62.5%	44.4%	54.0%
Note: Total persons who currently have a job working paid hours			
Reason(s) for not working from home	**Male**	**Female**	**All**
Type of job can't be done at home	89.6%	87.8%	88.9%
Not offered by employer	2.7%	9.0%	5.1%
No access to internet or proper equipment at home	2.2%	4.4%	3.0%
Other	6.0%	5.2%	5.7%
Note: Total persons who currently have a job working paid hours but not working from home			
Household Impacts of COVID-19 Survey, 10 – 15 June 2020			
Question: Activities as COVID-19 restrictions ease	**Male**	**Female**	**All**
Attendance at workplace in person			
Have done activity	65.8%	52.6%	59.7%
Intend to do activity	13.3%	22.4%	17.5%
Do not intend to do activity	14.8%	16.4%	15.6%
Do not know	6.1%	8.7%	7.3%
Note: Total persons aged 18 years and over who usually participate in activity			

Table 4: *Uptake of WfH during April, May and June 2020 as a function of education*

Household Impacts of COVID-19 Survey, Detailed Release, June 2020			
Actions taken in the last four weeks due to spread of COVID-19	**Has a non-school qualification**	**Does not have a non-school qualification**	**All**
Worked from home	39.2%	19.0%	33.7%
Note: Total employed persons aged 18 years and over			

According to the detailed survey in June, as shown in **Table 4**, among those who are employed, 33.7 percent of them have worked from home in the previous four weeks. Similar figure in early May was 46 percent, as reported in **Table 3**.

Another survey which was conducted in May to June 2020 offers similar findings. This survey was administered by the Australian Institute of Family Studies and it comprised 7,306 respondents. According to this survey, 60 percent of the respondents were always working from home during the pandemic, compared to 7 percent before the pandemic. While the numbers reported in this survey are similar to the ones mentioned in the ABS survey, they are not the same. The main reason is that in this survey Victoria, the ACT and Tasmania were over-represented. Similarly, compared to the target population, the survey over-represents couples, females, those who are middle-aged and those with tertiary education.[2]

The responses to surveys conducted in July and August, as reported in **Table 5**, show that around a quarter of the respondents expect working or studying from home to continue in the future. This is in accord with the findings of another survey administered in late June by the Community and Public Sector Union and researchers at CQ University and UNSW Canberra. The respondents were more than 6,000 employees, including nearly 1,400 managers, in the Australian Public Sector. According to the researchers, over two-thirds of the respondents indicated a preference to continue working from home in some capacity in the future. Moreover, a vast majority of the managers who participated in the survey thought the workers were just as productive or more productive working from home, and thus majority of them were in support of working from home arrangements to continue in the future.[3]

Similarly, a recent study by Beck et al. (2020) surveyed the respondents collecting their WfH tendencies before COVID-19, during the pandemic and the expectation for the future. The authors collected information from respondents in two waves; Wave 1 (March 30 to April 15) and Wave 2 (May 23 to June 15). While the number of observations for the two waves are 476 and 705, respectively, both samples are comparable to the general characteristics of the Australian population. The survey responses show that while 71 percent of respondents in employment did not work from home before the pandemic, this number was down to 39 percent during the Wave 1 data period, and then went up to 54 percent during the collection of the second wave. Similarly, while only 7 percent of the respondents were working 5 days from home before COVID-19, this number went up to 30 percent, and then down to 21 percent according to Wave 1 and 2 respectively. In accord with these figures, average days worked from home was only 0.86 prior to the pandemic. It went up to 2.4 days in Wave 1, and down to 1.7 days during Wave 2 collection. The survey respondents were also asked about working from home in the future. 71 percent of them agreed

[2] The survey findings can be accessed using the following:
https://aifs.gov.au/sites/default/files/publication-documents/covid-19-survey-report_1_early_findings_0.pdf
[3] Full report can be accessed using the following:
https://www.unsw.adfa.edu.au/public-service-research-group/sites/cpsr/files/pdf/548493134%20-%20Working%20From%20Home%20Report_Final%20%281%29.pdf

with the statement that they would like to work more from home in the future. As the authors point out, the high percentages of working from home observed during the pandemic are not sustainable, especially not the extreme value of hundred percent of the work being done from home. They point out that it is more likely to end up with having a significant share of the people working from home for a few days of the week.

Compared to the June survey, as reported in **Table 3**, the August survey results below (**Table 5**) show that the percentage of respondents who have resumed attendance at workplace in person has declined slightly (from 60% to 55%). The proportion of those who have returned is also much lower in VIC compared to the rest of the country due to the second wave and the relevant restrictions that were present in Melbourne. Moreover, among those who have resumed attendance in the previous week, around a third of them were spending less time at workplace in person.

Table 5: *Uptake of WfH during July and August 2020 as a function of gender and location*

Household Impacts of COVID-19 Survey, 6 – 10 July 2020					
Question		**Sex**		**Location**	**All**
Aspects of life under COVID-19 restrictions to continue in the future	**Male**	**Female**	**VIC**	**Rest of Australia**	
Spending more time at home	16.5%	17.4%	13.2%	18.3%	16.9%
Working or studying from home	20.9%	28.6%	24.7%	24.8%	24.8%
Note: Total persons aged 18 years and over					
ABS Household impact of Covid-19 survey, August 2020					
Question		**Sex**		**Location**	**All**
	Male	**Female**	**VIC**	**Rest of Australia**	
Resumed attendance at workplace in person					
Have done activity	59.2%	50.0%	29.6%	65.8%	54.5%
Have not done activity	28.1%	34.6%	42.3%	26.5%	31.4%
Unable to do activity as restrictions still in place	12.7%	15.4%	28.2%	7.7%	14.1%
Total persons aged 18 years and over who usually participate in activity					
Change to usual time spent at workplace in person					
More time	5.8%	3.8%	-	-	4.9%
About the same time	57.1%	64.9%	-	-	60.7%
Less time	34.2%	31.3%	-	-	32.9%
Don’t know yet	2.9%	0.0%	-	-	1.6%
Note: Total persons aged 18 years and over who resumed attendance at workplace in the last week					

Table 6: *Household Impacts of COVID-19 Survey, September 2020*

Working from home before 1 March 2020	Sex		Location			All
	Male	Female	New South Wales	Victoria	Rest of Australia	
One or more times a week	20.8%	22.2%	24.5%	19.7%	20.3%	21.5%
Most days	12.3%	10.7%	12.6%	6.3%	14.3%	11.5%
At least once a week	8.5%	11.4%	11.9%	13.4%	5.9%	10.0%
At least once a month	6.2%	5.1%	8.8%	6.1%	2.7%	5.6%
Several times a year	4.4%	3.9%	np	3.8%	np	4.1%
Once a year or less	3.4%	3.7%	np	5.2%	np	3.6%
Never or almost never	65.2%	65.1%	57.2%	65.1%	71.7%	65.2%

Note: Total persons 18 years and over with a job

Working from home in the last four weeks	Sex		Location			All
	Male	Female	New South Wales	Victoria	Rest of Australia	
One or more times in the last four weeks	44.3%	47.4%	49.8%	52.0%	38.6%	45.8%
One or more times in the last week	37.9%	42.1%	40.8%	49.6%	33.1%	40.0%
Most days	28.8%	32.6%	32.1%	42.6%	21.6%	30.7%
At least once a week	9.1%	9.5%	8.7%	6.9%	11.4%	9.3%
At least once in the last four weeks	6.3%	5.3%	9.0%	2.4%	5.5%	5.8%
Never or not in the last four weeks	55.7%	52.6%	50.2%	48.0%	61.4%	54.2%

Note: Total persons aged 18 years and over with a job

The September survey results are presented in **Table 6**. In this wave ABS asked the respondents information regarding working from home in the previous four weeks as well as working from home before the pandemic has started (earlier than 1 March 2020 used as the reference period). Pre-pandemic numbers show that around 20 percent of the respondents were working from home one or more days a week, with around 10 percent doing it most days of the week. The corresponding figures in the September survey are around 40 and 30 percent, respectively. In terms of gender differences, the data show very similar numbers among males and females. However, while we observe slightly higher likelihood of working from home before the pandemic among those in NSW compared to the respondents in VIC, this difference has reversed in the September survey.

Table 7: *Household Impacts of COVID-19 Survey, October 2020*

Working from home	Before 1 March 2020		September 2020		October 2020	
	Male	Female	Male	Female	Male	Female
One or more times in the last week	20.8%	22.2%	37.9%	42.1%	41.2%	41.6%
All or most days	12.3%	10.7%	28.8%	32.6%	29.2%	31.1%
At least once a week	8.5%	11.4%	9.1%	9.5%	12.1%	10.5%
At least once in the last four weeks	6.2%	5.1%	6.3%	5.3%	5.4%	3.5%
Never or not in the last four weeks	n/a	n/a	55.7%	52.6%	53.4%	54.9%

Note: Total persons 18 years and over with a job

Working from home in the last four weeks (October 2020)	Sex		Location			All
	Male	Female	New South Wales	Victoria	Rest of Australia	
One or more times in the last four weeks	46.6%	45.1%	48.4%	53.0%	39.1%	45.8%
One or more times in the last week	41.2%	41.6%	44.1%	50.1%	33.6%	41.4%
Most days	29.2%	31.1%	32.7%	43.6%	19.1%	30.1%
At least once a week	12.1%	10.5%	11.4%	6.5%	14.5%	11.3%
At least once in the last four weeks	5.4%	3.5%	4.3%	2.9%	5.5%	4.4%
Never or not in the last four weeks	53.4%	54.9%	51.6%	47.0%	60.9%	54.2%

Note: Total persons aged 18 years and over with a job

The latest survey results released by the ABS are presented in **Table 7.** When compared to **Table 6**, there is no noticeable difference between the WfH figures. In other terms, the practice of working from home has not changed much compared to September. There is also no noteworthy change in percentages by location or gender.

More recently, the NSW Innovation and Productivity Council released a report outlining remote working insights for the state of New South Wales.[4] This report presents results from a survey of 1,500 workers in August and September. Whilst 53% of the respondents report being more productive working from home, the report also reveals significant savings in terms of time and travel costs. For example, according to the calculations in the report, working from home two days a week saves an average worker 123 extra hours and $860 in transportation costs per year. The report also predicts a 'hybrid model' as the future of work in NSW with around 30% of total work done remotely (compared to 18% before the pandemic).

In this section we summarised the evolution of WfH practices during the COVID-19 outbreak. As expected, we observed a relatively higher uptake of these practices during the peak of the pandemic. Over time, as the number of cases diminished and restrictions have been eased, we observed employees attending at workplace in person. In the last two months of the ABS survey we also observed a levelling-off of working from home percentages, with a considerable number of workers still working remotely. Therefore, a natural question to consider next is how the employment arrangements might look like after the pandemic is over. Thus, in the next section we scrutinise the potential of the post-pandemic uptake of the working from home practices.

[4] Full report can be accessed using the following: https://www.treasury.nsw.gov.au/sites/default/files/2020-11/Full-Report-NSW-Remote-Working-Insights-Report-1-2020%20%281%29.pdf

5.3 Potential post-pandemic uptake

In this section we focus our attention on the post-pandemic analysis and identify the percentage of jobs that could potentially be completed from home. To this end we make use of a white paper by Dingel and Neiman (2020) presented to the Becker Friedman Institute for Economics at University of Chicago. In this paper the authors classify the possibility of working from home for various occupations using data from the Unites States (US). According to their calculations, 37 percent of jobs in the US can be performed from home, with significant variation by location and industry. We combine results from Dingel and Neiman (2020) with Australian Census distributions across different occupation types to calculate the shares of jobs that can be completed from home by state, weekly wage, education and industry, following the approach taken by Stratton (2020).

Figure 11 shows that while on average 41 percent of the jobs in Australia can be done from home, ACT is the state with the highest proportion by a significant margin. This finding is in accord with the observation from **Figure 9** and **Figure 10** in the previous section. VIC and NSW are the other two states which are above the Australian average in terms of percentage of jobs that can be done from home.

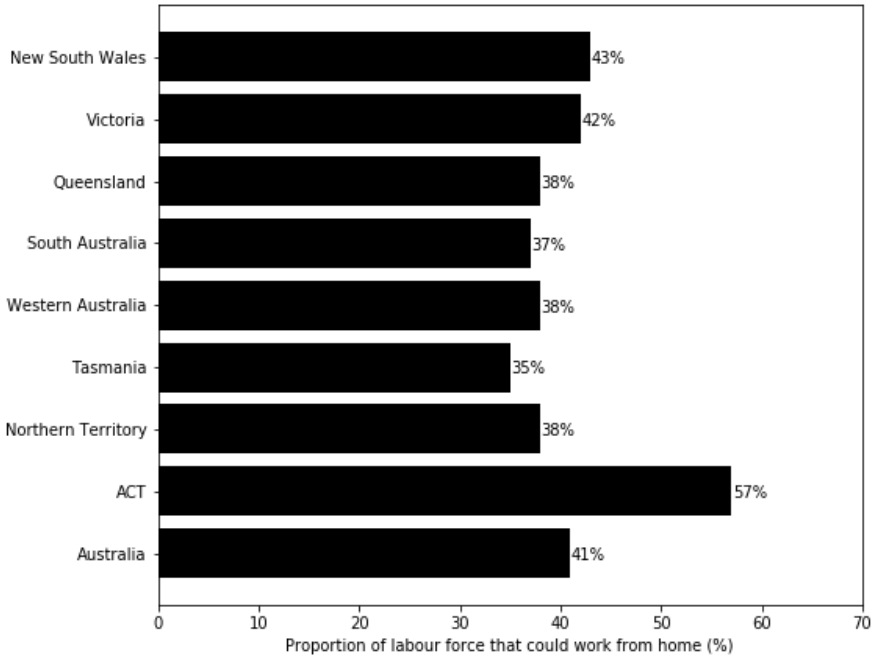


Figure 11: *Predicted distribution of jobs across states that could potentially be done from home*

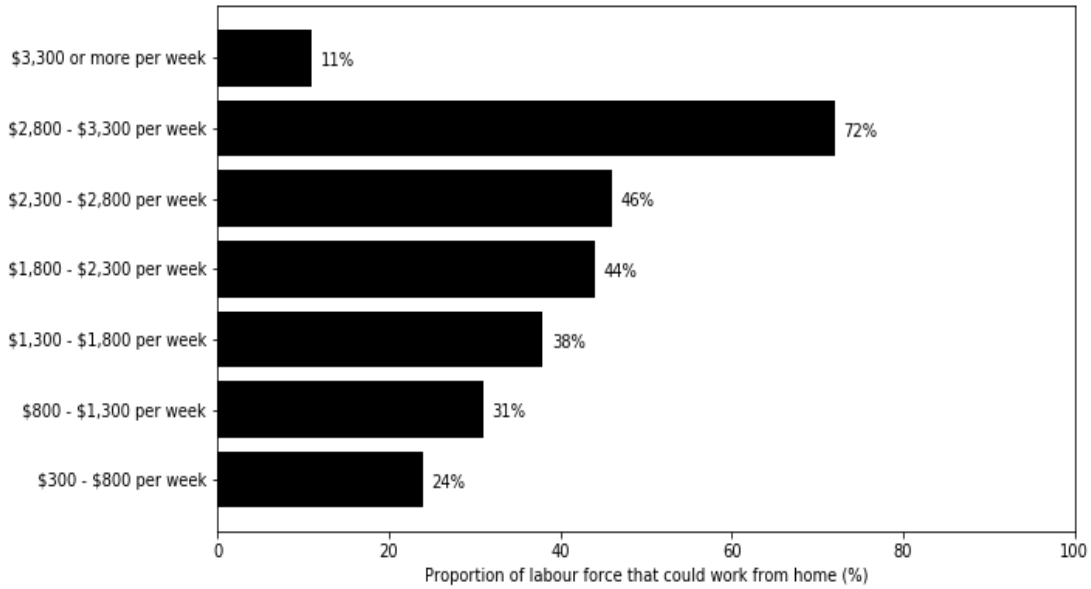


Figure 12: *Predicted distribution of jobs across income categories that could potentially be done from home*

Figure 12 studies the variation in the possibility of working from home by weekly wage. We observe a consistent increase in the likelihood of working from home by the increase in wages, with a significant jump around $2,800. This jump corresponds to managers as shown in **Figure 6**. At the same time, we find a substantial drop in the likelihood of performing the job from home after the $3,300 mark. According to the 2016 census data, this group comprise health professionals such as doctors as well as specialist managers and business, human resources and marketing professionals. This finding matches the percentage for the health professionals in **Figure 5** presented in Section 5.1. However, **Figure 12** and **Figure 4** show significant differences despite the fact they both show the variation by weekly earnings. The distinction likely arises from the fact that **Figure 4** represents the actual percentages of people *actually* working from home (pre-pandemic), while **Figure 12** shows the jobs that *could potentially* be completed from home.

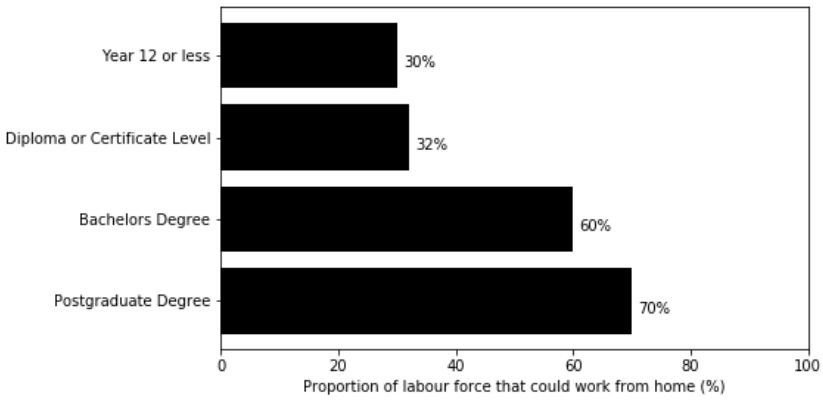


Figure 13: *Predicted distribution of jobs as a function of employee education that could potentially be done from home*

The possibility of working from home shows an increasing trend by education, according to **Figure 13**. The significant jump at the bachelor's degree level is also noteworthy. However, **Figure 3** in Section 5.1 did not offer such an explicit relation between education and working from home. Similar to our explanation before, this is due to the distinction in the two working from home measures; one measuring the actual percentages of people working from home, and the other one reporting the possibility of those jobs that could be performed from home.

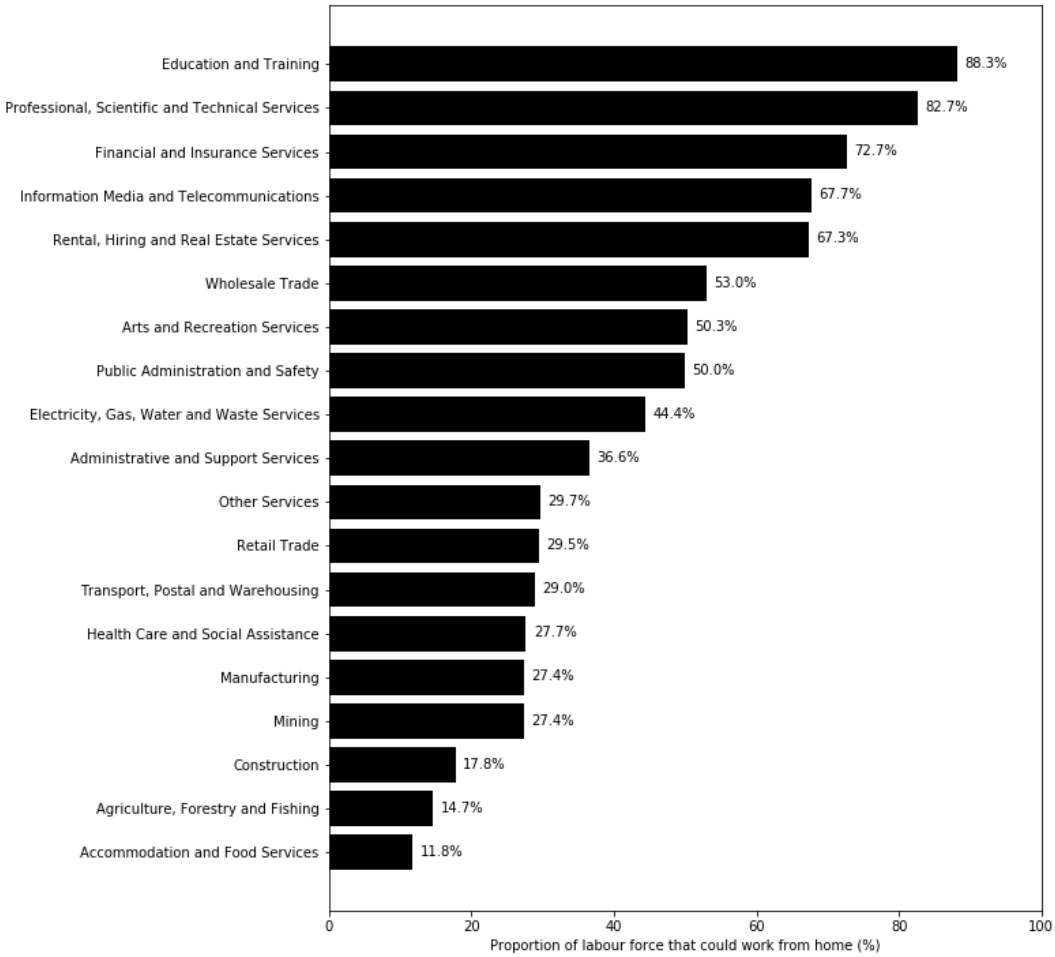


Figure 14: *Predicted distribution of jobs across different industry sectors that could potentially be done from home*

Next, we focus on the industries with the percentage of jobs that can be done at home for each industry. The stand-out ones are education and science/technology, with both above 80 percent. These figures are not too surprising given how fast schools could transition into online learning, not just in Australia, but all over the world. However, the pre-pandemic numbers, presented in **Figure 5**, show less than 3 percent of education and training being performed from home. This vast distinction between what was actually being done from home pre-pandemic and what can be done from home is due to the nature of the job/industry. Another industry with similar discrepancy in terms of actual and potential WfH is the Public Administration and Safety. While the actual number was 1.1 percent, as presented in **Figure 5**, the potential is 50 percent. On the other hand, the lowest percentage in **Figure 14** is for the hospitality industry with 12 percent. This is consistent with how the sector has been one of the worst affected by COVID-19 related lockdown measures.

We compare findings from the Dingel and Neimann (2020) methodology with results from Adams-Prassl et al. (2020). This study provides a bit more variation over the Dingel and Neimann (2020) paper by taking the heterogeneity due to worker and firm differences into consideration. In other words, this study does not only focus on the working from home feasibility averages by occupation and industry, but it also focusses on workers with different characteristics. The data come from three waves of surveys conducted in the US and the UK in March, April and May 2020, with a total number of respondents that is close to 25,000. One novel approach of this survey is that the respondents were asked what share of job tasks they could do from home, and the responses are recorded on a continuous scale (0-100 percent). Overall, the authors show that on average 42 percent of the work tasks of the respondents could be done from home in the US, while the same figure is 39 percent in the UK. According to the authors, majority of the respondents report values between 0 and 100 percent, while a non-negligible share of them report either 0 or 100 percent.

Table 8 presents the averages of work that can be done from home by occupation. In the last two columns of the table, we note the percentage of those people in the same occupation answering either 0 or 100 percent. The two groups of occupations with averages above 60 percent are Business and Financial Operations and Computer and Mathematical. They also have a median score around 70 and 14-16 percent of the respondents saying they can do all of their work from home. Another occupation group in which 16 per cent of the respondents can do all their work from home is Office and Administrative Support. Interestingly, for the same occupation, again 16 percent of the respondents report the share of their work they can do from home is 0. This difference highlights heterogeneity in WfH capability within the same occupation category.

***Table 8**: Work that can be done from home (by occupation)*

Occupation	Mean	SD	Median	Proportion of jobs that can done remotely entirely	Proportion of jobs that cannot be done remotely at all
Management	56.07	32.63	61	0.09	0.07
Business and Financial Operations	63.35	29.8	68	0.14	0.05
Computer and Mathematical	67.61	27.6	72	0.16	0.02
Architecture and Engineering	54.5	27.73	56	0.06	0.04
Life, Physical, and Social Science	43.65	32.59	46	0.06	0.13
Community and Social Service	45.25	35.22	50	0.07	0.19
Legal	54.15	31.08	53	0.06	0.07
Educational Instruction and Library	35.06	32.78	27	0.06	0.16
Arts, Design, Entertainment, Sports, & Media	49.14	36.93	51	0.13	0.16
Healthcare Practitioners and Technical occ.	25.18	32.38	6	0.04	0.36
Healthcare Support	29.14	35.88	4.5	0.07	0.33
Protective Service	22.73	31.11	2	0.03	0.44
Food Preparation and Serving	13.71	25.83	0	0.02	0.53
Building and Grounds Cleaning & Maintenance	23.92	32.82	1	0.04	0.42
Personal Care and Service	21.13	32.72	1	0.05	0.47
Sales and Related Occupations	26.57	35	2	0.05	0.4
Office and Administrative Support	53.68	38.4	60	0.16	0.16
Farming, Fishing, and Forestry	25.22	33.68	6	0.07	0.27
Construction and Extraction	30.85	33.92	15	0.03	0.29
Installation, Maintenance, and Repair	29.4	33.59	10	0.03	0.3
Production	24.74	33.48	2	0.04	0.42
Transportation and Material Moving	21.39	31.82	1	0.03	0.45
Military Specific Occupations	36.16	30.06	34	0.04	0.15

Table 9: *Work that can be done from home (by industry)*

Industry	Mean	SD	Median	Proportion of jobs that can done remotely entirely	Proportion of jobs that cannot be done remotely at all
Agriculture Forestry and Fishing	41.19	34.75	42	0.06	0.18
Mining and Quarrying	54.59	23.27	56	0.03	0.02
Manufacturing	44.44	34.68	49	0.06	0.19
Electricity, Gas, Steam etc.	52.34	29.59	52	0.09	0.1
Water Supply etc.	55.39	25.77	57	0.04	0.04
Construction	44.75	34.14	49	0.06	0.17
Wholesale and Retail Trade	28.84	34.52	8	0.04	0.37
Transportation and Storage	37.04	37.71	21.5	0.07	0.3
Accommodation and Food Service Activities	17.68	28.42	1	0.02	0.49
Information and Communication	70.37	27.2	77	0.17	0.02
Financial and Insurance Activities	66.01	32.31	74	0.2	0.06
Real Estate Activities	53.16	33.48	53	0.09	0.1
Professional Activities	57.79	34.67	64	0.13	0.1
Administrative and Support Services	52.28	36.67	55	0.16	0.12
Public Administration and Defence	54.59	37.68	62	0.12	0.18
Education	37.71	34.82	30	0.07	0.18
Human Health and Social Work	31.62	35.59	10	0.06	0.29
Arts, Entertainment and Recreation	40.01	38.3	30	0.11	0.27
Other Service Activities	29.22	36.84	5	0.09	0.35
Activities of Households as Employers	35.58	35.28	35.5	0.05	0.27
Extraterritorial Organisations	58.69	27.38	59	0.13	0.06
Other	33.04	38.29	8	0.09	0.36

Table 9 shows the averages of work that can be done from home by industry. The two industries with an average greater than 65 percent are *Financial and Insurance Activities* and *Information and Communication*. For both of these industries close to 20 percent of the respondents said they can perform all their work from home. Conversely, and as expected, among those working in the *Accommodation and Food Services* Activities industry close to half of them said none of their work could be performed from home.

Overall, we have shown that while working from home practices were not very common before the COVID-19 pandemic, many workers in various industries were able to adjust and perform a significant amount of their tasks from home in 2020. Given the percentage of jobs that could potentially be done from home, combined with the willingness of employees to continue performing some of their tasks from home, we believe in the near future a significant share of workers will be working from home at least a few days of the week. Of course, we expect to see a significant variation in the WfH practices depending on the industry, occupation and location.

6. QUALITATIVE ANALYSIS OF EMPLOYER PREFERENCES FOR WFH

Stage Three of this project focused on collecting qualitative data from a purposive sample of employers or managers to explore past, current and emerging practices on working from home from the organizational perspective. Data collection had two components: an anonymised Delphi process with a diverse group of employers or managers through a purposive sampling frame; followed by in-depth interviews with a selected sample of employers or manager to create some targeted case studies. This chapter of the report outlines the methods used and the results by theme.

6.1 The Delphi process

The RAND corporation developed the Delphi technique in the 1950s; it was originally used to forecast the impact of technology on warfare. The aim of a Delphi Process is to clarify and expand on issues, and to identify areas of agreement or disagreement; it can be used to either measure the diversity of opinions on a topic or to steer a group towards consensus. The Delphi Technique is ideal for identifying risks and opportunities, compiling lessons learned, reflecting on a 'wicked' or emerging problem, or exploring a new way to do something.

The technique is an iterative process, and first round aims to get a broad range of opinions from the group of experts. The results of the first round of questions, when summarised, provide the basis for the second round of questions. Results from the second round of questions are analysed and summarized feed into a third and final round. For this research, the second and third rounds were collapsed into one exercise.

The method entails recruiting a group of experts, called panellists, who anonymously reply to a discussion paper and subsequently receive feedback in the form a collated, summarized 'group response' at each round. Each expert independently gives opinions, estimates and/or assumptions to a facilitator who reviews the data and issues an anonymized summary report. The panellists discuss and review the summary report individually, and give updated information to the facilitator, who again reviews the material and issues. This process continues until the facilitator feels the panel has reached consensus or 'agreed differences'. The experts at each round have a summary of what conclusions other experts have made, but they do not know who made which statement of outcome. Anonymity allows the experts to express their opinions freely and encourages openness and honesty.

6.2 Recruitment and sampling

Thirty-seven business owners, employers and managers were recruited to the Delphi exercise and have responded to the first Delphi Paper. Eighteen of these participants formed a sample from NSW (14 based in Sydney and 4 in regional NSW) and the remainder formed a national sample representing every state and territory.

Of the 18 1-digit ANZSIC codes, the Delphi sample represented 13 codes. No one was recruited from Mining, Electricity, Manufacturing, Gas, Water & Waste Services, Information Media & Telecommunications, or Accommodation & Food Services. The highest recruitment numbers came from Professional, Scientific & Technical Services (6); Construction (5); Health Care and Social Assistance (4) and Retail (4).

In terms of business size, the majority of respondents represented SMEs, with eight being businesses with more than 100 staff. However, of these eight businesses, three represented the views of very large national corporations. Please see **Table 10** for more details on the 37 businesses in the Delphi process.

Table 10: *Sample composition*

Business Type by ANZSIC Code	Location	Employees	Delphi 2
Construction	Hobart	26	
Agriculture, Forestry & Fishing	Hobart (& national)	50 (100+ casuals/contractors)	
Health Care & Social Assistance	Perth	4	✓
Professional, Scientific & Technical	Perth	30	✓
Rental, Hiring & Real Estate	Darwin	43	✓
Retail Trade	Brisbane	12 (4 FT, 8 PT)	✓
Retail Trade	Brisbane	15 (most PT)	
Professional, Scientific & Technical	Brisbane	29 (1/3 PT)	✓
Education & Training	Brisbane	43	✓
Construction	Gold Coast	17	
'Other' Services (Advocacy)	Canberra	15 (+100 volunteers nationally)	✓
Financial & Insurance Services	Canberra	16	✓
Financial & Insurance Services	Adelaide	100+	✓
Public Administration & Safety	Adelaide	200+	✓
Arts & Culture	Adelaide	245 (+ Casuals)	✓
Professional, Scientific & Technical	Melbourne	35	✓
Construction	Melbourne	8	
Wholesale Trade	Melbourne	7 FTE + 8 PT/Casual	
Health Care & Social Assistance	Ballarat	6	✓
Financial & Insurance Services	Sydney (national)	400+ Sydney (5,000+ nationally)	✓
Professional, Scientific & Technical	Sydney	45	✓
Wholesale Trade	Sydney	15	
Wholesale Trade	Sydney	50	
Transport, Postal & Warehousing	Sydney (national)	400+ Sydney) (3,000+ nationally)	✓
Rental, Hiring & Real Estate	Sydney	28	✓
Construction	Sydney	37	✓
Health Care & Social Assistance	Sydney	9	
Transport, Postal & Warehousing	Sydney (national)	150 Sydney (600+ nationally)	✓
Professional, Scientific & Technical	Sydney	200+	✓
'Other' Services (Advocacy)	Sydney	15	✓
Professional, Scientific & Technical	Sydney	4	✓
Retail	Sydney	17 (incl casuals)	
Retail	Sydney	4	
Education & Training	Newcastle	14	✓
Rental, Hiring & Real Estate	Newcastle	23 (incl 6 part-time)	✓
Health Care & Social Assistance	Wollongong	23	
Construction	Wollongong	15	

Of the 37 businesses who responded to the first Delphi Paper, 13 described their core work activities as impossible to be transitioned to a work from home model. A further two businesses were classified as 'essential' businesses in the COVID shutdown periods and while the core workplace activities could technically be carried out from home they chose not to. A further 22 businesses had pivoted to working from home to some degree during 2020. These 22 businesses, along with the two businesses who have elected not to adopt work from home practices, received the second Delphi paper. **Table 10** highlights which businesses received the second Delphi paper.

6.3 Outline of first Delphi paper

The first Delphi discussion paper (see Appendix A) aimed to engage participants in the subject matter, look at both the employers' perspectives and to a lesser degree the employee's perspective based on evidence from previous studies and an overview of current trends from the pandemic shutdowns.

Key issues included in this paper were:

1. Impacts on business operations from COVID-19 shutdowns:
2. Longer term benefits/issues for industries where staff have worked from home:
3. Any national or international evidence on what happens for businesses moving forward.

The first paper then asked for an overview of the business being represented in the responses (including: approximate number of employees, number of locations/offices/office floors the business occupies and number of years the business had been trading); and then posed three broad questions to encourage comments and discussion:

1. How much of your business was able to pivot to working from home (i.e. what percentage of your workforce were able to work from home)

2. What were the concerns/issues for you in moving to a 'work from home' approach?

3. How have your employees approached or accepted working from home?

6.4 Outline of second Delphi paper

The second Delphi paper (see Appendix B) provided a summary of the findings from the first Delphi paper (see themes outlined below in the analysis). This led into some emerging evidence supported by comments from the first Delphi paper about hybrid workplaces. Internationally, companies like Google, Microsoft and Walmart have already proposed hybrid work models that will allow employees to continue to work from home on a regular basis at least a few days a week. This seems to be the model that appeals most to both employees and employers here in Australia as well, born out by responses to date in the research. The second Delphi paper went on to inquire about respondents' longer-term views of working from home practices. This included a short ranking exercise where participants were asked to rank (and provide comment on if they wished) the following eight components related to current and/or future work from home practices:

1. Working from home is *not* a long-term strategy.

2. Employee working times and work organisation (workload and schedules, team structures and engagement, managing or developing flexible workplaces and routines).

3. Performance management (measuring results against expectations, setting guidelines and goals, feedback and consultation, autonomy vs ambiguity).

4. Technology and security systems and upgrades (converting systems, structures and tools to on-line content, on-line communication processes, firewalls and data management, appropriate access to hardware and software, access to data).

5. Communication and collaboration (messaging, staff meetings, feedback, performance reviews, team connectivity, social and informal work engagement).

6. Health & Safety (workspace ergonomics, appropriate technology, good broadband width; and managing increased fatigue, anxiety, or stress).

7. Employee work-life balance (blurred boundaries between work and personal life, a disconnect from employment-based networks of support, training and leadership).

8. Corporate image and external facing engagement (customer or client interfaces and engagement, location and/or 'shop font' image of the company, work practices influencing business focus).

6.5 In-depth interviews

A subset of ten interviews were conducted to provide context to the Delphi responses. Interviews were targeted at both Delphi participants and additional interviewees through purposive sampling. In particular, organisations that had indicated that working from home practices were a part of their workplace practice prior to 2020 or where it was clear that working from home was considered to be a long-term shift in organizational practice were targeted for an interview. **Table 11** provides an outline of the organisations who were interviewed.

Interviews were semi-structured and focused on exploring working from home practices prior to 2020 and expectations of practices post 2020 and how experiences during 2020 had shaped these potential changes.

Table 11: *Interview Participants*

Business Type	Location	Business Size (FTE equivalent)
Local Government (Community Services)	Queensland	30 employees and 100+ volunteers
Retail business	Queensland	12 staff (4 FT + 8 part time/casual)
Education Provider	NSW	45 staff
Health Care provider	NSW	23 staff
Engineering Firm	NSW	37 staff
Architect firm	NSW	15 staff
Health Care Provider	Victoria	800 staff
Advocacy Service	Victoria	15
Finance & Insurance	SA	400 staff + 5,000 in call centre
Law Firm	WA	30 staff

6.6 Key themes from analysis

The following section provides a brief overview of the broad themes that emerged from our analysis to the responses to the Delphi papers and in-depth interviews.

6.6.1 Not every business can pivot to working from home practices.

As expected, not all businesses were able to take up work from home practices. Those respondents in Construction, Manufacturing, Warehousing and Agriculture on the whole reported little change in workplace practices. For most this was because the job roles just did not allow for this kind of adaptation:

> *"The seafood industry is not possible to transition to working from home for 95% of staff."* (Fishing Industry, Hobart)

> *"While it would be possible for our business to do a little bit of the paper work at home - invoicing, quotes and things like that - we need to be in the warehouse to carry out most tasks, that is where the products, the machinery, the packaging, everything – it is all in the warehouse."* (Wholesaler, Sydney)

Similar comments were heard from those working in health care services. However, some innovation was described that allowed working from home during 2020. This included an uptake in tele-health in both GP practices and Physio clinics. A GP Clinic in the outer suburbs of Sydney described having two teams of health professionals – where one team worked from home using tele-health and another team worked in the practice setting for face-to-face consultations. This was to ensure that their client base, and their staff, remained safe during lockdown periods while ensuring the business could remain operational should there be an outbreak. The practice manager described the process as follows:

> *"It was achievable in the short term, we kept things going and patients' needs were taken care of, but it was not really sustainable long term. We have certainly retained some of the telehealth options we weren't offering before, but we have now basically returned to normal practice routines. Our doctors found the telehealth both mentally draining and not satisfactory for good patient care."* (Health Care Provider, Sydney)

A physiotherapist running a small practice that also tried telehealth explained that:

> *"…we had tried providing a few on-line consultations with zoom, but it wasn't easy to engage with the patient and provide exercise or therapeutic advice, and certainly not specialized treatments. Certainly not a long-term solution for us, but in the short term we were able to manage and keep helping clients."* (Health Care Provider, Perth)

These results are not surprising at two levels, the nature of the work and also that during the COVID shutdowns over 2020 most of these businesses were described as being 'essential services' meaning there was not a necessity for them to try and find an alternative mode of operation.

Similar results were heard from those working in other businesses like retail, where it was deemed possible by some businesses to pivot all or parts of the business to working from home as a short-term measure but in terms of long-term day to day practices this was not considered viable. Some innovation was described that allowed working from home during

Case Study 1: Small Retail Business Owner

This combination second-hand bookstore/café/gift shop and community space is located in Brisbane. The owner has two adjacent outlets – one aimed at children and one for the wider public. Both sell a range of gifts and crafts and arts by local artists in addition to books. Both stores run regular activities and events, while the larger store has a café, a range of regular book club groups and craft groups using the premises. The business employs 12 staff; four of these are fulltime and the remainder are part time or casual. This business is typical of those that generally rely on face-to-face contact with customers and little opportunity for working from home. The owner explained how they had worked hard to pivot to an on-line only presence at the beginning of the COVID lockdown period. *"To begin with we were really worried about parts of the business – while we were sure our regular customers would still buy our books online there are other elements to our business that were harder to be sure would continue if we were shut down for too long – the café, the events, the book clubs and craft groups, gift and art sales. We shifted our book club meetings to online (groups organized themselves with a bit of help from us) with pick up or delivery of books only. This required a lot of work in getting batches of books ready for pick up or delivery and good communication to ensure each group was still going if they wanted to. We also had to make sure all our stock was available for sale online and that our newsletters and social media increased to keep up communication with our regular customers and community members."*

This meant that some core staff remained employed during the COVID shut down; managing book sales, website content and running the online book groups. "*This new work managed to keep a core group of our staff employed during the really quiet times…[*but*] for some of this we just had to rely on job keeper to retain our really great staff members through the restrictions and close downs – for example our café and events staff."*

However, the innovations that allowed this business to continue to trade were not seen as a viable long-term solution to their business practice. "*That is not to say that our sales and overall business did not take a big hit. We have certainly not come out of this unscathed – we lost a few staff; book club group numbers are down and most of our craft group numbers will need to be built up again once we can maximize group gatherings instore. We survived and things are improving now, but we are not back to where we were in 2019 - we certainly could not survive as an online business only."*

A follow-up with this business highlighted that the business had returned to pre-COVID practices. The only on-going change to business practice is the maintenance of a better website and on-line presence to strengthen sales. *"On-line sales remain good – that is something we may have pursued anyway but having to shift our business around last year certainly made us fast track those changes...But really, we are the sort of business that will always relay on operating in person, and therefore our staff have very limited opportunities for working from home on a regular basis, and they get that."*

2020, as seen in **Case Study 1** above. However, even in those businesses where such innovations allowed business to continue these solutions were not seen as viable in the long-term.

These responses are not really surprising, when you consider the typical work provided by many industries and businesses; such as tradesmen, agriculture, manufacturing, builders, retail or health practices. While some businesses had trialled innovations in business, some had not even attempted any work from home strategies, choosing instead to either close down operations during critical closures or adapt their practices to suit the conditions. For example, in the case of a dental surgery in regional Victoria, this meant deferring or spacing patient care and for another medical practice it involved rearranging the patient care spaces and waiting rooms and staggering doctor hours.

> *"It was hard – we took care of urgent, emergency cases and then spaced other patients out so that no patient overlapped with another. Just to be extra cautious."* (Health Care Provider, Ballarat)

> *"We just closed the doors when we had to, opened again when we could. It has been a tough year but we had no capacity to compete on-line with bigger stores so working at all, let alone from home, was not possible."* (Retail Store, Sydney)

These examples highlight that some pivoting to working from home is possible within industries we regard as 'hands on', and technology such as telehealth is making this more feasible. But it is never going to be possible for all businesses and for others; only some components of their business may be able pivot to enable working from home.

6.6.2 You need a critical mass to make long term changes.

Many of the small business (particularly those with less than 50 employees) seemed to be able to make temporary changes to adapt their businesses and workplaces to COVID restrictions but this was not transposing into considerations of longer-term changes. As with the health providers in the last section, they have reverted to normal work practice when they could.

For example, a small Wholesale business with less than 20 staff explained that, while some of their office-based staff could potentially work from home more often, the business did not have the resources to put good infrastructure in place for this to happen. Other smaller businesses discussed the need for investment in data security, new software and hardware, as well as staff training to pivot to good working from home practice and they just did not have the resources *at this time* to make those changes.

Another point that was raised by small business owners and operators was that a small number of staff often meant people had more than one role within the business. As one business owner explained:

> *"The people who do the office work are also the people packing the orders for delivery. While you can do one job from home, you can't do the other so they need to be here, in the warehouse."* (Wholesaler, Sydney)

> *"In a business like ours* [a not-for-profit community centre] *staff members have lots of roles. The receptionist is also helping in the kitchen and driving the bus."* (Community Centre, Brisbane)

One small Professional firm had managed to set up systems to enable one valued employee to continue her role remotely full time after she moved to a regional town in NSW. While effort and costs at the time were considered considerable, the business owner could see the benefit for the company in being able to offer similar opportunities to other staff now that systems were in place. This change had commenced before COVID, but the employer could now see the value of the arrangements as a way to retain existing staff and perhaps attract new staff to the business.

For the 24 businesses that took part in the second Delphi exercise technology, security systems and upgrades, developing on-line content and communication processes, and data management was the third highest consideration when thinking about long-term working from home practices.

> *"This is something we really need time to sit down and work out – what it is going to cost versus what are the gains."* (Law Firm, Melbourne)

"*This is a significant factor in transitioning to a remote working system, you need good structures in place… Technology was both an enabler and also a constraint (we did not initially have sufficient laptops for staff who usually worked at a desktop in the office). We facilitated "drive through" pick up of desktops and purchased more laptops. We provided $400 per person to purchase miscellaneous items for their home office (e.g. monitor) and provided $40/moth per person allowance towards ancillary costs such as utilities and internet costs."* (Finance & Insurance, Sydney)

"*We already had a lot of this in place and that meant we were able to pivot to working from home reasonably easily. The organisation had implemented fairly rigorous risk management strategies to ensure OHS issues were covered…We were hit with a ransomware virus in late 2019 early 2020 and our IT team were ultra-cautious with access to our systems."* (Local Government, Brisbane)

The costs and effort of setting up new systems and processes to enable good work from home practices are often not always clear and may not be seen as 'worth it' to many small businesses; particularly in a time of financial insecurity such as this.

"We are a small specialist construction business and volume fell dramatically over the period with associated difficulties with profitability (in what is always an industry with very small margins) and more critically cashflow. While administration and technical support areas would have been able to WFH, to do this would have needed investment in significant infrastructure to do so, not really an option when cashflow was being squeezed……. many of our office activities are significantly paper based and setting up infrastructure to digitise all essential information and then allow everyone to connect remotely was obviously was a significant issue at a time of greatly reduced turnover and heightened issues with managing cashflow." (Construction, Melbourne)

More information and resources available to small businesses may help in understanding the cost-benefit analysis of pivoting to a work from home system.

For other businesses, such as those quoted below, small numbers of staff meant adaptations to the workplace were possible, enabling staff to remain in the workplace. This ability to adapt the workplace was mentioned in across varying industry types, including health care practices, warehousing, architecture, education and law practices. While the advantage of reconfiguring physical space was never the sole reason given for not taking up work from home practices it was certainly one factor that enable stasis in operations.

"For us the big factor was that we have the space here to work at a safe COVID distance from each other. Our premises allow us to work collaboratively but safely." (Architect Firm, Sydney)

"We have our own offices, our own space, so we were able to socially distance and still come into the office. I believe this was critical for working as a team during a challenging time." (Education Provider, Brisbane)

Most of the larger organisations that took part in the Delphi process and interviews discussed being able to invest resources into ensuring good work from home practices were possible.

"Yes, additional work [was] *required to manage the pivot.* [We had a] *Crisis Management team who organised this work across 5 main streams (1: Governance and Risk; 2. Our People; 3. Our Customers; 4. Our Partners and*

Suppliers and 5. Communication), across all of the business units and geographies." (National Finance & Insurance Provider, Sydney)

Costs participants mentioned included making funding available to staff to set up home office systems; creating work teams dedicated to rolling out COVID work from home strategies and action plans; ensuring good wellbeing check systems and mental health resources were in place for employees working from home; dedicating additional time to checking on staff welfare and practical needs through online meetings, and activities and resources on the intranet that could be accessed by those working from home.

Most larger organisations also already had good reporting and communication systems set up, as well as remote and secure access to essential data and programs to enable people to work from home, that were often considered beyond the scope of the smaller operators. However, some smaller businesses had managed to achieve a smooth transition to working from home, largely due to having good online systems already in place.

"Working from home was an easy transition for us really… we already had good access to the programs we need to use and essentially most of us work with separate clients anyway so we had our own work to get on with. It was just a case of setting up different communication strategies for team meetings, catching up with clients etc. …and it was probably a bit harder for the receptionist to communicate with everyone." (Accountant firm, Canberra)

"We are a small team working here and already had a fairly flexible approach to the need to work from home occasionally. Because we have a national membership, national board and state-based committees our online communication systems and workplace resources were already suitable for working remotely. It was a reasonably smooth transition and most of the team appreciated this during a pretty stressful time, especially those with younger families." (Advocacy Industry, Melbourne)

The ability of a business to pivot to working from home relies not only on the nature of the business itself, but also on the availability of good resources and processes. Small business and family enterprises in Australia account for almost 98 per cent of all businesses, employing 44 per cent of the workforce and accounting for 35 per cent of Australia's gross domestic profit (ASB and FES, 2019). Resourcing needs to be available to these businesses if they are to transition to any kind of long-term work from home practices. Data from this small sample suggests working from home will not be a large-scale transition for many businesses in this sector.

6.6.3 Working from home was not seen as an impact on productivity

There were very few comments raised about loss of productivity; either as a result of transitioning to working from home or as a reason not to transition to working from home practices in the future.

"We have not seen a drop in productivity as a result and people seem to be happier as they can fit things like childcare and family life around their work practices more easily." (Finance & Insurance, Sydney)

Naturally, loss of productivity and the need to be prudent with limited resources as a result of the loss of trade and income in 2020 were discussed in several of the Delphi responses, particularly by small business owners. This was often seen as the driver of caution around making significant investments in new processes and systems at this time.

The COVID lockdown periods were sudden and extreme for most businesses, and this created another level of uncertainty and unpreparedness that did not allow much effort or resources to be committed to long term innovations of any kind. For many businesses, the fact that they could pivot staff to working from home *at all* may have overshadowed real thoughts about what this has meant, or could mean, for productivity in the long term.

> *"Even if we wanted to think about setting up better systems for our staff to work from home now is not the time. We are just trying to make sure the business stays viable at the moment."* (Wholesaler, Melbourne)

> *"We're really just trying to keep the doors open now and keep all our staff in a job so this isn't even on our radar at the moment except if we have to in the lock downs."* (Construction, Gold Coast)

> "*We didn't have a choice, you had to make it* [working from home] *work as best you can… what that means for the long term, I'm not sure."* (Real Estate, Newcastle)

Although working from home was not directly linked to productivity in most Delphi responses, there was some acknowledgement from participants that individual staff were concerned about this at a personal level.

> *"For a small group of people (5 or 6) it just is not suitable – some say they just don't feel they are as productive at home."* (Education, Wollongong)

> *"We [*as an organisation*] have not been worried about productivity, although this is easier to measure in some areas, like finance or HR, than it is in other areas like community development. But for some of our team leaders and individual staff, monitoring productivity has not been a focus. We're still working that one out"* (Local Government, Brisbane)

> *"I don't think it's been an issue for the business overall, but some staff have certainly said they feel less productive working from home. I don't think it is for everybody."* (Public Administration, Adelaide)

For many businesses the shift to working from home was not a considered, planned option they elected to take up, but a necessity. As such, thoughts of impact on productivity were perhaps not forefront of their decision making and planning at this time.

> *"We just went from business as usual to nothing – planning for working from home just wasn't a thing. It was more reactionary than that – we did what we had to do."* (Real Estate, Newcastle)

> *"I would say that most of our loss in productivity was from having no ability to trade during the lockdown period here in Victoria, not because of staff working from home."* (Construction, Melbourne)

This was very apparent in in this case study from local government in Brisbane, as seen below, where the prerogative during the 2020 COVID period was focused on ensuring a continuation of service.

Case Study 2: Queensland Local Government

This case study relates to the community services division of a Queensland LGA. This team has 30 full time employees, plus over 150 volunteers. They operate out of three separate spaces – head office and two community centres. Their main role is to deliver support and services to over 900 residents (mainly older people, people with a disability and vulnerable community groups) including socialisation activities, transport and home care.

When the need to working from home happened in early 2020 the focus was very much on team and client welfare, ensuring smooth and secure transitions in practices, including team communication, managing service delivery and data/platform security and reliability. "*My concerns as a leader of the team was the welfare of the staff, volunteers and members of the community. The organisation had implemented fairly rigorous risk management strategies to ensure OHS issues were covered. We communicated via teams/zoom and tried to have as much fun as possible to maintain sanity in a strange world."*

The priority here was about ensuring smooth transitions for staff, allowing time to adjust to new ways of working and offering support during stressful times to ensure staff wellbeing. "I *did have a concern for the welfare of people working from home. Our team has a focus on social engagement and interaction and work so well together (we are the loudest team in the building). All my staff have an appreciation for working from home and have a sense of validation. There were some staff, including myself, who did not take up the option and we were able to reallocate roles to give people the opportunity to continue to work in the office. The resistors did not like the idea of working from home and during the hard lockdown for some it became unbearable that they needed to take time out. Others have thrived with WFH; they are very much the productivity based workers (data analysis, accounts, compliance and quality).*

Critically, for this business measuring productivity was not seen as a priority at this time. "*Fortunately, our funder allowed 100% flexibility in the use of our funds across types and our outputs were not used as measurements of success."*

Working from home, as a business wide practice over the longer term, with any sense of success seems to be contingent on two key factors – good systems and support; and a balance between levels of personal choice and flexibility for employees with some sense of predictability and routine for the employer. For those businesses where working from home practices were established and/or had been well resourced and integrated into the business model, little effects on productivity were reported.

> *"As we have reliable and self-motivated staff, performance and trust issues are not a concern* [and] *as our core function workflows (customer order to delivery) completes on a daily cycle basis and would be obvious when incomplete. We do have to put more thought on sales and telesales activities when we get there but overall, we do not see performance or trust issues as a serious one if staff are well motivated."*
> (Wholesaler, Sydney)

> *"We have not seen a drop in productivity as a result* [of a shift to working from home] *and people seem to be happier as they can fit things like childcare and family life around their work practices more easily. For a small group of people (5 or 6) it just is not suitable – some say they just don't feel they are as productive at home and some feel they do not have the right sort of space to allow them to work from home."*
> (Postal/Transport, Sydney)

As seen in the last quote and in **Case Study 2**, there was acknowledgement that working from home was not right for all employees and that sustainable working from home practices require good processes and support systems to make it work. This was mentioned by other participants as well, particularly among larger employers and those organisations where working from home had been an emerging trend prior to 2020.

> *"Some people felt they could not work from home easily for different reasons (like small children home, or too many people working from home in the one space) and they took some annual leave where they could. Others had less work to do because of the shutdowns anyway."* (Administration, Adelaide)

> *"We know from years of transitioning to a work from home strategy that it does not work for everyone. You need to provide some work space for people to come in when needed or for those where working from home just isn't a possibility. There has to be a balance."* (Finance & Insurance, Sydney)

Measuring what level of loss in productivity is the result of COVID-related changes to trade or custom and what is related to lack of productivity in the workforce is a little blurred from the perspective of many businesses who responded to the Delphi papers and interviews. Working from home for most businesses involved in this research was reactionary and imposed, not planned. It is also a very recent shift and/or on-going and therefore full evaluation of this change in practice is not complete.

As working from home practices are embedded into regular business operations, and productivity is able to be benchmarked and measured, there may be different perceptions on this. There is already some anecdotal evidence among some respondents of an emerging dissatisfaction with ad hoc on-going work from home practices, with implications of challenges for planning and team building and poor productivity not being accounted for.

> *"Each team seems to be doing their own thing – with some teams, like mine, strongly advocating for a return to all staff being back in the office; while other teams and individual staff members seem to be doing their own thing. My team is fully back in the office and we think we need to be - in order to begin driving a recovery in business growth. But not everyone is doing that – there doesn't seem to be any sense of a process at the moment, at an organizational level, around working from home. We need to have a better system of accountability and organisation from the top."* (Education Provider, Brisbane)

> *"It's all a bit ad hoc – some teams are nearly all working from home, some are back in the office. Each team seems to be finding its own rhythm of days when they are all together and days when people work from home."* (Aged Care Provider, Victoria)

Further longitudinal analysis of work practices post-2020 are really needed to understand the long-term shifts in workplace practices. With uncertainty about forced business shutdowns still a possibility, albeit a slim one, many businesses are still 'finding their way' in terms of the impact of working from home on productivity.

6.6.4 Work is not just about productivity it is about working with others (co-workers and clients)

Most of the responses to both the Delphi papers and the interviews highlighted a prioritization of strategies and processes to maintain communication – particularly within work teams and units, but also with clients. Along with facilitating employee wellbeing, communication and collaboration

(messaging, staff meetings, feedback, performance reviews, team connectivity, social and informal work engagement) were rated most highly in the ranking exercise as part of the second Delphi paper. This was raised broadly across all industries and business sizes, and where working from home practices had been taken up and in businesses where it hadn't.

> *"We maintained contact as a team via email and zoom meetings, zoom meetings were more about moral support and a chance to check in rather than teamwork."* (Local Government, Brisbane)

> *"We could have worked from home, everyone could have taken their computers and work tables home and for some of us, that would have meant getting a lot more work done. But our business relies a lot on collaboration, on working in teams over plans and drawings; brain storming and problem solving together. We need to get the client in and show them how we solve a problem. You can't always do that on zoom."* (Architecture firm, Wollongong)

> *"Much of our effort in 2020 went into making sure our employees felt supported at home. We trained team leaders to look for signs of anxiety and stress, we worked on ensuring good communication flows and tried to make time for social get togethers and a bit of fun. We encouraged managers to check in regularly with their team and with individuals. We shared signs to watch out for (e.g. burnout). Care of our staff was our biggest priority."* (Finance & Insurance, Sydney)

> *"I think overall, the team communication found new routines and ways of doing things and supervising others."* (Law Firm, Sydney)

Critically, working from home practices also need to consider the needs of the customer or client of that business – not just the work force itself. For many organisations much thought and preparedness had to be put into pivoting *external* systems as well as *internal* systems so that customer service could continue in some form.

> *"We knew working from home wasn't an issue for any of our team. We had all the right systems and communication in place, and we work alone a lot of the time anyway. But we were worried about how our clients would feel about not meeting with us and working fully online. On the whole, clients coped really well with the new system and this will probably become a new way of working for us most of the time."* (Accounting firm, Canberra)

> *"The hardest thing was engaging with clients. Our business* [Law Firm] *has a whole floor of meeting rooms just for client engagement. These meetings are often very confidential, personal and can be distressing for the client. That's hard to deal with on Teams or Zoom, you need to be face to face."* (Law Firm, Sydney)

> *"We were able to change our processes to continue to deliver a different kind of social engagement program. Our Community Bus service had to cease completely but we kept in touch with both users of the service and volunteers to ensure their wellbeing. We found that family members were able and willing to take on the support role and very few users required an intervention from us. We continued to provide a different transport service to those who required it by coordinating taxis. Our community Centres changed their delivery/ service to leverage our staff and volunteers to provide a delivered frozen meal service that boomed during the height*

*of COVID and still continues now. Volunteers gladly took on the role of delivering meals." (*Community Centre, Brisbane)

Some felt that customers or clients had not been able to detect any difference in service delivery despite a trend to working from home.

> *"Quite frankly, I am not sure most of our clients knew where we were when we were in contact, to them is was 'business as usual'."* (Aged Care Provider, Victoria)

> *"We have transitioned most finance specialists to working from home over the last 3 or 4 years and it really hasn't made any difference to our customer engagement – for example, our mobile lenders can meet customers face to face at their home or at a branch nearest them; for the rest of the communication process – usually via email or phone calls – we could be anywhere."* (Finance Provider, Adelaide)

The case study on the following page, for an education provider in Brisbane, highlights that for some organisations face to face, in-house contact is a key component of their business model and as such, the work from model currently in place is unlikely to become a permanent strategy. This was also highlighted previously with the example of health care providers and other industries (such as care delivery or social services) where person to person engagement is core business.

6.6.5 Work from home practices as a long-term strategy – the hybrid workplace

A small core group of (mainly larger) businesses were planning and structuring their workplace practices to incorporate more work from home practices. For a couple of these, this had been a strategy before COVID that had now accelerated and for others it was a new consideration they were planning for moving forward.

> *"Looking ahead at this year [2020] I think we are seeing a bit more flexibility in how the firm operates. Some people have come back to the office as soon as they can after each lockdown, but others are having a mix of working from home and working in the office and this may continue for longer."* (Aged Care Provider, Victoria)

> *"Nearly 90% of staff would like to continue to WFH at least 2 days a week. Pockets of resistance (concerns about productivity). Staff have been formally surveyed and their responses considered for input into the remote working strategy which is being piloted now."* (Finance & Insurance Provider, Sydney)

> *"Most of us have enjoyed the flexibility of working from home and about 60 per cent have continued to work from home some of the time (on average one or two days a week)."* (Local Government, Brisbane)

> *"We had been increasing our flexible work practices over the last 5 years, so some leaders and teams migrated with little issue. Others found it more challenging."* (Finance Provider, Adelaide)

Case Study 3: Education Provider

This education provider in Brisbane has two colleges, one for senior secondary school education and one aimed at international students doing intensive English courses, Diploma programs and University Foundation courses. This case study focuses on the international student college and office administration staff, who work from the one office location. It does not include teaching staff at the secondary school.

There are 45 FTE staff members based in the main office and international college, with about 75 per cent of this team focused on the international student program – including new enrolments and admissions, accommodation, social programs, and education provision. Prior to 2020 there was no existing culture of working from home practices. *"It's just not that kind of business, we need to be here to engage with the students. They come in all the time with questions, classes are held in the same building and we encourage that kind of interaction; we see it as part of their international experience to have a community around them. It is how you immerse yourself in another language or culture. So, working from home just wasn't a regular thing here."*

With work practices influenced by the high levels of student engagement, including with administration staff, the pivoting to an online focus during 2020 was challenging and new for all staff. "*The hardest bit about moving to being an online college last year was the speed at which it happened. It was hard to put good practices in place, we were mainly focused on our students, on their mental health and care…the staff really just got on with it as best they could, but it wasn't ideal."* Of course, much of Australia experienced quite short periods in total lockdown and as with this college, many businesses reverted to office-based practice as soon as they could. "*Even though the student activities were all on-line a core group of senior management staff returned to work in the office as soon as we could. We had our own spaces so we could come in and socially distance but still work together. We felt this was important for the college. We needed to work out new systems, bounce ideas and problems off each other, work out where the business was going…you can't always book a zoom call to sort these things out, we needed to be able to organically discuss issues as they cropped up."*

All staff pivoted to working from home during the lock down periods, this happened suddenly, with *"most of our efforts were ensuring the students were OK, communication with current students and those looking to start was our top priority. Their pastoral care was critical, so little was done about putting in place policies and practice guidelines for working from home for the staff – it was more ad hoc than that and I think we always saw it as a temporary state until we could return to regular work routines*."

Throughout 2020/21 the international student industry has been under a lot of pressure – while students who were already in Australia were able to continue via online classes and new students have enrolled and commenced remotely, the college is only just now returning to face to face student engagement. "…*we are making a push to return to face-to-face teaching as much as we can in the coming months, and working towards having new students arrive, hopefully by 2022*."

With the shutdown periods becoming less likely and a shift back to face-to-face classes for students already residing in Australia the ad hoc working from home arrangements are now an emerging issue that needs to be addresses to understand how ongoing working from home arrangements fit into workplace practices at this college. "*Each team seems to be doing their own thing – with some teams, like mine, strongly advocating for a return to all staff being back in the office; while other teams and individual staff members seem to be doing their own thing. People notice…they see the ones coming in late and leaving early, not turning up for days on end…and questions are asked. There are no guidelines at present and no real communication outside of each team, but they are going to have to address this soon, my team [*student engagement and recruitment*] are all back in the office and we need to be; not only to work on getting things up and running again but also for the students. How can we expect them to return to face to face classes if there is no-one here in the office?"*

Case Study 4: Finance Provider

This employer, a large national bank, employs 400 staff in Adelaide. While front line staff have continued to provide 'shop front' services most of the staff located in the head office, 'specialist finance' staff had been transitioning to a work from home model over the past 3 to 4 years. "*We have been working to this for a while now, with finance lenders to start with but then other teams moving to the same model – working from home but with access to branch office space as required*". The bank has put a lot of resources and planning into this in recent years.

However, COVID saw the shut down on many of the organisation's overseas call centres in 2020 and a decision was made to bring this service back to Australia. This meant the migration all staff in head office to working from home and 5,000 call centre staff were hired and are now operating out of the head office location in the city. "*Basically, our head office is now our national call centre and everyone else is working from home*."

This is not considered to be a short-term solution. *"Much of our core business, except for frontline staff of course, has now pivoted to fully working from home. This is not temporary but will continue long term."*

More rarely participants talked about a complete shift to working from home, with one or two businesses talking about more permanent work from home arrangements. While this has meant the about 250 staff are now working from home on a permanent basis the inner-city office building is still an active workplace for a much larger number of (call centre) employees and as such is just a shift in the utilisation of resources. However, for another previously city-based business, a shift to working from home was combined with flexible 'hot desk' and meeting room facilities located in (cheaper) outer suburban locations and this has meant that city-based office premises were no longer required.

More often businesses talked about a shift to a hybrid model of working from home (employees spending a few days in the office and a few days at home). This appeared to be the emerging favoured approach for both organisations and their employees.

> *"Nearly 90% of staff would like to continue to WFH at least 2 days a week. Pockets of resistance (concerns about productivity)… In each site that we reopened we have seen less people actually return to site than expected (planned) as part of trials. E.g we planned for 50-70% returns but saw 20-30%, even in "safe" states like WA. People preferred to work flexibly and at home….For the most part WFH has been well received. Some staff have mentioned that they have much better work/life balance and fewer commute times have been cited regularly. Some staff mentioned increased costs of WFH, which were covered while the allowance of $40/mth was provided (now removed). Staff have been formally surveyed and their responses considered for input into the remote working strategy which is being piloted now."* (Finance & Insurance, Sydney)
>
> *"Some employees are back to full time in the office, others have fallen into routines of one or two days working at home and the rest in the office. It varies person to person and from team to team – partly dependent on personal needs and preferences and partly on the culture and requirements within the team."* (Public Administration, Adelaide)
>
> *"We are seeing a fairly regular pattern on people working from home one or two days a week now."* (Advocacy Organisation, Canberra)

Case Study 5: Engineering Firm

This Sydney based engineering firm, with 37 fulltime employees, was previously located in inner-city offices for more than 10 years. At the beginning of 2020 they made the move to all staff working from home. "*We thought it was best to keep staff safe, and no-one knew whether this was going to be for a few weeks, a few months or longer. Our business was fairly easy to transition to working from home and at that time we kept the city-based offices for client meetings and any one who was unable to, or didn't want to, work from home*."

"*On the whole, staff found the transition to working from home a good one. Feedback from staff was that there were less distractions, they were getting more work done, and people enjoyed the flexibility of working when it suited them best*." It soon became obvious to this small firm that working from home could be a long-term option for many of their staff, with their expensive city-based office space underutilized and un-necessary. "*We have given up our city centre office space in favour of several smaller suburban pods, where we provide workspace for teams and meetings with clients. Employees can come in and hot desk at the nearest pod to them if they need to…we appreciate that not everyone has an ideal space to work from home, but we encourage staff to work from home as much as they can."*

The smaller pod spaces are located in light industrial areas to the west, north and inner-south of the city. This solution means client meetings can be kept out of the city centre and employees can work at home, or closer to their own home instead of commuting to the city every day. "*The savings to the business are good, even though we are effectively leasing three sites instead of one larger one; staff seem happy with the flexibility of working from home or working from a pod closer to home, and we have not seen any decrease in productivity as a result of the changes. I think for our business this has been a positive change in workplace practices*."

A follow-up interview with this business found that while staff time at the pod locations had increased post-2020, most staff were still working at least two days a week from home on a regular basis with the business having no plans to reconsider an inner-city based office location.

Case Study 6: Aged Care Provider

This Melbourne based aged care provider employs over 800 FTE staff across the metropolitan and several regional areas of Victoria from four key office locations. They provide in-home aged care services, allied health, socialisation programs and independent living housing options for low-income older people. For most of their care staff working from home is not a viable option but for approximately one third of staff members, who are office-based, working from home is a possibility. For some, such as the team leader interviewed here, working from home was already an extant reality before the 2020 shutdown periods, with the precedent set by the CEO who was also working remotely on a regular basis. "*Well, I moved out of the city in late 2018, and now work from home two days a week, plus a third day in one of our regional offices. Our CEO also lived out of the city at this time and was regularly working from home – so it was easy to put the process in place."*

However, while there was some working from home praxis prior to the 2020 COVID changes, there was only a small number of staff who had chosen to take this up. *"Really, you were seen as perhaps taking advantage and a little bit suspect by being absent all the time."* However, having previous processes in place made the transition to working from home for the majority of office staff over extended periods of time in 2020 easier. "*We had a lot of processes and systems in place*; *for example: everyone was asked if they had appropriate work spaces and we had to send in photographs of our workspaces for health and safety regulations; our client and communication systems were already good because we have multiple work sites and really, I am not sure if any of our clients would have known the difference, they could probably not tell where we were working from.*"

The combination of prior acceptance of a work from home culture, plus an extended period of all staff fully working from home during the 2020 COVID lockdowns in Victoria, appear to have influenced an increased trend to working from home now evidenced in 2021. "*Well technically, we have been back working in the office for a while now, but in fact the proportion of staff who have continued to regularly work from home has increased from a handful of staff before 2020 to about 35 to 40 per cent of office staff now who are working from home at least one or two days a week. For me it has been really affirming, I am no longer the outlier, everyone gets it now.*"

This organisation does have some systems in place to support on-going work from home practices that have carried over from 2020; including regular on-line social events within teams, virtual assessments of home workplace systems; good staff communications systems, and increased flexibility in car parking allocations in the city location. "*I feel this is going to be the 'new normal', with about half of our staff regularly working from home, and the different teams in the office seem to have found a rhythm with this, for example: in our team Wednesdays seems to be a day everyone is in, so we have arranged team meetings and catchups on those days. So, my Wednesdays are now really busy with meetings but that has freed up other days for work that needs a bit more focus. …I can't see us going back from here.*"

One organisation interviewed, an aged care provider, explained that working from home had been an established practice for a small number of staff pre-2020, viewed with some reservations by many fellow employees; but that post-2020 about 50 per cent of staff able to work from home were regularly doing so about two to three days a week.
Many of these organisations talked about putting enormous resources into setting up good processes and systems to accommodate working from home practices. There is a lot more we can learn from their transitions to good hybrid work practices that may inform other organisations and businesses.

6.7 Looking ahead

As more companies consider strategies around how their workplaces will function best moving on from 2020, plans seem to vary from bringing workers back to the office for a return to 'business as usual' right through to the closure of city centric office spaces in favour of a combination of home offices and client/team meeting spaces scattered across cities. This is in line with other commentary that suggest we should expect to see expanded gathering spaces in the workplace and fewer personal workstations (PwC, 2021)

Internationally, companies like Google, Microsoft and Walmart have already proposed hybrid work models that will allow employees to continue to work from home on a regular basis at least a few days a week. This seems to be the model that appeals most to both employees and employers here in Australia as well, born out by responses to the Delphi paper and interviews in the research. As part of this study, some participants have told us that they were already offering some WfH opportunities – both formally and informally - and that 2020 has seen a cementing of these practices into wider workplace culture. For others, this continues to be a new and evolving practice that may, or may not, become part of ongoing workplace practice.

A hybrid workplace, where a large number of office employees rotate in and out of the office embraces the flexibility that most employees (and some employers) feel most comfortable with. However, it can create complexities in how a workplace is organised, and is likely to transform a company's culture, employee engagement, the way the work gets done and how office space is used. These shifts take time, planning and other resources. Many participants in this study discussed workplaces being in a state of transition, with new work from home patterns not fully established or evaluated.

These new arrangements may imply that companies need less office space or more flexible office space. A survey from the United States by PwC suggests some organisations have already cut back on their real estate needs, as working from home reimagines how organisations get work done, and where that work takes place (PwC, 2021). While there is some evidence of this in the qualitative work in this research it appears that most workplace locations have remained stable and are not under review. But of course, this may change as time goes by.

This qualitative component of the research raises many conceptual questions about how we view our time at work and what corporate Australia will look like moving forward. Are we going to see the rise of the 'hot desk', with personal work spaces no longer viable for occupation only one or two days a week? Will employees be freed of living within a 'commutable' distance from the office and will organisations be prepared to employ someone living in different city, state or country and never see them in the office? What would giving up the large city centre office block mean for corporate identity? Many of these questions cannot be addressed at this stage in the evolutionary process, as changes in how Australians work and where they work are still emerging.

7. QUANTITATIVE ANALYSIS OF EMPLOYEE & MANAGER PREFERENCES FOR WFH

This section reports findings from an online survey of 3,853 employees and managers across 17 of the largest Australian cities. Section 7.1 presents the survey instrument. Section 7.2 describes the sampling approach. Section 7.3 examines WfH capability and preferences. Section 7.4 examines WfH uptake before and during the COVID-19 pandemic. Section 7.5 presents findings on preferences, attitudes and perceptions towards WfH from the perspective of employees, and Section 7.6 presents the same from the perspective of managers. Section 7.7 discusses how employers could offer technical and organisational support for remote working arrangements to their employees and managers. Section 7.8 concludes by examining the potential impacts of remote working arrangements on travel behaviour.

Throughout this chapter, we present findings for the full sample. We conducted similar analyses using data collected from the subset of respondents living in NSW. There were no significant differences between findings from the two samples. Consequently, we do not include an NSW-specific discussion within this chapter, and the interested reader is referred to Appendix F for more details specific to the NSW context.

7.1 Survey instrument

To measure Australian employees' and managers' preferences for WfH, we designed an online survey instrument following a three-stage process. First, we reviewed the existing literature to identify relevant determinants of WfH, and perceived benefits, challenges and impacts, based on which we formulated a first draft of the instrument. Second, we undertook three rounds of consultations with project stakeholders where we amended the instrument to reflect their insights and experiences. And third, the survey instrument was piloted with a sample of 109 respondents. Following analysis of this data, the survey instrument was revised a final time.

The final instrument comprised five broad sections:

1. **Employment:** Respondents were asked about the nature of their current employment, and their employment pre-pandemic, such as occupation, industry, firm size, income, etc. Respondents that have direct reports were identified as managers.

2. **Commute patterns:** Respondents with an on-site that they report to regularly for work were asked about their commute before and during the pandemic, such as days spent on-site, arrival and departure time at work, travel mode, and travel time. These respondents were also asked to indicate how these patterns are likely to change, if their employer offered them the flexibility to work remotely, when possible.

3. **WfH preferences:** Respondents were asked about their ability to perform their job tasks and activities remotely, and their preferences to work remotely. Employees able to do some of their job tasks and activities remotely were presented eight different scenarios such as the one shown in **Figure 15**, where they are offered the choice between two competing employment arrangements *for themselves* that differ in terms of wages and degree of flexibility to work remotely. Similarly, managers with direct reports that are able to do some of their job tasks and activities remotely were presented eight different scenarios such as the one shown in **Figure 16**, where they are offered the choice between two competing employment arrangements *for their direct reports* that differ in terms of wages and degree of

Imagine that the COVID-19 pandemic has ended and the disease has been eradicated.

In this scenario, imagine further that your employer offers you a choice between the following two work arrangements that differ in terms of their flexibility and wages.

Which would you prefer?

Scenario 1 of 8

	Offer 1	Offer 2
Flexibility to work remotely on some days	**No**, you need to be on-site on all workdays	**Yes**, when possible, you can choose to work some of your workdays remotely
Flexibility to work remotely at some hours	**Yes**, when possible, you can choose to work some of your work hours remotely	**No**, on the days that you need to be on-site, you need to be on-site at all work hours
Yearly (weekly) take home pay after tax	$103,220 per year ($1,985 per week)	$107,120 per year ($2,060 per week)
Offer I prefer:	○	○

Figure 15: *Example screenshot of hypothetical scenario to elicit employee preferences for remote working*

Imagine that the COVID-19 pandemic has ended, and the disease has been eradicated.

In this scenario, imagine further that you can offer your employee a choice between the following two work arrangements that differ in terms of their flexibility and wages.

Which of the two arrangements would you prefer to offer your employee?

Scenario 1 of 8

	Offer 1	Offer 2
Flexibility to work remotely on some days	**No**, they need to be on-site on all workdays	**No**, they need to be on-site on all workdays
Flexibility to work remotely at some hours	**No**, they need to be on-site at all work hours	**Yes**, when possible, they can choose to work some of their work hours remotely
Yearly (weekly) salary before tax (excluding superannuation)	$113,048 per year ($2,174 per week)	$101,816 per year ($1,958 per week)
Offer I prefer for my employee:	○	○

Figure 16: *Example screenshot of hypothetical scenario to elicit manager preferences for remote working*

flexibility to work remotely. For each scenario, respondents are asked to indicate the option that they most prefer. Alternative attributes are systematically manipulated across scenarios, to understand how employees and managers value different WfH arrangements.

4. **WfH attitudes and perceptions:** Respondents are asked about their attitudes towards and perceptions of the impacts of remote working on productivity, health and wellbeing, and transport, land and energy use.

5. **Demographics:** Respondents are asked about their age, gender, education, place of residence, household size and structure, and income.

The survey concluded with an open text question to elicit any feedback from respondents about the survey itself. Respondent feedback was largely positive, and specific comments indicated a high level of engagement.

7.2 Sampling

The sample was recruited through the market research company Dynata. Our sample was limited to individuals with a minimum age of 18 years, living in one of the 17 largest Australian cities, that were employed before the onset of the COVID-19 pandemic.

The survey was launched on Dec 11. Data collection was paused from Dec 14 to Jan 11, to allow for the holiday break. Data collection resumed on Jan 11, and concluded on May 4. We surveyed roughly 150 employees and 50 managers each week. Data collection was deliberately staggered over a five-month period, to allow us to observe how preferences for different WfH arrangements evolve over time, as a function of concurrent changes in contextual factors relating to the spread and containment of the pandemic, and as a function of employee and manager experiences with different arrangements in practice over extended periods of time.

After quality checks based on survey response times, responses from 3,853 individuals were deemed usable (of the 4,087 that were surveyed in total), and these 3,853 respondents comprise our sample throughout this chapter.

Figure 17, **Figure 18**, **Figure 19**, **Figure 20** and **Figure 21** compare the sample and the target population in terms of distribution across cities, industry sectors, occupation types, firm sizes and income groups, respectively. In general, we have good coverage across different fields, including a mix of respondents from both large and small cities and firms, employed across a mix of white-collar and blue-collar industry sectors and occupation types. However, our sample comprises a greater proportion of NSW residents by design. In addition, some white-collar industry sectors and occupation types are overrepresented in our sample when compared to the target population.

Any differences between our sample and the target population (defined as individuals with a minimum age of 18 years, living in one of the 17 largest Australian cities, that were employed before the onset of the COVID-19 pandemic) have been controlled for in our subsequent analysis through reweighting. Iterative proportional fitting was used to impute the joint probability distributions across our sample and the target population for different categories of the following variables: city of residence, industry sector, occupation type, firm size and income group. For each individual in our sample, the weighting factor was calculated by taking the ratio of the probability of observing the individual's demographic characteristics in the target population to the corresponding probability for our sample.

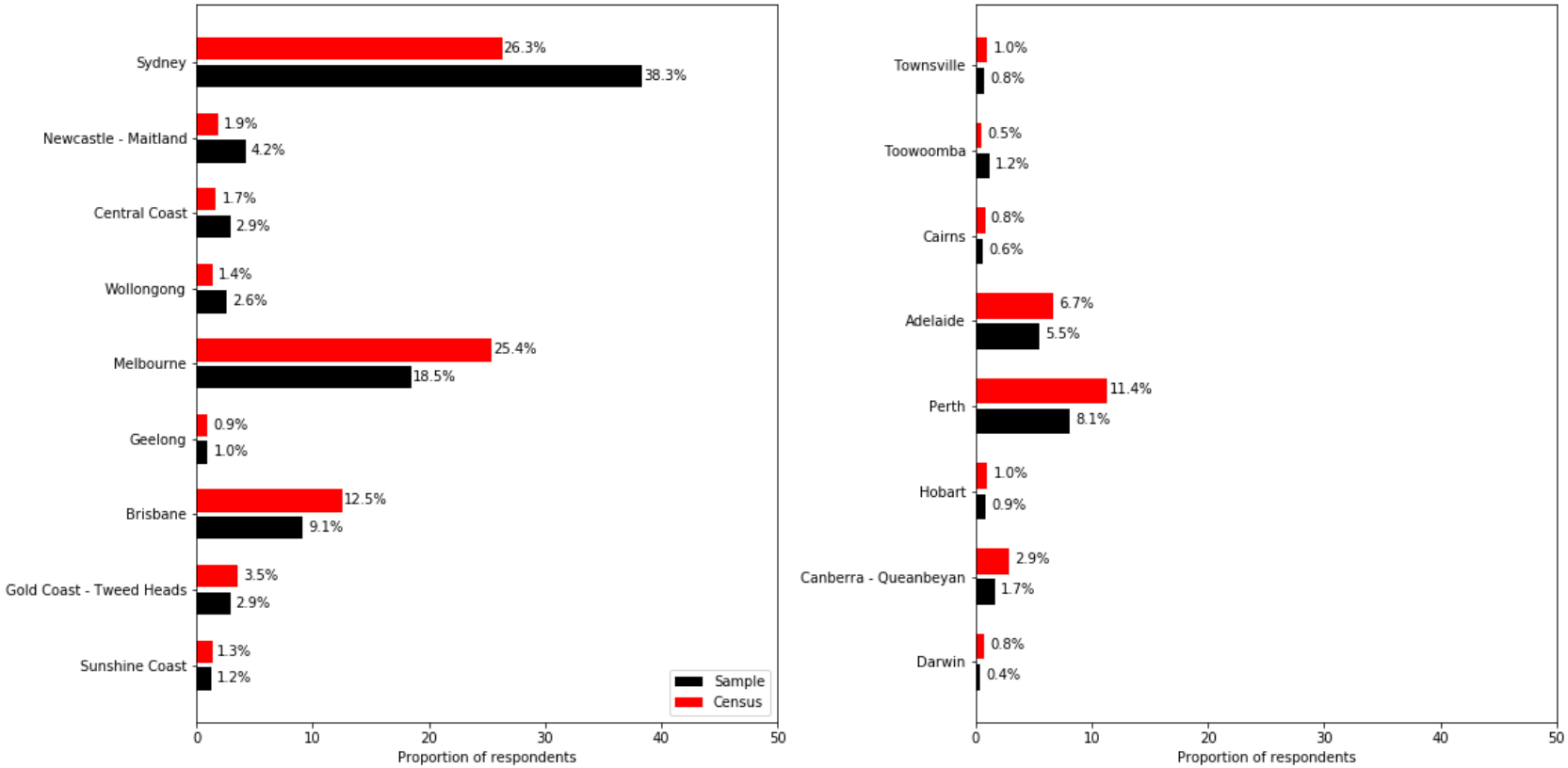


Figure 17: *Distribution of respondents across cities, and corresponding distribution from the 2016 Census*

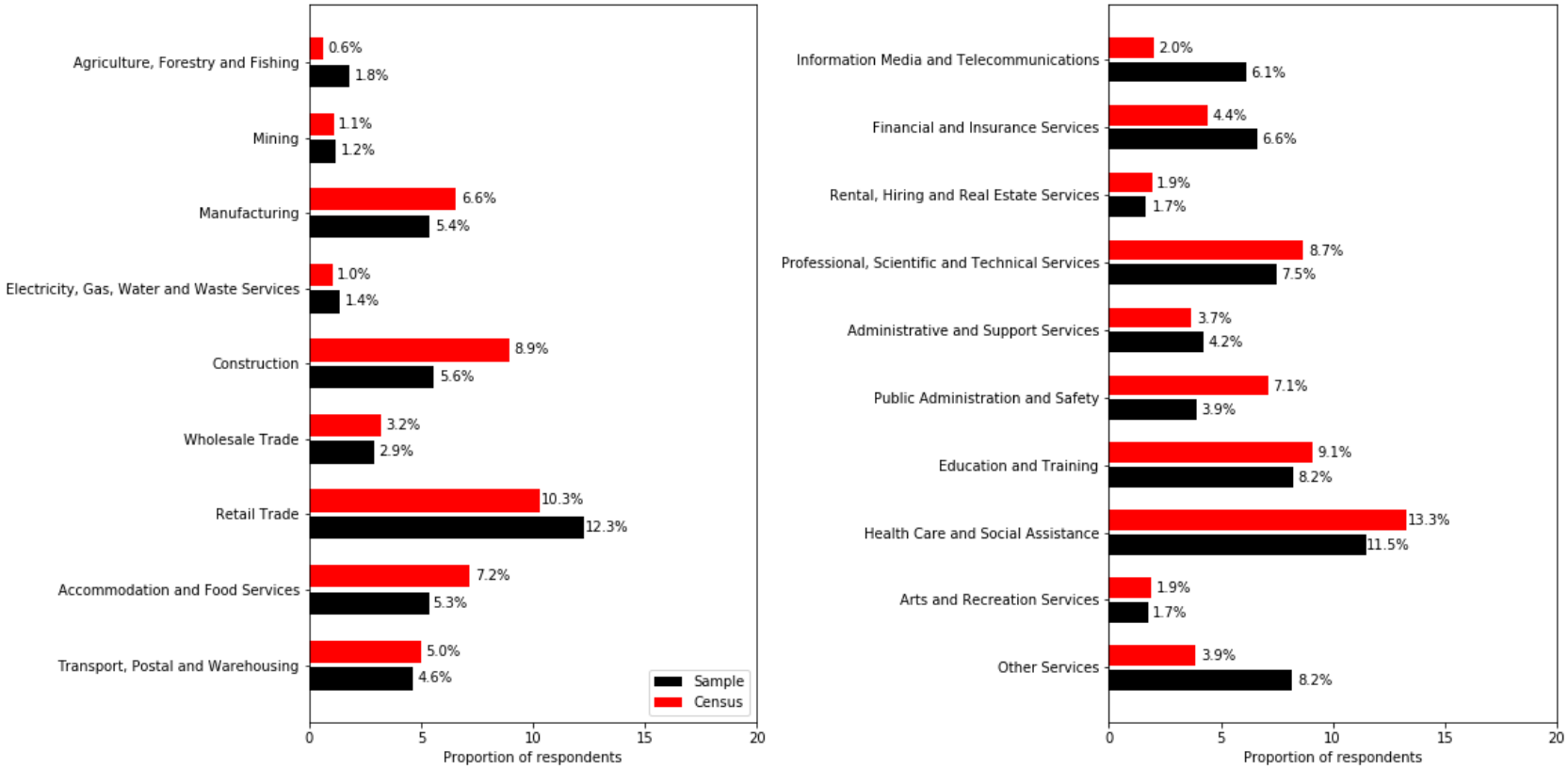


Figure 18: *Distribution of respondents across 1-digit ANZSIC industry sectors, and corresponding distribution from the 2016 Census*

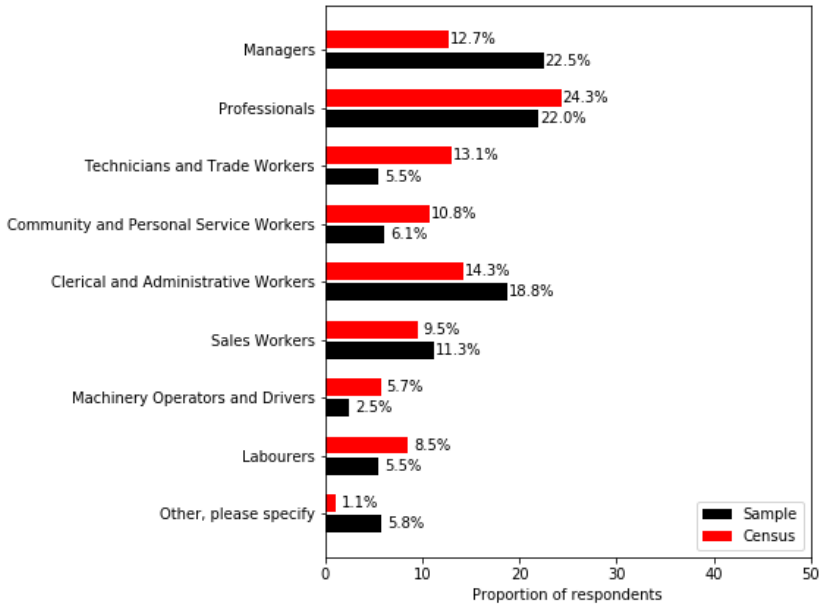


Figure 19: *Distribution of respondents across 1-digit ANSCO occupation types, and corresponding distribution from the 2016 Census*

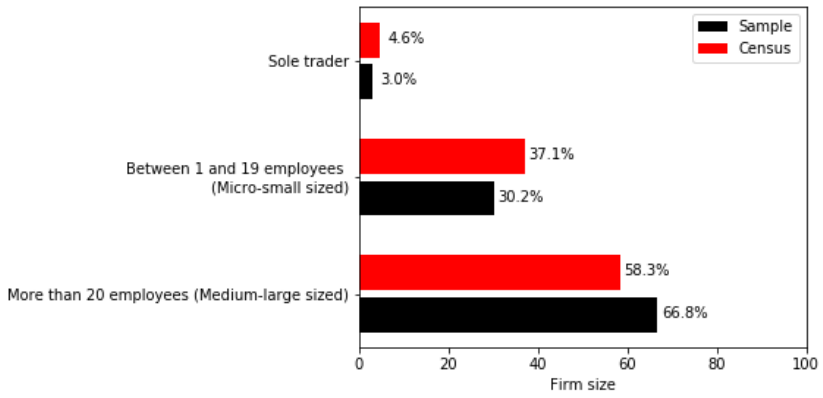


Figure 20: *Distribution of respondents across firm sizes, and corresponding distribution from the 2016 Census*

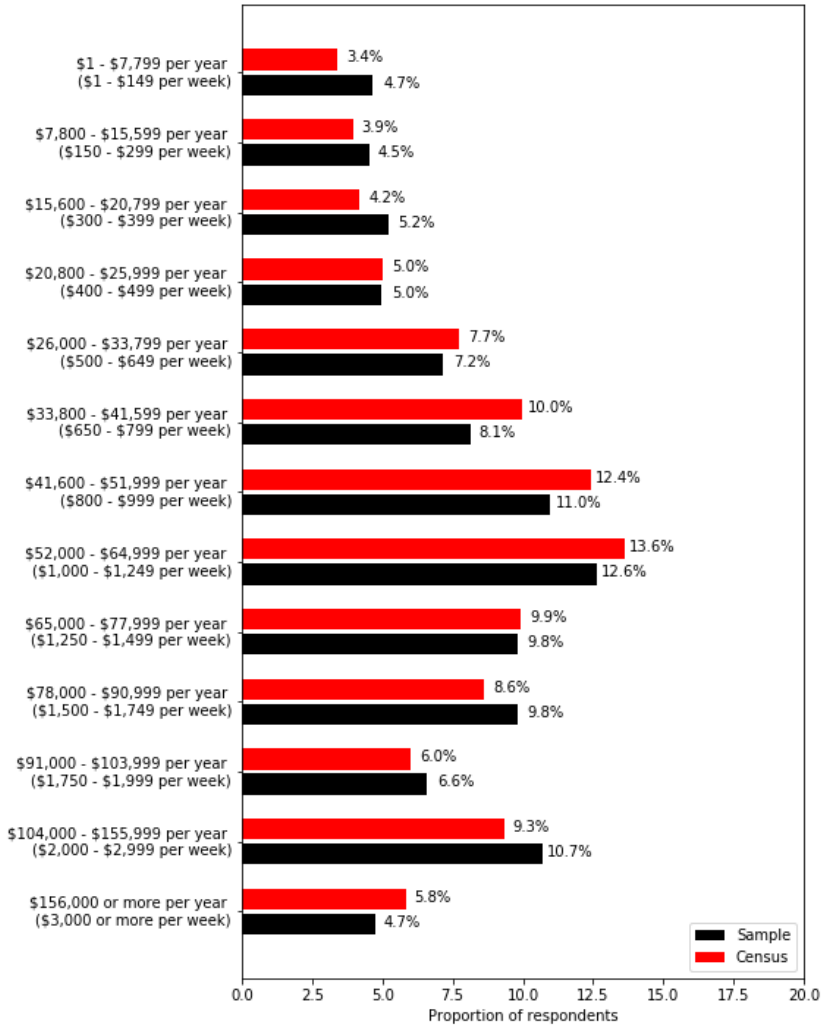


Figure 21: *Distribution of respondents across income groups, and corresponding distribution from the 2016 Census*

7.3 WfH capability

Of our sample of 3,853 respondents, 2,694 respondents were classed as 'employees' and asked about their ability to do some of their jobs tasks and activities remotely. On average, across our sample of 2,694 employees, 1,525 employees, or 57 per cent, indicated that some of their jobs tasks and activities could be done remotely. However, once we reweight our sample to account for differences with the target population, we find that roughly 51 per cent of employees believe that some of their jobs tasks and activities could be done remotely. And only 22 per cent of employees have formalised remote working arrangements with their employers.

Figure 22 plots employees' self-reported ability to work remotely across different 1-digit ANZSIC industry sectors. As one would expect, and consistent with our findings from the analysis of historic data, ability to work remotely is strongest in white collar sectors, such as Information Media and Telecommunications; Financial and Insurance Services; and Professional, Scientific and Technical Services. However, there are some unexpected results in that employees in our sample working in blue-collar sectors such as Electricity, Gas, Water and Waste Services and Mining also report high average abilities to work remotely. This is likely because these employees are drawn from urban areas, and whilst they work in these blue-collar sectors their jobs are more likely to be white collar jobs.

Once we control for occupation type, the results are more consistent with prior expectations. **Figure 23** plots self-reported ability to work remotely across different 1-digit ANZSCO occupation types. Employees in white collar jobs, such as Professionals, Managers, Clerical and Administrative Workers report the greatest ability to work remotely. Conversely, employees in blue collar jobs, such as Labourers, Machinery Operators and Drivers report the lowest ability to work remotely. Community and Personal Service Workers, Sales Workers, and Technicians and Trades Workers too report low abilities to work remotely.

Figure 24 plots self-reported ability to work remotely as a function of firm size. There is no clear pattern here, indicating that WfH capability is not correlated with firm size.

Finally, **Figure 25** plots the same measure as a function of wages. Consistent with our previous analyses, we find a U-shaped relationship, where the proportion that are able to work remotely is high for individuals employed in low and high-paying jobs, and comparatively lower for individuals employed in medium-paying jobs.

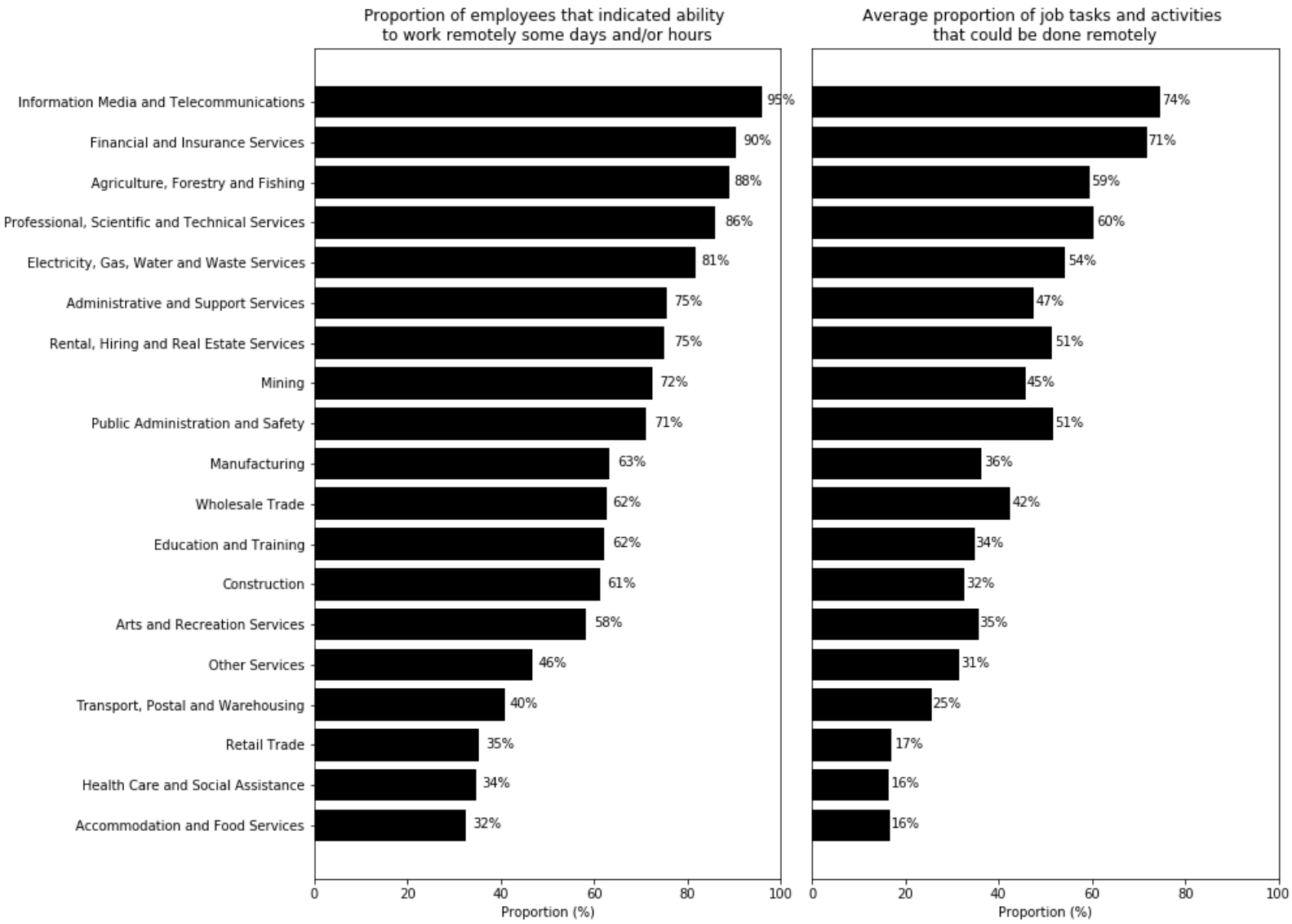


Figure 22: *Self-reported employee ability to do some job tasks and activities remotely as a function of their 1-digit ANZSIC industry sector*

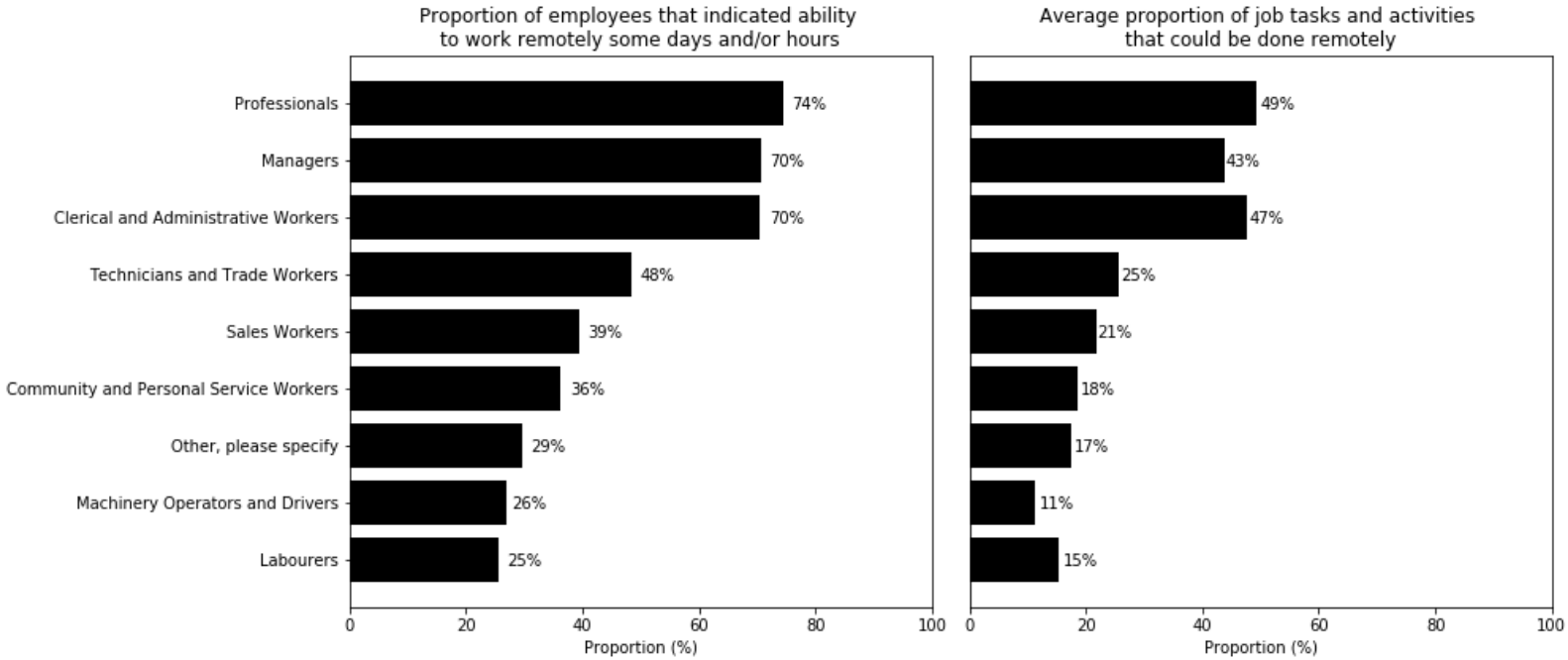


Figure 23: *Self-reported employee ability to do some job tasks and activities remotely as a function of their 1-digit ANZSCO occupation type*

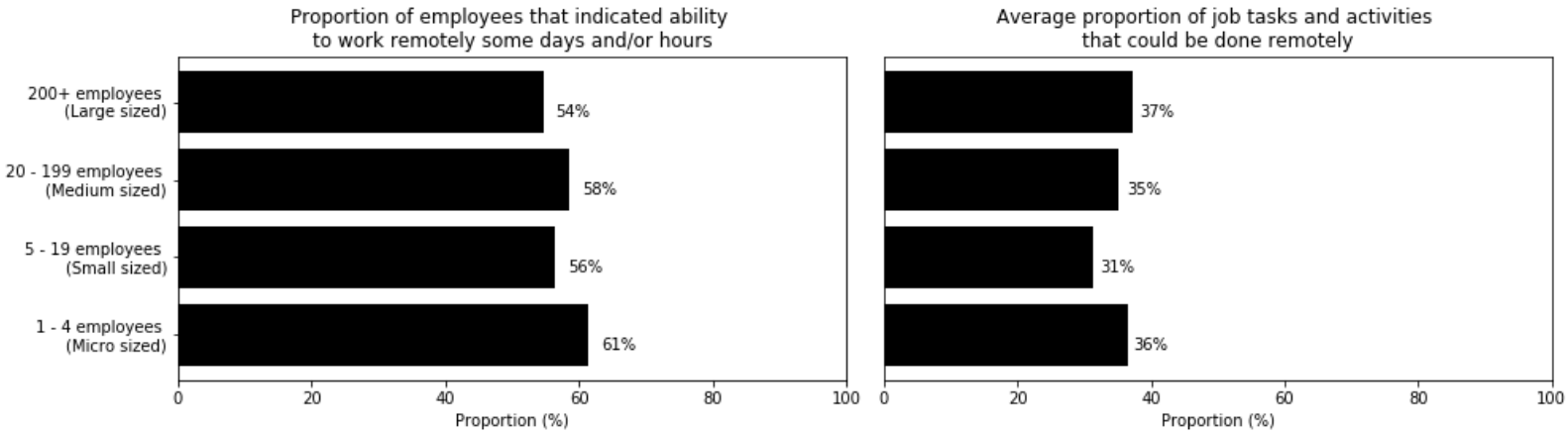


Figure 24: *Self-reported employee ability to do some job tasks and activities remotely as a function of firm size*

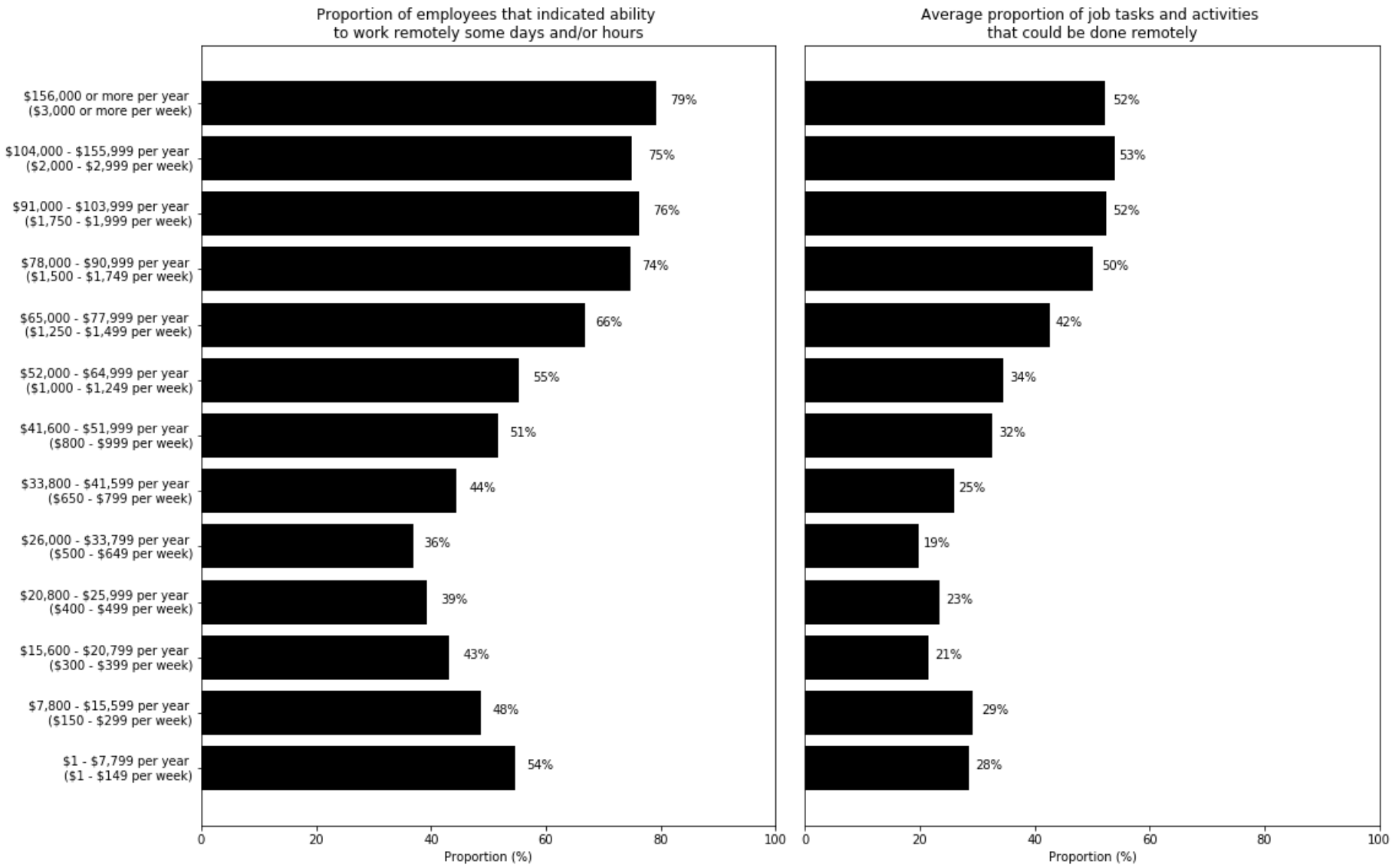


Figure 25: *Self-reported employee ability to do some job tasks and activities remotely as a function of their wages*

7.4 WfH uptake

Respondents were asked about their uptake of remote working before and during the pandemic, and the week before each respondent was surveyed, as well as their willingness to continue remote working arrangements post-pandemic. Note that these questions were only asked of the 1,525 employees that reported that some of their job tasks and activities could be done remotely. However, in reporting findings from this section of the survey, we include all 2,694 employees in our sample, assuming that the 1,169 employees who cannot do any of their job tasks and activities remotely were not working remotely during these periods. Note further that the responses have been reweighted, to adjust for any differences between our sample and the target population.

Figure 26 shows uptake of remote working before and during the pandemic, and the week before each respondent was surveyed, and willingness to continue remote working arrangements post-pandemic. Based on our analysis, we estimate that the average employee was doing 17 per cent of their job tasks and activities remotely before the pandemic. Roughly 70 per cent of the target population was doing less than 10 per cent of their job tasks and activities remotely before the pandemic, while only 4 per cent were doing more than 90 per cent of their job tasks and activities remotely before the pandemic.

At the peak of the pandemic, we estimate that the average employee was doing 31 per cent of their job tasks and activities remotely. Roughly 57 per cent were doing less than 10 per cent of their job tasks and activities remotely, while 17 per cent were doing more than 90 per cent of their job tasks and activities remotely.

Uptake of remote working in the week before respondents were surveyed lies somewhere between these two extremes. We estimate that the average employee was doing 24 per cent of their job tasks and activities remotely. Roughly 63 per cent were doing less than 10 per cent of their job tasks and activities remotely, while 10 per cent were doing more than 90 per cent of their job tasks and activities remotely during this period.

Given that our data collection to date has been staggered over a four-month period, we are able to plot uptake of remote working arrangements over time, as shown in **Figure 27**. While there are some outliers, such as the weeks commencing 4 Jan, 22 Feb, 22 Mar and 26 Apr, across most other weeks average uptake appears to have stabilised around 20 per cent.

Returning to the last panel in **Figure 26**, respondents were asked how much of their job tasks and activities would they like to continue doing remotely post-pandemic. We estimate that the average employee would like to continue doing 25 per cent of their job tasks and activities remotely. Roughly 58 per cent would do less than 10 per cent of their job tasks and activities remotely, while 8 per cent would do more than 90 per cent of their job tasks and activities remotely. These figures are closer to the corresponding figures for last week, indicating that current WfH uptake might be a good indicator of future uptake in a post-pandemic world, at least in the short term. However, it also appears to be the case that current uptake is slightly less than desired future uptake, indicating that the provision of remote working arrangements to employees is potentially lagging their own desire to work remotely.

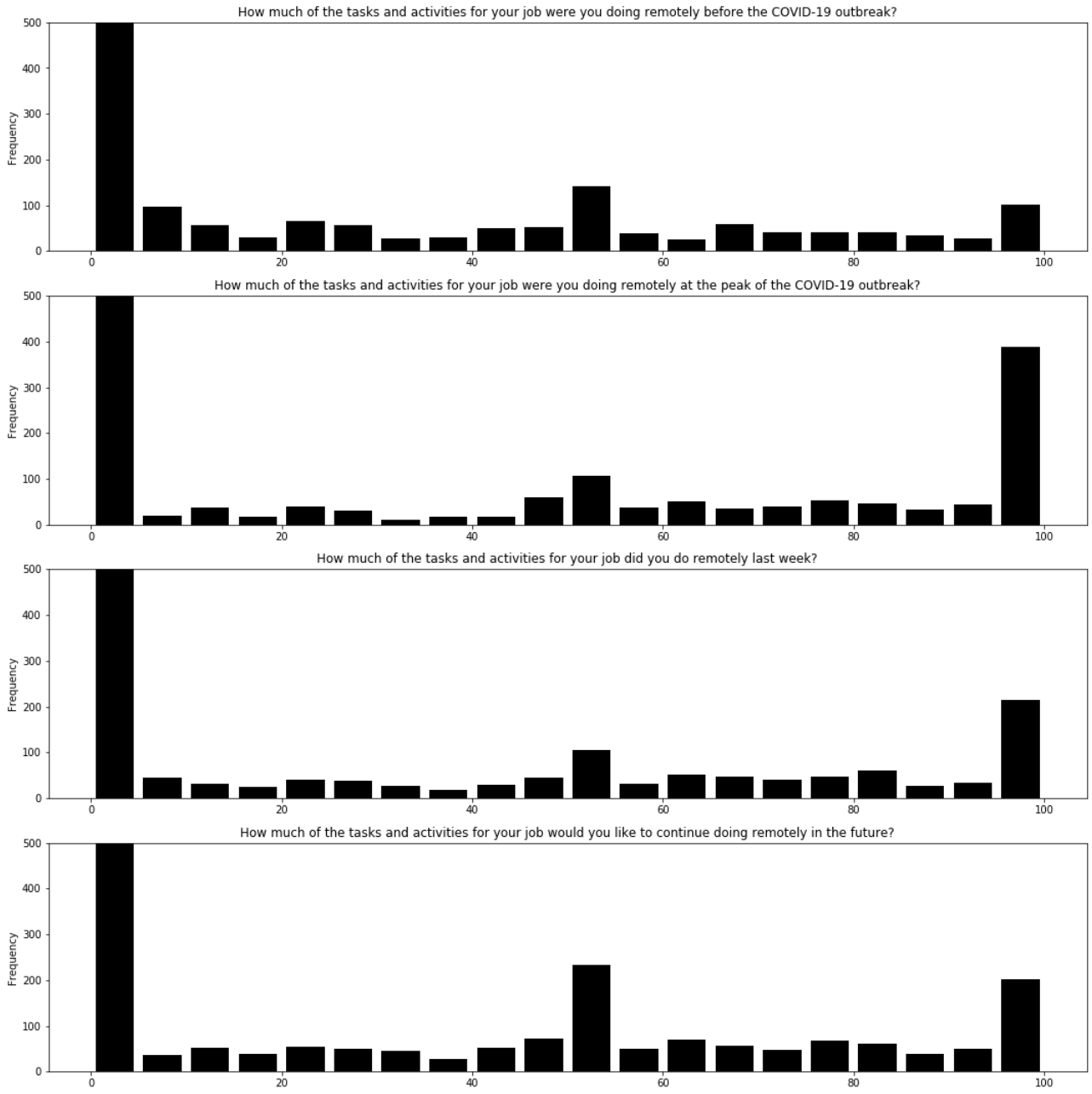


Figure 26: *Uptake of remote working arrangements before and during the pandemic, and willingness to continue remote working arrangements post-pandemic*

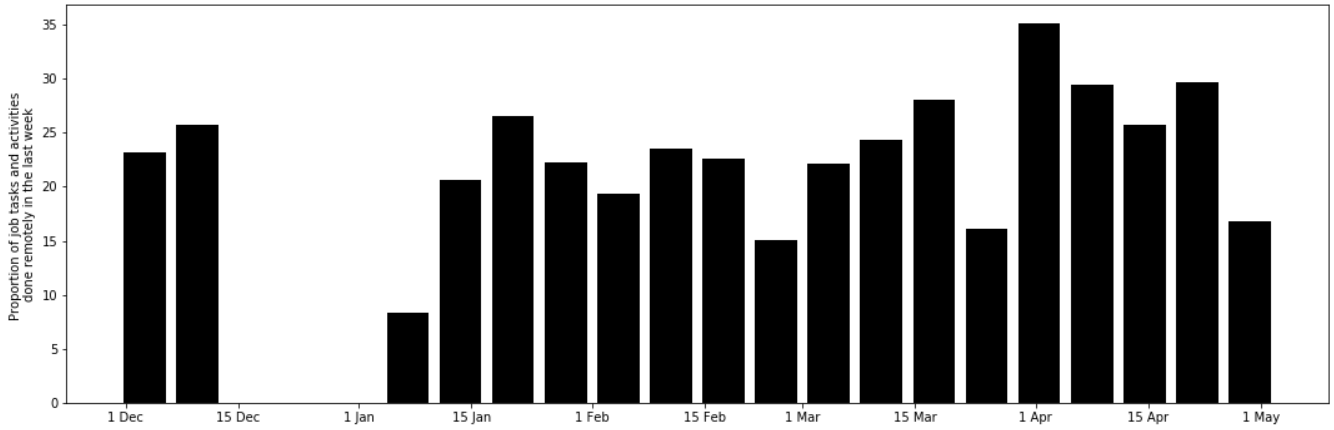


Figure 27: *Uptake of remote working arrangements over time*

Next, we compare uptake across some of the key variables of interest. **Figure 28** compares uptake across different industry sectors. Before the pandemic, uptake was highest across white-collar sectors, such as information, media and telecommunications; financial and insurance services; and professional, scientific and technical services. High uptake continued across these sectors during the pandemic, and employees in these sectors indicated a high willingness to continue these arrangements into the future.

Interestingly, uptake was also high before the pandemic across some blue-collar sectors, such as agriculture, forestry and fishing; electricity, gas, water and waste services; and mining. However, uptake during the peak of the pandemic across these sectors was comparatively lower than the white-collar sectors mentioned previously, indicating that there are likely limitations to the amount of work that can feasibly be done remotely in these sectors, as also reflected by the lower capabilities reported for these sectors in the previous section.

Some sectors, such as education and training; rental, hiring and real estate services; and arts and recreation services, demonstrate a fluctuating trend. These sectors had comparatively low uptake before the pandemic. Uptake surged during the peak of the pandemic, with the average employee across these sectors doing more than 40 per cent of their job tasks and activities remotely. However, in the week before they were surveyed, employees in the sector reported doing less than 25 per cent of their job tasks and activities remotely, significantly lower than how much they would ideally like to work remotely. Together, these findings suggest that while these sectors have the capability to adopt greater remote working arrangements, and employees working in these sectors would be supportive of expanding remote working arrangements, employers in these sectors have preferred to return to pre-pandemic practices.

Finally, as one would expect, sectors such as health care and social assistance; transport, postal and warehousing; and retail trade have had the lowest uptake both before and during the pandemic, due to lower capabilities, as also reported in the previous section.

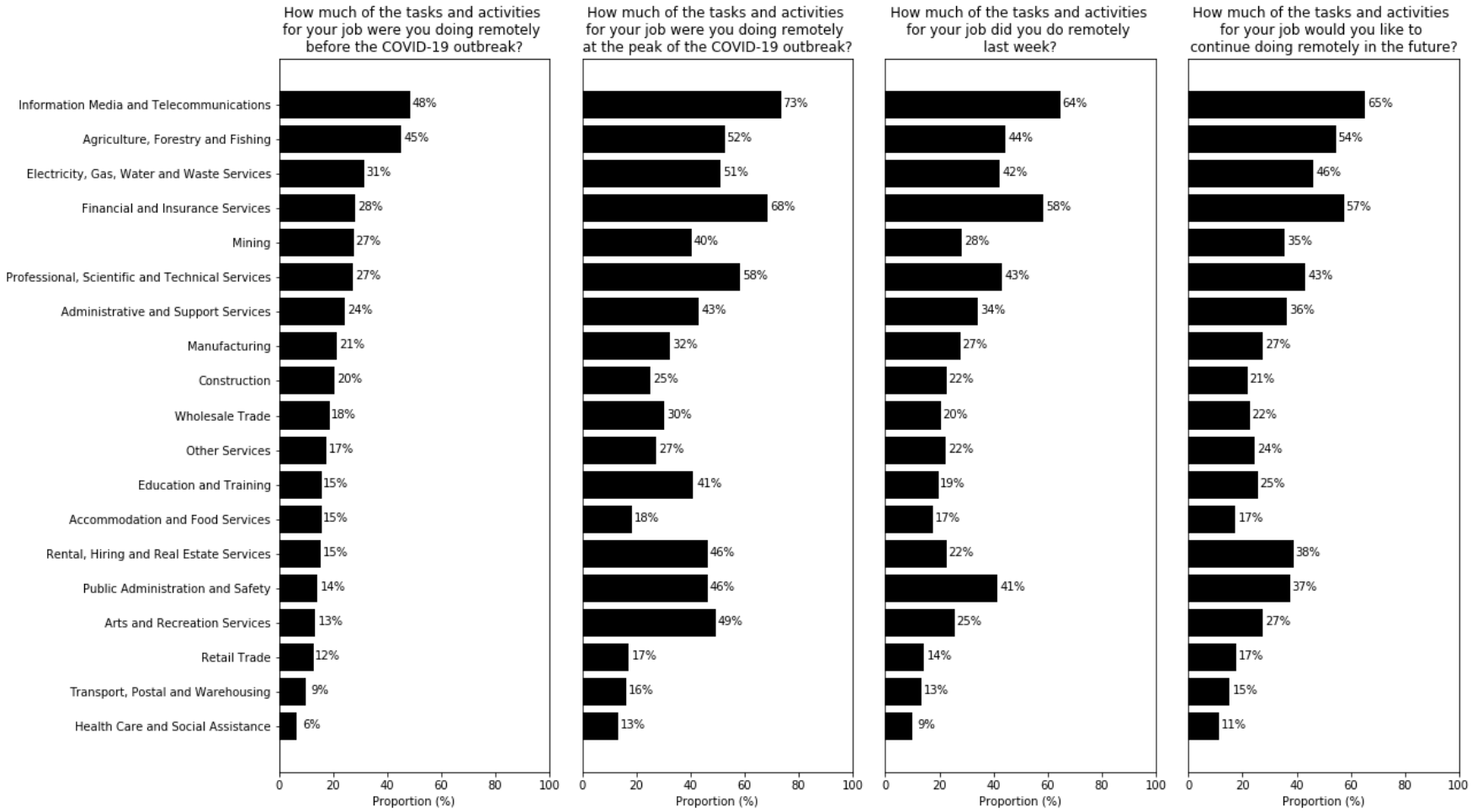


Figure 28: *Uptake of remote working arrangements before and during the COVID-19 pandemic, and willingness to continue remote working arrangements post-pandemic, across different 1-digit ANZSIC industry sectors*

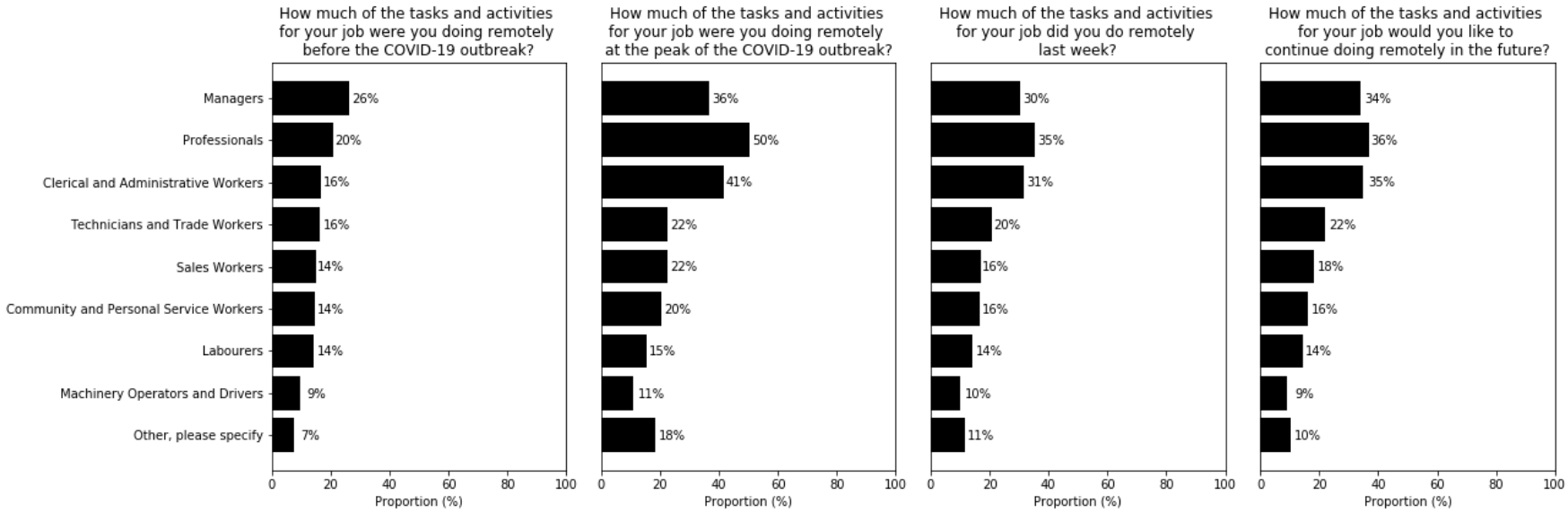


***Figure 29**: Uptake of remote working arrangements before and during the COVID-19 pandemic, and willingness to continue remote working arrangements post-pandemic, across different 1-digit ANZSCO occupations*

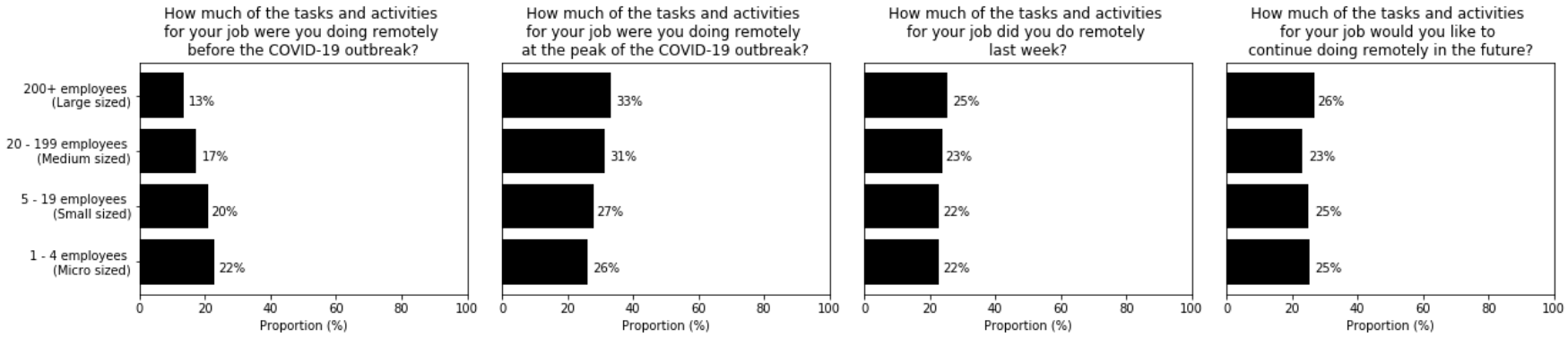


***Figure 30**: Uptake of remote working arrangements before and during the COVID-19 pandemic, and willingness to continue remote working arrangements post-pandemic, as a function of firm size*

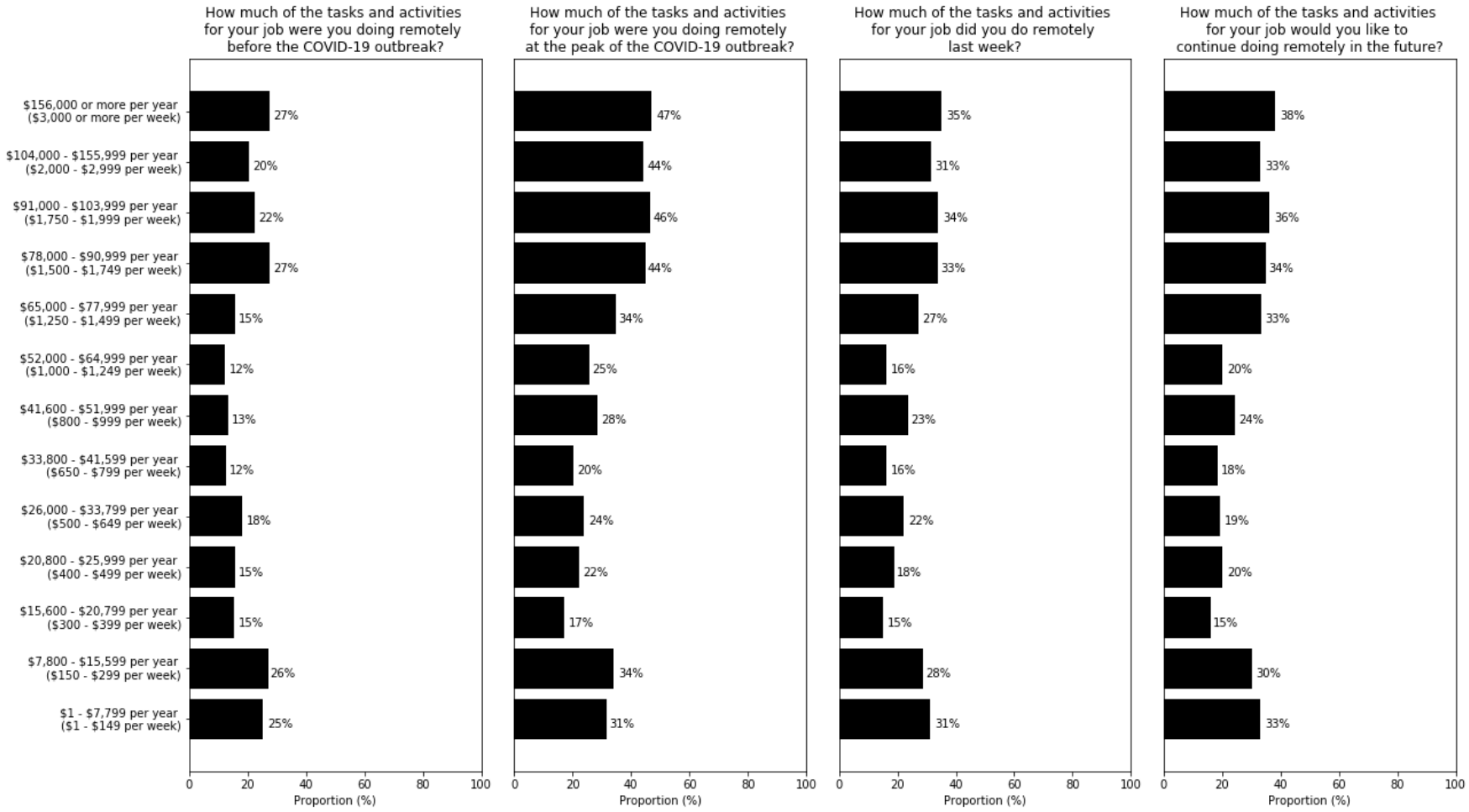


***Figure 31**: Uptake of remote working arrangements before and during the COVID-19 pandemic, and willingness to continue remote working arrangements post-pandemic, as a function of income*

Figure 29 plots the analogous distributions across different occupation types. Both before and during the pandemic, uptake has been relatively higher across white-collar occupations, such as managers, professionals and clerical and administrative workers. Interestingly, while uptake was comparatively highest among managers before the pandemic, they were overtaken by professionals and clerical and administrative workers during the pandemic, indicating that the ability of managers to work remotely may lag behind these other professions. Expectedly, uptake is lower among blue-collar occupations, such as labourers, machinery operators and drivers.

Figure 30 compares uptake across different firm sizes. Before the pandemic, uptake appears to be negatively correlated with firm size, with smaller firms showing higher uptake. However, during the pandemic, the pattern appears to reverse itself, with larger firms showing higher uptake. In combination, these findings appear to indicate that larger firms have greater capabilities to support remote working arrangements, and their experiences during the pandemic may have increased their willingness to let their employees work remotely in the future.

Figure 31 compares uptake across different income groups. Across all four time periods, uptake appears to follow a U-shape, being relatively high for both low and high-income groups, and being relatively low for median-income groups. In summary, acceptance of remote working arrangements appears to be lowest for middle income groups, and highest for high-income groups. Interestingly, uptake of remote working arrangements did not change for lower income groups before and during the pandemic, hovering near the capability levels reported in the previous section. This indicates that there is less potential for increased uptake amongst these jobs.

Finally, we examine how uptake has varied across different urban areas in **Figure 32**. By and large, the patterns are consistent across all urban areas: uptake was lowest before the pandemic, peaked at the height of the pandemic, has settled somewhere in between in the succeeding period, and has lagged desired future uptake. Current and desired future uptake is higher by roughly 5-10 per cent for the three largest Australian urban areas, i.e. Sydney, Melbourne and Brisbane, when compared to the other 14 urban areas in our sample.

Figure 33 examines how uptake has varied within the Sydney metropolitan area, depending on whether employee workplaces are situated in the CBD or not. Here, the differences are starker. Past, present and future uptake are all higher for employees working in the CBD by roughly 20-30 per cent, when compared to employees working outside the CBD. Together, these findings appear to indicate that remote working arrangements are most feasible and appealing for employees living in large metropolitan areas and working in central business districts. In contrast, the potential to grow remote working arrangements in non-CBD metropolitan areas and regional centres is comparatively greater, as reflected by comparatively lower pre-pandemic and current uptake.

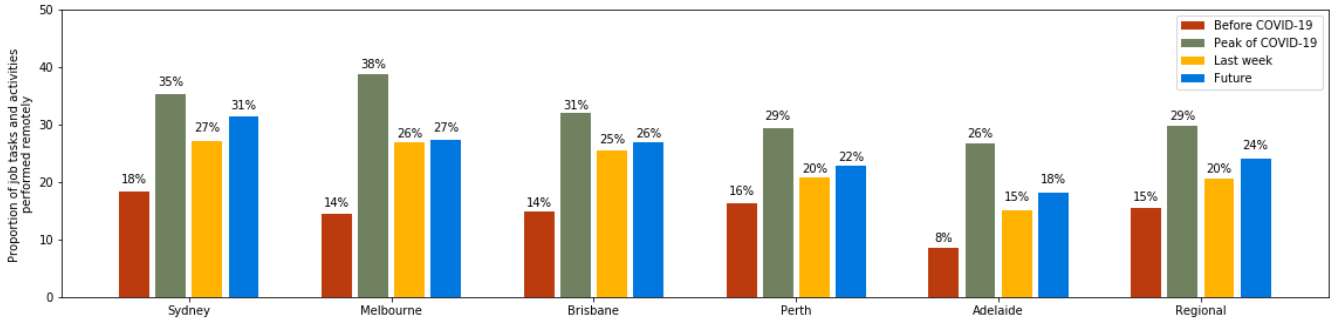


Figure 32: *Uptake of remote working arrangements before and during the pandemic, and willingness to continue remote working arrangements post-pandemic, across different urban areas*

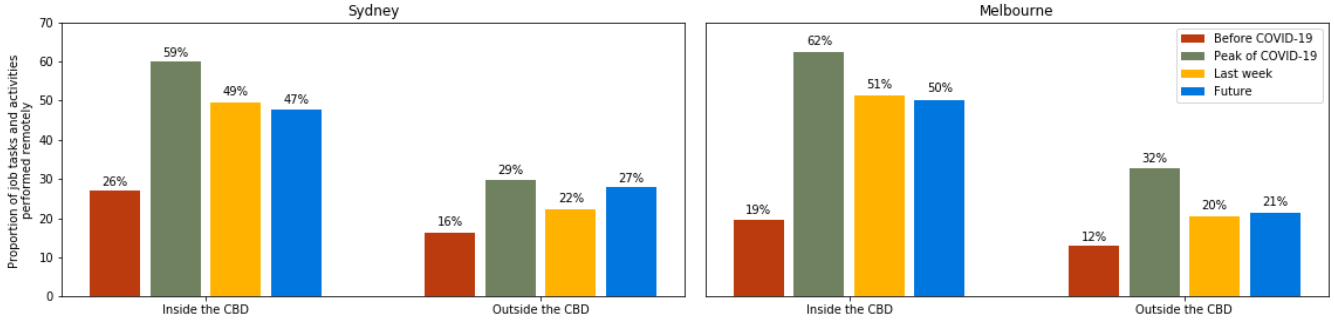


Figure 33: *Uptake of remote working arrangements before and during the pandemic, and willingness to continue remote working arrangements post-pandemic, within the Sydney metropolitan area*

7.5 Perceived impacts

Survey respondents were asked a number of questions to assess impacts of remote working arrangements on productivity, human relations, health and wellbeing. These questions were asked of 2,985 employees and self-employed individuals, and 868 managers. In this section, we summarise the key findings from the perspective of both employees and managers.

We begin with productivity impacts. **Figure 34** plots the quantity and quality of work that employees can achieve remotely, compared to working on-site. On both measures, the sample is skewed to the left, with half of the employees reporting a significant decline in both quantity and quality, a quarter reporting a significant increase, and a quarter reporting no significant difference. While productivity may decline on average hour-for-hour, a majority of both employees and managers agree that this will *not* have an impact on the ability to achieve job objectives and outputs, most likely due to the increased flexibility afforded by remote working, and the ability to work longer hours if necessary. **Table 12** and **Table 13** summarise responses to attitudinal statements assessing employee and managerial perceptions of productivity impacts. Remote working is also expected to increase employee autonomy, focus and self-discipline, as well as the ability to multi-task more efficiently. However, remote working arrangements are likely to have a negative impact on the ability to interface with customers, which may limit their application to more customer-oriented businesses and industries.

Table 14 and **Table 15** summarise responses to attitudinal statements assessing employee and managerial perceptions of human relations impacts. Both employees and managers express concern about the impacts on social interactions and opportunities for collaboration within the organisation. In general, employees are less concerned than managers about the impacts on performance appraisal, supervision and coordination. Impacts on organisational culture are somewhat conflicting. While a majority believe that their loyalty to the company would increase if they were able to work remotely more often, they also indicate that they would feel less connected to the company and its values.

Finally, **Table 16** and **Table 17** summarise responses to attitudinal statements assessing employee and managerial perceptions of health and wellbeing impacts. The majority of employees in our sample report positive impacts in terms of work-life balance, and physical and mental health. However, a significant proportion of employees also express concerns about the lack of separation between work and home life, and how it could exacerbate feelings of anxiety and isolation. In general, managerial responses agree with employee perceptions.

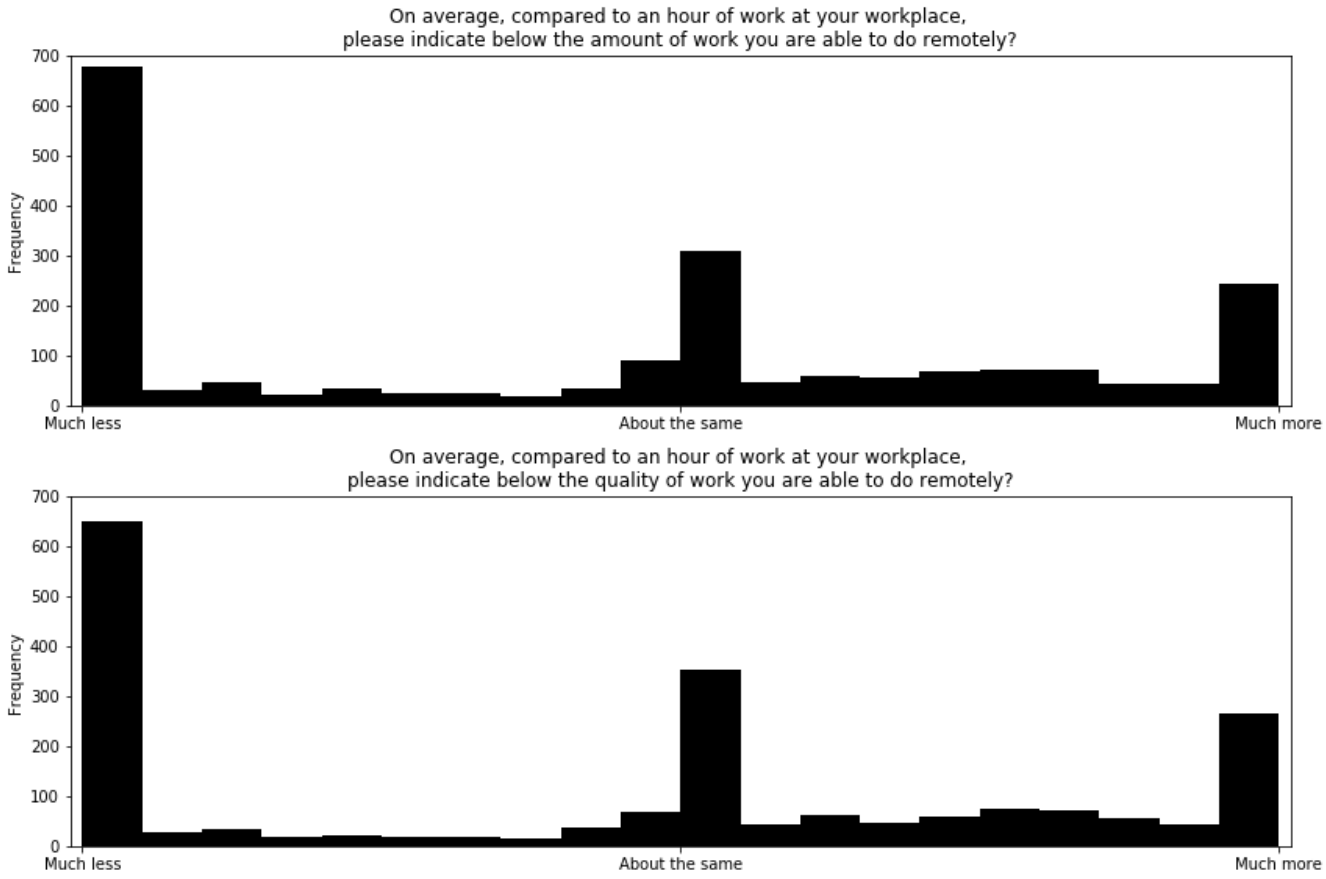


Figure 34: *Employee self-assessments of quantity and quality of remote working, when compared to working at the workplace*

Table 12: *Descriptive statistics for employee responses to attitudinal statements about impacts on productivity*

Survey item	Rating scale Distribution of responses							Mean response
	1 Strongly disagree	***2***	***3***	***4***	***5***	***6***	***7 Strongly agree***	
Employees (n = 2985)								
Please indicate your level of agreement or disagreement with the following statements with regards to the benefits and challenges of working remotely								
I would be able to work longer hours if needed	7.3%	4.5%	5.1%	19.9%	21.7%	24.0%	17.4%	4.9
I would be able to achieve my job objectives and outputs as expected	8.9%	4.6%	5.8%	21.5%	21.1%	21.1%	17.0%	4.7
I would have more autonomy in my work	6.9%	4.0%	7.2%	25.6%	22.5%	19.1%	14.7%	4.7
I would be able to multi-task more effectively	7.4%	4.3%	8.5%	23.1%	23.5%	18.8%	14.5%	4.7
I would be able to focus better on my work	7.9%	5.8%	8.1%	23.6%	20.6%	18.5%	15.5%	4.6
I would have an increased sense of self-discipline	7.3%	5.0%	7.5%	24.9%	23.8%	18.5%	13.0%	4.6
I would feel a sense of work-related success	7.6%	5.9%	9.7%	27.8%	22.6%	15.2%	11.2%	4.4
I would be able to fulfill my career goals	9.2%	6.2%	8.4%	30.7%	20.6%	14.8%	10.1%	4.3
I would be able to spend more time with customers	18.2%	9.9%	9.9%	24.7%	18.2%	11.1%	8.1%	3.8

Table 13: *Descriptive statistics for manager responses to attitudinal statements about impacts on productivity*

Survey item	Rating scale Distribution of responses							Mean response
	1 ***Strongly disagree***	***2***	***3***	***4***	***5***	***6***	***7*** ***Strongly agree***	
Managers (n = 868)								
Please indicate your level of agreement or disagreement with the following statements with regards to the benefits and challenges of working remotely								
They would have more autonomy over their work	1.4%	2.1%	4.7%	18.7%	25.2%	26.7%	21.1%	5.3
They would be able to work longer hours if needed	1.9%	2.5%	6.0%	16.5%	24.6%	27.4%	21.0%	5.3
They would have an increased sense of self-discipline	1.4%	2.2%	6.7%	17.4%	24.8%	26.7%	20.7%	5.3
They would be able to achieve their job objectives and outputs as expected	2.0%	3.5%	4.4%	18.0%	25.7%	25.8%	20.5%	5.2
They would be able to focus better on their work	1.2%	2.7%	8.2%	18.0%	23.8%	25.1%	21.1%	5.2
They would be able to multi-task more effectively	1.1%	3.6%	5.5%	20.1%	24.8%	25.3%	19.6%	5.2
They would be able to fulfill their career goals, and feel a sense of work-related success	1.9%	3.4%	6.7%	23.9%	22.0%	24.2%	17.9%	5.1
They would be able to spend more time with customers	4.8%	6.3%	9.6%	22.2%	17.4%	21.9%	17.8%	4.8

Table 14: *Descriptive statistics for survey responses to attitudinal statements about impacts on human relations*

Survey item	Rating scale Distribution of responses							Mean response
	1 ***Strongly disagree***	***2***	***3***	***4***	***5***	***6***	***7*** ***Strongly agree***	
Employees (n = 2985)								
Please indicate your level of agreement or disagreement with the following statements with regards to the benefits and challenges of working remotely								
I would miss out on informal social interactions with colleagues	7.8%	5.2%	7.2%	19.0%	22.1%	21.7%	17.0%	4.8
I would have fewer opportunities for collaborations and brainstorming sessions with colleagues	8.4%	6.9%	8.5%	22.4%	23.3%	18.1%	12.4%	4.5
My sense of loyalty to the company would increase	9.6%	5.9%	9.6%	30.9%	19.1%	14.5%	10.4%	4.3
I would feel less connected to the company and its values	11.3%	9.4%	9.1%	23.7%	20.2%	16.4%	10.0%	4.2
I would be concerned about how my performance would be monitored and observed	12.3%	7.8%	10.0%	24.1%	20.9%	15.9%	9.0%	4.2
I would have access to fewer learning opportunities and training sessions	11.9%	9.3%	11.5%	23.8%	19.3%	14.1%	10.3%	4.1
My career prospects may suffer due to loss of ad-hoc interactions with colleagues and supervisors	12.1%	8.8%	10.1%	25.7%	20.4%	14.6%	8.3%	4.1
It would be difficult for my supervisor to coordinate work	12.9%	10.5%	11.7%	22.5%	18.4%	13.4%	10.6%	4.1
I would be worried that my colleagues are not doing their fair share of the work	14.4%	9.9%	10.8%	24.1%	18.1%	13.9%	8.7%	4.0
The relationship with my supervisor would be adversely affected	13.7%	12.2%	11.2%	26.4%	18.0%	11.6%	6.9%	3.9

Table 15: *Descriptive statistics for manager responses to attitudinal statements about impacts on human relations*

Survey item	Rating scale Distribution of responses							Mean response
	1 ***Strongly disagree***	***2***	***3***	***4***	***5***	***6***	***7*** ***Strongly agree***	
Managers (n = 868)								
Please indicate your level of agreement or disagreement with the following statements with regards to the benefits and challenges of working remotely								
They would miss out on informal social interactions with colleagues	2.5%	4.0%	5.7%	15.5%	21.9%	30.1%	20.3%	5.2
They would have fewer opportunities for collaborations and brainstorming sessions with colleagues	3.9%	3.4%	8.8%	15.2%	23.7%	26.2%	18.8%	5.1
Their sense of loyalty to the company would increase	1.6%	4.5%	8.7%	21.8%	19.7%	24.9%	18.8%	5.0
They would be concerned about how to monitor and observe their performance	2.6%	4.9%	8.7%	19.1%	25.1%	24.0%	15.7%	4.9
They would feel less connected to the company and its values	3.6%	4.9%	8.4%	19.3%	23.6%	23.3%	16.8%	4.9
They would have access to fewer learning opportunities and training sessions	4.9%	5.8%	8.6%	17.4%	21.8%	25.1%	16.5%	4.9
Their career prospects may suffer due to loss of ad-hoc interactions with colleagues and supervisors	4.9%	6.9%	7.1%	20.8%	21.0%	23.0%	16.3%	4.8
It would be difficult for me to coordinate their work	6.6%	7.4%	9.1%	17.0%	20.9%	23.4%	15.6%	4.7
My relationship with them would be adversely affected	5.4%	9.2%	9.9%	18.5%	18.9%	23.0%	15.1%	4.7
I do not trust them to put in the required time and effort	11.2%	11.5%	11.1%	15.1%	17.8%	19.1%	14.1%	4.3

Table 16: *Descriptive statistics for survey responses to attitudinal statements about impacts on health and wellbeing*

Survey item	Rating scale Distribution of responses							Mean response
	1 Strongly disagree	***2***	***3***	***4***	***5***	***6***	***7 Strongly agree***	
Employees (n = 2985)								
Please indicate your level of agreement or disagreement with the following statements with regards to the benefits and challenges of working remotely								
I would have better work-life balance	6.1%	4.7%	6.7%	22.3%	19.4%	20.2%	20.6%	4.9
I would be able to exercise more	6.7%	5.0%	7.1%	21.6%	20.4%	20.6%	18.7%	4.8
I would be able to better manage personal and family issues	5.9%	4.3%	7.1%	24.7%	22.1%	19.8%	16.1%	4.8
I would have greater life satisfaction	6.1%	4.8%	6.8%	23.9%	22.8%	19.0%	16.6%	4.8
I would experience less stress	7.6%	5.1%	9.4%	24.9%	18.7%	18.7%	15.6%	4.6
I would eat better	8.2%	5.1%	9.5%	24.9%	19.6%	17.2%	15.4%	4.6
I would have higher morale	8.1%	5.4%	9.1%	29.3%	19.7%	16.0%	12.4%	4.4
I would feel isolated from my work colleagues	11.3%	8.0%	9.0%	20.2%	20.6%	17.5%	13.4%	4.4
I would find it difficult to separate work and home life	12.6%	9.3%	10.4%	20.8%	20.1%	15.4%	11.3%	4.2
I would worry I am missing out by being away from the workplace	15.5%	10.4%	10.3%	21.1%	19.7%	13.8%	9.3%	4.0
Work would intensify and I would find it difficult to switch off	13.6%	10.3%	10.5%	22.6%	19.1%	14.5%	9.4%	4.0
My family would be more stressed as a result of my remote working	21.3%	13.0%	11.2%	20.9%	16.4%	10.7%	6.6%	3.6
My physical health would deteriorate	20.7%	13.9%	12.3%	21.8%	15.0%	10.0%	6.5%	3.5

Table 17: *Descriptive statistics for manager responses to attitudinal statements about impacts on health and wellbeing*

Survey item	Rating scale Distribution of responses							Mean response
	1 ***Strongly disagree***	***2***	***3***	***4***	***5***	***6***	***7*** ***Strongly agree***	
Managers (n = 868)								
Please indicate your level of agreement or disagreement with the following statements with regards to the benefits and challenges of working remotely								
They would have better work-life balance	1.3%	2.8%	4.2%	15.2%	21.2%	30.2%	25.1%	5.4
They would be able to better manage personal and family issues	1.1%	2.8%	4.9%	15.8%	21.9%	29.4%	24.1%	5.4
They would take fewer sick days	1.9%	3.2%	5.6%	14.2%	21.9%	29.2%	24.0%	5.3
They would have greater life satisfaction	1.2%	2.1%	4.6%	16.9%	24.9%	29.5%	20.8%	5.3
They would have higher morale	0.7%	2.2%	7.2%	20.3%	22.1%	28.8%	18.8%	5.2
They would experience less stress	1.6%	3.5%	8.5%	17.4%	22.2%	26.2%	20.5%	5.2
They would feel isolated from their work colleagues	3.4%	3.2%	6.7%	18.0%	23.9%	27.2%	17.6%	5.1
They would find it difficult to separate work and home life	2.7%	4.6%	8.1%	18.9%	21.8%	26.3%	17.7%	5.0
They would worry they are missing out by being away from the workplace	4.4%	3.9%	10.1%	18.7%	21.8%	25.1%	16.1%	4.9
Work would intensify and they would find it difficult to switch off	3.8%	4.9%	9.6%	19.7%	22.1%	23.2%	16.7%	4.9

7.6 Employee preferences for remote working

Of the 1,525 employees that indicated that some of their jobs tasks and activities could be done remotely, 1,113 employees reported having a designated workplace that they work from or report to (e.g. office, co-working space, warehouse, factory floor). These 1,113 employees were shown stated preference (SP) experiment scenarios to elicit their preferences for different remote working arrangements for themselves, such as the example scenario shown in **Figure 15**.

Data from the hypothetical scenarios was used in conjunction with other employment and demographic information collected as part of the survey to estimate latent class choice models (LCCMs) of employee preferences for remote working. LCCMs are finite mixtures of discrete choice models. They were first developed in the field of marketing sciences as tools to identify relatively homogenous consumer segments that differ substantially from each other in terms of their behaviour in the marketplace (Kamakura and Russell, 1989). They have since emerged as a very popular form of discrete choice model, finding application in a wide variety of disciplines, including but not limited to transportation. In our case, LCCMs allow us to identify employee segments in the population that differ in terms of their preferences for different remote working arrangements. We describe the general LCCM framework in Appendix C. We present detailed estimation results in Appendix D. Here, we summarise the key findings from our analysis.

Our preferred model identified four distinct segments, or classes, in our sample population that differ in terms of their preferences for remote working arrangements, their employment and demographic characteristics, and their attitudes and perceptions towards remote working. The classes have been ordered in terms of their increasing valuation of remote working arrangements. Over subsequent paragraphs, we describe in greater detail each of the four classes identified by the model. These descriptions are summarized in **Table 18**.

Class 1: Comprising 31 per cent of the sample population, employees belonging to this class do not appear to value remote working arrangements. They do not see any significant personal benefits on productivity, health and wellbeing. Individuals belonging to this class are more likely to have low wage clerical and administrative jobs in sectors such as retail trade, education and training with lower capabilities to support remote working arrangements, and lower uptake both before and during the pandemic. These individuals are more likely to be women, have vocational qualifications or a Bachelor's degree, live alone or with their partners or in shared households, with no children.

Class 2: Comprising 24 per cent of the sample population, employees belonging to this class also do not appear to value remote working arrangements. However, unlike Class 1, they do see significant personal benefits on productivity, health and wellbeing, but they are concerned about the negative impacts on their relationship with their colleagues, supervisors and the firm as a whole, as well as opportunities for learning and career advancement. Individuals belonging to this class are more likely to have medium wage managerial jobs in small to medium-sized firms operating in sectors such as information, media and telecommunications that have high capabilities to support remote working arrangements, and high uptake both before and during the pandemic, indicating that these individuals already enjoy many of the benefits of remote working arrangements, and are not looking to increase their ability to work remotely. These individuals are likely to be highly educated middle-aged men in married households with children. Individuals with a disability and/or caregiving duties are most likely to belong to this class.

Class 3: Comprising 26 per cent of the sample population, employees belonging to this class value the ability to work remotely some days and/or hours, equivalent to a compensating wage differential between $2,000 and $4,000. They see significant positive impacts on their personal productivity, health and wellbeing, and are not concerned about impacts on social and organisational relationships, and learning and career advancement opportunities. Individuals belonging to this class are more likely to have medium wage professional, clerical and administrative jobs in sectors such as financial and insurance services with high capabilities to support remote working arrangements, lower uptake before the pandemic, but moderate to high uptake during the pandemic. These individuals are likely to be young, have vocational qualifications or a Bachelor's degree, living in households with no children.

Class 4: Comprising 21 per cent of the sample population, employees belonging to this class strongly value the ability to work remotely some days and/or hours, equivalent to a compensating wage differential between $12,000 and $24,000. Like Class 3, they see significant positive impacts on their personal productivity, health and wellbeing, and are not concerned about impacts on social and organisational relationships, and learning and career advancement opportunities. Individuals belonging to this class are more likely to have high wage professional jobs in sectors such as financial and insurance services that have high capabilities to support remote working arrangements, moderate uptake before the pandemic, but high uptake during the pandemic. These individuals are likely to be older college-educated women in households with children.

In summary, policies that seek to encourage the continuation and increased adoption of remote working arrangements post-pandemic should be targeted at employees belonging in Classes 3 and 4. These individuals work in jobs that have high capabilities to support remote working arrangements. However, uptake was relatively low before the pandemic, only picking up during the pandemic. These employees see significant personal benefits from being able to work remotely, and are eager to continue these arrangements post-pandemic.

Next, we examine how the compensating wage differential for the ability to work remotely some days and/or hours estimated by our model varies across our four primary variables of interest: industry sector, occupation, firm size and income. **Figure 35** plots average compensating wage differentials across different 1-digit ANZSIC industry sectors. There is no clear pattern. Wage differentials are expectedly highest across white-collar sectors with high WfH capabilities, such as financial and insurance services and public administration and safety, they are also high for selected blue-collar sectors with lower WfH capabilities, such as transport, postal and warehousing. However, the reader should note that these wage differentials are only estimated for the 1,113 employees that indicated that some of their jobs tasks and activities could be done remotely, and that they have a designated workplace that they work from or report to.

Figure 36 plots average compensating wage differentials across different 1-digit ANZSCO occupation types. Here, there is a clearer correlation between WfH capabilities and average wage differentials. White-collar occupations, such as professionals, clerical and administrative workers and managers, that have the greatest capability to work remotely also value remote working arrangements the most. Conversely, blue-collar occupations, such as machinery operators and drivers, have lower capabilities, and consequently they attach less value to the ability to work remotely.

Figure 37 plots average compensating wage differentials as a function of firm size. In general, wage differentials seem to increase with firm size, indicating that employees in larger firms value the ability to work remotely more than employees in smaller firms. This is likely due to capabilities as well. As

reported in Section 7.4, larger firms have greater capabilities to support remote working arrangements, and the value of these arrangements to their employees is consequently greater.

Figure 38 plots average compensating wage differentials across different income categories, and **Figure 39** plots the same as a fraction of the income. In terms of net wage differential, there is a clear monotonic pattern, such that higher income groups are willing to forego roughly $9,000 in annual wages for the ability to work remotely, while the lowest income group is only willing to forego roughly $2,000. However, when we look at compensating wage differentials as a fraction of total income, the pattern reverses itself, such that lower income groups are willing to give up much larger proportions of their existing incomes to be able to work remotely. For middle and high-income groups, the fraction is more stable, such that the average employee in these income groups is willing to forego roughly 10 per cent of their incomes to be able to work remotely some days and/or hours.

Finally, given that our data collection to date has been staggered over a four-month period, we are able to plot how the value of flexible working arrangements has evolved over time, as shown in **Figure 40**, as employees have had more time to experience these arrangements in practice. While the average compensating wage differential tends to fluctuate across weeks, there is no clear pattern. It appears that preferences for remote working have stabilised, at least over the four-month period over which data for our analysis was collected.

Table 18: *High-level summary of different market segments, or classes*

	Class I	**Class II**	**Class III**	**Class IV**
Share of the sample population	31 per cent	24 per cent	26 per cent	21 per cent
Preferences for remote working arrangements	Do not value increased flexibility to work remotely		Value ability to work remotely, compensating annual wage differential of $2,000 - $4,000	Strongly value ability to work remotely some days, compensating annual wage differential of $12,000 - $24,000
Attitudes and perceptions towards remote working	Do not see significant benefits to productivity, health and wellbeing	See benefits for productivity, health and wellbeing, but concerned about organisational relationship, learning opportunities and impacts on career advancement	Positive perceived impacts on productivity, health and wellbeing; and less concerned about organisational relationship, learning opportunities or career advancement	
Employment characteristics	Low wage clerical and administrative jobs in sectors such as retail trade, education and training	Medium wage managerial jobs in small to medium-sized firms in sectors such as information media & telecommunications	Medium wage professionals and clerical and administrative workers in sectors such as financial and insurance services	High wage professionals in sectors such as financial and insurance services
WfH capability and uptake	Moderate capability, but lower uptake before and during the pandemic	Moderate capability, but high uptake both before and during the pandemic	High capability, low uptake before the pandemic, but moderate to high uptake during the pandemic	High capability, low uptake before the pandemic, but high uptake during the pandemic
Demographic characteristics	More likely to be women with a Bachelor's degree or vocational qualification, living alone, in shared households, or with partners in households with no children	More likely to be college educated middle-aged men with a postgraduate degree, living with their partners in households with children	More likely to be young individuals with a Bachelor's degree or vocational qualification, living in households with no children	More likely to be older and college-educated women living with their partners in households with children

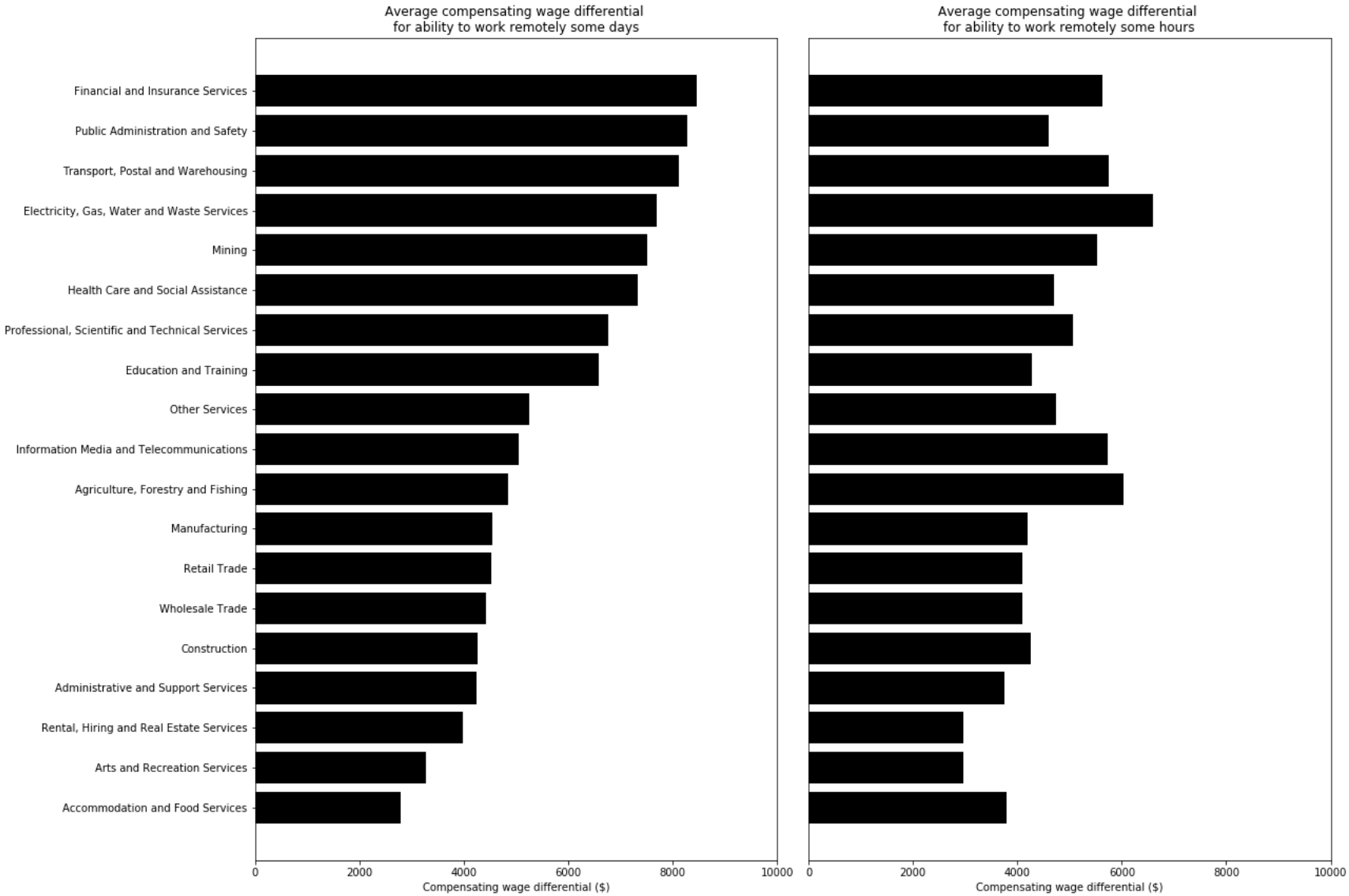


Figure 35: *Average compensating wage differential for flexible work arrangements, across different 1-digit ANZSIC industry sectors*

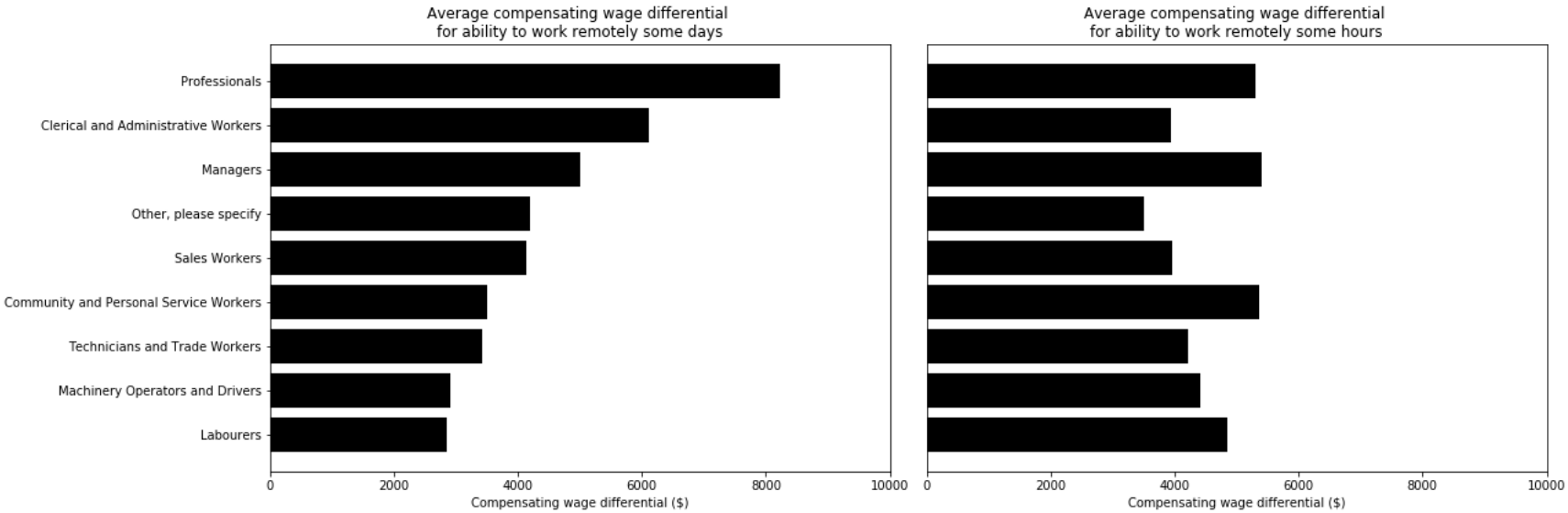


Figure 36: *Average compensating wage differential for flexible work arrangements, across different 1-digit ANZSCO occupations*

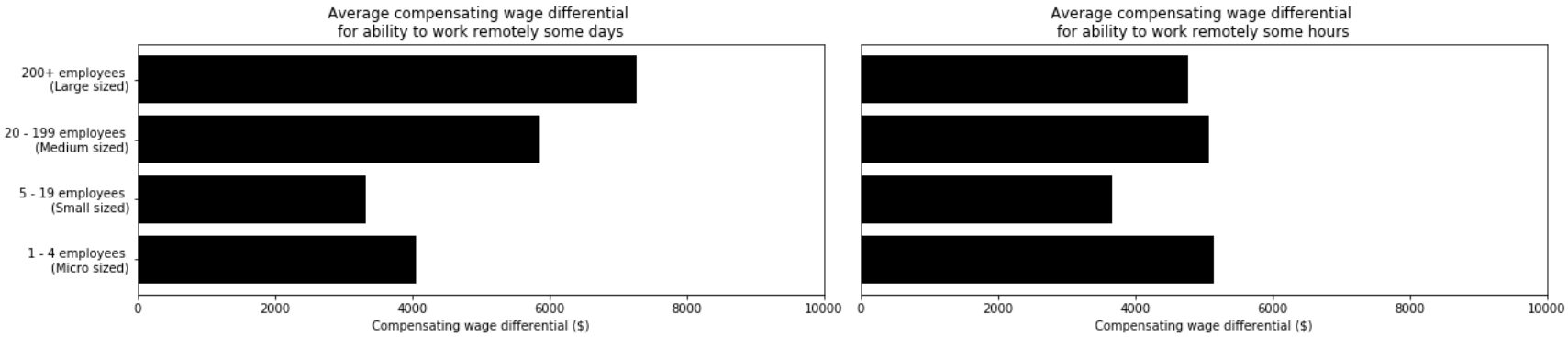


Figure 37: *Average compensating wage differential for flexible work arrangements, across different firm sizes*

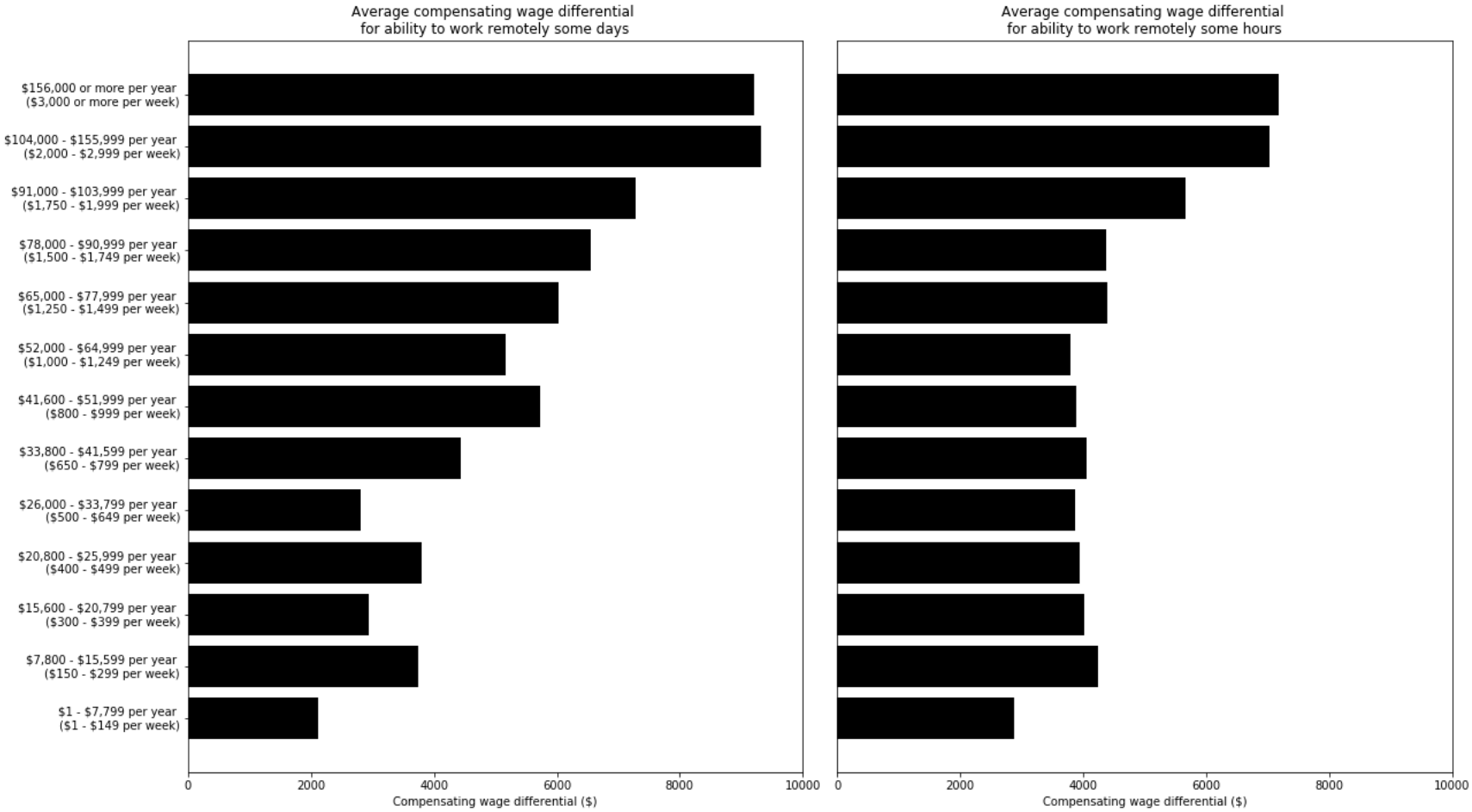


Figure 38: *Average compensating wage differential for flexible work arrangements, across different income categories*

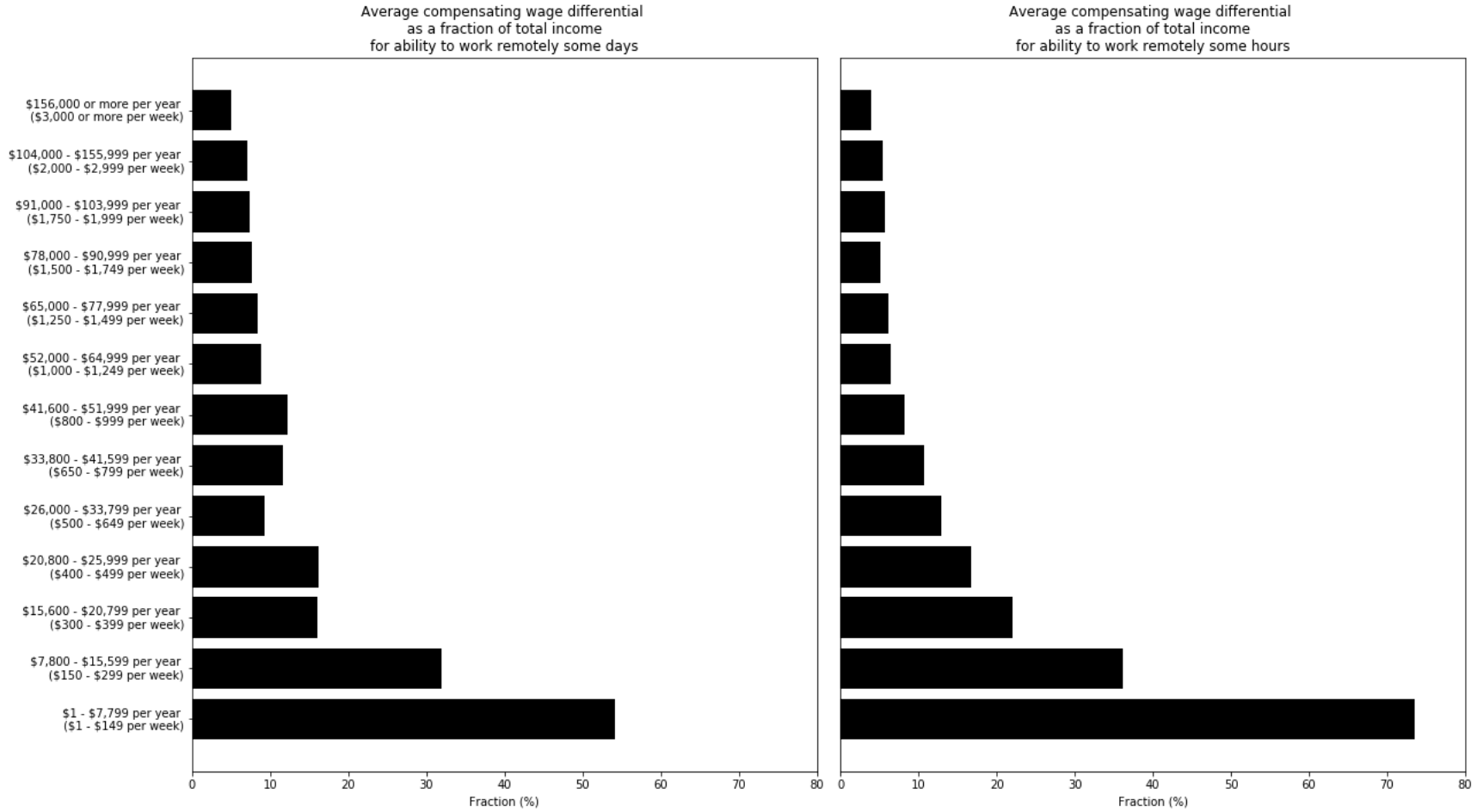


Figure 39: *Average compensating wage differential for flexible work arrangements as a fraction of total income, across different income categories*

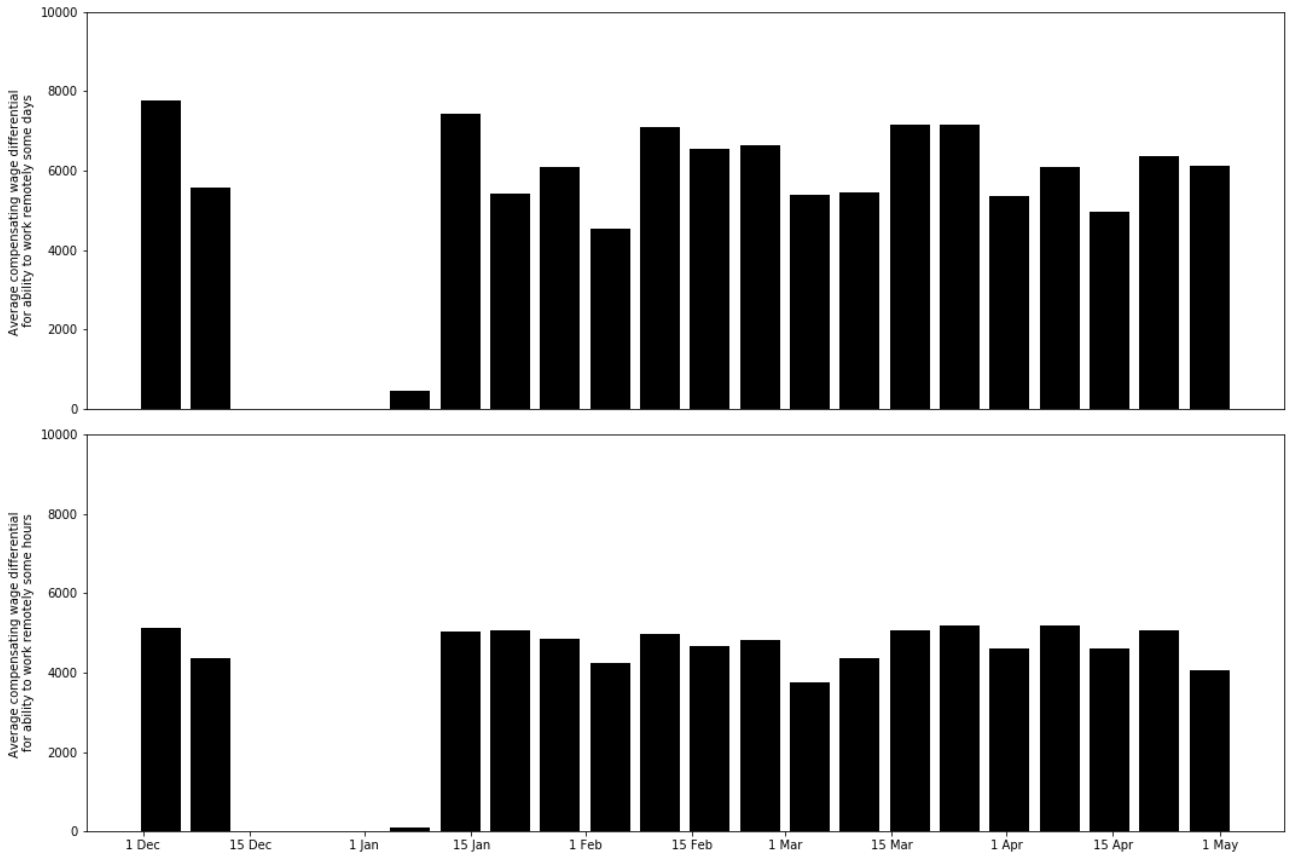


Figure 40: *Average compensating wage differential as a function of when employees were surveyed*

7.7 Managerial WfH preferences

Of our total sample of 3,853 respondents, 868 respondents are identified as managers. Of these, 788 managers have direct reports that have some job tasks and activities that could be done remotely. These 788 managers were shown analogous SP experiment scenarios to elicit their preferences for different remote working arrangements for one of their direct reports, such as the example scenario shown in **Figure 16**.

Data from the hypothetical scenarios was used in conjunction with other employment and demographic information collected as part of the survey to estimate Latent Class Choice Models (LCCMs) of manager preferences for offering remote working arrangements to their direct reports. We describe the general LCCM framework in Appendix C. We present detailed estimation results in Appendix E. Here, we summarise the key findings from our analysis.

Our preferred model identified three distinct segments, or classes, in our sample population that differ in terms of their preferences for offering remote working arrangements to their direct reports, the employment characteristics of their direct reports and the demographic characteristics of the managers themselves, and their attitudes and perceptions towards remote working. The classes have been ordered in terms of their increasing valuation of remote working arrangements. Over subsequent paragraphs, we describe in greater detail each of the three classes identified by the model. These descriptions are summarized in **Table 19**.

Class 1: Comprising 45 per cent of the sample population, managers belonging to this class do not appear to value offering remote working arrangements to their direct reports. They see positive impacts on employee productivity, health and wellbeing, but they are concerned about management issues relating to supervision, coordination, appraisal, etc. Managers belonging to this class are more likely to supervise employees with high wage jobs in smaller firms, working in sectors that have high capabilities to support remote working arrangements, and high uptake both before and during the pandemic, indicating that these individuals already enjoy many of the benefits of remote working arrangements, and are not looking to increase their direct reports' ability to work remotely.

Class 2: Comprising 20 per cent of the sample population, managers belonging to this class value offering the flexibility to work remotely some days to their direct reports, equivalent to a compensating wage differential of roughly $7,000. Interestingly, they are opposed to offering the flexibility to work remotely some hours on the days that their direct reports are required to be on-site, equivalent to a negative compensating wage differential of roughly $3,000, indicating that on these days they would prefer their direct reports to be on-site during all work hours. They see positive impacts on employee productivity, health and wellbeing, and are not as concerned about management issues. Managers belonging to this class are more likely to supervise employees with lower wage jobs in larger firms, working in sectors that have high capabilities to support remote working arrangements, moderate uptake before the pandemic, and high uptake during the pandemic.

Class 3: Comprising 35 per cent of the sample population, managers belonging to this class value offering the flexibility to work remotely some days and/or hours to their direct reports. They see positive impacts on employee productivity, health and wellbeing, and are not as concerned about management issues. Managers belonging to this class are more likely to supervise employees with high wage jobs in larger firms, working in sectors that have high capabilities to support remote working arrangements, moderate uptake before the pandemic, and high uptake during the pandemic.

In general, managers in Classes 2 and 3 appear to be supportive of offering remote working arrangements to their direct reports, while managers belonging to Class 1 are less enthusiastic. There are other interesting differences between the classes in terms of company strategy that are worth emphasizing. **Figure 41** and **Figure 42** plot the distribution across classes of managerial responses to their company's short and long-term strategy, respectively, with regards to remote working. Managers in Class 1 are much less likely to believe that post-pandemic their company would offer flexible working arrangements to employees that include a mixture of working on-site and remotely, compared to the other classes. However, they are more likely to believe that the company will expand its remote workforce, compared to the other classes. In the case of companies belonging to Class 1, the hybrid workplace is likely *not* to apply to individual employees, but to the workforce as a whole, such that it constitutes a mix of on-site workers and remote workers. In the case of companies belonging to Classes 2 and 3, the hybrid workplace is more likely to be available to individual employees, such that they have the flexibility to work both remotely and on-site.

Table 19: *High-level summary of different market segments, or classes*

	Class I	**Class II**	**Class III**
Share of the sample population	45 per cent	20 per cent	35 per cent
Preferences for remote working arrangements	Do not value offering increased flexibility to work remotely to their direct reports	Value offering increased flexibility to work remotely some days to their direct reports, but opposed to offering flexibility to work remotely some hours	Value offering increased flexibility to work remotely some days and/or hours to their direct reports
Attitudes and perceptions towards remote working	See benefits for productivity, health and wellbeing of their employees, but concerned about supervision, coordination, performance appraisal, organisational loyalty, etc.	See benefits for productivity, health and wellbeing of their employees, and not as concerned about management issues	
Employment characteristics of the direct report	Higher wage jobs in small to medium-sized firms	Lower wage jobs in larger firms	Higher wage jobs in larger firms
WfH capability and uptake	High capability, and high uptake both before and during the pandemic	High capability, moderate uptake before the pandemic but high uptake during the pandemic	
Future company strategy	Mix of remote workers and on-site workers	More flexible work arrangements to all employees	

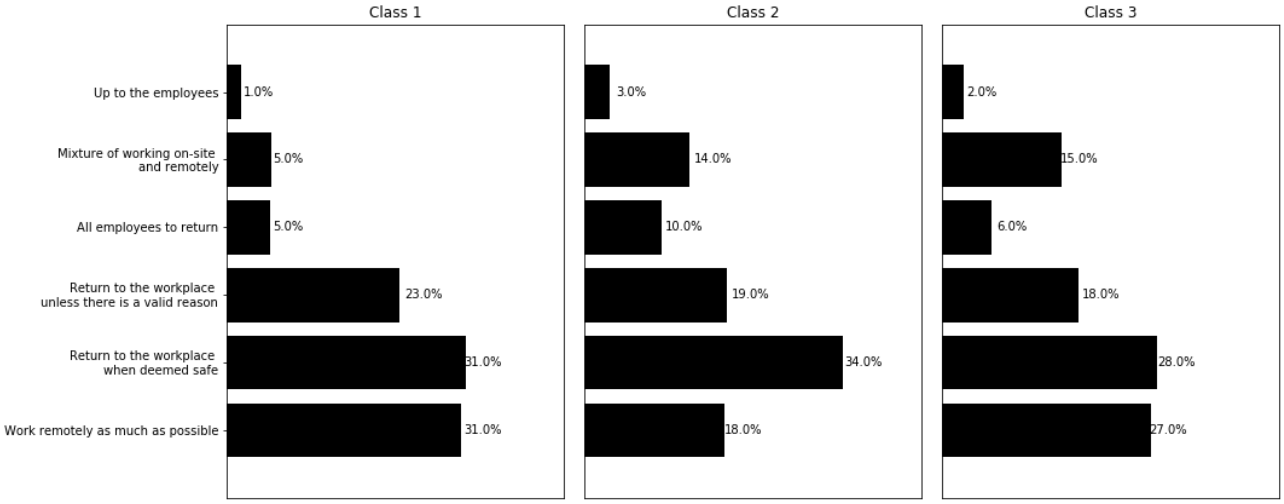


Figure 41: *Class profiles in terms of manager assessment of company's short-term strategy with regards to remote working*

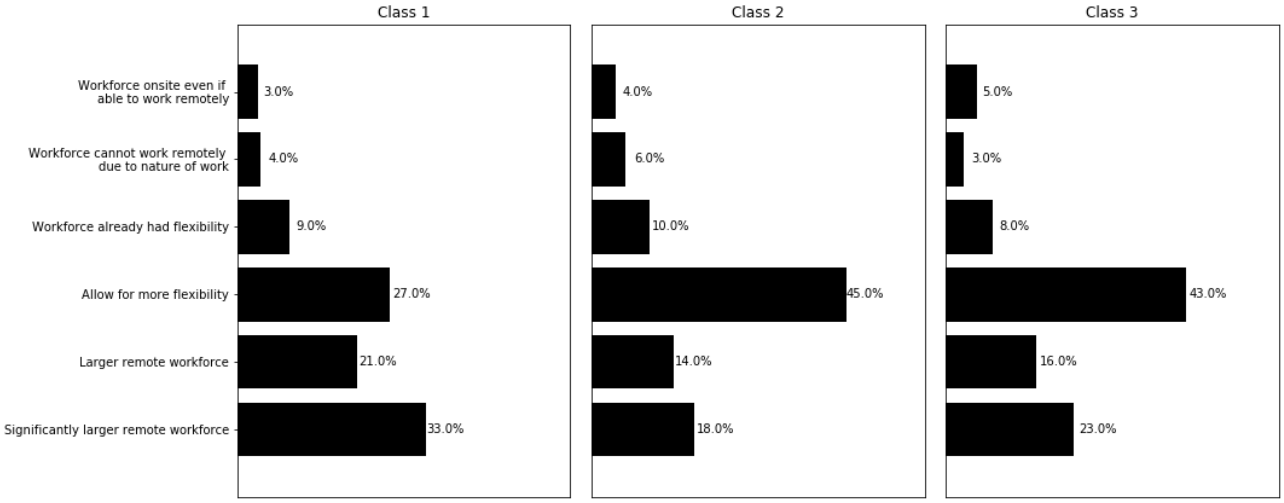


Figure 42: *Class profiles in terms of manager assessment of company's long-term strategy with regards to remote working*

7.8 Technical and organisational support

Note that all employees and managers in our sample were asked to indicate the importance of different employer measures to support remote working arrangements. **Table 20** enumerates the average ratings across different measures.

In general, employees value the ability to work flexibly the most. Measures corresponding broadly to technical infrastructure and support, such as better hardware and software, are rated slightly lower by employees in terms of their importance, compared to the ability to work flexibly, while managers rate both sets of measures as equally important. Finally, measures relating to HR, management and training are given the least importance by both employees and managers. Notwithstanding their relative importance, average ratings are high across all measures, for both employees and managers, indicating that any appropriate strategy to support remote working must consist of a combination of all three types of measures. Interestingly, managers appear to attach greater importance to every single measure included in our survey instrument, and the difference is statistically significant in each case.

Table 20: *Average importance placed by employees and managers in our sample on different employer measures to support remote working arrangements*

Measure	Average rating			
	Employees (n = 2,694)	**Managers (n = 868)**	**t-stat***	**p-value***
Flexibility in work hours	5.1	5.6	-8.63	0.00
Flexibility in taking time off	5.0	5.5	-9.85	0.00
Better hardware and equipment	4.9	5.4	-12.08	0.00
Better software for remote working	4.9	5.5	-10.14	0.00
Better technical support	4.9	5.5	-8.20	0.00
Clear rules that establish times when people must be available	4.9	5.5	-8.23	0.00
Better cyber security policies to support remote work	4.8	5.6	-12.83	0.00
Help managing workloads	4.7	5.5	-10.14	0.00
Provision of learning and development opportunities	4.7	5.4	-13.18	0.00
Opportunities for regular virtual contact with colleagues and supervisors	4.7	5.4	-11.14	0.00
Help in building networks and relationships	4.6	5.4	-11.04	0.00
Better management training in leading remote working teams	4.6	5.4	-11.73	0.00
Better team training in working remotely	4.6	5.4	-12.43	0.00

1 – not important; 7 – extremely important

** two-sided test with null hypothesis that mean rating is same for employees and managers*

7.9 Implications for transport and land use behaviour

Of the 2,694 employees in our sample, 1,879 employees reported having a designated workplace that they work from or report to (e.g., office, co-working space, warehouse, factory floor). These employees were asked about their commute patterns before and during the pandemic, as well as the week before they were surveyed. Of these 1,879 employees, 1,113 employees indicated that some of their jobs tasks and activities could be done remotely. These 1,113 employees were further asked how they would change their commute patterns (days and times spent on-site during a typical work week), if their employer offered them the flexibility to work remotely when possible. All findings in this section have been reweighted to adjust for differences between our sample and the general Australian population.

Figure 43 plots the distribution in terms of the days that employees worked on-site before the pandemic, and the days that they would work on-site if allowed to work remotely when possible. On average, there is a 25-35 per cent reduction in commute travel across weekdays for these employees. Once we factor in the commute behaviour of the remaining employees who have a designated workplace but do not have the ability to work remotely, this results in a 15-20 per cent reduction in all commute travel across the network, as shown in **Figure 44**. Finally, **Figure 45** plots the same information in terms of number of days spent on-site under the two scenarios across employees that have the ability to work remotely. The greatest change is the increase in the number of employees that would work remotely all workdays, and the corresponding decline in the number of employees that are on-site 5 days a week. However, in absolute terms, the strongest preference appears to be for hybrid working arrangements, where employees are on-site 2 or 3 days a week.

Figure 46 plots the percentage shift in commute trips made using different transport modes, as a function of the day of the week. In general, reduction in car travel is lower than the corresponding reduction in public and active transport travel. This indicates that remote working arrangements appeal more to individuals that commute using public or active transport. The widespread adoption of remote working arrangements could reduce commute travel on the public transport network by 22-31 per cent on a given weekday, compared to 12-18 per cent for private cars. Across all modes, the plots have a U-shape, where the greatest reduction in trips is on Mondays and Fridays.

Figure 47 compares the reduction in car and public transport commute trips across employees living in the five largest urban areas (i.e. Sydney, Melbourne, Brisbane, Perth and Adelaide) and the twelve smaller urban areas in our sample. In general, the reduction in both car and public transport travel appears to be consistent across large and small urban areas, and there are no clear points of difference between large and small cities.

Similarly, **Figure 48** compares the reduction in car and public transport commute trips across employees working in the CBD and non-CBD areas within the Sydney metropolitan region in our sample. In general, the reduction in both car and public transport travel is much greater for employees commuting to workplaces in the CBD. For example, commute trips to the CBD could decline by up to 23 per cent for car and 39 per cent for public transport. In contrast, commute trips to non-CBD areas could decline by up to 16 per cent for car and 24 per cent for public transport.

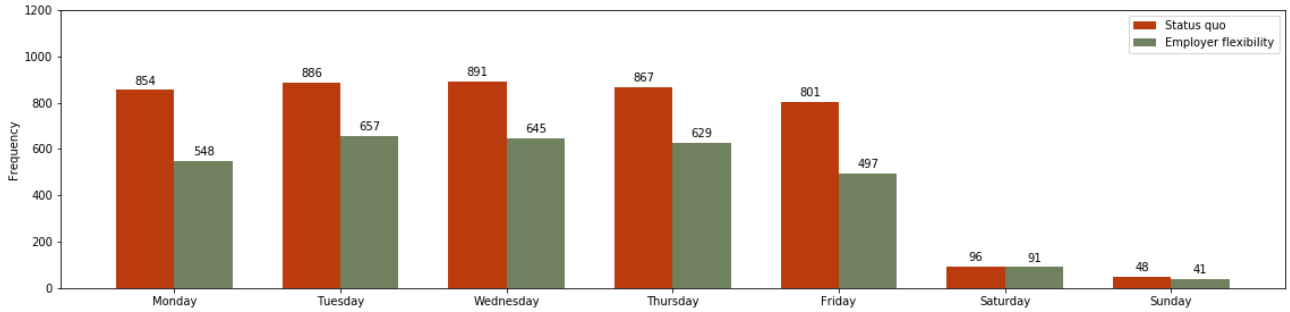


Figure 43: *Days spent on-site before the pandemic, and days they would spend on-site post-pandemic if allowed to work remotely when possible, for employees with a regular on-site location that have the ability to work remotely*

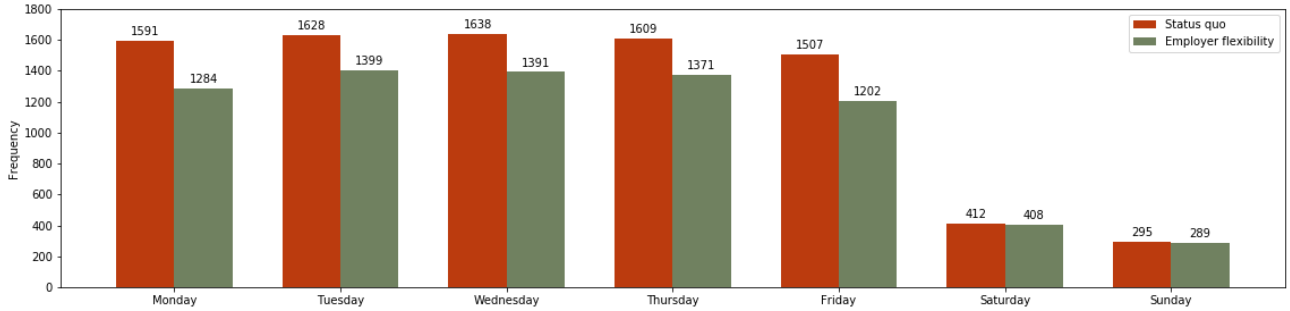


Figure 44: *Days spent on-site before the pandemic, and days they would spend on-site post-pandemic if allowed to work remotely when possible, for all employees with a regular on-site location*

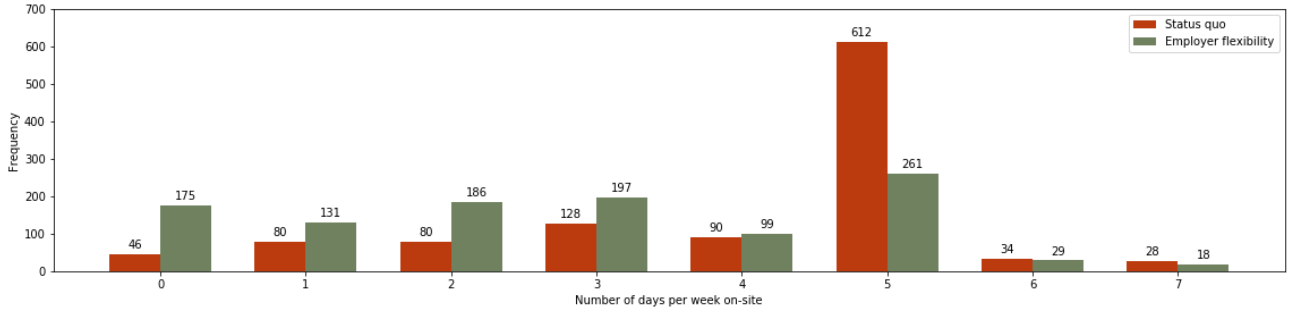


Figure 45: *Number of days spent on-site before the pandemic, and number of days they would spend on-site post-pandemic if allowed to work remotely, for employees that have the ability to work remotely*

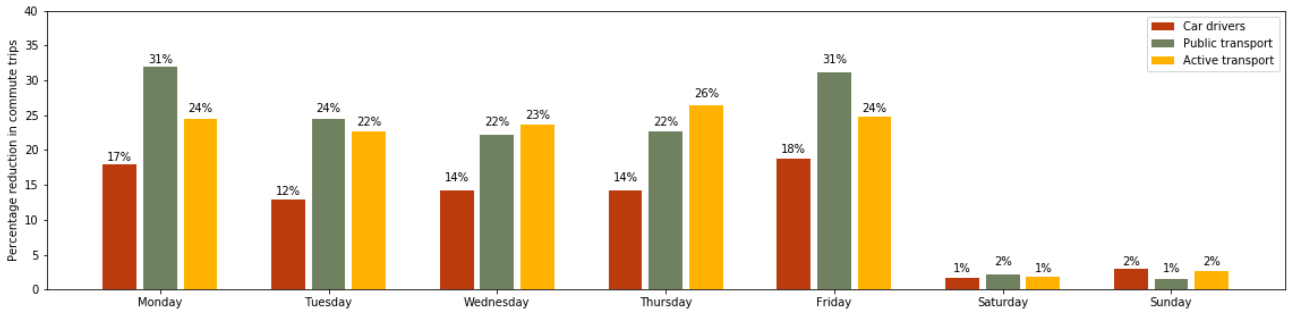


Figure 46: *Percentage reduction in commute travel across different transport modes and across different days of the week, if employees were allowed to work remotely when possible*

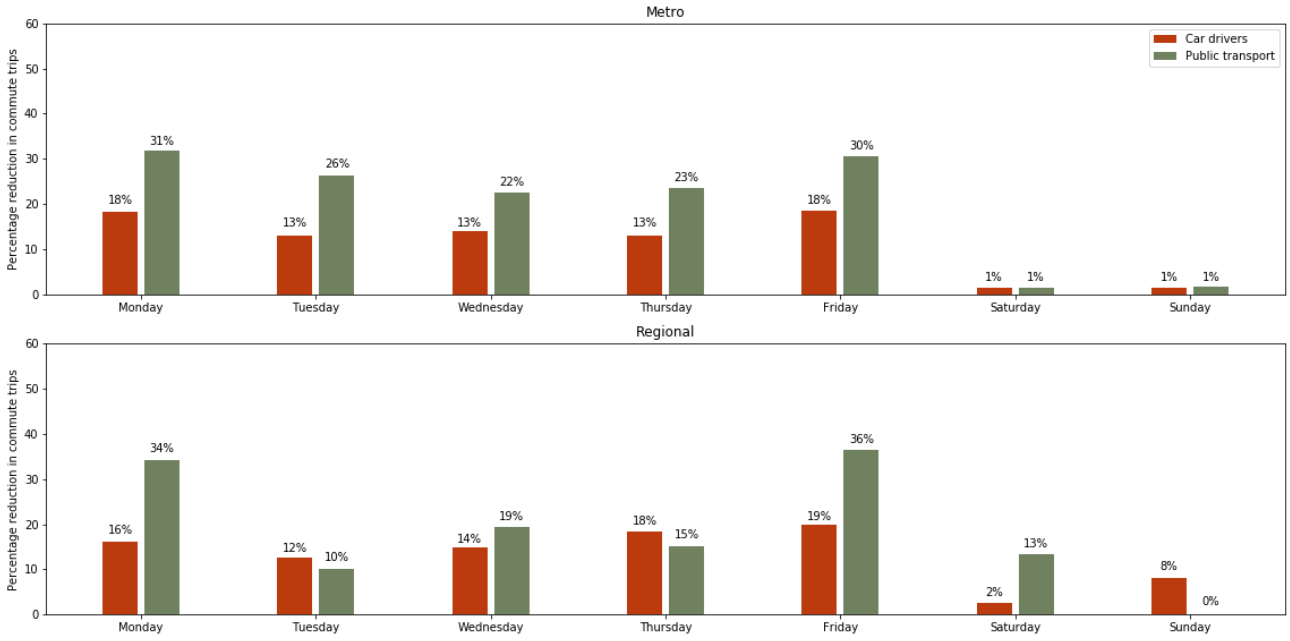


Figure 47: *Percentage reduction in car and public transport commute travel across different days of the week for employees living in the five major metropolitan centres and the twelve smaller regional centres, if employees were allowed to work remotely when possible*

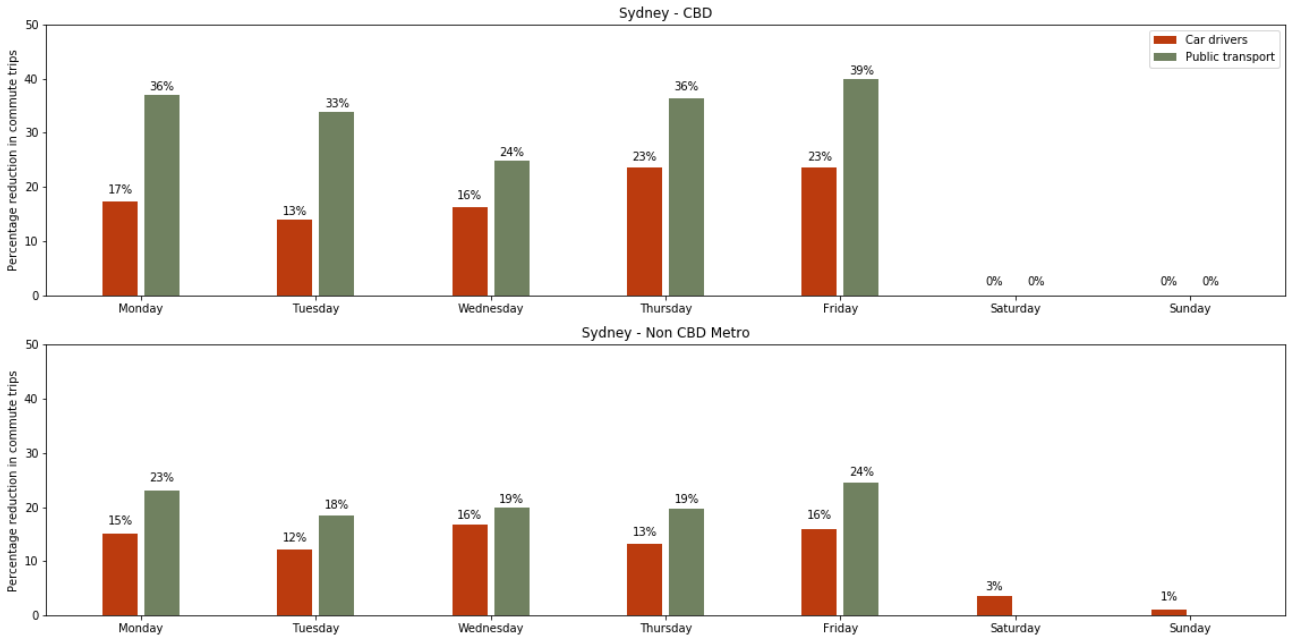


Figure 48: *Percentage reduction in car and public transport commute travel across different days of the week for employees working in CBD and non-CBD areas within the Sydney metropolitan region, if employees were allowed to work remotely when possible*

Figure 49 plots the distribution of employees that have the ability to work remotely in terms of their arrival time at work before the pandemic, and their preferred arrival if allowed to work remotely when possible. **Figure 50** plots the corresponding distributions for departure time from work. For the morning commute, after accounting for the remaining employees who have a designated workplace but do not have the ability to work remotely, there is roughly a 5 per cent shift across the network away from the peak window between 8:00 AM and 9:00 AM, and towards 10 AM. For the evening, there is a larger shift in magnitude of roughly 10-20 per cent away from the peak window between 5:00 PM and 6:00 PM, and towards 2:00 to 4:00 PM. Together, the plots indicate that peak spreading could reduce commute travel during peak hours by an additional 5 per cent during the morning period, and an additional 10-20 per cent during the evening period.

From the perspective of employees, the ability to work remotely some days could offer significant benefits in terms of commute time savings. Based on responses to our survey, we estimate that the average one-way commute has a duration of 32 minutes. Therefore, every day that an employee does not have to work on-site saves them roughly an hour in commute time. Based on **Figure 45**, we estimate that on average employees spend 4.0 days on site at present, but would spend 2.9 days on site if they could work remotely when possible. Therefore, the average employee stands to save 70 minutes in weekly commute time from remote working arrangements.

We use the model of employee preferences for remote working arrangements developed in Section 7.5 to infer the value of commute travel time. Note that our model identified four different segments in the population that differ in terms of their average compensating wage differential for the ability to work remotely some days. Class membership was specified as a function of, among other variables, the average commute time that an employee would save if they had the ability to work remotely when possible. Weekly commute time savings were calculated for each employee based on their reported travel time for their commute trip, and change in the number of days in a week that they would prefer to go on-site. We use the model to simulate changes in class membership, and consequently changes in the compensating annual wage differential for the ability to work remotely some days, in response to an increase in weekly commute time savings by 1 hour across each employee in our sample. Assuming that the average employee works 42 weeks in a single year, dividing their compensating annual wage differential by 42 yields the amount of money the employee would be willing to give up in their salary to save an hour of commute time, or their value of time. While this is an unorthodox way of calculating value of time, it gives us a useful baseline against which to compare findings from other studies, as well as serves to validate results from our estimated model of employee preferences for remote working.

Table 21 enumerates our estimates for the value of time for different sub-population groups, based on their commute travel behaviour. On average, based on our calculation, the average value of time implied by our model is $7.2 per hour. The current Australian Transport Assessment and Planning (ATAP) guidelines recommend a value of $15.0 per hour. Our estimate is much lower than the ATAP value, as well as the current minimum wage rate of $19.5. Note that value of time is typically estimated at the margin of a single trip, whereas our estimate has been calculated averaged over accumulated savings in travel time over a year. In effect, our estimate is an *average* value of time, while estimates in the literature correspond to the *marginal* value of time. There are likely diminishing returns to travel time savings, which potentially explain why our estimates are significantly lower.

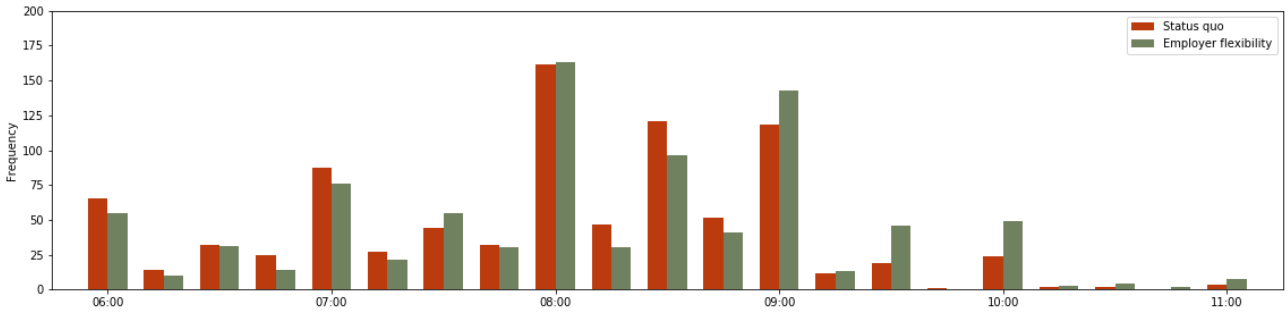


Figure 49: *Arrival time at work before the pandemic, and preferred arrival time if employees were allowed to work remotely when possible*

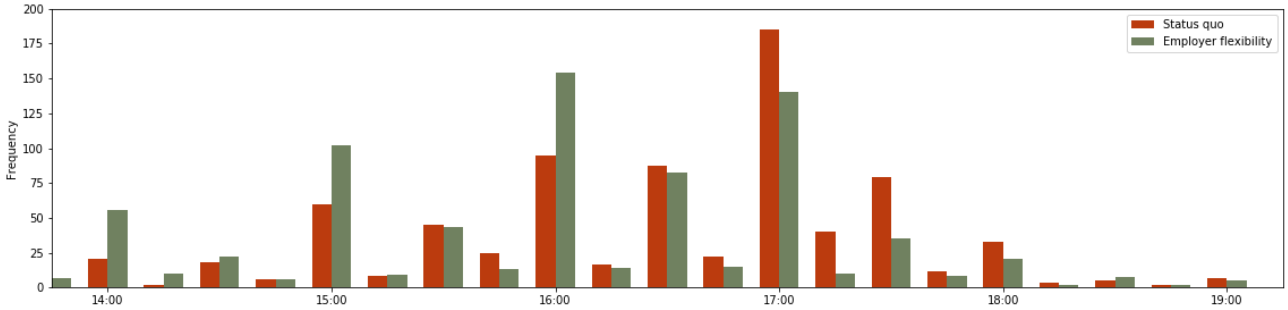


Figure 50: *Departure time from work before the pandemic, and preferred departure time if employees were allowed to work remotely when possible*

Table 21: *Estimated value of commute time for different sub-population groups*

Sub-population	**Estimated value of time ($/hr)**
Full population	7.2
Commute mode	
Car driver	7.1
Car passengers	3.7
Public transport	6.9
Active transport	6.5
Peak period travel	
Travel during the AM peak	7.0
Travel during the PM peak	6.7
Travel during the off peak	10.9

The survey instrument collected responses from both employees and managers regarding potential impacts of remote working on transport and land use behaviour. **Table 22** summarises the descriptive statistics for responses to these survey items. In terms of transport impacts, we find that 33 per cent of employees agree to varying extents that they would consider reducing car ownership, and 38 per cent agree that they would increase their non-work travel. In terms of land use impacts, 42 per cent of employees agree that they would consider living further away from their current workplace, 72 per cent of managers agree that the company would consider reducing its office space, and 68 per cent of managers agree that the company would consider renting cheaper office space in a different location. Of the 296 employees in our sample that have moved to a new home since 1 March 2020, 43 per cent indicated they were looking to improve their remote working conditions when considering their next home, and the same proportion indicated they considered moving to a different town or city. Based purely on responses to these questions, land use impacts of widespread adoption and continuation of remote working arrangements could be transformative for the shape and structure of our cities.

Table 22: *Descriptive statistics for survey responses to attitudinal statements about transport and land use behaviours and impacts*

Survey item	Rating scale Distribution of responses							Mean response
	1 ***Strongly disagree***	***2***	***3***	***4***	***5***	***6***	***7*** ***Strongly agree***	
Employees (n = 2000)								
Please indicate your level of agreement or disagreement with the following statements with regards to the benefits and challenges of working remotely								
I would consider giving up my car (or one of my cars)	31.1%	12.0%	8.8%	17.1%	13.0%	9.9%	8.1%	3.3
I would consider living further away from my current workplace	20.3%	9.8%	7.9%	20.0%	15.8%	13.9%	12.4%	3.9
I would increase my non-work travel	15.4%	9.2%	12.1%	25.2%	16.7%	11.9%	9.6%	3.9
My home energy bill would be significantly higher	5.7%	4.4%	7.3%	21.2%	26.7%	19.8%	14.9%	4.8
Managers (n = 807)								
Please indicate your level of agreement or disagreement with the following statements with regards to the benefits and challenges of working remotely								
The company would consider reducing its office space	3.5%	3.5%	5.4%	15.7%	22.8%	26.3%	22.8%	5.2
The company would consider renting cheaper office space in a different location	5.3%	4.3%	5.8%	17.1%	21.3%	25.0%	21.3%	5.1

8. CONCLUSIONS

Prior to the COVID-19 pandemic, uptake of remote working arrangements has been low. Based on the 2016 Census, we estimate that on average, roughly 2-8 per cent of the Australian workforce were working remotely on any given day. As a consequence of the COVID-19 pandemic, there has been an unprecedented upsurge in the adoption of remote working arrangements. Based on surveys conducted by the ABS during the pandemic, at least 40 per cent of the Australian workforce reported working remotely one or more times a week during the peak of the pandemic, and 30 per cent reported working remotely most days.

The pandemic has offered a unique opportunity to test the viability of remote working practices across different jobs and industries; to assess their economic, social and environmental impacts; and to examine if and how these practices could and should be continued in the future.

This research aimed specifically to explore these questions using a mixed methods approach. In particular, our methodology comprised four stages. First, we undertook a review of the relevant academic and grey literature on remote working arrangements, their impacts on productivity, health and wellbeing, and transport, energy and land use behaviours, and policies that could be used to support and enable their adoption. Second, we undertook an analysis of relevant Australian labour market data collected by the ABS and other organisations before and during the pandemic, to examine how uptake of remote working arrangements has varied historically. Third, we collected and analysed qualitative data from different employers drawn from across the country to understand their experiences with remote working arrangements. Finally, we collected and analysed quantitative data from a large-scale nationwide online survey of employees and managers to understand their attitudes and preferences towards remote working arrangements.

In the sections that follow, we synthesize the key findings from these different research activities. Section 8.1 examines the viability of remote working practices across different jobs and industries. Section 8.2 reviews the likely economic, social and environmental impacts of remote working arrangements. Section 8.3 concludes with a discussion on how remote working practices are likely to be continued in the future.

8.1 Viability of remote working

Based on an analysis of data collected by our survey, we estimate that roughly 51 per cent of employees working in large Australian urban areas (populations greater than 100,000) believe that some of their jobs tasks and activities could be done remotely. However, only 22 per cent have formalised remote working arrangements with their employers. This is consistent with data collected by the ABS, which finds that 40 per cent of employees were working remotely one or more times a week during the peak of the pandemic.

Ability to work remotely tends to be highest across white-collar sectors, such as information, media and telecommunications, and financial and insurance services, and white-collar occupations, such as professionals, managers, and clerical and administrative workers.

Not all businesses are able to adopt remote working arrangements. For example, firms working in construction, manufacturing, and warehousing reported little change in workplace practices even during the peak of the pandemic. Our qualitative analysis finds that while some job tasks in these sectors can indeed be done remotely, such as invoicing, quotes, etc., most tasks require employees to be present on-site.

Agriculture is an interesting case. Based on quantitative data collected before and during the pandemic, both by the ABS and ourselves, it appears that jobs in the sector have a high ability of being done 'from home', as home is likely where the agricultural facility is also located, especially in the case of smaller operations. However, our qualitative engagement with larger firms operating in the sector revealed greater difficulties in transitioning to remote work, as the nature of jobs is such that a significant proportion of staff are required to be on-site. Further, applying an expert classification of the possibility of working from home for various occupations, developed using US data, to the Australian context, we estimated that only 15 per cent of jobs in the sector could be done remotely. Therefore, the evidence appears to be conflicting.

Some industries were able to adopt remote working arrangements as a short-term measure during the pandemic, but were reluctant to continue them after. For example, GP and physio clinics reported an uptake in the adoption of telehealth practices during lockdowns. However, doctors found telehealth both mentally draining and not satisfactory for good patient care, and most health care service providers have returned to pre-pandemic practices. Similar experiences were also cited by retail service providers included in our qualitative analysis. Consistent with these experiences, our quantitative analysis finds that employees in the health care and social assistance; transport, postal and warehousing; and retail trade sectors reported some of the lowest abilities to work remotely, and the lowest uptake both before and during the pandemic. Relatedly, sectors, such as education and training; rental, hiring and real estate services; and arts and recreation services, demonstrate a fluctuating trend, with comparatively low uptake before the pandemic, high uptake during the peak of the pandemic, but declining uptake in the week before respondents were surveyed by our study. Together, these findings suggest that while these sectors have the capability to adopt greater remote working arrangements, and employees working in these sectors would be supportive of expanding remote working arrangements, employers in these sectors have preferred to return to pre-pandemic practices. Our qualitative analysis finds that for organisations in some sectors, face to face, in-house contact is a key component of their business model and as such, remote working arrangements currently in place are unlikely to become part of a permanent strategy.

We find that firm size has a significant impact on capability and uptake. Larger firms are more able to adopt remote working arrangements. Smaller businesses frequently do not have the resources to build the requisite technical infrastructure and organisational processes to enable remote working. Our quantitative analysis finds that average uptake of remote working arrangements increased only for employees across large firms (200+ employees) in our sample, but stayed the same for smaller firms. Our qualitative analysis finds that security systems and upgrades, developing on-line content and communication processes, and data management were the third highest consideration when thinking about long-term working from home practices. Most larger organisations already had good reporting and communication systems set up, as well as remote and secure access to essential data and programs to enable people to work from home, that were often considered beyond the scope of the smaller operators. The costs and effort of setting up new systems and processes to enable good work from home practices are often not always clear and may not be seen as 'worth it' to many small businesses; particularly in a time of financial insecurity such as this. Small business and family enterprises in Australia account for almost 98 per cent of all businesses, employing 44 per cent of the workforce and accounting for 35 per cent of Australia's gross domestic profit (ASB and FES, 2019). Resourcing needs to be available to these businesses if they are to transition to any kind of long-term work from home practices.

Finally, we find that the relationship between income and ability to work remotely is U-shaped, such that the proportion that are able to work remotely is high for individuals employed in low and high-paying jobs, and comparatively lower for individuals employed in medium-paying jobs. This has held true both before and during the pandemic. These patterns of correlation raise equity concerns, where higher-income jobs are more likely to enjoy the benefits of increasingly flexible working

arrangements, while the same are expected to be less available to employees working in medium-paying jobs.

8.2 Impacts of remote working arrangements

Most employees, managers and employers do not see a significant negative impact of remote working on productivity on average, but most also agree that remote working is not beneficial for all. Hour-for-hour, roughly one-half of employees report that the quantity and quality of work that they are able to do remotely is less than what they are able to do on-site, one-quarter report it being the same, and one-quarter report it being more. Conversely, roughly 59 per cent of employees agree that they would still be able to achieve their job objectives and outputs as expected if they were working remotely, likely due to increased flexibility, greater autonomy, and the ability to work longer hours if needed.

These findings are echoed by our qualitative analysis. There were very few comments raised about loss of productivity in our qualitative engagement with employers. However, there was acknowledgement that working from home was not right for all employees and that sustainable working from home practices require good processes and support systems to make it work, such as access to childcare services, home office setup support, etc. For those businesses where working from home practices were established and/or had been well resourced and integrated into the business model, little effects on productivity were reported.

However, 40-50 per cent of employees and 60-70 per cent of managers expressed concern about impacts on supervision, coordination, performance appraisal, career advancement, organisational loyalty and other aspects of human relations. Communication and collaboration (messaging, staff meetings, feedback, performance reviews, team connectivity, social and informal work engagement) was rated as the second highest consideration when thinking about long-term remote working practices. Our qualitative engagement with employers highlighted a prioritization of strategies and processes to maintain communication – particularly within work teams and units, but also with clients. This was raised broadly across all industries and business sizes, and where working from home practices had been taken up and in businesses where it hadn’t.

Impacts on health and wellbeing are ambiguous. While 55-60 per cent of employees see clear benefits, in terms of impacts on work-life balance and general life satisfaction, 40-50 per cent also express concern around finding it difficult to separate work and home life. Other studies find that remote working can exacerbate feelings of isolation, and create greater conflict between work and home life. Many employers in our qualitative engagement reported prioritising staff care and support - training managers to look for signs of anxiety and stress, ensuring good communication flows, making time for social activities, etc.

In terms of transport impacts, we estimate that remote working arrangements could reduce weekday commute travel by car by 12-17 per cent and by public transport by 22-31 per cent across large urban areas. Impacts are likely to be greatest for commute trips made to workplaces in CBD locations. Remote working arrangements could additionally move roughly 5 per cent of commute trips outside the morning peak period, and 10-20 per cent of commute trips outside the evening peak period. Reductions in travel are likely to be greatest on Mondays and Fridays.

Increased adoption of remote working arrangements could have a profound impact on the distribution of economic activities within urban areas, and consequently, the shape and structure of our cities. We find that 42 per cent of employees in our sample agreed that they would consider living further away from their current workplace, 72 per cent of managers agreed that their company would consider reducing its office space, and 68 per cent of managers agreed that their company

would consider renting cheaper office space in a different location. Of the 296 employees in our sample that have moved to a new home since 1 March 2020, 43 per cent indicated they considered moving to a different town or city.

8.3 Future of work

Our analysis finds that future workplaces are likely to adopt one of two hybrid approaches to incorporate remote working within their existing practices.

First, individual employees might be offered increased flexibility to work remotely some workdays and/or workhours. Roughly 34 per cent of employees reported wanting a mix of working on-site and remotely. The average employee is willing to give up roughly $6,000 in annual full-time wages to have the flexibility to work remotely some days, or roughly 10 per cent of their wages, but some are willing to give up as much as $24,000. Similarly, 35 per cent of managers saw their companies prioritising offering more flexibility to their employees. Most businesses in our qualitative engagement exercise talked about a shift to a model of remote working where employees could spend a few days in the office and a few days at home. A small core group of (mainly larger) businesses were planning and structuring their workplace practices to incorporate more remote work practices. For some this had been a strategy before COVID that had now accelerated, and for others it was a new consideration they were planning for moving forward.

Second, companies may significantly increase their remote workforce, while maintaining a sizable fraction of on-site only workers. In this case, the hybrid model is likely not to apply to individual employees, but to the workforce as a whole. We find that post-pandemic, roughly 58 per cent of employees don’t have the ability to work remotely or want to work completely on-site, and 8 per cent want to work remotely entirely. 45 per cent of managers in our sample saw their companies focusing more on hiring remote workers. In our qualitative engagement, we found that a small number of employers talked about a complete shift to remote working, with one or two businesses also talking about more permanent remote working arrangements.

Together, these findings suggest that future workplaces are likely to comprise a mix of both arrangements. Based on our findings on the viability and uptake of remote working arrangements across different sectors, occupations, etc., we estimate that roughly half of existing jobs will continue to be done completely on-site, up to 50 per cent of existing jobs could have flexible arrangements that allow individual employees some ability to work remotely, and 10 per cent or more of existing jobs could transition to permanent remote working arrangements.

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APPENDIX A: DELPHI PAPER ONE

For the purposes of this project we define working from home (WfH) as an organised work arrangement whereby some or all of the work that would normally have been done at a place of work such as an office, factory or institution is done at some other place such as home, café, or an airplane, at conventional hours or at other times, and usually enabled by information and communication technologies, (ICT).

Background: From the 1980s, WfH has been a component of the business landscape. While there may have been mixed reactions to, and slow uptake of, WfH over the past 40 years, COVID-19 has catalysed widespread adoption of the concept in most cities across the globe. Many employers and employees envisaged perhaps a few weeks to a few months of WfH arrangements; and in some places this has been the case. But 2020 may ultimately, for most office workers, be remembered as 'the year we worked from home'. Now that the end of the COVID-19 crisis is on the horizon, and life returns to some form of pre-pandemic normalcy in most places; employees, employers, and the community at large, are left wondering what becomes of WfH. Having experienced WfH first-hand with high intensity and for a prolonged period, albeit under a crisis situation, employees and employers have a better appreciation of the benefits and opportunities as well as the challenges and concerns.

Despite all the challenges of implementing wide scale WfH on short notice, the pandemic has offered employers and employees an opportunity to 'test bed' the feasibility of WfH practices across different job roles and industries. Dingel and Neiman (2020), for instance have shown that some 37% of jobs in the US can be performed entirely at home. Other studies have produced similar figures for European cities and reports from international bodies have shown that employees and employers are in favour of increased WfH (OECD, 2020; ILO, 2020). This suggests that wider adoption of WfH would not just be desirable but perhaps inevitable for many businesses and industries.

What will WfH trends mean for Australian business?

Since March, Australia has seen varying degrees of stay-at-home measures. In the early months of 2020 this saw a large proportion of the workforce instructed to stay home and continue to work remotely - if their functions made it possible. Organizations were sending their employees home, regardless of their familiarity with teleworking or working from home (WfH), creating conditions for the most extensive mass teleworking 'experiment' in history.

A Deloitte Access Economics (DAE, 2010a) report on the impacts of telework found that if 10% of Australian employees WfH, the travel time savings alone would be worth $1.3 billion, and that the (gross) real estate office savings could be worth $210 to $690 million. While there is uncertainty about precisely how WfH will evolve in the Australian economy in the coming decade, the results of this report suggest it will be one of the biggest structural changes to the labour market this decade.

Of course, there are a range of benefits and challenges, for both employers and employees, associated with WfH, beyond potential benefits to the Australian economy. Some of which you may have already experienced yourself in your own business. The rest of this paper will briefly outline what some of these may be.

Benefits

***Improved Productivity*:** While estimates in different studies vary, many have found average productivity gains from employees who work from home of between 10 and 40% over that of workers in an office environment (Garner and Dick 2007, Crandall and Gao, 2005, Mello 2002).

Some of this increased productivity may be attributable to increased job satisfaction (Manochehri and Pinkerton 2003; Tremblay 2002), improved morale or motivation (Kurland & Bailey 1999) or from having greater job autonomy (Baruch, 2000). Working from home requires a display of trust and confidence in employees and encourages independence and autonomy, which is highly valued by many employees. One study found that employees of businesses with WfH programs perceived greater psychological job control, resulting in significantly lower turnover intentions, family-work conflict and depression (Kossek et al., 2006).

Employees who engage in WfH also reported feeling less pressure to give the appearance that they are 'busy', allowing them to enjoy their work more than in an office environment. This increased job satisfaction is also a by-product of having more control over the balance of work-family life, and having the flexibility to respond to family needs (Crandall & Gao, 2005, Mello, 2007). "*Productivity gains can also be attributed to less exposure to and involvement with office politics"* allowing for a greater focus on outputs (Manochehri & Pinkerton 2003; Robertson et al. 2003). Jobs or assignments which require extended periods of concentration also benefit from having fewer distractions at the work site. Research also shown that employees working from home tend to work longer hours, in part because the time to commute to the workplace is replaced by work activities and also due to changes in work routines and the blurring of the boundaries between paid work and personal life.

At the organisational level, productivity gains are experienced through reduced absenteeism and staff turnover mainly because of the greater flexibility employees are accorded to attend to personal matters as long as work outputs are achieved. (Gibson et al. 2002; Potter 2003; Solomon 2000). Productivity may also be enhanced through improved customer and client service; which a flexible work scheduled employee is able to deliver not just by transcending the geographical and time clock boundaries in their operations but also through virtual teams that can be formed to provide services (Mello, 2007).

Fiscal Savings: There can be savings for both the employee and the employer. The employee may be able to save time and money on commuting through WfH arrangements, including reduced use of vehicles, carparking and public transport. The savings can be significant to those with long commute times and or with high cost of entry into the highly congested CBDs at peak hours. In the long term it may mean there is no need for families to have a second car. There could be further out-of-pocket cost savings for employees in terms of reduced clothing and meal expenses (Baruch, 2000; Mello, 2007). Time saved from commuting can be rechannelled to increased hours WfH or for other personal benefits ranging from longer sleep time to quality time with partners and families contribute to improved morale not just for the individual but for the whole family (Baard and Thomas, 2010).

WfH arrangements can reduce the cost of recruitment, retention, and replacement (Mello, 2007) and can, in the long run, significantly reduce organisational costs (Bernandino, 2017; Shabanpour, 2018). Longer term there may be organisational savings with less need for businesses to provide company incentives such as access to a vehicle, subsidised parking spaces or a reduced need for office space and expensive rental space in CBD. *"Telework programs often result in cost savings relative to office rent and occupancy needs, real estate taxes and property maintenance expenses. Cost savings that be incurred from consolidation of space can be significant. Sun Microsystems saved $69 million in real estate costs in 2005 through its telework program"* (Arnold 2006, Mello, 2007).

Improved Work-Life Balance: Improved flexibility to work at times best suited to the individual can be a source of personal satisfaction but also afford the opportunity to better attend to needs of family members or themselves leading to a greater sense of personal and family satisfaction. (Mello, 2007;

Baruch, 2000). Another benefit afforded by WfH was found to be better dietary and overall healthier lifestyles, reported by respondents in the study by Baard and Thomas (2000). Many studies have shown reduced sick days reported by WfH employees (Mohktarian, 1991). Improved health and wellbeing of the individual employee is the greatest reward for organisations and society at large. Fewer sick days, higher personal and job satisfaction of employees, and greater motivation are important benchmarks for any organisation and would be an important measure of the health of the society.

However, WfH does not come without its challenges for both employees and employers.

Challenges for the employee

Not everyone can harness the necessary self-discipline when permitted autonomy and flexibility, challenging improved productivity. For many employees, having the necessary space, family circumstances and supportive environment to WfH is a challenge. Setting up a home office environment can be expensive and challenging but also, maintaining the boundaries of the workspace necessary to focus can also be hard, and can be a leading cause for wanting to return to office locations and regular hours. Working from home or living at work? Some would argue that there are infringements on work/life balance when the office is at home. Problems associated with maintenance of the boundaries between home and work can be difficult for some employees, causing enhanced stress and even burnout. While remote working is associated with higher organisational commitment, job satisfaction and job-related well-being, these benefits come at the cost of work intensification, expectations to be available 'around the clock' and a greater inability to switch off (Felstead & Henseke, 2017; Mello 2007).

There can be a sense of loss of engagement and influence over office proceedings. The reduced physical interaction with supervisors and colleagues and loss of office 'visibility' may be perceived as impediments to promotions and favourable assignments (Church, 2015; Gajendran & Harrison, 2007; Mahler 2012). For some employees, WfH has resulted in feelings of isolation, uncertainty over the employee's relationship with co-workers and managers, and fears of not being seen as a 'serious' employee (Baruch 2000; Baruch & Nicholson 1997; Scott & Timmerman 1999).

ICT set up and network reliability have been cited as key issues. Computers and laptops are ubiquitous in 2020 and COVID-19 has accelerated the development and growth of sharing platforms and other supporting ICT solutions. While these have improved both the cost and effectiveness of connectivity, network reliability remains a source of concern. Loss of connection affects productivity and can also be a source of acute stress.

Challenges for the employer

There is a real need to be able to measure WfH performance. This is an important concern of many managers who oversee WfH employees (Crandall & Gao 2005). Managers may have reservations over whether employees are actually being as productive away from the office as they would be if physically present and may feel powerless in providing employees with more meaningful feedback (Manochehri & Pinkerton 2003). Also, the struggle with performance appraisals, assessments and on-boarding of new staff without a greater presence of the employee in the workplace can be a challenge (Crandall & Gao 2005, Mello, 2007).

One of the reasons cited by some organisations for not adopting WfH arrangements is selection of eligible employees to WfH (although this is less of a problem during the pandemic when in most cases all employees worked from home). In order to fully realize the benefits of a WfH program an employer needs to ensure that employees who engage in telework be self-disciplined and

motivated. A given employee's home may not lend itself to WfH due to problems with space, technology, security, and family/lifestyle issues but how is this assessed? Moreover, not all tasks can be performed as effectively away from the office (Mello, 2007). There may be impact on the development of teamwork within groups, an increasingly important facet of organizations (Baruch 2001; Gibson et al. 2002; Mills et al. 2001). Ironically, WfH has been seen as somewhat of a paradox by some, in that its flexibility allows employee and employer demands to be met simultaneously but it also fragments collectivity and can produce or promote exclusion (Taskin & Devos 2005, Mello 2007).

A critical element of WfH for the organisation is ICT infrastructure and data security (Harpaz, 2002). Since remote access to networks and data is critical to ensuring and maintaining productivity, providing the necessary technical support to all WfH employees may be a technical challenge for organisations and represent a significant cost. The related issue is data security for the organisation as well as for WfH employees is critical, with security breaches having serious financial and operational implications (Crandall & Gao 2005, Joyce 2006).

Another employer concern is employee safety and any resultant liability for injury that may occur at the employee's home or off-site work location. In addition, because many state worker compensation laws do not distinguish between employer offices and employee home-based offices, it is critical for employers to document whether an injury that occurred at the employee's home was work-related, took place at the home-based worksite and happened within the course of actually completing the employee's work-related responsibilities as fraudulent worker's compensation claims can increase the employer's costs of doing business (Mello, 2007).

WfH arrangements can have a negative impact on the corporate culture. Managers are not only confronted with their entire teams working from different locations but also with having to agree on individual working patterns and work schedules with employees to accommodate their care responsibilities. Managers are playing a pivotal role in supporting employees and mitigating any harmful impacts of WfH. Enterprises need to be aware of the increase in the work demands on managers themselves, which can result from managing remote teams.

This short paper highlights some of the key considerations for organisations adopting to WFH strategies, either in the short term because they have to or perhaps as a longer-term business strategy. **The following page has three discussion points we would like you to respond to.**

1. ***How much of your business was able to pivot to working from home (i.e. what percentage of your workforce were able to work from home)***
   - Were some sectors of the business able to do this more easily than others?
   - Were some sectors able to 'continue as normal' in your business premises?
   - Did some components of the business just have to shut down altogether?
   - Was there additional work associated with pivoting your business (i.e. creating on-line content)

   Your comments here:

2. ***What were the concerns/issues for you in moving to a 'work from home' approach?***
   - Employee organisation
   - Performance management & trust issues
   - Productivity concerns
   - Costs (e.g. setting up employee home work equipment and spaces, paying rent/insurance/cleaning/maintenance on vacant or underused business space, pivoting to new business models, moving business on-line etc.)
   - OS&H controls
   - Legal and contractual obligations
   - Team communication

   Your comments here:

3. ***How have your employees approached or accepted working from home?***
   - Higher or lower demand/participation than expected?
   - Any resistance to WfH? (And reasons why)
   - Have rates of WfH reduced since restrictions eased or is there still a high participation rate?
   - Have staff given feedback about personal costs or savings since working from home? (reducing commute time and costs, more family time, more or less work/home balance?)
   - Have you surveyed or informally asked staff for their opinions about continuing WfH practices?

   Your comments here:

4. ***Can you please provide a brief overview of your business, to the best of your knowledge.***

   Approximate number of (1.0FTE) employees:

   Number of locations/offices/office floors your business occupies:

   Number of years you have been trading: (less than 5, 5-10 years, more than 10 years)

APPENDIX B: DELPHI PAPER TWO

Dear [Delphi Participant]

Thank you for your valuable insights into your organisation's work from home practices since 2020. We have completed the analysis of your responses and the following provides a short summary of the key themes that are emerging. This paper will then go on to consider the long-term future of work from home practices for your organisation and we have a few short questions about your thoughts on this. Finally, we have decided to incorporate the final Delphi activity, a ranking exercise, at the end of this paper as a final contribution. Of course, we welcome any additional information you wish to share about the emerging changes to your organisation post-pandemic - please feel free add any comments to your response.

What you have told us

Firstly, a review of themes emanating from the last Delphi response. We have had 39 responses to the Delphi process from a mix of business sizes, locations, and types. As expected, *not all businesses were able to take up work from home practices*. Those respondents in construction, warehousing and agriculture reported little change in workplace practices. For most this was because the job roles just did not allow for this kind of adaptation but for some it was because, as a considered 'essential industry' they did not have to change workplace practices. For those businesses where working from home was feasible but they chose not to take this up, it was mainly driven by the collaborative nature of the work, where teamwork was a large part of the role; or alternatively, where employees undertook multiple roles, some desk based and others more physical and tied to a specific location (such as packing and distribution in a warehouse). This was a more common response in small and medium sized businesses, which brings us to the next key theme.

In order to pivot to longer-term, well-resourced working from home practices you need to have 'critical mass'. Many of the small businesses (less than 50 employees) talked about making temporary changes to adapt their businesses and workplaces to working from home when they had to (during COVID restrictions) but this was seen as a 'stop gap' solution and was not transposing into considerations of longer-term changes. This was partly about the nature of the business (for example, in smaller businesses employees are more likely to have multiple roles) but it was also about the resources needed to make a more permanent shift to working on-line. Working from home is an investment for a business – equipment and IT requirements, new policies and practices, shifts in job roles or activities, new ways of engaging with customers. These changes require resourcing and time.

Interestingly, very few participants raised the issue of *loss in productivity* – either because of transitioning to working from home or as a reason not to transition to work from home practices in the future. There was acknowledgement from some participants of individual staff and/or team managers concerned about productivity from a personal level, but no-one discussed a downturn in overall productivity for the business. Participants also highlighted that *work is not just about productivity, it is about working with others* – both co-workers and clients.

Concerns, strategies and processes about maintaining good communication were frequently raised. This was particularly in relation to co-workers, work teams and units, but also concerns were raised about relationships with clients. This was broadly across industries and business sizes and showed up where WfH practices had been taken up and in businesses where it hadn't. Support for employees and acknowledgment of the challenges of working from home (as well as the opportunities) were common. Those organisations where WfH practices were already commonplace, and those where substantial resources had been invested in pivoting to working from

home, offered examples of the efforts that had been put into ensuring employees felt supported and connected and that teamwork remained a critical element of business practice.

These were the businesses most likely to be considering WfH practices as a long-term strategy moving forward – in particular, *a hybrid model of working from home and in the office,* seemed to be gaining the most traction. For others, business practice had changed to incorporate a higher 'tolerance' for working from home but basically work life was returning to some kind of pre-2020 'normal' and for some WfH was an aberration and things had already returned to the way they were before 2020. It is these longer-term views of working from home practices that we are keen to hear more about next.

Looking ahead

As more companies consider strategies around how their workplaces will function best moving on from 2020 plans seem to vary from bringing workers back to the office for a return to 'business as usual' right through to the closure of large office spaces in favour of a combination of home offices and client/team meeting spaces scattered across cities. Experts suggest we should expect to see expanded gathering spaces in the workplace and fewer personal workstations.

Internationally, companies like Google, Microsoft and Walmart have already proposed hybrid work models that will allow employees to continue to work from home on a regular basis at least a few days a week. This seems to be the model that appeals most to both employees and employers here in Australia as well, born out by responses to date in the research. As part of this study, some of you have told us that you were already offering some WfH opportunities and 2020 has just seen a cementing of these practices into wider workplace culture.

A hybrid workplace, where a large number of office employees rotate in and out of the office embraces the flexibility that most employees (and some employers) feel most comfortable with. However, it can be a complicated way to organize the work week and the workspace, and is likely to transform a company's culture, employee engagement, the way the work gets done and how office space is used. For example, what does this mean for city-based real estate and the 'big city office' space?

These new arrangements may imply that companies need less office space or more flexible office space. A survey from the US by PwC suggests some organisations have already cut back on their real estate needs, as WfH reimagines how corporations get work done, and where work takes place. One respondent to our first Delphi paper outlined their recent shift from city centre office space to smaller pods or hubs set in suburban spaces where employees could go to hot desk, teams could meet to collaborate, or as spaces to meet with clients.

This raises so many conceptual changes for how we view our time at work and what corporate Australia looks like. Are we going to see the rise of the 'hot desk', with personal workspaces no longer viable for occupation only one or two days a week? Will employees be freed of living within a 'commutable' distance from the office and will organisations be prepared to employ someone living in different city, state or country and never see them in the office? What would giving up the large city centre office block mean for corporate identity?

For your organisation, consider the following questions:

Is the 'hybrid' workplace (some time in the office, some time at home) the most likely outcome that suits both employees and employers in your organisation?

If yes, how would you see this working in your business in 2021 and beyond? Have you already made steps towards implementing these practices and what do they look like? What are the long-

term implications for the business (in terms of office space, business growth or diversification, need for new technology or security systems and so forth?

If no, what are the alternatives for your organisation and why? What are the barriers to implementing a true hybrid workplace?

As a final exercise, can you please rank how important the following are to the shift to working from home practices for your organisation moving forward? You may want to elaborate on these priorities.

- ☐ **Working from home is not a long-term strategy for our business.**
  - Any further comments:

- ☐ **Employee working times and work organisation** (workload and schedules, team structures and engagement, managing or developing flexible workspaces and routines).
  - Any further comments:

- ☐ **Performance management** (measuring results against expectations, setting guidelines and goals, feedback and consultation, autonomy vs ambiguity).
  - Your comments:

- ☐ **Technology and security systems and upgrades** (converting systems, structures and tools to on-line content, on-line communication processes, firewalls and data management, appropriate access to hardware and software, access to data).
  - Your comments:

- ☐ **Communication and collaboration** (messaging, staff meetings, feedback, performance reviews, team connectivity, social and informal work engagement).
  - Your comments:

- ☐ **OS&H** (workspace ergonomics, appropriate technology, good broadband width; and managing increased fatigue, anxiety, or stress).
  - Your comments:

- ☐ **Employee work-life balance -** One of the most significant challenges many employees face when working from home is the work-life conflict they may experience due to blurred boundaries between work and personal life. In addition to this the disconnect from employment-based networks of support, training and leadership are difficult for many.
  - Your comments:

- ☐ **Corporate image and external facing engagement** (customer or client interfaces and engagement, location and/or ‘shop font’ image of the company, work practices influencing business focus)
  - Your comments:

APPENDIX C: LATENT CLASS CHOICE MODELS

Latent class choice models (LCCMs) are finite mixtures of discrete choice models. They were first developed in the field of marketing sciences as tools to identify relatively homogenous consumer segments that differ substantially from each other in terms of their behaviour in the marketplace (Kamakura and Russell, 1989). They have since emerged as a very popular form of discrete choice model, finding application in a wide variety of disciplines, including but not limited to transportation. In our case, LCCMs allow us to identify segments in the population that differ in terms of their preferences for different remote working arrangements.

LCCMs comprise two components: a class membership model and a class-specific choice model. The class membership model formulates the probability that a decision-maker belongs to a particular segment, or class, as some function of the characteristics of the decision-maker. Conditioned on the class that the decision-maker belongs to, the class-specific choice model formulates the probability that the decision-maker chooses a particular alternative as some function of the attributes of all of the alternatives in the choice set.

We begin with a description of the class membership model, formulated in our case as the familiar multinomial logit function:

$$\mathrm{P}(\mathrm{q_{ns}} = 1) = \frac{\exp(\mathbf{z_n'\gamma_s})}{\sum_{\mathbf{s'=1}}^{\mathrm{S}} \exp(\mathbf{z_n'\gamma_{s'}})} \tag{1}$$

, where $\mathrm{q_{ns}}$ equals one if decision-maker n belongs to class s, and zero otherwise; $\mathbf{z_n}$ is a vector of decision-maker characteristics, such as age, wages and industry sector of employment; $\boldsymbol{\gamma_s}$ is a vector of class-specific parameters denoting sensitivity to the decision-maker characteristics; and S is the total number of classes.

Next, we describe the class-specific choice model. Recall that each decision-maker is shown eight different scenarios, where each scenario presents a choice between two hypothetical remote working arrangements, either for themselves or for a direct report. The decision-maker is asked to indicate which arrangement they prefer. Therefore, for a given decision-maker n and scenario t, the class-specific choice model predicts the probability that arrangement j is preferred.

Let $\mathrm{u_{ntj|s}}$ be the utility of arrangement j for scenario t and decision-maker n, conditional on the decision-maker belonging to class s, specified as follows:

$$\mathrm{u_{ntj|s}} = \mathbf{x_{ntj}'\beta_s} + \varepsilon_{\mathrm{ntj|s}} \tag{2}$$

, where $\mathbf{x_{ntj}}$ is a vector of attributes specific to the arrangement, namely the ability to work remotely some days and/or hours, and the accompanying salary; $\boldsymbol{\beta_s}$ is the vector of class-specific parameters denoting sensitivities to these attributes; and $\varepsilon_{\mathrm{ntj|s}}$ is the stochastic component of the utility specification, assumed for the sake of mathematical convenience to be i.i.d. Gumbel with location zero and scale one across schemes, scenarios and decision-makers. Assuming the decision-makers are utility-maximizers, the class-specific probability that arrangement j is preferred over the other arrangement is given by the logit expression:

$$\mathrm{P}\left(\mathrm{y_{ntj}} = 1 | \mathrm{q_{ns}} = 1\right) = \mathrm{P}\left(\mathrm{u_{ntj|s}} \geq \mathrm{u_{ntj'|s}} \forall \mathrm{j'} = 1, \ldots, \mathrm{J}\right) = \frac{\exp\left(\mathbf{x_{ntj}'\beta_s}\right)}{\sum_{\mathbf{j'=1}}^{\mathrm{J}} \exp\left(\mathbf{x_{ntj'}'\beta_s}\right)} \tag{3}$$

, where y_{ntj} equals one if arrangement j is preferred, and zero otherwise; and J is the number of alternatives shown to the decision-maker for any scenario, equal to two in our case. The reader should note that heterogeneity in the decision-making process is captured by allowing the taste parameters $\boldsymbol{\beta_s}$ to vary across classes.

Equation (3) may be combined iteratively over alternatives and scenarios to yield the following class-specific probability of observing the vectors of choices $\mathbf{y_n}$:

$$P(\mathbf{y_n}|q_{ns} = 1) = \prod_{t=1}^{T}\prod_{j=1}^{J}\left[P\left(y_{ntj} = 1|q_{ns} = 1\right)\right]^{y_{ntj}} \tag{4}$$

, where $\mathbf{y_n} = \langle y_{n11}, \ldots, y_{nTJ}\rangle$; and T is the number of scenarios shown to a single decision-maker, equal to eight in our case.

Equation (1) and (4) may be combined and marginalized over classes, to yield the unconditional probability of observing the vectors of choices $\mathbf{y_n}$, which in turn may be combined iteratively over decision-makers to yield the following likelihood function for the data:

$$L(\boldsymbol{\beta}, \boldsymbol{\gamma}|\mathbf{y}, \mathbf{w}, \mathbf{x}, \mathbf{z}) = \prod_{n=1}^{N}\sum_{s=1}^{S}[P(\mathbf{y_n}|q_{ns} = 1)P(q_{ns} = 1)] \tag{5}$$

The unknown model parameters $\boldsymbol{\beta}$ and $\boldsymbol{\gamma}$ may be estimated by maximizing the likelihood function. All models for this study were estimated using the software package PandasBiogeme (Bierlaire, 2016). As our sample was stratified exogenously based on employment, demographic and geographic variables, we do not reweight the sample during model estimation (Ben-Akiva and Lerman, 1985).

APPENDIX D: ESTIMATION RESULTS FOR MODEL OF EMPLOYEE WFH PREFERENCES

We estimated a number of LCCMs with different model specifications, where we varied the explanatory variables, the functional form of the utilities, and the number of classes. Our dataset comprised 1,113 employees, each of whom were shown eight different choice scenarios. To facilitate comparison, **Table 23** enumerates for each model the number of parameters estimated, the log-likelihood at convergence, McFadden's rho-bar-squared ($\boldsymbol{\rho^2}$), the Akaike Information Criterion (AIC), and the Bayesian Information Criterion (BIC). The reader should note that McFadden's adjusted rho-bar-squared and the AIC are equivalent measures of fit. Based both on statistical measures of fit and behavioral interpretation, we select the four-class LCCM as the preferred model specification. In terms of fit, the four-class LCCM has the lowest BIC and the five-class LCCM has the lowest AIC. In terms of the signs and relative magnitudes of the different model parameters and the accompanying behavioral interpretation of each of the latent classes, results for the four-class LCCM proved to be the most satisfying.

The final four-class model specification has a McFadden's R-squared of 0.347, indicating a high goodness-of-fit. The class membership model included various employment and demographic characteristics as the explanatory variables $\mathbf{z_n}$, and the corresponding estimates for the model parameters $\boldsymbol{\gamma_s}$ are enumerated in **Table 24** and **Table 25**. For the purpose of identification, we chose Class 2 as the reference class, i.e. the effect of all variables on the propensity to be in Class 2 is constrained to be zero, and the relative effects of each variable on the corresponding propensity to be in other classes must be evaluated against Class 2. The class-specific choice models included the three attributes shown in the SP experiments, namely ability to work remotely some days and hours, and wages, as the explanatory variables $\mathbf{x_n}$. Corresponding estimates for the model parameters $\boldsymbol{\beta_s}$ are enumerated in **Table 26**.

The classes have been ordered in terms of their increasing willingness to adopt remote working arrangements. Estimation results for the class membership model and the class-specific choice models provide information on how the classes differ from one another in terms of the kinds of decision-makers that belong to each class ($\boldsymbol{\gamma_s}$), and the relative importance that they attach to different remote working arrangements ($\boldsymbol{\beta_s}$).

To further underscore behavioural differences across classes, we calculate posterior class membership probabilities for each decision-maker in our sample, based on their indicated choices to each of the eight scenarios. These weighted probabilities are used to draw out additional differences across the classes, in terms of the employment, demographic and attitudinal characteristics of the individuals belonging to each class. These are reported in **Table 27**-**Table 32**.

Table 23: *Summary statistics for LCCMs with varying numbers of classes*

Classes	Parameters	Log-likelihood	ρ^2	AIC	BIC
2	37	-4,435	0.281	8,944	9,130
3	71	-4,190	0.321	8,523	8,879
4	105	-4,032	0.347	8,281	**8,822**
5	139	-3,965	0.357	**8,217**	8,934

Table 24: *Class membership model*

Variable	Class 1		Class 2 (reference)		Class 3		Class 4	
	est.	**p-value**	**est.**	**p-value**	**est.**	**p-value**	**est.**	**p-value**
Class-specific constant	2.292	0.03	0.000	-	-0.336	0.78	0.208	0.88
Firm size								
Micro (0-4 employees)	-1.394	0.01	0.000	-	-1.086	0.08	-1.002	0.14
Small (5-19 employees)	-0.863	0.01	0.000	-	-0.983	0.01	-1.473	0.00
Medium (20-199 employees)	-0.877	0.01	0.000	-	-1.259	0.00	-0.755	0.06
Large (Over 200 employees)	0.000	0.00	0.000	-	0.000	0.00	0.000	0.00
Firm sector								
IT, Finance, etc.	-0.622	0.07	0.000	-	-0.295	0.44	-0.383	0.33
Retail Trade	0.422	0.35	0.000	-	-0.147	0.83	0.162	0.78
Health Care and Social Assistance	0.849	0.20	0.000	-	1.303	0.07	1.085	0.12
Education and Training	0.469	0.41	0.000	-	0.751	0.24	0.218	0.74
Other services	-0.004	0.99	0.000	-	0.045	0.92	-0.304	0.55
Other sectors (reference)	0.000	0.00	0.000	-	0.000	0.00	0.000	0.00
Occupation								
Managers	-0.686	0.21	0.000	-	-0.142	0.85	-0.284	0.70
Professionals	0.093	0.86	0.000	-	1.298	0.09	0.916	0.20
Clerical and Administrative Workers	0.108	0.85	0.000	-	1.298	0.09	0.700	0.37
Sales Workers	-0.801	0.25	0.000	-	0.825	0.36	-0.088	0.93
Labourers, tradesworkers, etc	-0.855	0.20	0.000	-	0.589	0.50	-0.285	0.77
Community and Personal Service Workers	-2.683	0.01	0.000	-	-0.314	0.73	-1.616	0.14
Other (reference)	0.000	0.00	0.000	-	0.000	0.00	0.000	0.00

***Table 25**: Class membership model (contd.)*

Variable	Class 1		Class 2 (reference)		Class 3		Class 4	
	est.	p-value	est.	p-value	est.	p-value	est.	p-value
Other employment characteristics								
Weekly work hours (10s)	0.186	0.26	0.000	-	0.079	0.63	-0.108	0.47
Weekly wages ($1,000s)	-0.781	0.01	0.000	-	-0.119	0.69	0.464	0.07
Weekly commute time savings from WfH (hours)	0.056	0.69	0.000	-	0.168	0.26	0.155	0.34
Commute mode								
Car driver	-0.406	0.23	0.000	-	0.003	0.99	-0.571	0.19
Car passenger	-1.618	0.03	0.000	-	-2.150	0.00	-2.279	0.05
Public transport	-0.755	0.02	0.000	-	-0.137	0.71	-0.435	0.27
Commute time								
Departs during the AM peak (7:30 – 9:30 AM)	-0.048	0.88	0.000	-	0.191	0.59	0.003	0.99
Departs during the PM peak (4:00 – 6:00 PM)	1.147	0.00	0.000	-	1.262	0.00	0.959	0.00
Age								
18-29 years	-0.104	0.78	0.000	-	0.198	0.64	0.261	0.56
30-39 years	0.479	0.17	0.000	-	0.717	0.06	0.838	0.04
40-49 years (reference)	0.000	0.00	0.000	-	0.000	0.00	0.000	0.00
50-59 years	0.655	0.08	0.000	-	0.006	0.99	0.848	0.06
60+ years	-0.539	0.31	0.000	-	-0.837	0.14	-0.078	0.89
Other demographic characteristics								
Male	-0.552	0.06	0.000	-	-0.058	0.85	-1.184	0.00
College educated	-0.057	0.84	0.000	-	-0.626	0.05	-0.084	0.80
Have a disability	-1.384	0.06	0.000	-	-0.598	0.39	-1.786	0.21
Have children living at home	-0.361	0.18	0.000	-	-0.428	0.16	-0.003	0.99
Provided unpaid care to a family member in the last two weeks	-1.471	0.00	0.000	-	-1.635	0.01	-0.463	0.35

Table 26: *Class-specific choice models of employee preferences for remote working for themselves*

Variable	Class 1		Class 2		Class 3		Class 4	
	est.	**p-value**	**est.**	**p-value**	**est.**	**p-value**	**est.**	**p-value**
Ability to work remotely some days, when possible	0.309	0.19	0.000	1.00	2.228	0.00	2.885	0.00
Ability to work remotely some hours, when possible	0.000	1.00	0.040	0.80	1.209	0.00	1.564	0.00
Wages ($1,000)	1.001	0.00	0.006	0.33	0.522	0.00	0.121	0.00

Table 27: *Class profiles in terms of employment and demographic characteristics*

Variable	Class 1	Class 2	Class 3	Class 4
Firm size				
Between 1 and 4 employees (Micro)	4.6%	12.2%	3.9%	4.2%
Between 5 and 19 employees (Small)	20.0%	21.3%	14.9%	7.6%
Between 20 and 199 employees (Medium)	28.2%	38.2%	22.3%	30.2%
More than 200 employees (Large)	47.2%	28.2%	58.8%	58.0%
Firm sector				
Agriculture, Forestry and Fishing	0.9%	4.1%	0.9%	1.6%
Mining	1.2%	1.6%	1.8%	2.1%
Manufacturing	6.9%	7.2%	5.2%	4.4%
Electricity, Gas, Water and Waste Services	0.5%	2.4%	1.3%	2.0%
Construction	6.0%	7.1%	4.0%	3.7%
Wholesale Trade	2.7%	3.0%	2.9%	1.7%
Retail Trade	10.0%	8.7%	5.2%	5.8%
Accommodation and Food Services	4.1%	5.2%	2.2%	1.3%
Transport, Postal and Warehousing	3.0%	3.2%	3.0%	5.2%
Information Media and Telecommunications	4.4%	13.8%	3.9%	6.2%
Financial and Insurance Services	7.4%	7.6%	13.2%	15.3%
Rental, Hiring and Real Estate Services	1.9%	1.1%	3.8%	0.7%
Professional, Scientific and Technical Services	8.4%	9.9%	12.0%	11.6%
Administrative and Support Services	6.7%	5.8%	6.3%	3.5%
Public Administration and Safety	6.7%	0.6%	7.2%	8.0%
Education and Training	11.2%	4.9%	10.9%	10.2%
Health Care and Social Assistance	8.9%	4.5%	10.9%	10.6%
Arts and Recreation Services	2.9%	1.2%	0.3%	0.8%
Other Services	6.1%	8.0%	5.0%	5.4%
Occupation				
Managers	15.0%	33.4%	9.5%	16.5%
Professionals	27.6%	18.1%	35.6%	43.6%
Technicians and Trade Workers	3.8%	6.4%	3.5%	1.9%
Community and Personal Service Workers	1.5%	8.2%	3.0%	1.9%
Clerical and Administrative Workers	35.4%	13.0%	34.6%	27.3%
Sales Workers	8.2%	9.2%	8.3%	4.6%
Machinery Operators and Drivers	1.1%	2.8%	1.4%	0.5%
Labourers	1.6%	5.8%	2.1%	1.0%
Other	5.9%	3.2%	2.1%	2.5%

Table 28: *Class profiles in terms of employment and demographic characteristics (contd.)*

Variable	Class 1	Class 2	Class 3	Class 4
Gender				
Male	35.0%	60.0%	45.0%	36.0%
Female	64.7%	39.5%	54.6%	64.0%
Other	0.2%	0.5%	0.3%	0.0%
Education				
Postgraduate degree	14.4%	30.5%	14.5%	23.8%
Graduate diploma and graduate certification level	7.3%	9.6%	5.4%	6.5%
Bachelor's degree	35.4%	25.0%	33.9%	35.4%
Advanced diploma and diploma level	10.7%	11.6%	14.4%	11.5%
Certificate level	17.1%	9.4%	15.9%	11.9%
Secondary education	14.8%	12.5%	15.6%	10.8%
Household structure				
Couple with no children	21.2%	15.8%	21.8%	19.3%
Couple with children living at home	30.7%	45.6%	35.4%	43.7%
Couple where all children have left home	6.7%	8.2%	6.3%	10.6%
Single parent with children living at home	6.1%	6.7%	3.2%	5.5%
Single parent where all children have left home	2.6%	2.1%	2.1%	2.4%
Living alone	17.9%	12.8%	14.8%	9.9%
Shared household	7.0%	2.8%	8.1%	3.8%
Single living with parents	6.6%	5.6%	8.1%	4.3%
Age				
18-29 yrs	25.9%	24.9%	27.3%	18.9%
30-39 yrs	19.6%	18.1%	26.2%	23.3%
40-49 yrs	19.8%	30.0%	21.7%	21.2%
50-59 yrs	25.3%	16.9%	16.6%	27.5%
60+ yrs	9.3%	10.1%	8.2%	9.1%
Other characteristics				
Weekly income	$1,165	$1,445	$1,385	$1,720
Hours worked per week	34.1	32.3	35.7	35.8
Have a disability	2.5%	18.8%	3.6%	1.9%
Have children living at home	37.1%	52.6%	38.6%	49.2%
Provided unpaid care to a family member in the last two weeks	5.5%	26.1%	4.3%	11.0%

Table 29: *Class profiles in terms of WfH capability and uptake*

Variable	Class 1	Class 2	Class 3	Class 4
WfH capability				
How much of your job tasks and activities are capable of being done remotely	58.6%	62.6%	67.2%	71.7%
WfH uptake				
How much of the tasks and activities for your job were you doing **remotely before the COVID-19 outbreak**?	17.8%	52.1%	19.4%	28.7%
How much of the tasks and activities for your job were you doing remotely **at the peak of the COVID-19 outbreak**?	52.3%	65.4%	67.5%	77.9%
How much of the tasks and activities for your job did you do remotely **last week**?	29.6%	56.6%	46.1%	63.6%
Consider the pandemic has been eradicated. How much of the tasks and activities for your job would you like to continue doing remotely **in the future**?	36.6%	60.0%	51.1%	64.5%
Perceived impacts on productivity				
On average, compared to an hour of work at your workplace, please indicate below the **amount of work** you are able to do remotely? (Scale of 0 – 100, where 50 is the same as their workplace)	55.2	63.3	63.0	73.1
On average, compared to an hour of work at your workplace, please indicate below the **quality of work** you are able to do remotely? (Scale of 0 – 100, where 50 is the same as their workplace)	58.4	66.5	64.0	75.2

Table 30: *Class profiles in terms of average level of agreement with different attitudinal statements towards the impacts of remote working arrangements on work and work-related aspects*

Statement	Class 1	Class 2	Class 3	Class 4
I would be able to focus better on my work	4.7	5.3	5.1	5.5
I would have more autonomy in my work	4.9	5.1	5.1	5.3
I would have an increased sense of self-discipline	4.7	5.2	4.9	5.2
I would be able to multi-task more effectively	4.7	5.1	4.9	5.4
I would be able to work longer hours if needed	5.1	5.3	5.3	5.6
I would be able to spend more time with customers	3.5	4.9	3.8	4.1
I would miss out on informal social interactions with colleagues	5.1	4.9	4.9	4.4
I would have fewer opportunities for collaborations and brainstorming sessions with colleagues	4.7	4.9	4.5	4.0
I would have access to fewer learning opportunities and training sessions	4.1	4.9	3.8	3.4
I would be concerned about how my performance would be monitored and observed	4.1	5.0	4.0	3.8
It would be difficult for my supervisor to coordinate work	3.8	4.8	3.4	3.1
I would be worried that my colleagues are not doing their fair share of the work	3.9	4.8	3.6	3.3
The relationship with my supervisor would be adversely affected	3.7	4.8	3.5	3.1
I would feel less connected to the company and its values	4.3	4.8	3.9	3.5
My sense of loyalty to the company would increase	4.3	5.1	4.5	5.1
I would be able to achieve my job objectives and outputs as expected	5.0	5.2	5.4	5.7
I would be able to fulfill my career goals	4.2	5.1	4.5	4.9
I would feel a sense of work-related success	4.4	5.2	4.5	4.9
My career prospects may suffer due to loss of ad-hoc interactions with colleagues and supervisors	4.0	4.8	3.9	3.7

1 – strong disagreement; 4 – neutral; 7 – strong agreement

Table 31: *Class profiles in terms of average level of agreement with different attitudinal statements towards the impacts of remote working arrangements on health and wellbeing*

Statement	Class 1	Class 2	Class 3	Class 4
I would have greater life satisfaction	4.7	5.1	5.3	5.5
I would have higher morale	4.4	5.0	4.8	5.1
I would have better work-life balance	4.9	5.2	5.4	5.8
I would experience less stress	4.5	5.1	4.9	5.1
I would be able to better manage personal and family issues	4.8	5.2	5.2	5.5
I would eat better	4.5	5.1	4.8	5.1
I would be able to exercise more	4.8	5.2	5.1	5.4
I would feel isolated from my work colleagues	4.5	4.9	4.2	3.7
I would worry I am missing out by being away from the workplace	4.2	4.7	3.7	3.2
Work would intensify and I would find it difficult to switch off	4.1	4.8	3.7	3.5
My physical health would deteriorate	3.3	4.6	2.9	2.9
My family would be more stressed as a result of my remote working	3.3	4.5	2.9	2.9
I would find it difficult to separate work and home life	4.2	4.8	3.8	3.6

1 – strong disagreement; 4 – neutral; 7 – strong agreement

Table 32: *Class profiles in terms of average level of agreement with different attitudinal statements towards the impacts of remote working arrangements on transport, land use, energy and environment*

Statement	Class 1	Class 2	Class 3	Class 4
I would consider giving up my car (or one of my cars)	2.8	4.8	3.0	3.4
I would consider living further away from my current workplace	3.6	4.8	4.1	4.4
I would increase my non-work travel	3.7	4.9	3.7	3.7
My home energy bill would be significantly higher	4.9	5.2	4.7	4.6
I would have to invest significantly in setting up a workspace at home	4.1	4.9	3.8	3.7
I would have more time for myself	5.2	5.2	5.5	5.7
I would save money overall	5.0	5.2	5.5	5.6

1 – strong disagreement; 4 – neutral; 7 – strong agreement

APPENDIX E: ESTIMATION RESULTS FOR MODEL OF MANAGERIAL WFH PREFERENCES

We estimated a number of LCCMs with different model specifications, where we varied the explanatory variables, the functional form of the utilities, and the number of classes. Our dataset comprised 788 managers, each of whom were shown eight different choice scenarios. To facilitate comparison, **Table 33** enumerates for each model the number of parameters estimated, the log-likelihood at convergence, McFadden's adjusted rho-bar-squared ($\boldsymbol{\rho^2}$), the Akaike Information Criterion (AIC), and the Bayesian Information Criterion (BIC). The four-class LCCM has the highest goodness of fit, in terms of both the AIC and the BIC. However, in terms of the signs and relative magnitudes of the different model parameters and the accompanying behavioral interpretation of each of the latent classes, results for the three-class LCCM proved to be the most satisfying, and the inclusion of an additional class in the four-class LCCM did not add any significant value in terms of behavioural and/or policy insight. Consequently, we select the three-class LCCM as the preferred model specification.

The final three-class model specification has a McFadden's R-squared of 0.099. This is generally on the lower side, and significantly lower than our corresponding model for employee preferences, reported in the previous appendix. This indicates that the variables used in our analysis only explain a small proportion of the variance in managerial preferences for remote working arrangements for their direct reports, and there are likely other unobserved factors at play. The class membership model included various employment characteristics of the direct report and demographic characteristics of the manager as the explanatory variables $\mathbf{z_n}$, and the corresponding estimates for the model parameters $\boldsymbol{\gamma_s}$ are enumerated in **Table 34**. For the purpose of identification, we chose Class 3 as the reference class, i.e. the effect of all variables on the propensity to be in Class 3 is constrained to be zero, and the relative effects of each variable on the corresponding propensity to be in other classes must be evaluated against Class 3. The class-specific choice models included the three attributes shown in the SP experiments, namely ability to work remotely some days and hours, and wages, as the explanatory variables $\mathbf{x_n}$. Corresponding estimates for the model parameters $\boldsymbol{\beta_s}$ are enumerated in **Table 35**.

The classes have been ordered in terms of their increasing willingness to offer remote working arrangements to their direct reports. Estimation results for the class membership model and the class-specific choice models provide information on how the classes differ from one another in terms of the kinds of decision-makers that belong to each class ($\boldsymbol{\gamma_s}$), and the relative importance that they attach to different remote working arrangements ($\boldsymbol{\beta_s}$).

To further underscore behavioural differences across classes, we calculate posterior class membership probabilities for each decision-maker in our sample, based on their indicated choices to each of the eight scenarios. These weighted probabilities are used to draw out additional differences across the classes, in terms of the employment, demographic and attitudinal characteristics of the managers belonging to each class and their direct reports. These are reported in **Table 36**-**Table 40** and **Figure 51**.

Table 33: *Summary statistics for LCCMs with varying numbers of classes*

Classes	Parameters	Log-likelihood	ρ^2	AIC	BIC
2	22	-4,028	0.078	8,100	8,210
3	41	-3,936	0.099	7,954	8,159
4	60	-3,852	0.118	**7,825**	**8,125**

Table 34: *Class membership model*

Variable	Class 1		Class 2		Class 3 (reference)	
	est.	p-value	est.	p-value	est.	p-value
Class-specific constant	-0.563	0.29	0.057	0.95	0.000	-
Employee weekly wages ($1,000)	0.023	0.88	-0.582	0.00	0.000	-
Firm size						
Micro (0-4 employees)	2.062	0.00	-0.686	0.50	0.000	-
Small (5-19 employees)	0.952	0.01	-0.545	0.37	0.000	-
Medium (20-199 employees)	0.314	0.26	-0.373	0.28	0.000	-
Large (Over 200 employees)	0.000	0.00	0.000	0.00	0.000	-
Firm sector						
IT, Finance, etc.	-0.495	0.10	-0.514	0.21	0.000	-
Retail Trade	-0.106	0.85	-0.084	0.91	0.000	-
Health Care and Social Assistance	0.107	0.87	0.306	0.72	0.000	-
Education and Training	-0.288	0.55	-0.458	0.41	0.000	-
Other services	-0.604	0.13	-0.181	0.63	0.000	-
Other sectors (reference)	0.000	0.00	0.000	0.00	0.000	-
Manager's age						
18-29 years	-0.166	0.64	0.623	0.10	0.000	-
30-39 years	0.456	0.12	0.338	0.35	0.000	-
40-49 years (reference)	0.000	0.00	0.000	0.00	0.000	-
50-59 years	-1.010	0.01	0.199	0.63	0.000	-
60+ years	-1.810	0.01	-0.398	0.50	0.000	-
Other demographic characteristics of the manager						
Male	0.340	0.19	0.354	0.33	0.000	-
College educated	0.578	0.06	0.281	0.39	0.000	-

Table 35: *Class-specific choice models of manager preferences for remote working for their direct report*

Variable	Class 1		Class 2		Class 3	
	est.	p-value	est.	p-value	est.	p-value
Ability to work remotely some days, when possible	-0.126	0.17	1.151	0.00	1.826	0.00
Ability to work remotely some hours, when possible	0.049	0.63	-0.506	0.04	1.404	0.00
Annual wages ($1,000)	0.005	0.47	0.163	0.02	-0.011	0.32

Table 36: *Class profiles in terms of WfH capability and uptake of their direct reports, as reported by the managers*

Variable	Class 1	Class 2	Class 3
WfH capability			
How much of your direct report's job tasks and activities are capable of being done remotely	68.6%	65.9%	71.7%
WfH uptake			
How much of the tasks and activities were they doing **remotely before the COVID-19 outbreak**?	56.8%	36.6%	36.5%
How much of the tasks and activities were they doing remotely **at the peak of the COVID-19 outbreak**?	71.3%	74.9%	76.9%
How much of the tasks and activities did they do remotely **last week**?	62.6%	54.0%	60.2%
Consider the pandemic has been eradicated. How much of the tasks and activities would you like them to continue doing remotely **in the future**?	62.0%	55.7%	60.3%

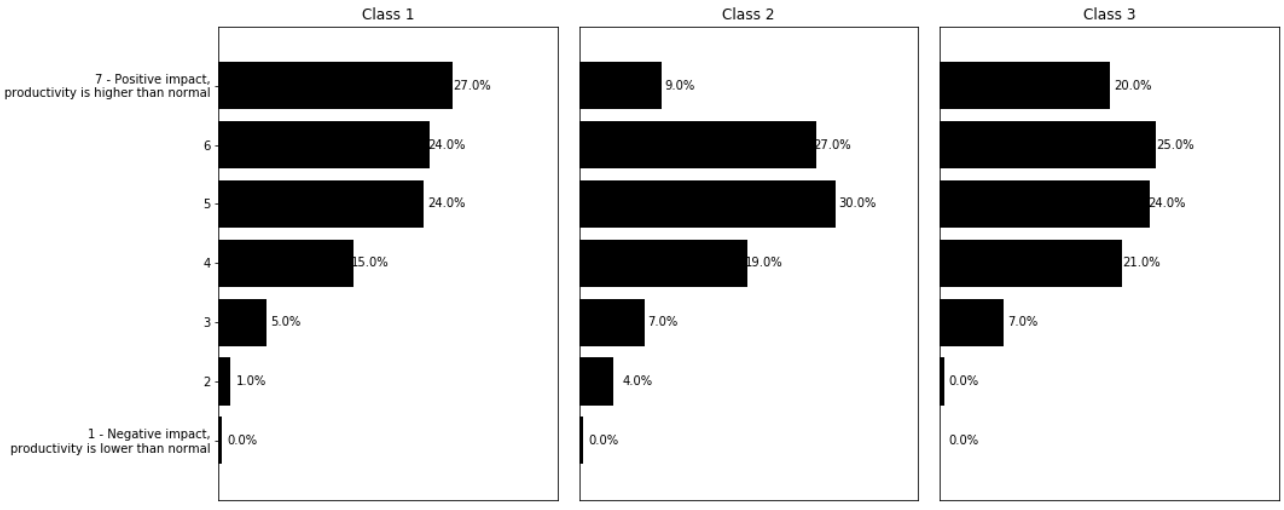

Figure 51: *Class profiles in terms of manager assessment of impacts of remote working on productivity*

Table 37: *Class profiles in terms of employment characteristics of the direct report*

Variable	Class 1	Class 2	Class 3
Current weekly wage	$1472	$1204	$1509
Firm size			
Between 1 and 4 employees (Micro)	19.0%	4.2%	4.8%
Between 5 and 19 employees (Small)	21.9%	15.1%	15.7%
Between 20 and 199 employees (Medium)	31.7%	35.6%	36.4%
More than 200 employees (Large)	27.0%	45.2%	43.1%
Firm sector			
Agriculture, Forestry and Fishing	4.4%	1.4%	2.2%
Mining	2.3%	0.5%	1.8%
Manufacturing	7.3%	8.1%	5.5%
Electricity, Gas, Water and Waste Services	3.2%	1.5%	1.2%
Construction	6.6%	8.0%	4.7%
Wholesale Trade	3.6%	3.6%	3.9%
Retail Trade	6.1%	6.2%	5.2%
Accommodation and Food Services	3.1%	2.3%	1.9%
Transport, Postal and Warehousing	2.9%	3.8%	3.1%
Information Media and Telecommunications	17.9%	8.9%	15.2%
Financial and Insurance Services	9.4%	13.4%	8.8%
Rental, Hiring and Real Estate Services	1.6%	1.9%	2.6%
Professional, Scientific and Technical Services	7.8%	6.0%	12.7%
Administrative and Support Services	2.4%	9.0%	3.0%
Public Administration and Safety	1.7%	7.0%	7.2%
Education and Training	5.8%	7.3%	9.1%
Health Care and Social Assistance	5.5%	6.6%	3.6%
Arts and Recreation Services	0.3%	1.1%	0.8%
Other Services	8.0%	3.2%	7.4%

Table 38: *Class profiles in terms of demographic characteristics of the manager*

Variable	Class 1	Class 2	Class 3
Gender			
Male	69.8%	63.7%	62.5%
Female	30.0%	36.2%	37.2%
Other	0.3%	0.1%	0.4%
Education			
Postgraduate degree	43.3%	28.4%	32.6%
Graduate diploma and graduate certification level	9.2%	7.6%	8.1%
Bachelor's degree	30.0%	39.8%	33.2%
Advanced diploma and diploma level	4.9%	7.8%	8.4%
Certificate level	6.7%	7.7%	10.9%
Secondary education	4.2%	8.0%	6.7%
Age			
18-29 yrs	19.9%	30.5%	19.3%
30-39 yrs	37.9%	25.1%	23.6%
40-49 yrs	33.2%	23.3%	31.0%
50-59 yrs	7.0%	16.1%	16.6%
60+ yrs	2.0%	5.0%	9.5%

Table 39: *Class profiles in terms of average level of agreement with different attitudinal statements towards the impacts of remote working arrangements on work and work-related aspects of the direct reports, as perceived by their managers*

Statement	Class 1	Class 2	Class 3
They would be able to focus better on their work	5.2	5.0	5.2
They would have more autonomy over their work	5.3	5.1	5.3
They would have an increased sense of self-discipline	5.2	5.0	5.2
They would be able to multi-task more effectively	5.2	5.0	5.2
They would be able to work longer hours if needed	5.2	5.2	5.3
They would be able to spend more time with customers	5.0	4.5	4.3
They would miss out on informal social interactions with colleagues	5.3	5.1	5.1
They would have fewer opportunities for collaborations and brainstorming sessions with colleagues	5.1	4.9	4.9
They would have access to fewer learning opportunities and training sessions	5.1	4.8	4.5
They would be concerned about how to monitor and observe their performance	5.1	4.8	4.6
It would be difficult for me to coordinate their work	5.1	4.5	4.2
My relationship with them would be adversely affected	5.0	4.5	4.1
I do not trust them to put in the required time and effort	4.8	4.0	3.6
They would feel less connected to the company and its values	5.2	4.7	4.7
Their sense of loyalty to the company would increase	5.1	4.8	4.9
They would be able to achieve their job objectives and outputs as expected	5.2	5.1	5.3
They would be able to fulfill their career goals, and feel a sense of work-related success	5.1	4.7	4.9
Their career prospects may suffer due to loss of ad-hoc interactions with colleagues and supervisors	5.1	4.7	4.5

1 – strong disagreement; 4 – neutral; 7 – strong agreement

Table 40: *Class profiles in terms of average level of agreement with different attitudinal statements towards the impacts of remote working arrangements on health and wellbeing of the direct reports, as perceived by their managers*

Statement	Class 1	Class 2	Class 3
They would have greater life satisfaction	5.3	5.2	5.5
They would have higher morale	5.3	5.1	5.2
They would have better work-life balance	5.4	5.3	5.6
They would experience less stress	5.1	4.9	5.2
They would be able to better manage personal and family issues	5.4	5.2	5.5
They would feel isolated from their work colleagues	5.3	5.0	4.9
They would worry they are missing out by being away from the workplace	5.2	4.6	4.6
Work would intensify and they would find it difficult to switch off	5.1	4.8	4.5
They would find it difficult to separate work and	5.3	5.0	4.7
They would take fewer sick days	5.2	5.2	5.5
They would save money overall	5.4	5.3	5.6
They would have more time for themselves	5.4	5.2	5.6

1 – strong disagreement; 4 – neutral; 7 – strong agreement

APPENDIX F: REMOTE WORKING CAPABILITY AND UPTAKE IN NSW

We have usable responses from 1,856 individuals in our sample that are resident in one of the following four cities in NSW: Sydney, Newcastle-Maitland, Central Coast and Wollongong. **Figure 52** plots the distribution, which is in close observance with the 2016 Census distribution. Any differences between our sample and the target population (defined as individuals with a minimum age of 18 years, living in one of the 4 NSW cities listed previously, that were employed before the onset of the COVID-19 pandemic) have been controlled for in our subsequent analysis through reweighting. Iterative proportional fitting was used to impute the joint probability distributions across our sample and the target population for different categories of the following variables: city of residence, industry sector, occupation type, firm size and income group. For each individual in our sample, the weighting factor was calculated by taking the ratio of the probability of observing the individual's demographic characteristics in the target population to the corresponding probability for our sample.

Of our sample of 1,856 NSW respondents, 1,252 respondents were classed as 'employees' and asked about their ability to do some of their jobs tasks and activities remotely. On average, across our sample of 1,252 employees, 747 employees, or 60 per cent, indicated that some of their jobs tasks and activities could be done remotely. However, once we reweight our sample to account for differences with the target population, we find that roughly 55 per cent of employees believe that some of their jobs tasks and activities could be done remotely. And only 26 per cent of employees have formalised remote working arrangements with their employers.

Respondents were asked about their uptake of remote working before and during the pandemic, and the week before each respondent was surveyed, as well as their willingness to continue remote working arrangements post-pandemic. Note that these questions were only asked of employees that reported that some of their job tasks and activities could be done remotely. However, in reporting findings from this section of the survey, we include all 1,252 NSW employees in our sample, assuming that those employees who cannot do any of their job tasks and activities remotely were not working remotely during these periods. Note further that the responses have been reweighted, to adjust for any differences between our sample and the target population.

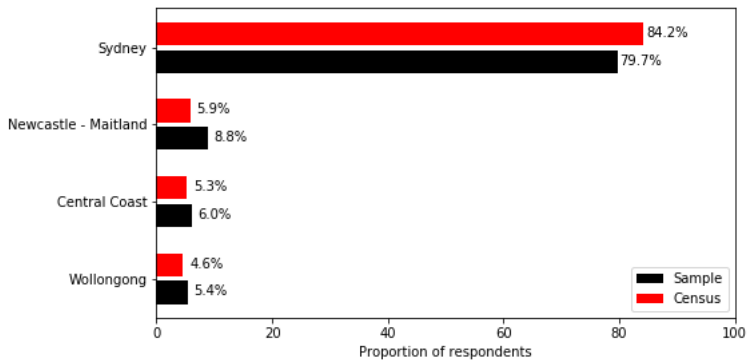

Figure 52: *Distribution of respondents across cities, and corresponding distribution from the 2016 Census*

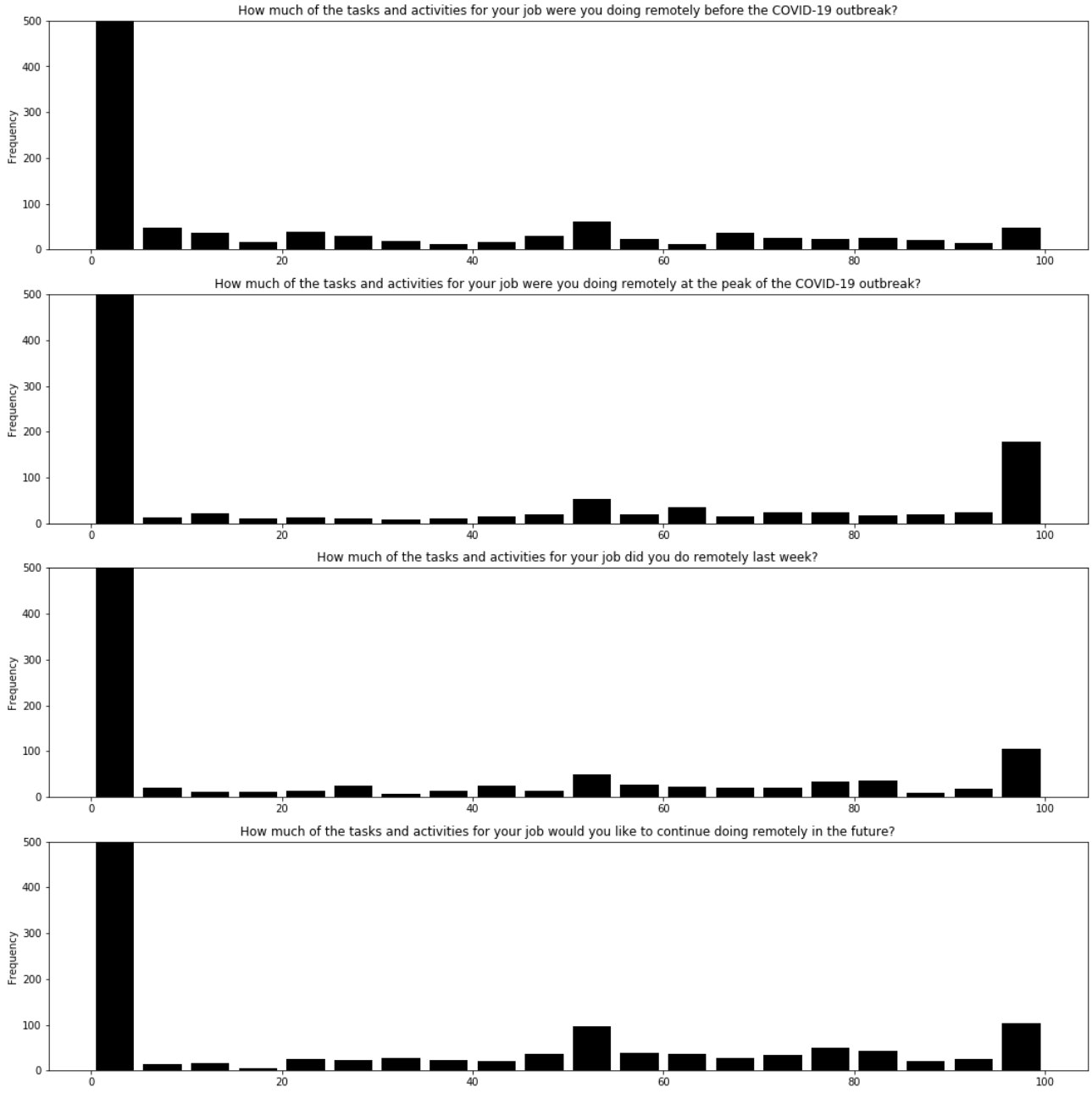

Figure 53: *Uptake of remote working arrangements before and during the pandemic, and willingness to continue remote working arrangements post-pandemic, for NSW residents*

Figure 53 shows uptake of remote working before and during the pandemic, and the week before each respondent was surveyed, and willingness to continue remote working arrangements post-pandemic. Based on our analysis, we estimate that the average employee was doing 19 per cent of their job tasks and activities remotely before the pandemic. Roughly 66 per cent of the target population was doing less than 10 per cent of their job tasks and activities remotely before the pandemic, while only 4 per cent were doing more than 90 per cent of their job tasks and activities remotely before the pandemic.

At the peak of the pandemic, we estimate that the average employee was doing 32 per cent of their job tasks and activities remotely. Roughly 55 per cent were doing less than 10 per cent of their job tasks and activities remotely, while 17 per cent were doing more than 90 per cent of their job tasks and activities remotely.

Uptake of remote working in the week before respondents were surveyed lies somewhere between these two extremes. We estimate that the average employee was doing 26 per cent of their job tasks and activities remotely. Roughly 61 per cent were doing less than 10 per cent of their job tasks and activities remotely, while 10 per cent were doing more than 90 per cent of their job tasks and activities remotely during this period.

Respondents were asked how much of their job tasks and activities would they like to continue doing remotely post-pandemic. We estimate that the average employee would like to continue doing 29 per cent of their job tasks and activities remotely. Roughly 54 per cent would do less than 10 per cent of their job tasks and activities remotely, while 8 per cent would do more than 90 per cent of their job tasks and activities remotely. These figures are closer to the corresponding figures for last week, indicating that current WfH uptake might be a good indicator of future uptake in a post-pandemic world, at least in the short term. However, it also appears to be the case that current uptake is less than desired future uptake, indicating that the provision of remote working arrangements to employees is potentially lagging their own desire to work remotely.

Finally, we examine how uptake has varied across different urban areas in **Figure 54**. By and large, the patterns are consistent across all urban areas: uptake was lowest before the pandemic, peaked at the height of the pandemic, has settled somewhere in between in the succeeding period, and has lagged desired future uptake. However, across all four urban areas, current uptake is only marginally lower than desired future uptake, indicating that most workplaces in these urban areas have embraced remote working arrangements, at least for the short-term, and most likely as a pandemic-related mitigation strategy.

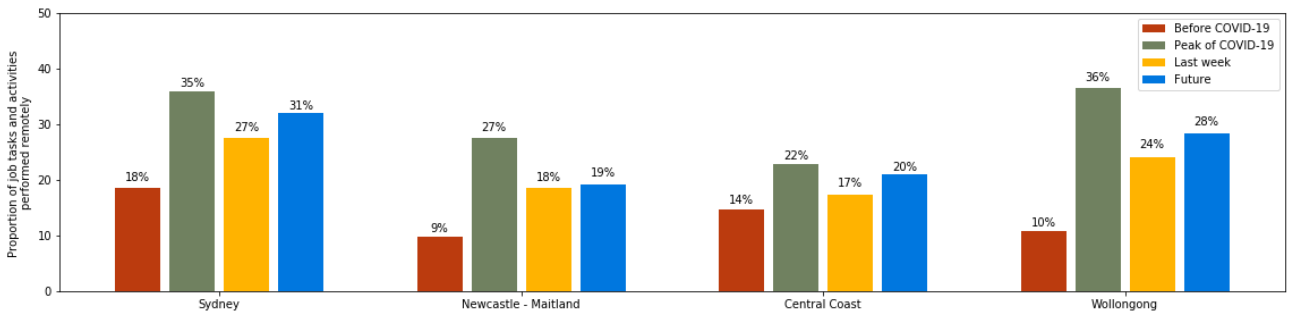

Figure 54: *Uptake of remote working arrangements before and during the pandemic, and willingness to continue remote working arrangements post-pandemic, across different urban areas*