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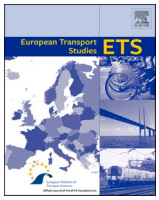

Working from home and commute duration: An exploration of ideal and actual measures

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ABSTRACT

Previous studies have found that working from home (WFH) frequency and commute distance/residential location influence each other. However, less attention has been given to the link with commute duration and people's ideal commute duration. People who have long commute durations and/or do not like to commute may be more inclined to work from home. In this study, we investigate how ideal and actual WFH frequency and ideal and actual commute duration influence each other and identify distinct worker segments based on these combined measures. The role of trip satisfaction, travel mode, residential location, commute frequency, and attitudes towards WFH and commute duration are used to explain different segments. Data from 2023 travel survey of University College London staff (n = 1791) were analyzed using multiple regression and cluster (segmentation) analyses. The average actual and ideal commute durations were about 58 and 34 min, respectively, while the average actual and ideal WFH shares were 41 % and 48 %. The segmentation results show that the staff can be grouped into five distinct clusters: *tolerant long commuters* (14.9 % of the sample), *overburdened hybrid workers* (14.8 %), *balanced hybrid commuters* (22.3 %), *remote flex workers* (25.2 %), and *happy office commuters* (22.7 %). The findings show that commute duration alone does not always determine how much people desire to WFH. Workers living in outer London areas and relying on rail are concentrated in the highest-burden clusters. People living in shorter distance, those who usually walk and cycle, are satisfied with their commute and have the least desire for WFH. Finally, policies that limit WFH may place a heavier burden on women and older workers who live farther away and rely on long rail commutes.

1. Introduction

Although working from home (WFH) – alternatively called telecommuting, teleworking or working remotely – has often been promoted as a way to reduce daily travel and address congestion problems, it has only increased slowly over the past decades (Messenger and Gschwind, 2016; Vilhelmson and Thulin, 2016). This can be partly explained by a large number of jobs not being suitable to be (easily) performed from home, management resistance (e.g., less control over employees' performance), but also because people might be reluctant to work from home since it results in less contact with co-workers, not having an ideal working environment at home, and potential distractions from – or tension with – spouse or children, social isolation and limited physical activity (partly because (active) travel to work disappears) (e.g., Conway et al., 2020; Shamshiripour et al., 2020). Studies have also shown that WFH might result in work intensification and a greater inability to switch off (Felstead and Henseke, 2017). The rise of WFH as a result of the COVID-19 pandemic, has shown that WFH can be a feasible way of working for both employers and employees. As a result, it can be expected that WFH is here to stay, and that many people will work from home at least a few times a month (Beck et al., 2020; Conway et al., 2020; Elldér, 2020; Hodder, 2020).

Although some studies indicate that WFH results in fewer and shorter trips (e.g., Choo et al., 2005; Elldér, 2020; Lachapelle et al., 2018), thereby resulting in congestion relief and more active mode use, other studies have found limited effects (Melo and de Abreu e Silva, 2017), or the emergency of compensating behavior. It is possible, for instance, that people compensate for having fewer commute trips by having more and longer trips for other purposes, such as leisure trips (e.g., Budnitz et al., 2020; Cerqueira et al., 2020). Furthermore, the acceptability of WFH may be related to workers' residential locations. People residing far away from their workplace might be more inclined to work from

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home compared to those living closer, in order to limit the time and money that they have to spend on commuting. It might even be possible that WFH results in people relocating to more desirable residences farther from their work, resulting in fewer, yet longer commutes mostly covered by motorized modes (de Abreu e Silva and Melo, 2018; Ory and Mokhtarian, 2006; Versigghel et al., 2025, 2026; Wöhner, 2022; Zhu, 2013). de Vos et al. (2018) found that workers with the option to WFH were more willing to accept longer commutes on average, suggesting that telecommuting may enable greater tolerance of spatial separation between home and work. Additionally, people might be receptive to a new job located farther from the place of residence, which previously was regarded as being too far.

WFH and people's desired WFH frequency may be influenced by their commute duration. Those with long commute durations may have a higher preference for WFH as the benefits, i.e., available time because of not commuting, are higher compared to those with short commute durations, who only would gain limited extra time. This means that apart from WFH desires, also commute duration may strongly impact WFH frequencies. However, most studies have explored the links between WFH and residential location/commute distances (rather than commute duration) and analysed the effects of working from home on travel behavior (de Abreu e Silva and Melo, 2018; Versigghel et al., 2025; Wöhner, 2022; Zhu, 2013). Additionally, it is possible that travel preferences can impact WFH (preferences). Those who feel that commuting can be useful and enjoyable may not have a desire to work from home, while those who think travel time is wasted time may prefer to work from home. However, no studies have analysed the effects travel attitudes on WFH. On the other hand, it may also be possible that a person who dislikes WFH may have positive travel attitudes (and a relatively high ideal commute duration) as the commute may be regarding as useful (i.e., bringing the person to the work location). In this regard, however, there is limited understanding of (i) what influences the desire for WFH frequency and commute duration, (ii) how actual and ideal WFH and commute duration relate to each other, (iii) how workers can be segmented based on ideal and actual measures of WFH frequency and commute duration, and (iv) how such segments can be profiled across sociodemographic factors, commuting modes, trip frequency, commute duration attitude and (un)favorable WFH attitudes. In this study, we aim to contribute to the literature by addressing these research gaps.

A consistent finding across other studies is that commute duration influences commute satisfaction. For example, De Vos (2025) shows that satisfaction is impacted not only by absolute commute duration but also by the gap between actual and ideal or tolerable commute durations, with satisfaction declining as this gap widens. These findings resonate with Redmond and Mokhtarian's (2001) earlier work, which showed that most people prefer a non-zero optimum commute (valuing transition time between work and home), yet more than half of commuters still travel longer than desired. They also reported that people's ideal commute duration is strongly affected by their actual commute duration. This pattern suggests that many individuals either succeed in keeping their commute close to what they consider ideal or adjust their preferences to align with their lived experience. A similar relationship between actual and ideal commute durations has been observed in the UK (Zhao et al., 2012). Stefaniec et al. (2022) found that post-pandemic workers with longer commutes expressed higher desire for WFH, often linking it to perceived gains in productivity and quality of life. Similarly, Kroesen (2022) used the natural experiment of COVID-19 to show that workers with long commutes, particularly women, reported higher well-being when freed from their daily travel burden. These findings highlight that WFH is not only a response to external shocks but also a mechanism through which individuals can reconcile dissonance between desired and actual commute durations.

Considering prior research, to the best of our knowledge, no study explicitly examined how (mis)matches between (ideal and actual) commute duration and (ideal and actual) WFH share relate across individuals. Using a quantitative survey-based study among a large sample of University College London' (UCL) staff, we aim at (i) exploring desires for WFH and commute duration, and (ii) segmenting individuals into different groups based on ideal and actual WFH and commute duration. We then test how sociodemographic factors, commuting modes, trip frequency, commute duration attitude and (un)favorable WFH attitudes explain membership in different segments. UCL is one of the largest universities in the United Kingdom, drawing staff from a wide range of occupational groups, contract types, and socio-demographic backgrounds. This diversity makes it possible to observe meaningful variation in commuting patterns, WFH practices, and preferences. Second, London is characterized by long and heterogeneous commuting conditions, substantial reliance on public transport, and significant pressures on infrastructure. These conditions create good circumstances for studying how individuals balance commute duration with WFH desires. Third, universities were among the earliest and most intensive adopters of hybrid work after the pandemic (e.g., Afrianty et al., 2022), yet they still maintain substantial in-person activity. This combination can result in wide differences between actual and ideal WFH frequencies across staff, which aligns well with the aims of the study.

2. Method

2.1. Data/sampling

This study is based on data collected from the 2023 University College London (UCL) travel survey (De Vos, 2025; De Vos et al., 2025). UCL put this survey out to students and staff to get a feel for their daily travel behaviors and experiences, mainly aiming to figure out how to make commuting associated with the university more sustainable and straightforward. The survey was live for four weeks during the tail end of Term 2, running from February 27th to March 27th, 2023. To get the word out, UCL used its usual communication channels, including newsletters aimed at both staff and students, plus its social media accounts. As a little encouragement, everyone who participated was entered into a draw to win one of eight £ 50 gift vouchers, with the winners picked in April 2023. In the end, we got 2593 completed surveys from UCL staff and students. After just cleaning up the dataset (mainly removing those who did not fill in the essential fields) we were left with a solid sample of 2295 people for our analysis. In this study, we focus exclusively on staff, including administrative personnel, research and teaching fellows, lecturers, and other permanent academics and professors, as the research examines work-from-home practices and students were excluded from the sample. This adjustment reduced the sample size to 1891. For the aim of descriptive analysis, different variables with their corresponding missing values are shown. However, later, for the aim of main modeling, according to the four key variables and their missing values (i.e., ideal and actual WFH and commute duration), the sample size was reduced to 1791.

In addition to respondents' demographic characteristics and residential locations, participants were asked about their travel mode for trips to UCL and commute frequency. They also rated their level of agreement with seven statements assessing trip (commute) satisfaction using a five-point Likert scale (See the statements in De Vos, 2025). As trip satisfaction plays a covariate role in subsequent analyses, the average score of the seven items was calculated. Scores below 2 were classified as dissatisfied, values between 2 and 4 as neither satisfied nor dissatisfied, and values greater than 4 as satisfied. Participants were further asked to respond to two WFH attitudinal statements (i.e., "I like working from home" and "working from home works well for me") using a five-point Likert scale, as well as one travel-time attitude statement (i.e., "travel time is wasted time") measured on the same scale. In addition, information on actual and ideal work-from-home shares and commute duration was collected. As for work from home, it was asked (i) during this term, how much do you generally work from home? - Percentage working from home, and (ii) what would be your preferred working

from home share (during term time)? - Ideal percentage working from home. Regarding commute duration, the following questions were asked: (i) think about the most recent, normal trip to the UCL campus you most frequently travel to (as indicated in a previous question), departing from your place of residence (during term time). What was the estimated duration (in minutes) of this trip? - Duration in minutes, and (ii) keeping in mind the normal trip to UCL described above, what would be your ideal travel duration (in minutes) to UCL campus? - Ideal travel duration to UCL (in minutes) (see Section 3.1 for detailed descriptive statistics).

According to Table 1, trip satisfaction averages 2.03 on a 3-point scale, with the majority (80 %) reporting being neither satisfied nor dissatisfied, while only 11.6 % are satisfied. The sample is predominantly women (65 %[1]) and slightly more than half reside in London urban area (58.5 %). The average age is 39.4 years (SD = 11.9), ranging from 19 to 75. Travel mode distribution shows underground (39.7 %) and train (34.7 %) as dominant, followed by biking (11.6 %), walking (6.3 %), bus/tram (5.6 %), and car (2.1 %). It is normal to see such high use of public transport and such low rates of driving for trips to and within central London. This pattern holds true for inner areas like the City of London (City of London, 2024). Frequency of commuting averages 3 trips per week, while attitudes toward WFH are generally positive, with means near 3.9 on a 5-point scale. The duration attitude interpreted as agreement with "travel time is wasted time" has a mean of 3.03, suggesting moderate agreement and highlighting perceived inefficiency in commuting.

Table 1
Sample characteristics.

Variable / Category	Details
Trip satisfaction	N = 1791, Missing= 102, Mean= 2.03, SD= 0.44, [1−3]
- Dissatisfied	8.2 %
- Satisfied nor dissatisfied	80.2 %
- Satisfied	11.6 %
Living in London urban area	N = 1850, Missing= 43, Mean= 0.59, SD= 0.49, 0/1
- No	41.5 %
- Yes	58.5 %
Being woman	N = 1837, Missing= 56, Mean= 0.65, SD= 0.48, 0/1
- No	34.8 %
- Yes	65.2 %
Age	N = 1833, Missing= 60, Mean= 39.42, SD= 11.89, [19−75]
Travel Mode	N = 1791, Missing= 102
- Bus/tram	5.6 %
- Underground	39.7 %
- Train	34.7 %
- Car	2.1 %
- Walking	6.3 %
- Biking	11.6 %
Commute frequency	N = 1854, Missing= 39, Mean= 3.07, SD= 1.68, [0−34]
WFH_att1: I like working from home	N = 1891, Missing= 2, Mean= 3.94, SD= 1.06, [1−5]
WFH_att2: Working from home works well for me	N = 1891, Missing= 2, Mean= 3.85, SD= 1.13, [1−5]
Duration attitude: Travel time is wasted time	N = 1891, Missing= 2, Mean= 3.03, SD= 1.15, [1−5]

[1] Recent UCL data also show more women being employed by UCL compared to men (https://www.ucl.ac.uk/human-resources/sites/human_resources/files/october_2025_c_staff_numbers_by_gender_and_faculty_areas.pdf)

2.2. Analysis procedure

Descriptive statistics were first examined to explore distributions and frequencies of the variables. Histogram and density plots were used to show distributions of actual/ideal WFH and commute duration across commute modes. For analysis purpose, since WFH and commute durations are measured in different scales and ranges, their z-scores were used in the main analysis. To examine the functional form (i.e. linearity or non-linearity) of the relationship between actual/ideal WFH frequency and commute duration, we used scatterplots and statistical diagnostics. First, we produced scatterplots of the standardized variables with both an OLS linear fit and a lowess non-parametric smoother overlaid. To statistically evaluate potential curvature, we estimated a polynomial regression.

Two linear regressions were employed to test how other variables explain desire for WFH and desire for commute duration. To segment respondents, we conducted a k-means cluster analysis, one of the most intuitive and widely used clustering methods, using indicators of actual and ideal WFH frequency and commute duration. This approach groups respondents into clusters that maximise similarity within clusters and differences between them (Anable, 2005; Wu, 2012), resulting in homogeneous groups based on their WFH and commute patterns. In the final step, we examined how the clusters differ in terms of sociodemographic, trip satisfaction, WFH attitudes, commute duration attitudes, commute modes, and commute frequency. All analyses were conducted in STATA and Jamovi.

3. Results

3.1. Descriptives

As described in Table 2, on average, respondents reported working from home for 41.1 % of their time, though their ideal share was higher at 48.0 %, suggesting a general desire for more remote work. The distributions also show that while half of respondents ideally wanted to work from home at least 50 % of the time, the actual median was lower at 40 %. Regarding commuting, the actual average commute duration was 58.3 min, whereas the ideal duration was much shorter at 33.9 min, highlighting a consistent preference for reducing commute duration. The medians reinforce this pattern: half of the respondents commuted 50 min or more, but ideally would prefer a commute of only 30 min.

Scatterplots (Fig. 1a–d) illustrate the relationships between actual and ideal WFH shares and commute duration. To statistically assess potential non-linearity in these associations, we estimated polynomial regression models in which each continuous predictor (with z-scores) was entered alongside its squared term. In all cases, the quadratic components were small and non-significant, indicating no detectable non-linear curvature. By contrast, the linear terms were large and highly significant, confirming that the associations were predominantly linear. These results support the use of linear specifications in subsequent analyses. As shown in Fig. 1a–d, actual and ideal WFH shares are positively and linearly related to each other, and both are positively associated with commute duration. In other words, higher WFH shares are linked to longer commutes (and vice versa).

Fig. 2 illustrates histogram and density plots of how the dominant chosen mode for commuting differs in terms of actual/ideal WFH share (in percentage; 0–100 %) and commute duration (in minute; 0–120 min) in the sample. Across all four plots, clear contrasts emerge between actual and ideal WFH shares and commute durations by dominant travel mode. Actual WFH frequency is generally low for public transport users (bus/tram and underground), concentrated below 30 %, while train commuters show a bimodal pattern with peaks around 20 % and 60 %, and car users show a relatively even spread across the range. Walking and biking commuters mostly report low WFH shares, reflecting their short-distance travel. In terms of actual commute duration, bus/tram and underground users cluster around 30–50 min, train

Table 2
Descriptives of actual vs. ideal WFH and commute duration values in the sample.

	N	Missing	Mean	SD	Range	Min	Max	25th	50th	75th
Actual WFH share (%)	1838	54	41.1	27.5	100	0	100	15.3	40.0	60.0
Ideal WFH share (%)	1838	54	48.0	27.2	100	0	100	25.0	50.0	70.0
Actual commute duration (min)	1791	101	58.3	28.9	117	3	120	36.0	50.0	75.0
Ideal commute duration (min)	1791	101	33.9	18.9	120	0	120	20.0	30.0	45.0

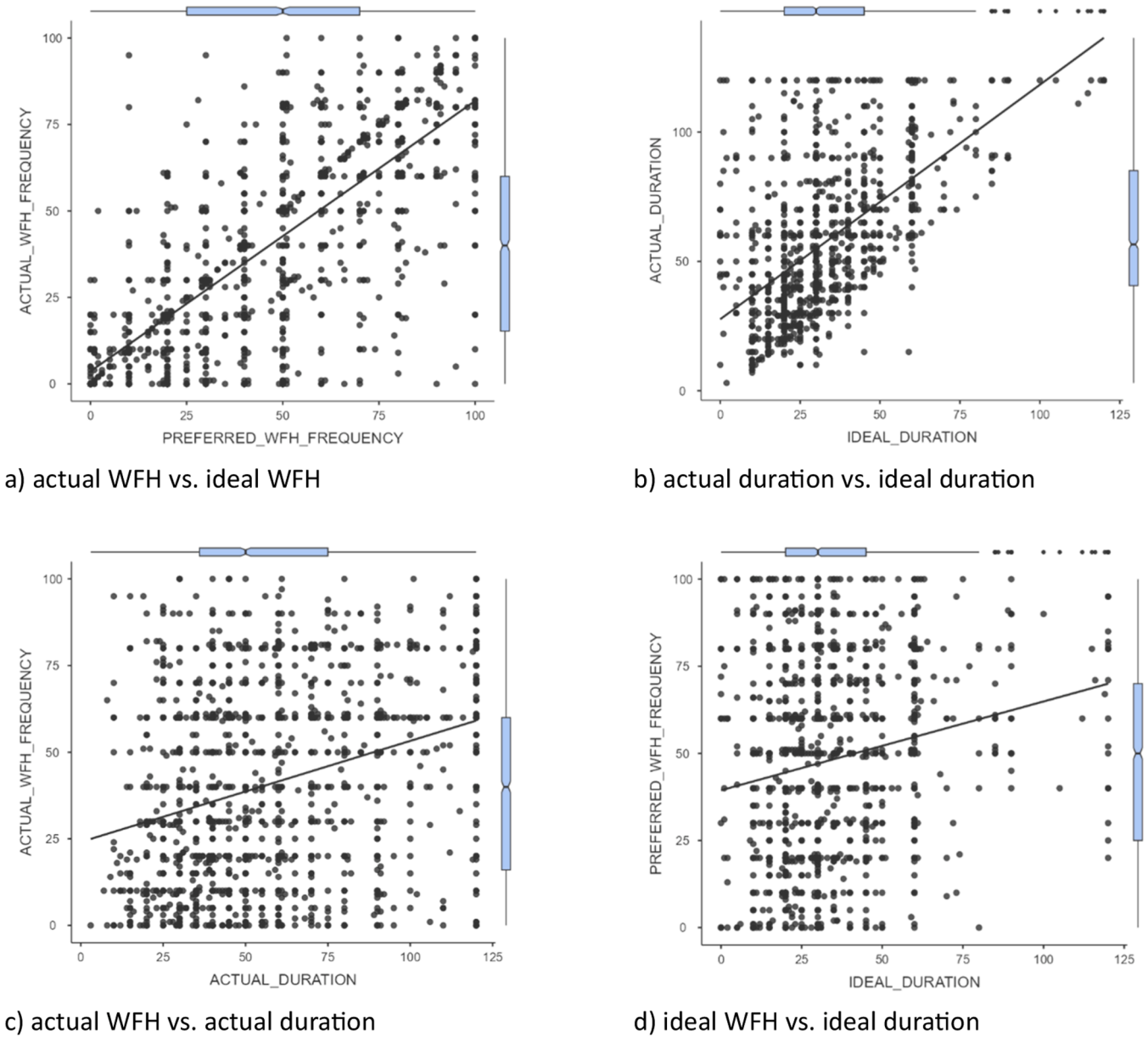

Fig. 1. Scatterplots of ideal-actual WFH and commute duration.

commuters display the longest and most variable times with a tail extending beyond 120 min, and car users average 20–60 min. Walking and biking remain concentrated under 30 min. Ideal WFH frequency shifts upward for all modes, with public transport and train users expressing the strongest desire for remote work (peaks near 50–70 %), while car users lean toward moderate flexibility and active modes show smaller but noticeable increases. Ideal commute durations reveal a universal preference for much shorter trips, with sharp peaks under 20 min across all modes, especially for those currently facing long commutes such as train and bus/tram users. Overall, the data highlight a strong mismatch between actual and desired conditions, particularly for modes associated with longer travel times, highlighting the role of commute burden in influencing WFH preferences.

3.2. *Regressions on desires for WFH and commute duration*

Table 3 shows the model predicting ideal WFH frequency using actual WFH frequency, actual commute duration, ideal commute duration, trip satisfaction, sociodemographic, and travel mode indicators. The model fit is strong ($R^2 = 0.744$, Adj. $R^2 = 0.742$), meaning about

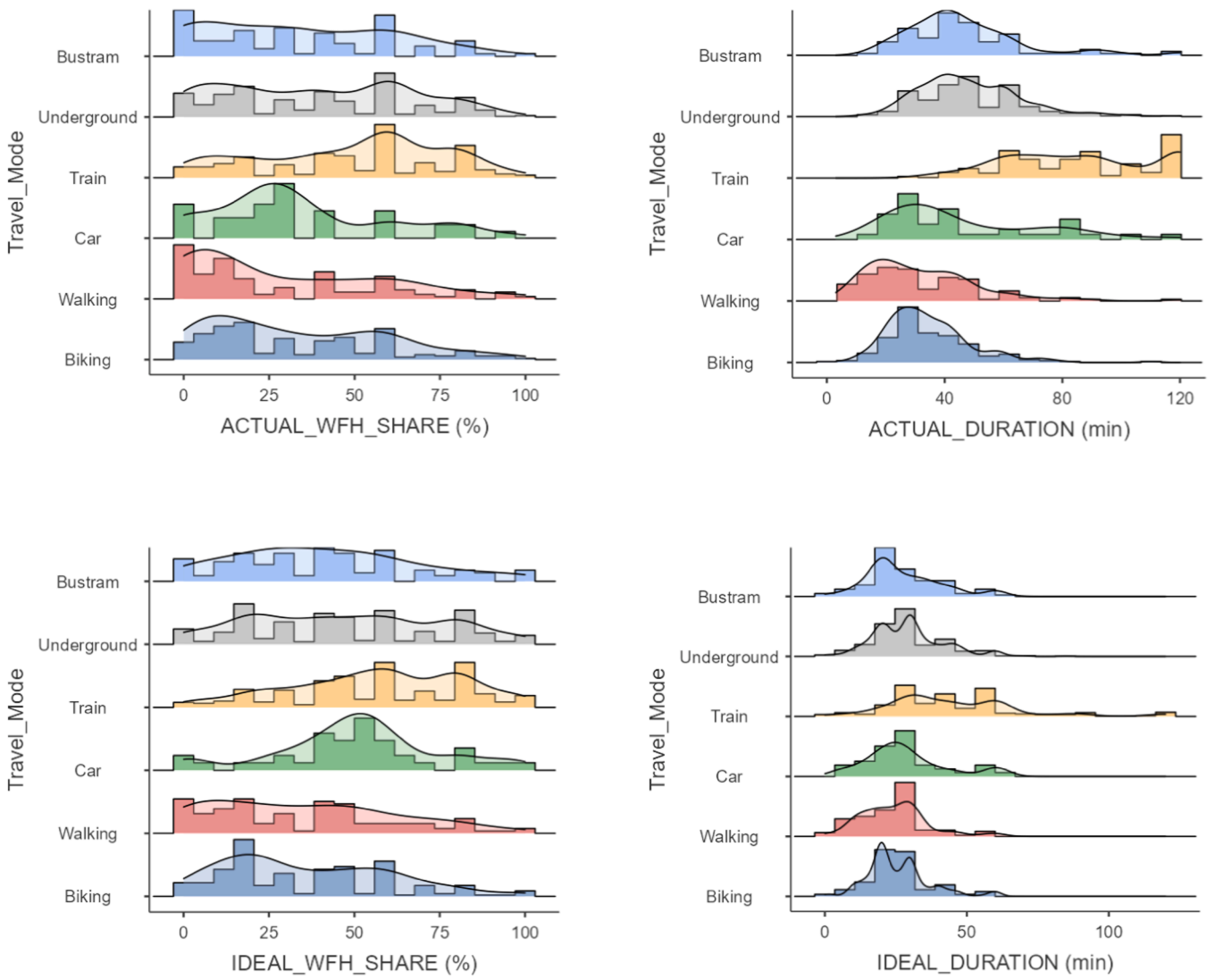

Fig. 2. Distributions of WFH share (actual vs. ideal) and commute duration (actual vs. ideal) by dominant commuting mode.

Table 3
The model predicting work-from-home desire.

Predictor	Coefficient	Std. Err.	Beta	p-value
Actual WFH frequency (z-score)	0.54	0.02	0.54	0.00
Actual duration (z-score)	0.07	0.02	0.07	0.00
Ideal duration (z-score)	-0.01	0.01	-0.01	0.36
Trip satisfaction	-0.13	0.03	-0.06	0.00
Residential location	0.07	0.04	0.04	0.08
Gender (woman)	0.01	0.05	0.00	0.83
Age	-0.00	0.00	-0.01	0.44
Biking	-0.03	0.08	-0.01	0.69
Walking	0.12	0.12	0.02	0.20
Car	0.26	0.10	0.04	0.01
Train	0.08	0.14	0.02	0.52
Underground	0.05	0.06	0.03	0.35
Commute frequency	-0.04	0.01	-0.05	0.01
I like working from home	0.21	0.02	0.23	0.00
Working from home works well for me	0.16	0.02	0.17	0.00
Travel time is wasted time	0.07	0.01	0.08	0.00
R-squared	0.74			
Adj R-squared	0.74			

* Bus/tram omitted because of collinearity.

74 % of the variance in ideal WFH share is explained by the predictors. The most influential variable is actual WFH frequency ($\beta = 0.54$, $p < 0.001$), indicating that those who already work from home more often strongly prefer to maintain or increase that level. Actual commute duration was also positively related to desired WFH ($\beta = 0.07$, $p < 0.01$), suggesting that individuals with longer commutes prefer higher WFH frequencies. In contrast, ideal commute duration was not a significant predictor ($\beta = –0.01$, $p = 0.36$). Among individual difference variables, trip satisfaction showed a small but significant negative association ($\beta = –0.06$, $p < 0.001$), meaning that individuals more satisfied with their commute desire WFH less. Residential location approached significance ($\beta = 0.04$, $p = 0.08$) but did not exceed conventional thresholds. Gender and age were not significant predictors. Commute mode variables generally did not contribute meaningfully. Only car users showed a small positive and significant association with desire for WFH ($\beta = 0.04$, $p = 0.01$). Other modes (bike, walking, train, underground) were not significant. Respondents who had more frequent trips to work, were less likely to desire for more WFH ($\beta = –0.05$, $p = 0.01$). Attitudinal items were strong predictors. Staff who agreed with item "I like working from home" ($\beta = 0.23$, $p < 0.001$), "Working from home works well for me" ($\beta = 0.17$, $p < 0.001$), and "Travel time is wasted time" ($\beta = 0.08$, $p < 0.001$) reported significantly higher WFH desire.

The second regression model explained desired commute duration using analogous predictors (Table 4). The model showed moderate

Table 4
The model predicting commute duration desire.

Predictor	Coefficient	Std. Err.	Beta	p-value
Actual duration (z-score)	0.54	0.03	0.54	0.00
Actual WFH frequency (z-score)	-0.01	0.04	-0.01	0.75
Ideal WFH frequency (z-score)	-0.03	0.03	-0.03	0.36
Trip satisfaction	0.22	0.05	0.09	0.00
Residential location	-0.11	0.06	-0.06	0.07
Gender (woman)	0.00	0.04	0.00	0.91
Age	0.00	0.00	0.06	0.00
Biking	-0.20	0.15	-0.01	0.18
Walking	0.04	0.12	0.01	0.78
Car	-0.06	0.16	-0.01	0.72
Train	0.10	0.17	0.03	0.56
Underground	0.01	0.09	0.01	0.87
Commute frequency	-0.04	0.02	-0.05	0.02
I like working from home	-0.01	0.04	-0.01	0.77
Working from home works well for me	0.10	0.04	0.06	0.01
Travel time is wasted time	-0.13	0.02	-0.14	0.00
R-squared	0.41			
Adj R-squared	0.40			

explanatory power ($R^2 = 0.41$, Adjusted $R^2 = 0.40$), substantially lower than for WFH frequency, indicating that desired commute duration is less predictable from the included variables. The strongest predictor was actual commute duration, which showed a large positive association with ideal duration ($\beta = 0.54$, $p < 0.001$). Workers with longer actual commutes tend to prefer longer ideal durations as well, possibly reflecting adaptation or constrained expectations. Neither actual WFH frequency nor desired WFH frequency significantly predicted desired commute duration. Among subjective variables, trip satisfaction had a positive association ($\beta = 0.09$, $p < 0.001$), indicating that individuals who enjoy or are happy with their commute tend to prefer a longer ideal duration. Residential location was marginal ($\beta = –0.06$, $p = 0.07$) but not statistically significant at the 5 % level. Of the commute modes, none reached significance. Gender was not significant, whereas age showed a small positive association ($\beta = 0.06$, $p = 0.006$), suggesting older respondents prefer slightly longer commute durations. Staff with higher commute frequency ($\beta = –0.05$, $p = 0.02$) were more likely to desire shorter commute durations. Two attitudinal variables were significant. Respondents who agreed with "Working from home works well for me" ($\beta = 0.06$, $p = 0.01$), and "Travel time is wasted time" ($\beta = –0.14$, $p < 0.001$) were more likely to desire for longer and shorter commute durations, respectively.

3.3. Segmentation: cluster analysis

A k-means cluster analysis was conducted using four indicators of actual and ideal WFH share and actual and ideal commute duration to identify groups of participants with similar patterns in WFH frequency and commute duration. Solutions with two to six clusters were tested, and the five-cluster solution was selected based on interpretability and the retention of statistically robust segment sizes. The ANOVA results ($p < 0.01$ for all four indicators) show that the clusters differ significantly from one another on each of the variables used to form them. Cluster sizes range from 14.8 % of the sample (smallest cluster) to 25.2 % (largest cluster), indicating a balanced distribution suitable for further analysis. These clusters can be described as follows.

Cluster 1. ***tolerant long commuters (n = 267, 14.9 %)***: this group captures individuals who face long commutes yet show only moderate interest in remote working. As illustrated in Fig. 3, their average actual WFH share is 21 % and they would ideally prefer 32 %, reflecting some desire for increased flexibility but not at the level observed among groups with similar commute burdens. Their average commute duration is 78 min, and their ideal is 43 min, indicating a large mismatch between actual and preferred conditions. Despite this, the group does not express a strong wish for high levels of WFH, suggesting adaptation to long commutes or constraints that limit remote working options. Further profile analysis (Table 5) shows that members of segment 1 tend to maintain frequent commuting (3.8 days/week), reflecting a routine strongly anchored in on-site work. They are more likely to live outside London (75.7 %) and rely heavily on train travel (63.3 %), consistent with their long commute times. Trip satisfaction is moderate, with slightly elevated disagreement compared to most clusters. Gender

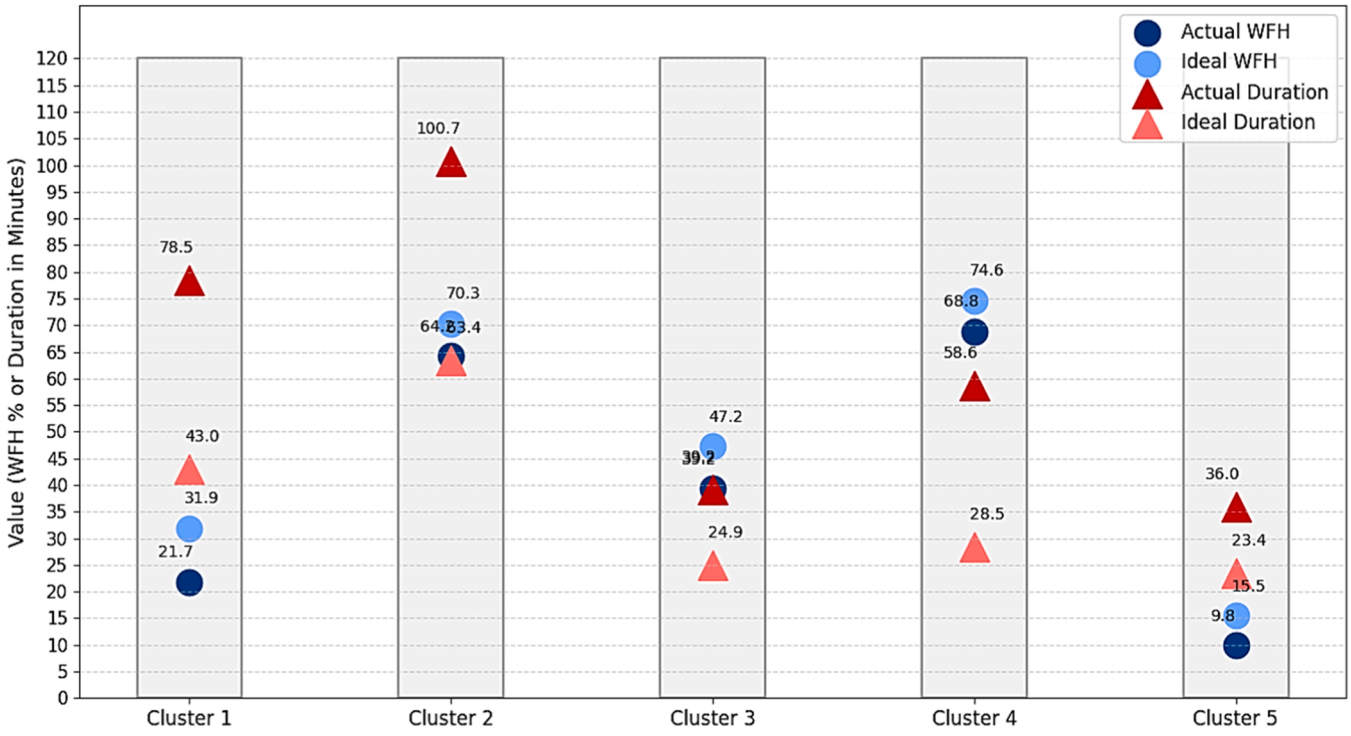

Fig. 3. Clusters' profiles based on the four indicators: actual/ideal WFH and commute duration.

Table 5
Clusters' characteristics.

	Cluster 1. tolerant long commuters	Cluster 2: overburdened hybrid workers	Cluster 3: balanced hybrid commuters	Cluster 4: remote flex workers	Cluster 5: happy office commuters
Trip satisfaction					
– Totally disagree- disagree	11.5 % (1.7 %) *	10.1 % (1.5 %)	5.4 % (1.2 %)	10.7 % (2.7 %)	4.8 % (1.1 %)
– Agree nor disagree	**83.1 % (12.3 %)**	**81.8 % (12.1 %)**	**80.7 % (18.0 %)**	**78.2 % (19.7 %)**	**79.3 % (18.0 %)**
– Agree- fully agree	5.4 % (0.8 %)	8.1 % (1.2 %)	13.9 % (3.1 %)	11.1 % (2.8 %)	15.9 % (3.6 %)
Residential location					
– London	24.3 % (3.6 %)	6.0 % (0.9 %)	**88.3 % (19.7 %)**	**56.6 % (14.2 %)**	**90.8 % (20.7 %)**
– Otherwise	**75.7 % (11.2 %)**	**94.0 % (14.1 %)**	11.7 % (2.6 %)	43.4 % (10.9 %)	9.2 % (2.1 %)
Gender					
– Woman	**67.1 % (10.0 %)**	**66.2 % (9.8 %)**	**63.6 % (14.3 %)**	**69.2 % (17.3 %)**	**62.1 % (14.1 %)**
– Man	32.9 % (4.9 %)	33.8 % (5.0 %)	36.4 % (8.2 %)	30.8 % (7.7 %)	37.9 % (8.6 %)
Commute mode					
– Biking	3.4 % (0.5 %)	1.4 % (0.2 %)	16.7 % (3.7 %)	7.9 % (2.0 %)	22.5 % (5.1 %)
– Walking	2.0 % (0.3 %)	1.3 % (0.2 %)	8.1 % (1.8 %)	3.9 % (1.0 %)	14.1 % (3.2 %)
– Car	2.0 % (0.3 %)	1.3 % (0.2 %)	5.0 % (1.1 %)	0.8 % (0.2 %)	1.3 % (0.3 %)
– Train	**63.3 % (9.5 %)**	**84.0 % (12.6 %)**	10.8 % (2.4 %)	35.6 % (9.0 %)	5.3 % (1.2 %)
– Underground	25.3 % (3.8 %)	10.0 % (1.5 %)	**50.4 % (11.2 %)**	**48.2 % (12.2 %)**	**48.9 % (11.1 %)**
– Bus/Tram	4.0 % (0.6 %)	2.0 % (0.3 %)	9.0 % (2.0 %)	3.6 % (0.9 %)	7.9 % (1.8 %)
Age (average)	42.0	**44.4**	38.2	39.6	35.7
Commute frequency (average)	3.8	1.8	3.1	1.9	**4.6**
WFH attitude					
- I like working from home (average)	3.8	4.4	4.0	**4.5**	2.9
- Working from home works well for me (average)	3.5	4.5	3.9	**4.5**	2.7
Commute duration attitude: - Travel time is wasted time (average)	2.9	2.8	3.0	**3.1**	3.0

* Within-cluster % (with total % in parentheses). For example: 11.5 % (1.7 %) → 11.5 % is within cluster, 1.7 % is % of total sample.

distribution is balanced, though women are slightly more represented than men. Their WFH attitudes are neither strongly positive nor negative, indicating a pragmatic stance toward hybrid work. Overall, this cluster represents experienced long-distance commuters who tolerate but do not particularly embrace remote working.

Cluster 2: *overburdened hybrid workers (n = 265, 14.8 %)*: this subgroup includes staff who face the most severe commuting burden. The average of their actual WFH share is 64 % and their ideal value is 70 %, showing a clear preference for remote work even beyond their already substantial work from home. Their commutes are the longest among all clusters, averaging 100 min, while their ideal commute duration is 63 min, reflecting the largest mismatch observed. This group might use WFH as a coping mechanism for intense travel time but still finds commuting highly burdensome and would prefer even greater flexibility. Segment 2 is the oldest group on average (44.4 years) and shows very low commuting frequency (1.8 days/week), consistent with their strong reliance on WFH. They are the least likely to live in London (6 %), instead residing in outer areas that contribute to their extreme commute durations. Their travel patterns are dominated by train use (84 %), the highest share across clusters. Trip satisfaction is low, and in line with Fig. 4, their WFH attitudes are among the most positive of all groups (4.4–4.5). Gender distribution is balanced. This profile reflects heavily burdened long-distance rail commuters who depend on hybrid arrangements to mitigate travel strain.

Cluster 3: *balanced hybrid commuters (n = 400, 22.3 %)*: this cluster includes individuals who maintain a balanced hybrid arrangement. Their average actual WFH share is 39 % and their ideal value is 47 %, reflecting a moderate desire for additional flexibility. Commute durations are short to medium, averaging 39 min, while their ideal duration is 25 min. The gap between actual and ideal conditions is modest, suggesting that their current working patterns and commuting burdens are reasonably well aligned. This group represents staff for whom hybrid working functions smoothly without major mismatches. These commuters are relatively young (38.2 years) and maintain a moderate commute frequency (3.1 days/week). They display high trip satisfaction, with the lowest disagreement levels across clusters. Cluster 3 contains one of the largest London-based shares (88.3 % within the cluster and 19.7 % of the total sample), reflected in their high use of underground (50.4 %) and active modes such as cycling (16.7 %) and walking (8.1 %). Women are more represented here relative to long-commute clusters (14.3 % vs. 10 %). Their attitudes toward WFH are generally positive but not extreme, aligning with their comfortable hybrid working experience. This cluster represents urban, mobile, well-balanced hybrid commuters with relatively low strain.

Cluster 4: *remote flex workers (n = 452, 25.2 %)*: this group consists of staff with high WFH participation. Their average actual share is 69 % and their ideal value is 75 %, indicating satisfaction with remote work opportunities and only a small desire for further increases. Commutes average 59 min on office days, and their ideal commute duration is 29 min, showing a preference for shorter travel but a manageable level of mismatch given their limited commuting frequency. These staff appear to have successfully integrated WFH into their routines and benefit from the flexibility it provides. Members of cluster 4 have low commute frequency (1.9 days/week) and strong preferences for remote work, reflected in the highest WFH attitude scores alongside cluster 2 (4.5 for both items). They include a substantial share of women (17.3 % of the total sample), the highest across clusters, and are moderately represented in London (56.6 %). Commute modes are varied, with high use of the underground (48.2 % within the cluster), complemented by train and limited active travel. Trip satisfaction is relatively low, with the second-highest disagreement rate (2.7 %), consistent with their desire to minimise office travel.

Cluster 5: *happy office commuters (n = 407, 22.7 %)*: cluster 5 represents workers who rarely work from home and appear comfortable with on-site arrangements. Their actual WFH share is 10 % and their ideal share is 15 %, indicating little desire to increase remote work. Commutes are short, with an average duration of 36 min, and their ideal duration is 23 min, showing a relatively small mismatch compared to other groups. These individuals experience low commuting strain and regard office-based routines as fitting their daily preferences. This cluster is the youngest on average (35.7 years) and commutes most frequently (4.6 days/week). They show the highest travel satisfaction,

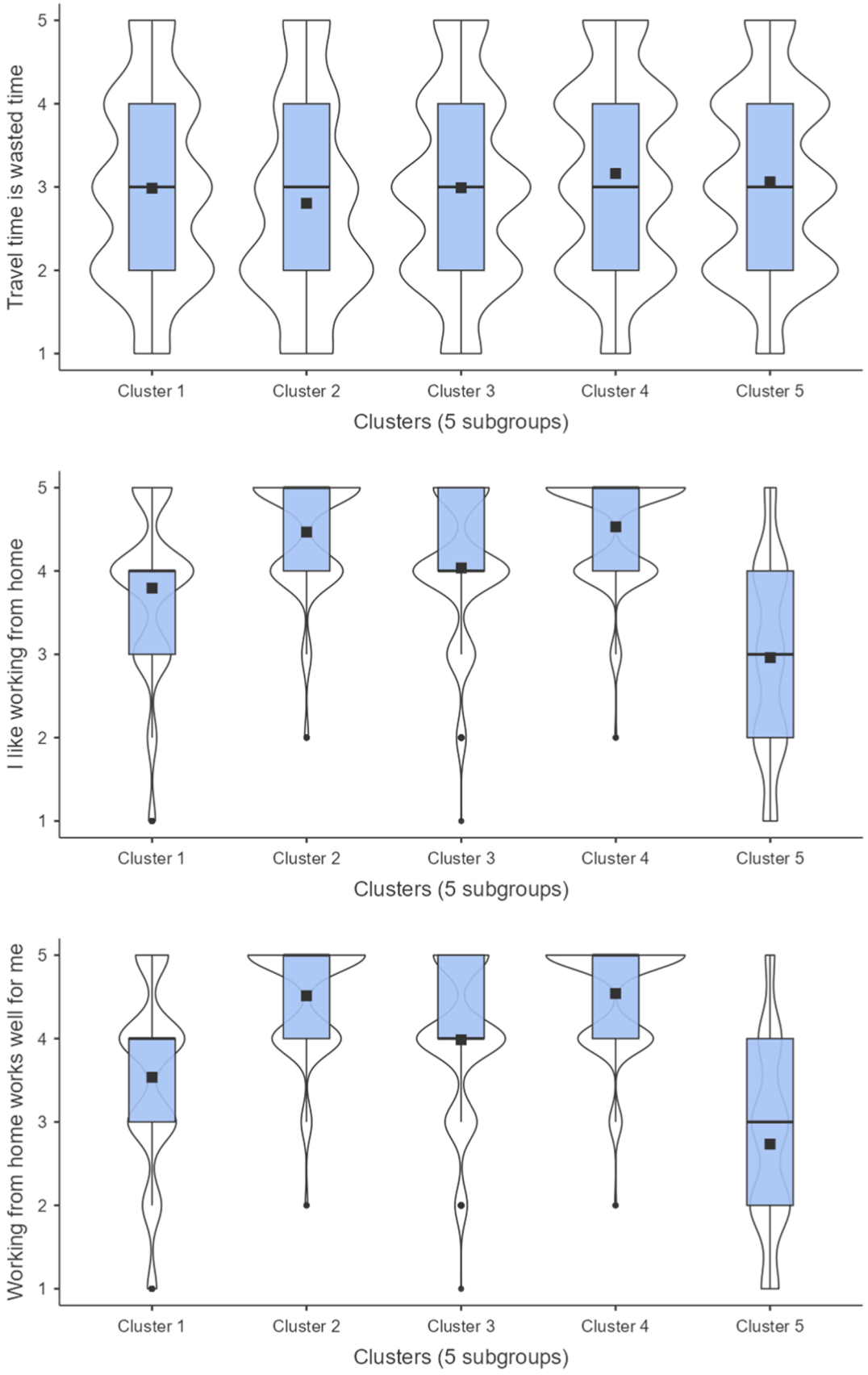

Fig. 4. Clusters' distributions for work from home and travel time attitudes.

with minimal disagreement and strong agreement that trips are acceptable. Cluster 5 has the largest London representation (20.7 % of the total sample) and the highest rates of cycling (5.1 %) and walking (3.2 %) in the entire sample, alongside substantial underground use (11.1 %). Their attitudes toward WFH are the lowest among all clusters (2.9 and 2.7), mirroring their preference for office-based work.

4. Discussion and conclusion

This study examined how university staff balance actual and ideal WFH frequencies and commute durations, and how these patterns cluster across individuals with different sociodemographic characteristics, attitudes, and travel behaviors. Across the analyses, the findings reveal that commuting, WFH practices, and personal evaluations interact in complex ways. The findings extend existing knowledge by showing not only linear relationships between commute duration and WFH desires, but also considerable variation across groups of workers whose circumstances and motivations differ. Individuals with longer commutes tend to desire higher WFH frequencies, which aligns with earlier studies showing that longer travel times increase the appeal of telecommuting (Stefaniec et al., 2022, Kroesen, 2022). However, this link is impacted by subjective commute experiences. Those who are more satisfied with their commute are less likely to increase their WFH frequency, indicating that commuting is not always viewed as something to minimise. This is consistent with research showing that satisfaction depends on both the length of the commute and its qualitative features, including comfort, predictability, and emotional experience (De Vos, 2025; Redmond and Mokhtarian 2001). When workers enjoy or at least tolerate their commute, the expected benefits of avoiding travel through WFH are reduced. The results also point to the important role of attitudes toward WFH. Workers who enjoy WFH or find it effective express much stronger desire for increasing it. While this corresponds with established patterns in attitude–behavior research, recent panel studies suggest that attitudes may themselves be influenced by behavioral experiences rather than pre-existing attitudes (Kroesen et al., 2017; Mehdizadeh and Kroesen, 2025). For example, during the pandemic, many workers were exposed to WFH more extensively and may have developed more positive evaluations as a result of experiencing additional flexibility or relief from commuting. This indicates that WFH attitudes and WFH desires evolve together, especially in contexts where work practices have been disrupted or expanded.

The segmentation analysis shows a deeper insight that university staff can be grouped into five distinct clusters based on their responses to actual and ideal WFH share and commute duration. In general, across the different segments, the gap between actual and ideal WFH share is small. However, the gap between actual and ideal commute duration is much larger. In the whole sample, the average actual and ideal commute durations are about 58 and 34 min, respectively, while the average actual and ideal WFH shares are 41 % and 48 %. But segmentation reveals heterogeneity in ideal and actual measures. For example, one segment comprising 14.9 % of participants (i.e., tolerant long commuters) has the second-longest average commute duration among the five segments (actual average = 78 min). Despite this, they show the second-lowest desire for WFH, at around 32 % of their time. In contrast, another segment representing 23 % of the sample (i.e., happy office commuters) has the shortest commute duration in the sample (actual average = 36 min). Their ideal level of WFH (15.5 % of time) is the lowest among all segments, yet it remains relatively close to that of the previous group. This group is likely younger, reports the highest trip satisfaction, and is more likely to walk or cycle compared to others. Their attitudes toward WFH are also the lowest among all clusters.

Another group, with around 14.8 % of the sample, has the highest commute durations (average = 100 min). They already have high actual WFH levels (64 % of time) and desire a small increase, aiming for about 70 % WFH. These workers are most likely older, live in outer London, use trains, and have the most positive attitudes toward WFH. There is also a group making up 25 % of the sample whose actual and ideal WFH shares are higher than their actual and ideal commute durations compared to the other 75 % of workers. Across all groups, staff tend to hold similar views about travel time, with most neither agreeing nor disagreeing that commuting is a waste of time. At the same time, there is considerable variation in how long people actually commute and how long they would ideally like to commute. This dissonance suggests that even when attitudes toward travel time are broadly shared, commuting outcomes can differ substantially. These findings echo Redmond and Mokhtarian's (2001) work, which showed that while some people value commuting as a transition between work and home, many still end up traveling longer than they would prefer. Workers with favorable attitudes toward WFH tend to have higher actual WFH shares and higher desire for WFH. For example, two subgroups (clusters 2 and 4) have commute durations of more than 50 min and therefore have WFH desire above 50 %. In contrast, two other clusters (3 and 5) have commute durations under 40 min and show WFH desire below 50 %, and they walk or cycle to work more than any other groups. This suggests that WFH policies should not be applied uniformly to all workers. Higher levels of WFH might unintentionally reduce commute-related physical activity (walking and cycling) for about 45 % of the population.

In conclusion, the findings first show that commute burden alone does not determine how much people want to WFH. For example, Cluster 1 tolerates long commutes but shows only a modest desire for WFH, whereas Cluster 2, despite already working from home frequently, expresses an even stronger desire for doing so alongside the longest commute burdens. This difference suggests that desires are influenced by practical constraints, not just by commute duration. The typology therefore goes beyond a simple link between commute duration and WFH desire and instead shows that different groups reach different balances based on time/costs, workplace rules, and personal attitudes. Second, workers living in outer London areas and relying on rail are concentrated in the highest-burden clusters. This highlights the importance of reliable, comfortable, and affordable regional rail services for sustaining hybrid work in the long term. In this context, WFH appears to be a way of coping with very demanding rail commutes, as seen in Cluster 2. In contrast, the more moderate use of WFH in Cluster 1 seems to reflect limited flexibility rather than easy commutes. By comparison, people using urban public transport or active modes tend to report higher satisfaction and a greater willingness to commute regularly, as observed in Clusters 3 and 5. This might point to good local accessibility as an important factor in making office attendance more acceptable. Third, trip satisfaction is highest among those with short and varied commutes, such as those in Cluster 5, and lowest among those who commute less often but face the greatest difficulties, such as Clusters 2 and 4. This pattern suggests that satisfaction plays an important role in shaping WFH behavior. When commuting feels less stressful or tiring, people may feel less need to work from home more often. When commuting is more difficult, the desire to work from home becomes stronger. For this reason, including trip satisfaction in behavioral models is important for understanding and predicting changes in hybrid work patterns. Finally, equity-wise, the higher share of women in Cluster 4, the remote-flex group, and the older age profile of Cluster 2 deserve careful attention. Policies that limit WFH may place a heavier burden on women and older workers who live farther away and rely on long rail commutes. To avoid unintended disadvantages, organizations should ensure that remote workers are evaluated fairly and have equal access to tasks and career opportunities, while still allowing flexibility.

A limitation of this study is that it focuses only on university staff in London. Other groups of workers may show different patterns and desires. Other cities with different transport networks and geography may also have different outcomes. Extreme commuters, those who live in other cities or countries, also have specific needs and desires that require separate research. Overall, policymakers and employers could use information about commute duration, mode of travel, and interest in WFH to decide how to promote or manage WFH for employees.

CRediT authorship contribution statement

Milad Mehdizadeh: Writing – original draft, Conceptualization, Methodology, Formal analysis. **Jonas De Vos:** Writing – original draft, Conceptualization, Methodology, Formal analysis.

Data availability

The authors do not have permission to share data.

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