Changing Work Practices, Active Travel, Health and Well-being during a Pandemic

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1.Introduction

Of the myriad of societal impacts of the COVID-19 pandemic, the acceleration of remote working practices, particularly working from home (WfH) has been among the most pronounced. Prior to COVID-19 restrictions beginning in March, 2020, around 24% of employed Australians worked from home one or more times/week[1]. During the height of the restrictions, WfH became the 'norm' for many office-based workers, as non-essential travel, travel to work and the workplace itself, were targeted as part of the virus containment strategies. This led to dramatic reductions in major modes of travel, a pattern repeat during the Delta-based lockdown in June-October, 2021 (Figure 1). As restrictions eased in mid/late-2020, it was evident that WfH in some capacity would likely remain both in the short term as a measure to reduce pressure on the transport network, CBD locations and high density office spaces, and risk of transmissible diseases[2], and the long term as employees and perhaps more importantly employers, saw it as a viable alternative[3]. Such was the shift, that by February, 2021, 41% of employed Australians now worked at home one or more times/week.
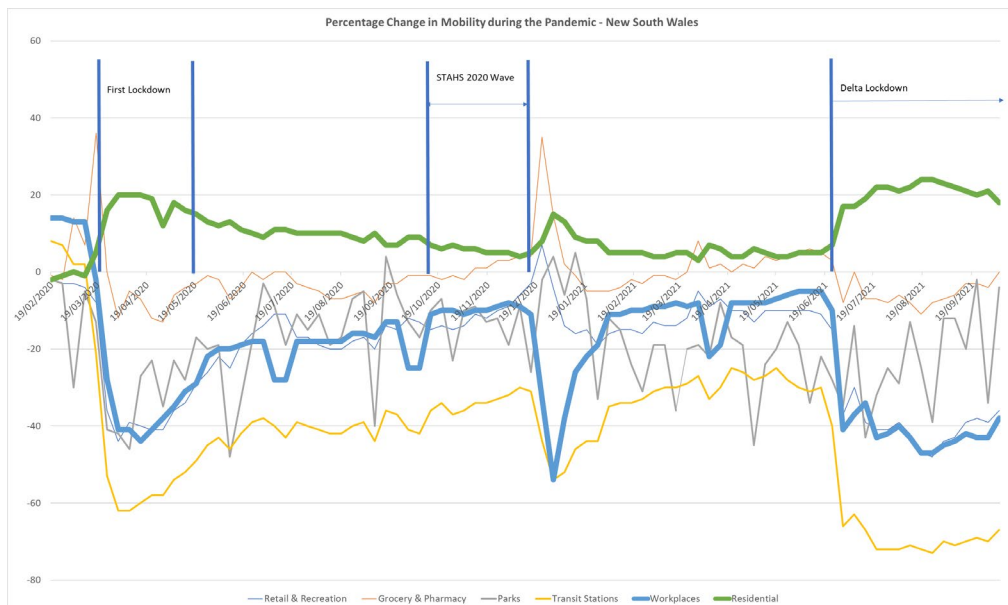

**Figure 1: Mobility Impacts of the Pandemic in Sydney (Google Mobility Data available at
https://www.google.com/covid19/mobility/)**

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[1] https://www.abs.gov.au/statistics/people/people-and-communities/household-impacts-covid-19-survey/feb-2021#work-from-home
[2] https://www.newscientist.com/article/2242113-australia-sees-huge-decrease-in-flu-cases-due-to-coronavirus-measures/. Accessed 06/06/20
[3] https://www.smh.com.au/business/companies/the-five-day-office-week-is-dead-long-live-the-hybrid-model-says-productivity-boss-20210706-p587d4.html

While allowing (some) WfH for employees is generally seen as a positive, questions continue to surface around how changes in working arrangements to be more home-based could impact health and wellbeing, particularly as travelling to/from/during work is an important source of active travel/physical activity and work itself comprises an important outlet for social interaction and inclusion. Given the large-scale return to WfH during the current lock-down and the likelihood that WfH will be an even greater feature of post-COVID scenarios, the current paper adds to a growing dialogue around the impacts of working at home on active travel, physical activity and wellbeing. Drawing from a survey of travel and health behaviour and social and wellbeing outcomes of 1,707 Sydneysiders conducted in late, 2020, when COVID-19 restrictions from the first outbreak had largely been eased, the paper addresses the following research questions: (1) *Have there been sustained significant changes in working practices (e.g., working at home, flexible working) following the first wave of the pandemic?* (2) *Have there been significant changes in active travel, physical activity and well-being that we can attribute to changes in working practices*?

2. Background/Literature

Teleworking/telecommuting, originated in the early 1970s, as a potential response to reducing congestion. Despite the appeal as both a travel demand management (TDM) strategy and attractive condition of employment, facilitated by technological advancements (particularly Home Internet capabilities), uptake of teleworking (now more generally termed Working from Home – WfH) has been much slower than predicted (Mokhtarian, 2009). The most significant issues appear to be related to ingrained ways of doing things and hesitation by managers to allow this to happen (Hopkins and McKay, 2019). Clearly, the pandemic changed the landscape by *forcing/mandating* the shift to WfH wherever possible, rather than it being *optional* to both employers and employees but this is now changing as restrictions ease.

Establishing the impacts of WfH is complicated due to a lack of consensus on what these impacts constitute and how to measure them, particularly given a dearth of longitudinal studies. In terms of transport changes, there are claims of shorter travel times and uptake of sustainable modes (Bieser, Vaddadi et al. 2021), as well as reduced traffic volume and air pollution (Giovanis 2018, Shabanpour, Golshani et al. 2018), but also reports of increased travel distance (Zhu 2012) and increased use of motor vehicles for non-work trips when working from home (Bieser, Vaddadi et al. 2021). Teleworkers report taking fewer commute trips but more non-work trips during the day (He and Hu 2015, Budnitz, Tranos et al. 2020), increasing overall travel distance. There is some evidence of an increase in walking and minutes of physical activity when teleworking at least 4 days a month (Chakrabarti 2018).

Health/wellbeing outcomes attributable to WfH are (arguably) even more challenging to identify and measure. Research points to an increase in job satisfaction and productivity when working from home (Gajendran and Harrison 2007, Felstead and Henseke 2017), but also an increase in feelings of stress and loneliness (Mann and Holdsworth 2003) as well as social and workplace isolation (Cooper and Kurland 2002, Daniel, Di Domenico et al. 2018). Conversely, there are reports of reduced stress and work-family-conflict for teleworkers (Montreuil and Lippel 2003). There seems to be an effect of teleworking intensity, with people who telework up to 2 days a week reporting positive job satisfaction and reduced stress (Delanoeije and Verbruggen 2020) or up to 8 hours a month reporting reduced depression (Henke, Benevent et al. 2016), but those who telework more than 2-3 days a week reporting negative health impacts (Gajendran and Harrison 2007). In a recent meta-review on this topic, drawing from 23 studies, Oakman (2020) identifies ten potential outcomes of WfH: pain, self-reported health, safety, well-being, stress, depression, fatigue, quality of life, strain and happiness. While there appears

little consensus around age, gender and other potential demographic correlates per se, the main issues seem to be various systemic moderators such as: the demands of the home environment, level of organisational support, and social connections external to work.

To date, while there has been a concerted push from the public health community to incorporate physical activity into the daily commute and other aspects of the work-day, there has been little focus on what happens as more working life is pushed to home. Are people becoming more sedentary and reducing physical activity or are they resorting to more conscious efforts to increase physical activity such as walking the dog or cycling to the local café?

3. Materials & Methods

An online survey capturing travel, work, health and wellbeing outcomes from 1,750 Sydneysiders was conducted in late, 2020, which after data error checking, resulted in a usable sample of 1,707 participants – restrictions had largely been eased by this time in Sydney. Given the focus of this analysis was on changing work practices, participants who primarily identified as workers (full-time, part-time, casual) were selected resulting in a usable sample of 1,165 workers[4]. Table 1 shows the composition of the sample. The gender split was equal with a reasonable distribution across age categories. Around two-thirds of participants had a Tertiary education, with a median income of $130,000, with office-based occupations dominating.

Table 1: Sample Characteristics of Participants Identified as Workers

n = 1,165	No.	%		No.	%
Gender			**Annual Household Income**		
Male	581	49.9	Less than $80,000	264	22.7
Female	584	50.1	$80,000 - $140,000	420	36.1
Age Category			$140,000 or more	350	30.0
18-24	79	6.8	Missing	134	11.2
25-34	252	21.6	**Occupation**		
35-44	366	31.4	Manager	283	24.3
45-55	265	22.7	Professional	368	31.6
56-64	164	14.1	Technicians and trades	72	6.2
65-69	39	3.3	Community and personal services	72	6.2
Highest Level of Education			Clerical and administration	237	20.3
HSC/SC	156	13.4	Sales	65	5.6
Trade or Tafe	213	18.3	Machine operators/drivers	25	2.1
Tertiary	788	67.6	Labourers	43	3.7
Missing	8	0.7			

4. Results

4.1. Changes in Work and Working from Home

Participants were asked about days worked and days worked at home in a typical week pre-COVID and in the last working week preceding the survey. Figure 2 indicates the relative change between waves. Overall, the proportion of participants WfH at least one day/week increased from 33% to 58%, while the proportion of WfH/Days Worked increased from 19%

to 48%. This suggests both an increase in the numbers WfH in some capacity and an increase in the proportion of work done at home – particularly notable is the evident shift to full-time WfH (taken as 5 days or more) for around 20% of the sample.
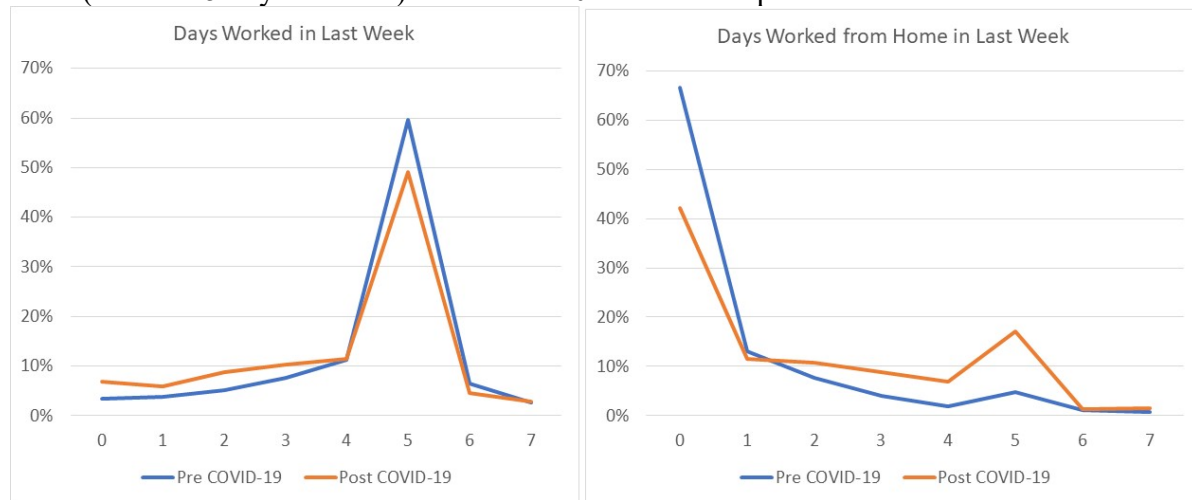

Figure 2: Changes in Work Pre-Post First Wave of COVID-19

4.2 Impacts on Physical Activity, Active Travel & Well-being

Participants were asked to indicate their level of change in physical activity, active travel, and general wellbeing compared to before COVID-19 restrictions. These were cross-tabulated with self-reported changes in working from home (Table 2) – note, these are participants who reported some WfH in the before and/or after periods *not* the entire sample of workers. Evidently, increased WfH is associated with an increase in sitting – this is illustrated most dramatically with 70% of those who reported a lot more WfH indicating they were sitting more. Increased WfH is also associated with a greater likelihood of reporting being anxious/depressed and greater concern around the future although this is not as starkly evident for those reporting a lot more WfH as with sitting.

Table 2: Changes in Physical Activity, Active Travel & Wellbeing

Compared to before the COVID-19 restrictions, I am….	*Overall*	Change in Working from Home					Spearman's Rho
		A lot less	A little less	No change	A little more	A lot more	
More physically active	*37%*	20%	26%	26%	47%	43%	0.081*
Less physically active	31%	68%	37%	21%	23%	36%	
Sitting more	*56%*	38%	36%	35%	58%	71%	0.332**
More anxious or depressed	*44%*	19%	33%	41%	56%	55%	0.214**
More concerned about the future	*67%*	51%	44%	51%	76%	72%	0.206**
Walking to work more	*23%*	24%	22%	16%	30%	25%	-0.170**
Walking to work less	32%	51%	39%	12%	13%	52%	
Cycling to work more	*25%*	26%	19%	10%	33%	34%	0.083*
Cycling to work less	23%	45%	38%	10%	15%	31%	
Walking more for non-work purposes	*40%*	33%	15%	23%	46%	51%	0.160**
Cycling more for non-work purposes	*31%*	23%	20%	16%	36%	46%	0.258**
Walking the dog more	*41%*	24%	24%	22%	53%	56%	0.343**
Walking/cycling for leisure more	*42%*	28%	31%	24%	53%	52%	0.184**
Walking/cycling for exercise more	*40%*	29%	42%	24%	47%	47%	0.149**

*Significant at 95% confidence level; **Significant at 99% confidence level*

In terms of physical activity, the marginally significant association with increased WfH, reflects the fact that while over 40% of participants reported an increase in physical activity, over one-third reported they were doing *less* physical activity. Evidently, some of these gains in physical activity are being captured through conscious efforts to walk and cycle more for non-work purposes, leisure and exercise, while less use is made of walking to access work.

5. Discussion

Experiences with WfH are highly variable based on the metrics considered here. Perhaps of most concern (arguably) is the large increase in sitting, corroborated by evidence elsewhere also in connection with an originally 'forced' large-scale move to WfH due to the pandemic (Koohsari et al., 2021). The consequences of sitting for extended periods of time are well-documented, particularly when combined with greater sitting for leisure/recreation (Oakman, 2020). As the need to travel to work and move during the day to attend meetings etc has been replaced by a laptop on the kitchen table and Zoom, people are invariably sitting more. While the onus has largely been on the individual to take responsibility for ensuring they take breaks, aided by a multitude of apps reminding them to do so (e.g., Tomato timer, Awareness), clearly there is a responsibility here on the employer as well to ensure they both provide opportunities for and encourage their employees to take regular breaks away from the screen. Similarly, the findings around greater anxiety/depression and concern, while clearly compounded by the pandemic, point to the need for greater efforts to ensure that any feelings of isolation and loss of social connections through work are addressed through regular interactions of both a work and social nature (Oakman, 2020). The loss of the daily commute and intra-day travel at work are clearly lost opportunities for building in active travel and associated physical activity benefits. The results here suggest that a significant proportion of people are compensating by making more conscious efforts to use 'active modes' for local travel, recreation and exercise. Equally, a significant proportion of participants have reported doing less physical activity with presumably less opportunity or inclination to do so. Given the substantial growth in WfH and likelihood this will continue post-COVID, it is clearly critical that awareness of these issues is on the radar of both employers and government agencies in their planning, policies and messaging for the future.

6. Next Steps

This extended abstract presents the first stages of an ongoing analysis with a view to seeking feedback and generating discussion at the conference. We are currently completing a more nuanced analysis examining the potential covariates (e.g., occupation, gender, age, household size etc) underlying the results here and will present these at the conference.

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