



CAWRI

Creativity and Wellbeing Hallmark Research Initiative

The post-COVID workplace: are (unhealthy) offices at risk of extinction?

Final report

7 March 2023

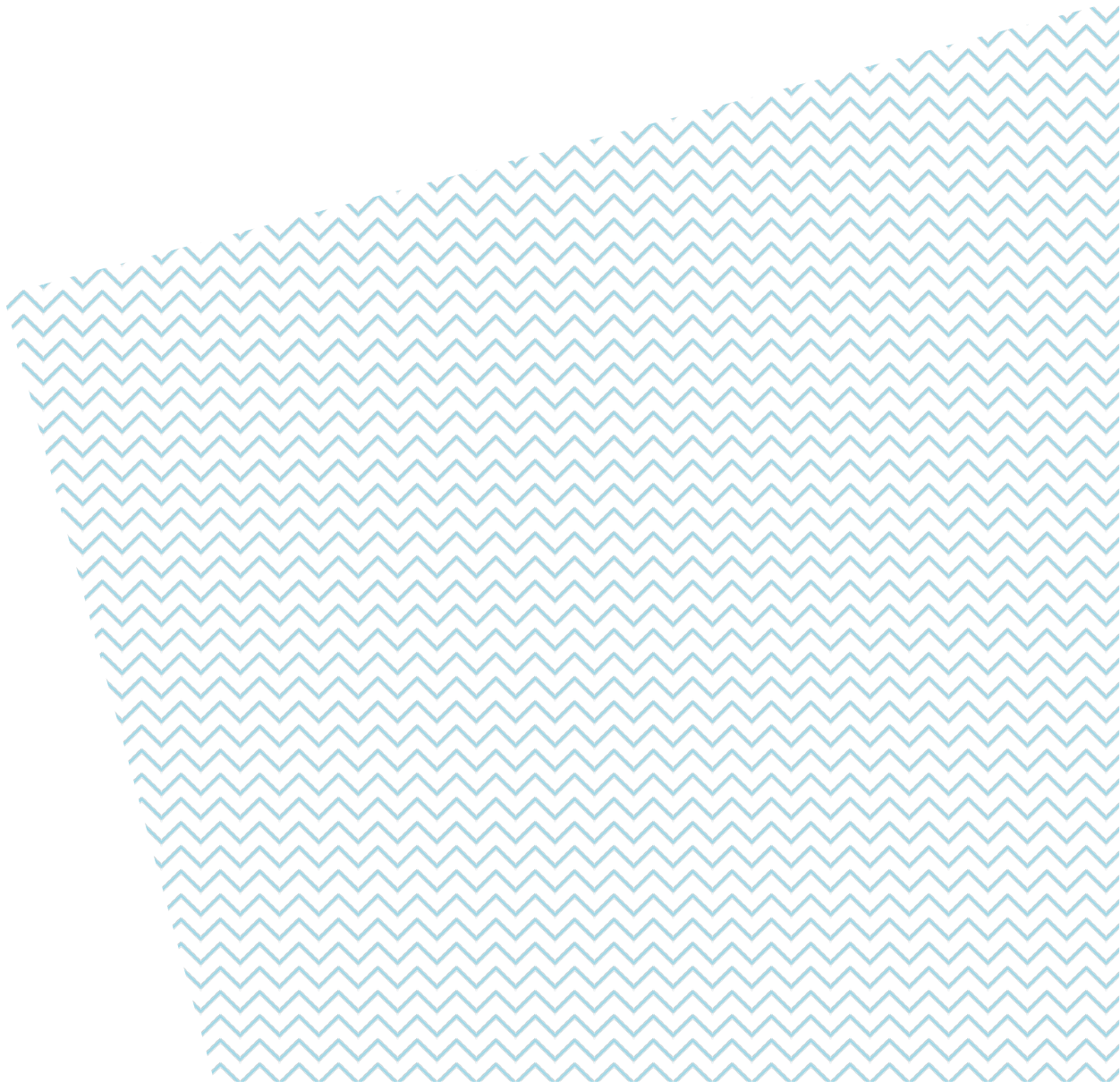


Table of Contents

- Project summary 3**
- Research team 3**
- Acknowledgements..... 3**
- Background..... 4**
 - Research context.....4
 - Project aims.....4
 - Methodology.....4
 - Cross-disciplinary collaborations/connections6
- Key findings 6**
 - Project outcomes9
- Discussion, implications and future directions 10**
- References 11**
- More information 12**

Project summary

This project built on pioneer work led by the University of Melbourne's Sustainable and Healthy Environments (SHE) Lab to capture workplace design, experience and performance over the last decade, including specific studies about remote working experiences during and after the Australian lockdowns. Investigating the impact on organisational culture, productivity and health (physical and mental) of people who were working away from their HQ for a sustained period of time due to COVID-19, this project focused on sectors that have traditionally been characterized by in person interactions as an essential component of delivery, including tertiary education and the creative arts. Comprising a pilot study involving two workplaces, this project surveyed workers and tested and developed ways of assessing multizone workplaces to identify and quantify negative and positive impacts on workers' satisfaction and perceived health from the adoption of new work practices post-pandemic. In terms of satisfaction with the current living-with-COVID-adapted working arrangements, both workplaces surveyed reported higher levels of extreme satisfaction than the broader SHE dataset of Australian workers (27% SHE dataset; 38% workplace 1; 50% workplace 2). IEQ data (workplace 1 only) was collected by monitoring devices placed in three levels. The devices measured temperature (air temperature, air velocity, relative humidity, Predicted Mean Vote (PMV), Predicted Percentage Dissatisfied (PPD), Indoor Air Quality item (CO₂), acoustics (dB) and light (lux). Overall, the surveyed building performed well, meeting or exceeding most of the relevant international/national IEQ standards. In addition to these survey findings, a framework for site observations of multizone workplaces was developed. The aim of this protocol is to support diagnostics of workplaces in terms of suitability of fit-out infrastructure delivered to workers. When deployed, the site observation protocol will provide relevant data about the type of work zones available to workers, IEQ conditions at various work zones, and active/universal and biophilic design implementation. Testing and deployment of the site observation protocol developed here is planned to take place in 2023 at the SHE Lab Living Labs.

This project ran from April 2022 to November 2022.

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Background

Research context

The pandemic forced workers to experience the good, the bad and the ugly of working away from offices – and the evidence indicates most are finding it difficult to revert to pre-COVID working arrangements. Under the current “living with COVID” stage in the pandemic, there are mounting pressures to bring workers back to CBDs which leaves managers with the task of reconciling what workers want while balancing organisational and cultural aspects of workplaces (Kniffin et al., 2021).

Studies show that most workers would like to have access to flexible ways of working for at least 1 day per week, with seven in ten workers preferring to work from home 2-3 days a week (Marzban et al, 2022). The top five benefits from remote working were not having to commute to/from HQ, more time with family, ability to perform more focused work, work life balance and less stress at the start of working day (Marzban et al, 2021). Conversely, other studies found significant challenges associated with remote working included internet connectivity, furniture ergonomics or set-up and the associated musculoskeletal issues (Widianawati et al., 2020, Marzban et al., 2021), as well as increased stress and burn-out, isolation from colleagues and an inability to establish a consistent routine and set a clear boundary between work and home lives (ACS, 2020; Gensler, 2020).

Despite the clear benefits to workers in the short-term, the likely impact on organisational culture, productivity and health (physical and mental) while working away from HQ for a sustained period of time is yet to be quantified. Further, balancing work from HQ with elsewhere can be challenging for some sectors, including tertiary education and the creative arts, which were the focus of this project, due to demand for in person interactions.

Project aims

This project aimed to develop ways of assessing multizone workplaces to identify and quantify negative and positive impacts on workers’ satisfaction and perceived health from the adoption of new work practices post-pandemic.

Methodology

For this pilot study, a mixed approach included (i) the use of a Post-Occupancy Evaluation (POE) survey focusing on workers’ satisfaction, productivity and health; (ii) testing of equipment to measure Indoor Environmental Quality (IEQ) in multizonal workplaces, and (iii) development of an observation protocol to be deployed in multizonal workplaces.

Two workplaces designed to host workers from STEM (workplace 1) and creative fields (workplace 2) were studied in 2022. The survey was deployed in both buildings, and testing of IEQ monitoring equipment was conducted in workplace 1. The site observation protocol was developed by researchers based on zones observed in workplace 1 and 2. A total of 60 workers participated in this study.

SHE Post-Occupancy Evaluation (POE): COVID surveys

The SHE POE - COVID survey was used for this study. The SHE longitudinal survey is a data collection vehicle feeding ongoing research projects focusing on the design, performance and experience of

spaces from the occupants' perspective in Australia. It has been used in over 200 workplaces in five continents. The SHE POE is recognised as a survey provider by the International WELL Building Institute (IWBI), Green Building Council of Australia (GBCA) and National Australian Building Environment Systems (NABERS).

The SHE COVID survey is a shorter version of the longitudinal POE and it has been used to map workers' working experiences since the onset of COVID-19. The web-based survey questionnaire takes 15 minutes to be completed by occupants. Questionnaire items target differences in perceived productivity and health (physical and mental), along with specific issues with home office set-up, healthy lifestyles (nourishment, hydration, physical activity, engagement with creative arts) and social and learning aspects of working from home vs the office.

In Australia, the SHE COVID survey has been deployed at three different stages (see Figure 1): during the first round of lockdowns (round 1, 2020), post-lockdowns (round 2, 2021) and "living with COVID" (round 3, 2022). Data from the pilot was benchmarked against these different stages to show changes in satisfaction, perceived productivity and health as reported by workers. Selected aspects of the survey results from a total sample of 60 questionnaires are presented and discussed later in this report.

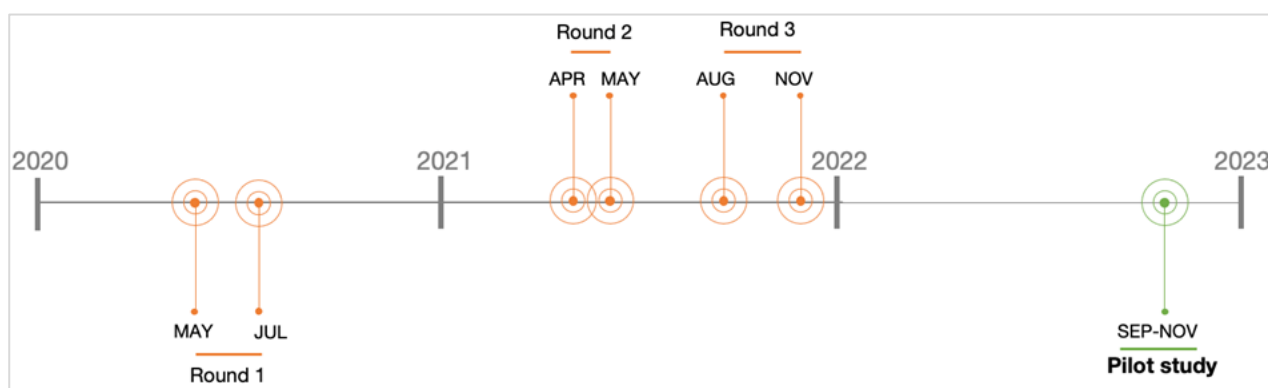


Figure 1 Rounds of the SHE POE – COVID survey, including the Pilot study reported here

Indoor Environmental Quality (IEQ): equipment testing

This pilot was used to test and fine-tune equipment deployed to monitor IEQ performance. A combination of devices was used during this pilot for the purpose of short-term (spot sampling) and long-term (continuous sampling) measurements.

Field work focused on: (i) understanding the suitability of equipment for long-term monitoring; (ii) comparing the accuracy of the continuous sampling data against spot sampling, (iii) fine-tuning the proposed sampling protocol for multizonal workplaces. To this end, three floors of workplace 2 were selected for IEQ monitoring. The monitoring devices were located at six work zones per floor focusing on spots purposefully designed to support incidental, planned and/or coordinated tasks performed by workers. Readings of key IEQ parameters, namely air temperature (Ta), air speed, relative humidity, carbon dioxide, ambient sound and illuminance were taken. Testing was satisfactory and devices will be deployed for data acquisition that will be taking place in 2023 at the SHE Lan Living Labs.

Site observations: protocol development

The pilot allowed researchers to develop a site observation protocol for studying multizonal workplaces used by resident and non-resident workers based on zones found in workplace 1 and 2. The site observations developed will be used to aid the diagnostic of the workplace in terms of its fit-out infrastructure delivered to workers. As such, the type of work zones available to workers, IEQ conditions at various work zones, active/universal and biophilic design implementation can be consistently gathered during site observations. Testing and deployment of the site observation protocol developed here is planned to take place in 2023 at the SHE Lab Living Labs.

Cross-disciplinary collaborations/connections

This study provided cross-disciplinary training opportunities for three ECAs, one HDR student and one Master student. All researchers contributing to this pilot are members of the Sustainable and Healthy Environments (SHE) Lab. This pilot also enabled collaborations with the University of Melbourne Smart Campus team, Melbourne Connect, University of Sydney, UTS, University of Wollongong and UNSW.

Key findings

Workers' profile

At workplace 1, the number of male and female participants in the survey was equal. 70% of the participants' type of work is professional from whom about 84% hold full time positions. Most workers (42%) reported an estimated commute time between their place of residence and office of 15 -30 minutes. At workplace 2, 100% of the participants were female, 50% hold full time positions and 33% have a casual job. Workers also reported a commute time between 15-30 minutes from their home to campus. Because of the small sample size, analysis focusing on workers' demographics are limited.

Satisfaction with IEQ

Overall, workplace 1 outperformed workplace 2 in terms of occupant satisfaction with Indoor Environmental Quality conditions (see Figures 2 and 3). As depicted in Figure 2, 50% of workers reported to be satisfied with IEQ conditions found at workplace 2. Results from workplace 1 outperformed these, with 61% of workers reporting to be satisfied with IEQ at their office (see Figure 3). For workplace 1, top 3 most common sources of dissatisfaction were: noise from people, glare from lights and reflections on screens. For workplace 2, the main sources of issue were: no place allocated for private phone calls, no place allocated for teleconferencing and space being too cold.

Considering that half of workers in our sample reported working in an open-plan office, these results are consistent with previous research conducted in such environments in Australia and elsewhere, especially when workers are performing most work activities from the same location (Marzban et al, 2022; Candido, et al, 2021). Findings also suggest that workers have limited or no ability to adjust their work setting to suit their preferences in terms of acoustics, thermal and visual comfort. Findings also suggest that office layout can be improved to cater for needs and/or workers are not engaging/allowed to engage with the multizonal infrastructure made available to them.

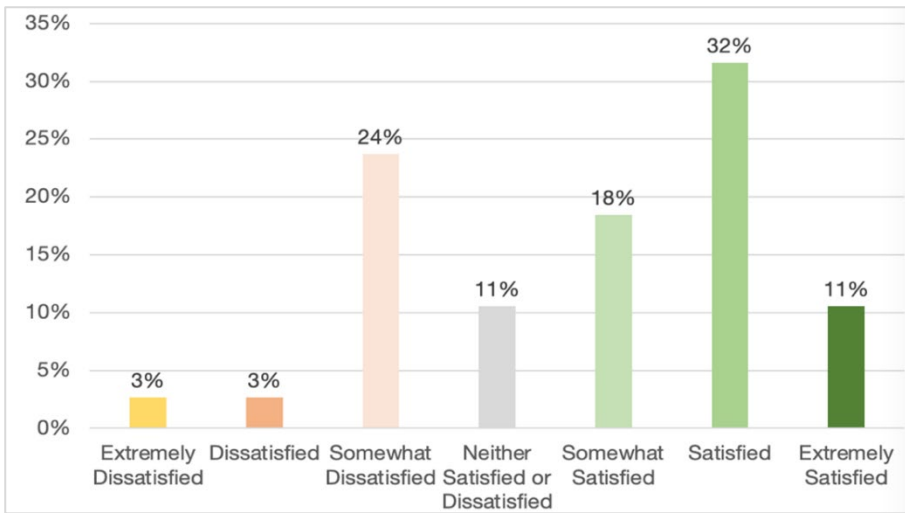


Figure 2 Workers' satisfaction with IEQ (in-office) at workplace 1.

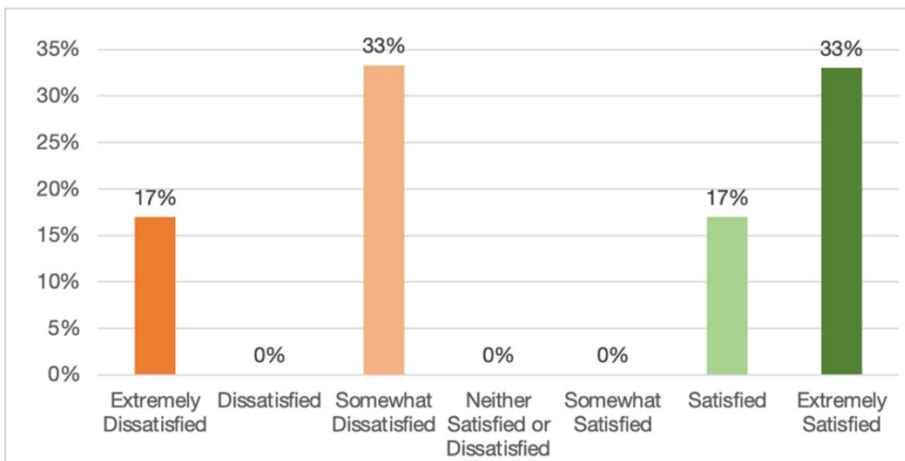


Figure 3 Workers' satisfaction with IEQ (in-office) at workplace 2

Satisfaction with post-pandemic working arrangements:

Regarding working arrangements post-pandemic, workers from workplace 1 and workplace 2 reported high levels of satisfaction. Data from those voting for “somewhat satisfied”, “satisfied” and “extremely satisfied” were grouped and depicted on Figure 4. Satisfaction results from workplace 1 and 2 outperformed the average satisfaction scores for the SHE POE-COVID survey database.

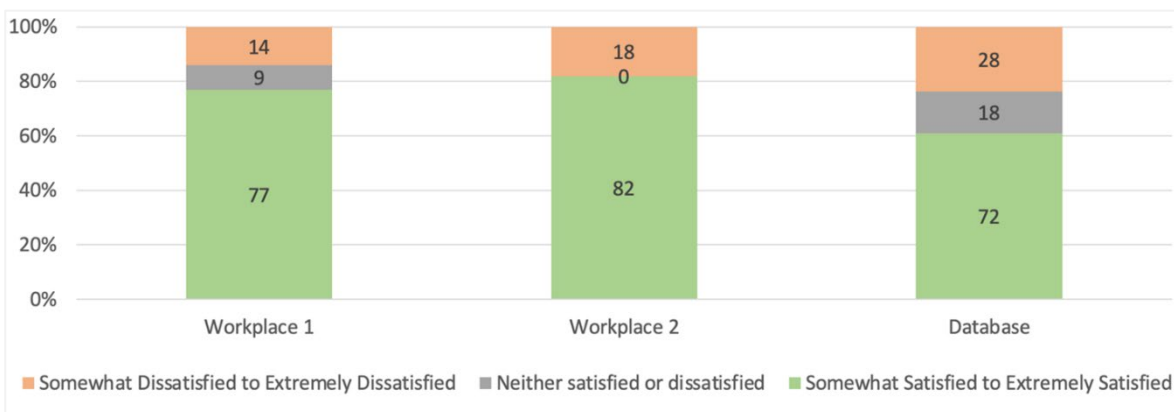


Figure 4 Satisfaction with working arrangements post-pandemic for as reported by workers from workplace 1, workplace 2 and the entire SHE POE-COVID database

For workplace 1, the top three most frequently mentioned challenges of ways of working post-pandemic reported by workers were: “stress and burn-out”, “difficulty in connecting/engaging with colleagues” and “isolation from colleagues”. For workplace 2, the same challenges were reported by people but “isolation from colleagues” was the most frequently mentioned one, followed by “difficulty in connecting/engaging with colleagues” and then “stress and burn-out”. These results are very consistent with those found in the SHE POE-COVID survey database.

“Not having to commute to work” was followed by “more time spent with family” as the top two most frequently cited options elected by workers from workplace 1 and 2 when asked about the best aspects of ways of working post-pandemic. Workers from workplace 1 selected “more control over where/when I work” as the third best aspect of ways of working post-pandemic. Workers from workplace 2 selected “ability to focus”. These findings reinforce workers’ IEQ assessment of their in-campus office.

Expectations with working arrangements in the longer term

When asked about any changes they would like to see implemented post-pandemic, most workers from workplace 1 and 2 said they would like to see “increased offering of working arrangements” (see Figure 5). Some also want to see implementation of alternative meeting arrangements. Many workers from workplace 2 expect to see “implementation of alternative working hours” and some also would like see a “removal of desk/equipment policy” at their workplace. When compared with the SHE POE-COVID survey database, these requests were reported by a smaller percentage of workers from both workplaces. These findings are somewhat expected considering the high percentage of satisfaction scores reported by people in terms of working arrangements post-pandemic.

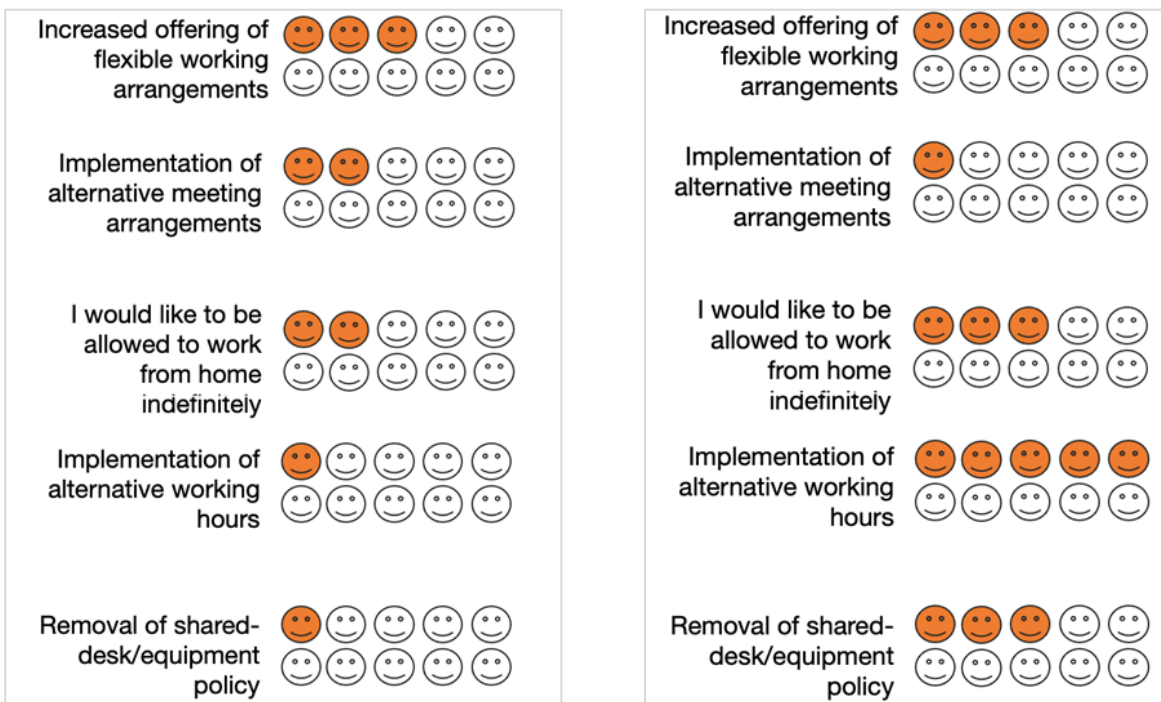


Figure 5 Expectations in terms of working arrangements and workspace as reported by workers from workplace 1 (left) and workplace 2 (right)

Project outcomes

Presentations (industry and academic events):

Key findings from this pilot have been accepted in/presented at the following industry and academic events:

- Durakovic, I., Candido, C. & Munao, L. (2023). A new way of working - call it what you want, it's about balancing expectations and experience, Corenet Global Summit APAC, Singapore.
- Durakovic, I., Candido, C. & Munao, L. (2022). A new way of working - call it what you want, it's about balancing expectations and experience. Corenet Global Summit EMEA, Amsterdam.
- Candido, C., Marzban, S., Durakovic, I., Backhouse, S., Ghosn, C., Stojanovic, D. & Nickas, S.(2022). In office vs elsewhere - what is working for the post-COVID unshackled workforce?, TEMC 2022 (Tertiary Education Facilities Management Association) Online Conference, Hobart and online.
- Candido, C., Marzban, S. & Durakovic, I. (2022). The post-COVID workplace: What is the role of the in-office experience in supporting musicians?, 45th National Conference of the Musicological Society of Australia, Melbourne and online.

Publications

- (forthcoming - journal) Avazpour, B., Fatourehchi, D., Smith, J., Candido, C. Using space syntax to harness the human-nature relationship in workplaces: a case study.
- (forthcoming - journal) Avazpour, B., Durakovic, I., Marzban, S., Candido, C. The rise of the unshackled workforce: three stages in the pandemic timeline in Australia.

Grants

- (submitted) DP240101518 - Unshackled: (re)designing the post-COVID workplace. Candido, C., Warren-Myers, G., Brambilla, A., Bioria, N., Marzban, S., Gocer, O., Stojanovic, D., Durakovic, I. and Wang, W. Universities: University of Melbourne (lead), University of Sydney, UT, University of Wollongong and UNSW.

Other

This pilot study provided some of the equipment and testing opportunities to fine-tune the framework for the launch of Living Labs at the University of Melbourne. The Living Lab project focuses on consolidating spaces as research ecosystems where short- and long-term investigations can take place. Data from sensing technology will be paired with Post-Occupancy Evaluation surveys, site observations and interviews to build evidence about the design, performance and experience of study spaces that can be leveraged to fine-tune buildings through time. The Living Lab project also focuses on providing students with authentic learning opportunities by demonstrating IEQ, interior design and building performance aspects relevant to occupants' satisfaction, productivity and health. Further, the Living Lab provides students and researchers "hands-on" experience in conducting diagnostic and performance evaluations of buildings and indoor environments through quantitative and qualitative methods.

Discussion, implications and future directions

With people becoming accustomed to working away from their offices since the onset of COVID, preliminary evidence indicates many are finding it difficult to revert to pre-pandemic working arrangements. Studies show that eight in ten workers would like to have access to flexible ways of working for at least 1 day per week, with seven in ten workers preferring to work from home 2-3 days a week (Marzban et al, 2022). With no past experience to guide them, managers are grappling with the need to find creative solutions that reconcile worker preferences with various organisational and cultural aspects of workplaces.

This pilot study contributes to this topic by developing and testing ways of assessing multizone workplaces. The study aims to contribute to the mapping of potential negative and positive impacts on workers' satisfaction and perceived health from post-pandemic working practices. This report presents findings from a pilot study conducted in two workplaces designed to support workers from STEM and creative sectors.

One of the challenges is to design workplaces to maximise their use and to maintain organisational culture and values amongst the workers. The deployment of the SHE Post-Occupancy Evaluation (POE) COVID survey helped understand workers' satisfaction, productivity and health. Results show that workers from both workplaces are satisfied with Indoor Environmental Quality (IEQ) conditions experienced at their campus-based offices. Complaints can be clustered under IEQ-related issues (acoustic, visual and thermal comfort) and interior-design-related (lack of spaces for phone calls and teleconferencing). These shortcomings are consistent with those found in open-plan offices in Australia and overseas. Findings can be used to improve the design of workplaces to better support workers during their time at the office. With people splitting their time at campus-based office and other locations, it is critical to provide them with IEQ conditions and fit-out layouts that do not underperform when compared to those found elsewhere. In this study, the use of place and the reasons of dissatisfaction could help improve workplace fine-tuning the design and IEQ performance of workplaces post COVID.

Since COVID-19, organizations and workers valued the importance of face-to-face communications, collaboration, problem-solving and innovation (Avdiu and Nayyar, 2020). However, the positive aspects of working from home such as work-life balance and time with family and control over work retain strong hold over workers. From a way of working perspective, workers from both workplaces reported very high levels of satisfaction with arrangements post-pandemic. Challenges were the same for workers from workplace 1 and 2, namely: isolation from colleagues, difficulty in finding/connecting with colleagues and stress and burn-out. Best aspects of the way of working post-pandemic included not having to commute to work and more time spent with family and then more control over where/when I work (workplace 1) and ability to focus (workplace 2). These findings are aligned with results from the SHE POE-COVID database. These findings highlight the importance of harnessing in-office time and experiences for workers to socialize, collaborate and interact thereby nourishing workers with meaningful interactions whilst on campus.

In terms of expectations with long-term working arrangements, workers revealed desire for increased offering in working arrangements, implementation of alternative working hours and some removal of desk/equipment policy at their workplace. These findings are aligned with results from the SHE-COVID database. These findings highlight the fact that workers are unlikely to relinquish the freedom of choice attained by ways of working implemented post-pandemic.

This pilot study also enabled (ii) testing of equipment to measure Indoor Environmental Quality (IEQ) in multizonal workplaces and the (iii) development of an observation protocol to be deployed in multizonal workplaces. Deployment of devices and site observations will take place 2023 at the SHE Lab Living Labs.

To enhance workers' satisfaction, productivity and health, the future workplace will need to consider multiple aspects, including technology, office design, furniture and working arrangements. In understanding the role of in-office experiences and preferences of those who support others and in communicating this widely to all stakeholders, the potential for flow on benefits that improve workers' wellbeing is substantial.

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More information

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For more information about CAWRI, visit <https://research.unimelb.edu.au/creativityandwellbeing>