

# Home and Hybrid Working: Stress Indicator Tool Guidance



# Introduction

This document presents and explains a stress risk assessment tool for home and hybrid workers. This tool was developed at the University of Hull as part of the Future Work Design project, in collaboration with four Local Authorities (LAs), East Riding of Yorkshire Council, Hull City Council, North East Lincolnshire & North Lincolnshire. This work was funded by the Local Digital Challenge Fund, Department for Leveling Up, Housing and Communities (DLUHC). The tool was developed following a large-scale qualitative study of 32 focus groups. Participants were a diverse range of Local Authority workers, many of whom were required to work from home during the first COVID lockdown (March – July 2020).

The data from this study were analysed into themes, described in full in the project report (<https://humanfactors.hull.ac.uk/wp-content/uploads/2020/11/UoH-Future-Work-Design-A4-WhitePaper-v5-small.pdf>). From this qualitative data, a set of stress risk items were generated, which were consistent with the stress risk model of the Health and Safety Executive's (HSE) [Management Standards](#). This set of questions was then piloted with a sample of 51 LA workers to review the items and the psychometric properties of the tool. Following this, organisational surveys were carried out with two Local Authorities, which provided a large development sample ( $n=3,177$ ). Validation work undertaken on this data set has resulted in v2 of the Home and Hybrid Working Stress Indicator Tool and this accompanying guidance document.

*The aim of the tool is to provide a mechanism for organisations to explore and assess the stress risks associated with home and hybrid working. It can provide quantitative data to evidence the prevalence and patterns of stress risks for home and hybrid workers in your organisation. The following document outlines the distinct sections of the Home and Hybrid Working (HHW) Stress Indicator Tool and offers guidance on collecting and managing the resulting data.*

**Professor Fiona Earle, Chartered Occupational Psychologist**  
**Dr Katie Cunnah, Senior Psychologist and Operations Director**  
**Centre for Human Factors, University of Hull**

# Home and Hybrid Working Stress Indicator Tool: Questions

The tool has three sections including A) Demographics and B) the HSE Management Standards Stress Indicator Tool (SIT), which can be completed as a stand-alone instrument by all employees irrespective of their working practices. Section C is the HHW Stress Indicator Tool and can be completed alongside the SIT by those who work at home/remotely as part or all of their working pattern.

## For All Staff

### Section A. Suggested demographics

The demographic questions in Section A were incorporated into the development surveys of this tool, and remain a useful starting point for you to develop the bespoke demographic questions which best reflect categories of staff in your organisation.

It will be helpful to consider how your organisation can meaningfully break down the information provided by your staff. For example, whether it is helpful to extract mean scores for different groups, such as levels of seniority, locations, role categories, work pattern, or individual characteristics. If exploring the patterns of stress risks within these different groups is of value, it may be worthwhile adding to the demographic questions. Your resulting risk assessment data should then be suitable to support your understanding of where interventions can be targeted. It is important when establishing staff groupings to ensure that participant anonymity is not breached. We strongly recommend ensuring data summaries are only available for groups consisting of 10 or more respondents, to protect the anonymity of your respondents.

### Section B. Management Standards Stress Indicator Tool

The questions in Section B are the 35 questions from the UK Health and Safety Executive's Management Standards SIT. These questions represent seven important domains of stress risk, each represented by items arranged into the following subscales – Demands, Control, Peer Support, Management Support, Relationships, Role, and Change. This element of the tool addresses general stress risks that are potentially present in all working environments, and is the HSE's recommended approach to assessing occupational stress risk. All staff, irrespective of role or working pattern, could be invited to complete the questions from the Management Standards Indicator Tool within your organisational survey. Brief scoring guidance is included below (see Table 1). Full guidance for using this tool and interpreting the data is available from the Health and Safety Executive website at <https://www.hse.gov.uk/stress/standards/downloads.htm>.

For staff who have some aspect of home/  
remote working in their working pattern

**Section C. Home and Hybrid Working Stress Indicator Tool**

The questions in Section C address stress risks for staff who have a home/  
remote working component to their role, reflecting specifically on their  
working patterns and conditions when working at home/remotely.



# Considerations for Data Collection

## Administration

The tool is presented here as a ready-to-use paper survey, but you may prefer to use the HSE's digital version of this survey to automate the data collection and assist with analysis. This is available via the HSE online survey platform. Contact HSE (<https://books.hse.gov.uk/Stress-Indicator-Tool>) for further information and a free demonstration. Alternatively, you could use your own digital survey tool. To operationalise the survey on your own digital platform, load all of the questions into the platform ensuring each question has the correct response category options. It is vital that you do not change or remove any items, as this will undermine the technical properties of the subscales, and it will be difficult to know if you have reliable information. It is also vital to ensure the scores aligned with each response are consistent with the guidance. Following the guidance below will support an accurate interpretation of your findings.

## Ethics

Ethical collection of this type of data requires clarity for the respondents in relation to what will happen to their data, i.e. how their data will be processed and used. It is also important that survey respondents are provided with a clear commitment in relation to data storage and security, particularly who will have access to the data, right to withdraw their data and the approach to confidentiality and anonymity. It is crucial that participants know that there will be no negative consequence for them if they complete this survey, and the protection of anonymity is therefore paramount to achieving a good response rate and collecting meaningful data. Further advice on collecting psychological data ethically is provided by the British Psychological Society: <https://www.bps.org.uk/news-and-policy/bps-code-ethics-and-conduct>

# Using the Home and Hybrid Working Stress Indicator Tool: Scoring Key

## Section A. Demographics

Frequency data should be calculated to provide insight into the characteristics of respondents. Responses to these questions can also be used to compare groups and identify any between-group differences in mean scores. This can be achieved by splitting the data according to the demographic characteristics.

## Section B. Management Standards Stress Indicator Tool

Items 1-35 can be reduced to subscale means by averaging the scores for the sets of items detailed in Table 1. This data reduction process will provide seven subscale scores of stress risk. Note that items for the *Demands* and *Relationships* subscales are negatively loaded (e.g. "My workload feels more intense when working remotely"). These scores are reversed in the scoring of the tool, so that high scores for all items and subscales consistently reflect positive work characteristics and a low stress risk. Mean scores for individual items are also useful in further exploring specific areas of risk. It is important to note that subscale scores should be compared to benchmarking data, rather than other subscales. Benchmarking data are available as means and as percentile scores. Benchmarking information for this instrument is available from the following academic paper by Webster and Edwards (2012) *Work & Stress*, 26:2, 130-142, [doi.org/10.1080/02678373.2012.688554](https://doi.org/10.1080/02678373.2012.688554). This document provides normative scores for public and private sector companies and supports meaningful data interpretation.

**Table 1. Management Standards SIT subscale reduction**

Demands (Reversed)	3, 6, 9, 12, 16, 18, 20, 22
Control	2, 10, 15, 19, 25, 30
Peer support	7, 24, 27, 31
Manager support	8, 23, 29, 33, 35
Relationships (Reversed)	5, 14, 21, 34
Role	1, 4, 11, 13, 17
Change	26, 28, 32

## Section C. Home and Hybrid Working

Items 36–65 are specific HHW stress risk items that can be grouped as outlined below in Table 2. The domains are closely linked with the seven stress risk domains of the SIT, but with the removal of *Role* and the inclusion of two aspects: A new domain of *Work/Home Interface* was included and a further additional specific aspect of risk associated with concern for remote *Monitoring* (see Table 2).

To reduce the item scores into their subscale means, averages of the seven stress risk domains can be calculated. The final *Monitoring* aspect is a single item and cannot be further reduced.

**Table 2. Home and Hybrid Working Subscale Reduction**

HHW Demands (Reversed)	36, 42, 49, 53, 57
HHW Control	37, 40, 43, 50
HHW Peer support	38, 44, 54, 58, 60
HHW Manager support	39, 45, 52, 55, 59, 64
HHW Relationships (Reversed)	47, 62
HHW Change	41, 61, 63, 65
Work/Home Interface	48, 51, 56
Monitoring (Reversed)	46

## A Note on Health Outcomes Data

The items presented above refer specifically to stress risk. Obtaining data in this area will support your understanding of the prevalence and patterns of stress risks within your organisation. However, it is worthy of note that assessing health outcomes alongside this stress risk assessment would offer the opportunity to explore current levels of health and wellbeing. Furthermore, when collected together, stress risk data and health outcome data can be statistically analysed to examine predictive relationships between stress risks and health outcomes. This information may be particularly useful in prioritising interventions for areas where risks are most closely related to negative health outcomes.

Many brief psychometric scales are available, for example, the PHQ-4 is a brief 4 item scale for mental health screening: [https://qxmd.com/calculate/calculator\\_476/patient-health-questionnaire-4-phq-4](https://qxmd.com/calculate/calculator_476/patient-health-questionnaire-4-phq-4). This tool is integrated into the automated HSE survey tools the SIT and ReSIT as an option, but this and similar tools could also be manually integrated into your paper survey or your own online survey.



# Technical Information

## Background

The HHW tool has been developed in two phases.

**Phase 1** involved a large-scale qualitative investigation of stress risks facing home and hybrid workers. This resulted in the generation of 41-items which became the first iteration of the HHW tool, designed to complement the existing 35 items of the Management Standards. The items were written to represent the home/remote working stress risks identified through thematic analysis of the qualitative data. This resulted in ten areas of stress risk, seven of which aligned with the seven stress risk domains underpinning the HSE Management Standards and Stress Indicator Tool (SIT), and three new areas of remote stress risk: 'Digital Risks', 'Digital Enablers' and a general 'Remote Working' section, incorporating questions about Work/Home Interface. For a full description of the qualitative findings and the development version of the HHW tool, see the White Paper <https://humanfactors.hull.ac.uk/wp-content/uploads/2020/11/UoH-Future-Work-Design-A4-WhitePaper-v5-small.pdf>. This 41-item development tool was initially piloted in a small study of Local Authority workers ( $n=51$ ) to allow a preliminary analysis of the psychometric properties of the new HHW working items, and an opportunity for feedback on item clarity and face validity.

**Phase 2** involved two large scale organisational surveys carried out within two Local Authorities. These surveys provided a full development sample with 3,177 respondents overall, of which 2,580 responded to the HHW tool. Exploration of the psychometric properties of the scale undertaken on this data set resulted in the attached tool. Technical information to support the subscale structure, reliability and validity of the HHW tool is presented here, along with percentile scores for benchmarking.

## 1. Subscale structure and reliability

To develop a robust tool with reliable subscales, it is important that the items in each subscale cluster together to represent coherent sets of items (or factors) so that the process of calculating subscale scores is meaningful and justifiable. To explore the most appropriate subscale structure, the data from the development sample were subjected to Principal Components Analysis (PCA) with Varimax rotation. This is a well-established statistical technique used to explore complex data sets and provide a meaningful structure to organise items into subscales. This process revealed a strong structure, largely consistent with the proposed themes. Clear factors were identified for *HHW Manager Support*, *HHW Peer Support*, *HHW Control*, *HHW Demands* and *HHW Relationships*. *Digital Risks* and *Digital Enablers* did not emerge as distinct factors and items from these themes were found to be distributed across the rotated solution. Therefore, these themes were not represented in the next development stage of the tool as distinct subscales.

*HHW Change* and *Work/Home Interface* also did not emerge as distinct factors. However, they did cluster coherently within *HHW Manager Support* and *HHW Demands*, respectively. Both of these clusters make sense and are supported by the PCA, but expert judgement and the qualitative analysis underpinning the tool both provided support for the conceptual distinction between these aspects of the cluster, with particular relevance for the practical utility of the tool in organisational settings. Consequently, *HHW Change* and *Work/Home Interface* were retained as distinct subscales. *HHW Role* was represented by a single item in the development version of the tool, which was found to cluster with *HHW Peer Support*. However, this item was removed in the following step, as it did not contribute positively to the *HHW Peer Support* subscale. Consequently, the tool does not include a subscale of *HHW Role*.

The next step of HHW tool development considered subscale reliability with a seven subscale structure, including the distinct subscale *Work/Home Interface*.

Reliability analysis is used to support robust subscale development. Cronbach alpha statistics were calculated for the clusters of items emerging from the PCA analysis. This provides a statistically sound basis for including or removing individual items from each subscale which are found to either contribute or detract from the scale reliability. All items within each cluster were systematically reviewed for inclusion or removal, by considering their impact on the subscale reliability as well as their conceptual consistency. The final subscale reliability analysis provided good support for the scale:

- Three subscales were found to have Alphas above 0.8 (*HHW Peer Support* with 5 items; *HHW Manager Support* with 6 items; *HHW Change* with 4 items\*)
- Two subscales were found to have Alphas above 0.7 (*HHW Demands* with 5 items; *Work/Home Interface* with 3 items\*)
- Two subscales were found to have Alphas above 0.6 (*HHW Relationships* with 2 items; *HHW Control* with 4 items)

\*Reliability analysis supported the separation of *HHW Change* and *Work/Home Interface* from *HHW Manager Support* and *HHW Demands*, each demonstrating strong subscale reliability, reflecting a coherent and conceptually distinct domain.

Although the Alphas for *HHW Relationships* and *HHW Control* are a little below the standard 0.7 level, the factor structure and the further validation work outlined below supports their inclusion in the scale.

## 2. Validity of the HHW tool subscales

Following psychometric support for subscale structure and reliability, the validity of the subscales required further statistical analysis to ensure the tool measures what is intended. Correlational analyses were undertaken to explore relationships between the HHW tool and existing measures; these included the SIT tool and outcome measures such as mental health and employee engagement. The aim of these analyses was to examine the extent to which the measure demonstrates an expected pattern of relationships with existing measures, i.e. stronger relationships with more closely related constructs (construct validity).

- **HHW and SIT domain relationships**

The strongest source of evidence for the HHW domains comes from relationships with the related SIT domains. Ideally, these relationships should be moderate (e.g.,  $r=0.4 - 0.6$ ), as very strong correlations (e.g., above  $r=0.9$ ) would question the added value of the HHW as a distinct measure. Correlations between the HHW and SIT domains were all in the expected direction and all highly significantly correlated ( $p<0.01$ ). *HHW Demands* was most highly correlated with *SIT Demands* ( $r=.50$ ) with only weak correlations with other *SIT domains* ( $r=0.25 - r=0.30$ ); Similarly, *HHW Control* was most strongly correlated with *SIT Control* ( $r=0.6$ ); *HHW Peer Support* was most strongly correlated with *SIT Peer Support* ( $r=0.61$ ); *HHW Manager Support* was most strongly correlated with *SIT Manager Support* ( $r=0.86$ ); *HHW Relationships* was most strongly correlated with *SIT Relationships* ( $r=0.52$ ); *HHW Change* was most strongly correlated with *SIT Change* ( $r=0.72$ ) and more moderately correlated with *SIT Manager Support*, providing further support for the distinction of these two domains; *Work/Home Interface* is a new domain and showed mostly weak correlations with the SIT domains, the strongest correlation being with *SIT Demands* ( $r=0.42$ ), which is the most closely related construct.

- **HHW and mental health outcomes**

The relationship between mental health and *Work/Home Interface* provides additional support for the value of *Work/Home Interface* as a distinct domain from *HHW Demands*. The SIT and HHW tools are both positively phrased, with high scores indicating a healthy workplace and low risk of stress (although some items require reversal). These domains would be expected to negatively correlate with scores on the PHQ-4, which is a measure of mental health difficulties using negatively phrased items which produce an overall score for mental health (Anxiety and Depression). Consistent with expectation, highly significant ( $p<0.01$ ) negative correlations were found between all HHW domains and overall scores on PHQ-4. Furthermore, consistent with theoretical frameworks, the PHQ-4 subscale of *Anxiety* was most strongly correlated with *Work/Home Interface* and *HHW Demands*, and the PHQ-4 subscale *Depression* was most strongly correlated with *Work/Home Interface* and *HHW Peer Support*.

- HHW and work pattern

In addition to exploring relationships with other instruments, further validation evidence was found by considering separate patterns of relationships between HHW domains and mental health for those workers who only infrequently work at home/remotely (20% or less) as opposed to those who work at home/remotely most or all of the time (80% or more). It was expected that the association between home working risks and mental health would be stronger for those workers who work at home/remotely more frequently. This expectation was supported by the findings, with stronger negative correlations between HHW domains and PHQ-4 for those working at home/remotely '80% or more' of the time. For this group of respondents, correlations between HHW domains and PHQ-4 ranged from  $r=-0.31$  (*HHW Manager Support*) to  $r=-0.48$  (*Work/Home Interface*). For the group of respondents working at home/remotely less frequently, these relationships were weaker, ranging from  $r=-0.20$  (*HHW Control*) to  $r=-0.37$  (*Work/Home Interface*).

### 3. Inclusion of Monitoring – Content Validity

Content validity refers to the extent to which the items on a test are fairly and fully representative of the entire domain the test seeks to measure. In this case, the domain of interest was stress risks for people working either wholly or partially away from the office. The content was established by the large-scale qualitative study gathering perspectives and experiences from over 300 public sector workers. Having completed the PCA, and confirmed the reliability and construct validity of the domains, the subscale structure was then reviewed against the initial qualitative themes, to ensure the HHW tool was representative of the concerns expressed by remote workers in the qualitative phase of the investigation.

One notable aspect of the qualitative data not supported by the new subscale structure was the common concern over remote performance monitoring, particularly the feeling of being offline and the impression this may give to managers and colleagues about work engagement and effort. The item '*I am concerned about being closely monitored when working remotely*' was originally proposed to capture these concerns.

This item did cluster with both *HHW Control* and *HHW Relationships* in the PCA, however, it was considered to be conceptually distinct and was not found to contribute positively to the subscale reliabilities. Consequently, the item was not included in the above structure. However, as this was a notable, meaningful and relevant aspect of the stress risks associated with remote working, this item is included in the final HHW tool as a single item. Construct validation supported the inclusion of this item, with consistent findings to the above: Correlational analysis demonstrated theoretically consistent associations with SIT domains, most strongly correlated with *SIT Change*, *Manager Support* and *Control* and least strongly with *SIT Demands*; Correlations with PHQ-4 (mental health) were also in the expected direction, with PHQ-4 *Anxiety* and *Depression* both being significantly negatively correlated. Furthermore, only weak levels of correlation ( $r=0.34$  and below) were found with the other HHW domains, including *HHW Change*, *HHW Control* and *HHW Relationships*, which supports the Discriminant Validity of *Monitoring*, and its separation from the other HHW tool domains.

## 4. HHW Benchmark data

Benchmarks offer important information to support the interpretation of your data. They provide a standard or point of reference against which you can compare your scores with scores in other organisations. The benchmarking data provided below allows you to compare your mean scores with the responses of 2,580 home/remote workers from the public sector. It is important to be aware that these data may not be representative of workers from other sectors, but represent the best data currently available. Mean scores, 25th and 75th percentile scores are provided below.

- **Above the 75th percentile** – This suggests that your employees' perceptions of their home, hybrid and remote working risks in this domain are more favourable than 75% of the respondents in the comparative sample. However, further exploration of items within the domain may reveal pockets of higher risk.
- **Between 75th and 25th percentile** – This suggests that your employees' perceptions of their home, hybrid and remote working risks in this domain are aligned with the middle 50% of respondents in the comparative sample. Whilst a score in this band is aligned with the majority, there is room for improvement to provide a healthy home/remote working or hybrid working environment. It is possible that there may be pockets of high risk in this area. Further exploration of items within the domain may reveal areas of particularly high or low risk.
- **Below 25th percentile** – This suggests that your employees' perception of their home, hybrid and remote working risks in this domain are more negative than 75% of respondents in the comparative sample. This indicates a high level of risk to employee health and wellbeing and we recommend that this is a priority area for further consideration.

	HHW Demands	HHW Control	HHW Peer support	HHW Manager Support	HHW Relationships	HHW Change	Work/Home Interface	Monitoring
<b>Mean</b>	2.95	3.72	3.82	3.83	3.54	3.52	3.78	3.42
<b>25<sup>th</sup> percentile</b>	2.40	3.25	3.40	3.33	3.00	3.00	3.33	3.00
<b>75<sup>th</sup> percentile</b>	3.60	4.25	4.40	4.50	4.00	4.00	4.33	4.00

This document evidences that the HHW tool has been developed with a strong statistical evidence base in response to rapid changes in working practices. It provides a useful mechanism for organisations to explore emerging challenges relating to home, hybrid and remote working. Development for this instrument is ongoing and will include further validation and more comprehensive benchmarking. Users of this tool are encouraged to share their anonymised data with the research team to support this ongoing development. If you are willing to share your data, please contact [humanfactors@hull.ac.uk](mailto:humanfactors@hull.ac.uk) to discuss.

**Copyright Notice (not to be removed):**

Copyright © University of Hull 2022. Developed by University of Hull in collaboration with East Riding of Yorkshire Council, Hull City Council, North Lincolnshire Council, North East Lincolnshire Council and the Department for Levelling Up, Housing and Communities. This document also contains questions from the Health & Safety Executive's Management Standards Indicator Tool (HSE, 2004).

