Taylor & Francis
Taylor & Francis Group

Architectural Science Review

ISSN: (Print) (Online) Journal homepage: www.tandfonline.com/journals/tasr20

# Archetype of future workers and their preferences for workspace design

Jiayu Pan & Ronita Bardhan

**To cite this article:** Jiayu Pan & Ronita Bardhan (16 Apr 2025): Archetype of future workers and their preferences for workspace design, Architectural Science Review, DOI: 10.1080/00038628.2025.2489650

**To link to this article:** https://doi.org/10.1080/00038628.2025.2489650



Published online: 16 Apr 2025.

ARCHITECTURAL SCIENCE REVIEW
https://doi.org/10.1080/00038628.2025.2489650

Taylor & Francis
Taylor & Francis Group



# Archetype of future workers and their preferences for workspace design

Jiayu Pan and Ronita Bardhan

Sustainable Design Group, Department of Architecture, University of Cambridge, Cambridge, UK

**ABSTRACT**

Technological advancements have gradually removed the spatial constraints of workspaces, while the outbreak of COVID-19 has accelerated the transition towards hybrid working mode. This paper studies the long-term implications of shifting work dynamics, with a focus on considerations for the design of future workspaces. It explores the evolving work patterns and preferences from the direct evidence. A questionnaire survey, collected during the summer of 2022 with 496 respondents around the world, forms the basis of the exploration. A cluster analysis is applied to reveal the worker archetypes with their corresponding design preferences. Three distinct types of workers are identified, including office workers, those opting for hybrid models and dedicated remote/home workers, while each group demonstrates distinct preferences for workspace design features. This study captures the preferences for different design variables across these groups, providing a forward-looking perspective on potential solutions for the future design of workspaces.

**ARTICLE HISTORY**
Received 8 October 2024
Accepted 28 February 2025

**KEYWORDS**
Workplace; future of work; hybrid working; office design; environmental design; remote working

## 1. Introduction

As work patterns undergo dynamic shifts towards hybrid working, and workspaces are expected to evolve in response to the changes, understanding the space preferences and behaviours of individuals in these transformations becomes important. The disruption of the COVID-19 lockdown opens up the possibility of working from home, enabled by digital technologies (Choudhury 2020). However, remote workers suffer the disadvantages of digital exhaustion, disconnectedness with their colleagues and loss of informal communication (Johanson 2021; Microsoft 2022, 2021). A hybrid working mode with more flexibility in working hours and location is expected to become a new option (Appel-Meulenbroek et al. 2022; Meakin 2021; Sailer, Thomas, and Pachilova 2023). This transition also represents the desire of modern workers (Caglar, Faccio, and Ryback 2020; Choudhury 2020), that employees with choices tend to perform better (Gensler Research Institute 2013). The dynamics of hybrid working vary across geographical regions and industries, influenced by factors like job characteristics, cultural norms, government policies and infrastructure availability (World Economic Forum 2023). Companies in the United States and Europe have been more proactive in adopting hybrid working models, while organizations in the Asia-Pacific region often require employees to spend the majority of their workweek in the office (CBRE 2021). Office-based, white-collar sectors, including technology, finance and professional services, have shown a greater inclination towards embracing hybrid work arrangements (Yeung 2021). As a response to the shift towards hybrid working, the office might be redesigned with fewer seats, diverse layouts and functions and better environmental experiences (Arup 2021; Boland et al. 2020; Miller 2014). Therefore, it is particularly important to identify the key design parameters to focus on to accommodate the evolving needs.

Humans spend most of their time indoors (Al Horr et al., 2016a; Ashrae 2016; United States Environmental Protection Agency 1989), and over 90% of workers spend at least four hours in the office building and at their workstations everyday (Rasheed, Khoshbakht, and Baird 2021). The quality of the physical workspace affects the productivity, health and well-being of its occupants significantly (Al Horr et al. 2016b; Brennan, Chugh, and Kline 2002; Haynes 2008; Page and Tolmie 2024; Pejtersen et al. 2011). While a large number of studies have demonstrated the influences of design and environmental features on the productivity and satisfaction of workers (Chacon Vega et al. 2020; Rasheed, Khoshbakht, and Baird 2021; Shafaghat et al. 2015; Vischer 2007), limited study focuses on the workers' preferences for the design of workspaces when they are granted with more freedom to choose their working location and time in a flexible and hybrid working pattern (Pan, Chen, and Bardhan 2024, 2023).

This work focuses on a questionnaire survey conducted to capture the alterations in work patterns and workspace preferences accelerated by the social restrictions during the pandemic. This survey aims to reveal the underlying intricacies that define the evolving landscape of workspaces with more insights from the design aspect. Respondents indicate the changes in their work patterns before, during and after the pandemic, and compare their experience at home and in office. Archetypes of future workers are developed with advanced data grouping analyses (e.g. cluster analysis) to inform further study. The archetypes represent generalized profiles that capture key patterns in work

**CONTACT** Jiayu Pan jp844@cam.ac.uk Sustainable Design Group, Department of Architecture, University of Cambridge, 1-5 Scroope Terrace, Cambridge CB2 1PX, UK

behaviours and workspace design preferences identified from the survey responses, providing a framework for understanding how diverse worker groups navigate the balance between in-office and remote work and how to address their demands through workspace design. The study also acts as an initial proof-of-concept to the discussion on the changes in the work pattern, preferences and potential implications for the workspace design.

The paper is structured as follows: Section 2 introduces the data collection and analytical methods, with the details about the survey. Section 3 presents and discusses the results of the survey, including demographic information, changes in work patterns, preference for workspace environment and design factors and the characteristics of the worker archetypes. Section 4 concludes this work and summarizes the major findings.

## 2. Data and methods

This section introduces the investigation and analysis through the collection of survey data and analytical methods. The questionnaire survey is designed based on the trends and some design elements identified in previous studies and surveys (Al Horr et al. 2016b; Gensler Research Institute 2023, 2021a, 2021b, 2008; Pan, Chen, and Bardhan 2024, 2022; Rasheed, Khoshbakht, and Baird 2021; Srivastava et al. 2024). Data-driven methods including Categorical Principal Component Analysis (CATPCA) and cluster analysis are applied to analyse the data collected in the survey.

### 2.1. Questionnaire survey

To gain a direct insight into what kind of office space is preferred and needed in the future, a survey is designed to capture the changes in the work pattern and workspace preference after the pandemic. The questionnaire is composed of 30 questions, divided into three parts. This study focuses on analysing the results of the first two sections, which include 24 questions. The third section, which investigates context-specific seat preferences, has been reported separately and contributes to another study (Pan et al. 2025). The structure of the questionnaire is illustrated in Figure 1, with the 24 analysed questions provided in Appendix A: (1) basic demographic information (5 questions); (2) the working pattern and preference for design features ('Work pattern and location' and 'Work environment') (19 questions) and (3) the votes for different types of seats from a case study (6 questions). The socio-demographic details include the age, gender, employment status, industry and country/region of residence. The information on participants' detailed work patterns is collected, including the description of their work pattern before, during and after the pandemic, the days they normally spend in office and at home and the reasons for working from home and working in office. Questions related to their domestic and office environment are also included, such as their current and preferred office type, the presence of other people at home and whether they have a separate space to work at home. The respondents are enquired about their well-being, level of comfort and satisfaction and work performance at home and in office separately, with the comparison of the design features and the ranking of the most impactful design factors. A range of design elements is covered in the choice (as listed in Figure 1), including indoor environmental quality (IEQ) factors that cover the aspects of temperature, air quality, acoustics and lighting, the interior design factors like workstation and furniture, adequate space and aesthetics, and the access to amenities and outdoor space. At last, participants rate their agreement level on six statements as cross-validation and vote their preferences for different innovative workspace solutions.

This survey is approved by the Faculty of Architecture and History of Art Research Ethics Subcommittee at the University of Cambridge. The participants are informed that participation is voluntary before the start of the survey, and they have the right to withdraw from the survey at anytime. The survey responses were gathered using an online questionnaire via Qualtrics (Qualtrics 2023), while a snowball sampling method was employed for distribution. By leveraging social and professional platforms, respondents were encouraged to share the questionnaire within their networks, helping to expand the participant pool. This distribution method was chosen to maximize reach and attract participants from diverse geographic regions and industries and capture a broad range of perspectives and experiences. A pilot study is conducted to test the questions prior to the actual survey. The final survey was distributed in the Summer of 2022 for an active period of around six weeks.

Although there is no rule of thumb for the minimum sample size for cluster analysis, a larger sample size is always desired to provide valid cluster results (Siddiqui 2013). As there are twenty variables selected for data processing, an ideal sample size would be 10–15 times the number of input variables, resulting in a minimum required sample size of 200. In the survey, a total of 876 participants filled in the questionnaire, and 496 responses were used for further analysis.

### 2.2. Exploratory data-driven analysis

To identify the archetypes of workers through the survey, a two-step cluster analysis is applied to classify the participants' demographic information, working patterns and design preferences. IBM SPSS 28.0 is employed to perform the analysis (IBM Corp 2023). Cluster analysis is an exploratory technique to reveal the natural groupings within a dataset. It aims at maximizing intra-class similarity and minimizing inter-class similarity. Twenty variables obtained from the survey are selected as the clustering features, including the basic socio-demographic features like age, gender, employment status and industry, the work pattern factors like work mode, current and preferred days in office and at home and well-being, comfort and work performance rating, and the top design factor that affects their well-being and productivity.

The factors are firstly pre-processed with categorical Principal Component Analysis (CATPCA) to quantify the categorical variables and reduce the dimensionality of the data (IBM SPSS Statistics 2023a). Principal Component Analysis (PCA) is a widely used method for reducing the dimensionality of large datasets, which helps in identifying patterns and trends by transforming the original features into a smaller set of uncorrelated components (Jolliffe 2011). This process is commonly used to eliminate redundant information, thus improving the efficiency of further analysis (Kent et al. 2021). Given that the survey dataset contains

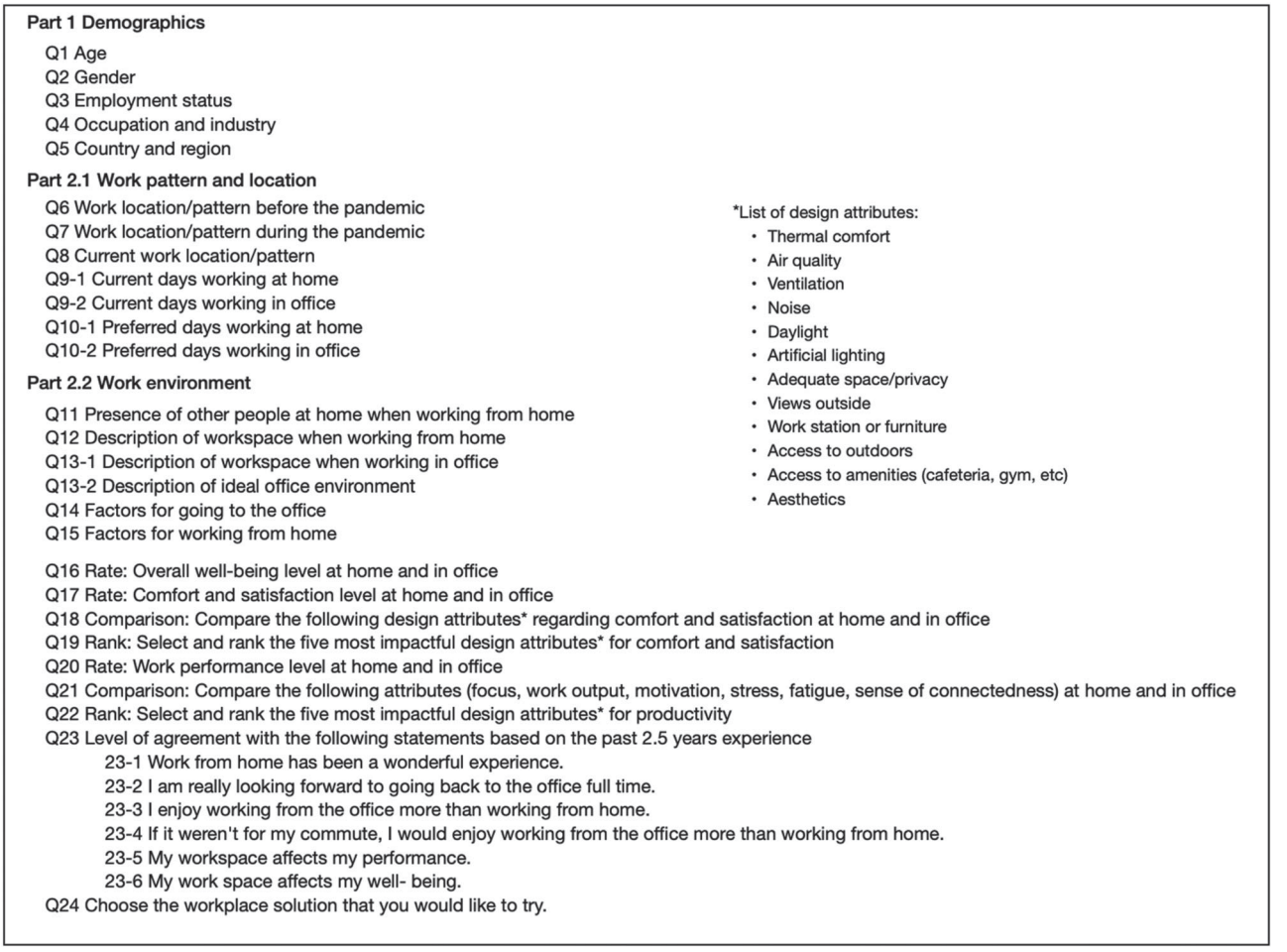


**Figure 1.** Structure of the questionnaire survey.

both numerical and categorical variables, CATPCA was applied rather than standard PCA. CATPCA is a modified version of PCA designed to handle mixed data types (both numerical and categorical) (Casacci 2020). The correlation analysis demonstrates the variables were sufficiently correlated to warrant dimensionality reduction. The object scores (or component scores), generated from CATPCA, represent the transformed values for each observation along the principal components. The scores are further used in the two-step cluster analysis. Two-step cluster analysis starts with the construction of a cluster feature tree. Each successive object is added to an existing leaf node or forms a new node, and the nodes are grouped using the standard agglomerative clustering algorithm. Two-step cluster analysis is an effective and accurate method for segmenting and classifying populations into different groups and creating profiles of people to support decision-making (Tkaczynski 2017). Schwarz's Bayesian Criterion (BIC) is used as the cluster criteria to determine the number of clusters (IBM SPSS Statistics 2023b). A cluster-wise descriptive analysis is applied to characterize the archetypes.

## 3. Results and discussion

While the topic of the 'future of work', including hybrid and virtual digital solutions and changes in work patterns and real estate demand are widely investigated and validated through data (CBRE 2021; Microsoft 2022, 2021; PwC 2021), the understanding of physical spaces and design is relatively limited in the existing studies. Based on the opinions and discussions, this questionnaire survey understands how people accommodate the transition from pre-pandemic offices to post-pandemic workspaces and their preferences and expectations. This section reports the results of the survey, including the basic demographics, changes in work patterns and the exploration of relative design features. The descriptive statistics of quantitative variables are presented in Appendix B.

### 3.1. Demographics

The analysis is based on a total of 496 responses, with demographic distributions illustrated in Figure 2. Respondents' ages mainly concentrate within the 18–54 years old range, which aligns with the working age. The largest proportion of participants falls within the 18–24 years old ($n = 135$, 27.2%) and 25–34 years old ($n = 176$, 35.5%) groups. The sample is diverse, with around 65% of female ($n = 322$) and 32% of male ($n = 163$) respondents. Participants hold a variety of employment types, including full-time workers (60%, $n = 294$), part-time workers (7.4%), self-employed workers (7.1%) and university students (10.5%) who are indicative of future trends. Respondents work

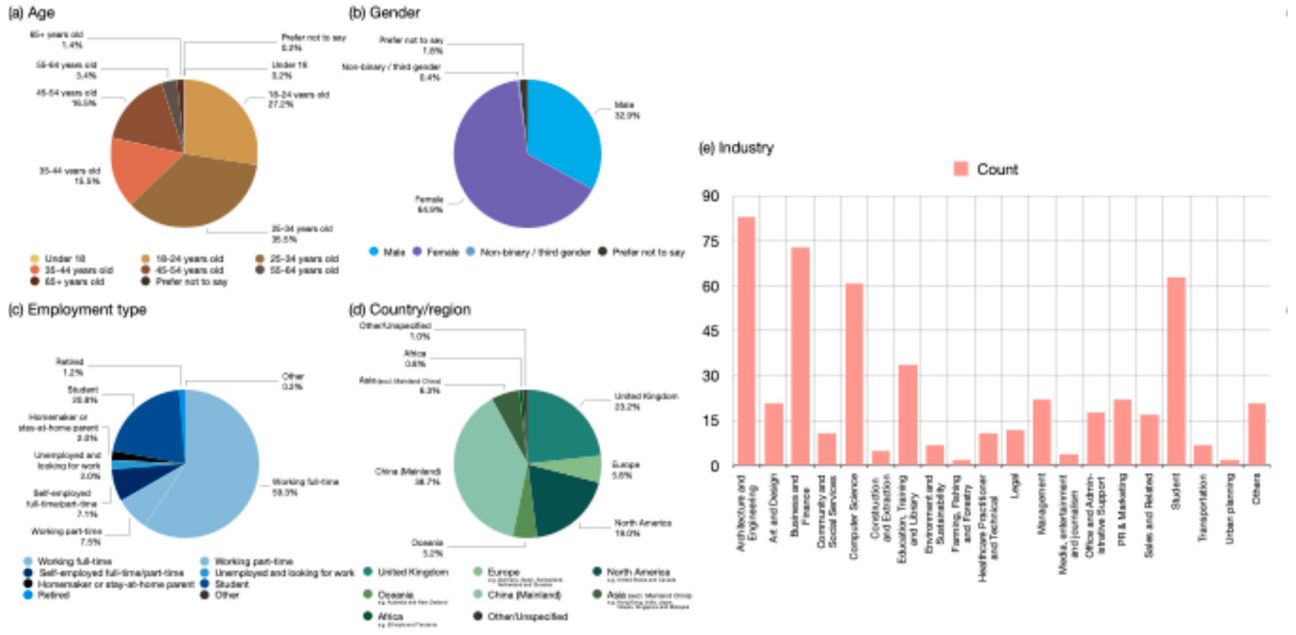


**Figure 2.** Demographic distributions of participants.

in knowledge-based industries such as architecture and engineering (16.7%), business and finance (14.7%) and computer science (12.3%). Geographically, the sample is based in 18 countries and regions, with the highest number of respondents from Mainland China ($n = 192$, 38.7%), followed by the United Kingdom ($n = 115$, 23.2%) and North America ($n = 94$, 19.0%). Other Asian countries (e.g. Hong Kong, India, Japan, Taiwan, Singapore and Malaysia), Continental European countries (e.g. Germany, Spain, Switzerland, the Netherlands and Slovakia) and Oceania countries (e.g. Australia and New Zealand) account for 6.3%, 5.8% and 5.2%, respectively.

### 3.2. Changes in work pattern

The survey results show the shifts in work patterns before, during and after the pandemic, as illustrated in Figure 3(a). Respondents were asked to describe their work situations across three distinct phases. Prior to the pandemic, the majority of respondents ($n = 318$, 64.1%) worked exclusively in an office environment, with only a small percentage of remote workers ($n = 38$, 7.7%) and hybrid workers ($n = 94$, 19.0%). However, in response to the pandemic, over 80% of work-in-office respondents reported a change in their work patterns. A share of 47% of people were working remotely ($n = 233$), while hybrid workers occupy about 36% ($n = 178$).

Looking towards the post-pandemic time, as of mid-2022, hybrid working has emerged as the predominant work mode ($n = 224$, 45.2%), with a decrease in the number of remote workers to 19.5% ($n = 92$) and an increase in in-office workers to 33% ($n = 164$). Notably, more than half of the individuals who worked remotely during the pandemic transitioned to a hybrid mode of work after the pandemic. These findings highlight the dynamic and evolving nature of work patterns, which have been significantly impacted by the pandemic. Figure 3(b) shows the distribution of post-pandemic work patterns by region. More respondents in the UK, Europe and North America choose hybrid working, while a higher percentage of people working in office is found in the Asia-Pacific region. As indicated in Figure 4, more than half (52.6%) of the respondents agree or strongly agree with the statement 'Work from home has been a wonderful experience', while only about a quarter of people (25.6%) indicate they look forward to returning to office full-time. These findings align with the surveys by other large organizations like JLL (JLL 2020), McKinsey (Alexander et al. 2021), CBRE (CBRE 2021) and Gensler survey (Gensler Research Institute 2021c, 2020), and Microsoft (Microsoft 2022).

Figure 5(a) provides information on the current and preferred work locations for different numbers of workdays per week. It shows that the most common current work arrangement is still working 5 or more days in the office, with 184 respondents reporting this as their current work situation. However, when it comes to preferred work arrangements, only 60 respondents preferred working in the office for 5 or more days per week. The majority of participants prefer to spend 2–3 days at home or in office as a balance if they have a choice. On average, participants currently spend about 2.3 days at home and 2.9 days in the office, while they prefer to spend 2.6 days at home and 2.4 days in the office every week. These data indicate a shift in preference towards more flexible work arrangements.

As an additional insight, the current and preferred work locations for each day of the week are enquired (shown in Figure 5(b)). Currently, respondents mostly work in the office from Monday to Thursday, with Wednesday being the most popular day in the office, as 297 people reported. On Fridays, the number of people working from home increases to 218, while the number of in-office workers decreases to 234. During weekends, participants tend to work from home, with 133 selecting this option compared to 49 who work in the office. The analysis of preferred work arrangements reveals a consistent preference for spending more time at home. Most participants preferred to work from home on Fridays and Mondays, with 250 and 248 respondents respectively. For the other weekdays, participants prefer to

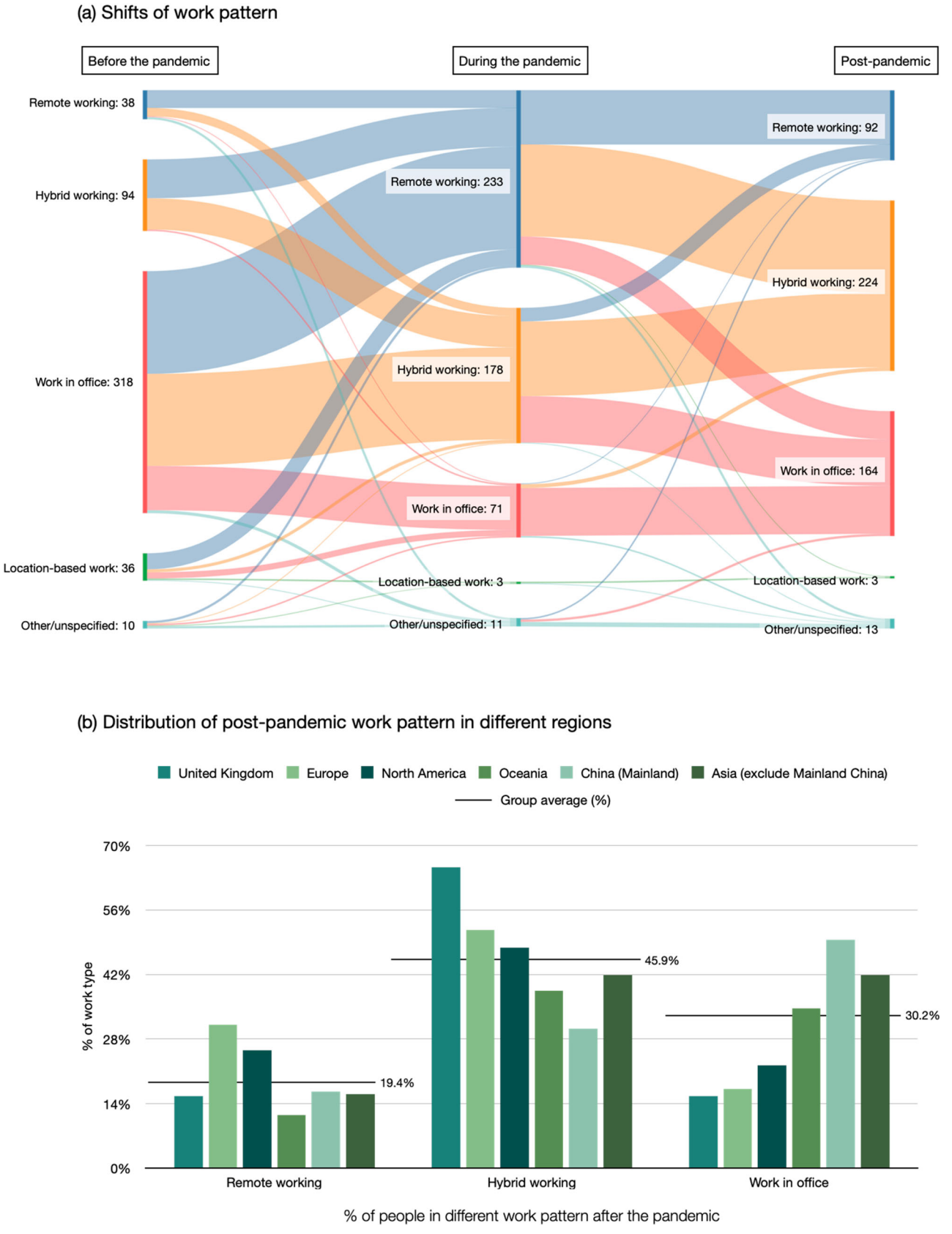


**Figure 3.** Distribution of work pattern.

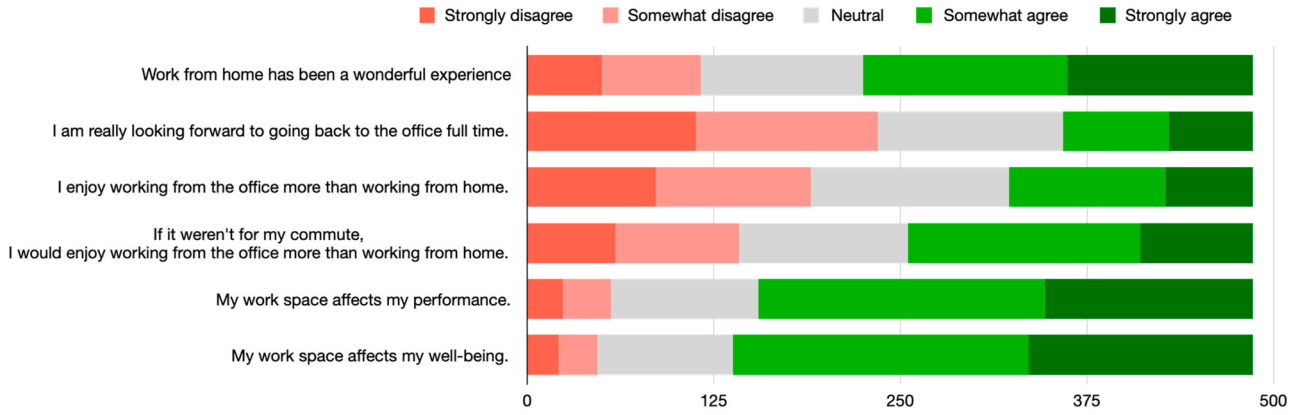


**Figure 4.** Level of agreement to the statements relating to work pattern and workspace.

maintain a balance between working from home and working in the office. Interestingly, participants tend to go to the office on Wednesday, Thursday and Friday compared to working from home.

Figure 6 demonstrates the reason why people want to work in the office and work from home. The main reasons for working in office include face-to-face collaboration, brainstorming, and meeting with colleagues ($n = 328$), followed by more focused working time ($n = 267$), better work environment ($n = 246$), air condit1ioning and heating in the office ($n = 215$) and socializing and networking events ($n = 187$). Some participants reported that they are required by their employer to work in the office ($n = 125$), or their role requires them to be in a certain place like a classroom to teach or lab to run an experiment. These results highlight the importance of offices for collaboration and focused work. When it comes to working from home, the top reasons are having a more flexible schedule ($n = 410$) and less commuting time or cost ($n = 333$). Spending more time with family and pets is also important ($n = 201$). However, participants did not vote as strongly for reasons like 'better work environment' ($n = 145$) and 'more focused working time' ($n = 131$) when working from home, compared to working in the office.

When being enquired about what type of new workplace solutions they would accept, the largest number of respondents chose the digital hybrid conference and meeting room ($n = 278$) and provided access to the local ($n = 204$). Some respondents show interest in virtual socializing space ($n = 134$) and digital twin of physical offices ($n = 126$) too.

### 3.3. Preference for workspace and design factors

The design and environment of a workspace can have a significant impact on an individual's work experience and overall productivity. This section provides a detailed overview of the survey findings to explore various aspects of workspace preferences and design factors. The survey asked questions such as the presence of other people while working from home, current and ideal workspace descriptions for both home and office, overall well-being, comfort and productivity level comparisons between home and office and impactful design attributes.

Figure 7 provides insight into the work-from-home conditions reported by participants. The majority of respondents ($n = 387$) reported having a separate space for work, while 104 participants shared their workspace with a family member or flatmate. When asked about the presence of other individuals at home during working hours, most respondents reported being with independent adult(s) ($n = 264$), living alone ($n = 120$) or having a pet ($n = 81$). Results from the Pearson Chi-squared test indicate a significant association between the work-from-home environment and the comfort level at home ($p < 0.001$). Figure 8 displays a comparison between the current and preferred office settings. The open plan layout is the most common office type currently used by participants ($n = 209$), followed by semi-open cubicles ($n = 104$) and private enclosed offices ($n = 78$). This suggests that the most popular office layouts are still the traditional ones, despite changing trends and preferences. In contrast, the most desirable office types are private enclosed offices ($n = 238$), semi-open spaces ($n = 139$) and enclosed offices with several colleagues ($n = 100$).

The majority of participants (66.7%) recognized that the workspace has an impact on their work performance, while an even larger proportion (70.2%) felt that it affected their well-being, as Figure 4 indicates. They also rated their level of well-being, comfort and satisfaction and work performance at home and in office, respectively (shown in Figure 9). On average, the well-being score is slightly higher at home (3.85) than in the office (3.64), with most respondents ($n = 207$) rating it as 4 for both environments. The average score for comfort and satisfaction is significantly higher when working from home (4.17) compared to working in the office (3.43). While only eight participants rated their comfort level as 'terrible' at home, 221 respondents indicated it as 'excellent'. A large group of respondents rated their comfort level in the office as a 3 ($n = 180$) or 4 ($n = 176$), with a relatively limited number of people giving 'excellent' level ($n = 69$). As for work performance, the average score in the office (3.95) is higher than when working from home (3.69), with 234 respondents rating it as 4 and 142 rating it as 5 in the office.

The design attributes that affect the comfort and satisfaction level are compared in the two different work locations in Figure 10(a). Offices are found to have better workstations and furniture, artificial lighting and access to amenities. Home is significantly better at providing adequate space and privacy, with 258 people voting for 'much better at home' and 102 choosing 'a bit better at home'. Noise and air quality levels are another two factors that have been considered much better at home.

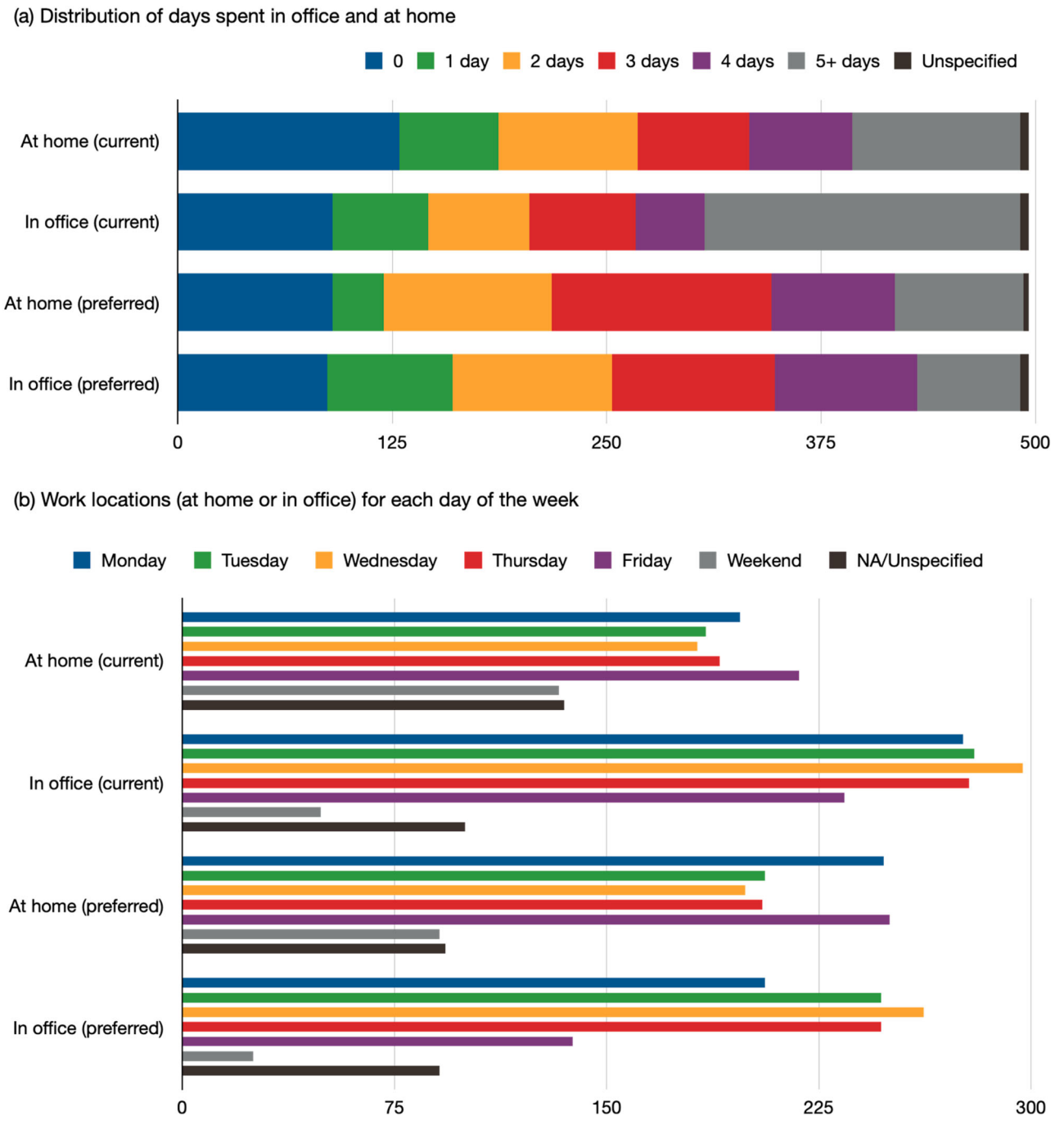


**Figure 5.** Current and preferred work locations.

Additionally, working from the home environment has some advantages over other attributes like ventilation, access to outdoors, thermal comfort, daylight and the view outside compared to office. In terms of work performance, detailed indicators are compared in Figure 10(b). Participants suggested a much better sense of connection with co-workers with 211 voting for 'much better in office'. Also, they feel better attention, focus and motivation in office, with higher productivity. In contrast, the home provides a better environment with less stress and fatigue and a better connection with family.

The participants also ranked the design factors that have the greatest impact on both comfort and satisfaction level and work performance (shown in Figure 11(a and b)). Regarding comfort and satisfaction, adequate space and privacy received the highest number of votes and were ranked as the most important factor by most respondents. This is not surprising since it was also identified as a factor that is much better at home, explaining the high level of comfort and satisfaction in the domestic environment reported in previous questions. Noise level and workstation are the second most impactful factors, followed by thermal comfort and air quality. On the other hand, the most important factor for work performance is noise level, which was ranked as significantly more impactful than all other factors. Other design attributes such as furniture, privacy and thermal comfort also received high votes. While artificial lighting is relatively insignificant in the comfort and satisfaction vote, it has

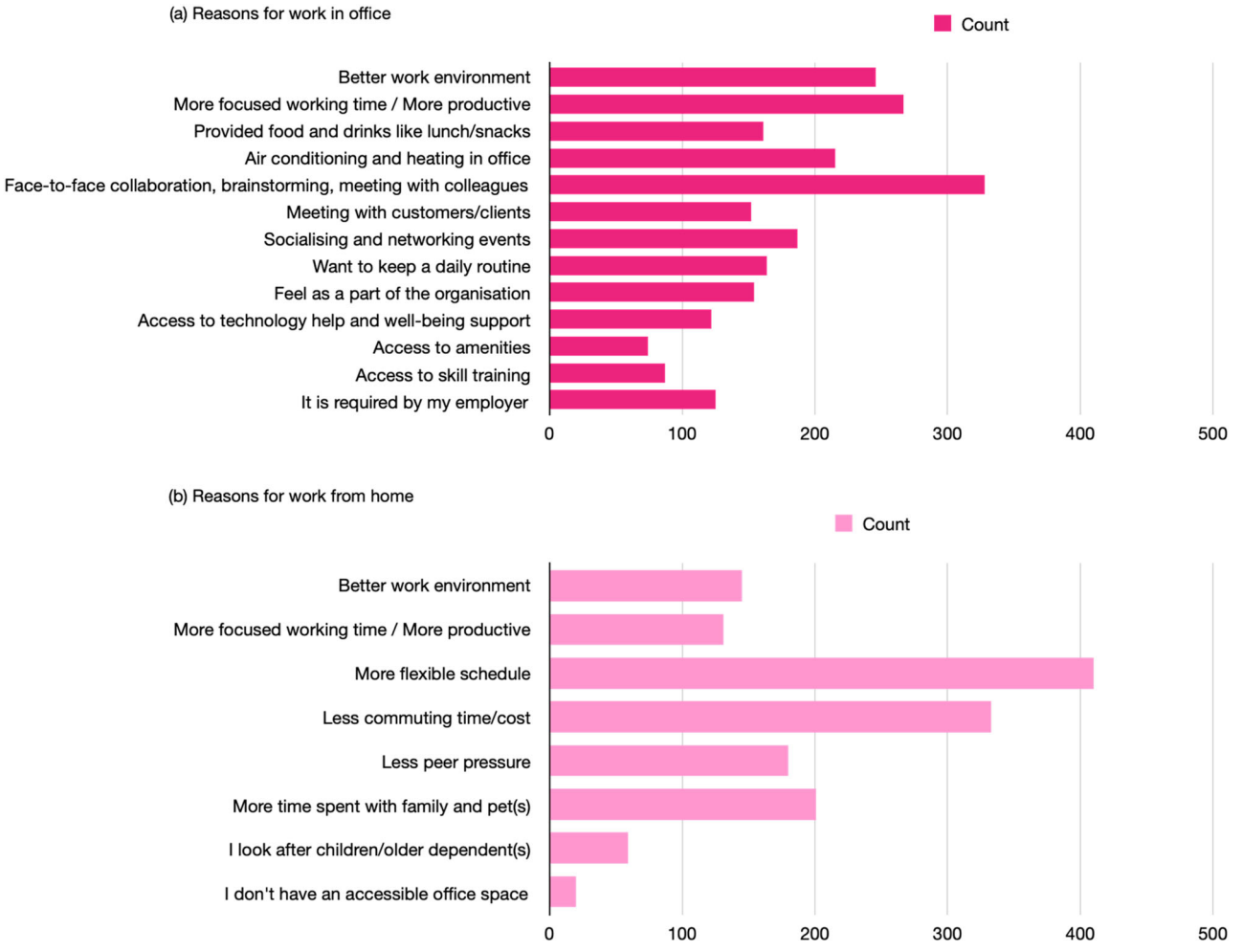


**Figure 6.** Votes for reasons why participants work in office and work from home.

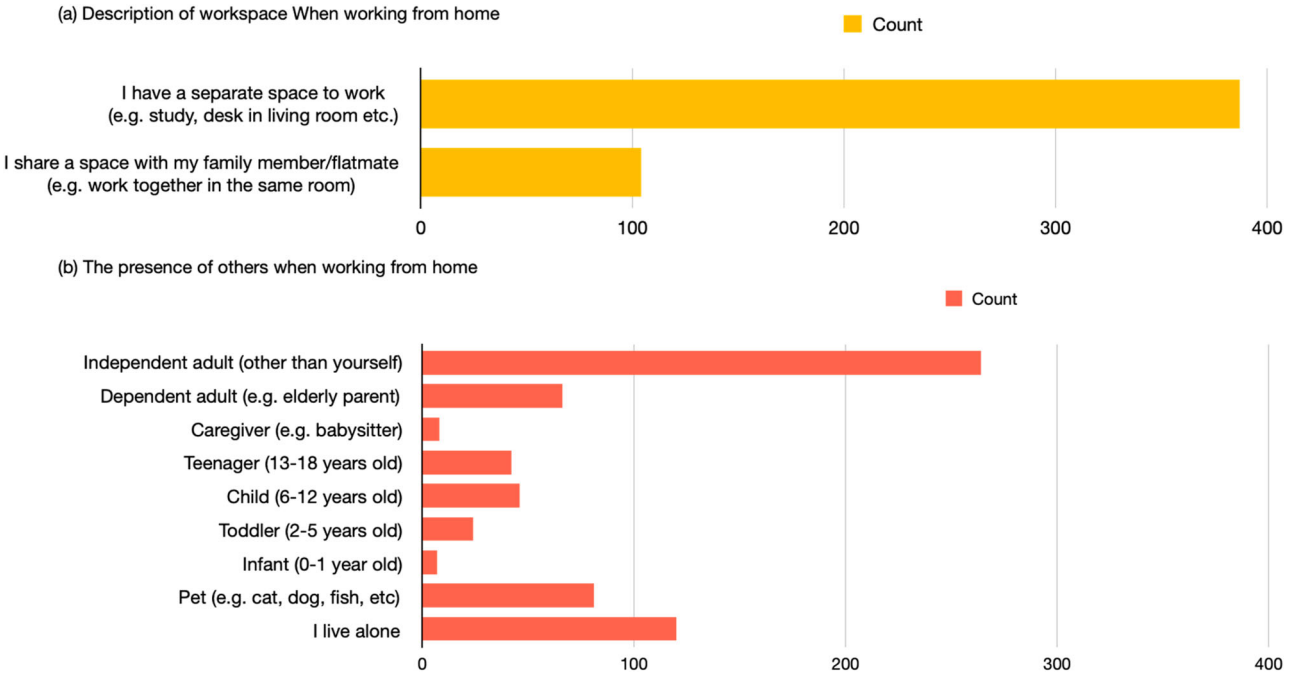


**Figure 7.** Work-from-home conditions.

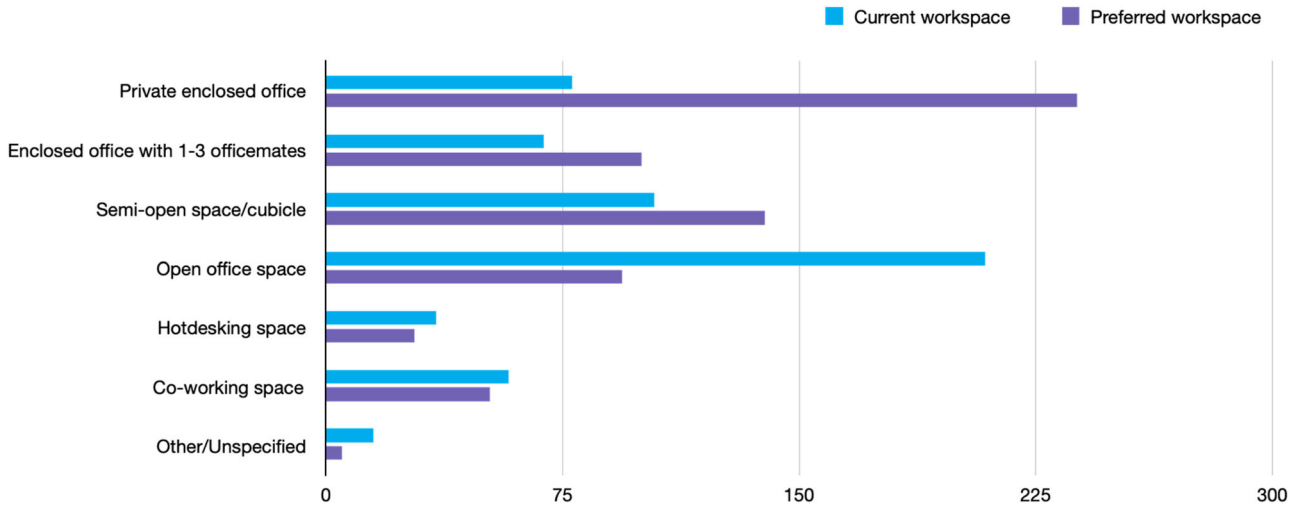


**Figure 8.** Current and preferred office setup.

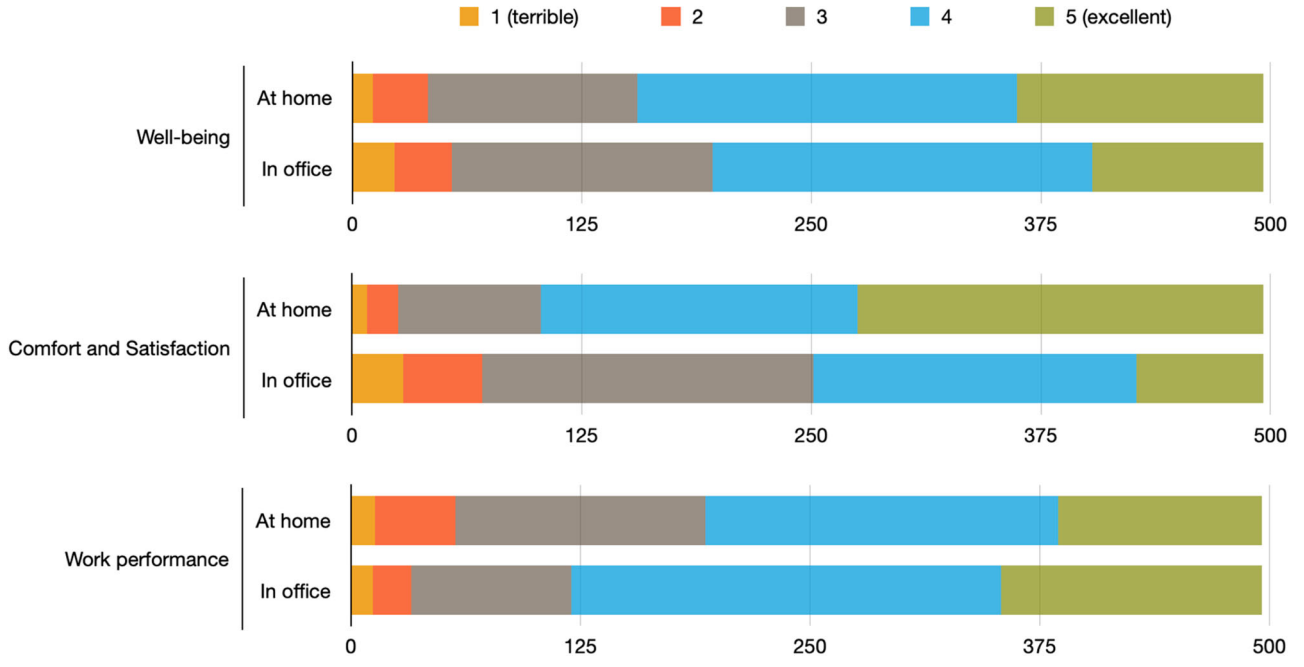


**Figure 9.** Level of well-being, comfort and satisfaction, and work performance when working from home and working in office.

a larger impact on productivity. In contrast, daylight and views outside are more impactful on comfort but less important for work performance. Overall, there are commonalities in the preference for design factors, with factors such as adequate space, workstation and furniture, noise level, thermal comfort and air quality being highly important in both cases. Aesthetics and access to the outdoor are found to be much less impactful.

### 3.4. Characterising workers' archetype

The two-step clustering process generates a total of three clusters with good cluster quality, as indicated by the silhouette value of 0.6. The mean CATPCA score of the three clusters is 1.41 (Cluster 1), 0.05 (Cluster 2) and 1.35 (Cluster 3) separately. The factors involved in the CATPCA processing are analysed to understand the characteristics of the clusters. Table 1 provides a brief summary of the demographics distribution of the three clusters, including factors such as age, gender, employment status and industry. The full description of the three clusters is included in Appendix C (Table C1). The results of the Chi-squared test show that the associations between demographic factors and cluster results are not statistically significant. The percentage value in the table indicates the fraction of each question component in the cluster group.

The age distribution among the three clusters is not distinctive, although Clusters 1 and 2 include a relatively younger age group compared to Cluster 3. Cluster 1 has the largest male composition (38.3%) compared to the other two clusters, while Clusters 2 and 3 encompass higher female shares (65.4% and 70.0%). Work-related factors like employment status and industry also vary among the clusters. Cluster 1 mainly comprises students (27.1%) and full-time workers (62.6%), while Clusters 2 and 3 have a mix of full-time, part-time and self-employed groups. Cluster 1 contains the largest portion of participants who work

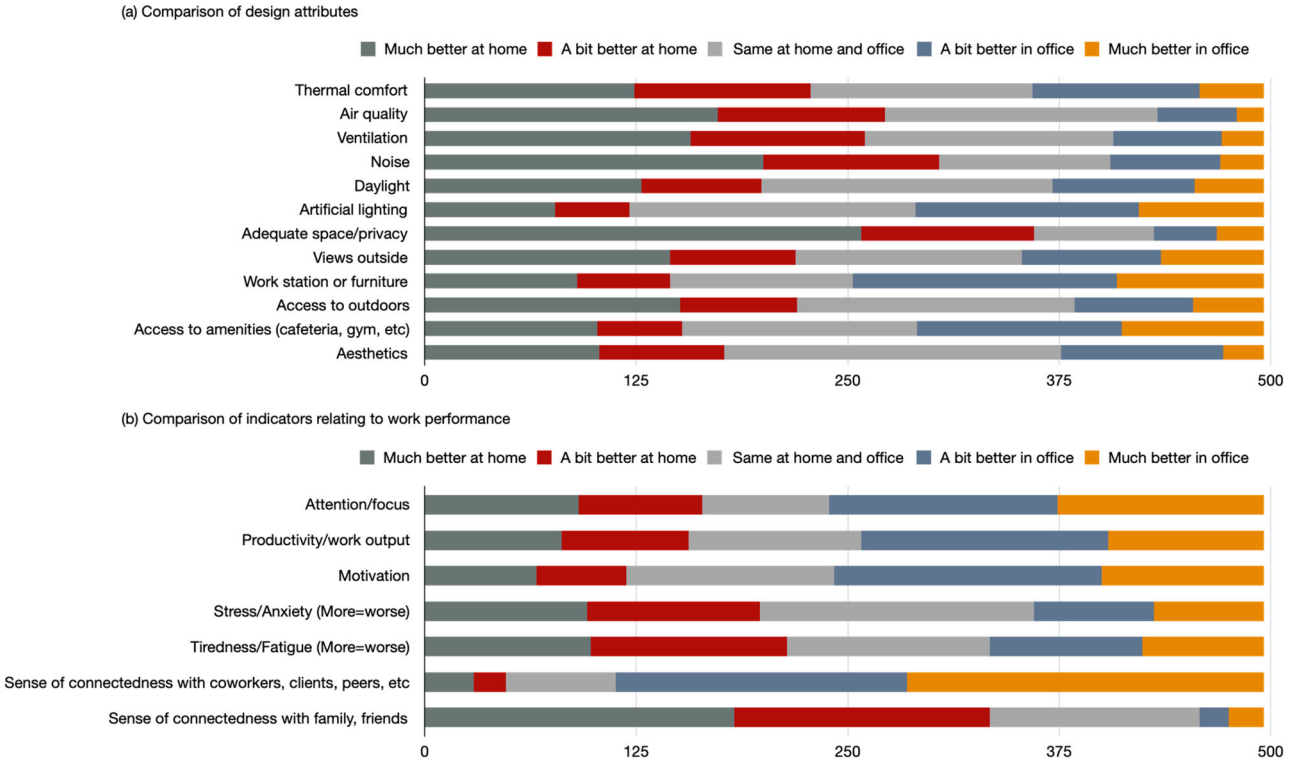


**Figure 10.** Comparisons of different design and work indicators in two locations (home and office).

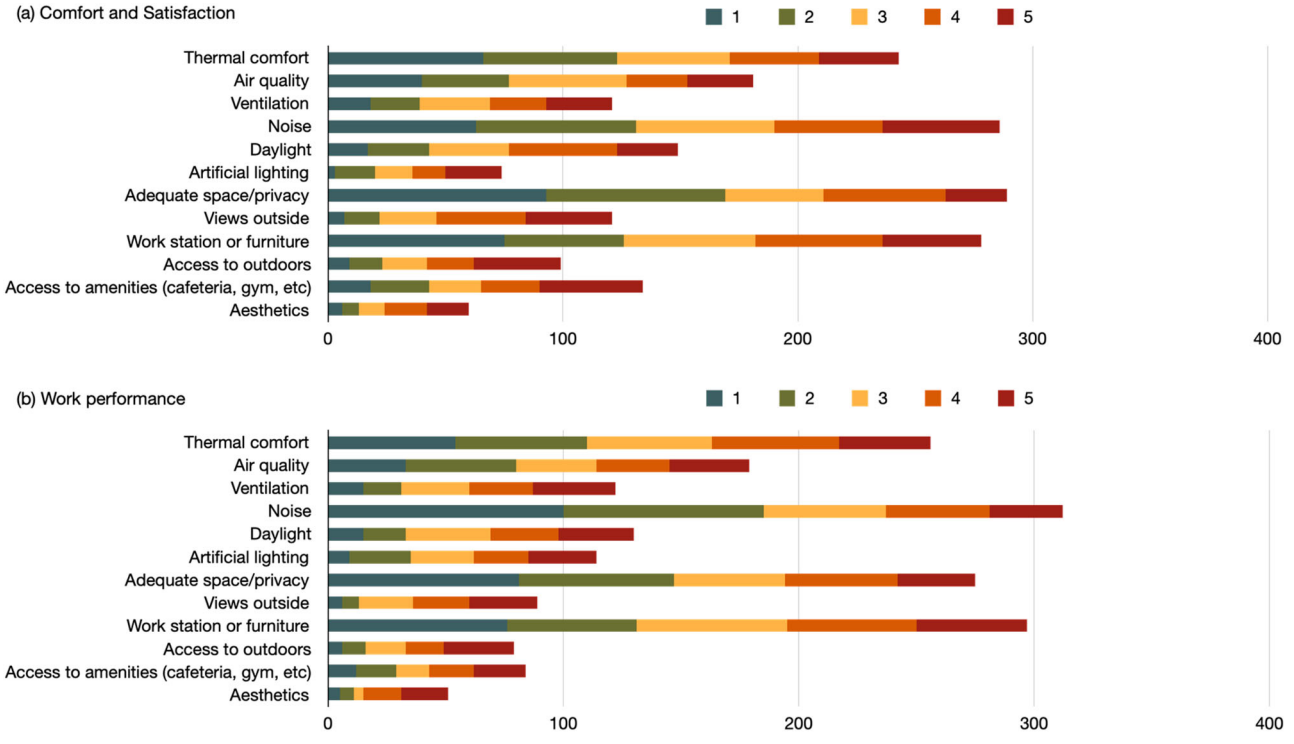


**Figure 11.** Rank of the impact of design factors regarding (a) comfort and satisfaction and (b) work performance.

in the architecture and engineering sector (24.3%). Cluster 2 has a relatively higher percentage of computer scientists (15.2%). Cluster 3 includes a higher percentage of employees in industries like business and finance (20.0%), education, training and library (12.0%), public relations and marketing (7.0%) and management (6.0%). The results indicate that some patterns in age and occupation can be observed among the clusters; however, the socio-demographic variables are not the dominant factors in the cluster analysis.

The three clusters are distinctively characterized as 'office worker' (Cluster 1, $n = 107$, 21.6%), 'hybrid worker' (Cluster 2, $n = 289$, 58.3%) and 'remote worker' (Cluster 3, $n = 100$, 20.2%),

**Table 1.** Demographic distribution of three clusters.

| | | Cluster 1 | Cluster 2 | Cluster 3 | Total | |
|---|---|---|---|---|---|---|
| | | $n = 107$ | $n = 289$ | $n = 100$ | | |
| | | 22% | 58% | 20% | $n = 496$ | $p$-value (Chi-square test) |
| Age | 18–24 years old | 31% | 30% | 15% | 27% | 0.0313 |
| | 25–34 years old | 39% | 35% | 34% | 36% | |
| | 35–44 years old | 16% | 12% | 24% | 16% | |
| | Others | 14% | 22% | 27% | 22% | |
| Gender | Female | 59% | 65% | 70% | 65% | 0.5398 |
| | Male | 38% | 33% | 28% | 33% | |
| | Others | 3% | 2% | 2% | 2% | |
| Employment status | Working full-time | 63% | 58% | 60% | 59% | 0.2113 |
| | Working part-time | 4% | 7% | 12% | 7% | |
| | Student | 27% | 21% | 14% | 21% | |
| | Others | 7% | 14% | 14% | 13% | |
| Industry | Architecture and Engineering | 24% | 16% | 12% | 17% | 0.0216 |
| | Business and Finance | 11% | 14% | 20% | 15% | |
| | Student | 16% | 13% | 9% | 13% | |
| | Computer Science | 5% | 15% | 12% | 12% | |
| | Education, Training and Library | 4% | 6% | 12% | 7% | |
| | Management | 6% | 3% | 6% | 4% | |
| | PR & Marketing | 4% | 4% | 7% | 4% | |
| | Art and Design | 2% | 6% | 3% | 4% | |
| | Office and Administrative Support | 7% | 3% | 2% | 4% | |
| | Sales and Related | 0% | 4% | 5% | 3% | |
| | Legal | 1% | 3% | 1% | 2% | |
| | Community and Social Services | 4% | 2% | 2% | 2% | |
| | Healthcare Practitioner and Technical | 4% | 2% | 0% | 2% | |
| | Others | 14% | 8% | 9% | 10% | |

according to the analysis of the relevant factors about work patterns and design preferences. Therefore, workers' archetypes are formed from the clusters. Office workers prefer going to office during most of the workdays and seem enjoying the office environment more; on the other hand, remote workers tend to spend more days working from home and value a domestic environment with adequate space and minimal noise distractions. Hybrid workers, who split their workdays between home and office, fall somewhere in between the previous two, maintaining a relatively balanced distribution between office and home. Table 2 shows the differences in the components of the clusters.

### *Cluster 1: office worker*

The office worker cluster represents the people who mainly use office as their daily work location. Approximately 69% of respondents in this group reported working in an office or on campus. This characteristic is further reinforced by their responses regarding the number of days spent at home and in the office. Almost 80% of the group spend 0 or 1 d at home, while over 85% spend 4–5 days or more in their offices. On average, they spend 0.95 days at home and 4.27 days in the office in a normal work week. This group also indicates a similar preference for the distribution of workdays between the two locations, with mean values of 0.9 at home and 4.06 in the office. The office workers generally strongly agree that they enjoy working in offices more than working from home.

There is a gap between the group's ratings of their well-being, comfort and satisfaction and work performance in the office versus at home. The group demonstrates a high level of awareness regarding the impact of their workspace on their well-being and work performance. They have the highest proportion of respondents who 'strongly agree' or 'somewhat agree' with the corresponding statements compared to the other two clusters. The group reported a low well-being level at home, with a score of 2.93, while they indicated a much higher well-being level in the office, with a score of 4.25. The difference in comfort and satisfaction levels between the two locations is relatively smaller, with the values of 3.34 at home and 4.00 in the office. This suggests that the office worker group acknowledges the comfortable environment at home but still feels more satisfied and comfortable in their office for work. Not surprisingly, their work performance rating is significantly higher in the office, with over 90% of them rating their in-office productivity as 4 or 5, while their work performance at home is much lower, with an average value of 2.8.

In terms of design factors, the office worker group has identified thermal comfort and workstation or furniture as the most impactful factors for their comfort, satisfaction and work performance. The group has also shown a higher-than-average preference for access to amenities and views outside. Meanwhile, the group seems to have more tolerance for noise, as fewer people voted for noise level as their top preference factor. Additionally, the group considers adequate space and privacy less impactful, as it received the least votes among the three clusters. In terms of comfort and satisfaction, this cluster shows a greater interest in aesthetics, access to the outdoors and artificial lighting. However, these three factors are not particularly impactful on their productivity, as air quality and daylight have been identified with higher importance.

### *Cluster 2: hybrid worker*

A hybrid worker cluster is a large and neutral group that splits their workdays relatively evenly between office and home. More than half of the individuals in this cluster work in hybrid mode. Currently, the average number of days spent working from home

**Table 2.** Detailed distribution of the cluster components and features.

| Variable | | Cluster 1 Office worker | Cluster 2 Hybrid worker | Cluster 3 Remote worker | Overall (%) |
|---|---|---|---|---|---|
| Work mode | Hybrid working(work from home and work in office) | 23% | **53%** | **46%** | **45%** |
| | Remote working(work from home) | 5% | 16% | **40%** | 19% |
| | Work in office | **68%** | 27% | 14% | **33%** |
| | Others | 4% | 4% | 0% | 3% |
| Days at home (current) | 0–2 days | **89%** | **51%** | 27% | **54%** |
| | 3 | 4% | 17% | 16% | 14% |
| | 4–5 (or more) days | 7% | **32%** | **57%** | **32%** |
| Days in office (current) | 0–2 days | 10% | **41%** | **76%** | **41%** |
| | 3 | 4% | 19% | 7% | 14% |
| | 4–5 (or more) days | **86%** | **40%** | 17% | **45%** |
| Days at home (preferred) | 0–2 days | **92%** | **39%** | 7% | **44%** |
| | 3 | 7% | **36%** | 20% | 26% |
| | 4–5 (or more) days | 1% | 25% | **73%** | 30% |
| Days in office (preferred) | 0–2 days | 4% | **52%** | **98%** | **51%** |
| | 3 | 19% | 27% | 1% | 20% |
| | 4–5 (or more) days | **78%** | 20% | 1% | 29% |
| Rate: Well-being level at home | 1–2 | 30% | 3% | 0% | 8% |
| | 3 | **42%** | 23% | 3% | 23% |
| | 4–5 | 28% | **74%** | **97%** | **69%** |
| Rate: Well-being level in office | 1–2 | 2% | 5% | **38%** | 11% |
| | 3 | 7% | **33%** | **41%** | 29% |
| | 4–5 | **92%** | **63%** | 21% | **60%** |
| Rate: Comfort and satisfaction level at home | 1–2 | 20% | 1% | 0% | 5% |
| | 3 | **34%** | 14% | 1% | 16% |
| | 4–5 | **47%** | **84%** | **99%** | **79%** |
| Rate: Comfort and satisfaction level in office | 1–2 | 3% | 8% | **45%** | 14% |
| | 3 | 22% | **41%** | **37%** | **36%** |
| | 4–5 | **75%** | **51%** | 18% | **49%** |
| Rate: Work performance at home | 1–2 | **34%** | 7% | 1% | 11% |
| | 3 | **42%** | 29% | 6% | 27% |
| | 4–5 | 24% | **64%** | **93%** | **61%** |
| Rate: Work performance in office | 1–2 | 1% | 2% | 25% | 7% |
| | 3 | 8% | 16% | **33%** | 18% |
| | 4–5 | **91%** | **82%** | **42%** | **76%** |
| Top design factor that affects comfort and satisfaction | Access to amenities | 7% | 2% | 4% | 4% |
| | Access to outdoors | 2% | 1% | 3% | 2% |
| | Adequate space/privacy | 14% | 17% | 29% | 19% |
| | Aesthetics | 3% | 1% | 1% | 1% |
| | Air quality | 7% | 8% | 8% | 8% |
| | Artificial lighting | 1% | 1% | 0% | 1% |
| | Daylight | 3% | 4% | 2% | 3% |
| | Noise | 11% | 12% | 16% | 13% |
| | Thermal comfort | 21% | 12% | 9% | 13% |
| | Ventilation | 5% | 2% | 6% | 4% |
| | Views outside | 3% | 0% | 3% | 1% |
| | Workstation or furniture | 16% | 18% | 7% | 15% |
| | N/A | 7% | 21% | 12% | 16% |
| Top design factor that affects productivity | Access to amenities | 3% | 2% | 4% | 2% |
| | Access to outdoors | 0% | 1% | 4% | 1% |
| | Adequate space/privacy | 13% | 15% | 25% | 16% |
| | Aesthetics | 0% | 1% | 1% | 1% |
| | Air quality | 7% | 7% | 6% | 7% |
| | Artificial lighting | 1% | 2% | 3% | 2% |
| | Daylight | 4% | 3% | 1% | 3% |
| | Noise | 17% | 20% | 24% | 20% |
| | Thermal comfort | 19% | 10% | 6% | 11% |
| | Ventilation | 3% | 3% | 3% | 3% |
| | Views outside | 3% | 1% | 1% | 1% |
| | Workstation or furniture | 21% | 15% | 10% | 15% |
| | N/A | 10% | 21% | 12% | 17% |
| Level of agreement: I enjoy working from the office more than working from home. | 1–2 | 3% | **35%** | **85%** | **38%** |
| | 3 | 19% | **40%** | 8% | 29% |
| | 4–5 | **79%** | 25% | 7% | **33%** |
| Level of agreement: My workspace affects my performance. | 1–2 | 5% | 11% | 18% | 11% |
| | 3 | 15% | 24% | 23% | 22% |
| | 4–5 | **80%** | **64%** | **59%** | **67%** |
| Level of agreement: My workspace affects my well-being. | 1–2 | 4% | 9% | 17% | 9% |
| | 3 | 20% | 22% | 15% | 20% |
| | 4–5 | **77%** | **69%** | **68%** | **70%** |

*Bold texts indicate the values over 30%.

is slightly lower than the days in office, with an average of 2.48 and 2.89 respectively. However, they prefer spending a bit more time at home than in the office, with an average of 2.71 days at home and 2.39 days in office. About 40% of the group have a neutral attitude towards the statement 'I enjoy working from the office more than working from home', which is the largest proportion among the three clusters.

Individuals in this cluster show some level of agreement towards the influence of workspace on their well-being and work performance, but not as strong as the previous group. The differences between perceived well-being, comfort and satisfaction, and work performance in the office and at home are relatively small. The average well-being rating is slightly higher at home than in the office, with over 70% giving a rating of 3 or 4 at home and over 75% in the office, which represents a medium level. The comfort and satisfaction level is higher at home with a mean value of 4.26, compared to a score of 3.53 in the office. The productivity score is slightly higher in the office with an average of 4.06, while at home, the rating is 3.75. Over 80% of people think their work performance in the office is great with a rating of 4 or 5, while approximately 60% rate their performance at home at 4 or 5.

Hybrid worker cluster also displays diverse preferences for different design factors. In terms of comfort and satisfaction, the group shows a stronger interest in air quality, daylight, and workstations and furniture. For productivity, the votes for factors like aesthetics and ventilation are the highest among the three groups. Additionally, the group includes individuals who consider noise (20.07%), workstation (15.22%) and adequate space (14.53%) as crucial factors for productivity. Conversely, access to amenities, outdoor access and views outside are relatively unimportant for this group.

### *Cluster 3: remote/home worker*

Remote worker or home worker cluster comprises individuals who strongly prefer to work from home or remotely. They represent the largest remote working component among the three clusters, with 40% of the workers in this cluster. Also, 46% of the workers in this group work in a hybrid mode. Currently, the average number of work-from-home days is 3.41, while the average number of work-in-office days is 1.62. The group prefers to spend even more time at home, with an average value of 4.03, and less time in the office, with an average value of 0.67. A majority (around 57%) of the people in this cluster normally spend 4–5 days at home, and over 70% indicate they want to spend 4–5 days at home in their preferred situation. Moreover, 85% of the people in this group disagree with the statement 'I enjoy working from the office more than working from home'.

This group includes the largest proportion of workers who believe that their workspaces have very limited influence on their well-being and work performance, with 18% and 17% respectively voting against the idea. However, it also includes 31% of people who strongly agree that the workspace could affect their work performance and 39% who strongly agree that the workspace could affect their well-being. About 97% of the people in this group reported a high well-being level at home, with a score of 4 or 5, and no one rated their well-being level as low with a score of 0 or 1. The average well-being level at home is 4.52, while the average in-office well-being level is significantly lower with a value of 2.66. The comfort and satisfaction level in the office is significantly low, with an average of 2.55, while 81% of the group thinks they are very comfortable and satisfied in the office with a score of 5. None in this cluster reported a low score of 1 or 2 for comfort and satisfaction at home, while only 1% of the group gave a score of 3. The average comfort and satisfaction level at home is 4.8. The group's work performance is also higher at home compared to in-office, with a mean value of 4.49 compared to 3.20. A majority of 93% of the workers in this cluster think they have a good or excellent level of productivity at home.

This group demonstrates a distinctive preference for design factors. They highly value adequate space and privacy and noise level. Approximately 29% of the people in this cluster ranked adequate space and privacy as their top factor for comfort and satisfaction, and 25% ranked it as the top factor for productivity. Also, 24% and 16% of the group believe that noise level is the most impactful factor for productivity and comfort and satisfaction, respectively. This cluster includes the largest percentage of people who believe that access to the outdoor environment is impactful among the three clusters. Although no one in this group considers artificial lighting as an important factor for their comfort and satisfaction, the proportion who chose artificial lighting as the impactful factor for their productivity is the largest among the three clusters. This characteristic contrasts with the office worker group. Additionally, daylight and thermal comfort seem to be the least impactful factors, as a limited number of people choose them.

## 4. Conclusion

This work presents the findings from a questionnaire survey integral to the exploration of long-term shifts in workspace design. The machine-learning-based data-driven approach applied in this study reveals insights about workers' archetypes collected from the survey, beyond typical hypothesis-driven statistical methods (Van Helden 2013). The diverse participant pool predominantly comprises a younger demographic and individuals from knowledge-based industries. The participants span across 18 countries and regions, with notable concentrations from Mainland China, the UK and North America, providing a rich global perspective.

In alignment with industry reports from JLL, CBRE and Gensler (CBRE 2021; Gensler Research Institute 2021c, 2021a, 2021b, 2020; JLL 2020), the survey reinforces the idea that offices still remain pivotal for collaboration and focused work in post-pandemic time, while remote working offers enhanced flexibility and reduced commuting costs. Hybrid working emerges as a highly popular option. Also, the survey has demonstrated people's diverse nature in their preference for workspace and environment. It distinctively identified three worker archetypes: office workers, hybrid workers and remote workers. The majority leans towards hybrid work, while the remote and office worker groups share nearly equal proportions. These groups show unique preferences for design elements, with office workers preferring factors such as thermal comfort and workstation furniture, hybrid workers exhibiting a mix of preferences encompassing air quality, ventilation and daylight, and remote

workers emphasizing the significance of adequate space, privacy and noise. The workers' archetype established in this study could have an important implication for practice, by guiding the decision-making of designers, employers and facility managers on creating optimal work environments for employees (Appel-Meulenbroek et al. 2022; Sailer, Thomas, and Pachilova 2023).

This study would be further improved by increasing the sample size. While the results offer valuable insights into emerging patterns, the collection of around 500 respondents limits the generalisability of conclusions. The survey distribution process has a natural limitation on the sample group, as the majority of participants are literate workers with access to social media and the internet. Additionally, the diverse nature of work, occupations and industries introduces variability, necessitating more focused investigations into specific professions and sectors. The introduction of the four-day workweek policy may further affect work arrangements and preferences, potentially influencing how employees balance in-office and remote work, which could be included in the future study. This study mainly focuses on the discussion of office and home as the two major workspaces for hybrid working, while some alternative spaces like café and libraries are not fully included in the investigation. Future iterations of this survey, with an expanded sample, more up-to-date data and targeted exploration of different work categories, could provide deeper insights into evolving preferences and transitions in the dynamic landscape of workspace design.

## Acknowledgement

This study is in part supported by the Alan Turing Institute with the doctoral enrichment award, received by JP. All opinions, findings and/or conclusions are those of the authors and do not necessarily reflect the views of the funding organization.

## Disclosure statement

No potential conflict of interest was reported by the author(s).

## Funding

This work was supported by the Alan Turing Institute: [Grant Number Doctoral Enrichment Award].

## Data availability statement

Data are available on request from the authors.

## Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work, the author(s) used chat.openai in order to improve the language. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

## References

Alexander, A., A. D. Smet, M. Langstaff, and D. Ravid. 2021. "What Employees are Saying about the Future of Remote Work." McKinsey Insights. Accessed February 15, 2023. https://www.mckinsey.com/capabilities/people-and-organizational-performance/our-insights/what-employees-are-saying-about-the-future-of-remote-work.

Al Horr, Y., M. Arif, M. Katafygiotou, A. Mazroei, A. Kaushik, and E. Elsarrag. 2016a. "Impact of Indoor Environmental Quality on Occupant Well-Being and Comfort: A Review of the Literature." *International Journal of Sustainable Built Environment* 5: 1–11. https://doi.org/10.1016/j.ijsbe.2016.03.006.

Al Horr, Y., M. Arif, A. Kaushik, A. Mazroei, M. Katafygiotou, and E. Elsarrag. 2016b. "Occupant Productivity and Office Indoor Environment Quality: A Review of the Literature." *Building and Environment* 105: 369–389. https://doi.org/10.1016/j.buildenv.2016.06.001.

Appel-Meulenbroek, R., A. Kemperman, A. Van De Water, M. Weijs-Perrée, and J. Verhaegh. 2022. "How to Attract Employees Back to the Office? A Stated Choice Study on Hybrid Working Preferences." *Journal of Environmental Psychology* 81: 101784. https://doi.org/10.1016/j.jenvp.2022.101784.

Arup. 2021. "Future of Offices: In a Post-Pandemic World [WWW Document]." Accessed April 20, 2021. https://www.arup.com/perspectives/publications/research/section/future-of-offices-in-a-post-pandemic-world.

Ashrae, G. 2016. "Guideline 10-2016-Interactions Affecting the Achievement of Acceptable 1 Indoor Environments." The American Society of Heating, Refrigerating and Air-Conditioning Engineers 2.

Boland, B., A. De Smet, R. Palter, and A. Sanghvi. 2020. "Reimagining the Office and Work Life after COVID-19." Reimagining Off. Work Life COVID-19. Accessed June 5, 2023. https://www.mckinsey.com/capabilities/people-and-organizational-performance/our-insights/reimagining-the-office-and-work-life-after-covid-19.

Brennan, A., J. S. Chugh, and T. Kline. 2002. "Traditional Versus Open Office Design: A Longitudinal Field Study." *Environmental Behavior* 34: 279–299. https://doi.org/10.1177/0013916502034003001.

Caglar, D., E. Faccio, and E. Ryback. 2020. "Creating the Office of the Future." PwC Strateg. Winter 2020.

Casacci, S. 2020. "Categorical Principal Component Analysis." In *Encyclopedia of Quality of Life and Well-Being Research*, edited by F. Maggino, 1–2. Cham: Springer International Publishing. https://doi.org/10.1007/978-3-319-69909-7_104643-1.

CBRE. 2021. "Five Global Themes Influencing the Future of Office: 2021 Occupier Sentiment Survey." CBRE Insights Evol. Workforce. Accessed August 31, 2022. https://www.cbre.com/insights/articles/the-future-of-the-office.

Chacon Vega, R. J., S. P. Gale, Y. Kim, S. Hong, and E. Yang. 2020. "Does an Open-Plan Office Actually Work? A Workplace gap Analysis: Importance and Perceived Support of key Activities." *Journal of Corporate Real Estate* 22: 261–277. https://doi.org/10.1108/JCRE-03-2020-0014.

Choudhury, P. (Raj). 2020, November-December. "Our Work-from-Anywhere Future." *Harvard Business Review*. https://hbr.org/2020/11/our-work-from-anywhere-future.

Gensler Research Institute. 2008. *Do top-Performing Companies Work Differently?* Gensler.

Gensler Research Institute. 2013. *What Factors Drive Workplace Performance?* Gensler.

Gensler Research Institute. 2020. *France Workplace Survey 2020*. Gensler.

Gensler Research Institute. 2021a. *China Workplace Survey 2021*. Gensler.

Gensler Research Institute. 2021b. *U.S. Workplace Survey Winter 2021*. Gensler.

Gensler Research Institute. 2021c. *India Workplace Survey 2021*. Gensler.

Gensler Research Institute. 2023. *UK Workplace Survey 2023*. Gensler.

Haynes, B. P. 2008. "The Impact of Office Comfort on Productivity." *Journal of Facilities Management* 6: 37–51. https://doi.org/10.1108/14725960810847459.

IBM Corp. 2023. "IBM SPSS Statistics for MacOS." Released 2021.

IBM SPSS Statistics. 2023a. "Categorical Principal Components Analysis (CATPCA) [WWW Document]." Documentation. Accessed March 27, 2023. https://www.ibm.com/docs/en/spss-statistics/28.0.0?topic = categories-categorical-principal-components-analysis-catpca.

IBM SPSS Statistics. 2023b. "TwoStep Cluster Analysis [WWW Document]." Documentation. Accessed March 27, 2023. https://www.ibm.com/docs/en/spss-statistics/28.0.0?topic = edition-twostep-cluster-analysis.

JLL. 2020. "Global Workforce Expectations are Shifting Due to COVID-19 [WWW Document]." Jones Lang LaSalle JLL Res. Accessed May 29, 2023. https://www.us.jll.com/en/trends-and-insights/research/global-workforce-expectations-shifting-due-to-covid-19.

Johanson, M. 2021. *Hybrid Work: What the Office Could Look Like Now*. BBC Worklife. https://www.bbc.com/worklife/article/20210713-hybrid-work-what-the-office-could-look-like-now.

Jolliffe, I. 2011. "Principal Component Analysis." In *International Encyclopedia of Statistical Science*, edited by M. Lovric, 1094–1096. Berlin, Heidelberg: Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-642-04898-2_455.

Kent, M., T. Parkinson, J. Kim, and S. Schiavon. 2021. "A Data-Driven Analysis of Occupant Workspace Dissatisfaction." *Building and Environment* 205: 108270. https://doi.org/10.1016/j.buildenv.2021.108270.

Meakin, L. 2021. *That New Hybrid Office May Not Be as Flexible as You Hoped For*. UK: Bloom.

Microsoft. 2021. "The Next Great Disruption is Hybrid Work – Are We Ready?" 2021 Work Trend Index Annu. Rep.

Microsoft. 2022. "Great Expectations: Making Hybrid Work Work." 2022 Work Trend Index Annu. Rep. 1–56.

Miller, N. G. 2014. "Workplace Trends in Office Space: Implications for Future Office Demand." *Journal of Corporate Real Estate* 16: 159–181. https://doi.org/10.1108/JCRE-07-2013-0016.

Page, G., and J. Tolmie. 2024. "Physical Working Environments: How They Affect our Wellbeing and Performance." *In Practice* 46: 152–156. https://doi.org/10.1002/inpr.420.

Pan, J., R. Bardhan, and S. Chen. 2022. "How do Occupants Perceive Thermal Comfort in a Hybrid Office Space? A Case Study of a co-Working Space in London."In *Presented at the 3rd Conference on Comfort at the Extremes Resilient Comfort: Designing to Survive (CATE2022)*.

Pan, J., S. Chen, and R. Bardhan. 2024, March 15. "Reinventing Hybrid Office Design Through a People-Centric Adaptive Approach." *Building and Environment*. 252: 111219. https://doi.org/10.1016/j.buildenv.2024.111219.

Pan, J., T. Y. Cho, M. Sun, R. Debnath, N. Lonsdale, C. Wilcox, and R. Bardhan. 2023. "Future Workspace Needs Flexibility and Diversity: A Machine Learning-Driven Behavioural Analysis of co-Working Space." *PLOS ONE* 18: e0292370. https://doi.org/10.1371/journal.pone.0292370.

Pan, J., T. Y. Cho, M. Sun, K. Steemers, and R. Bardhan. 2025. "Environmental and Spatial Dynamics in a Flexible Workspace for Hybrid Work: A Data-Driven Design Framework." *Building and Environment* 270: 112544. https://doi.org/10.1016/j.buildenv.2025.112544.

Pejtersen, J. H., H. Feveile, K. B. Christensen, and H. Burr. 2011. "Sickness Absence Associated With Shared and Open-Plan Offices – a National Cross Sectional Questionnaire Survey." *Scandinavian Journal of Work, Environment & Health* 37 (5): 376–382. https://doi.org/10.5271/sjweh.3167.

PwC. 2021. *It's Time to Reimagine Where and How Work Will Get Done - PwC's US Remote Work Survey (Business Transformation Insights)*. PwC.

Qualtrics. 2023. "Qualtrics [WWW Document]." https://www.qualtrics.com/uk/.

Rasheed, E. O., M. Khoshbakht, and G. Baird. 2021. "Time Spent in the Office and Workers' Productivity, Comfort and Health: A Perception Study." *Building and Environment* 195: 107747. https://doi.org/10.1016/j.buildenv.2021.107747.

Sailer, K., M. Thomas, and R. Pachilova. 2023. "The Challenges of Hybrid Work: An Architectural Sociology Perspective." *Buildings and Cities* 4 (1): 650–668. https://doi.org/10.5334/bc.350.

Shafaghat, A., A. Keyvanfar, M. S. Ferwati, and T. Alizadeh. 2015. "Enhancing Staff's Satisfaction With Comfort Toward Productivity by Sustainable Open Plan Office Design." *Sustainable Cities and Society* 19: 151–164. https://doi.org/10.1016/j.scs.2015.08.001.

Siddiqui, K. A. 2013. "Heuristics for Sample Size Determination in Multivariate Statistical Techniques." *World Applied Sciences Journal* 27 (2): 285–287. https://doi.org/10.5829/idosi.wasj.2013.27.02.889.

Srivastava, C., E. L. Murnane, S. L. Billington, and H. W. Samuelson. 2024. "Impact of Workplace Design on Perceived Work Performance and Well-Being: Home Versus Office." *Journal of Environmental Psychology* 95: 102274. https://doi.org/10.1016/j.jenvp.2024.102274.

Tkaczynski, A. 2017. "Segmentation Using Two-Step Cluster Analysis." In *Segmentation in Social Marketing*, edited by T. Dietrich, S. Rundle-Thiele, and K. Kubacki, 109–125. Singapore: Springer Singapore. https://doi.org/10.1007/978-981-10-1835-0_8.

United States Environmental Protection Agency. 1989. Report to Congress on Indoor Air Quality, Volume III. EPA/400/1, Washington, DC.

Van Helden, P. 2013. "Data-Driven Hypotheses." *EMBO Reports* 14 (2): 104–104. https://doi.org/10.1038/embor.2012.207.

Vischer, J. C. 2007. "The Effects of the Physical Environment on job Performance: Towards a Theoretical Model of Workspace Stress." *Stress and Health* 23 (3): 175–184. https://doi.org/10.1002/smi.1134.

World Economic Forum. 2023. "The Future of Jobs Report 2023 (No. 978-2-940631-96–4). World Economic Forum, Cologny/Geneva Switzerland.

Yeung, P. 2021. *The Bosses Who Want Us Back in the Office*. BBC Worklife. https://www.bbc.com/worklife/article/20210323-the-bosses-who-want-us-back-in-the-office.

## Appendix A

### Demographics

1. How old are you?
   - ○ Under 18
   - ○ 18-24 years old
   - ○ 25-34 years old
   - ○ 35-44 years old
   - ○ 45-54 years old
   - ○ 55-64 years old
   - ○ 65+ years old
2. How do you describe yourself?
   - ○ Male
   - ○ Female
   - ○ Non-binary/third gender
   - ○ Prefer to self-describe
   - ○ Prefer not to say
3. What best describes your employment status over the last three months?
   - ○ Working full-time
   - ○ Working part-time
   - ○ Self-employed full-time/part-time
   - ○ Unemployed and looking for work
   - ○ Homemaker or stay-at-home parent
   - ○ Student
   - ○ Retired
   - ○ Other, please specify
4. Which of the following best describes your current occupation?
   - ○ Architecture and Engineering
   - ○ Art and Design
   - ○ Business and Finance
   - ○ Community and Social Services
   - ○ Computer Science
   - ○ Construction and Extraction
   - ○ Education, Training and Library
   - ○ Farming, Fishing and Forestry
   - ○ Healthcare Practitioner and Technical
   - ○ Legal
   - ○ Management
   - ○ Office and Administrative Support
   - ○ Personal Care and Service
   - ○ Public Relations
   - ○ PR & Marketing
   - ○ Sales and Related
   - ○ Student
   - ○ Transportation
   - ○ If others, specify
5. In what country/region do you live?
   - ○ United Kingdom
   - ○ United States
   - ○ Australia
   - ○ Canada
   - ○ China
   - ○ Hong Kong
   - ○ India
   - ○ Japan
   - ○ Taiwan
   - ○ Singapore
   - ○ If other, please specify
6. Which of the following best describes your situation **before the pandemic** (i.e. before January 2020)?
   - ○ Remote working (work from home)
   - ○ Hybrid working (work from home and work in office)
   - ○ Work in office
   - ○ Other, please specify:
7. Which of the following best describes your situation **during the pandemic** (i.e. early 2020 to early 2022)?
   - ○ Remote working (work from home)
   - ○ Hybrid working (work from home and work in office)
   - ○ Work in office
   - ○ Other, please specify:
8. Which of the following best describes your situation **now (mid 2022)**?
   - ○ Remote working (work from home)
   - ○ Hybrid working (work from home and work in office)
   - ○ Work in office
   - ○ Other, please specify:

### Hybrid working pattern

9. In your current situation, **how many days per week** do you typically work:

| day(s) | 0 | 1 | 2 | 3 | 4 | 5+ |
|---|---|---|---|---|---|---|
| at home | ○ | ○ | ○ | ○ | ○ | ○ |
| in office | ○ | ○ | ○ | ○ | ○ | ○ |

In your current situation, **which day/days** would you normally work at home/in office? Check all that apply.

| weekday | Mon | Tue | Wed | Thu | Fri | N/A |
|---|---|---|---|---|---|---|
| at home | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| in office | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

10. If you had a choice, how many days per week would you **prefer to work**:

| day(s) | 0 | 1 | 2 | 3 | 4 | 5+ |
|---|---|---|---|---|---|---|
| at home | ○ | ○ | ○ | ○ | ○ | ○ |
| in office | ○ | ○ | ○ | ○ | ○ | ○ |

If you had a choice, which day/days would you **prefer to work at home/in office**? Check all that apply.

| weekday | Mon | Tue | Wed | Thu | Fri | N/A |
|---|---|---|---|---|---|---|
| at home | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| in office | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

11. When you work from home, who is typically also present in the home? Check all that apply.
    - ☐ Independent adult (other than yourself)
    - ☐ Caregiver (e.g. babysitter)
    - ☐ Child (6-12 years old)
    - ☐ Infant (0-1 year old)
    - ☐ I live alone
    - ☐ Dependent adult (e.g. elderly parent)
    - ☐ Teenager (13-18 years old)
    - ☐ Toddler (2-5 years old)
    - ☐ Pet (e.g. cat, dog, fish, etc)

12. When you work from home, which of the following best describes your work space?
    - ☐ I have a separate space to work (e.g. study, desk in living room etc.)
    - ☐ I share a space with my family member/flatmate (e.g. work together in the same room)
    - ☐ Other, please specify:

13. When you work from an office, which of the following best describes **your current work space**? Check all that apply.
    - ☐ Private enclosed office
    - ☐ Enclosed office with 1-3 officemates
    - ☐ Semi-open space / cubicle
    - ☐ Open office space
    - ☐ Hotdesking space
    - ☐ Co-working space
    - ☐ Other, please describe

    Which of the following best describes your **ideal work space**? Check all that apply.
    - ☐ Private enclosed office
    - ☐ Enclosed office with 1-3 officemates
    - ☐ Semi-open space / cubicle
    - ☐ Open office space
    - ☐ Hotdesking space
    - ☐ Co-working space
    - ☐ Other, please describe

14. What factors would drive you **go to office**? Check all that apply.

- ☐ Better work environment
- ☐ More focused working time / More productive
- ☐ Provided food and drinks like lunch/snacks
- ☐ Air conditioning and heating in office
- ☐ Face-to-face collaboration, brainstorming, meeting with colleagues
- ☐ Meeting with customers/clients
- ☐ Socialising and networking events
- ☐ Want to keep a daily routine
- ☐ Feel as a part of the organisation
- ☐ Access to technology help and well-being support
- ☐ Access to amenities
- ☐ Access to skill training
- ☐ It is required by my employer
- ☐ Others, please specify

15. What factors would drive you **work from home**? Check all that apply.

- ☐ Better work environment
- ☐ More focused working time / More productive
- ☐ More flexible schedule
- ☐ Less commuting time/cost
- ☐ Less peer pressure
- ☐ More time spent with family and pet(s)
- ☐ I look after children/older dependent(s)
- ☐ I don't have an accessible office space
- ☐ Others, please specify

16. How would you rate your overall **well-being** when working from:
(1 = terrible, 5 = excellent)

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| at home | ○ | ○ | ○ | ○ | ○ |
| in office | ○ | ○ | ○ | ○ | ○ |

17. How would you rate your **comfort and satisfaction** when working from:
(1 = terrible, 5 = excellent)

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| at home | ○ | ○ | ○ | ○ | ○ |
| in office | ○ | ○ | ○ | ○ | ○ |

18. Please compare your **level of comfort and satisfaction** with the following design attributes in your home vs. office work spaces:

| | at home | | same | in office | |
|---|---|---|---|---|---|
| | much better | a bit better | | a bit better | much better |
| Thermal comfort | ○ | ○ | ○ | ○ | ○ |
| Air quality | ○ | ○ | ○ | ○ | ○ |
| Ventilation | ○ | ○ | ○ | ○ | ○ |
| Noise | ○ | ○ | ○ | ○ | ○ |
| Daylight | ○ | ○ | ○ | ○ | ○ |
| Artificial lighting | ○ | ○ | ○ | ○ | ○ |
| Adequate space/privacy | ○ | ○ | ○ | ○ | ○ |
| Views outside | ○ | ○ | ○ | ○ | ○ |
| Work station or furniture | ○ | ○ | ○ | ○ | ○ |
| Access to outdoors | ○ | ○ | ○ | ○ | ○ |
| Access to amenities (cafeteria, gym, etc) | ○ | ○ | ○ | ○ | ○ |
| Aesthetics | ○ | ○ | ○ | ○ | ○ |

19. Please choose the **five most impactful design attributes and rank**, based on their impact on your level of **comfort and satisfaction** (1 = most impactful, 5 = less impactful):
(hold, drag and drop to rank five of the options below)

- Thermal comfort
- Air quality
- Ventilation
- Noise
- Daylight
- Artificial lighting
- Adequate space/privacy
- Views outside
- Work station or furniture
- Access to outdoors
- Access to amenities (cafeteria, gym, etc)
- Aesthetics

20. On a scale of 1-5, how would you rate your overall **work performance** when working from:
(1 = terrible, 5 = excellent)

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| at home | ○ | ○ | ○ | ○ | ○ |
| in office | ○ | ○ | ○ | ○ | ○ |

21. Please compare the following attributes during a typical day of working from home vs. from office:

| | at home | | same | in office | |
|---|---|---|---|---|---|
| | much better | a bit better | | a bit better | much better |
| Attention/focus | ○ | ○ | ○ | ○ | ○ |
| Productivity/work output | ○ | ○ | ○ | ○ | ○ |
| Motivation | ○ | ○ | ○ | ○ | ○ |
| Stress/Anxiety (More=worse) | ○ | ○ | ○ | ○ | ○ |
| Tiredness/Fatigue (More=worse) | ○ | ○ | ○ | ○ | ○ |
| Sense of connectedness with coworkers, clients, peers, etc | ○ | ○ | ○ | ○ | ○ |
| Sense of connectedness with family, friends | ○ | ○ | ○ | ○ | ○ |

22. Please choose the **five most impactful design attributes and rank**, based on their impact on your productivity (1 = most impactful, 5 = less impactful):
(hold, drag and drop to rank five of the options below)

- Thermal comfort
- Noise
- Adequate space/privacy
- Access to outdoors
- Air quality
- Daylight
- Views outside
- Access to amenities (cafeteria, gym, etc)
- Ventilation
- Artificial lighting
- Work station or furniture
- Aesthetics

23. Please choose your level of agreement with the following statements based on your experience in the **past 2.5 years**:

| | disagree | | neutral | agree | |
|---|---|---|---|---|---|
| | strongly | somewhat | | somewhat | strongly |
| Work from home has been a wonderful experience. | ○ | ○ | ○ | ○ | ○ |
| I am really looking forward to going back to the office full time. | ○ | ○ | ○ | ○ | ○ |
| I enjoy working from the office more than working from home. | ○ | ○ | ○ | ○ | ○ |
| If it weren't for my commute, I would enjoy working from the office more than working from home. | ○ | ○ | ○ | ○ | ○ |
| My work space affects my performance. | ○ | ○ | ○ | ○ | ○ |
| My work space affects my well-being. | ○ | ○ | ○ | ○ | ○ |

24. Which workplace solution would you like to try and use? Check all that apply.

- ☐ Digital hybrid conference/meeting
- ☐ VR-based immersive work environment
- ☐ Virtual socialising space: tea room and cafe
- ☐ Other: please specify
- ☐ Digital twin of physical offices
- ☐ Virtual office space through webpage/digital applications
- ☐ Provided access to local flexible co-working hubs

## Appendix B

**Table B1.** Descriptive data of the survey ($n = 469$)

| | Mean | 95% confidence interval | Median | Standard deviation | Min | Max |
|---|---|---|---|---|---|---|
| **Number of days spent at home (Current)** | 2.34 | [2.17, 2.50] | 2.00 | 1.858 | 0 | 5 |
| **Number of days spent in office (Current)** | 2.93 | [2.76, 3.10] | 3.00 | 1.942 | 0 | 5 |
| **Number of days spent at home (Preferred)** | 2.58 | [2.44, 2.73] | 3.00 | 1.630 | 0 | 5 |
| **Number of days spent in office (Preferred)** | 2.40 | [2.26, 2.54] | 2.00 | 1.629 | 0 | 5 |
| **Level of well-being at home** | 3.85 | [3.77, 3.94] | 4.00 | 0.960 | 1 | 5 |
| **Level of well-being in office** | 3.64 | [3.55, 3.73] | 4.00 | 1.006 | 1 | 5 |
| **Level of comfort and satisfaction at home** | 4.17 | [4.09, 4.25] | 4.00 | 0.926 | 1 | 5 |
| **Level of comfort and satisfaction in office** | 3.43 | [3.34, 3.52] | 3.00 | 1.019 | 1 | 5 |
| **Level of work performance at home** | 3.69 | [3.61, 3.78] | 4.00 | 0.998 | 1 | 5 |
| **Level of work performance in office** | 3.95 | [3.87, 4.03] | 4.00 | 0.921 | 1 | 5 |
| **Level of agreement: Work from home has been a wonderful experience.** | 3.44 | [3.33, 3.55] | 4.00 | 1.273 | 1 | 5 |
| **Level of agreement: I am really looking forward to going back to the office full time.** | 2.67 | [2.55, 2.78] | 3.00 | 1.282 | 1 | 5 |
| **Level of agreement: I enjoy working from the office more than working from home.** | 2.89 | [2.78, 3.00] | 3.00 | 1.254 | 1 | 5 |
| **Level of agreement If it weren't for my commute, I would enjoy working from the office more than working from home.** | 3.21 | [3.10, 3.32] | 3.00 | 1.233 | 1 | 5 |
| **Level of agreement: My workspace affects my performance.** | 3.79 | [3.69, 3.88] | 4.00 | 1.072 | 1 | 5 |
| **Level of agreement: My workspace affects my well-being.** | 3.87 | [3.78, 3.96] | 4.00 | 1.040 | 1 | 5 |

**Table B2.** Descriptive data of three clusters.

| | | Mean | 95% confidence interval | Median | Standard deviation |
|---|---|---|---|---|---|
| **Cluster 1 Office worker ($n = 107$)** | **Number of days spent at home (Current)** | 0.95 | [0.69, 1.22] | 0.00 | 1.376 |
| | **Number of days spent in office (Current)** | 4.27 | [4.00, 4.54] | 5.00 | 1.418 |
| | **Number of days spent at home (Preferred)** | 0.90 | [0.70, 1.10] | 0.00 | 1.055 |
| | **Number of days spent in office (Preferred)** | 4.06 | [3.85, 4.25] | 4.00 | 1.026 |
| | **Level of well-being at home** | 2.93 | [2.74, 3.11] | 3.00 | 0.988 |
| | **Level of well-being in office** | 4.25 | [4.13, 4.38] | 4.00 | 0.660 |
| | **Level of comfort and satisfaction at home** | 3.34 | [3.13, 3.55] | 3.00 | 1.098 |
| | **Level of comfort and satisfaction in office** | 4.00 | [3.85, 4.15] | 4.00 | 0.789 |
| | **Level of work performance at home** | 2.80 | [2.61, 2.99] | 3.00 | 0.985 |
| | **Level of work performance in office** | 4.38 | [4.24, 4.52] | 4.00 | 0.722 |
| | **Level of agreement: I enjoy working from the office more than working from home.** | 4.12 | [3.96, 4.28] | 4.00 | 0.844 |
| | **Level of agreement: My workspace affects my performance.** | 4.11 | [3.95, 4.27] | 4.00 | 0.828 |
| | **Level of agreement: My workspace affects my well-being.** | 4.07 | [3.91, 4.22] | 4.00 | 0.827 |
| **Cluster 2 Hybrid worker ($n = 289$)** | **Number of days spent at home (Current)** | 2.48 | [2.28, 2.68] | 2.00 | 1.756 |
| | **Number of days spent in office (Current)** | 2.89 | [2.68, 3.11] | 3.00 | 1.842 |
| | **Number of days spent at home (Preferred)** | 2.71 | [2.55, 2.87] | 3.00 | 1.384 |
| | **Number of days spent in office (Preferred)** | 2.39 | [2.23, 2.55] | 2.00 | 1.370 |
| | **Level of well-being at home** | 3.97 | [3.87, 4.06] | 4.00 | 0.794 |
| | **Level of well-being in office** | 3.75 | [3.65, 3.84] | 4.00 | 0.818 |
| | **Level of comfort and satisfaction at home** | 4.26 | [4.18, 4.35] | 4.00 | 0.75 |
| | **Level of comfort and satisfaction in office** | 3.53 | [3.43, 3.63] | 4.00 | 0.858 |
| | **Level of work performance at home** | 3.75 | [3.65, 3.84] | 4.00 | 0.830 |
| | **Level of work performance in office** | 4.06 | [3.97, 4.14] | 4.00 | 0.729 |
| | **Level of agreement:I enjoy working from the office more than working from home.** | 2.85 | [2.73, 2.97] | 3.00 | 1.005 |
| | **Level of agreement: My workspace affects my performance.** | 3.73 | [3.61, 3.85] | 4.00 | 1.032 |
| | **Level of agreement: My workspace affects my well-being.** | 3.82 | [3.70, 3.94] | 4.00 | 0.994 |
| **Cluster 3 Remote worker ($n = 100$)** | **Number of days spent at home (Current)** | 3.41 | [3.07, 3.75] | 4.00 | 1.724 |
| | **Number of days spent in office (Current)** | 1.62 | [1.27, 1.97] | 1.00 | 1.774 |
| | **Number of days spent at home (Preferred)** | 4.03 | [3.81, 4.25] | 4.00 | 1.132 |
| | **Number of days spent in office (Preferred)** | 0.67 | [0.51, 0.83] | 1.00 | 0.829 |
| | **Level of well-being at home** | 4.52 | [4.41, 4.63] | 5.00 | 0.559 |
| | **Level of well-being in office** | 2.66 | [2.44, 2.88] | 3.00 | 1.112 |
| | **Level of comfort and satisfaction at home** | 4.80 | [4.72, 4.88] | 5.00 | 0.426 |
| | **Level of comfort and satisfaction in office** | 2.55 | [2.33, 2.77] | 3.00 | 1.104 |
| | **Level of work performance at home** | 4.49 | [4.36, 4.62] | 5.00 | 0.659 |
| | **Level of work performance in office** | 3.20 | [2.97, 3.43] | 3.00 | 1.155 |
| | **Level of agreement: I enjoy working from the office more than working from home.** | 1.68 | [1.48, 1.88] | 1.00 | 1.024 |
| | **Level of agreement: My workspace affects my performance.** | 3.59 | [3.33, 3.85] | 4.00 | 1.325 |
| | **Level of agreement: My workspace affects my well-being.** | 3.79 | [3.53, 4.05] | 4.00 | 1.320 |

## Appendix C

**Table C1.** Demographic distribution of three clusters (full version).

| | | Cluster 1 | Cluster 2 | Cluster 3 | Total | |
|---|---|---|---|---|---|---|
| | | $n = 107$ | $n = 289$ | $n = 100$ | | |
| | | 21.57% | 58.27% | 20.16% | $n = 496$ | $p$-value (Chi-square test) |
| Age | Under 18 | 0.00% | 0.35% | 0.00% | 0.20% | 0.0313 |
| | 18–24 years old | 30.84% | 30.10% | 15.00% | 27.22% | |
| | 25–34 years old | 39.25% | 34.95% | 34.00% | 35.69% | |
| | 35–44 years old | 15.89% | 12.46% | 24.00% | 15.52% | |
| | 45–54 years old | 9.35% | 17.30% | 22.00% | 16.53% | |
| | 55–64 years old | 1.87% | 3.81% | 4.00% | 3.43% | |
| | 65 + years old | 2.80% | 1.04% | 1.00% | 1.41% | |
| Gender | Female | 58.88% | 65.40% | 70.00% | 64.92% | 0.5398 |
| | Male | 38.32% | 32.53% | 28.00% | 32.86% | |
| | Non-binary / third gender | 0.00% | 0.69% | 0.00% | 0.40% | |
| | Prefer not to say | 2.80% | 1.38% | 2.00% | 1.81% | |
| Employment status | Homemaker or stay-at-home parent | 1.87% | 1.73% | 3.00% | 2.02% | 0.2113 |
| | Others/Unspecified | 0.00% | 0.35% | 0.00% | 0.20% | |
| | Retired | 1.87% | 1.04% | 1.00% | 1.21% | |
| | Self-employed full-time/part-time | 1.87% | 9.00% | 7.00% | 7.06% | |
| | Student | 27.10% | 20.76% | 14.00% | 20.77% | |
| | Unemployed and looking for work | 0.93% | 2.08% | 3.00% | 2.02% | |
| | Working full-time | 62.62% | 57.79% | 60.00% | 59.27% | |
| | Working part-time | 3.74% | 7.27% | 12.00% | 7.46% | |
| Industry | Architecture and Engineering | 24.30% | 15.57% | 12.00% | 16.73% | 0.0216 |
| | Art and Design | 1.87% | 5.54% | 3.00% | 4.23% | |
| | Business and Finance | 11.21% | 14.19% | 20.00% | 14.72% | |
| | Community and Social Services | 3.74% | 1.73% | 2.00% | 2.22% | |
| | Computer Science | 4.67% | 15.22% | 12.00% | 12.30% | |
| | Construction and Extraction | 0.93% | 1.04% | 1.00% | 1.01% | |
| | Education, Training and Library | 3.74% | 6.23% | 12.00% | 6.85% | |
| | Environment and Sustainability | 0.93% | 1.73% | 1.00% | 1.41% | |
| | Farming, Fishing and Forestry | 0.93% | 0.35% | 0.00% | 0.40% | |
| | Healthcare Practitioner and Technical | 3.74% | 2.42% | 0.00% | 2.22% | |
| | Legal | 0.93% | 3.46% | 1.00% | 2.42% | |
| | Management | 5.61% | 3.46% | 6.00% | 4.44% | |
| | Media, entertainment and journalism | 0.93% | 0.69% | 1.00% | 0.81% | |
| | Office and Administrative Support | 6.54% | 3.11% | 2.00% | 3.63% | |
| | PR & Marketing | 3.74% | 3.81% | 7.00% | 4.44% | |
| | Sales and Related | 0.00% | 4.15% | 5.00% | 3.43% | |
| | Student | 15.89% | 12.80% | 9.00% | 12.70% | |
| | Transportation | 2.80% | 0.69% | 2.00% | 1.41% | |
| | Urban planning | 1.87% | 0.00% | 0.00% | 0.40% | |
| | Others/Unspecified | 5.61% | 3.81% | 4.00% | 4.23% | |

**Table C1.** Detailed distribution of the cluster components and features (full version).

| Variable | | Cluster 1 | Cluster 2 | Cluster 3 | Overall (%) |
|---|---|---|---|---|---|
| | | Office worker | Hybrid worker | Remote worker | |
| Work mode | Hybrid working (work from home and work in office) | 23.36% | 52.94% | 46.00% | 45.16% |
| | Remote working (work from home) | 4.67% | 16.26% | 40.00% | 18.55% |
| | Work in office | 68.22% | 26.64% | 14.00% | 33.06% |
| | Location-based (field/depot-based) | 0.00% | 0.69% | 0.00% | 0.40% |
| | Location-based ( on campus) | 0.93% | 0.00% | 0.00% | 0.20% |
| | Not working | 1.87% | 1.38% | 0.00% | 1.21% |
| | Other/unspecified | 0.93% | 2.08% | 0.00% | 1.41% |
| Days at home (current) | 0 | 50.47% | 21.45% | 13.00% | 26.01% |
| | 1 | 28.97% | 8.65% | 2.00% | 11.69% |
| | 2 | 9.35% | 20.42% | 12.00% | 16.33% |
| | 3 | 3.74% | 17.30% | 16.00% | 14.11% |
| | 4 | 0.93% | 14.19% | 18.00% | 12.10% |
| | 5 (or more) | 6.54% | 17.99% | 39.00% | 19.76% |
| Days in office (current) | 0 | 7.48% | 16.26% | 35.00% | 18.15% |
| | 1 | 0.93% | 10.03% | 26.00% | 11.29% |
| | 2 | 1.87% | 14.53% | 15.00% | 11.90% |
| | 3 | 3.74% | 19.38% | 7.00% | 13.51% |
| | 4 | 18.69% | 6.92% | 0.00% | 8.06% |
| | 5 (or more) | 67.29% | 32.87% | 17.00% | 37.10% |
| Days at home (preferred) | 0 | 50.47% | 11.42% | 3.00% | 18.15% |
| | 1 | 18.69% | 3.46% | 0.00% | 6.05% |
| | 2 | 22.43% | 24.22% | 4.00% | 19.76% |
| | 3 | 7.48% | 35.64% | 20.00% | 26.41% |
| | 4 | 0.93% | 14.19% | 30.00% | 14.52% |
| | 5 (or more) | 0.00% | 11.07% | 43.00% | 15.12% |
| Days in office (preferred) | 0 | 2.80% | 12.11% | 49.00% | 17.54% |
| | 1 | 0.00% | 11.76% | 39.00% | 14.72% |
| | 2 | 0.93% | 28.37% | 10.00% | 18.75% |
| | 3 | 18.69% | 27.34% | 1.00% | 20.16% |

**Table C1.** Continued.

| | | | | | |
|---|---|---|---|---|---|
| | 4 | 40.19% | 13.84% | 0.00% | 16.73% |
| | 5 (or more) | 37.38% | 6.57% | 1.00% | 12.10% |
| Rate: Well-being level at home | 1 | 9.35% | 0.35% | 0.00% | 2.22% |
| | 2 | 20.56% | 2.77% | 0.00% | 6.05% |
| | 3 | 42.06% | 22.84% | 3.00% | 22.98% |
| | 4 | 24.30% | 48.10% | 42.00% | 41.73% |
| | 5 | 3.74% | 25.95% | 55.00% | 27.02% |
| Rate: Well-being level in office | 1 | 0.00% | 0.69% | 21.00% | 4.64% |
| | 2 | 1.87% | 4.15% | 17.00% | 6.25% |
| | 3 | 6.54% | 32.53% | 41.00% | 28.63% |
| | 4 | 56.07% | 44.98% | 17.00% | 41.73% |
| | 5 | 35.51% | 17.65% | 4.00% | 18.75% |
| Rate: Comfort and satisfaction level at home | 1 | 7.48% | 0.00% | 0.00% | 1.61% |
| | 2 | 12.15% | 1.38% | 0.00% | 3.43% |
| | 3 | 33.64% | 14.19% | 1.00% | 15.73% |
| | 4 | 32.71% | 41.18% | 18.00% | 34.68% |
| | 5 | 14.02% | 43.25% | 81.00% | 44.56% |
| Rate: Comfort and satisfaction level in office | 1 | 0.00% | 2.08% | 22.00% | 5.65% |
| | 2 | 2.80% | 5.88% | 23.00% | 8.67% |
| | 3 | 22.43% | 41.18% | 37.00% | 36.29% |
| | 4 | 46.73% | 38.75% | 14.00% | 35.48% |
| | 5 | 28.04% | 12.11% | 4.00% | 13.91% |
| Rate: Work performance at home | 1 | 12.15% | 0.00% | 0.00% | 2.62% |
| | 2 | 21.50% | 6.92% | 1.00% | 8.87% |
| | 3 | 42.06% | 29.41% | 6.00% | 27.42% |
| | 4 | 22.43% | 45.67% | 36.00% | 38.71% |
| | 5 | 1.87% | 17.99% | 57.00% | 22.38% |
| Rate: Work performance in office | 1 | 0.93% | 0.35% | 10.00% | 2.42% |
| | 2 | 0.00% | 2.08% | 15.00% | 4.23% |
| | 3 | 8.41% | 15.57% | 33.00% | 17.54% |
| | 4 | 41.12% | 55.71% | 29.00% | 47.18% |
| | 5 | 49.53% | 26.30% | 13.00% | 28.63% |
| Top design factor that affects comfort and satisfaction | Access to amenities | 6.54% | 2.42% | 4.00% | 3.63% |
| | Access to outdoors | 1.87% | 1.38% | 3.00% | 1.81% |
| | Adequate space/privacy | 14.02% | 16.96% | 29.00% | 18.75% |
| | Aesthetics | 2.80% | 0.69% | 1.00% | 1.21% |
| | Air quality | 7.48% | 8.30% | 8.00% | 8.06% |
| | Artificial lighting | 0.93% | 0.69% | 0.00% | 0.60% |
| | Daylight | 2.80% | 4.15% | 2.00% | 3.43% |
| | Noise | 11.21% | 12.11% | 16.00% | 12.70% |
| | Thermal comfort | 21.50% | 11.76% | 9.00% | 13.31% |

**Table C1.** Continued

| | | | | | |
|---|---|---|---|---|---|
| | Ventilation | 4.67% | 2.42% | 6.00% | 3.63% |
| | Views outside | 2.80% | 0.35% | 3.00% | 1.41% |
| | Workstation or furniture | 15.89% | 17.65% | 7.00% | 15.12% |
| | N/A | 7.48% | 21.11% | 12.00% | 16.33% |
| Top design factor that affects productivity | Access to amenities | 2.80% | 1.73% | 4.00% | 2.42% |
| | Access to outdoors | 0.00% | 0.69% | 4.00% | 1.21% |
| | Adequate space/privacy | 13.08% | 14.53% | 25.00% | 16.33% |
| | Aesthetics | 0.00% | 1.38% | 1.00% | 1.01% |
| | Air quality | 7.48% | 6.57% | 6.00% | 6.65% |
| | Artificial lighting | 0.93% | 1.73% | 3.00% | 1.81% |
| | Daylight | 3.74% | 3.46% | 1.00% | 3.02% |
| | Noise | 16.82% | 20.07% | 24.00% | 20.16% |
| | Thermal comfort | 18.69% | 9.69% | 6.00% | 10.89% |
| | Ventilation | 2.80% | 3.11% | 3.00% | 3.02% |
| | Views outside | 2.80% | 0.69% | 1.00% | 1.21% |
| | Workstation or furniture | 20.56% | 15.22% | 10.00% | 15.32% |
| | N/A | 10.28% | 21.11% | 12.00% | 16.94% |
| Level of agreement: I enjoy working from the office more than working from home. | 1 | 0.93% | 9.34% | 58.00% | 17.34% |
| | 2 | 1.87% | 25.95% | 27.00% | 20.97% |
| | 3 | 18.69% | 39.79% | 8.00% | 28.83% |
| | 4 | 41.12% | 20.07% | 3.00% | 21.17% |
| | 5 | 37.38% | 4.84% | 4.00% | 11.69% |
| Level of agreement: My workspace affects my performance. | 1 | 0.00% | 3.81% | 13.00% | 4.84% |
| | 2 | 4.67% | 7.61% | 5.00% | 6.45% |
| | 3 | 14.95% | 24.22% | 23.00% | 21.98% |
| | 4 | 44.86% | 40.14% | 28.00% | 38.71% |
| | 5 | 35.51% | 24.22% | 31.00% | 28.02% |
| Level of agreement: My workspace affects my well-being. | 1 | 0.00% | 3.46% | 11.00% | 4.23% |
| | 2 | 3.74% | 5.54% | 6.00% | 5.24% |
| | 3 | 19.63% | 22.49% | 15.00% | 20.36% |
| | 4 | 42.99% | 42.56% | 29.00% | 39.92% |
| | 5 | 33.64% | 25.95% | 39.00% | 30.24% |
| | | High | Medium | Low | 0% |