

Out of sight, out of mind? Research into the occupational safety and health of distributed workers

Report submitted to the IOSH Research Committee

Professor Karina Nielsen

Professor Kevin Daniels

Rachel Nayanie

University of East Anglia

Emma Donaldson-Feilder

Affinity Health at Work

Dr Rachel Lewis

Affinity Health at Work

Kingston University

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Out of Sight, Out of Mind? Research into the Occupational Safety and Health of Distributed Workers

Sponsored by the Institution of Occupational Safety and Health

Professor Karina Nielsen¹

University of East Anglia, Norwich Research Park, Norfolk, NR4 7TJ

Professor Kevin Daniels

Rachel Nayani

University of East Anglia, Norwich Research Park, Norfolk, NR4 7TJ

Emma Donaldson-Feilder

Affinity Health at Work, 287 Mayall Road, London, SE24 0PQ

Dr Rachel Lewis

Affinity Health at Work, 287 Mayall Road, London, SE24 0PQ

Kingston University, 53–57 High Street, Kingston upon Thames, Surrey KT1 1LQ

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¹ Karina Nielsen is now with University of Sheffield, Sheffield University Management School, Conduit Road, Sheffield, S10 1FL

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Abstract

Many workers spend at least some of their work time working away from a main office or location. Leading the occupational safety and health (OSH) of these distributed workers is challenging, due to less opportunity for face-to-face contact and potential issues of access to OSH resources. This study examined OSH leadership of distributed workers across a range of sectors, occupations and geographical locations.

Phase 1 comprised a systematic literature review. Studies revealed that two existing frameworks, transformational leadership and leader-member exchange, may be appropriate for leading OSH in distributed contexts. Other factors seemed important, such as good communications and supervisor support.

In *phase 2*, in interviews with 41 OSH practitioners, we explored the OSH leadership of distributed workers. Analysis indicated that transformational, transactional (contingent reward), health-specific and safety-specific leadership frameworks were applicable, in addition to the trust element of leader-member exchange. OSH practitioners role-model OSH leadership behaviours to line managers, with the aim of encouraging managers to model these behaviours to distributed workers, and also display health- and safety-specific leadership directly to distributed workers.

Phase 3, comprised a multi-level survey completed by 822 distributed workers, 112 line managers and 40 OSH practitioners, in 19 organisations. Line managers' leadership behaviours were related to distributed worker self-rated health, wellbeing and job satisfaction, as well as the extent of compliance with safety standards. Where OSH practitioners had direct contact with distributed workers, their health-specific leadership behaviours were related to higher levels of job satisfaction and safety performance. No evidence was found that line managers role-model their OSH practitioners' OSH leadership behaviours.

Phase 4 comprised development of a toolkit based on findings of the study comprising a range of tools to assist OSH practitioners responsible for distributed workers.

Executive Summary

This four-phase project examined the occupational safety and health (OSH) leadership of distributed (or remote) workers – defined as workers who spend at least part of their working week, working away from a main office or location. The rationale for the project was that, despite nearly half of all workers in Western Europe being engaged in some form of distributed work (ICD, 2010), there has been little research specifically examining the OSH leadership of these workers. Furthermore, managing the health and safety of distributed workers is challenging in view of the lack of face-to-face contact, distributed workers' potential limited access to OSH resources and these workers often having more than one place of work. All these factors make it difficult to monitor and manage OSH risks for these workers (Dix & Beale, 1996).

The general goal of this research was therefore to develop our understanding of how OSH practitioners can ensure employee health and safety among distributed workers. Given the role of line managers in ensuring employee safety and health, we focussed on the roles of both OSH practitioners and line managers in ensuring distributed workers' health and safety. The project examined whether current OSH leadership frameworks are applicable in the context of distributed working; whether other frameworks may be more appropriate, and whether OSH practitioners can deploy appropriate frameworks to ensure the cascade of effective OSH leadership via line managers to distributed workers. Furthermore, the research team generated a toolkit for OSH practitioners to enhance development of underpinning and effective line management behaviours. The toolkit included the skills and abilities underpinning effective OSH leadership behaviours that facilitate good OSH practices among distributed workers.

In the first phase, we conducted a systematic literature review focussed on empirical research examining OSH leadership and management of distributed workers. Our search was necessarily broad, in order to encompass different distributed working occupations. The purpose of this phase was to understand research to date and use this understanding to inform the research study phases 2 (interview study), 3 (survey study) and 4 (toolkit development).

We identified 20 empirical papers that met the inclusion criteria of this topic. There were no studies that explored OSH leadership behaviours and styles specifically developed for distributed workers. We were unable to identify any studies that had explored the potential cascading of leadership from OSH practitioners to line managers, and from line managers to distributed workers. Studies reveal that existing leadership frameworks are relevant in the

occupational safety and health of distributed workers, specifically transformational leadership and leader-member exchange. Supervisor support was equally important, as are leaders' use of motivational language and competent leadership. Furthermore, studies found that other factors may need to be in place to ensure the health and safety of distributed workers, such as good communication characterised by face-to-face interaction, and when communicating electronically, clear and concise communication. High safety standards within the organisation were also found to be important.

Overall, the literature review revealed that no leadership frameworks have been developed with a specific view to capturing the complexities of distributed working.

The second (qualitative) phase examined, from the perspective of OSH practitioners, the OSH leadership behaviours that ensure good OSH for distributed workers and the enablers and barriers of OSH leadership across a range of differing distributed work occupations and industrial sectors. The purpose of this phase was to gather data to inform a survey questionnaire for use in phase 3, and to inform development of the toolkit for use by OSH practitioners in phase 4.

We recruited and undertook 11 scoping interviews with OSH experts from policy, practice and academia. Findings from these interviews and the literature review informed the development of an interview protocol for OSH practitioners. Utilising professional contacts, we recruited and interviewed 41 OSH practitioners responsible for distributed workers, across a range of occupations and hazard environments. Interviews were conducted between May and September 2015 and were undertaken via telephone, recorded and verbatim transcribed.

We identified that the most commonly adopted leadership behaviours were those falling under the categories of transformational leadership, transactional leadership (contingent reward) and the trust element of leader-member exchange. OSH practitioners adopted two strategies for exercising OSH leadership behaviours. First, what we termed the 'cascade' involved role modelling good health and safety leadership behaviours to line managers with the aim of encouraging line managers to display health and safety leadership behaviours to distributed workers. Second, what we termed the 'bypass', whereby OSH practitioners role modelled these behaviours directly to distributed workers. We incorporated both strategies when developing the survey. Additionally, in accordance with the findings from the literature review, OSH practitioners emphasised communication. These included both the content and the means of communication. OSH practitioners also reported that organisational resources in the form of training and awareness, events promoting occupation health and safety, policies and procedures, monitoring and reporting systems and the use of appropriate

health- and safety-specific technology and equipment were important to ensure the health and safety of distributed workers. We therefore incorporated items on the application and use of these OSH resources and management systems into the survey.

In the third phase we conducted a multi-level survey. The purpose was to examine the OSH leadership provided by OSH practitioners and line managers to distributed workers in relation to the health and safety of distributed workers. In addition to the primary focus on leadership behaviours and OSH outcomes of distributed workers, the survey acknowledged the heterogeneous nature of distributed working by including items around physical aspects, such as work locations, modes of working, switching between modes (such as driving and teleworking), as well as the main hazards encountered.

We recruited 19 organisations that employed distributed workers, across a range of sectors including transportation, telecommunications, engineering and advisory services.

Recruitment took place through professional contacts and the promotion of the research in *Safety & Health Practitioner* (SHP) magazine. The survey was issued through web links or via hard copies between February and June 2016. In total 40 OSH practitioners, 112 line managers and 822 distributed workers completed the questionnaires. Workers were asked to rate the leadership behaviours of their line manager and, if there was direct contact, also the leadership behaviours of their OSH practitioner; their line manager was asked to rate the leadership behaviours of their OSH practitioner, and the OSH practitioner reported on their own leadership behaviours. We also asked workers to rate a number of OSH outcomes, such as wellbeing, job satisfaction and aspects of safety performance.

Leadership behaviours from line managers to distributed workers. The results of the survey confirmed that all five existing types of leadership behaviour – transformational, transactional (contingent reward) leadership, leader-member exchange (trust), health-specific and safety-specific leadership, when exerted by line managers, were related to distributed worker self-rated health, wellbeing and job satisfaction. Our results suggest that line managers have an influence on the health and safety of distributed workers through contact with individual workers rather than through shared experiences of leadership behaviours in work groups. Furthermore, these leadership styles were also related to the extent to which distributed workers complied with safety standards and used safety equipment. Contrary to expectations, the items we developed specifically for this study as a result of the interviews did not display good psychometric properties.

Influence of OSH leadership behaviours through line managers to distributed workers – the cascade. We examined whether OSH practitioners' health and safety leadership was related to line managers' health and safety leadership behaviours. However, we found no evidence

for this cascading effect. These results suggest that line managers do not model the behaviours displayed by their OSH practitioners; whether line managers exert health and safety behaviours may depend on other factors not explored in the present research.

Influence of OSH leadership directly from OSH practitioner to distributed workers – the bypass. Based on the interview information, in cases where OSH practitioners had direct contact with these workers, we also examined whether OSH practitioners' health and safety leadership behaviours were directly related to distributed workers. We found that OSH practitioners' health- and safety-specific leadership behaviours at the individual level were related to higher levels of job satisfaction and safety performance, but we found fewer relationships than when line managers' exerted these leadership behaviours. Furthermore, when the health and safety leadership behaviours reported by the whole work group level were high, distributed workers under the OSH practitioner reported better self-rated health and were more enthusiastic about their jobs. This suggests that, contrary to line managers, OSH practitioners may influence distributed workers' health and safety through shared experiences of the OSH practitioners' health- and safety-specific leadership as well as through individual experiences.

In the fourth phase, we developed a toolkit including a self-reflection framework, to assist OSH practitioners in the OSH leadership of distributed workers. The toolkit was developed from data collected in the interviews in phase 2 and survey findings from phase 3.

The toolkit comprises six elements. (1) An OSH practitioner self-reflection framework which may be useful to OSH practitioners to ensure good OSH and supporting line managers leading distributed workers. This consists of four areas of skills and abilities: getting the message across to distributed workers; listening and understanding distributed workers and their role; empowering and collaborating with distributed workers; and cascading to distributed workers via line managers. (2) A checklist of the most common barriers to and facilitators of that may influence the extent to which OSH practitioners develop and employ the skills and abilities listed. (3) A line manager leadership framework, including self- and other reports, based on transformational leadership, transactional leadership (contingent reward), leader-member exchange, health-specific and safety-specific leadership. (4) A checklist of the most common OSH risks experienced by distributed workers. (5) Case study real-life examples that covered the different phases of OSH management including risk mitigation, early response and ongoing management of risks, risk prevention and OSH promotion. (6) An overview of managing OSH of distributed workers.

1. Introduction and rationale for this project

Distributed workers are those who spend at least part of their working week, working away from a main location. Nearly half of all workers in Western Europe can be considered distributed workers and the number is believed to be increasing (ICD, 2010). Dix and Beale (1996) propose that distributed working tends to be characterised by less frequent contact with colleagues and managers, limited access to organisational information and more than one place of work.

Raghuram, Tuertscher and Garud (2010) suggest that Occupational Safety and Health (OSH) is not a major area of research in distributed working. Raghuram et al.'s analysis indicated a stream of issues relating to psychosocial risks including stress, dissatisfaction and poor work-life balance, but research on distributed workers facing major physical hazards, or ergonomic hazards such as computer-based work is less frequent (Zohar, Huang, Lee & Robertson, 2014). Moreover, the literature on the work experience of different forms of distributed worker is fragmented and contradictory (Belanger, Watson-Manheim, Beth & Swan, 2013) and there are only preliminary and equivocal findings on managing distributed workers (Golden & Fromen, 2011).

These specific characteristics and risks present challenges for the OSH of such workers. First, it may be difficult for OSH practitioners - those who provide health and safety expertise to others, to keep in contact with distributed workers to monitor whether workers employ good OSH practices. Second, the limited access to organisational information may mean that distributed workers are not familiar with OSH practices and procedures and are not kept updated about relevant training. Third, having more than one location of work may present challenges for OSH management as it may be beyond the control of the OSH practitioner to predict and control the risks faced by their distributed workers. In the present study, we therefore focus on how OSH practitioners can introduce leadership and management practices that may ensure the health and safety of such workers.

It is well known that line managers play an important role in employees' health and safety (Kuoppala, Lamminpää, Liira & Vainio, 2008; Skakon, Nielsen, Guzman, & Borg, 2010). We therefore propose that line managers who may be the first point of contact for distributed workers and who may have more interaction with these workers may play an important role in ensuring OSH for distributed workers.

Leadership behaviours help ensure distributed workers' health and safety (Kuoppala et al., 2008; Skakon et al., 2010). Given the potential OSH issues for distributed workers and the characteristics of distributed working, current leadership frameworks may not be fit for

purpose since most are relational and have been developed applying assumptions of face-to-face interaction, whereby leaders model desired behaviours to their workers. Furthermore, given the characteristics of distributed working, there is limited opportunity for line managers and OSH practitioners to observe or directly intervene with distributed workers. OSH leadership models may not be easily transferable from standard working contexts to distributed working contexts. For example, aspects of safety transformational leadership may be transferred to the distributed context because safety transformational leaders encourage workers to develop innovative and improved practices for safety-related issues (Mullen & Kelloway, 2009). Also, there is a need to differentiate the OSH leadership provided by line managers to those they manage from the leadership OSH practitioners provide to line managers.

In this investigation, we explore the role OSH practitioners and line managers play in ensuring the health and safety of distributed workers. We also aim to develop practical tools that can support OSH management of distributed workers.

This research is timely. In a recent review of safety leadership practices for safety compliance, Pilbeam, Doherty, Davidson, and Denyer (2016) reviewed the literature on safety leadership practices in general and on the basis of their review of 25 studies concluded that as most research has been carried out in high hazard settings (oil and gas, construction and manufacturing), research is needed to explore other occupational settings including low risk settings. We address this call by including a wide range of occupational settings characterised as high and medium risk. Low risk is typically characterised by office work so less prevalent among distributed workers. The focus on distributed workers may be particularly important due to the challenges they face. Pilbeam and colleagues (2016) also called for flexible methods to explore the different leadership frameworks and practices that may be employed to ensure worker safety. We use a mixed methods approach to identify existing frameworks and review the usability of these. Finally, Pilbeam et al. (2016) called for research to focus also on the higher hierarchical levels. In this investigation, we focussed on OSH practitioners in addition to line managers.

1.1 Who are distributed workers?

Distributed (or remote) workers are those workers who spend at least part of their working day, working away from a main location (Dix & Beale, 1996). They are a heterogeneous group and vary according to factors such as how much time they spend in different locations during work (e.g. home, travelling); the extent of communication with managers, co-workers and clients; technologies used to conduct their work and communication; and the complexity of tasks and application of complex knowledge (Daniels, Lamond & Standen, 2001).

Although some occupations are inherently distributed (e.g. mobile maintenance engineers), employees in traditionally non-distributed occupations may be distributed for part of their time (e.g. computer programmers). There are many reasons why organisations adopt distributed working, such as extending geographical coverage of labour markets, reducing office accommodation costs and improving work-life balance (Daniels et al., 2001). The physical and psychological OSH challenges and hazards faced by distributed workers may be as diverse as distributed workers (Hislop, Axtell & Daniels, 2008). Many distributed workers are lone workers for some or all of their work-time.

Distributed workers may be found across a range of industries and occupations. Examples include:

- Public service workers (police, community nurses, social workers, local authorities (housing, street, public spaces maintenance), public sector workers (inspection and regulation)
- Utilities, Energy and Telecoms workers (engineering, construction, plant maintenance— in variable locations such as roadside, countryside, urban and remote, domestic)
- Transportation workers - people and goods (buses, trains, planes, lorries and vans)
- Service workers (e.g. surveyors, architects, consultants, sales)
- Homeworkers (fixed, flexible, casual)
- Delivery drivers and salespeople

1.2 Hazards experienced by distributed workers

Hazards may range from ‘holes and poles’ (working at height and at depth), chemicals, power (gas, electricity), slips, trips, falls, heavy loads, machinery, as well as risks presented through interaction with the public, such as verbal and physical abuse, and physical harm from animals such as household pets and livestock. Some distributed workers are not only exposed to hazards that may harm themselves, but others too, for example those who undertake public transportation, roadside construction and engineering, and work with chemicals and power. They may be exposed to dynamic risks whereby there is a degree of unpredictability. For example, distributed workers who work outdoors can also be exposed to adverse weather conditions and working after nightfall.

For the purpose of this study, we define hazards levels as follows:

- ‘High’ hazards for example working at height, or at depth, working with chemicals, machinery, and hazardous substances, that can potentially lead to multiple casualties that are potentially life-threatening for the worker.

- ‘Medium’ hazards, for example may lead workers to slip, trip over things, or fall over; where workers are required to lift or carry objects, or road-use.
- ‘Low’ hazards, for example where workers spend most of their time in an office environment.

1.3 Key definitions

Key terms such as leadership, management, health and safety are used throughout the report. In the following we define these key terms.

- Safety is the condition of being protected from or unlikely to cause danger, risk or injury; or being designed to prevent injury or damage (Oxford English Dictionary).
- Health is “a state of complete physical, mental, and social wellbeing and not merely the absence of disease or infirmity” (WHO, 2015). Danna and Griffin (1999) defined worker health and wellbeing as the state of individuals’ mental, physical and general health, as well as their experiences of satisfaction both at work and outside of work and their intention to remain within the organization.
- Leadership concerns the creation of a vision and development of the organisation to adapt to changing circumstances and encouragement of innovative work practices (Alimo-Metcalfe & Alban-Metcalfe, 2002).
- Management concerns the planning and organisation of work, setting objectives, creation of monitoring systems to ensure standards are met (Alimo-Metcalfe & Alban-Metcalfe, 2002).

It is important to note that an individual can be both a leader and a manager; their roles are not mutually exclusive, although they are distinct it is also possible to be either or neither (Furnham, 2005).

Based on Avolio et al. (2009) and the findings of the literature review (e.g. Conchie 2013; Whitford & Moss, 2009), we identified nine major leadership frameworks. Authentic leadership, e-leadership, ethical leadership, leader-member exchange, servant leadership, the Ohio state/behavioural leadership model, and full range leadership were all identified in the literature view by Avolio et al. (2009). We also identified a health-specific leadership framework that seemed particularly relevant for our purpose.

The definitions of the main leadership frameworks are as follows.

Authentic leadership: the leader exerts transparent and ethical behaviours that encourage employees to openly share the information needed to make decisions. Leaders also make decisions considering followers’ inputs (Avolio et al., 2009).

E-leadership: leaders virtually lead followers from different departments, organisations, and countries. The focus is not on the leaders' behaviours per se, but rather on how distributed work groups make decisions and the effects of distance and multiple locations on decision making (Avolio et al., 2009).

Ethical leadership: leaders demonstrate appropriate conduct in their personal actions and their interactions with others. They promote ethical behaviours of followers through two-way communication and they reinforce ethical behaviours and engage and encourage ethical decision making (Avolio et al., 2009).

Health-specific leadership: In addition to these widely studied leadership frameworks, which have not been developed for health- and safety-specific purposes, we identified the health-specific questionnaire developed by Gurt et al. (2011). Gurt et al. (2011) argue that most existing leadership frameworks do not explicitly include the leaders' active engagement in ensuring followers' health. Health-specific leadership focusses on leaders who set the agenda for health by bringing up the topic in interactions with their followers, they communicate the importance of employee health, they role model healthy and safe behaviour, and they actively support organisational health-promotion activities.

Leader-member exchange (LMX) theory focusses on the relationship between the leader and follower (Cogliser & Schriesheim, 2000). The main principle in LMX theory is that leaders develop different relationships with individual followers and the quality of these relationships influences employee outcomes. Leadership is thus the interaction between leaders and their followers. The main components of the LMX are trust, obligation and respect (Graen & Uhl-Bien, 1995).

The Ohio State (Behavioural) Leadership Model. According to this model, leaders engage in two types of behaviours. There are two central dimensions: Initiating structure concerns the extent to which the leader defines workers' roles, organises group activities and define how tasks are to be accomplished by workers. Considerate leadership focusses on the degree to which leaders are attentive to whether followers express comfort, have high levels of wellbeing, experience their status is respected and are satisfied (Kuj, 2008).

Servant leadership: Servant leaders are those who thrive to serve others before they lead. They put the needs of their followers before their own. Servant leaders are characterised by ten major skills: they listen, they show empathy, they heal, they demonstrate awareness, they are persuasive, they are skilled in conceptualisation, they possess foresight, they demonstrate stewardship, they are committed, and they build community.

The full range leadership framework suggests that a constellation of leadership behaviours exists that all leaders display to some extent. The framework consists of three leadership styles: transformational, transactional and laissez-faire leadership (Bass & Riggio, 2006). As only the first two types of leadership style have been associated with positive worker outcomes (Skakon et al., 2010, Kuoppola et al., 2008) we decided only to include these:

Transactional leadership: There are three main dimensions of transactional leadership. Contingent reward: Leaders establish clear expectations about what rewards can be expected once targets have been achieved. Leaders establish constructive transactions or exchanges with followers. Management-by-exception: Leaders take action to correct problematic issues. They either do this actively – before behaviours create serious problems or passively – after the behaviours have created problems.

Transformational leadership: These are leaders who enact behaviours that aim to transform and inspire followers to perform beyond expectations whilst transcending self-interest for the good of the organisation. The four main dimensions of transformational leadership include: Idealised influence: Leaders act as role models and walk the walk and talk the talk. They can be trusted to do the “right thing” and they demonstrate ethical and moral conduct. They are open about their values and take a stand. Inspirational motivation: Leaders formulate a clear vision and objectives that are inspiring, meaningful and achievable for their followers. Intellectual stimulation: Leaders challenge existing mindsets and encourage employees to make independent decisions at work. Finally, individualised consideration: Leaders coach and mentor their employees to help them achieve their full potential and develop at work. They are aware of each follower’s needs. They also listen to their employees’ concerns.

Finally, **Safety-specific transformational leadership** (Barling et al., 2002). This type of leadership comprises the same dimensions as transformational leadership but focusses explicitly on safety.

1.4 Out of sight, out of mind: Aims, objectives and methods

The aim of this investigation was to establish the parameters of good OSH leadership behaviours in distributed worker settings.

The investigation had the following objectives:

- i. Obtain knowledge of appropriate OSH leadership behaviours for OSH practitioners and line managers responsible for distributed workers through demonstrably strong empirical research.

We formulated three specific research questions to guide the achievement of our first objective:

1. Are current OSH leadership frameworks applicable in the context of distributed working?
2. What other frameworks or models may be applicable to/optimal for OSH leadership of distributed workers?
3. Can OSH practitioners deploy appropriate frameworks and models in distributed working contexts to ensure effective OSH leadership from line managers?

The answers to research questions 1 to 3 and the underlying empirical data obtained informed objectives 2 and 3:

- ii. Identify skills and abilities underpinning effective leadership behaviours that facilitate good OSH practices among distributed workers;
- iii. Develop a toolkit for OSH practitioners to enhance development of underpinning and effective line management behaviours that facilitate good OSH practices among distributed workers.

In achieving our objectives, we considered both the OSH leadership provided to line managers by OSH practitioners, and the OSH leadership provided by line managers to distributed workers. Can OSH practitioners deploy appropriate frameworks and models in distributed working contexts to ensure effective OSH leadership from line managers?

The research study comprised four phases. These phases comprised:

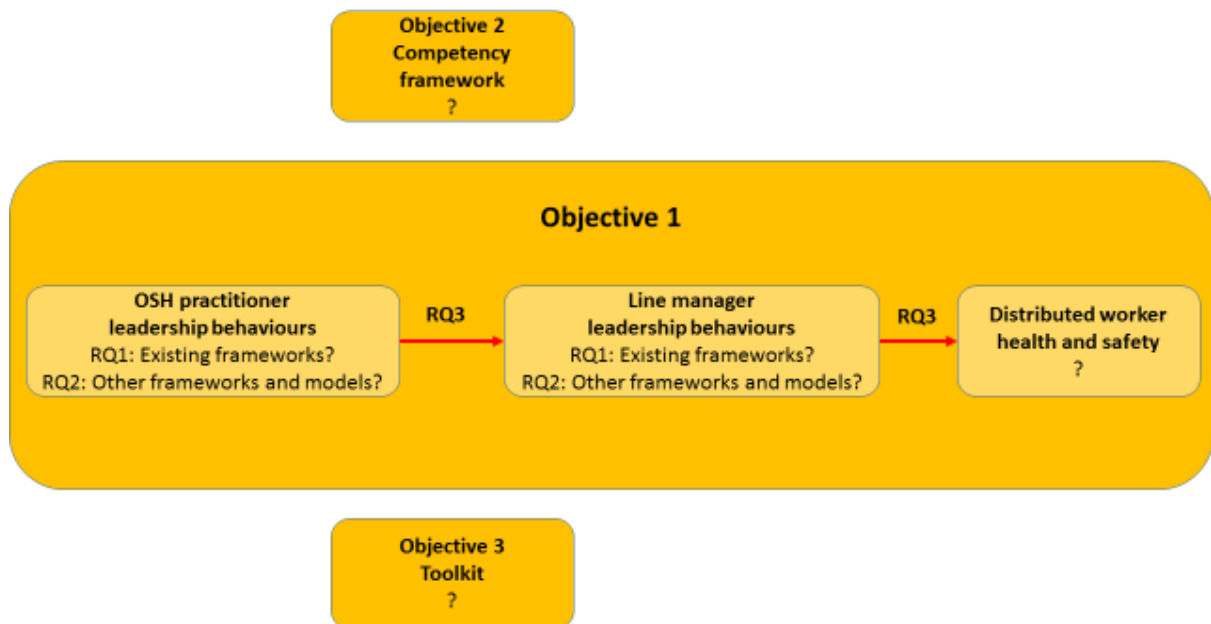
1. **Phase 1 – a systematic review of the literature.** We undertook a thorough review of the literature, from 1990 to 2015, in order to gather evidence with respect to OSH leadership and management of distributed workers. The findings informed subsequent phases of the study.
2. **Phase 2 – a qualitative study.** We conducted scoping interviews with eleven OSH experts, which allied with findings from the literature review enabled us to develop an interview guide. We then undertook semi-structured interviews incorporating critical incident technique questioning with 41 OSH practitioners, currently responsible for distributed workers. From our analysis of this study, we generated a survey applicable to a range of distributed work contexts.

3. **Phase 3 – a quantitative study.** We administered the survey online or in hard copy, according to organisational preferences. The survey comprised three questionnaires – one for each of OSH practitioners, line managers of distributed workers and distributed workers. Nineteen organisations across a range of sectors, sizes and hazards took part, generating responses from 40 OSH practitioners, 112 line managers and 822 distributed workers.
4. **Phase 4 - Toolkit and report.** Utilising the results from the qualitative and quantitative studies, we built a toolkit to assist OSH practitioners in leading effective OSH for distributed workers.

Due to the exploratory nature of the present investigation, we employed a mixed methods research design with a sequential strategy, that is, we conducted the qualitative study first and this informed the content of the quantitative study. In light of the complexity of our objectives and research questions, the mixed method research design has several advantages. First, the mixed methods design ‘provides a better understanding of research problems, as only one type of data could provide an incomplete understanding’ (Creswell & Plano Clark, 2011, p. 5). This means that using only quantitative data or qualitative data could lead to the omission of important information about the context, e.g. which leadership behaviours may be important in the context of distributed workers. In this investigation, we used the qualitative study to inform our quantitative study. This strategy enabled us to identify existing leadership frameworks, but also identify leadership behaviours specific to distributed workers. Second, the mixed method design enables the researcher to generate and verify theories within the same study. This is possible because qualitative research can produce information that may lead us to revise our research questions, for example if interview results suggest that there is no cascade from OSH practitioners to line managers, instead OSH practitioners bypass line managers and interact with distributed workers directly. Conversely, it is also possible to go back to the qualitative data to explore reasons for quantitative findings. Finally, several authors (e.g. Johnson & Turner, 2003) argued that using a mixed method design minimises the drawbacks of each method leading to a more in-depth analysis of key processes and mechanisms.

In Figure 1.1, we provide an overview of the objectives and main research questions of the investigation. First, through answering the three research questions, we achieve objective 1. We included data from phases 1, 2 and 4, the systematic literature review, the qualitative and the quantitative studies to answer the three research questions. Second, achieving objective 2, we used the qualitative data of phase 2 to identify the skills and abilities underpinning OSH leadership and third, also using the qualitative data, we achieved the third objective by developing a toolkit for OSH practitioners and managers.

Figure 1.1. Overall research model



Note: RQ = Research Question.

2. Phase 1: Systematic literature review

In the first phase of this investigation, we conducted a systematic literature review. We did this to obtain an overview of the role of OSH practitioners and line managers in ensuring distributed workers' health and safety. The information was used to inform phases 2 and 3 of the investigation.

We aimed to answer all three research questions in our literature review. In response to research question 1, we found that established leadership frameworks were related to the health and safety of distributed workers. These frameworks included transformational leadership, leader-member exchange, organisational and supervisor support, competent leadership and motivating language (could be considered one aspect of transformational leadership). In answer of research question 2, we found that other models and frameworks included modes and means of communication, including face-to-face interaction and use of technology. It was also important that line managers had an understanding of working as distributed workers themselves. We also found high safety standards and procedures were important for worker safety. We found no studies relating to our third research question, which suggested a cascade of OSH practitioners' leadership and management to line managers' leadership and management, and in turn, how this influenced worker health and safety. In this chapter, we describe and discuss the results of the literature review.

2.1 Search strategy

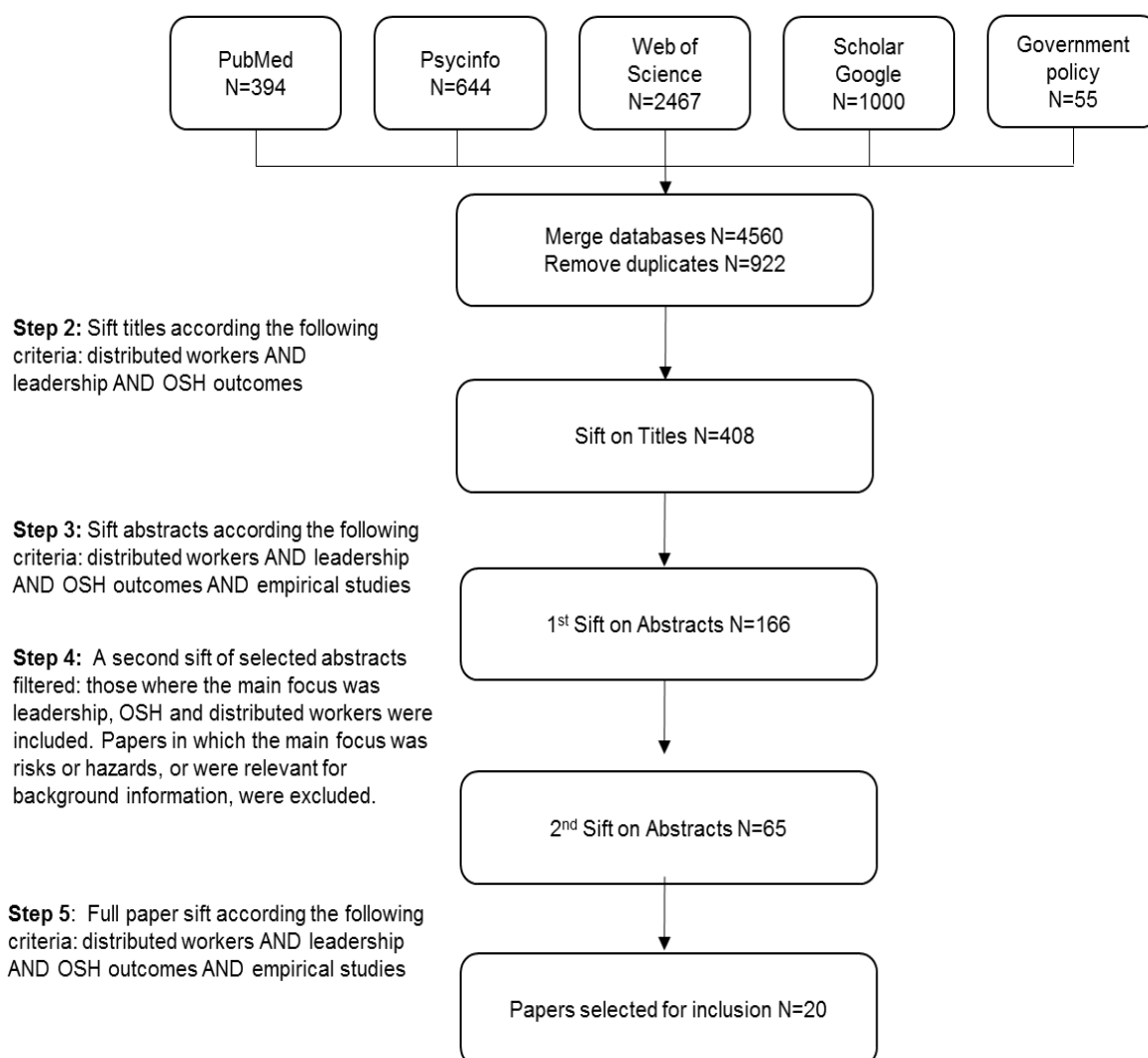
We searched the databases PubMed, PsycInfo, ScholarGoogle and Web of Science. We used the search terms and parameters agreed with the steering group. The Search terms for literature review are listed in Appendix A. ScholarGoogle produced a large number of 'hits' so only the first 400 sorted by relevance we included in the review. We also examined a number of policy reports as identified by members of the project team.

Two members of the research team independently reviewed all titles for potential relevance to the research. Out of 922 papers identified through the initial search, we examined the abstracts of 408. Through independent review, then discussion, non-empirical papers and those that did not focus on occupational safety and health leadership were omitted. Some 166 abstracts were retained after the first abstract sift. We then conducted a detailed joint examination of the abstracts to be included in the final review. We examined abstracts according to their relevance to the overall project – focussing on papers that were concerned with all of the following: leadership or management, occupational safety or health or wellbeing (one dimension of health often examined without mention of health); and distributed workers. Disagreements were resolved by discussion. From this exercise, we identified 65 papers for a full-paper sift. Both reviewers examined the full papers with respect

to the inclusion criteria. Following this exercise, 20 papers met the inclusion criteria for the full-paper analysis. The flow chart of this sift is illustrated in Table 2.1.

Table 2.1 Flowchart of the paper sift process undertaken for the literature review

Step 1: Database search applying search terms as detailed in table 1



The 20 full papers were then divided amongst three members of the research team, who each reviewed the findings and summarised these into evidence tables. We focussed on the type of distributed workers included in the sample, the geographical area, methods, scales applied and findings. Each summary was then audited by another member of the team to ensure consistency of interpretation of the findings. A summary of the selected papers can be found in Table 2.2, and the evidence tables from sifted papers are provided in Appendix B.

2.2 Findings

In the following section we provide an overview of the papers that we identified during our systematic literature search and discuss how each relate to the three research questions.

Research question 1. Are current OSH leadership frameworks applicable in the context of distributed working?

12 papers were identified that partially addressed which current OSH leadership frameworks may be applicable to the context of OSH leadership and management in distributed workers.

5 studies have focussed on the role of social support in ensuring good occupational safety and health among distributed workers.

Chen, Wong and Yu (2008) surveyed off-shore oil workers in China, examining supervisory instrumental and emotional support. They found that a lack of supervisory instrumental support was related to workers being physically inactive and smoking, but not drinking behaviours; whilst supervisory emotional support was unrelated to employees' physical activity, drinking and smoking.

Among Norwegian oil drill workers, a study by Nesheim and Gressgård (2014) examined management support, which they measured as the leader's encouragement of employee to seek knowledge and learn from others and knowledge sharing. They found a positive relationship between knowledge sharing among onshore workers and management support. However, they found no such relationship with respect to offshore personnel. For both onshore and offshore workers, knowledge utilisation was related to knowledge sharing.

Gray-Stanley, Murumatsu, Heller, Hughes, Johnson and Ramirez-Valles (2010) found in a sample of US community-based workers that supervisory social support moderated the relationship between depression and role conflict, in that workers reporting the lowest levels of depression, while also experiencing the highest levels of role conflict, were those who were supported by their supervisors. Social support from both employees and supervisors moderated the relationship between depression and client disability stress, in that when workers whose clients had high levels of disability experienced support from their colleagues and supervisors, they reported lower levels of depression.

Nurmi (2011) undertook a qualitative interview study of Finnish remote working practitioners across a range of industries such as telecommunications to the paper and pulp industry. The study found that employees reported that social support from the manager was important to minimise stress, but that role overload was more likely when workers worked remotely from managers. Findings suggested this may be due to managers being unaware of workload of

remote workers. The study also suggested that managers should encourage self-management behaviours in terms of setting clear personal and professional limits and prioritising tasks, and encourage employees to set clear limits for work hours and email communication.

Weymouth, Davey, Wright, Barclay, Belton, Svenson and Bowell (2007) conducted a study of Australian remote nursing. They interviewed Australian remote nurses, and both interviewed and surveyed nursing executives. Nurses reported a lack of social support and that the workload of their managers may present prevent effective OSH leadership. Management were said to focus on service, rather than workers and lacked the strategies for leading workers who worked across large geographical distances. Furthermore, managers lacked accessibility and engagement with the health teams and community workers.

One study explored the role of leader-member exchange (LMX; Graen & Uhl-Bien, 1995), i.e. the extent to which leaders build a good quality relationship with their followers and differentiate their interactional exchange style in their relationships among subordinates. Golden and Veiga (2008) examined LMX with respect to virtual and non-virtual workers in a US high-tech corporation. They found that LMX is more important to job satisfaction of virtual workers than for non-virtual workers.

In their study examining the relationship between workplace isolation and considerate leadership among virtual workers in the US, Mulki and Jaramillo (2011) found that workers' involvement in the workplace, and satisfaction with the supervisor were related to considerate leadership. Lower turnover intentions among workers was in turn related to worker satisfaction with the supervisor.

Whitford and Moss (2009) examined the impact of different dimensions of transformational leadership (transformational leaders formulate a clear vision, challenges existing mindsets of their employees, role model desirable behaviours and coaches and mentors employees to reach their full potential) on job satisfaction and work engagement both traditional and virtual teams across six continents. Having a visionary leader was associated with job satisfaction when the promotion focus was high for workers whose leaders worked in a different location. The authors found no such relationship with work engagement. However, visionary leadership was related to work engagement if the focus on prevention was low for those workers who worked in different locations from their leaders. There was no such relationship for job satisfaction. Furthermore, when leaders and employees were in the same location, the relationship between the leader showing personal recognition and work engagement was not moderated by worker prevention focus. Finally, when leaders and employees worked in different locations, higher levels of employee work engagement but not job satisfaction, were

reported where the leader demonstrated personal recognition of employees and the leader's performance orientation was high.

Conchie (2013) undertook a survey study examining safety-specific transformational leadership and safety behaviours among UK construction workers. The study found that safety-related whistle-blowing, safety voice - such as making suggestions or expressing concerns on safety related matters, and safety compliance were significantly related to specific transformational leadership behaviours. The study also found that intrinsic motivation partially mediated the relationships between whistle-blowing behaviours and safety voice. In a second study of UK construction workers (2013), Conchie found that the mediated path from safety-specific transformational leadership behaviours to safety voice behaviours and safety whistle-blowing over intrinsic motivation was moderated by trust in the leader, so that the indirect paths were only significant when employees trust their leader.

Yang, Yen, and Cheng (2012) conducted a mixed methods study of Taiwanese police workers and leaders. They found that job satisfaction among Taiwanese police officers was directly related to leadership ability, which comprised of emotional and social ability, managerial ability and intellectual ability.

Among US teleworkers, Madlock (2013) examined the use of supervisory motivating language comprising emphatic language – the expression of shared feelings, meaning-making language – conveying for example, organisational rules and values, and direction-giving language. They found that employees' satisfaction with teleworking, overall job satisfaction and commitment was related to supervisors' use of motivating language. The form of motivating language most often used was direction-giving language, more so than emphatic language and meaning-making language. Job satisfaction was related to emphatic language, whilst meaning-making language was not; employees' communication satisfaction and overall job satisfaction was most strongly related to direction giving language. Employees' satisfaction with communication was not related to use of emphatic and meaning-making language.

Overall, of the studies that used existing frameworks of OSH leadership, most focussed on social support. Other studied leadership frameworks were transformational leadership and leader-member exchange. Few concepts were examined in more than one study. All conceptual frameworks, however, received some support for being applicable to the distributed worker context. Six out of 14 studies were conducted in the US. Few studies were representative of a larger group of employees, only two included more than one sector of distributed working (Nurmi, 2011; Whitford & Moss, 2009). Most of the studies above used scales not adapted to the distributed worker context.

Research question 2. What other frameworks or models may be applicable to/optimal for OSH leadership of distributed workers?

Twelve studies explored concepts that are specific to the distributed worker context.

A number of studies focussed on the importance of face-to-face interaction and appropriate use of information and communication technology (ICT). Among US virtual workers, Mulki and Jaramillo (2011) found that face-to-face meetings with the supervisor was not related workers' involvement in the workplace. Among US teleworkers, Fonner and Roloff (2012) found that emails from colleagues and supervisors, instant messaging, videoconferencing and face-to-face meetings were all related to stress caused by interruptions among teleworkers. This finding suggests that managers need to manage levels of these means of communication. Mihailova (2009) found in her qualitative multiple case study among Russian and Estonian teleworkers that line managers emphasised the importance of contacting senior managers by using ICT, but that this was discouraged by senior managers.

In a qualitative study of Canadian truck drivers, McDonough, Howard, Angeles, Dolovich, Marzanek-Lefebvre and Laryea (2014) found that managers were aware of and sensitive to their responsibility of providing health-specific and general information and education for drivers. However, there was a lack of OSH training available to truck drivers. Health-specific information was provided through occupational health and safety meetings, newsletters, and an open door policy, however, managers were unaware of the resources available, and, given the unusual working hours and geographical distances, were unaware of how to connect with drivers. Managers were also aware of the importance of adequate nutrition for truck drivers whilst on the road, but did not have strategies to address this, without financial implications. Managers were also aware that, as drivers could not be monitored whilst on the road, there were limitations to safety procedures.

The study among Australian nurses working in remote areas by Weymouth et al. (2007) revealed that long response times from managers in dealing with emerging issues, an underestimation of nurses' workload and unrealistic expectations were of concern for nurses. Further the study found nurses perceived that a lack of management support was due to a lack of stability in management. The nursing executives in the study reported that managers should communicate their roles clearly to employees and hold good communication and interpersonal skills. In addition to managers being recruited locally to ensure that they had a good understanding of remote working, findings suggest managers should provide nurses with feedback, de-briefings, provide professional support and deal with employment conditions and salary issues.

In a multiple case study of Finnish distributed workers, Nurmi (2011) found that managers reported it was important to develop a level of trust in their employees and important to find a balance between micromanaging teams - in terms of them achieving their goals and completing their tasks, and trusting them to do this. Employees reported it stressful when the information flow from managers was poor, when managers were not accessible, when managers provided unclear role and goal descriptions, and when workers experienced overly close control and observation by managers.

Other studies focussed on the specific psychosocial issues of virtual and teleworkers who also could perform their duties in the main location. In an interview based study of Estonian service sector virtual workers, Mihhailova, Oun and Turk (2011) found that line managers believed that exceptional work required face-to-face meetings, so mainly routine assignments were suitable for virtual working. Both employees and managers reported that effective work processes were due to autocratic and centralised decision-making. However, although managers expected employees to adhere strictly to given timelines and communication rules, they also expected employees to show initiative in problem-solving and engage in independent decision-making. Result-based feedback from managers was considered important for employees.

In a study of US teleworkers, Golden and Fromen (2011) found that teleworkers with a teleworking manager reported greater personal development, better feedback, lower turnover intentions and higher job satisfaction, compared to teleworkers who had a traditional manager. Among both groups there were no differences in empowerment or work climate, nor in relation to clarity of what is expected of teleworkers. Those virtual workers with virtual-working managers, report higher empowerment, greater clarity, higher job satisfaction, greater opportunities for professional development, better work climate and lower turnover intentions, compared to virtual workers with traditional workers. The study found no difference with respect to feedback provided by virtual managers to virtual workers, compared to that provided by traditional managers to virtual workers.

In a qualitative study on US teleworkers by Greer and Payne (2014), interviews with supervisors revealed that supervisors needed to be able to manage six challenges arising from teleworking. First, lack of face-to-face communication created challenges in interpreting nonverbal cues which might otherwise trigger more frequent communication during face-to-face interaction. Second, leaders required the ability to coordinate work in a way to ensure cohesion and camaraderie in a team whose members did not see each other on a day-to-day basis. Third, supervisors needed to overcome challenges of managing, mentoring and monitoring employees in different locations. Fourth, the study found supervisors needed to

manage jealousy arising if teleworkers were required to take on extra work of non-teleworkers. Fifth, supervisors were required to manage the challenges arising if teleworkers were prone to experience distractions when at home. Finally, challenges arose from a lack of resources, such as teleworkers not having the necessary technological equipment and storage space.

In another qualitative study, Long, Kuang, and Buzzanell (2013) found that Chinese workers reported that supervisors had little understanding of the processes neither of teleworking, nor of the nature of teleworking. This lack of understanding resulted in supervisors assuming teleworkers always had availability, and therefore assigned additional tasks to them.

In a German study by Konradt et al. (2000), discussions in health circles among teleworkers revealed that employees reported supervisors communicated concerning task-related issues and had an understanding of the special issues concerning teleworkers' family issues. However, other areas, such as events and developments were not always communicated. The study also found that with respect to teleworkers, supervisors had a greater need for control and interpreted a lack of response to phone calls differently than they would from people working in the main office. A lack of supervisory understanding concerning technological breakdowns was also discussed.

In a Swedish study of construction workers, Torner and Pousette (2009) found that high safety standards were characterised by clear roles and procedures, clear organisational structures such as planning, collective values, norms and behaviours towards maintaining high safety standards, individuals' abilities and attitudes, and organisational members being aware of the resources available to them.

Studies on other models and frameworks specific to the distributed worker context were found from all over the world with only four out of eleven from the US. More than half of these studies focussed specifically on teleworkers (six out of 11 studies).

Research question 3. Can OSH practitioners deploy appropriate frameworks and models in distributed working contexts to ensure effective OSH leadership from line managers?

There were no studies focussing on the cascading effect whereby OSH practitioners adopt leadership frameworks and models in their behaviours to line managers, nor were there any studies of how such cascading would influence line managers' leadership behaviours. A summary of the main findings according to leadership relevant topic is presented in Table 2.2.

Table 2.2. Summary the main findings from the literature review

Finding	Authors
Leadership and management	
Perceived support from organisations and managers and good leader-worker relationships predict OSH-related outcomes. Instrumental support appears important, as does knowledge exchange between units. Communication and access to ICTs (especially video-conferencing etc.) may be important for facilitating this	Chen et al. (2008) Gray-Stanley et al. (2010) Greer & Payne (2014) Madlock (2013) McDonough et al. (2014) Mihhailova et al. (2011) Golden & Veiga (2008) Weymouth et al. (2007)
Transformational leadership is important for motivating safe behaviours and wellbeing, but only when the leader is trusted and/or workers are focussed on their hopes/aspirations	Conchie (2013) Whitford & Moss (2009)
Distributed workers may benefit in many ways (e.g. job satisfaction, feedback, personal development and empowerment) when managers also engage in similar distributed work. This may be because this enables better understanding of teleworkers context	Golden & Fromen (2011) Long et al. (2013)
Competent leadership related to worker job satisfaction	Yang et al. (2012)
Managers' workload may get in the way of effective OSH leadership	Weymouth et al. (2007)
Interaction	
Face-to-face communication and instant messaging are related to stress from interruptions for distributed workers. A lack of interruptions is a positive feature of telework	Fonner & Roloff (2012) Konradt et al. (2000) Nurmi (2011)
Communication/support are a challenge for distributed working including, around OSH. This is especially so if natural face-to-face communication is a problem, or ICTs have to be used instead (e.g. for asynchronous working). This can cause problems with role ambiguity, workload etc.	Greer & Payne (2014) McDonough et al. (2014) Mihhailova (2009) Nesheim & Gressgård (2014) Nurmi (2011) Weymouth et al. (2007) Mihhailova et al. (2011)
Email messages should be clear and to the point	Nurmi (2011)

Table 2.2, continued

Finding	Authors
Motivation and emotion	
Motivation (motivational strategies, such as planning and supervisors using motivating language) predicts safety behaviour/wellbeing indicators	Conchie (2013) Greer & Payne (2014) Madlock (2013) Mulki & Jaramillo (2011) Nesheim & Gressgård (2014)
Safety systems/infrastructure	
Sophisticated safety standards (subsuming support structures and processes and investment) are important for safety	Torner & Pousette (2009)

2.3 Conclusions from the systematic literature review

Overall, we found few studies examining OSH leadership of distributed workers. Few of the identified studies examined more than one type of distributed worker and most studies comprised small samples. Overall across the studies, we found a weak evidence base, comprising cross-sectional studies, self-reports or small qualitative studies. Together, these findings call for research exploring whether relationships between OSH leadership and distributed worker health and safety can be generalised across different types of distributed workers, and for mixed methods that can capture the complexity of these workers. Most studies were conducted in the US or China, only two studies were carried out in the UK, which calls for research in this context. Some studies took place in the offshore oil industry. Although these workers are distributed, there is often a strong safety culture and OSH practitioners and line managers are present on platforms which may mitigate the challenges of distributed working in relation to good OSH.

The literature review did hold some clues as to effective OSH leadership of distributed workers. Existing leadership frameworks such as transformational leadership may be important in distributed work contexts, whilst studies indicate management support and effective relationships between leaders and workers were equally important. Because distributed workers may have less face-to-face contact with their manager, the leadership behaviours modelled during contact are especially important in influencing workers and ensuring good OSH.

Given the challenges of distributed working, such as lack of physical proximity, some studies focussed on means of communication, with mixed results. ICT, whilst important in providing a means for managers to communicate with workers may also be a source of stress, dependent upon the ways it was utilised. Not surprisingly, managers who also engaged in distributed working seemed more attuned to the challenges workers faced and led accordingly.

Disappointingly, we found no studies specifically examining the role of the OSH practitioner. Several studies however, touched upon the importance of OSH policies, procedures and structures that may have been put in place by the OSH practitioner. This presents a significant research gap, given we may expect the OSH practitioner to establish an agenda for OSH within organisations and therefore be instrumental in influencing good OSH leadership of line managers.

In summary, with respect to research question 1 - *Are current OSH leadership frameworks applicable in the context of distributed working?*

- Perceived support from organisations and managers and good leader-worker relationships predict OSH-related outcomes
- Instrumental support appears important, as does knowledge exchange between units. Communication and access to ICTs (especially video-conferencing etc.) may be important for facilitating this
- Transformational leadership is important for motivating safe behaviours and wellbeing, but only if leader is trusted and/or workers focussed on their hopes/aspirations
- Competent leadership related to worker job satisfaction
- Motivation and motivational strategies such as planning, supervisors using motivating language predict safety behaviour/wellbeing indicators

In summary, with respect to research question 2: *What other frameworks or models may be applicable to/optimal for OSH leadership of distributed workers?*

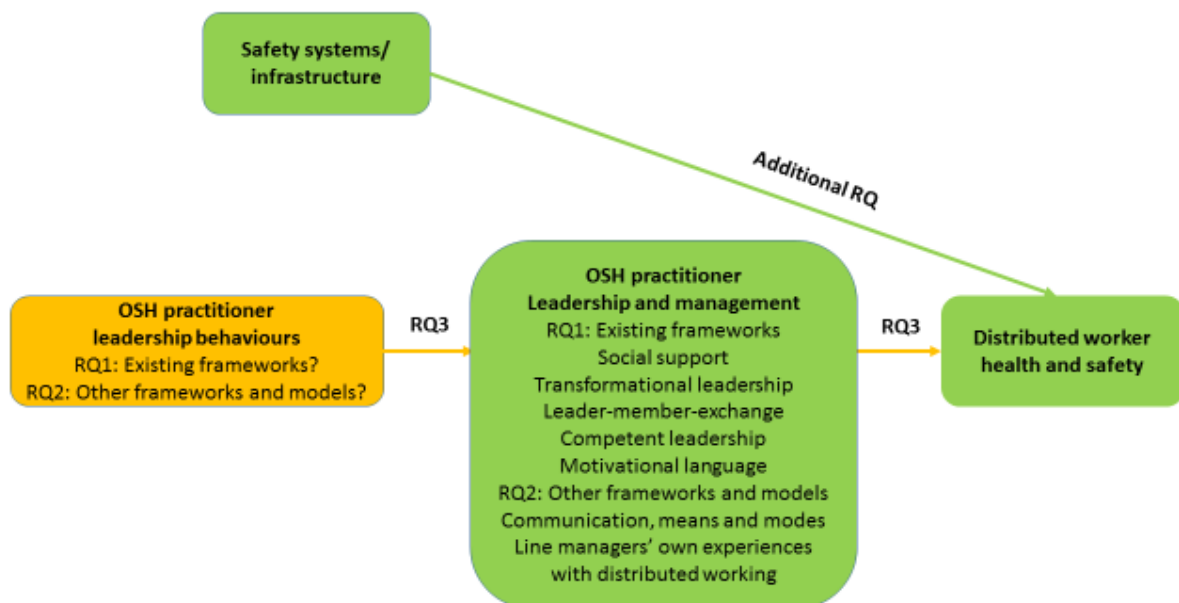
- Face-to-face communication and instant messaging related to stress from interruptions for distributed workers/lack of interruptions a positive feature of telework;
- Communication/support a challenge for distributed working– especially if natural face-to-face communication a problem or ICTs have to be used instead (e.g. for asynchronous working);
- Remote workers may benefit in many ways if managers also engage in similar distributed work;

- High safety standards and good safety systems are important to OSH.

In summary with respect to research question 3: *Can OSH practitioners deploy appropriate frameworks and models in distributed working contexts to ensure effective OSH leadership from line managers?*

We found no studies focussing on this cascade, suggesting a fertile research area. In Figure 2.1, we present an overview of the findings of the literature review.

Figure 2.1. Summary of literature review findings



Taken together, these findings informed the subsequent phases of the study in several ways. First, a handful of studies found existing leadership frameworks are appropriate, but overall few leadership frameworks were examined. The most commonly known frameworks were transformational leadership and LMX. This suggests that we take a broad view by encompassing the main leadership frameworks in the qualitative study. Second, studies indicated the importance of line managers in their own right, indicating we examine line manager behaviours as well as those of OSH practitioners. Third, studies suggest the importance of OSH management, i.e. the creation of monitoring systems to ensure standards are met in ensuring good OSH outcomes of distributed workers. These results suggested we take a broad view by considering the enablers and barriers of OSH leadership, from the perspective of the OSH practitioner rather than keeping a narrow focus on leadership behaviours. We therefore included the wider OSH management systems in the following phases.

3. Phase 2: Experiences of OSH practitioners of ensuring the occupational safety and health of distributed workers – a qualitative study

In this section, we report the findings of the interviews conducted with OSH practitioners. In this first step of our mixed methods sequential design, we conducted semi-structured interviews with OSH expert and OSH practitioners. We describe in this chapter how we used the qualitative data to develop the content of the survey. We provide preliminary answers to research questions 1 and 2. We use this information to inform phase 3 and 4 of the investigation. First, we identified the leadership behaviours that OSH practitioners reported to be important for line managers to ensure the health and safety of distributed workers. Second, we identified additional leadership behaviours that we felt were inadequately covered by existing leadership frameworks. On the basis of the literature review, we also examined wider frameworks and models in place to manage the OSH of distributed workers such as the safety monitoring systems in place and the way work is organised through means and modes of communication.

In conclusion of our analyses, we conclude that existing leadership frameworks important for OSH in distributed worker contexts include:

- Transformational leadership;
- Transactional leadership (contingent reward);
- Health-specific leadership;
- Safety-specific leadership;
- LMX (trust)

We can also conclude that the following additional frameworks are important:

- Leadership behaviours concerning developing a close relationship and building trust;
- Management systems including:
 - Training and awareness;
 - Promotion;
 - Policies and procedures;
 - Risk assessment and hazard evaluation;
 - Monitoring/reporting;
 - Health- and safety-specific technology/ equipment.

3.1 Aims of phase 2 and rationale for the qualitative study

Given the research questions and the objectives, the aims of the qualitative study were threefold. First, we aimed to enhance our understanding of the OSH challenges presented

across a range of distributed work contexts. Given that distributed workers are a heterogeneous group, our aim was to gain a broad understanding of the leadership and management of distributed workers' health and safety. We asked about the major risks experienced by distributed workers. We used this information to develop a risk checklist for OSH practitioners; this forms part of the toolkit at www.iosh.co.uk/outofsight and was used to inform our questionnaire. (See Appendix H for an analysis of the questionnaire development.) Second, we aimed to gain insight to which leadership behaviours OSH practitioners deemed to be important for line managers to successfully manage OSH of distributed workers. We used this information to inform our survey and the line manager leadership included in our toolkit. Third, we aimed to identify the barriers and enablers of good OSH. We asked about the barriers and enablers and found that OSH practitioners often mentioned the wider management of distributed workers that were also identified in the literature review. We used this to explore which OSH management systems were in place. This was used to inform the survey and the part of the toolkit focussed on the barriers and facilitators of OSH. Fourth, we aimed to gather concrete examples of how distributed worker OSH had been managed. These concrete examples were used to develop case studies, which form part of the toolkit. We briefly describe the case study vignettes in chapter 5, but the case studies themselves are reported in the toolkit. The survey questionnaires are presented in Appendix G; Appendix H provides an overview of the scales included in the analyses in this report; and Appendix I provides an overview of the toolkit.

3.2 Methods for data gathering

Methods comprised a two-phased approach. In the first phase, we undertook a total of 11 semi-structured scoping interviews with experts comprising a balance of practitioners, academics and policy makers, with active interest and involvement in OSH in distributed work contexts. In the second phase, we undertook a total of 41 interviews with OSH practitioners, with responsibility for distributed workers. The OSH practitioner interviewees required OSH knowledge, and had frequent contact with line managers of distributed workers.

Prior to data collection, the research was approved by the ethics committee of the University of East Anglia. All but one of the interviews were conducted by telephone. The audio recordings were verbatim transcribed. Verbal informed consent was obtained and recorded at commencement of the interview. Prior to interview, interviewees were provided with information as to the purpose of the study, and the topics to be covered in the interview. Following the interview, participants were given the option of reviewing the verbatim transcript. In line with ethics committee requirements, all data have been anonymised, in

terms of personal and organisation names. The extracts in this report have been attributed to pseudonyms.

3.3 Expert scoping interviews.

We developed the expert interview guide, drawing upon the literature review and research questions. In total 11 experts were interviewed, selected through professional networks of the research team and via discussion with the steering group. The expert interviewees comprised 4 practitioners, 5 academics and 2 policy makers as outlined in Table 3.1

Table 3.1 Overview of expert interviewees

Academic / Practitioner	OSH specialism with respect to distributed workers
Academic	High hazard
Academic	High hazard & OSH management
Practitioner	High hazard
Policy	High/low hazard
Academic	Low hazard
Practitioner	OH and H&S, both high and low hazards
Academic	OH and H&S, both high and low hazards
Practitioner	OH and H&S, both high and low hazards
Academic	OSH leadership
Practitioner	High/low hazard
Policy	High/low hazard

The purpose of the expert interviews was to complement our understanding of distributed working, derived from the findings of the literature review and to direct the development of the interview protocol and inform the toolkit. Topics covered the following: the experts' views as to effective OSH leadership, OSH outcomes, experiences of OSH in respect of distributed working, examples of hazards and risks, views and experiences of effective OSH leadership, and the application of leadership frameworks within distributed work contexts. We also probed experts' views and experiences of the cascade of OSH leadership behaviours from the OSH practitioner, to line managers through to distributed workers' health and safety, and

the barriers and enablers to achieving this in terms of the OSH management systems. Interviews were undertaken via telephone and lasted between 34 and 75 minutes, with the majority taking about one hour. The audio recordings were verbatim transcribed. We undertook a thematic analysis, drawing out the salient themes, and these themes informed the practitioner interview guide development.

Expert interviewees raised the need for the interviews to probe different types of distributed working, as well as issues across a range of differing workers, such as workplace isolation and travelling. The need to identify the risks and hazards associated with each type of distributed worker was raised, including both physical and psychosocial risks. With respect to existing leadership frameworks applied in OSH leadership of distributed workers, some academic experts mentioned that transformational leadership may be applicable, as might LMX. The experts indicated a need to probe the barriers and enablers to effective OSH leadership for distributed workers, especially with respect to the cascade of leadership behaviours from the OSH practitioner to distributed workers, and where the OSH practitioner liaised directly with workers.

The expert interview guide can be found in Appendix C.

3.4 OSH practitioner interviews

In the second phase, methods comprised semi-structured interviews with OSH practitioners, who were responsible for distributed worker. We developed the OSH practitioner interview protocol, which is presented in Appendix D, on the basis of the results of the literature review and the expert interviews.

The interviews covered four main areas: 1) We asked about the major risks to distributed working. 2) We explored what OSH practitioners consider to be key OSH leadership skills, behaviours and abilities for facilitating OSH practices in distributed workers, looking at: a) their own practice; and b) line managers who manage distributed workers. 3) We explored the general barriers and facilitators to OSH management. 4) In order to generate a deep understanding of OSH leadership in practice, we adopted critical incident technique (CIT, Flanagan, 1954). A recent review of safety leadership proposed the CIT may be a useful avenue to identify important behaviours and practices (Pilbeam et al., 2016). The critical incident technique is a method for probing the direct experience of OSH leadership of distributed workers through recall of a specific event of personal significance. Gathering of this data served three purposes: first to provide real-life examples of OSH experiences for the toolkit, as described in section 5.6; second to complement data provided in the other areas of questioning, to inform survey development; and, third to gain insight into the

process of managing OSH for distributed workers. We randomly allocated one of four differing critical incident themes to each interviewee, ensuring even representation across all interviews. The themes were as follows:

1. Promotion. 'From your experience, can you describe a specific occasion when the wellbeing, safety and health for distributed workers has been promoted? By this, we mean steps to promote the health, wellbeing and safety, for example so that work is seen as a positive aspect of health and wellbeing.'
2. Prevention. 'From your experience, can you describe a specific occasion when risks or hazards in respect of the health and safety of distributed (or remote) workers have been prevented? By prevention, we mean ways in which you remove the hazard or risk.'
3. Ongoing management. 'From your experience, can you describe a specific occasion when there was an early response or ongoing management of risks and hazards that arise in respect of the health and safety of a distributed (or remote) workers? For example, the ongoing identification of risks, hazards and aspects of wellbeing and the development of means to address them.'
4. Mitigation. 'From your experience, can you describe a specific occasion when harm from hazards/risks that can't be removed in respect of the health and safety of a distributed (or remote) worker as mitigated? By mitigation we mean measures directed at minimising the potential harm from unavoidable hazards.'

We undertook 41 interviews with OSH practitioners across a range of organisations and distributed worker contexts. The selection criteria for OSH practitioners were that they had OSH knowledge and were in contact with line managers of distributed workers.

Interviews lasted between 28 and 70 minutes, with the majority lasting about one hour.

Interviewees were recruited through professional contacts of the research team.

Interviewees were from 19 different organisations, 5 out of these 19 were small organisations, 14 out of 19 were private organisations, and 11 out of 19 had distributed workers in both high and low risk jobs, 3 out 19 organisations had mainly low risk workers and the remainder had mainly high risk workers. Table 3.2 summarises the sectors and types of distributed workers represented through the interviews.

Table 3.2. Summary of OSH practitioner interviewees

Industry	Ownership	Size	Hazards	Number of interviewees
Advisory service	Public	Medium	Low/ Medium	2
Oil and gas	Private	Medium	High	2
Public transportation	Private	Large	High	3
Engineering and construction	Private	Large	High	6
Utilities	Private	Large	High	3
Maintenance and construction	Private	Large	High	5
Energy	Private	Large	High	2
Local authority	Public	Medium	Medium	2
Police	Public	Large	High	3
International educational services provider	Private	Medium	High	1
Goods transportation (businesses)	Private	Medium	High	1
Agriculture	Private	Small	Medium	1
Police	Public	Large	High	1
Health consultancy services	Private	Medium	Low/ Medium	1
Goods transportation (domestic)	Private	Small	Low/ Medium	1
Design service provider	Private	Small	Low/ Medium	1
Third party contractor for a range of services - domestic and business	Private	Large	Medium	3
Telecommunications	Private	Large	Medium	2
Occupational health services	Private	Small	Low/ Medium	1
Total				41

3.5 Analysis of OSH practitioner interview data

We organised the qualitative data applying NVIVO. We developed and refined data coding protocols in conjunction with the steering group and with reference to the research aims and objectives, the research findings and the findings from both the literature review and expert interviews. The data code structure was built into NVIVO. In the following we describe the coding used for the purpose of this investigation.

The main coding categories include:

Dimensions of leadership from leadership frameworks. The literature review conducted in phase 1 and a recent literature review of the main leadership frameworks were used to identify major frameworks (Avolio et al., 2009). In total, 9 frameworks were included in our mapping of leadership behaviours onto existing frameworks. The frameworks included: Authentic Leadership, Transformational Leadership, Ethical Leadership, Leader-Member Exchange (LMX), Servant Leadership, e-leadership, Considerate leadership (Avolio et al., 2009). Furthermore, two health- and safety-specific frameworks were identified through the literature search in phase 1 of the study. These were: Health-Specific Leadership (Gurt et al., 2011), and Safety-Specific Transformational leadership (Barling et al., 2002). See section 3.5.1 for more details. The statements extracted were used to inform the survey items with respect to OSH practitioner and line manager leadership behaviours as described in sections 3.5.1 to 3.5.4, and to inform the toolkit in phase 4 of the study: OSH practitioner management self-reflection framework, as overviewed in section 5.2.

Enablers of OSH, comprising aspects of the work or working arrangements that facilitate effective OSH leadership and management. The statements were used to inform the development of survey items as described in section 3.5.5 and the items on wider OSH frameworks and models and the toolkit – see ‘Facilitators and barriers’ at www.iosh.co.uk/outofsight.

Barriers to OSH, comprising aspects of the work, or working arrangements that get in the way of effective OSH leadership and management of distributed workers. These statements were used to identify items capturing the wider OSH frameworks and to inform the toolkit – see ‘Facilitators and barriers’ at www.iosh.co.uk/outofsight.

Hazards, physical and psychosocial risks, comprising any risks or hazards that arise due to the nature of the work, whether explicitly stated or implied. For example, remote locations imply a risk of lack of mobile contact, whilst winter weather implies an increased driving risk. Travel implies risks due to driving. Ladder work suggests risks of working at height. We used these statements to inform the part of the toolkit on ‘Risks and the development of the survey’ (see www.iosh.co.uk/outofsight). Also, see Appendix E for a detailed analysis of risk factors.

Critical incidents, comprising examples of incidents involving OSH leadership and management of distributed workers. These pertained to the promotion of OSH, the prevention of risks, the ongoing management of risks and hazards and the mitigation of risks and hazards. Data were retained as 'stories' in their own right, in addition to relevant data coded according to the other code categories. The statements extracted were used to inform the case study vignettes included in the toolkit at www.iosh.co.uk/outofsight.

Types of distributed workers. These reflected the data provided in the interviews: lone workers (any from the list below who work alone), environmental / ecology consultants (remote locations), engineering plant workers, public transportation workers (trains, buses, depots and stations), goods transportation workers (vans, lorries, customer sites and depots), security and policing workers, plant - operations and maintenance workers, roadside construction workers (utilities and highways), domestic property workers (inspections, maintenance and meter reading), homeworkers, mobile workers (frequent travel from site to site), business travellers (driving, rail, air, overseas), farm workers, service consultants (business travel and hosted by other organisations) and public space workers (repair and maintenance).

We added the following high level codes: Distributed workers hosted by other organisations, Hosted distributed workers from other organisations, Toolbox examples of good practices, or unique approaches of ensuring good OSH for distributed workers as presented in the interviews and Case Studies (extracts that describe the organisation).

Data were coded by two members of the research team. First, 3 transcripts were jointly coded in order to develop a shared mental model as to interpreting the code descriptions and to ensure consistency. One member of the research team then coded 33 transcripts, the other coded 4 transcripts. We then continued the inter-rater interpretive validity exercise, by independently coding 4 and 3 of each others' coded transcripts. Minor discrepancies arose from extracts that had been omitted from coding, rather than incorrectly coded. The coding approach was refined through discussion and mutual agreement.

Template and content analyses (King, 1998) were employed to analyse the qualitative data. We conducted three sets of qualitative analyses: analysis of leadership frameworks, of OSH risks and hazards, and of barriers and enablers to effective OSH for distributed workers.

3.5.1 Qualitative analysis of existing leadership frameworks

We mapped the data generated from the interviews against these leadership frameworks to identify leadership behaviours that are effective for distributed workers and that either 1) can

be found in existing leadership frameworks, or 2) fit within the existing frameworks but need to be adapted or 3) are not captured by existing frameworks.

In the analysis, we used a two-step approach. First, relevant statements were mapped against the frameworks described in section 1.4, p. 13 and it was identified which leadership framework the statement most precisely exemplified. In each case, the value 1 was given. If a statement covered two leadership frameworks equally well, it would be given the value 2. Once all statements had been coded, we examined the frequencies of 1s and 2s for each framework.

As is evident from the definitions above, many leadership frameworks include similar perspectives, e.g. transformational leadership and LMX both include elements of a good relationship between leader and employee. In the second step, we further analysed the 2s, i.e. ones that could be mapped on to more than one leadership framework. In order to minimise the number of cases of overlap between concepts, we counted the statements against the framework that contained the most dimensions, i.e. were the most inclusive (and had many ratings in the other dimensions). For example, we coded considerate behaviours as transformational leadership as this framework includes four dimensions as opposed to the Ohio State Leadership model which only contains two dimensions; additionally because the other dimensions of transformational leadership were also often mentioned by OSH practitioners as important behaviours. At the first stage, a range of leadership frameworks were therefore excluded from further analyses. The second step of the analysis is presented in Table 3.3.

Once we had identified the main leadership frameworks we identified measures of the frameworks. We compared statements against the items included in measures and decided whether the item adequately covered the OSH practitioner's description of the leadership behaviour. In cases, where this was not the case additional items were developed.

3.5.2 Results of mapping leadership frameworks

The template analysis of existing leadership frameworks, section 1.4, p. 13, revealed in the second step that the transformational leadership framework figured most prominently among the leadership behaviours mentioned by interviewees. We found all four dimensions of this framework to be relevant. Individualised consideration was the most often mentioned leadership behaviour (45 times), followed by intellectual stimulation (26 times). Idealised influence was referred to 23 times and inspirational motivation was the least often referred to of the four dimensions of transformational leadership (10 times). In Table 3.3, an overview of the results of the second step of the analysis is provided.

Table 3.3: Overview of the second step of mapping onto existing leadership frameworks

Leadership framework	Number of statements
Transformational leadership	
Intellectual stimulation	26
Idealised influence	23
Inspirational motivation	10
Individualised consideration	45
Transactional leadership	
Contingent reward	18
Management-by-exception, active	1
Management-by-exception, passive	2
Leader-member exchange	
Trust	38
Respect	5
Obligation	1
Health- and safety-specific leadership	19
Health-specific leadership	22
Safety-specific leadership	31
Supervisor support	5
Servant leadership	
Listening	2

It has been argued that transactional leadership can be viewed as the foundation for transformational leadership, in that an exchange relationship may need to be established before the leader can engage in more developing behaviours (Bass & Riggio, 2006). Our results indicate that the two types of leadership co-occur. We found that contingent reward was mentioned 18 times by OSH practitioners. OSH practitioners reported it was important that it was made clear to distributed workers what was expected of them.

Although a good quality relationship (LMX) was mentioned many times by OSH practitioners, the main emphasis was on building trust (38 statements) rather than a respectful relationship or a relationship characterised by obligations. It came as no surprise as OSH practitioners focussed heavily on putting health and safety on the agenda. This was done in face-to-face meetings but also putting procedures in place that would enable distributed workers to reflect

on good health and safety when they were away from the main location. Informal discussions were also an important part of managing the health and safety of distributed workers.

Although many statements referred to health and safety as a general concept (19 in total), many statements treated these as independent behaviours (22 statements concerned health explicitly and 31 related to safety-specifically).

In the following we only include the analysis of the tailored items. The description of the analyses of the existing leadership frameworks can be found in Appendix F.

3.5.3 Development of leadership measures

Based on this analysis we developed the part of the questionnaire concerning leadership behaviours. To address the challenge of keeping the questionnaire short but still include as many different leadership frameworks as possible we used the following strategy.

- We only included frameworks or dimensions of frameworks with ten or more statements relating to them. We used this cut-off point to keep the questionnaire as short as possible. As a result four leadership frameworks and some 11 tailored items were included. Due to the number of interviews it practically meant that more than one in four of OSH practitioners had reported the statement and thus we suggest it could be considered a central leadership behaviour.
- As transformational leadership behaviours did not often explicitly refer to safety-specific behaviours we decided to include a general transformational leadership behaviour questionnaire.
- Where more than one validated measure of a leadership framework has been developed, we chose the shortest version. For example, we decided to use the short transformational leadership behaviour scale developed by Carless, Wearing, and Mann (2000) even if it does not capture the four dimensions of transformational leadership separately. See section 6 for a discussion of the implications of this.
- The health-specific questionnaire covered both health promotion, health and safety. Health promotion is perceived as a broader concept in Germany where the questionnaire was developed (Gurt et al., 2011). OSH practitioners often referred separately to leadership behaviours related to managing health and safety. We therefore decided to use these items but tailor them to our context. It seems reasonable to assume that safety-specific leadership to be strongly related to safety performance, whilst leadership behaviours focussed on health would be more closely related to health. We therefore reworded each item to include either 'health' or

'safety', rather than health and safety or safety promotion. This resulted in two seven-item scales, one focussed on health and the other on safety.

- There were a number of statements that concerned building a good relationship with distributed workers and developing mutual trust. Although these behaviours are included in the individualised consideration dimension of transformational leadership and the trust dimension of LMX, we found that items in existing measures did not capture these behaviours sufficiently. We therefore developed 11 some additional items.
- We found preliminary support for our third research question. OSH practitioners reported how they tried to role model the health and safety behaviours they wanted line managers to display to their distributed workers.
- OSH practitioners most often reported focussing on health and safety issues, e.g. setting safety on the agenda in meetings, when asked about their own leadership behaviours. They suggested that they would directly interact with distributed workers and thus bypass the line manager. We therefore asked distributed workers both to rate their line managers' leadership behaviours, but we also asked distributed workers to indicate whether they had any contact with their OSH practitioner, and if they did, we asked them to rate the health and safety leadership of this OSH practitioner. To keep the questionnaire to distributed workers reasonably short, we only asked distributed workers to rate their OSH practitioners' health- and safety-specific leadership.

The leadership frameworks included in the questionnaire were:

- Transformational leadership (7 items, Carless et al., 2000);
- Transactional leadership – the contingent reward dimension (5 items, Podsakoff et al., 1990);
- Health-specific leadership, rating both line managers and OSH practitioners (7, items, adapted from Gurt et al., 2011);
- Safety-specific leadership, rating both line managers and OSH practitioners (7 items, adapted from Gurt et al., 2011);
- LMX – the trust dimension (2 items, Graen & Uhl-Bien, 1995);
- Additional tailored items (11 items).

The items and their response categories together with the analysis of the cascade and the bypass mechanisms are included in Appendix H.

3.5.4 Detailed analysis of leadership data

In the following, we include a more detailed analysis of the statements providing examples of the tailored items.

LMX or transformational leadership? Or something else?

Graen and Uhl-Bien (1995) discussed the potential overlap between LMX and transformational and transactional leadership. They refer to the debate as to whether LMX should be classified as either transactional or transformational leadership. They argued that LMX is both. In the early phases of the relationship, LMX may resemble transactional leadership more but as the relationship between leader and worker develops it takes the form of transformational leadership social exchange. In our analyses, we found support that many statements covered the trust dimension of LMX and the individualised consideration dimension of transformational leadership. However, the measures identified that measured these two constructs did not cover the behaviours and social exchanges expressed by OSH practitioners in sufficient detail and we therefore developed additional tailored items.

A good relationship was seen as imperative to ensuring the health and safety of distributed workers, however, as stated by LMX it was not only a question of a good working relationship. Several OSH practitioners reported that it was of utmost importance to know distributed workers, not just as employees but as people:

‘There is also the fact that the manager should be getting to know their team from a purely humanistic point of view, they get to know the character as well and not just the person.’

(Tom, OSH practitioner, engineering and construction).

We therefore developed the following item:

- ‘How would you characterise your personal relationship with your immediate manager?’

In a distributed worker context it was reported that opportunities to interact face-to-face as and when the opportunity arose were essential to develop a good social exchange and to prevent social isolation in the distance:

‘I work at home occasionally great to get things done but it’s very nice to be in the office and meet and talk to people that you see regularly as well. So I think there’s that risk of isolation which is why we try and encourage if your passing the office please drop in, we do get to see you and you get to see other people as well.’ (Jim, OSH practitioner, international educational services provider)

- 'How well would you say your immediate manager knows you?'

Related to a good social exchange and showing consideration was also the fact that trust was of major importance. Although trust is one dimension of LMX, the LMX questionnaire does not directly cover trust. OSH practitioners frequently mentioned the importance of a trusting relationship with distributed workers. When line managers did not have face-to-face contact on a regular basis a trusting relationship between those responsible for good OSH and distributed workers was perceived to be essential:

'It's getting people to respect and trust you because they know that you're there to help them not to hinder them. And that's the biggest thing with health and safety, getting people to know that you're there to help, you're not trying to hinder what they do or stop them doing their jobs, you're just trying to help them make it safer for them.' (Tom, OSH practitioner, engineering and construction).

'You can't do it on Facetime that is built by personal interaction. It's as much about knowing what someone's like when they're leant against the bar if you like on a Saturday night as it is about what your hierarchical relationship is with that person on a Monday to Friday. You build trust, you know, well it's the old thing that it's hard won but it's very easily lost and people don't do that on phone calls. They do it with handshakes and recognising someone and their body language and how they're interacting with you and what respect you're showing someone. All those things conglomerate into that nebulous thing called trust.' (Naomi, OSH practitioner, maintenance and construction)

We therefore developed the following item:

- 'How much trust do you have in your immediate manager?'

In line with LMX, OSH practitioners also emphasised the need for understanding distributed workers' needs.

'There are some people who are just not suited to particularly home working because they go mad. There are some people that just need contact with individuals. And there is part of the population that would go absolutely bananas if you make them work at home. The line manager should be monitoring for that kind of stuff. If they can see people declining or there are changes in their personality they should be monitoring and saying ok we need to do something with this individual. And it should be moved back into ideally somewhere that they can work with people.' (Brian, OSH practitioner, engineering and construction)

The need to understand distributed workers' situation was also reported in qualitative interviews in our literature review (Golden & Fromen, 2011; Konradt et al., 2000; Long et al., 2013):

We therefore developed an additional item on understanding individuals' needs:

- 'How well does your immediate manager understand your problems and needs?'

Related to the importance of supporting distributed workers in managing their health, OSH practitioners also reported that it was important to understand that distributed workers were individuals who react differently to their working situation:

'A lot of these guys have been in the industry for a long time and they take it in their stride, they come to work at 7 go home at 5 and don't think any more of it. Others are more conscientious and worry about it if this or that has broken. So they are more concerned and conscious about that. So yes I think it plays on different people in different ways. But you can see guys that do get stressed or worried about their job not being on time, their job not being right or failing in some way shape or form. And others they don't seem to take that interest.' (Jason, OSH practitioner, energy).

To capture this element of leadership we developed the following item:

- 'My immediate manager understands different workers have different needs.'

The importance of demonstrating that the company cares for their distributed workers was also mentioned as an issue:

'There's 140 people on the team, I can confidently say that probably 90% of the people I know on first name terms. I'm happy to chat with everybody and anybody and you have to make people aware of who you are and what you are. But at the same time take the time to actually listen to them and when we have the visits it's not always a doom and gloom, something's gone wrong so we need to discuss this. We'll have the chats and arrange an evening out, a social event as much as anything... as we see them (so they) don't see themselves cut off from the main business. It's a good form of communication and they feel it's a part of it and they also feel that because somebody is prepared to take the time out and drive up to them so they don't feel as if they've come off from us completely'. (Jonathan, OSH practitioner, domestic goods transportation)

On the basis of this we developed the following item:

- 'My immediate manager makes it clear to me that the company cares for my health'

OSH practitioners also reported the importance of taking care of employees' health and wellbeing and taking action when concerns are identified:

'There will be the bit about listening out and checking on people's wellbeing that's an important part of it. So if somebody turns up really tired, if somebody was to come in and say I'm exhausted, when I'm driving I'm nearly falling asleep or something then they would do, I'd expect them to do something about that. That might be looking at the persons workload or review it or try and come up with a solution to help that. But then it would really be around the person's wellbeing and I think they'll be asked, they'll be expected to be having a chat about how the person is, how things are going, what's difficult, what's going well, that sort of stuff'. (James, OSH practitioner, health consultancy services)

On the basis of the provision of hands-on support to ensure distributed workers' health, we developed the following items. As with health and safety leadership we included items on health and safety separately:

- 'My immediate manager coaches me on how to manage my health'
- 'My immediate manager coaches me on how to manage my safety'

Another aspect that wasn't covered by existing leadership frameworks was making sure that distributed workers were in the right frame of mind to do the job. Good health and safety behaviours could be obstructed, not because workers were negligent, but because they had issues that took away attention from good OSH behaviours. An understanding of whether workers would be capable of doing the job was essential:

'When we've done something investigations there's some perhaps cable damage or something where somebody could have been electrocuted. You do often find that when you go into it we have uncovered personal issues where other members of the team, who were members of the same family, knew about them. So what we're trying to say to them look if there is an issue with an individual within that team then go tell them to sit in the van or send him home or something for the day, get it sorted out and then come back to work. Because he's no good to us if he's in that wrong frame of mind.' (Janine, OSH practitioner, goods transportation)

'The other thing is which we've tried to address, which is quite difficult but these people, I mean like you and me they can come to work and are they in the right mind-set to be doing the job, they can have personal issues at home. You know a chap with his wife all sorts of things or the other way or whatever. And the next step is trying to understand whether an individual is in the right frame of mind to carry out what could be a high risk activity that day.' (Janine, OSH practitioner, goods transportation).

We therefore developed the item:

- 'My immediate manager makes sure I am in the right frame of mind to do the job at hand.'

OSH practitioners reported that it was essential for distributed workers to feel they could approach their line manager with their issues and concerns:

'So every day the guys are seeing their supervisor and they've got that opportunity to chat with them face to face. They also work with the open door, the guys have got all their numbers, they can contact them anytime and talk about anything.' (Paul, OSH practitioner, engineering and construction)

Statements on approachability lead to the development of the items:

- 'How approachable do you find your immediate manager?'

OSH practitioners also emphasised the importance of making it explicit that distributed workers were not expected to ignore their health and wellbeing whilst working remotely:

'if somebody's got to be in the office one day and they live in, and these are all examples of ones I know about, if somebody lives in the other side of the New Forest sort of thing, we need them to come into the office and then be up early the next morning or something we don't tell them to come up, drive down, come up, drive down again. Because we want them to be ok, we don't want them to be knackered and falling asleep and stressed. So we will make sure they're ok and we'll book them hotel rooms and stuff'. (James, OSH practitioner, health consultancy services)

'The door is always open and everyone knows they can always come and speak to me whenever they like if they have a problem, if they need time off, and that's arranged for them. We are a caring company and it's about caring for your people.' (Naomi, OSH practitioner, maintenance and construction)

These concerns led to the development of two items:

- 'My immediate manager makes it clear to me that the company cares for my safety'
- 'My immediate manager makes it clear to me that the company cares for my health'

An important aspect of creating a relationship that meant distributed workers would come forward with problems was reported to be that it was clearly signalled that workers were valued:

'Because we're looking after their wellbeing they feel valued and loved and all the rest of it, anything that they feel is untoward they can report it to their manager and immediately report it to their manager.' (Mitchell, OSH practitioner, public transportation)

We therefore developed an item that reflected this signal:

- 'My immediate manager makes me feel valued.'

Table 3.4 provides an overview of the tailored items included in the survey, while Table 3.5 provides a summary of the leadership items using established scales included in the survey.

Table 3.4. Overview of tailored leadership items included in the survey

Tailored item ²	Domain	Response categories
My immediate manager coaches me on how to manage my safety	Safety	Never, Seldom, Sometimes, Often, Always
My immediate manager makes it clear to me that the company cares for my safety	Safety	Never, Seldom, Sometimes, Often, Always
My immediate manager coaches me on how to manage my health	Health	Never, Seldom, Sometimes, Often, Always
My immediate manager makes it clear to me that the company cares for my health	Health	Never, Seldom, Sometimes, Often, Always
My immediate manager makes me feel valued	TFL	Never, Seldom, Sometimes, Often, Always
My immediate manager makes sure I am in the right frame of mind to do the job at hand	TFL	Never, Seldom, Sometimes, Often, Always
My immediate manager understands different workers have different needs	TFL	Never, Seldom, Sometimes, Often, Always
How much trust do you have in your immediate manager?	LMX	A little, A fair amount, Quite a lot, A great deal
How well would you say your immediate manager knows you?	LMX	A little, A fair amount, Quite a lot, A great deal
How would you characterise your personal relationship with your immediate manager?	LMX	Extremely bad, Worse than average, Average, Better than average, extremely good
How approachable do you find your immediate manager?	LMX	A little, A fair amount, Quite a lot, A great deal

TF = transformational leadership, LMX = leader member exchange

² The questions were adapted for each questionnaire as follows: distributed workers were asked to rate their line manager's leadership, line managers to rate their OSH practitioner's leadership and OSH practitioners to rate their own leadership behaviours.

Table 3.5. Overview of leadership items³ using established scales included in the survey

Transformational Leadership Scale: Carless et al. (2000)	
<i>Item</i>	<i>Response categories</i>
My immediate manager is clear about his/her values and practices what he/she preaches	Never, Seldom, Sometimes, Often, Always
My immediate manager instils pride and respect in others and inspires me by being highly competent	Never, Seldom, Sometimes, Often, Always
My immediate manager communicates a clear and positive vision of the future	Never, Seldom, Sometimes, Often, Always
My immediate manager encourages thinking about problems in new ways, and questions assumptions	Never, Seldom, Sometimes, Often, Always
My immediate manager fosters trust, involvement and cooperation among the workers	Never, Seldom, Sometimes, Often, Always
My immediate manager treats me as an individual, and supports and encourages my development	Never, Seldom, Sometimes, Often, Always
My immediate manager gives me encouragement and recognition	Never, Seldom, Sometimes, Often, Always

³ The questions were adapted for each questionnaire as follows: distributed workers were asked to rate their line manager's leadership, line managers to rate their OSH practitioner's leadership and OSH practitioners to rate their own leadership behaviours.

Table 3.5, continued

Transactional Leadership (contingent reward) Scale: Podsakoff et al. (1990)	
<i>Item</i>	<i>Response categories</i>
My immediate manager always gives me positive feedback when I perform well	Never, Seldom, Sometimes, Often, Always
My immediate manager commends me when I do a better than average job	Never, Seldom, Sometimes, Often, Always
My immediate manager gives me special recognition when my work is very good	Never, Seldom, Sometimes, Often, Always
My immediate manager personally compliments me when I do outstanding work	Never, Seldom, Sometimes, Often, Always
My immediate manager does not acknowledge my good performance	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
LMX (trust) Index: Graen and Uhl-Bien (1995)	
<i>Item</i>	<i>Response categories</i>
How well does your immediate manager understand your problems and needs?	Not much, A little, A fair amount, Quite a lot, A great deal
How would you characterise your working relationship with your immediate manager?	Extremely bad, Worse than average, Average, Better than average, Extremely good

Table 3.5, continued

Safety-Specific Leadership Scale: Adapted for safety-specific leadership from Gurt et al. (2011)	
<i>Item⁴</i>	<i>Responses</i>
My immediate manager discusses safety related issues with me	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
My immediate manager routinely discusses with me the objectives that are to be accomplished concerning safety	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
My immediate manager invites me to contribute my experience towards the implementation of safety initiatives/projects	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
My immediate manager reflects on how to increase my safety	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
My immediate manager includes me in decisions concerning safety issues	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
My immediate manager assumes responsibility for my safety	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
My immediate manager informs me about safety at work issues	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree

⁴ Where distributed workers and OSH practitioners were in face-to-face contact with each other, OSH practitioners were asked to rate their own safety-specific leadership of distributed workers and workers were asked to rate their OSH practitioner's safety-specific leadership.

Table 3.5, continued

Health-Specific Leadership Scale: Gurt et al. (2011).	
<i>Item⁵</i>	<i>Responses</i>
My immediate manager discusses health related issues with me	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
My immediate manager routinely discusses with me the objectives that are to be accomplished concerning health	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
My immediate manager invites me to contribute my experience towards the implementation of health initiatives/projects	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
My immediate manager reflects on how to increase my health	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
My immediate manager includes me in decisions concerning health issues	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
My immediate manager assumes responsibility for my health	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
My immediate manager informs me about health at work issues	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree

⁵ Where distributed workers and OSH practitioners were in face-to-face contact with each other, OSH practitioners were asked to rate their own health, specific leadership of distributed workers and workers were asked to rate their OSH practitioner's health-specific leadership.

3.6 Qualitative analysis of enablers and barriers to effective OSH leadership

Interview data contained detailed information about the potential barriers to and enablers of good OSH leadership among distributed workers. Furthermore, the findings from the systematic literature review highlighted the potential importance of resources that leaders may employ or instigate to counter some of the OSH leadership challenges presented by distributed working. For example, from the literature review we found that ICT used instead of face-to-face communication may facilitate support, but may also generate difficulties such as role ambiguity and a high workload (Fonner & Roloff, 2012; Nurmi, 2012). McDonough et al.'s (2014) study of truck drivers highlighted the importance of management provision of health-specific and general information and education provided to drivers. The need for OSH specific training was also highlighted in this study. Torner and Pousette's (2009) study found the importance of clear roles and procedures and organisational planning structures, as well as organisational members being aware of the resources available to them. Furthermore, the scoping interviews with experts highlighted the importance that OSH practitioner put in place or utilise OSH resources, such as policies, procedures, the highlighting of OSH issues and resources, in order to ensure distributed workers demonstrated the desired OSH behaviours when the leader was not present. In the following sections, we describe the qualitative analysis we undertook and the survey items we developed as a result.

Cognisant of the importance of structural resources in enabling effective leadership, we added code categories for barriers and enablers to effective OSH leadership into the coding protocols. Indeed, during the interviews, participants often spoke of these enablers such as structures, systems, processes and technologies that they put in place or utilised. Excerpts that mentioned enablers were coded as such.

3.6.1 Enablers to distributed worker health and safety

We undertook a categorisation exercise to identify the most commonly cited enablers. First we extracted all the 'enabler' coded excerpts. This generated a list of 431 excerpts. Second, we examined each excerpt, assigning each a category according to the enabler. Since the survey was designed to be relevant across as many types of distributed worker as possible, we focussed on categories of enablers that were described across the interview sample, rather than those that were specific to some groups of workers. During the early stage of this process, we found the following categories of enabler re-occurred throughout the data: training and awareness, promotion, policies and procedures (including risk assessment and hazard evaluation), monitoring, and health or safety/distributed workers specific technology or equipment. In Table 3.6, an overview of the enablers can be found.

Table 3.6. Overview of enablers

Enabler category	Number of statements
OSH Training and awareness.	74
OSH Promotion	54
OSH Policies and procedures	65
OSH Risk assessment and hazard evaluation	73
OSH Monitoring / reporting	74
OSH Health or safety-specific technology/ equipment.	48

3.6.1.1 OSH training and awareness

74 coded statements referred to the training and awareness of OSH as a means in which OSH practitioners ensure good OSH of distributed workers. Thus it was the joint most frequently cited enabler, as illustrated by the following statement.

‘Training, to be honest is the most important thing. That could be in-house training courses, external trainers or even we (OSH team) have regular one-to-one meetings with all our operatives where issues can be raised, team meetings, toolbox talks. So it’s really ongoing, continuously training and revisiting problems like risk assessments. Just keeping things fresh is an important bit around those areas.’ (Sally, OSH practitioner, local authority)

Training onsite. Some organisations countered the challenge of distributed working by training workers in the field. In this engineering and construction company, tablet computers are used extensively by distributed workers in ensuring good OSH during excavation work. In order to train the distributed workers, the organisations arranged for trainers to conduct tablet training at the distributed worker location.

‘We have dedicated iPad trainers that just go round when they are out and about on the field and can assist them (distributed workers), in getting used to them. And most people do come on board after a while... and find it a very useful tool. It provides part of their day to day working.’ (Ian, OSH practitioner, maintenance and construction)

Distributed worker training - directed at specific OSH risks. Data from the interviews highlighted OSH practitioners instigated training directed at good OSH behaviours of distributed workers with respect to specific hazards. For example, that many distributed workers undertake considerable driving and that to ensure good OSH, some organisations ensure workers undertake driving training as part of an integrated approach to driver safety.

'We have a system in place where we do a driver risk assessment for people. Everybody who drives on behalf of the organisation, we put them through a drivers' safety training course. And if they clock 10,000 miles or have 2 or more accidents in their period, we'd probably do an enhanced drivers' safety course for those people.' (Jim, OSH practitioner, international educational services provider)

Similarly, in this example, Chris (OSH practitioner, utility company) talked about training specifically for distributed workers who have contact with the public.

'We have training, so if people are violent – violence and aggression, we have a specific course run by two ex-policemen that gives people techniques – avoidance techniques. Mainly how not to get in that situation.'

The level and quantity of training received, depended on the level of hazard that the distributed worker may be exposed to.

'We tend to have a lot of people trained to a reasonable level in safety and to a very high level in the specific role they execute.' (Peter, OSH practitioner, police)

OSH Training for managers of distributed workers. OSH training extended beyond the distributed workers and the risks and hazards associated with their work. Some OSH practitioners instigated formal OSH training of line managers, in addition to awareness building activities.

'All our managers and team leaders go on an IOSH management safety course. And then we attend the team meetings, we give them clear guidance on what their responsibilities are in health and safety.' (Sam, OSH practitioner, public transportation)

Determining distributed worker training and awareness needs. Some OSH practitioners visited workers onsite in order to ascertain OSH behaviours and determine training and awareness needs.

'You need them to be competent and that's really why we need to be out on site with them quite a lot, visiting sites so we get a good feel for the competency of the workforce.' (Sally, OSH practitioner, local authority)

Given the evidence provided from the interview data, we formulated two survey items with respect to OSH training. As data reveal training important for both managers and workers, we adopted a multi-level approach to investigating this topic: we asked OSH practitioners of both line manager and distributed worker training, whilst we asked both line managers and distributed workers of worker training. We also recognised that, whilst OSH training may be

available in the organisation, not all workers may have received it at the time of the survey. We therefore asked 2 questions: the first with respect to OSH training actually received, which may in turn lead to good OSH behaviour, and the second with respect to whether OSH training was available if needed. The questions we formulated were therefore, as follows:

OSH practitioner questionnaire

- ‘I ensure line managers receive the training they need to manage distributed (or remote) workers' health and safety.’
- ‘My company offers a variety of training that is relevant to distributed (or remote) workers' work and equipment.’

Line manager questionnaire

- ‘I ensure my distributed (or remote) workers receive the health and safety training they need.’
- ‘My organisation / company offers a variety of training that is relevant to distributed (or remote) workers' work and equipment.’

Distributed worker questionnaire

- ‘I receive the health and safety training I need.’
- ‘My company offers a variety of training that is relevant to me and my distributed (or remote) work.’

The response categories for all items were: Never, Seldom, Sometimes, Often, Always.

3.6.1.2 Promotion of OSH

In addition to OSH training and awareness, OSH practitioners interviewed undertake the promotion of OSH for distributed workers - 54 excerpts were coded as such. The excerpts fell into three main categories: targeted events addressing specific OSH aspects; targeted campaigns addressing specific a risk – such as sunburn in the summertime, or safe driving in the winter; and issue or risk based promotions, for example following an incident, or directed at improving lower OSH performance.

OSH Promotion through targeted events. Targeted events are a means of focussing on OSH issues that are otherwise difficult to convey in ‘business as usual’, such as those associated with healthy eating and lifestyle. Distributed workers are invited to attend these

events, which may run for several days, such as this example if provided by Diana, an OSH practitioner, police.

'The occupational health team ran some wellbeing events over 2 days. It was about making accessible to all offices, so that they come in and say, get their cholesterol checked, to have their blood pressure checked, to take part in a rowing competition against the Chief.'

Roger, an OSH practitioner in telecoms, talks about safety related events as important to refresh safety, but also due to staff turnover. In Roger's organisation, the distributed workers are called in to attend the events, which take place every 6 months:

'They run about 6 monthly where they have what they call a 'safety day'. Where we would call them in for a day to a specific venue and they would do things like use of ladders, dynamic risk assessment – they will have discussions about that. And it's to keep it refreshed all the time because there is a significant turnover of drivers and meter readers.'

Promotion addressing specific risks. In some cases, promotion of OSH was directed at specific risks. For example in respect of driving in winter conditions:

'So we have these campaigns around this time of year with winter approaching and the darker nights and worse weather – as it generally is, so we run these campaigns.' (Barbara, OSH practitioner, third party contractor, domestic and business)

Billy, an OSH practitioner of distributed workers whose work involves dealing with the public, spoke of reactive and proactive OSH promotion campaigns.

'It could be something that is happening at another company, and we will do reactive toolbox talks. But we also do proactive toolbox talks as well. And that might be for instance dog bites... It could also be on perhaps the management of violent customers.'

Issue based OSH promotion through meetings. OSH practitioners reported ongoing means of promoting OSH for distributed workers, such as one-to-one meetings, toolbox talks and presentations. For example, Jason, an OSH practitioner in an energy organisation:

'We are always engaging folks, so we reward the top end and we always talk to or look at the bottom end as well. And communication in different forms just helps, whether that's presentation, individual toolbox talks, one to one chats, understanding people's requirements.'

Giving this finding, we incorporated a survey item in each of the questionnaires with respect to the promotion of OSH. We distinguished between promotion undertakings aimed at the

general worker population, by asking specifically about promotion of OSH geared at distributed working. We asked this question of all three groups, because interview data indicated line managers were also recipients of, or involved in the OSH promotion, whilst OSH practitioners tended to direct these activities. The survey items regarding the promotion of OSH were as follows:

OSH practitioner questionnaire – ‘In the past 12 months, how many sessions or meetings have you promoted, about health and safety when working remotely?’

Line manager questionnaire – ‘In the past 12 months how many sessions or meetings have you had that promoted health and safety when working remotely?’

Distributed worker questionnaire – ‘In the past 12 months how many sessions or meetings have you attended, that promoted health and safety when working remotely?’

The response category for all items was [number]

3.6.1.3 Development and implementation of OSH policies and procedures

Interviewees recounted that the development and implementation of OSH policies and procedures related distributed working were important in enabling good OSH for distributed workers. 65 excerpts were coded in respect to the OSH practitioner utilising or instigating policies and procedures as enablers to good OSH. For example, Ian, an OSH practitioner, in maintenance and construction describes the scope of the policies and the means in which they are implemented by the OSH practitioner and management.

‘To avoid risks it’s more around the policies and procedures we put in that get disseminated down that help avoid risk. And they can be around the use of the right equipment – tools that we use, bringing in new tools that prevent damage, accident or incident. And then put policies and procedures around that help managing, interfacing with the operatives. We do that regularly.’

Policies and procedures were concerned with specific aspects of distributed working, such as driving, working in unsafe environments (e.g. ‘holes and poles’), and access to specialist health advice. Lone working was a specific working characteristic for many distributed workers, necessitating specific policies and procedures. For example, Andrew, an OSH practitioner in a utility, notes that the procedure is if working alone, to adopt the relevant lone working policy and the respective safety system.

‘There is a procedure that says if you’re working alone, then you should be using our one working system.’

As procedures varied between interviewees and distributed working contexts, we focussed our question on policies. Interview data indicated that the OSH practitioner and line managers may be responsible for informing workers of correct policies. Therefore, taking the most commonly cited policies, we added the following survey items to each of the questionnaires:

OSH practitioner questionnaire – ‘Do you keep line managers informed of any of the following policies geared up to distributed (or remote) working?’ (1) Lone worker policy (2) Working from home policy (3) Working in unsafe environments policy (4) Travelling / working abroad policy (5) Policies about the amount of time spent travelling/driving (6) Policies about access to specialist health advice (7) Other [please state]

Line manager questionnaire – ‘Do you keep workers informed of any of the following policies geared up to distributed (or remote) working?’ (1) Lone worker policy (2) Working from home policy (3) Working in unsafe environments policy (4) Travelling / working abroad policy (5) Policies about the amount of time spent travelling/driving (6) Policies about access to specialist health advice (7) Other [please state]

Distributed worker questionnaire – ‘Are you informed of any of the following policies geared up to distributed (or remote) working?’ (1) Lone worker policy (2) Working from home policy (3) Working in unsafe environments policy (4) Travelling / working abroad policy (5) Policies about the amount of time spent travelling/driving (6) Policies about access to specialist health advice (7) Other [please state]

The response categories for each item were: Yes, No, Not applicable

With respect to procedures, and given the challenges of working remotely, we focussed on differing means through which distributed workers might access information regarding procedures. We therefore incorporated the following item:

Distributed worker questionnaire – ‘How often do you access information about safe and healthy working through each of the following means?’ (1) Telephone (2) Email (3) Web (4) Intranet (5) Apps that help you in your work (6) Face to face (7) Meetings/toolbox talk

The response categories were: Never, About once a month, Several times a month, About once a week, Several times a week, Daily, Hourly

3.6.1.4 OSH Risk assessments and hazard evaluations

Given the often dynamic environment in which distributed workers function, coupled with the challenges whereby the manager or OSH practitioner is not always at hand to ensure the

correct behaviours, risk assessment and hazard evaluation are important means of preventing or mitigating adverse OSH outcomes for distributed workers. 73 excerpts were coded as being in respect to the OSH practitioner utilising or instigating risk assessments and/or hazard evaluations in ensuring good OSH.

For some types of distributed working, such requiring the use of machinery in outside spaces and attending domestic properties, distributed workers are required to anticipate potential risks.

As Roger, an OSH practitioner in telecoms, notes: *'It gets tricky when the external environment or some external factor intrudes on the safety of these workers on site. And they tends to be our main focus – that's where the risk assessment work and training on risk assessment requirements come in.'*

In such dynamic environments, the workers may be required to undertake their own risk assessments on a daily basis. For example, Sally, OSH practitioner, local authority, explained:

'Risk assessments, toolbox talks, all that sort of work – to make them (distributed workers) aware to basically do a visual check before they start to work instead of crash, bang, wallop, in we go. Make sure they take their own precautions before they actually start work.'

In some cases, organisations apply technologies to assist their remote workers who are required to undertake dynamic risk assessments, for example, the use of iPad to access information about the geographical area, or the use of photography to communicate potential risks to managers. For example, Sonny, an OSH practitioner in engineering and construction talks about the use of technology for dynamic risk assessment for his workers who work on pylons:

'The lads with the smartphones, if they've got a problem they can send a photo directly back to their line manager and say 'look, we've got this problem on site. We're not sure. We've stopped work, what do you think?' and they can get advice.'

In other cases, where the risks are more stable, such as with teleworking, the risk assessment may be undertaken once.

'We get the person involved to write a risk assessment of their home working situation. And then we get them to take physical pictures of it, which we place on the risk assessment.'
(Billy, OSH practitioner, energy)

Given the interview data and the heterogeneous characteristics of the sample, we formulated one survey item for each of the questionnaires.

OSH practitioner and line manager questionnaire – ‘Do the distributed (or remote) workers in your area of responsibility routinely assess risks in the course of their work?’

Distributed worker questionnaire – ‘Do you routinely assess risks in the course of your work?’

The response categories were: Never, About once a month, Several times a month, About once a week, Several times a week, Daily, Hourly

3.6.1.5 OSH Monitoring and reporting

Many of the interviewees also undertook monitoring inspections of distributed workers to ensure they were following policies and procedures, with 74 excerpts coded within this category. Monitoring fell under four broad categories: monitoring whether the correct OSH procedures were being adhered to; monitoring of the OSH risks and hazards; monitoring the OSH of the distributed worker themselves – for example if they work remotely or alone; and for those workers who use ICT, monitoring distributed worker presence at work.

Monitoring correct OSH procedures. *These* inspections comprised a procedure in their own right. For example, Andrew, OSH practitioner, utility:

‘Part of my role is to carry out what you might call an independent health and safety inspection. So, every month I will do four health and safety inspections across the sites and activities that I am responsible for and report on that.’

Monitoring risks and hazards. The OSH practitioner in one organisation, which comprised dedicated teleworkers utilised technology to monitor and ensure correct working conditions at home.

‘The home based workers send pictures in of their set-ups, so we can advise on any changes. We have used video conferencing where we’ve linked up and they’ve shown us their set-up at home, so we can advise on any adjustments to chairs etc.’ (Mark, OSH practitioner, advisory service)

Along a similar line, OSH practitioners describe monitoring working techniques, to highlight potential risks. For example Geoff, an OSH practitioner responsible for distributed workers involved in roadside maintenance:

'We're looking at hand/arm vibration, we're looking at digging techniques so that we don't damage and put people at risk. There's lots of little groups of people looking at specific trends to improve our business.'

Monitoring the OSH of the distributed worker. Monitoring can take the form of checking whether workers are alright, for example where they working in hazardous or environments with dynamic risks, or if they are lone workers.

'If the workers haven't been in contact, what we will generally do, we'll either visit ourselves or if we've got operatives nearby, if we've got someone whose working a couple of streets away... we get them to go round and check.' (Sally, OSH practitioner, local authority)

Monitoring distributed worker presence at work. For those distributed workers who had access to ICT, for example teleworkers, or mobile workers who are based from home, some OSH practitioners described ICT enabled monitoring systems. These systems served a dual purpose by providing a means of communications between the workers and colleagues, but also a means of monitoring presence at work. For example, Brian, an OSH practitioner in engineering and construction:

'You can immediately see if anyone is online, so I can just check down the list and it says green, red, white – I can see what they're doing.'

Reporting the management checks of distributed workers. In some cases, the OSH practitioner put in place a reporting system to ensure line managers undertook their responsibilities with respect to OSH of distributed workers. For example, John, an OSH practitioner in telecoms, talks about the system applied in his organisation:

'We set targets around how many field visits they (line managers) carry out. We have set laid down documentation and they have to complete in terms of reviewing people's approach to work, their practices, and this allows them to carry out coaching conversations. The outputs of all these visits are logged onto a huge database system which we can track.'

As monitoring and reported activities were undertaken the OSH practitioner and line manager, rather than the distributed worker, we added the following item to their respective questionnaires:

OSH practitioner and line manager questionnaire – 'How often do you check whether distributed (or remote) workers follow health and safety procedures?'

We also added two items with respect to the use of technology to undertake monitoring in both the OSH practitioner and line manager questionnaires.

OSH practitioner and line manager questionnaire – ‘How often do you use the following for health & safety purposes?’ Checking that emails are being read; Checking employees are using their mobiles.

The response categories were: Never, About once a month, Several times a month, About once a week, Several times a week, Daily, Hourly.

3.6.1.5 Health and safety / distributed worker specific technology or equipment

Some 48 excerpts were in respect of the use of technology or equipment specific to the health and safety of distributed workers.

Applying technology to ensure safety. Lone working was a common feature for many distributed workers, and this exacerbates some of the OSH issues, especially in cases of emergency. OSH practitioners utilised technology to help locate workers, and to enable communications between workers and those in the fixed location.

‘All vehicles have trackers, so that helps us in understanding where team are and what they are doing. And not necessarily from an HR point of view, but more from a safety point of view.’ (Ian, OSH practitioner, maintenance and construction)

Similarly Tom, an OSH practitioner for engineering environmental consultants, explained a system to ensure communications between his workers when they work outside a mobile phone signal, comprising GPS, satellite enabled communications, a buddy, and SOS function.

“One of the things we ask when we do a risk assessment is ‘are you going to be outside of mobile phone ranges?’ If so then you’ve got one of these devices you can take with you. They have a buddy and they can send messages... and it’s using satellite. We’ve also got GPS so when they send their ‘check-in’ message it pinpoints exactly where they are on a map. We’ve also got an SOS put on them as well, so if they click that it’s a real emergency it goes to a third party.’

Similarly, Sam, an OSH practitioner responsible for public transportation workers, talked about a very well received initiative to provide body worn CCTV cameras.

‘So if they’re on the train and they’ve got someone who maybe hasn’t paid the correct fare and then that starts to escalate into an argument at a point where the revenue protection individual feels ‘this is going somewhere I don’t want it to go’, they will say ‘I’m now about to turn on my body worn camera, you are now being recorded’. That has dramatically dropped off the number of verbal assaults, because it shuts people up immediately.’

Utilising technology to encourage good OSH behaviour. In some cases, technology introduced by the OSH practitioner serves the dual purpose of monitoring as well as incentivising good OSH behaviours, for example:

All the guys driving have an iPad so they get emailed once a week telling them their driving styles, so we address speeding, adverse breaking, adverse cornering.’ (Ian, OSH practitioner, maintenance and construction)

Utilising technology to provide OSH-related information to distributed workers. In some organisations, technology is utilised to provide OSH specific information to distributed workers, for example:

‘We’re able to put all safety information onto apps. Things like – we’ve got a set of standards which tells them about PPE (personal protective equipment) and the minimum expectations for PPE. Various topics, and they can all sit on the app and are available 24 hours a day to go to the teams. Whereas prior to that everything’s been on a folder and you go onsite and you dig this folder out of the van, and you know nobody’s ever looked at it.’ (Sonny, OSH practitioner, engineering and construction)

The survey item with respect to technology and equipment was as follows:

Distributed workers and line manager questionnaires – ‘How often do you use the following for health & safety purposes?’ (1) Taking photos (2) Texting for advice (3) Satellite communications (4) Mobile phone signal enhancing equipment (6) GPS tracking (7) Buddy system (8) Ringing back to base (9) Personal alarm.

The response categories were: Never, About once a month, Several times a month, About once a week, Several times a week, Daily, Hourly.

3.6.2 Items in respect of hazards and safety

Given that the interview data highlighted hazard environment as an important consideration for OSH practitioners in implementing or adopting enablers to effective OSH, we additionally added items to all three questionnaires, with respect to workplace safety and the risks and hazards faced by the distributed workers:

Distributed workers and line manager and OSH practitioner questionnaires – ‘To what extent do you consider workplace safety to be a concern?’

The response categories were: Low concern, A bit of a concern, Moderate concern, High concern.

Distributed workers and line manager and OSH practitioner questionnaires – ‘Are there hazards in your workplace that have a recognised risk of harm for you?’

Respondents were asked to tick the following responses:

'High' hazards, for example working at height or at depth, working with chemicals, machinery, or hazardous substances, that may potentially lead to multiple casualties.

'High' hazards, for example working at height, or at depth, working with chemicals, machinery, and hazardous substances, that are potentially life-threatening for the worker.

'Medium' hazards, for example that may lead workers to slip, trip over things, or fall over; where workers are required to lift or carry objects, or road use.

'Low hazards', for example where workers spend most of their time in an office environment.

3.6.3 Barriers to effective OSH – physical separation and how to communicate with line managers

Two main barriers emerged from the interviews. The first was in respect of the challenge of communications – between the OSH practitioner, line managers and distributed workers. The second was in respect of distributed workers' access to their line manager. This aligns with findings from the literature review, for example Greer and Payne (2014) highlighted the challenges arising from lack of face-to-face interaction between line managers and workers. Similarly, the study of Nurmi (2011) highlighted issues in the flow of information between managers and workers.

The challenge of communications. The interviews review highlighted differing means through which line managers communicate with distributed workers, and distributed workers access information with respect to OSH procedures. We therefore incorporated questions with respect to how technology is utilised for communications.

Taking the most often cited means of communication, we formulated items with respect of communications. In each case, the options provided were:

Distributed worker questionnaire

- ‘Typically, how often do you and your immediate manager communicate with each other?’
- ‘Typically, how often do you use the following to communicate with your immediate manager, when you’re not in the same location?’ [(1) Face-to-face (2) Skype / Lync /

videoconference / Facetime etc. (3) Landline phone (4) Mobile phone (5) Memos (6) Email (7) Instant messaging (8) Other [please state]

Line manager questionnaire

- ‘Typically, how often do you and your distributed (or remote) workers communicate with each other?’
- ‘Typically, how often do you use the following to communicate with your distributed (or remote) workers, when you’re not in the same location?’ [(1) Face-to-face (2) Skype / Lync / videoconference / Facetime etc. (3) Landline phone (4) Mobile phone (5) Memos (6) Email (7) Instant messaging (8) Other [please state]

OSH practitioner questionnaires

- ‘Typically, how often do you and the line managers in your area of responsibility communicate with each other?’
- ‘Typically, how often do you and the distributed (or remote) workers in your area of responsibility communicate with each other?’
- ‘Typically, how often do you use the following to communicate with line managers, when you’re not in the same location?’ [(1) Face-to-face (2) Skype / Lync / videoconference / Facetime etc. (3) Landline phone (4) Mobile phone (5) Memos (6) Email (7) Instant messaging (8) Other [please state]

The response categories for all items were: Never, About once a month, Several times a month, About once a week, Several times a week, Daily, Hourly.

Some interviewees noted IT challenges when working in remote locations. We therefore added the following item to each of the questionnaires:

Distributed workers and line manager and OSH practitioner questionnaires –

‘Typically, how often do you experience the following problems with IT that’s used for communication?’ (1) Technical problems (2) Spam (3) Misinterpretation of messages (4) Ability/willingness to use IT (5) Information overload (6) Availability of IT (7) Impolite messages.

The response categories were: Never, About once a month, Several times a month, About once a week, Several times a week, Daily, Hourly.

The challenge of distributed worker access to their line manager. Given the challenges of distributed working and the role of the manager, we incorporated a number of questions with respect to the distributed workers’ line manager, such as access, communications and

asynchronous working. Furthermore, Golden and Fromen (2011) found improved teleworker outcomes when the line manager was also a distributed worker. We therefore added the following items with respect to the line manager:

Distributed worker questionnaire

- ‘Typically, is your immediate manager: in the main location full-time, Away from the main location for some of the time, Away from the main location all the time?’

The response category for this items was to select the most applicable response.

- ‘Do you work at different times to your immediate manager, for example night shifts, or working in other countries?’
- ‘Are you able to get in touch with your immediate manager, (or someone who can help), when you need them?’

The response categories for these items were Yes, No.

- ‘In a typical month, how often is your immediate manager available when you need them?’
- Please answer this question if you spend time at another organisation / company premises as part of your job. – ‘Typically, how often do you and managers from another organisation / company communicate with each other about health and safety?’

The response categories for these items were: Never, About once a month, Several times a month, About once a week, Several times a week, Daily, Hourly.

3.7 Conclusions from phase 2

Overall, the qualitative data generated rich information about the leadership behaviours and wider OSH management frameworks. Furthermore, the qualitative study provided insight into the challenges facing OSH practitioners responsible for distributed workers. Data highlight the ways in which OSH practitioners provide leadership to line managers and distributed workers, as well as the wider OSH management frameworks such as policies, procedures and other management systems utilised along the way. Qualitative analyses enabled us to identify specific areas for questioning in the quantitative phase.

Leadership behaviours presented the main focus of the study. We therefore used existing scales and developed items from the qualitative analysis to reflect the behaviours deemed most important by OSH practitioners. The inclusion of existing measures and the tailored items allowed us to provide answers to research questions 1 to 3 using quantitative data.

The leadership behaviours included were:

- Transformational leadership
- Transactional leadership
- LMX
- Health-specific leadership
- Safety-specific leadership

One finding from the analysis was that some OSH practitioners effectively by-passed line managers, by providing health- and safety-specific leadership directly to distributed workers. We set out to test this in our quantitative survey. To do this, we asked distributed workers whether they had any direct contact with their OSH practitioner, and if they replied in the affirmative, we asked them to rate the health and safety leadership behaviours of their OSH practitioner in addition to rating the line managers' behaviours. This would enable us to explore whether OSH practitioners' leadership behaviours were most effective through a cascade where line managers would observe these behaviours and hopefully through vicarious learning (Gong, Huang, & Farh, 2009) imitate these behaviours in their interaction with their distributed workers or whether OSH practitioners' leadership behaviours had a greater impact in direct interaction with distributed workers.

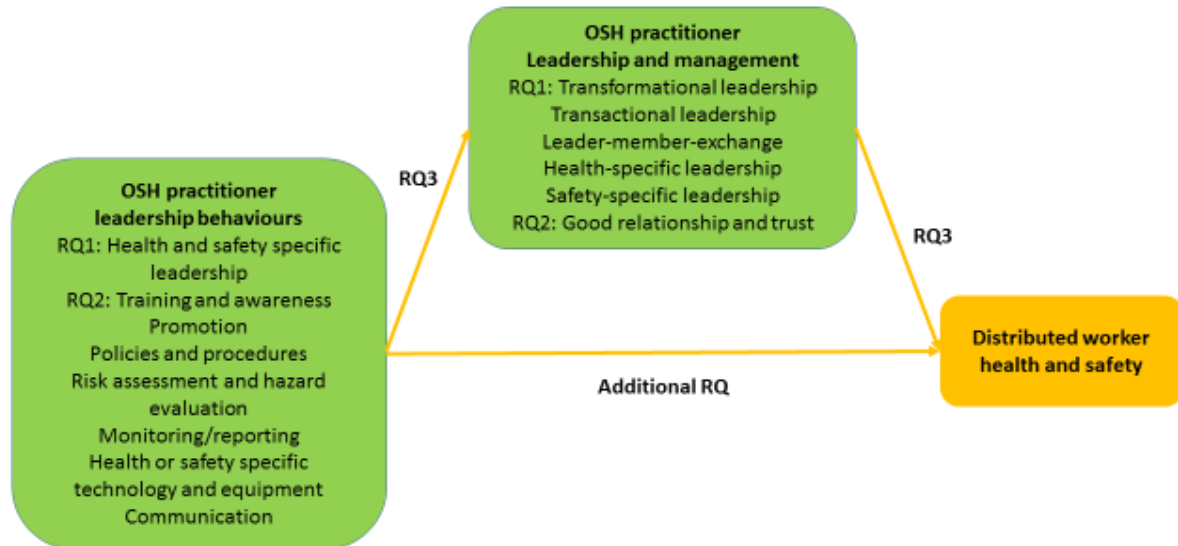
The multi-level design of the survey also enabled us to obtain measures from distributed workers, their line manager and their OSH practitioner. Bearing this in mind, we carefully considered which questions to ask of which respondent. One of the main adjustments that we made was that for management systems, for example those used for communications. Line managers and OSH practitioners were asked to rate the availability of support systems, whereas employees were asked to rate the extent to which they used these systems. This different focus allows us to explore conceptual differences, i.e. whether OSH practitioners, line managers and employees have a shared understanding of OSH management resources in the workplace.

To capture the wider OSH management framework, we included the following:

- Training and awareness
- Promotion
- Risk assessment and hazard evaluation
- Monitoring/reporting
- Health- and safety-specific technology and equipment
- Communication.

In Figure 3.1, we summarise the results of the qualitative phase of the study. We provide preliminary answers to research questions 1 to 2.

Figure 3.1. Summary of qualitative results



Note: RQ = research question

We have detailed in this chapter how tailored items concerning OSH leadership and management were generated from the analysis of the qualitative data, along with findings from the literature review. It is apparent from this analysis that survey items should encompass a range of different measures to reflect the barriers and enabled to OSH leadership as well as the behavioural aspects. Data highlight that the survey should acknowledge the heterogeneous nature of distributed working by including items around physical aspects, such locations, modes of working, switching between modes (such as driving and teleworking), as well as the main hazards encountered. Although we asked OSH practitioners as to OSH outcomes for their workers, we supplemented this data with our own prior knowledge, as well as findings from the literature review. The items we generated from these findings are detailed in Appendix G, which provides the surveys and Appendix H, which lists the established scales and items used.

4. Phase 3: reports of leadership behaviours, occupational safety and health outcomes and the nature of distributed working – a quantitative study

4.1 Aims of phase 3 and rationale for the quantitative study

In this section, we report the findings of the survey distributed to OSH practitioners, line managers and their distributed workers. In this second step of our mixed methods study, we administered a survey to 19 organisations employing distributed workers. We describe in this section how we used the quantitative data to provide answers to our three research questions. We use the results to inform parts of the toolkit. In answer of our first research question, we found that existing leadership frameworks could be applied in distributed worker settings. They showed good psychometric properties, with the exception of health-specific leadership which was slightly modified, and all types of leadership were related to health and safety outcomes. In answer of our second research question, we found that our newly developed tailored items did not show good psychometric properties and we therefore did not conduct any further analyses with these. In answer of our third research question, we found that line managers did not model the health and safety leadership behaviours of their OSH practitioners, thus we found no support for the cascade. We did find that OSH practitioners' health and safety leadership behaviours were directly related to distributed workers' health and safety, although to a lesser extent than the line managers' health and safety leadership behaviours.

The quantitative study comprised a multi-level survey. For each organisation in the sample, we surveyed distributed workers, their line manager(s) and their OSH practitioner(s). The questionnaires differed slightly, however, the themes remained the same across the levels. With respect to leadership behaviours, we asked OSH practitioners to rate their own leadership behaviours displayed to line managers and we asked line managers to rate the leadership behaviours of their OSH practitioner. Distributed workers were asked to rate the leadership behaviours of their line manager. We also asked OSH practitioners who were in direct contact with distributed workers to rate their health- and safety-specific leadership behaviours to the distributed workers and we asked distributed workers to rate the health- and safety-specific leadership behaviours of their OSH practitioner, if they were in direct contact. In this way, we were able to examine both the direct health- and safety-specific leadership between OSH practitioners and distributed workers, as well as the cascade of the wider range of leadership behaviours, from OSH practitioner's behaviours to line manager's behaviours and line manager to distributed worker, thus exploring whether OSH practitioners exert their influence through acting as role models for line managers. Our reasoning for

focussing on health- and safety-specific leadership items to explore direct leadership between the OSH practitioner and distributed workers was twofold. First, as these behaviours reflected the main responsibilities of the OSH practitioner, they would be more likely to be the behaviours displayed between OSH practitioners and distributed workers with whom they had direct contact. Second, in order to keep the already lengthy questionnaires manageable, so as not to compromise completion rates. An overview of the nested questionnaire measures is provided in Figure 4.1.

Figure 4.1. Overview of the nested measures within each questionnaire

OSH Practitioner (OSH) questionnaire	Line manager (LM) questionnaire	Distributed Worker (DW) questionnaire
Self-report on leadership behavior to LM and of health- and safety-specific leadership direct to DW Type of distributed work / hazards Provision of management resources (communications, policies, procedure etc.) Demographics and tenure OSH qualification	Report on OSH leadership behavior to LM Type of distributed work / hazards Wellbeing, commitment, job satisfaction DW safety performance Safety climate (group) Access and use of management resources ((communications, policies, procedure etc.) Demographics and tenure	Report on LM leadership to DW and of OSH health- and safety-specific leadership direct to DW Type of distributed work / hazards Detail about distributed working such as modes of distributed work, switching between modes and main locations of work The full suite of health, safety and wellbeing self-report measures, including wellbeing, workplace isolation, safety performance and self-rated health Access and use of management resources ((communications, policies, procedure etc.) Demographics and tenure

In this chapter, we focus on describing the survey design, providing a brief overview of the sample and providing answers to our three research questions.

4.2 Building the survey items with respect to OSH outcomes

We incorporated a number of items to measure health, safety and wellbeing outcomes, based upon the previous phases of our study, the findings from the literature review and the interview data. These are detailed in Appendix H, but are summarised as follows. Based on the literature review and the analysis of risks identified in the interviews with OSH practitioners, we identified six risks related to distributed working. These were: physical risks,

workplace isolation, lack of knowledge sharing, work demands, role conflict, emotional demands, and verbal and physical abuse (see Appendix E). To capture the broad definition of health as outlined by World Health Organisation, we included measures of self-rated health, wellbeing, positive affect, commitment, job satisfaction and absenteeism and presenteeism (coming to work whilst ill). Finally, to capture safety, we included two measures of safety performance (using safety equipment and complying with safety procedures) and safety outcomes (incidents).

4.3 Building the survey items with respect to the nature of distributed working

In addition, data from the expert and OSH practitioner interviews highlighted three important aspects for the OSH of distributed workers: the physical location of the distributed work, the amount of time spent away from a main location and the amount of switching between different modes of working, such as driving, teleworking and working at a remote site. This aligns with the findings from the literature review, for example, McDonough et al. (2014) highlighted OSH management issues arising from unusual working hours and geographical distances covered by truck drivers. Similarly, Weymouth et al. (2007) found geographic distance an issue in the OSH management of health community workers. Additionally, several studies identified challenges arising from teleworking, whereby workers spent little, or no work time at an office location (e.g. Golden & Fromen, 2011). We therefore included items to better understand the nature of distributed working. The items are detailed in Appendix H.

4.4 Piloting the questionnaire

We undertook a cognitive pilot of the questionnaires to ensure that items could be understood by the respondents and that the wording of the items provided respondents with the necessary information for them to respond in the manner intended (Collins, 2003). This pilot ensured questionnaires were fit for purpose (Collins, 2003) and feasible for completion by busy workers, given the length of the distributed worker questionnaire. The questionnaire was piloted among 23 participants, ranging from low risk to high risk and small, medium and large companies. Feedback indicated the questionnaires were fit for purpose, subject to minor adjustments.

4.5 Method for data gathering

Data were collected via administration of a survey which we developed from the literature review findings and the qualitative analysis described in the preceding sections. The survey

comprised three questionnaires: one tailored to OSH practitioners, one for line managers of distributed workers and one for distributed workers.

We recruited organisations through organisational contacts who had taken part in the interview phase, contacts of the research team, promotion of the research at conferences, through a LinkedIn group and through an article about the research that was published in the *Safety & Health Practitioner* (SHP) magazine, published by IOSH. The SHP article proved to be an effective means of recruitment, generating fifteen enquiries, from which eight organisations took part. In total, we recruited nineteen organisations. One organisation was recruited through Affinity Health at Work Consortium, the remainder were recruited through professional contacts of the research team including trades bodies representing distributed workers. The majority of the organisational sponsors were senior OSH practitioners, the remainder organisational leaders.

Originally, we anticipated that only UK companies would participate, however, due to the article in the SHP magazine the sample included companies based in New Zealand, as well as one with distributed workers working in Australia, Malaysia, India and Scandinavia.

The survey was generated through an online survey platform, Qualtrics. The multi-level survey design required that we link worker responses to their line manager response and their OSH practitioner response. To ensure we could do this, we asked participating organisations to provide the email addresses of participants and details of who worked with whom. We assigned each respondent a unique identifier that enabled us to link responses during analysis. In some cases, distributed workers had no online access, in which case we issued hard copy (paper) questionnaires. All responses were input to Qualtrics, before being downloaded to SPSS for analysis, to provide a consistent audit trail across the two means of distribution.

In total, the survey ran from February to June 2016. We issued reminders to non-participants via Qualtrics, according to the timescales pre-agreed with the organisational sponsor. The majority of organisations ran the survey for three weeks, before ceasing to issue reminders.

In all, over 30 organisations contacted the research team enquiring about participating. One of the challenges of the multi-level design was that we needed to match responses from workers to their line manager and their OSH practitioner. This either necessitated individual survey invitations sent out to each participant, or other means of matching responses. We avoided selection bias by requiring invitations sent to entire work groups, rather than selected workers. For this reason we also avoided requesting line managers to provide participants' details or to forward survey links. These logistical requirements led to some

organisations not being able to take part. The response rates varied considerably between organisations, depending in part upon the degree to which participation was supported and encouraged by organisational leaders. Two organisations withdrew when our main contact, the OSH practitioner left the organisation. One organisation withdrew following an OSH incident that required internal enquiry. In three organisations, we arranged for participants to indicate their work group on the survey, which enabled us to match responses through a general survey link. In those cases, we were unable to establish precise response rates, but we provide an estimate based on information from the organisation.

4.6 Description of the sample

At the close of the survey 40 OSH practitioners, 112 line managers and 822 employees had completed the questionnaires. This generated response rates of 67.8% from OSH practitioners, 49% from line managers and 36.3% from distributed workers. The overall response rate was 38.2%. Distributed workers provided data on 40 OSH practitioners and 161 line managers. We recruited fewer line managers than anticipated because of the larger number of smaller companies and a flatter hierarchical structure in larger organisations, whereby line managers were responsible for greater numbers of workers. The final sample presents an even spread between small, medium and large organisations, with private and public organisations represented, and exposed to high, low and medium risks, with distributed workers working across more than one category of risks in some organisations.

We obtained between 740 and 819 valid responses for most of the variables used in the analyses answering our research questions. We obtained fewer responses for ratings of OSH practitioners' leadership behaviours, because only distributed workers who were in direct contact with their OSH practitioners complete these questions. For ratings of OSH practitioners' leadership, we obtained between 458 and 459 responses. Overall, in eight of the organisations we had sufficient respondents across all three levels to test the cascade from OSH practitioners over line managers to employees. An overview of the sample can be found in Table 4.1. The sample characteristics are described in section 4.3.1.

We explored whether our final sample was representative of the general population of distributed workers. We conclude that it is highly unlikely that our sample is representative of distributed workers given that organisations in our sample tended to be in high- and medium-hazard sectors.

Where we collected data using instruments used in other large scale surveys, we are able to make some statements with respect of representativeness. We used items from the UK

2011 Workplace Employment Relations Survey (WERS)⁶ to assess job related anxiety-contentment and depression-happiness, and these were rated on a similar 1-5 scale used in our analyses. Although not directly comparable because of variations in the scale used, the 2015 WERS reports average levels of anxiety-contentment and depression-happiness of 3.74 and 4.16 respectively. These values are higher than those reported in our sample (3.40 and 3.77 respectively (see Table 4.6). The 2010 European Survey of Working Conditions (ESWC) indicates that 78% of European workers report their health as good or very good, compared with 73% of our sample. Some 43% of European workers took a day or more sickness absence compared to 41% in our sample, and 23% took five days or more compared to 13% in our sample. Some 11% of European workers reported experiencing verbal abuse at work and 2% physical assault, compared to 18% and 1% respectively in our sample. In sum and given the variables that enabled us to make comparisons with samples of the working population, we have no grounds for claiming our sample is representative of the general working population in terms of wellbeing or related variables. It is important to note that neither the WERS nor the ESWC focus explicitly on distributed workers but they do provide some indications of the generalisability of our sample to a wider working population. To the best of our knowledge, no large scale studies exist focussing on distributed workers.

We have no grounds to suspect any statistical relationships between leadership and health and safety outcomes would not be replicated in other samples. This is because our data shows reasonable dispersion (standard deviations) in most variables (see Table 4.6), those variables that exhibited noticeable skew tend to be variables with low baselines (e.g. exposure to physical assault) and there is a sufficiently large sample of responses available for most inferential analyses to have good statistical power.

4.7 Survey findings

4.7.1 Sample background information

The participating OSH practitioners were on average responsible for 16 line managers (range 0-116) and 120 distributed workers (range 0-1200). The lower range of level of 0 occurred where the OSH practitioner was not directly responsible for line managers or distributed workers, such as an advisory role. OSH practitioners had been responsible for health and safety on average for eight years. 33% reported that their distributed workers worked in a medium risk organisation (slip, trip over things, or fall over; requirements to lift or carrying objects, or road-use), whilst the remainder worked in high risk (working at height, or at depth, working with chemicals, machinery, and hazardous substances, that are potentially

⁶ WERS documents can be accessed at <https://www.gov.uk/government/collections/workplace-employment-relations-study-wers>

life-threatening or that may potentially lead to multiple casualties). We had no OSH practitioners reporting their distributed workers worked in low risk contexts, as this was defined as mainly working in an office location. On average OSH practitioners reported working on health and safety matters 39 hours out of a total of 46 hours worked per week. Distributed workers reported working on average 41 hours a week. Each line manager was on average responsible for 16 distributed workers. Line managers worked on average 48 hours a week.

Table 4.1. Organisations taking part in the survey, responses and response rates

Industry / Size / Country	Distributed Workers	Survey Method	Responses/ response rate (%)			Overall response rate (%)
			OSH	LM	DW	
1. Building design and data, Small, UK	Surveying (onsite / outdoors)	Online web link, email invitation	1 (100)	1 (100)	5 (83.3)	87.5
2. Construction machinery, Large, UK	Repair (onsite/outdoors)	Online web link, email invitation	1	8	42	32.5
3. Technologies in ground transportation, Medium, UK	Advisory (onsite/outdoors)	Online web link, email invitation	2 (40)	4 (22)	4 (5.8)	11.4
4. Employment Advisory, Medium, UK	Teleworkers, onsite (office)	Online web link, email invitation	0 (0)	9 (69)	7 (16.7)	28.6
5. Engineering testing, certification, Large, UK	Inspection (onsite/outdoors)	Online web link, email invitation	1 (100)	21 (91.3)	325 (76.8)	77.6
6. Oil terminal maintenance, Large, UK	Maintenance (onsite/outdoors)	Online web link, email invitation and hard copy	1 (50)	0 (0)	0 (0)	4.5
7. Telecommunications, Large, UK	Repairs and maintenance (roadside/outdoors)	Online web link	13 (72)	33 (42)	276 (25*)	27.0*
8. Utility maintenance, Medium, UK	Maintenance (onsite/outdoors)	Hard copy	2 (100)	9 (100)	60 (76.8)	85.5
9. Property maintenance, Medium, UK	Maintenance (onsite/outdoors)	Hard copy	2 (100)	6 (33.3)	42 (22.1)	23.1

*Denotes an estimate

Table 4.1, continued

Industry / Size / Country	Distributed Workers	Survey Method	Responses/ response rate (%)			Overall response rate (%)
			OSH	LM	DW	
10. Pest control, Small, New Zealand	Pest control (onsite/outdoors)	Online web link	0 (0)	1 (100)	0 (0)	0.7*
11. Pest control, Small, New Zealand	Pest control (onsite/outdoors)	Online web link	1 (100)	1 (100)	4 (25*)	42.8*
12. Pest control, Small, New Zealand	Pest control (onsite/outdoors)	Online web link	0 (0)	1 (100)	0 (0)	0.7*
13. Pest control, Small, New Zealand	Pest control (onsite/outdoors)	Online web link	0 (0)	1 (100)	1 (1*)	14.3*
14. Pest control, Small, New Zealand	Pest control (onsite/outdoors)	Online web link	0 (0)	0 (0)	0 (0)	0
15. Pest control, Small, New Zealand	Pest control (onsite/outdoors)	Online web link	0 (0)	1 (100)	0 (0)	0.7*
16. Surveying / valuing assets, Medium, India, Malaysia, Australia, Scandinavia	Inspection (onsite/outdoors)	Online web link	9 (60)	8 (57)	19 (31*)	40*
17. Civil engineering (rail), Small, UK	Engineering (rail side/outdoors)	Hard copy	1 (100)	3 (100)	15 (100)	100
18. Good transportation (retail), Large, UK	Delivery drivers	Hard copy	6 (75)	4 (25)	22 (32)	34.8
19. Physiotherapy, Small, UK	Mobile workers	Online web link		1 (100)	0 (0)	12.5
		Totals	40 (67.8)	112 (49.1)	822 (36.3)	38.3

*Denotes an estimate

The survey design allowed distributed workers to indicate more than one choice in describing what type of distributed worker best described them. This allowed us to assess whether workers also worked alone, travelled or worked from home in addition to the type of work they undertook. The majority of distributed workers (83% of respondents) were lone workers – that is they spent part or all of their time working alone. Additionally 71% reported as being mobile workers and 73% reported working from home at least some of the time. Respondents reported switching between these modes on a daily or weekly basis. With respect to types of work, 57% reported the job as being an engineering site worker, 24% plant operations, 19% construction site and 12% roadside construction, reflecting the medium and high hazard environment responses described above. Table 4.2 presents the responses for each type of distributed worker.

Table 4.2. Type of distributed worker

Type of distributed worker	Percentage of respondents
Lone worker	83%
Construction site worker	19%
Engineering site worker	57%
Public transport worker	1%
Goods transport worker	7%
Security and police worker	1%
Plant operations and maintenance worker	24%
Roadside construction worker	12%
Domestic property worker	7%
Mobile worker (frequent travel from site to site or travelling for business)	71%
Domestic care worker	1%
Services consultant	6%
Public space worker	5%
Working from home	73%

Demographic data indicate differences between the OSH practitioners, line managers and distributed workers. The majority (97%) of distributed workers were male, whilst this percentage decreased to 88% for line managers and 80% for OSH practitioners. The level at

which each group completed their education differed, with 48% of OSH practitioners having completed their education at either degree level (bachelor), masters level or at doctorate (PhD) level, in contrast to 35% of line managers and 31% of distributed workers. The mean age was similar across all three groups of between 47 and 48 years, with an average tenure in the current role of 12.58 years for workers, 16.05 years for line managers and 14.64 years for OSH practitioners. The demographic data is presented in Table 4.3.

Table 4.3. Demographic information

	OSH practitioners N=40	Line managers N=115*	Distributed workers N=822
Mean Age	47.72	47.55	47.59
SD	8.63	8.00	11.48
Gender			
Female	20%	12%	3%
Male	80%	88%	97%
Tenure	14.64	16.05	17.14
SD	13.39	12.22	14.66
Years in current role			
	4.63	5.31	12.58
SD	3.34	5.34	11.60
Education			
Primary school	0%	0%	0.7%
Secondary school	53%	65%	69%
Bachelor	35%	28%	27%
Master	10%	7%	3%
PhD or above	3%	0%	1%

*112 useable responses, 3 were blank

In the following we provide supplementary analyses. We first provide some background knowledge of the three samples. We provide frequencies for their use of technology and the main health and safety management systems in place. To make full use of our data, we did not match responses across the three levels but present the frequencies from the full sample. This provides a good overview of a wide sample but does have the limitation that it is not possible to compare across the levels, i.e. we are not able to detect disagreement between OSH practitioners, line managers and distributed workers in their use of technology and the health and safety management systems in place. We next provide some background analyses supporting the analyses for research questions 1 to 3. We present a description of the scales, their reliabilities and the inter-rater reliability of line managers' ratings of their OSH practitioners' leadership behaviours. Finally, we conducted multi-level analyses of the relationships between hazards, health and safety among distributed workers.

Modes and patterns of communication

We examined communications between OSH practitioners and line managers, and between line managers and distributed workers. Data are presented in Table 4.4.

With respect to the frequency of communication, overall line managers felt they communicated with workers more frequently than workers reported to communicate with their line managers. For example, a total of 80% of line managers reported communicating with workers daily or several times a week, compared to 43% of workers reporting the same frequency of communication to their line managers. This discrepancy is most likely explained by the fact that line managers communicate with several distributed workers whereas most distributed workers only communicate with one line manager. There was less variation between OSH practitioners and line manager responses. For example, 45% and 41% respectively reporting communications between them several times a week. Although we did not match responses from line managers and distributed workers, the figures do point to line managers reporting they communicate more often with their distributed workers, compared to worker responses.

Table 4.4. Frequency and use of communication

	OSH practitioner to line managers	Line managers to distributed workers	Distributed workers to line managers
Frequency of communication			
Hourly	5%	1%	2%
Daily	26%	39%	14%
Several times a week	45%	41%	29%
About once a week	10%	9%	28%
Several times a month	8%	10%	16%
About once a month	5%	0%	10%
Never	0%	0%	2%
Face-to-face			
Hourly	3%	1%	1%
Daily	6%	12%	8%
Several times a week	11%	18%	6%
About once a week	8%	12%	8%
Several times a month	25%	13%	10%
About once a month	44%	40%	47%
Never	3%	4%	20%
Videoconferencing			
Hourly	0%	0%	0%
Daily	16%	1%	1%
Several times a week	21%	15%	7%
About once a week	13%	16%	15%
Several times a month	21%	5%	5%
About once a month	16%	2%	4%
Never	13%	55%	70%
Landline			
Hourly	3%	0%	0%
Daily	6%	15%	4%
Several times a week	36%	27%	11%
About once a week	8%	11%	14%
Several times a month	17%	12%	11%
About once a month	17%	2%	11%
Never	14%	33%	50%
Memos			
Hourly	0%	0%	0%
Daily	3%	7%	4%
Several times a week	3%	14%	7%
About once a week	3%	11%	5%
Several times a month	9%	5%	6%
About once a month	9%	4%	5%
Never	72%	59%	74%
Emails			
Hourly	13%	3%	1%
Daily	36%	38%	17%
Several times a week	33%	37%	41%
About once a week	10%	9%	13%

Several times a month	8%	6%	15%
About once a month	0%	2%	5%
Never	0%	6%	9%

Table 4.4, continued

	OSH practitioner to line managers	Line managers to distributed workers	Distributed workers to line managers
Instant messaging			
Hourly	6%	0%	0%
Daily	24%	16%	4%
Several times a week	9%	30%	9%
About once a week	9%	8%	9%
Several times a month	15%	12%	8%
About once a month	18%	6%	12%
Never	18%	28%	60%
Mobile phone			
Hourly	8%	6%	2%
Daily	22%	35%	12%
Several times a week	41%	33%	26%
About once a week	8%	11%	23%
Several times a month	14%	11%	21%
About once a month	8%	1%	13%
Never	0%	3%	4%

The most commonly used means of communication was the mobile phone, with 96% of workers, 97% of managers and 100% of OSH practitioners using this as a means of communication. For workers, other means of communication included the use of emails (91%), face to face (80%), landline telephone (50%) and instant messaging (40%). Of the 80% who reported communicating with their manager face to face, more than half (47%) only did so about once a month. This was in line with the frequency reported by line managers (40%). Similarly, the majority of OSH practitioners and line managers who communicated face to face, did so about once a month (44% and 40% respectively). The frequency of communications tended to be more positively reported by line managers than workers. For example 32% of managers reported using memos at least once a week compared to 16% of workers.

With respect to OSH practitioners' communications with line managers, videoconferencing was used by 86% of respondents, with 50% reporting they did so at least once a week. This contrasts with the reported use of videoconferencing by line managers when communicating with workers, 32% of managers reported doing so at least once a week, compared to only 23% of workers. It is noteworthy that many distributed workers report never using

videoconferencing (70%) or instant messaging (60%). It would appear that these means of communication were used more often by OSH practitioners when communicating with their line managers. OSH practitioners reported videoconferencing with line managers daily (16% reported daily use of videoconferencing) and 34% reported videoconferencing with their line managers once or several times a week. Instant messaging was also often used by OSH practitioners, 24% reported instant messaging their line managers every day, while 18% reported using instant messaging once or more a week in their communications with line managers.

Despite the reported differences in frequency of communication, 60% of distributed workers reported that they never or seldom worked at different times to their line manager. 13% reported they often or always worked away from their line managers, while the remainder said sometimes. On the positive side, the majority, in total 77%, reported they always or often could contact their line manager when needed and only 6% reported they never or seldom could contact their line manager when needed.

Health and safety management

With regard to health and safety management, a total of 80% of workers reported assessing risks at least daily (see Table 4.5). This was higher when compared to OSH practitioners' responses as to workers assessing risks at least daily (74%) but slightly lower than line managers' responses (86%). The very high figures point to all key stakeholders being aware of the need to conduct risk assessments. The awareness is also reflected in the concern for safety reported by OSH practitioners, line managers and distributed workers. Workplace safety was reported as high concern for 48% of OSH practitioners, compared to 54% of line managers and 46% of workers.

A total of 77% of workers reported often or always receiving training specific to distributed working, whilst 87% of line managers thought workers received this training. A lower overall percentage of 40% of OSH practitioners thought workers often or always received the training specific to distributed working.

With regard to OSH policies and procedures, data indicate a number of policies relevant to distributed working and relatively consistent responses by the three levels as to distributed workers being informed of these policies. The notable exceptions follow. Compared to workers accessing unsafe environment policies (83%), 67% of OSH practitioners and 84% of managers reported keeping workers up to date. 70% of OSH practitioners reported keeping line managers up to date about specialist health services, whilst 82% of line managers reported keeping workers up to date. This contrasted to 63% of workers who reported having been kept up to date. Table 4.5 presents data with respect to OSH management systems.

Table 4.5. Health and safety management

	OSH practitioners	Line managers	Distributed workers
Do distributed workers assess the risks when working remotely?			
Hourly	33%	40%	48%
Daily	41%	46%	32%
Several times a week	10%	2%	6%
About once a week	3%	2%	3%
Several times a month	3%	0%	3%
About once a month	10%	6%	4%
Never	0%	6%	3%
Workplace safety a concern			
Low concern	10%	21%	20%
A bit of a concern	23%	9%	13%
Medium concern	20%	16%	21%
High concern	48%	54%	46%
Distributed workers receive training in distributed working			
Never	0%	3%	2%
Seldom	13%	3%	6%
Sometimes	27%	7%	15%
Often	16%	26%	34%
Always	34%	61%	43%
Policies in place	OSH practitioner keep line managers up to date	Line managers keep employees up to date	Employees are informed about policies
Lone worker policy			
Yes	80%	74%	77%
No	10%	8%	14%
N/A	10%	18%	8%
Working from home policy			
Yes	42%	44%	55%
No	13%	11%	12%
N/A	45%	44%	33%
Working in unsafe environments			
Yes	67%	84%	83%
No	10%	5%	10%
N/A	23%	12%	7%
Travelling/working abroad			
Yes	43%	43%	49%
No	8%	8%	14%
N/A	50%	50%	38%
Travel/driving policies			
Yes	66%	84%	77%
No	18%	10%	18%
N/A	16%	6%	5%
Specialist health service policies			
Yes	70%	82%	63%
No	13%	8%	26%
N/A	18%	9%	11%

OSH practitioners had promoted on average 13 health and safety sessions in the past 12 months. Line managers reported having attended 11 health and safety sessions a month whilst workers reported having attended 4 such sessions in the past month. With respect to training geared up to distributed working, 50% of OSH practitioners, 87% of line managers and 77% of distributed workers responded this was often or always available.

With regards to whether OSH practitioners reported they monitored that line managers and workers followed health and safety procedures, 13% reported they monitored workers daily and 3% reported they monitored line managers daily. 10% of OSH practitioners reported monitoring workers several times a week and 5% reported monitoring line managers several times a week. 15% reported they monitored their workers about once a week whilst 13% monitored line managers about once a week. A little more than a quarter (26%) reported they monitored how often workers followed health and safety procedures several times a month whilst 30% reported they monitored line managers at this frequency. A third of OSH practitioners reported they monitored their workers about once a month while 43% reported this was the case. Only 3% of OSH practitioners reported they never ensured their workers followed health and safety procedures whereas 7% reported they never monitored their line managers.

Background analyses for Research Questions 1-3

Reliability was assessed via internal consistency (Cronbach's alpha) of the multi-item scales. Where single item scales were used (e.g. absence days), reliability could not be calculated because reliability is estimated from consistency of responses to items in the same scale. For the leadership scales, we also obtained measures of inter-rater reliability for distributed workers ratings of line and OSH practitioners' leadership behaviours. We used intra-class correlations (two variants, ICC1 and ICC2) and the median value of r_{wg} across all groups of distributed workers (see Hofmann, 2004). These are shown in Table 4.6.

Table 4.7 shows the means, standard deviations and reliabilities of the variables used in the analyses for line managers' ratings of their OSH practitioners' leadership behaviours. In total, between 106-109 line managers provided ratings on different aspects of OSH practitioners' leadership behaviours. Table 4.7 shows the means, standard deviations and reliabilities of line manager ratings.

Table 4.6 show some distributed worker variables to have restricted distributions, notably exposure to threats, physical assault, verbal abuse and unsafe performance. In each case, the distribution clusters towards the lower end of the scale. In general, Tables 4.6 and 4.7

show that leadership, health, wellbeing and safety scales tended to cluster towards the higher end of the scale ranges.

Tables 4.6 and 4.7 show that the internal consistencies of all but one of the scales are good (i.e., $\alpha \geq 0.70$). This was distributed workers' reports of unsafe performance, where the internal consistency is marginal ($\alpha = 0.63$), but may have been adversely affected by restricted range as most workers reported low exposure to unsafe performance (Mean = 0.11, SD = 0.20).

Table 4.6. Descriptive statistics and reliabilities for distributed worker rated scales

Variable	Scale range	Mean	SD	α
<i>Predictor variables</i>				
Line manager transformational leadership	1-5	3.62	0.98	0.95
Line manager transactional leadership	1-5	3.52	1.03	0.92
Line manager health-specific leadership	1-5	3.50	0.88	0.92
Line manager safety-specific leadership	1-5	3.59	0.87	0.94
LMX	1-5	3.69	1.03	0.75*
OSH manager health-specific leadership	1-5	3.74	0.76	0.90
OSH manager safety-specific leadership	1-5	3.76	0.75	0.93
<i>Outcome variables</i>				
Self-rated health	1-5	3.90	0.84	n/a
Absence spells	1-5	1.62	0.95	n/a
Absence days	0-365	4.48	14.75	n/a
Presenteeism days	0-365	6.42	19.11	n/a
Job related anxiety-contentment	1-5	3.40	0.955	0.86
Job related depression-happiness	1-5	3.77	1.013	0.89
Job related enthusiasm	1-5	3.17	0.92	0.89
Job satisfaction	1-5	3.77	0.73	0.76
Exposure to physical hazards	1-5	3.08	0.73	0.86
Threats of physical violence	0-1	0.02	0.16	n/a
Physical assault	0-1	0.01	0.11	n/a
Verbal abuse	0-1	0.18	0.39	n/a
Integration into the organisation	1-5	3.44	0.81	0.76
Knowledge exchange	1-5	3.45	0.92	0.88
Job demands	1-5	2.79	0.85	0.78
Role clarity	1-5	4.25	0.74	0.87
Emotional demands	1-5	2.47	0.79	0.71
Safety compliance	1-5	4.52	0.64	0.91
Unsafe performance (e.g. exposure to incidents)	0-5	0.11	0.20	0.63
Safety proactivity	1-5	3.49	0.72	0.82
Communication frequency with line manager	1-7	4.17	1.32	n/a
Availability of line manager	1-7	5.44	1.45	n/a
Face-to-face communication	1-5	2.55	1.49	n/a
Communication by video conference	1-5	1.90	1.45	n/a
Communication by landline telephone	1-5	2.41	1.63	n/a
Communication by mobile telephone	1-5	3.90	1.44	n/a
Communication by memos	1-5	1.84	1.54	n/a
Communication by email	1-5	4.21	1.54	n/a
Communication by instant messaging	1-5	2.07	1.56	n/a

N = 740-819 for most variables, *N* = 458-459 for ratings of OSH practitioners. * = inter-item correlation

Table 4.6, continued

Variable	Scale range	Mean	SD	α
<i>Control variables</i>				
Proportion contracted hours as a distributed worker	0-1	0.83	0.29	n/a
Work at different times to manager	1-5	2.27	1.34	n/a
Proportion manager is a part-time distributed worker	0-1	47.0%	--	n/a
Proportion manager is a full-time distributed worker	0-1	36.7%	--	n/a
Health and safety issues are a concern	1-5	3.61	1.60	n/a
Hazardous work place	1-5	2.77	0.87	n/a

N = 740-819 for most variables, *N* = 458-459 for ratings of OSH practitioners. * = inter-item correlation

Table 4.7. Descriptive statistics and reliabilities for line manager rated variables

Variable	Scale range	Mean	SD	α
<i>Predictor variables</i>				
OSH practitioner transformational leadership	1-5	3.78	1.03	0.91
OSH practitioner transactional leadership	1-5	3.41	1.05	0.95
OSH practitioner health-specific leadership	1-5	3.70	0.76	0.84
OSH practitioner safety-specific leadership	1-5	3.78	0.76	0.90
OSH practitioner LMX	1-5	4.05	0.84	0.59*

N = 106-109 *= inter-item correlation.

Table 4.8. Inter-rater reliability of distributed workers' ratings of line manager and OSH practitioner leadership

Variable	ICC1	ICC2	Median r_{wg}
Line manager transformational leadership	0.20	0.55	0.68
Line manager transactional leadership	0.20	0.55	0.53
Line manager health-specific leadership	0.14	0.45	0.63
Line manager safety-specific leadership	0.17	0.50	0.68
Line manager LMX	0.17	0.51	0.55
OSH practitioner health-specific leadership	0.04	0.49	0.66
OSH practitioner safety-specific leadership	0.06	0.60	0.71

N = 106-109

NB All reliability indices calculated from group where at least three distributed workers rated the line manager or OSH practitioner, as appropriate.

Table 4.9. Inter-rater reliability of line manager' ratings of OSH practitioner leadership

Variable	ICC1	ICC2	Median r_{wg}
OSH practitioner transformational leadership	0.33	0.69	0.79
OSH practitioner transactional leadership	0.18	0.49	0.48
OSH practitioner health-specific leadership	0.05	0.18	0.75
OSH practitioner safety- specific leadership	0.09	0.32	0.79
OSH practitioner LMX	0.12	0.38	0.67

NB All reliability indices calculated from groups where at least three distributed workers rated the line manager or OSH practitioner, as appropriate.

Tables 4.8 and 4.9 show that inter-rater reliability is marginal. Although there are no definitive rules on cut-offs for ICC1 and ICC2 values, LeBreton and Senter (2008) views r_{wg} values of 0.51 to .70 indicate only moderate agreement, ICC1 scores are also typically much lower than other indices of inter-rater reliability. All three indices of inter-rater reliability indicate some convergence in distributed workers' ratings but also that there is considerable diversity of views within work groups. This may reflect the distributed nature of the sample that restricts direct and/or shared observation of line and OSH practitioners.

Health, wellbeing, safety and hazard exposure of distributed workers

We used multilevel regression analysis to examine relationships between key aspects of distributed working and indices of health, wellbeing, safety and hazard exposure. In the main analyses that regressed leadership variables onto key outcomes, these aspects of distributed working would become control variables.

We based our analyses on data used to analyse relationships between line manager leadership and the outcome variables shown in Appendix H. Because we only analysed data from groups with at least three responses, our effective sample size for these analyses was up to 459 distributed workers from 99 groups reporting to 22 OSH practitioners in 11 organisations. In these analyses, we used data only from the distributed workers questionnaire.

We implemented multilevel regression analysis with the HLM-7 program (Raudenbush et al., 2011). We fitted a four level model, with distributed workers (level 1), nested within line managers (level 2), nested within OSH practitioners (level 3), nested within organisations.⁷

⁷ To enable estimation of such complex models, regression slopes were fixed to be invariant across all levels of analysis (line manager, OSH practitioner and organisation). Dichotomous variables

We found that the proportion of time spent in distributed working had an adverse impact on safety proactivity, with more extensive distributed workers reporting lower levels of safety proactivity. There was some evidence that some of the more extensive distributed workers tended to engage in more presenteeism. Otherwise, there was no evidence on any other adverse effects of distributed working.

Distributed workers that worked at different times to their line manager tended to report a range of adverse effects. These were: greater anxiety ($p < .05$), greater depression ($p < .05$), less enthusiasm for work ($p < .05$), lower job satisfaction ($p < .06$), more exposure to physical hazards ($p < .01$), more verbal abuse ($p < .05$), more work demands ($p < .01$), less role clarity ($p < .01$), more emotional demands at work ($p < .01$), unsafe performance (i.e., experience of incidents and near misses, $p < .01$), inability to get in touch with their line manager ($p < .01$), and more communications by mobile telephone ($p < .05$) and memos ($p < .05$). The adverse effects for depression, enthusiasm, job satisfaction and the effect on communication by mobile telephone appeared to be relative to workers in the same group who worked at the same time as their line manager. For example, the effects of not working at the same time as their line manager were greater for distributed workers in groups that had other members who worked at the same time as their line manager. However, distributed workers who worked at different times to their managers did also report a more proactive personal approach to safety ($p < .01$) suggesting that working at different times from your line manager resulted in distributed workers assuming more responsibility for their own safety.

Distributed workers who had line managers who also worked some or all of the time as distributed workers (i.e. temporally co-located but not necessarily spatially co-located) reported: fewer absence spells ($p < .05$), greater role clarity ($p < .05$), greater safety compliance ($p < .05$) and less communication via mobile telephone ($p < .05$). Groups of such

(threats of physical violence, physical assault and verbal abuse) were analysed using HLM-7 procedures for analysing dichotomous variables. All other variables were estimated using normal theory assumptions. Two variables, absence days and presenteeism days, consisted of count variables. Poisson regression is usually recommended for such variables but normal theory assumptions are applicable with large sample sizes (Snijders & Bosker, 1999). However, estimation problems required us to use normal theory estimation instead. All variables were left in their raw metric if a dummy variable or centred at the grand mean for the sample. We also included group-level estimates of extent of working at the same time as line managers, extent to which line managers are also distributed workers, hazardous work environment and health and safety concern by taking averages for each work group. This enabled us to examine whether there were common group level experiences for these variables. We used these procedures in analyses as described in the main body of the report.

workers reported less face-to-face communication ($p < .01$) but this was compensated for by more communication via videoconference ($p < .05$). Workers who had line managers that were full time distributed workers reported less communication via landline telephone ($p < .05$). However, groups with managers that were also part or full time distributed workers scored lower on self-rated health ($p < .05$).

Distributed workers who reported working in more hazardous environments reported less enthusiasm at work ($p < .01$), more exposure to physical hazards ($p < .01$), greater exposure to physical violence ($p < .01$), more work demands ($p < .01$), more emotional demands ($p < .01$), less safe performance (i.e. exposure to incidents and near misses, $p < .01$) and fewer opportunities to contact their line manager ($p < .05$). However, such distributed workers also reported a more proactive personal approach to safety ($p < .05$). Distributed workers that were concerned about health and safety at work reported: more role clarity ($p < .05$), more threats of physical violence ($p < .05$), more verbal abuse ($p < .05$), fewer demands at work ($p < .01$), less safe performance (i.e. exposure to incidents and near misses, $p < .05$) and more opportunities to contact their line manager ($p < .01$).

In summary, distributed work appears to be associated with lower safety proactivity and presenteeism was more prevalent for those workers who had more extensive forms of distributed work. Distributed workers who work at different times to their line manager, especially if in the minority in the work group, appear to experience poor psychological wellbeing, exposure to some hazards and potentially adverse effects on communication with their line manager. Distributed workers with line managers who are also distributed workers may experience some adverse effects on health, but they also report lower sickness absence, safety compliance and experience good communications. Unsurprisingly, working in hazardous environments is associated with a range of adverse effects, and those workers with health and safety concerns report some adverse effects in terms of hazard exposure.

4.7.2 Answering our research questions

In the remainder of this chapter, we describe how the analyses addressed each of the research questions.

Research Question 1: Are current OSH leadership frameworks applicable in the context of distributed working?

To address our first research question, we conducted multilevel confirmatory factor analyses (ML-CFA) with the Mplus program (Muthén & Muthén, 1998–2010). For these analyses we were able to use the entire sample of distributed workers nested in groups, using Mplus

default procedures for handling missing data and robust maximum likelihood indicators. We did not need to use line manager or OSH practitioner data for these analyses.

Excepting LMX, for each line management leadership scale, we conducted an ML-CFA on the scale items from pre-existing measures. In each case, we assessed the model fit of a single factor model to examine whether the framework measured conformed to the expected uni-dimensional structure when applied to distributed workers. As only two items from a pre-existing scale assessed LMX, these data were not amenable to ML-CFA (however, note that the inter-item correlation was high: $\alpha = .75$). Our total sample of line managers rated (161) was insufficient to estimate a model that included all leadership items in one analysis. Our total number of OSH practitioners rated (40) was also insufficient to run ML-CFAs. To assess the fit of each model, we used the Confirmatory Fit Index (CFI, values of 0.95-1.00 indicative of acceptable fit) and the Root Mean Square Error of Approximation (RMSEA, values of 0.00-0.10 indicative of acceptable fit). Table 4.10 shows the results of the ML-CFAs.

Table 4.10. Multilevel Confirmatory Factor Analyses of Existing Leadership Scales

Variable	CFI	RMSEA
Line manager transformational leadership	.98	.06
Line manager transactional leadership	.98	.07
Line manager safety-specific leadership	.97	.07
Original seven items line manager health-specific leadership	.91	.14
Modified line manager health-specific leadership	1.00	.03

As can be seen from Table 4.10, in the first three cases, the data indicate existing frameworks are applicable to the distributed work context. The exception is for the health-specific leadership scale. In its original form, this scale consisted of seven items that were worded similarly to the safety-specific leadership scale. However, an examination of the factor loadings for the seven health-specific items indicated two items did not load significantly on the single factor at the group level of analysis ($p > .20$). Exclusion of these two items (the modified model in Table 4.10) yielded acceptable model fit. Therefore, we used a five-item version of the health-specific leadership scale. Cronbach's alpha for the modified scale was .92. Results for the five item scales are shown in Table 4.4 and all other tables in the results section. On the basis of the ML-CFAs, we can therefore conclude that existing leadership frameworks, some with minor modifications, may be applicable to the distributed worker context. However, as Table 4.8 indicates, there is marginal consistency in different

workers' ratings of their line managers which may indicate that the individuals' experience of line management is more important in the distributed context compared to the whole groups' experience.

Tables 4.11, 4.12, 4.13 show the correlations between the leadership scales for line and OSH practitioners. The tables shows correlations for individuals' ratings, and also for aggregate ratings of managers where three or more ratings were obtained for that manager. Tables 4.11, 4.12, and 4.13 show substantial correlations both between individual ratings and between ratings aggregated at the group level that reflects how a group in general rates its line or OSH practitioner. The extent of these correlations suggests the possibility of smaller number of dimensions underpinning good leadership, and that concern over worker health and safety is strongly associated with other aspects of effective leadership.⁸

Table 4.11. Correlations between different leadership scales – workers rating line managers.

	1	2	3	4	5
1. Line manager transformational leadership	--	.92**	.86**	.82**	.89**
2. Line manager transactional leadership	.87**	--	.80**	.76**	.81**
3. Line manager health-specific leadership	.80**	.72**	--	.93**	.80**
4. Line manager safety-specific leadership	.80**	.71**	.92**	--	.75**
5. Line manager leader-member exchange	.83**	.76**	.73**	.72**	--

** p < .01

⁸ We ran multilevel exploratory factor analyses to examine whether a single unifying factor did explain relationships between distributed workers' ratings of their line managers. A single factor solution to explain both variation within and between work groups did not provide a good fit to the data (CFI = .87, RMSEA = .26), although all items loaded substantially and significantly on the single factor both within and between groups (all loadings > 0.75, p < .05). A solution with two factors explaining within-group variation and one factor explaining between group variation provided a good fit to the data (CFI = 1.00, RMSEA = .06). For the between group factor, all loadings were > 0.93, p < .05). The first within-group factor had significant loadings (p < .05) for health-specific (1.02), safety-specific (0.71) and leader-member exchange (0.12). Leader-member exchange had significant loadings on the second factor (0.73), along with transformational (0.97) and transactional leadership (0.89) leadership. The correlation between the two factors was substantial r = .77, p < .01). A solution with two factors to explain within- and between-group variance also demonstrated good fit to the data (CFI = 1.00, RMSEA = .01). At the within-group level, the factor had significant loadings (p < .05) for health-specific (1.01), safety-specific (0.72) and leader-member exchange (0.13). Leader-member exchange had significant loadings on the second factor (0.72), along with transformational (0.97) and transactional leadership (0.91) leadership. At the between-group level, both health (1.25) and safety (0.36) specific leadership loaded on the first factor (p < .05), with safety-specific (0.56), leader-member exchange (0.96). transformational (1.04) and transactional leadership (0.93) leadership loading on the second factor (0.72). Correlations between the two factors were substantial and significant both within- and between-groups (r > .73, p < .01). In light of the cross-loadings, high degrees of fit of two different models and substantial correlations between factors in multi-factor models, we cannot be sure of the underlying structure of the leadership scales. Because of the indeterminate structure and varying foci and specificity of the different leadership scales, we opted to retain the specific scales in the full analysis and as a basis for producing practical recommendations

NB Correlations below the diagonal represent correlations between individual ratings and correlations above the diagonal represent correlations between ratings aggregated at the group level.

Table 4.12. Correlations between different leadership scales – workers rating OSH practitioners.

	1	2
1. OSH practitioner safety-specific leadership	--	.92**
2. OSH practitioner health-specific leadership	.91**	--

** p < .01

NB Correlations below the diagonal represent correlations between individual ratings and correlations above the diagonal represent correlations between ratings aggregated at the group level.

Table 4.13. Correlations between different leadership scales – line managers rating OSH practitioners.

	1	2	3	4	5
1. OSH practitioner transformational leadership	--	.93**	.79**	.77**	.95**
2. OSH practitioner transactional leadership	.83**	--	.84**	.88**	.92**
3. OSH practitioner health-specific leadership	.73**	.70**	--	.92**	.71**
4. OSH practitioner safety-specific leadership	.76**	.67**	.86**	--	.78**
5. OSH practitioner leader–member-exchange	.81**	.66**	.70**	.72**	--

** p < .01

NB Correlations below the diagonal represent correlations between individual ratings and correlations above the diagonal represent correlations between ratings aggregated at the group level.

To further assess the extent to which existing leadership frameworks apply in the distributed context, we ran multilevel regressions for line managers' leadership on each outcome variable. The size of the correlations shown in Tables 4.11, 4.12 and 4.13 raises estimation issues when running multilevel regression analyses on outcome variables, specifically the issue of multicollinearity. Therefore, we estimated relationships between the outcome variables and each leadership variable separately in the analyses. By comparing results from regression analyses using different leadership variables, we were able to examine whether some leadership frameworks were better or more consistent predictors of health and safety outcomes than other frameworks, and therefore be subject to more focussed

interventions. For example, if safety-specific leadership predicted more outcomes than transformational leadership, we could recommend leadership training be focused on safety-specific leadership. However, if safety-specific and transformational leadership predicted the same number of outcomes, then either form of training might be equally as effective. For a discussion of the limitations of the high correlations see section 6.2. In the regressions, we separated individuals' experiences of leadership from collective group experiences of leadership by entering individuals' ratings of their line manager and average ratings for each group. Both individual ratings and aggregated averages were centred at the grand mean for the sample and regression slopes fixed to be invariant across levels of analysis. As with the analyses of the control variables, we again fitted a four level model as outlined above and models were estimated with the control variables as described above. We again only analysed data from groups with at least three responses, our effective sample size for these analyses was up to 459 distributed workers from 99 groups reporting to 22 OSH practitioners in 11 organisations.

Table 4.14 summarises the results of the multilevel regression analyses. Overall, Table 4.14 shows that the vast majority of significant outcomes can be detected at the individual level of analysis, representing the workers' personal experience of the line manager. There are significant outcomes across a range of indicators of health, wellbeing, safety and hazard exposure. However, there are no associations with 'hard' outcomes (absence, presence, safety performance) or exposure to threats of physical violence.

Because each leadership variable is assessed on a scale ranging from 1 through to 5, the regression coefficients shown in Table 4.14 give some indication of the relative effects of a change in one unit on one leadership scale would have on the outcome variables relative to other leadership scales. Table 4.14 shows that no leadership scale has a unique relationship with any outcome variable. Where significant relationships occurred with outcome variables, in 22 out of 24 cases, relationships occurred with each leadership scale. In the four other cases, relationships occurred with three leadership scales. Although these results in combination suggest the utility of an approach to leadership that includes all facets of leadership, LMX was associated with health and safety outcomes in all 24 cases where there was a significant association with an outcome variable. Moreover in general, transformational leadership and LMX may have greater associations with outcomes than the other leadership variables on better health and wellbeing outcomes, less exposure to hazards and more frequent contact with line managers. Health- and safety-specific leadership appear to have stronger associations on integration, knowledge exchange, safety behaviours and communication via information and communications technologies.

The extensive range of associations between existing leadership frameworks and the outcome variables indicates that existing frameworks may be applicable to the distributed context. However, the almost total lack of any associations between existing leadership frameworks and the group-level/aggregate measures of the outcome variables suggests that any effects occur through the individual workers' personal experiences rather than through experiences that are common across groups of co-workers.

Table 4.14 Multilevel regressions of each leadership variable on outcome variables for line managers' leadership.

Outcomes	Transformational		Transactional		Health-specific		Safety-specific		LMX	
	Group	Individual	Group	Individual	Group	Individual	Group	Individual	Group	Individual
Self-rated health	-0.11	0.25*	-0.10	0.24**	-0.02	0.18**	-0.11	0.22**	-0.12	0.23**
Absence spells	-0.09	-0.02	-0.09	-0.02	-0.13	0.02	-0.09	0.00	-0.07	0.00
Absence days	-0.78	0.41	-1.03	1.14	-1.75	1.50	-0.73	0.78	-0.33	0.43
Presenteeism days	-0.77	-1.27	-1.55	-0.64	-1.52	-0.42	0.17	-1.51	-1.21	-0.57
Job related anxiety-contentment	-0.06	0.32**	-0.07	0.34**	0.11	0.29**	0.03	0.30**	-0.05	0.30**
Job related depression-happiness	-0.02	0.43**	0.01	0.41**	0.13	0.38**	-0.04	0.42**	0.07	0.35**
Job related enthusiasm	0.00	0.53**	0.03	0.46**	0.17	0.44**	0.06	0.48**	0.07	0.42**
Job satisfaction	-0.05	0.32**	0.07	0.25**	0.07	0.30**	0.02	0.31**	0.03	0.27**
Exposure to physical hazards	0.01	-0.11**	0.07	-0.09**	0.02	-0.13**	-0.02	-0.12**	0.00	-0.09**
Threats of physical violence	0.65	-0.83	-0.14	-0.47	-0.48	-0.31	-0.01	-0.01	0.76	-0.75
Physical assault	0.91	-2.08**	-0.43	-1.64*	0.00	0.00	0.00	0.00	2.25	-3.50*
Verbal abuse	0.64	-0.50**	0.27	-0.38*	0.04	-0.08**	0.57	-0.52**	0.73	-0.51**
Integration into the organisation	-0.08	0.45**	-0.01	0.39**	-0.02	0.50**	-0.08	0.51**	-0.14	0.44**
Knowledge exchange	-0.06	0.24**	0.00	0.22**	-0.02	0.25**	-0.14	0.29**	-0.14	0.24**
Job demands	0.09	-0.31**	-0.04	-0.21**	-0.08	-0.29**	-0.08	-0.25**	0.03	-0.27**
Role clarity	-0.03	0.34**	0.01	0.28**	0.09	0.29**	0.01	0.33**	-0.02	0.27**
Emotional demands	0.00	-0.17**	0.00	-0.15**	-0.04	-0.15**	-0.05	-0.13**	0.01	-0.17**

*/yellow shading $p < .05$

**/green shading $p < .01$

LMX = leader-member exchange

Table 4.14, continued

Outcomes	Transformational		Transactional		Health-specific		Safety-specific		LMX	
	Group	Individual	Group	Individual	Group	Individual	Group	Individual	Group	Individual
Safety compliance	0.08	0.17**	0.09	0.13**	0.11	0.22**	0.06	0.23**	0.04	0.17**
Unsafe performance (e.g. exposure to incidents)	0.00	0.00	0.01	-0.01	0.00	-0.01	0.00	-0.01	0.01	-0.01
Safety proactivity	0.03	0.19**	0.01	0.19**	0.03	0.27**	0.01	0.26**	-0.05	0.21**
Communication frequency with line manager	0.01	0.45**	0.04	0.37**	0.23*	0.37**	0.21	0.38**	0.11	0.42**
Availability of line manager	0.00	0.56**	0.09	0.41**	0.14	0.43**	0.17	0.49**	0.14	0.51**
Face-to-face communication	0.21	0.20**	0.06	0.19**	0.15	0.18**	0.06	0.20**	-0.02	0.16**
Communication by videoconference	-0.13	0.13**	-0.13	0.14**	0.05	0.17**	0.06	0.14*	-0.03	0.12**
Communication by landline telephone	0.12	0.12	0.06	0.13	-0.02	0.27**	0.03	0.26**	0.08	0.14*
Communication by mobile telephone	0.04	0.42**	-0.02	0.42**	0.14	0.47**	0.16	0.47**	0.06	0.44**
Communication by memos	-0.21	0.28**	-0.12	0.22**	-0.08	0.27**	-0.09	0.25**	-0.04	0.23**
Communication by email	-0.07	0.37**	-0.06	0.38**	-0.25	0.43**	-0.32	0.44**	-0.05	0.43**
Communication by instant messaging	-0.18	0.33**	-0.16	0.32**	-0.08	0.40**	-0.06	0.38**	-0.16	0.34**

*/yellow shading $p < .05$

**/green shading $p < .01$

Research Question 2: What other frameworks or models may be applicable to/optimal for OSH leadership of distributed workers?

We used ML-CFA to examine whether items developed from our interviews reflected different leadership constructs from those in existing leadership frameworks. The content of the new items could reflect the individualised consideration element of transformational leadership (the fifth, sixth and seventh items in Table 3.4), LMX (trust, the eighth through twelfth items in Table 3.4) and health- and safety-specific leadership (the first through fourth items in Table 3.4). None of the new items developed from the interviews reflected transactional leadership.

We examined uni-dimensional models reflecting the content of the existing and new items. If uni-dimensional models with the existing and new items provided good fit to the data, then the new items are redundant and do not indicate existing frameworks need to be amended. Table 4.15 shows the results of the ML-CFAs involving transformational leadership, health-specific and safety-specific leadership compared to analyses on the existing items alone. The analyses were conducted on workers' ratings of their line managers. Analyses with the LMX items are considered separately below.

In analyses incorporating the new items into the existing scales, we found good fit, suggesting the new items do indeed reflect (the individualised consideration element of) transformational leadership, health- and safety-specific leadership respectively. However, although the analyses with the new items indicated good fit, Table 4.15 shows that the fit indices in these analyses were not as good as those for the items in the existing scales alone. Therefore, in relation to transformational leadership, health-specific and safety-specific leadership, we can conclude that existing scales and leadership frameworks are applicable to the distributed context and that modification or augmentation of these frameworks is not necessary.

Table 4.15. Multilevel Confirmatory Factor Analyses of Existing Leadership Scales and New Items

Variable	CFA with original items		CFA with new items added	
	CFI	RMSEA	CFI	RMSEA
Line manager transformational leadership	.98	.06	.95	.08
Line manager health-specific leadership	1.00	.03	.96	.07
Line manager safety-specific leadership	.97	.07	.98	.05

There were four new items developed from the interviews that represent LMX. There were persistent estimation problems when attempting to model the four new items alongside the two existing LMX items (specifically negative residual variances at the group level). Omitting variables did not solve this problem. A ML-CFA on the tailored items alone revealed the same problem. In the context of these findings and given that LMX is a well-established concept, we can conclude that there is no reliable evidence that LMX (trust) cannot be applied to the distributed context in its original form: That is, we conclude that existing trust element of LMX scale can be applied to the distributed worker context.

Taken together, the results in respect of the items developed from the interviews indicate that existing leadership scales and frameworks may be applied to the distributed context. Moreover, given very high inter-correlations amongst transformational leadership, transactional leadership, health- and safety-specific leadership and LMX, it seems that an approach encompassing all of these leadership domains could be applicable to the distributed working context.

4.7.3 Do tailored items form an independent leadership framework?

To examine further whether the tailored items (see Table, 3.4, see p. 51) functioned as a separate scale and thus represent an independent framework, we explored the psychometric properties of the new items. We ran multilevel exploratory factor analysis, with distributed workers' ratings of their line managers nested within each line manager. We examined the performance of factor solutions that were homologous at both the level of the distributed worker and the level of the line manager, namely a one factor solution at both levels, a two factor solution at both levels, a three factor solution at both levels and a four factor solution at both levels (see Table, 3.4, see p. 51). Homologous solutions provide a consistent explanation across levels of analysis and there is no theoretical reason we can think of that would lead us to expect non-homologous solutions across levels of analysis. We found that the one factor solution did not fit the data (CFI = .89, RMSEA = .11) and the two factor solution did not converge. Both the three and four factor solutions provided good fit to the data (CFI > .98, RMSEA < .05). However, in both cases, there were many items that cross-loaded on one or more factors, and also some items did not have homologous factors loadings across levels of analysis. Therefore, it appears that the new items are not psychometrically consistent with themselves, as well as with existing scales.

4.7.4 Line managers' use of management systems

We also examined relationships between each work group's average rating of their line manager with line managers' ratings of their own health and safety behaviours. To do this, we were able to use line managers' ratings of the extent to which they ensured their distributed workers received the health and safety training they needed (rated on a five point scale from 1 = Never to 5 = Always), the number of meetings on health and safety organised by the line managers in the previous 12 months, and the extent to which line managers checked their distributed workers followed correct health and safety procedures (rated on a five point scale from 1 = Never to 5 = Always). We had useable data on 83 line managers in 12 organisations. We again used multilevel regression analysis, analysing each leadership dimension separately. We also examined the average rating for line managers for each OSH practitioner they reported to and average ratings for line managers in each organisation.

In general, out of 45 possible relationships, only 5 were significant. We found that line managers reported ensuring appropriate health and safety training in organisations with higher average levels of line manager health-specific leadership ($B = 0.93, p < .05$) and organisations with higher average levels of line manager LMX ($B = 0.93, p < .05$). These results would be consistent with organisations taking a systemic approach to safety, with line managers reinforcing other safety related processes such as training. Additionally, we found that individual line managers with higher levels of LMX held fewer meetings focussed on health and safety ($B = -6.73, p < .05$) and checked on implementation of health and safety procedures less often ($B = -0.59, p < .05$). One possible explanation may be that line managers who enjoy a good relationship with their distributed workers may not require face-to-face contact, because they trust workers to work responsibly and not need to monitor them. Moreover, individual line managers who used higher transactional leadership behaviours also checked on implementation of health and safety procedures less often ($B = -0.61, p < .05$). The contingent reward dimension is about rewarding desired behaviours and thus it is possible that line managers who reward their distributed workers for performing according to standards may not feel the need to check up on workers themselves.

Research Question 3: Can OSH practitioners deploy appropriate frameworks and models in distributed working contexts to ensure effective OSH leadership from line managers?

To assess the extent to which OSH practitioners can apply leadership frameworks to influence line managers' behaviours, we regressed line managers' ratings of their OSH practitioner onto distributed workers' ratings of their line managers' leadership. These analyses therefore explore the extent to which line managers' leadership, which Table 4.14

indicates is associated with good health and safety outcomes, is associated with OSH practitioners' leadership. Because we used distributed workers' ratings of their line managers, we again fitted a four-level model with the same controls as used in the multilevel regression analyses reported above. Again, we only analysed data from work groups with at least three responses, our effective sample size for these analyses was up to 333 distributed workers from 58 work groups reporting to 10 OSH practitioners in 8 organisations. Because of the small number of OSH practitioners, we could not estimate models that simultaneously modelled line managers' individual ratings and ratings aggregated to their respective OSH practitioners. Therefore, we ran two sets of analyses.

First, we modelled line managers' individual ratings with OSH leadership variables centred at the grand mean for the sample. Centring in this way captures individual line managers' variation in ratings plus variation between OSH practitioners. That is, in this first procedure we captured line managers' idiosyncratic experiences of their OSH practitioners as well as the shared collective experiences of line managers with the same OSH practitioner. Second, we modelled individual line managers' ratings centred at the average score for each OSH practitioner. This procedure captures individual line managers' variation in OSH leadership ratings and removes variation between OSH practitioners. Therefore, this second procedure only captures individual line managers' idiosyncratic experiences of their OSH practitioners. Discrepancies between the two sets of analyses would reveal whether any significant associations reflected idiosyncratic experiences of line managers or collective experiences of managers advised by a single OSH practitioner.

Table 4.16 shows the results of these multilevel analyses. Table 4.16 shows there were no relationships between OSH practitioners' leadership behaviours and line managers' leadership behaviours.

Our interview data suggested that OSH practitioners may directly influence workers' health and safety outcomes, where they have direct contact with workers. To examine this, we analysed survey data from 310 workers in 84 work groups advised by 22 OSH practitioners in 10 organisations. Workers who had contact with OSH practitioners rated the OSH practitioner's health- and safety-specific leadership. We used workers' ratings of the leadership of the OSH practitioners. We again analysed data from OSH practitioners where we had at least three ratings from distributed workers and fitted a four level model, with individual workers' ratings of OSH practitioners and average ratings of OSH practitioners used in the analyses. We used the same control variables as used in previous multilevel regressions and added a control for how often workers were in contact with their OSH practitioner. Leadership variables were again examined one at a time and regression slopes

fixed to be invariant across all levels of analysis. Table 4.17 summarises the results of these multilevel regression analyses.

Table 4.16. Multilevel regressions of each OSH leadership variable on each line managers' leadership variable.

Outcomes	OSH Transformational		OSH Transactional		OSH Health-specific		OSH Safety-specific		OSH LMX	
	Individual and group variation	Individual variation only	Individual and group variation	Individual variation only	Individual and group variation	Individual variation only	Individual and group variation	Individual variation only	Individual and group variation	Individual variation only
Line manager transformational leadership	0.05	0.04	-0.02	-0.04	-0.09	-0.08	-0.02	-0.01	0.05	0.05
Line manager transactional leadership	0.05	0.01	-0.02	-0.04	-0.1	-0.11	-0.03	-0.06	0.06	0.04
Line manager health-specific leadership	0.11	0.09	0.03	0.02	0.00	0.01	0.05	0.07	0.08	0.06
Line manager safety-specific leadership	0.11	0.07	0.01	-0.02	-0.01	-0.01	0.05	0.05	0.08	0.05
Line manager LMX	0.07	0.05	-0.01	-0.03	-0.05	-0.03	-0.01	-0.01	0.10	0.10

*/yellow shading $p < .05$

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LMX = leader-member exchange

Table 4.17. Multilevel regressions of each leadership variable on outcome variables for OSH practitioners' leadership.

Outcomes	Health-specific		Safety-specific	
	Group	Individual	Group	Individual
Self-rated health	0.46*	0.02	0.52*	0.03
Absence spells	-0.21	0.05	-0.18	0.06
Absence days	2.39	1.08	1.77	1.46
Presenteeism days	3.98	-0.78	4.54	-1.34
Job related anxiety-contentment	-0.02	0.09	0.08	0.04
Job related depression-happiness	0.54	0.10	0.41	0.12
Job related enthusiasm	0.62*	0.10	0.57*	0.11
Job satisfaction	0.18	0.19**	0.19	0.21**
Exposure to physical hazards	-0.19	-0.11*	-0.14	-0.12*
Threats of physical violence	-0.29	0.14	0.3	0.01
Physical assault	-0.08	0.01	0.39	2.72
Verbal abuse	-1.01	-0.25	-0.5	-0.42*
Integration into the organisation	-0.02	0.31**	0.00	0.35**
Knowledge exchange	0.36	0.12	0.39	0.16*
Job demands	0.03	-0.12	-0.11	-0.06
Role clarity	0.20	0.15**	0.21	0.16**
Emotional demands	0.31	0.02	0.21	0.02
Safety compliance	0.07	0.15**	0.14	0.12**
Unsafe performance (e.g. exposure to incidents)	-0.01	0.03	0.01	0.02
Safety proactivity	0.21	0.30**	0.25	0.29**

*/yellow shading $p < .05$

**/green shading $p < .01$

Table 4.17 shows that health- and safety-specific leadership provided by OSH practitioners has positive associations with: group-level self-reported health, group-level job-related enthusiasm, individual job satisfaction, reduced exposure to physical hazards, reduced exposure to verbal abuse, integration into the organisation, knowledge exchange, role clarity, safety compliance and safety proactivity. As with the analysis of line manager leadership, Table 4.17 shows that the vast majority of significant effects occur at the individual level of analysis, representing the workers' personal experience of the OSH

practitioner. The range of significant relationships is also less extensive than for line manager leadership, which may reflect the closer relationships between line managers and workers. Therefore, our results indicate that although OSH practitioners' leadership behaviours may not influence line managers' leadership behaviours, OSH practitioners may nevertheless influence health and safety outcomes for distributed workers through direct contact with those workers, albeit that line managers' leadership may be related to a broader range of outcomes.

4.8 Conclusions from phase 3 of the research

In the present chapter we achieved our first objective through answering our three research questions, based on the analyses of the quantitative study conducted in the third phase of the investigation.

The quantitative study provided useful insights into the role OSH practitioners and line managers play in ensuring distributed workers' health and safety. We were able to answer all three research questions based on the survey data.

In answer of research question 1, we can conclude that existing leadership frameworks can be used in OSH in distributed working settings.

We tested the psychometric properties of the leadership measures in the survey. Overall, we found that all measures had good psychometric properties. We did slightly amend the health-specific leadership measure and excluded two items to improve its psychometric properties.

All five line manager leadership constructs were significantly related, at the individual level, to major health and safety outcomes. At the group level, these results could not be replicated. This is perhaps not surprising given that 83% of distributed workers reported being lone workers. It seems that line managers exert their influence through the dyad interaction rather than at the group level. Our results corroborate the findings of Nielsen and Daniels (2012) who also failed to establish similar relationships at the group level.

There were no relationships with the incidence of accidents, neither at the individual level, nor the group level. There may be several explanations for this. First, the psychometric properties of the measure were poor. Second, it is possible that other factors predict accidents better, such as the conditions distributed workers face when they are away from their main location of work. Third, the low incident rate may mean insufficient power to detect relationships. Finally, safety behaviours of the person are the most proximal and generally the strongest predictor of incidents.

Although we found that all types of leadership were significantly related to self-rated health and wellbeing, we found no associations with presenteeism and absenteeism, neither at the individual nor the group level. Previous research has found this relationship for group-level transformational leadership (Nielsen & Daniels, 2016): over time transformational leadership leads to increased sickness absence. They suggested that this link could be explained by the line manager creating a culture in the work group, whereby employees put pressure on each to show up for work and line managers encourage their employees to perform above and beyond the call of duty, thereby making employees ill in the long term. As our sample mainly consisted of lone workers, it is unlikely that such group mechanisms come into play.

In answer of research question 2, we found no support that our additional items with a particular focus on a good working relationships and building trust were effective to manage distributed worker OSH. We tested whether they functioned as an extension of transformational leadership and LMX. But adding the items did not provide a better fit to the models. We then tested whether they were a separate factor, but analyses showed poor psychometric properties and thus we must conclude that they do not present a coherent set of leadership behaviours. We therefore did not conduct any further analyses.

We explored the relationship between line managers' leadership styles and their use of the systems. Leaders who engaged in health-specific leadership behaviours and had better relationships with their workers were more likely to report having appropriate health and safety training in their organisation. Leaders who had a poor relationship with their workers were less likely to monitor their health and safety and held fewer meetings about health and safety. Also leaders who displayed transactional leadership behaviours were less likely to check up on health and safety procedures, possibly because they reward workers who perform according to established standards and thus they see no need for additional monitoring.

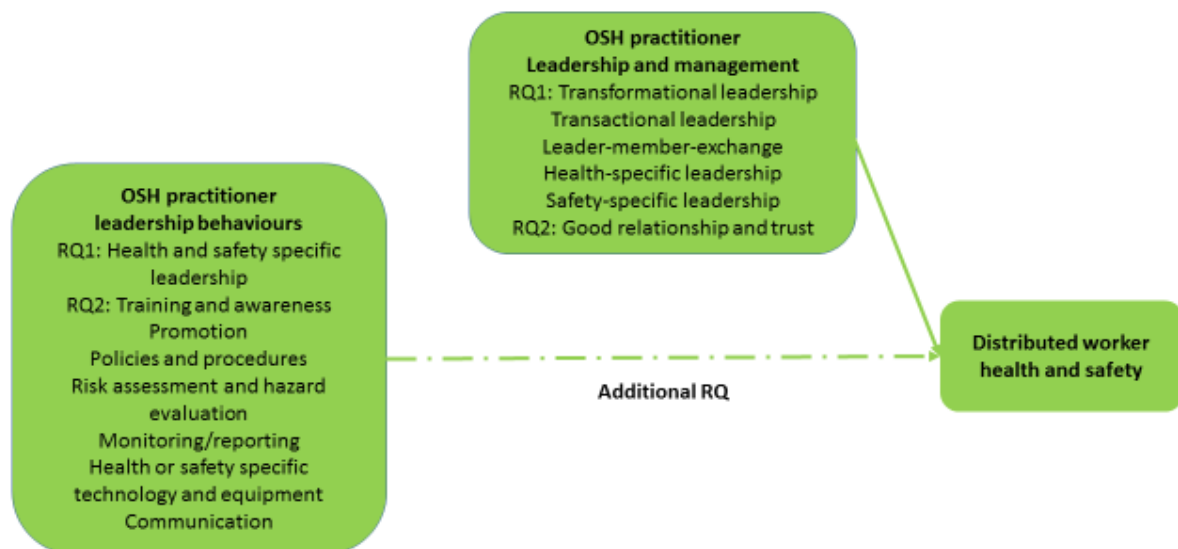
Finally, in answer of research question 3, we found no support for the cascading effect. Although the second step of the analyses, i.e. the link between line managers' leadership behaviours and distributed workers' health and safety was confirmed, we found no evidence that line managers mirrored their OSH practitioners' health and safety leadership behaviours. We can thus conclude that the cascading effect does not exist.

Based on our qualitative analyses, we proposed an additional research question that the health and safety behaviours of OSH practitioners may be directly related to distributed workers' health and safety. We find support for this, albeit they were only related to few outcomes. Interestingly, we only found this association at the group level, not the individual level. It would appear that whilst line managers' leadership behaviours are more powerful at

the dyad level, OSH practitioners' health and safety leadership exerts its influence also at the group level. In interviews, many OSH practitioners reported that they would seek their influence at group meetings or be at the remote site during lunch hours. This may explain the group level impact of OSH practitioners.

In summary, we found support for research question 1, but not research questions 2 and 3.

In the following chapter we describe how the results of the mixed methods study were translated into the toolkit developed to support the OSH management of OSH practitioners.



5. Phase 4: Development of a toolkit to assist OSH practitioners in the leadership of occupational safety and health of distributed workers

5.1 Aims of phase 4 and rationale for the self-reflection framework and toolkit

In the previous chapters we have described and discussed how we achieved our first objective and answered our five research questions. In this chapter, we present the self-reflection framework and the remainder of the toolkit outlined in objectives 2 and 3. Objective 2 concerns the development of a self-reflection framework underpinning the leadership behaviours. This self-reflection framework forms part of the overall toolkit. Objective 3 was to develop a toolkit for OSH practitioners to enhance the development of effective line manager behaviours that facilitate good OSH practices among distributed workers. Once phases 1-3 had been completed, the empirical findings were reviewed to identify how best to create tools that would be usable and of practical assistance to OSH practitioners. The research team drew on previous experience of generating toolkits for practitioners and usability of such tools to identify and produce toolkit materials.

An initial draft of the toolkit was provided to the steering group for testing and review. The comments and suggestions from this process were integrated into the tools to produce the final toolkit, which includes the following documents:

- OSH practitioner self-reflection framework for working with distributed workers;
- Line manager leadership framework and related questionnaires;
- Types of distributed worker and some of the key occupational safety and health risks faced;
- Case study vignettes of organisations managing distributed workers;
- Facilitators of and barriers to OSH practitioners abilities for working with distributed workers;
- Overview of managing occupational safety and health in distributed workers.

The documents themselves are included in the online version toolkit, which can be accessed at www.iosh.co.uk/outofsite. This chapter describes and summarises the tools that comprise the toolkit.

5.2 OSH practitioner self-reflection framework for working with distributed workers

Based on the results of phases 2 and 3 we can conclude that whilst line managers' leadership behaviours were strongly related to the health and safety outcomes of distributed workers, OSH practitioners' influence was less about leadership behaviours and more about both how they dealt directly with distributed workers and how they enabled good OSH

practice to be cascaded through the intermediary of line managers. In the quantitative analysis, we found no evidence that line managers modelled their leadership behaviours on those of their OSH practitioner and OSH practitioners' leadership behaviours were only related to few health and safety outcomes. In the interviews, practitioners talked more about their OSH interventions than their leadership and it became clear that they had a direct relationship with distributed workers (bypass) rather than purely leading them through a 'cascade' via line managers. We therefore developed a specific OSH practitioner self-reflection framework based on a broader conception of the OSH practitioner's role, including but not limited to supporting line managers to show OSH leadership. The development of the self-reflection framework together with the line manager materials described in the following section fulfils our second objective: Identify skills and abilities underpinning effective leadership behaviours that facilitate good OSH practices among distributed workers.

In order to create this self-reflection framework, skills and abilities were extracted from both the OSH practitioner and expert Interview data. These skills and abilities indicators were then sorted into themes using a card sort methodology. Ten themes were identified from the data: visible, approachable and available; open, flexible communication; engaging with workers; gaining knowledge of worker roles; respectful approach to worker input; empowering; collaborative working; providing knowledge and support; frequent communication; and enabling. These ten themes were then clustered into four skills and abilities:

- ***Getting the OSH message across to distributed workers:*** includes being visible, approachable and available, engaging with workers in the most appropriate ways and being open and flexible about communicating with workers
- ***Listening to and understanding distributed workers and their role:*** includes gaining knowledge and understanding of distributed worker roles and taking a respectful approach to worker input where workers feel safe and confident to report issues
- ***Empowering and collaborating with distributed workers:*** includes empowering workers to take ownership of their work and safety, and establishing and using collaborative working
- ***Cascading to distributed workers via managers:*** includes providing knowledge and support to managers, being in frequent communication and enabling opportunities for managers to communicate about OSH

The indicators underlying each of the themes were listed to provide an overall self-reflection framework designed to guide OSH practitioners in their work with line managers and distributed workers.

The resultant self-reflection framework sets out skills and abilities that were found during the research to be particularly key for OSH practitioners when working with distributed workers. It is not designed to be a complete self-reflection framework for OSH practitioners; in fact many of the general procedural and task based abilities and role requirements of OSH practitioners are not included. Rather the framework aims to give a sense of the particularly important areas for OSH practitioners to consider when dealing with distributed workers, particularly focussing on getting communication right, knowing who the workers are, taking a participative approach and cascading OSH via managers.

The self-reflection framework document also includes a list of the particular procedural recommendations for OSH practitioners that were extracted from the research. These were abilities extracted from the interviews, but on closer inspection, were not seen as those that were specific or particular to working with distributed workers. They were therefore kept as separate abilities to the framework.

5.3 Materials to support line manager's OSH leadership behaviours

To achieve our third objective: Develop a toolkit for OSH practitioners to enhance development of underpinning and effective line management behaviours that facilitate good OSH practices among distributed workers, we included the leadership behaviours identified in phases 2 and 3 of the project (transformational and transactional leadership, health- and safety-specific leadership and LMX) as part of our toolkit and translated this into usable materials for OSH practitioners and line managers. The aim of this output is to provide a comprehensive behavioural framework setting out the descriptors of the leadership behaviours line managers need to display to support good OSH in distributed workers. It comprises a framework made up of the existing leadership models that emerged from the quantitative analysis as being associated with OSH outcomes. Based on the questionnaire items used to measure each of these leadership models, descriptors of the behaviour were created. Because the framework is based on the findings of the research, the description of transformational leadership is based on the Carless et al. (2000) questionnaire, rather than on the four-factor model of transformational leadership used in some studies.

The resulting framework is made up of five behavioural themes corresponding to the five scales that showed associations with distributed worker OSH outcomes (see section 4.3 above):

- **Transactional leadership:** including feedback and recognition for good performance
- **Transformational leadership:** including vision, values, role modelling, treating people as individuals, trust, involvement and new ways of thinking
- **Leader-member exchange:** including developing good working relationships and understanding individuals' problems and needs
- **Health-specific leadership:** including taking responsibility for work group members' health, discussing, involving and involving people on health at work matters
- **Safety-specific leadership:** including taking responsibility for work group members' safety, discussing, involving and involving people on safety at work matters

The aim is that this behavioural framework provides an overview to help line managers understand what they need to do and to help OSH practitioners design guidance and training for line managers.

5.4 Self-report and self plus one other questionnaires for line manager behaviour

To further enhance the usefulness of the comprehensive leadership framework to OSH practitioners who work with, and line managers who manage, distributed workers, two questionnaire documents were produced: 1. Self-report questionnaire that line managers can fill in to explore the extent to which they show the management and leadership behaviour required to support good OSH in distributed workers.

2. Self plus one other questionnaire to help managers not only rate their own behaviour but also get feedback from a trusted other on how their management and leadership behaviour is perceived

The questions used in each of these questionnaire documents are based on the items of the scales used to measure the relevant existing leadership frameworks, see section 3.5.4 and appendix H. For the self-report questionnaire, each item was adapted to allow the manager to rate him/herself. The self plus one other questionnaire is made up of two parts: the self-report questionnaire, which is identical to that used in the self-report questionnaire document; plus the 'other' questionnaire designed to be completed by a trusted other, preferably a direct report. The latter 'other' questionnaire adapted the items from the research scales in order to allow the respondent to rate a specified manager.

Whilst the research survey questionnaire used a reduced version of the Leader-Member Exchange (LMX) scale (Graen and Uhl-Bien, 1995), the LMX scale included in the self-report and self plus one other questionnaire documents was the full seven-item scale. The decision to add back in the five items not included in the research survey questionnaire was taken due to the research that LMX is a better predictor of employee wellbeing than

transformational leadership (Gregersen, Vincent-Höper, & Nienhaus, 2014). Although the trust dimension of LMX was most frequently mentioned by OSH practitioners, it may be possible that the other dimensions also play a role.

For each of the questionnaires in these documents, a response scale was created, together with scoring instructions designed to help the respondent (line manager or their chosen 'other' rater) to calculate a score for each behavioural area expressed as a percentage of the maximum possible score. Instructions were then drawn up for the manager to self-assess where they are effective or reasonable as an ability and which skills represent a development need for them. For the 'other' questionnaire, the respondent is asked to write out the percentage score on each of the five sets of skills and abilities in a summary table and return this to the manager to whom they are providing feedback. The self plus one other questionnaire document, provides instructions and a table to allow the manager to compare their own score with the score given to them by their trusted 'other' rater.

Each document includes introductory and explanatory information. In the case of the self plus one other questionnaire, this introduction includes 'hints and tips' about getting feedback from another person, to help the line manager to select a suitable person to complete the 'other' questionnaire. In the case of the self-report questionnaire, the manager is provided with guidance on what to do next. By contrast, the self plus one other questionnaire states that the manager should take the results of the process 'to the development session for which [they] have been asked to complete it'. Good practice in feedback suggests that individuals who receive feedback from others should be provided with support to understand this feedback and plan/take action based on it; thus the aim is that the self plus one other questionnaire should only be used in situations where it forms part of a development programme, for example training, coaching and/or action learning.

5.5 Checklist of distributed worker health and safety risks

Also achieving our third objective to develop a toolkit that would prove useful for OSH practitioners in managing the health and safety of distributed workers, we developed a checklist of the risks commonly experienced by distributed workers. Phase 2 interview data from both OSH practitioners and experts were analysed to extract the key risks. This data was then summarised into a tabular format. In order to improve usability of the tool, the table was further summarised to amalgamate some of the distributed worker categories that reported very similar risks in their work (for instance, construction site worker and roadside construction worker). The resultant set of risk factors is not an exhaustive list of all the risks faced as it was directly produced from the interview data and the interviews were not designed to generate exhaustive coverage of the field. Rather it gives a sense of the key

risks that emerged from the research to support practitioners to consider how to manage them.

5.6 Case study vignettes of organisations managing distributed workers

Also to achieve our third objective, in order to provide further support for OSH practitioners and an understanding of what is achievable in practice, data from the critical incident part of the OSH practitioner interviews were used to generate real-world examples of what organisations have done to support OSH outcomes in distributed workers. Firstly, the most complete examples of critical incident scenarios were extracted from the interviews. These were then categorised into four OSH scenario types, as per the interview pro-forma (see section 3.2.2 above):

- Mitigating OSH risks to distributed workers
- Early response and ongoing management of OSH risks to distributed workers
- Preventing OSH risks to distributed workers
- Occupational safety and health promotion for distributed workers

The interview data were then summarised and the data developed into case study vignettes. The vignettes in this output therefore are divided into four sections (as above). In some cases, the risks or OSH needs involved were identified as a result of an incident or accident; in others, they were flagged up by the distributed workers themselves or emerged over time. In all cases, it is recommended that employers take a collective approach to decision-making and designing solutions, so that workers and other relevant stakeholders are involved in the solution development. This can be done by setting up a specific working group or by building on existing collaborative opportunities, such as work group meetings and multi-disciplinary committees.

5.7 Facilitators and barriers to OSH practitioners' abilities for working with distributed workers

This output aims to enable OSH practitioners to work more effectively with distributed workers. For clarity and usability, it was decided that this output should be used to support the understanding and use of the OSH practitioners' self-reflection framework for working with distributed workers (see section 5.2 above). To create this output, the interview data from both OSH practitioners and experts were analysed to identify and extract the facilitators of (those factors that support) and barriers to (those issues that get in the way of) OSH practitioners behaving in the ways set out in the self-reflection framework. Each of the extracted indicators was then mapped to the four OSH practitioner skills and abilities described in section 5.2. The resultant framework of facilitators and barriers was set out in tabular format.

5.8 Overview of managing occupational safety and health in distributed workers

Once all the toolkit outputs had been created, the research team elicited the key learning and tips for OSH practitioners from the research project as a whole. These findings were drawn together to form a quick-view summary and reflection of the range of insights about how line managers and OSH practitioners can best support positive occupational safety and health in distributed (or remote) workers. The resultant output was presented as a set of ten numbered items.

5.9 Conclusions from phase 4 of the research

In order for the research findings from this project to be of benefit to OSH practitioners and line managers and ultimately to the distributed workers they work with/manage, it was important to convert the findings into materials that would be usable and useful in real world organisations. Based on reports of what practitioners and managers found useful, the research team developed a set of materials including a self-reflection framework, questionnaires, barriers and facilitators, key risk tables, case study vignettes and an overview. This toolkit has been tested by, and adapted in response to comments from, the research project steering group; however, further user testing would be a valuable way to refine and maximise the utility of the outputs.

In Figure 5.1 we provide an overview of the toolkit. We propose that the case study vignettes and the checklist of risks common to distributed workers provide knowledge about which risks to look for and how to manage these and therefore these tools will help set the context, build understanding of OSH for distributed workers and inspire OSH practitioners to take appropriate action in their own organisation. The OSH practitioner self-reflection framework sets out what OSH practitioners actually need to do to support OSH outcomes in distributed workers. In addition, OSH practitioners who have developed skills and abilities to understand and deal with the challenges faced by distributed workers are more likely to be able to support line managers' in displaying good leadership behaviours and can use the line manager leadership behavioural framework to support this. These leadership behaviours will in turn promote good worker health and safety. We propose that also OSH practitioners who have direct contact with their followers and possess these skills and abilities will have a positive impact on their distributed workers' health and safety.

Figure 5.1 Overview of the tools provided within the toolkit



6. Overall discussion and conclusion

6.1 Summary of findings

The incidence of distributed workers is high and the number predicted to increase. Managing the health and safety of distributed workers is challenging in view of the lack of face-to-face contact with such workers, distributed workers' limited access to OSH resources and distributed workers having more than one place of work. All these factors make it difficult to monitor and manage OSH risks for these workers (Dix & Beale, 1996). The incidence and the challenges of distributed working make it imperative to develop our understanding of how OSH practitioners can ensure employee health and safety among distributed workers. The research project described in this report represents a response to that imperative. As OSH practitioners may not be the first point of contact and due to the role of line managers in ensuring employee safety and health (Kelloway & Barling, 2010), we focussed on the roles of both OSH practitioners and line managers in ensuring distributed workers' health and safety. The project involved three main objectives and three main research questions; these are reiterated below and the key findings summarised.

Project objective 1: Obtain knowledge of appropriate OSH leadership behaviours for OSH practitioners and line managers responsible for distributed workers through demonstrably strong empirical research.

Related to objective 1 we asked three overall research questions. We will answer each of these separately and discuss how these together helped us achieve the first objective.

1. Are current OSH leadership frameworks applicable in the context of distributed working?

We explored this research question through three different methods. First, we conducted a systematic literature review. In this review, we identified existing leadership frameworks including transformational leadership, supervisor support and leader-member exchange (Avolio et al., 2009). Other leadership behaviours included using motivational language (which can be considered part of transformational leadership) and leader been seen as competent.

Second, we interviewed OSH practitioners about the line manager behaviours they perceived as effective in ensuring the health and safety of distributed workers. Through these interviews we identified that effective leadership behaviours included those subsumed under transformational leadership, transactional leadership (the contingent reward dimension), the trust element of leader-member exchange and finally, how work was organised and monitored to ensure good OSH. Based on these results, we developed a

survey including these leadership frameworks together with health and safety outcomes. We also found the OSH practitioners mentioned behaviours that could be related to individual consideration and LMX which were present in existing leadership frameworks, but not to a sufficiently detailed extent. We therefore developed 11 tailored items specifically focussed on the relationship between line managers and their distributed workers. These behaviours included knowing your workers, not only as workers but also as individuals, developing a trusting relationship and signalling that the organisation cares.

Third, analysing the survey data, we found that all existing measures showed good psychometric properties, with the exception of health-specific leadership, which was slightly amended leaving out two items. We also tested whether our tailored items extended transformational leadership, LMX or health- and safety-specific leadership. Contrary to expectations, our tailored items did not function well psychometrically. They did not function as part of already established scales such as transformational leadership or LMX nor did they function as a separate leadership framework. We were therefore not in a position to explore links between these tailored items and worker OSH outcomes. The results of the survey confirmed that all five existing types of leadership behaviour when enacted by line managers were related to the health outcomes of self-rated health, wellbeing measures and job satisfaction at the individual level in distributed worker direct reports. None of the five leadership behaviours were related to presenteeism or sickness absenteeism. These leadership styles were also related to some indicators of individual safety performance, although none of the leadership behaviours were related to self-reports of actual incidents. We propose this may be because other factors inherent in the distributed working environment may play a larger role, e.g. the availability of appropriate safety equipment and the control workers have over the environment as and when an incident occurs. Moreover, presenteeism, sickness absence and incidents are likely to be events with low baseline frequency, meaning many more observations may be needed to detect relationships with leadership behaviours.

In answer of our first research question we can conclude that existing leadership frameworks can successfully be transferred to the distributed worker context and be employed to manage the health and safety of these workers. These leadership frameworks we found support for were:

- Transformational leadership
- Transactional leadership – contingent reward
- Leader-member exchange – trust
- Health-specific leadership
- Safety-specific leadership.

2. What other frameworks or models may be applicable to/optimal for OSH leadership of distributed workers?

In order to answer our second research question, we again used all three types of data. From the literature review, we identified that other factors may need to be in place to ensure the health and safety of distributed workers. These included line managers and distributed workers having good communication characterised by face-to-face interaction, and when communicating electronically, this communication needed to be clear and concise. Safety standards within the organisation were also found to be important. There were no empirical studies that explored leadership behaviours and styles specifically developed for distributed workers.

In interviews, OSH practitioners also put a strong emphasis on communication. This included both the ways and the means of communication. OSH practitioners also reported that organisational resources in the form of training and awareness, events promoting occupation health and safety, policies and procedures, monitoring and reporting systems and the use of appropriate health- and safety-specific technology and equipment were important to ensure the health and safety of distributed workers. From the quantitative analyses, we found that 'good' leaders were more likely to communicate with their workers.

Although our literature review revealed that no leadership frameworks have been developed with a specific view to capturing the complexities of distributed working, OSH practitioners reported in interviews some specific line manager leadership behaviours relating to good interpersonal relations. We therefore developed and tested whether tailored items that reflected these leadership behaviours could work as an independent scale. We found no evidence for this.

In answer of research question 2, we can conclude that the tailored items did not add additional value to the existing frameworks. It should be mentioned that existing leadership frameworks are highly correlated indicating an overall 'good leadership' dimension that incorporates several behaviours from each framework. We did find links between leadership frameworks and communication frequency with distributed workers.

3. Can OSH practitioners deploy appropriate frameworks and models in distributed working contexts to ensure effective OSH leadership from line managers?

We were unable to identify any studies that had explored the potential cascading of leadership from OSH practitioners to line managers, and from line managers to distributed workers. Therefore, our third research question was answered through the empirical data

only. In interviews, we found that it was the strategy of OSH practitioners to role model good health and safety leadership behaviours to line managers with the aim of encouraging line managers to display health and safety leadership behaviours to their employees.

Based on the survey, we sought to confirm this cascading effect. We found that OSH practitioners' health and safety leadership were unrelated to line managers' health and safety leadership behaviours. In other words, there was no cascading effect. These results suggest that line managers do not model their behaviour on that of OSH practitioners: their health and safety behaviours may depend on other factors not explored here.

In interviews OSH practitioners reported they exerted health and safety leadership behaviours to distributed workers when they had direct contact with these. We therefore extended our research question to also examine whether line managers would be bypassed, i.e. were the health and safety behaviours of OSH practitioners directly related to the health and safety of distributed workers?

In cases where OSH practitioners had direct contact with distributed workers, we found that OSH practitioners' health-and safety-specific leadership behaviours were related to higher levels of job satisfaction and safety compliance and proactivity at the individual level in the relevant distributed workers. When the health- and safety-specific leadership behaviours were displayed, distributed workers for whom the OSH practitioner was responsible reported better work group level self-rated health and enthusiasm about their jobs. This suggests that, unlike line managers who appear to influence distributed worker health and safety through dyadic interaction, OSH practitioners may influence distributed workers' health and safety both through the collective and shared experience of the entire work group, for example, via toolbox talks or other activities that influence work group norms as to good OSH, as well as through the personal experience of individual workers.

In answer of research question 3, we can conclude that there is no support for the cascading effect. Extending our question to explore a possible bypass, it seems that where OSH practitioners have direct contact with distributed workers we do find relationships between OSH' practitioners' health and safety leadership and some health and safety outcomes, but we find fewer relationships than with the health and safety leadership behaviours of line managers. This result is perhaps not surprising as line managers probably have interaction more often with distributed workers and they also have a double role as they are responsible for performance and recognition and thus their behaviours may have a stronger impact, e.g. in enforcing workers to use safety equipment or making workers more satisfied with their job.

Project objective 2: Identify skills and abilities underpinning effective leadership behaviours that facilitate good OSH practices among distributed workers.

Based on the interviews, we analysed the skills and abilities underpinning effective leadership behaviours. We developed a self-reflection framework for OSH practitioners that we propose may be useful to OSH practitioners to ensure good OSH and supporting line managers leading distributed workers. We identified four main skills and abilities:

- Getting the message across to distributed workers, i.e. being approachable and flexible in how to communicate with distributed workers;
- Listening and understanding distributed workers and their role, i.e. gaining knowledge and understanding of the specific challenges faced by distributed workers, getting to know distributed workers and promoting a climate where distributed workers feel safe to voice OSH concerns;
- Empowering and collaborating with distributed workers, i.e. encouraging collaborative working among distributed workers and empowering workers to take responsibility for their own health and safety;
- Cascading to distributed workers via line managers, i.e. providing knowledge and support to workers and being in frequent contact with line managers about OSH issues and enabling opportunities for line managers to communicate about OSH issues, for example through toolbox talks.

We developed this self-reflection framework as part of the toolkit.

Project objective 3: Develop a toolkit for OSH practitioners to enhance development of underpinning and effective line management behaviours that facilitate good OSH practices among distributed workers.

In addition to the self-reflection framework for OSH practitioners, we analysed the interview data to develop other elements of the toolkit. In acknowledgement of the challenges faced by OSH practitioners to employ the important skills and abilities, we developed an overview of the barriers and facilitators that may influence the extent to which OSH practitioners can employ the skills and abilities listed.

We also used the critical incident technique part of the interviews to develop case study vignettes that may help OSH practitioners to develop their understanding of how to manage the health and safety of distributed workers by highlighting how issues had been tackled in previous cases. Based on the interview data that explored the risks of distributed workers, a checklist was developed that incorporated the most common OSH risks reported by OSH practitioners. We also developed a self-reflection tool for line managers. This tool is built on the answers to research question 1 and includes transformational leadership, transactional leadership, LMX, health- and safety-specific leadership (the latter in two separate scales). Finally, we summarised these elements into an overview for good OSH leadership.

The toolkit consists of six elements:

- An OSH practitioner self-reflection framework as described above
- A checklist of the most common barriers to and facilitators of the OSH practitioner self-reflection framework
- A line manager leadership behavioural framework, and questionnaires to help measure the relevant behaviour including self-report and feedback from an 'other' rater
- A checklist of the most common OSH risks experienced by distributed workers,
- Case study vignettes that covered the different phases of OSH management including risk mitigation, early response and ongoing management of risks, risk prevention and OSH promotion
- Overview of managing OSH of distributed workers.

6.2 Strengths and limitations

The key strengths of this investigation are:

- 1) The mixed methods approach combined with a literature review which allowed us to expand and nuance our original research questions.
- 2) We obtained survey responses from three different targets: OSH practitioners, line managers and their distributed workers. We were able to link these together in our quantitative analyses. This approach enabled us to examine the role OSH practitioners and line managers play in ensuring good OSH
- 3) We included a wide range of distributed workers. Previous studies have primarily focussed on one type of distributed worker. Our approach increases generalisability in that our results may hold true across a range of distributed worker settings.
- 4) The large samples sizes both in the interview study and the survey (at the distributed worker level).

Nevertheless, the investigation has a number of limitations which should be considered when drawing conclusions.

First, we chose a broad search strategy for our literature review and included as many types of distributed workers as possible. It could be argued that we are comparing apples and oranges and that conclusions cannot be reliably drawn on the basis on the outcomes of our investigation. As evidenced in our literature review, most empirical studies focus on one occupation only, i.e. virtual workers or teleworkers. To mitigate the narrow focus of previous research, we deliberately moved beyond this approach to get a broader understanding of

distributed workers in general to get an idea of which behaviours and systems may be effective in ensuring employee safety and health among these workers. Our results can thus be generalised across more occupational settings.

Second, we interviewed OSH practitioners and used this input to inform our toolkit. As a result, we have limited information about the challenges faced by line managers. It is possible that other barriers and facilitators are important at their level.

Third, because we conducted a mail survey and many of our respondents were blue collar workers, we tried to keep the questionnaire as short as possible. We decided only to include five leadership frameworks, rather than all frameworks that came up in our qualitative analysis. This decision was made for pragmatic reasons to keep the survey as short as possible. We cannot rule out that other frameworks may also play a role, however, in the interviews we found transactional and transformational leadership, LMX, and health- and safety-specific leadership to be important and our quantitative analyses support these. Our literature review supports the importance of transformational leadership and LMX. We only included the short version of transformational leadership developed by Carless et al. (2000). We were thus unable to explore each of the four sub-dimensions of transformational leadership. We chose the 7-item measure because it enabled us to include other types of leadership and still keep the questionnaire relatively short. The measure was also chosen because many respondents in our sample were blue collar workers and the measure has previously been found to be valid in study populations including distributed workers with few academic educational qualifications (Nielsen & Munir, 2009; Nielsen & Daniels, 2016). We feared a lengthy transformational leadership questionnaire would adversely influence response rates without leading to substantial gains in reliability and validity. Furthermore, the four dimensions of transformational leadership are highly correlated and it is therefore recommended that a single scale is used for research purposes (Judge & Piccolo, 2004). We also included only the trust index of LMX and the contingent reward dimension of transactional leadership. It is possible that other dimensions of these leadership frameworks are also important. The tailored items were put through a rigorous set of psychometric tests and as the items did not form parts of coherent scales were not considered further. This is not to say they cannot form useful constructs in the future, but in the context of the data we have collected, we have no evidence that to consider them further would be fruitful.

Fifth, our survey was cross-sectional and we can therefore not draw conclusions about causality. It is possible that workers who are healthy have more positive views of their line manager and this enables him or her to display more positive leadership behaviours. It is possible that positive gain spirals exist: healthy employees may inspire line managers to be

more transformational which in turn challenges workers in a positive manner resulting in high wellbeing. Future research should test these proposed relationships over time.

Common-method variance may pose a threat to our results. To minimise the risk of common method bias, we followed the recommendations of Podsakoff et al. (2003) when we developed the questionnaire. First, we ensured respondent confidentiality. Second, we counterbalanced items to mask which items belonged to which scales. Third, we used items that were clear, simple and specific. To this end, we piloted the questionnaire to 23 distributed workers. Finally, the risk of common method variance may be decreased in multiple regression as opposed to bivariate methods (Siemens, Roth, & Oliveira, 2010). Based on these precautions, we consider it unlikely for common method variance to be a threat.

Sixth, the response rates varied from 4.5% to 100% across the 19 organisations participating in the survey, with an overall rate of 38.2%. This range is very large. In one organisation only the OSH practitioner responded to the questionnaire; this result was due to significant restructuring changes in the organisation at the time of the survey. The second lowest response rate was 11.4%. Four studies had in excess of a 67% response rate, above which a sample can be considered representative sample of the population from which it is drawn (Baruch & Holtom, 2008).). To get an overview of whether these levels of response rates are typical in studies of distributed workers, we reviewed the response rates of the quantitative studies included in our literature review. It would appear that the challenges of obtaining response rates is common in studies of distributed workers. Four of the quantitative studies included in the literature review did not report a response rate. Response rates in the remaining studies varied from 34% to 97%, with the majority around 50%. It would appear that our response rates are on the low side compared to these studies. We tried to ensure good response rates using a range of strategies. Where possible we asked OSH practitioners to provide email addresses. In some cases, a link to the survey was included on the intranet or in emails. In other organisations, line managers or OSH practitioners would distribute paper-and-pencil surveys and return them to the research team. These different strategies are likely to account for the differences in response rate. For example, one study of distributed workers (not included in our literature review as it did not meet our inclusion criteria) found that when supervisors distributed the questionnaire only 34% responded compared to 86% when a representative from the research team was present in the organisation (Huang et al., 2013). In the present study, we were unable to be present at participating organisations due to a lack of resources and the geographic location of some organisations. This undoubtedly had a negative impact on our response rates.

We also explored the impact of using email surveys. A review by Sheehan (2001) found that surveys sent via emails had response rates ranging from 22% to 62%, with an average of 37%. Sheehan (2001) also found that follow-up contact improved response rates, and we tried to improve response rates by providing weekly updates on response rates to organisations where possible. Despite the challenges in achieving good response rates among distributed workers and using email surveys, we did manage to achieve good response rates in some organisations, also in one large organisation (77%). Overall, we did manage to secure a large number of distributed workers allowing us to perform reliable analyses although our sample is unlikely to be representative of the population of distributed workers. A related issue concerning the representativeness of our sample is that we only included organisations that had links to OSH practitioners, either externally or internally employed. We made this choice because of our third research question. We are thus unable to draw conclusions about how good OSH leadership may be ensured in organisations without specific OSH practitioner support.

Seventh, our tailored items did not contain any information above and beyond the information captured within existing leadership frameworks and scales. In this study, we wanted to explore which line manager leadership behaviours OSH practitioners find important to ensure the health and safety of distributed workers. It is possible that OSH practitioners cannot reliably answer this question. Asking distributed workers and their line managers may have provided us with a different picture of the leadership behaviours that enable good OSH of distributed workers. Because we mapped leadership behaviours against the leadership frameworks reviewed by Avolio et al. (2009) we did not include standardised measures of trust in the line manager. Instead we chose to develop our own items, specifically focusing on the aspects highlighted by OSH practitioners. It is possible that standardised measures would have captured a trusting relationship better.

Eighth, our leadership measures were highly correlated which prevented us from including all leadership frameworks in the same analysis. It is a common criticism of leadership frameworks that these are highly correlated (Gregersen, et al., 2014; Rowold & Borgmann, 2014; Graen, Rowold & Heinitz, 2010). More research is needed to determine which leadership behaviours may be particularly powerful and integrate overlapping frameworks.

Finally, we did not test the toolkit that we developed in response to objectives 2 and 3. We therefore cannot draw any conclusions about the effectiveness of the toolkit.

6.3 Implications for practice

The strongest relationships between line managers' leadership behaviours and health and safety outcomes were found to relate to transformational leadership behaviours and LMX.

These results suggest that training in these types of leadership may be particularly successful when aiming to improve distributed workers' health and safety. Previous research has found that training can increase transformational leadership behaviours (Barling, Weber, & Kelloway, 1996).

To provide practical guidance on how OSH practitioners may manage the health and safety of distributed workers, we developed a toolkit consisting of five components. First, we developed a checklist that OSH practitioners and line managers may use when identifying the health and safety risks associated with distributed working. Second, we developed a self-reflection framework for OSH practitioners. We propose that OSH practitioners who have the skills and abilities to get the OSH message across to distributed workers, who listen to and understand the role of distributed workers, who empower and collaborate with distributed workers and who cascade OSH through line managers may successfully manage the health and safety of distributed workers. Third, in recognition that it may be a challenge for OSH practitioners to use these skills and abilities, we developed an overview of the barriers and facilitators the OSH practitioners may face. We developed this overview to highlight to OSH practitioners the resources they may employ to develop these skills, e.g. training but also training of their distributed workers to enable them to engage with OSH procedures and practices and increase awareness. Fourth, we developed a line manager leadership behavioural framework, together with questionnaires designed to measure leadership behaviours including self- and other ratings and guidance on how to act on the results of these ratings. Fifth, we identified case studies in our qualitative data. These case studies may serve as inspiration for OSH practitioners on how they can tackle the challenges associated with OSH prevention, mitigation, early response and promotion. Finally, we developed an overview for OSH practitioners. This provides a quick-view summary and reflection of the range of insights about how line managers and OSH practitioners can support occupational safety and health in distributed workers. We recommend that the toolkit is made available online and that OSH practitioners and line managers are encouraged to apply these tools provided.

6.4 Implications for research

We found that line managers' leadership behaviours were related to distributed workers' health and safety. However, we found no evidence for the cascading effect of health and safety leadership from OSH practitioners through line managers' leadership to distributed workers' health and safety outcomes. In other words, the behaviours related to good OSH outcomes modelled by line managers came from elsewhere rather than the cascade proposed in research question 3. Future research could uncover why this may be the case, and examine the sources of line managers' leadership behavioural modelling as related to

good OSH outcomes. We did not find that OSH practitioners' health and safety leadership behaviours were related to the health and safety leadership behaviours of line managers and these behaviours were only weakly related to the health and safety outcomes of distributed workers. However, our qualitative data suggest that OSH practitioners developing the skills and abilities outlined in our self-reflection framework may support better distributed worker OSH outcomes. We propose that distributed workers will benefit from having an OSH practitioner who understands their workers' situation, is perceived as approachable, empowers workers to take responsibility for their own health and safety and who understands how to cascade communication and support via line managers. To provide a concrete example: If the OSH practitioner does not understand the specific situation of the distributed workers, he or she may not be able to put health and safety on the agenda in a way that makes sense to the distributed worker and captures the needs of the worker. Future studies should explore this proposition.

We also suggest that perhaps these skills and abilities can help support line managers' effective health and safety leadership behaviours. It is possible that line managers, whose OSH practitioner understands the situation of the workers for whom line managers are responsible and are able to cascade good OSH practices to line managers, may find it easier to display appropriate OSH leadership behaviours. Future studies should explore the psychometric properties of the self-reflection framework and explore the role of this framework in predicting line managers' leadership behaviours and distributed worker health and safety outcomes.

We propose that other parts of our toolkit may also be important to ensure distributed workers' health and safety. First, it is possible that understanding the risks of distributed workers better (through the risk checklist) and getting ideas about how to deal with OSH management of distributed workers (through seeking inspiration in the vignette case studies) will generate better outcomes. Second, we propose that there may be conditions that either enhance or hinder the impact of the OSH practitioners' skills and abilities. It is possible that these skills and abilities only have an impact when the wider organisation provides adequate support (the facilitators) or that the impact of these skills and abilities may be hindered when there are many barriers to OSH. In light of the lack of testing and validation of the toolkit, we recommend ongoing evaluation of the use and effects of the toolkit.

In Figure 1, we propose a research model to be tested in future studies. The green boxes and lines represent results from the present study whilst the orange lines and boxes suggest directions for future research based on objectives 2 and 3, the self-reflection framework for OSH practitioners and the wider toolkit.

Figure 6.1. Model for future research



6.5 Conclusion

In this study of how OSH practitioners and line managers may promote the health and safety of distributed workers, we set out to 1) find which leadership frameworks may be appropriate to ensure the health and safety of distributed workers, 2) develop a self-reflection framework underpinning these behaviours and 3) develop a toolkit that may support OSH practitioners in managing distributed workers' health and safety.

First, we found that existing leadership frameworks, some with a little adaptation, showed good psychometric properties and were associated with key health and safety outcomes for distributed workers. We found that although OSH practitioners' health and safety leadership behaviours were related to some health and safety outcomes for distributed workers, line managers did not model their behaviour on their OSH practitioners' behaviours. There was no relationship between OSH practitioners' health and leadership behaviours and the leadership behaviours of line managers.

We developed and tested some tailored items that we believed could detect leadership behaviours beyond those of established frameworks. However, we failed to establish the validity of these items.

Second, we developed a self-reflection framework that may enable OSH practitioners to promote good safety and health of distributed workers. These behaviours include: a) Getting

the message across to distributed workers, listening to and understanding distributed workers and their role; b) Empowering and collaborating with distributed workers, i.e. encouraging collaborative working among distributed workers and empowering workers to take responsibility for their own health and safety; and c) Cascading to distributed workers via line managers. We propose that OSH practitioners who possess these skills and abilities may be successful in ensuring the health and safety of distributed workers and supporting their line managers to display leadership behaviours appropriate to ensuring the health and safety of distributed workers. The self-reflection framework needs to be assessed in future research.

Third, we developed a toolkit that included a checklist of risks common to distributed workers, a checklist of the common barriers and facilitators of OSH practitioner skills and abilities, a tool to identify line managers' leadership behaviours and case study vignettes. These tools may help OSH practitioners identify the psychosocial and physical risks of distributed workers, and support line managers to exert leadership behaviours that may ensure distributed worker's safety and health. Case vignette studies were developed to provide concrete examples of how OSH practitioners may tackle issues of mitigation, prevention, promotion and early response and ongoing management. Finally, the checklist of some of the potential hazards and risks for distributed workers. The toolkit also needs to be tested and assessed.

7. References

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8. Appendices

- Appendix A: Search terms for literature review
- Appendix B: Evidence tables from the systematic literature review
- Appendix C: Interview guide for the expert scoping interviews
- Appendix D: Interview protocol for the interviews with OSH practitioners
- Appendix E: Qualitative analysis of risk factors
- Appendix F: Detailed qualitative analysis of established leadership frameworks
- Appendix G: Survey questionnaires
- Appendix H: List of established measures
- Appendix I: Toolkit
- Appendix J: List of journal articles and conference presentations reporting on this project's findings

Appendix A: Search terms for literature review

This document sets out the search terms and protocol for the 'Out of sight, out of mind?' literature review. The aim of this project is to establish the parameters of good OSH leadership behaviours in distributed work environments. We consider OSH leadership provided to line managers by OSH practitioners, and OSH leadership provided by line managers to distributed workers.

The research questions are as follows:

- i. Are current OSH leadership frameworks applicable in the context of distributed working?
- ii. What other frameworks or models may be applicable to/optimal for OSH leadership of distributed workers?
- iii. Can OSH practitioners deploy appropriate frameworks and models in distributed working contexts to ensure effective OSH leadership from line managers?

Literature review strands

Research question i. will primarily be addressed as a result of the literature review, although information in respect of questions ii and iii might also emerge from the findings. The literature review comprises three strands:

1. OSH leadership frameworks, models or behavioural indicators.
2. OSH in the context of distributed working.
3. Combination of OSH leadership in distributed working contexts.

Table of Search Terms and Synonyms

		Strand 1.			
Strand 2.					
Strand 3.					
Distributed work context (or)					
Distributed work	Sectors	OSH	Leadership	Worker	Organisation
Distributed	Construction	Safety	Leader	Worker	Organis*
Telework	Oil and Gas	Health	Leader*	Employee	Organiz*
Telecommute	Transport	Wellbeing	Manage*	Staff	Job
Virtual	Energy	Wellbeing	Supervis*	Personnel	Occupation*
Distance	Utilities	Stress	Behav*	Team	Work*
Computer mediated	Services	Hazard		Group	Climate
Mobile	Telecommunic	Accident		Crew	

		Strand 1.			
Strand 2.					
Strand 3.					
	ations				
Home	Education	Risk		Workforce	
Flexi-place	Agriculture	Satisfaction			
Outwork	Forestry	Strain			
Lone	Fisheries	Psychological distress			
iWork	Postal	Engagement			
eWork	Distribution	Emotional exhaustion			
Web work	Elderly homecare	Emotional stability			
Mobile work		Burnout			
Digital nomads		Anxiety			
Location nomads		Mental health			
Technomads		Tension			
Road warriors		Sleep quality			
Location independent		Sleep disturbance			
Site workers		Vitality			
Offsite		Depression			
Remote		Sadness			
Agile		Mental illness			
		Suicide			
		Fatigue			
		Tiredness			
		Heart disease			
		Blood pressure			

Scope

The following are within the scope of the literature review:

- Research on distributed working and OSH leadership and management over the past 25 years (1990-2015)
- Publications in English language
- Peer reviewed journals

- National (UK) and international contexts

The search databases comprise PubMed, PsycInfo, ScholarGoogle, Web of Science

Protocol for searching and filtering

The searching and filtering will follow three stages. Add at each stage inter-rater reliability checks.

1. Full title search.

A list of titles will be recorded according to the search terms agreed for each of the three stands of searches. Full search results are then filtered by the SMG and selected according to title and relevance to research area. A record will be maintained of the search terms applied for each search, the database searched and results.

2. Filtered abstract search

Duplicates will be removed. The abstracts for the filtered search results are then tabulated (note: for internal use only) and a further sift undertaken by the SMG based upon the abstracts and relevance to research area.

3. Final sift and review of literature

4. The papers relating to the sifted abstracts will then be subject to detailed literature review and summarised onto evidence tables.

Appendix B: Evidence tables from the systematic literature review

Authors / year	Country	Design	Methods	Distributed worker sample	Synopsis of findings in respect of present study	Evidence
Chen et al (2008) **⁹	China	Cross-sectional	Survey	581 off shore oil company workers	High levels of instrumental support from supervisors is related to lower risk of smoking and increased risk of physical inactivity after controlling for a range of factors.	Relatively large sample size but cross-sectional and crude measures. Simple statistics.
Conchie (2013) ***	UK	Cross-sectional	Survey	Study 1: 251 frontline construction workers in three companies (engineers, electricians, plumbers, joiners). Study 2: 220 frontline construction workers in one single company	Study 1: Intrinsic motivation mediates the relationship between safety-specific transformational leadership and challenge citizenship behaviours. Identification regulation mediates the relationship between safety-specific leadership behaviour and safety compliance. Study 2: Intrinsic motivation partially mediates the relationship between safety-specific transformational leadership and challenge citizenship behaviours. This relationship is moderated by trust: Employees high in trust experience this relationship but employees low in trust do not experience intrinsic motivation.	Cross-sectional design. Technically good analysis, relatively small sample size in one country but more occupations and two studies. Overall high quality study. Model fit is not good, cross-sectional self-report limit causal inference.

⁹ We provide an evidence grading for each paper in respect of indicative, rather than absolute features of quality. When assessing indicative features of quality, equal importance was placed on sample size and measurement, relative to the other papers. 'Indicative' features are neither binding nor exhaustive and the quality rating judgement was agreed during discussion.

There were few prospective studies preventing quality ratings considering more powerful methods:

Grading Indicative features of quality

- *** Good methodology and analysis for its type (indicative features are the following: appropriate to large sample size, strong measures, appropriate to advanced analysis).
- ** Competent methodology and analysis for its type (indicative features are the following: small to appropriate sample size, unvalidated or single item measures, measures appropriate to advanced analysis).
- * Weak methodology and analysis for its type (indicative features are the following: small sample size, unvalidated or single item measures, weak (largely descriptive) analysis, poor reporting standards).

Authors / year	Country	Design	Methods	Distributed worker sample	Synopsis of findings in respect of present study	Evidence
				across four sites (electricians, ground workers, pipefitters)		
Fonner and Roloff, 2012 ***	US	Cross-sectional	Survey	100 office workers and 80 high intensity teleworkers	Teleworkers indicate that face-to-face communication, videoconferencing, instant messaging and email are related to higher levels of stress due to interruptions.	Cross-sectional design. Technically well-executed cross-sectional survey, with around 80 teleworkers and 100 office workers. Structural model in relation to teleworkers is limited by small sample size.
Golden & Fromen (2011) ***	US	Cross-sectional	Survey	11,059 employees in Fortune 500 company. Professional-level but no information on occupation or sector	Compared to employees who have traditional managers (face to face) employees with a teleworking manager report poorer feedback, lower empowerment, lower professional development, and lower workload. Also reported lower job satisfaction, increased turnover intentions and higher work climate. Compared to employees with traditional managers, employees with a virtual manager report lower feedback, lower role clarity, lower empowerment, lower professional development, and lower workload. They also report poorer job satisfaction, higher turnover intentions and higher work climate. Teleworkers (virtual workers) with teleworking managers (compared to teleworkers with traditional managers) reported higher feedback, greater personal development, and higher workload. They also reported higher job	Cross-sectional design. Large sample size (N > 10000). Two single item scales were used: turnover intention which is often assessed using a single item scale. The rest of the scales had decent reliability.

Authors / year	Country	Design	Methods	Distributed worker sample	Synopsis of findings in respect of present study	Evidence
					satisfaction, and lower turnover intentions. Virtual employees with virtual managers had better role clarity, more empowerment, better professional development, higher job satisfaction, lower turnover intentions, and better work climate. Findings suggest work mode of workers and managers should match.	
Golden & Veiga, 2008 ***	USA	Cross-sectional survey	Survey	375 employees who worked an average of 25% of the work week in virtual mode from a large high-tech US corporation	Leader-member exchange (LMX) important for job satisfaction, but especially important for job satisfaction of virtual workers. The link between LMX and job satisfaction is moderated by the degree of virtual working.	Cross-sectional design. Decent sample size, use of validated measures, Good analysis.
Gray-Stanley et al. 2010 **	USA	Cross-sectional	Survey	323 direct support (care) workers from 5 community-based organisations in the US Midwest	Work social support (supervisor and co-worker) is inversely related to depression. Neither sub-dimensions of supervisor or worker support more significant. Supervisor and co-worker support moderated the effects of client disability stress. The effects of role conflict were moderated by supervisor support so that supervisory support moderates the negative effects of role conflict on depression (particularly for workers experiencing high stress levels). Indications that work support has stronger inverse relationship with depression in workers who perceive higher levels of client disability stress.	Cross-sectional design. Insufficient number of organisations to include specific org. characteristics in model. Decent sample size.
Greer & Payne, 2014 ***	USA	Cross-sectional	Survey: qualitative data from survey coded and then	86 high performing teleworkers as identified by supervisor ratings, 58 supervisors	Supervisors indicated the following challenges with telework most frequently (> 10% sample): lack of face-to-face communication, interdependency of telework, managing and monitoring performance, jealousy by non-teleworkers. High performing teleworkers identified strategies to overcome challenges as (> 10% sample): use of advanced	Cross-sectional design. Analysis conducted on subsample, but a large data sample for

Authors / year	Country	Design	Methods	Distributed worker sample	Synopsis of findings in respect of present study	Evidence
			correlated with quantitative ratings		Technologies, being accessible, communication with co-workers/supervisors; having a conducive physical environment.	Qualitative analysis.
Konradt et al (2000) *	Germany	Intervention study	Health circle discussions	17 teleworking employees	Lack of interruption from supervisors during daily work was positive aspect of teleworking. Improved, more informal relationship with supervisors. Supervisors demonstrated good understanding of work-life balance issues and more task-related discussions. Unclear performance standards.	Only indirect information from health circle discussions.
Long, Kuang & Buzzanell, 2013 *	China	Cross-sectional	Qualitative interviews	8 teleworkers	Supervisors lack understanding of teleworks nature and processes. Supervisors from other areas will assign tasks to teleworkers because they think they have no other work to do.	Cross-sectional design. Small sample and descriptive analysis.
Madlock, 2013 **	USA	Cross-sectional	Survey	177 teleworkers from a variety of industries	Job satisfaction and satisfaction with communication were related to teleworkers' perceptions that supervisors use motivating language and are competent communicators. Specific facets of motivating language were related to job satisfaction: direction-giving instructions, guidance), and empathetic language (emotion focussed - praise, criticism). Direction-giving language related to satisfaction with communication	Cross-sectional design. Reasonable sample size, established measures used, Simple analysis.
McDonough et al. 2014 *	Canada	Cross-sectional	Qualitative	16 truck drivers and 10 managers from two haulage companies based in south western Ontario	Perception that workplace regulations and organisation put drivers at risk in respect of health and safety. Management recognise the importance of their roles, but were frustrated by lack of awareness of workplace health promotion resources, nor how to connect in that respect with drivers given shift and remote working.	Focus group format may lead to bias (group think). No triangulation. A few brief quotes, but not enough context to the quotes.
Mihhailova, Oun, & Turk	Estonia	Cross-sectional	Survey and qualitative	3,156 employees from 323 different	OSH outcome is satisfaction. If no face-to-face contact or video conferencing possible,	Poorly described study with

Authors / year	Country	Design	Methods	Distributed worker sample	Synopsis of findings in respect of present study	Evidence
(2011) *			interviews	Estonian service sector organisations. Six semi-structured interviews	intensive ICT mediated communication is preferred. Interviews show that managers find virtual work suitable for routine tasks where no complex decision making is involved. In highly virtual environments, all goals and plans should be written down and agreed. Manager should not intervene in work process, assessment should be based on results. Employees granted autonomy to make decisions independently. Important to agree communication rules. Interviewees prefer an autocratic, effective and centralised decision-making process – although this contradicts the autonomy in virtual work. Employees in virtual working environment prefer telephone meetings over official report writing, memos, online messaging and forums.	Descriptive analysis only.
Mihhailova (2009) *	Estonia and Russia	Case study	Semi-structured interviews and focus groups	58 employees from one Estonian and one Russian company	The OSH outcome is satisfaction with the job and with management. Top management willing to be available for teleworking middle managers using ICT. Top level management trying to apply classic management concepts rather than management concepts appropriate for virtual workers.	Poor description of methods. Results very descriptive and not explained properly.
Mulki & Jaramillo 2011 ****	USA	Cross-sectional	Survey	344 field salespeople working for a US subsidiary of a large multi-national pharmaceutical company	Considerate leadership directly impacts satisfaction with supervisor. Satisfaction with supervisor mediates between workplace isolation and turnover intentions. The number of face-to-face meetings between supervisors and field salespersons and between salespersons, does not significantly influence worker perceptions of workplace isolation. Those higher on self-efficacy, and who believe considerate leadership actions are made by their supervisor experience lower workplace isolation.	Cross-sectional design. Decent sample, established. Good analysis. Established measures used.
Nesheim & Gressgård	Norway	Cross-sectional	Survey	880 employees from oil operating	Outcome is knowledge utilisation that includes items reflecting knowledge utilisation in relation to safety.	Cross-sectional design. Large sample

Authors / year	Country	Design	Methods	Distributed worker sample	Synopsis of findings in respect of present study	Evidence
(2014) ***				firm and 1773 employees from subcontractors	Knowledge sharing is related to experience, training. Intrinsic motivation, distributed location (negative) and management support. Knowledge utilisation is related to knowledge sharing, experience, training and management support.	size. Reasonable analysis strategy. Lack of information about origin of studies other than that they are established measures.
Nurmi (2011) ***	Finland	Multiple case study design	Qualitative	97 focal team leaders and employees from electronics, telecommunications, software, consultancy, pulp and paper, and banking industries	Team members who worked remotely from managers had the least access to informational and social support from their manager, there was also a danger of role ambiguity because employees could not knock on the leader's door to ask for clarification. Employees who had distant managers were also more likely to experience role overload because the leader was not aware of their workload. Burnout from teams working in multiple time zones and extending working hours for synchronous communication.	Very large sample size for an interview study. Descriptive analysis.
Torner & Pousette, 2009 *	Sweden	Cross-sectional	Qualitative	19 line managers and 5 worker safety representatives, from a single large road tunnel construction project	The characteristics of high safety standards are: organisation and structures (planning, roles, procedures, resources); collective values norms and behaviours (climate, interaction, cooperation); and, individual competence and attitudes.	Small sample, descriptive analysis.
Weymouth et al, 2007 **	Australia	Cross-sectional	Mixed methods	Survey (Likert and open questions) to 61 Remote area nurses in Northern Territory, Western	Data from remote nurses: managers inaccessible and unsupportive; lack of leadership, poor responsiveness to issues, frequent management personnel changes – lack of management team stability contributed to lack of support. Re: OSH – lack of assistance and double standards.	Instruments developed by the researchers, piloted by independent steering group.

Authors / year	Country	Design	Methods	Distributed worker sample	Synopsis of findings in respect of present study	Evidence
				Australia and South Australia. Interviews with 26 ex-remote area nurses; and, 9 nursing executives with experience of distance management	Perception management more concerned with paperwork that staff following critical incidents. Re: training – issues finding cover to attend courses. None of the respondents rated OSH handling as excellent and half stated OSH not handled well. Expert views: crisis management skills differentiated good leaders; lack of time to build rapport with nurses; high bureaucratic demands, high turnover, lack of communication; that quality leadership would enhance team cohesion.	Results only analysed using percentages. Few quotes.
Whitford & Moss (2009) **	Australia, US, Europe, Asia, South Africa and South America	Cross-sectional	Survey	165 employees from small, medium, and larger organisations in both traditional and virtual environments	In virtual environments, visionary leadership (part of transformational leadership) is significantly related to job satisfaction only when there is a high focus on promotion, i.e. employees' focus on their hopes and aspirations. Furthermore in virtual environments, visionary leadership is related to work engagement when employees are prevention focussed, i.e. employees pursue their duties and responsibilities	Small to appropriate sample size, all measures have been used in previous studies.
Yang et al, 2012 **	Taiwan	Cross-sectional	Mixed methods: qualitative methods used to refine the survey.	171 project leaders and workers from Taiwanese police departments	Leadership competency (classified into 3 factors: emotional, managerial and intellectual competency) had a direct relationship with job satisfaction. .	Collated items and developed survey: tested content and construct validity. Small sample. Poor description of measures

Appendix C: Interview guide for the expert scoping interviews

Introduction

This research collaboration between UEA Norwich Business School and Affinity Health at Work, is sponsored by the Institution of Occupational Safety and Health (IOSH). Thank you for your participation

The aim of the project is to establish the parameters of good Occupational Safety and Health leadership behaviours in work contexts characterised by distributed working. Distributed, or remote workers spend part, or all of their working day physically remote from their line manager. Good occupational safety and health leadership in this context comprises the behaviours and abilities that ensure effective occupational safety and health for distributed workers: including physical and mental health, safety and wellbeing. We will examine leadership provided to line managers by occupational safety and health practitioners, and the cascade through line managers to distributed workers.

Consent

This interview will be voice recorded and transcribed. Are you happy with that?

We will not identify you on the interview notes or transcription: you are assured complete anonymity. All data will be kept on password protected computers. Only the research team will have access to the data. The data will also be used to generate publications for scientific journals and a report for the Institution of Occupational Safety and Health. These publications will not identify either yourself or the organisation. Participating organisations will receive a high level report of anonymised findings pertinent to their organisation. You can withdraw from the study at any time.

Do you consent to participate in this interview?

Please refer to the research [information sheet](#) for more information and details of the timetable.

Expert interview questions

Note regarding examples: obtain information in respect of type of distributed worker, public/private, large/SME and high/low risk.

1. How would you define occupational safety and health (OSH) in your context?
 - a. What would you describe as effective OSH?
 - b. What are good OSH outcomes? (*Prompts: thresholds*)
2. Do you have experience in respect of distributed workers?
 - a. How would you define distributed working in your context?
 - b. If so, which areas of distributed working? (*Prompts: telework, haulage work, construction work, home working, working at client premises*).
 - c. Is your experience in high hazard (i.e. risk of serious injury) or low hazard (i.e. unlikely to be killed or seriously injured by work), public or private, large, medium or small sized organisations? Please give an example of the size of organisation you have worked with/in/experienced?
3. What in your experience are the psycho-social and physical hazards that are specific to distributed working? Could you give me some examples? (*Prompts: workload, isolation, access to medical, communications, clear expectations, role clarity*)
 - a. What are the severity and likelihood of these hazards?
 - b. How can these risks be managed?
 - c. Could you give me examples?
 - d. What, in your experience, are the implications for leaders and managers of these employees?
4. What OSH leadership and management behaviours have you found to be effective in achieving a high/optimal level of OSH in distributed working (covering all hazards, not just those that are specific to distributive working)?
 - a. What behaviours have you found to be ineffective?
 - b. How might these differ for high and low hazard?
 - c. How might these be measured?
 - d. What are the barriers to effective OSH leadership and management behaviours?
 - e. What are the enablers of effective OSH leadership and management behaviours?
 - f. Could you provide any examples from your experience?
5. What are the current OSH leadership and management frameworks or approaches to OSH leadership and management that you are aware of? (*prompts: transformational, transactional, considerate, supportive, leader-member exchange*)
 - a. Which, if any, do you have experience with?
 - b. (For practitioners within organisations) Does your organisation have a leadership or management competency/behavioural framework? If so, does it include aspects relevant to OSH?
 - c. If so, how have you used them?
 - d. Are these applicable in the context of distributed working?
 - e. Why / why not?
 - f. Which aspects or elements of these leadership frameworks are applicable in the context of distributed working?

- g. What are the limitations of existing OSH leadership behavioural frameworks in relation to distributed working?
 - h. Could you provide any examples?
6. How might the cascade of providing OSH leadership work: from OSH practitioner behaviour that influences line manager behaviour that influences OSH outcomes for distributed workers? (*prompts: implementation/translation of OSH policies and procedures, influencing line workers in respect of OSH behaviours*)
 - a. Are there any OSH practitioner behaviours that are more effective at influencing line managers and thereby OSH outcomes for distributed workers? Which, and why?
 - b. What are the barriers to achieving this cascade?
 - c. What are the enablers to achieving the cascade?
 - d. Could you provide any examples from your experience?
 7. Is there anyone else you could recommend we speak to in order to obtain expert views?
 8. Are there any organisations that you could recommend or introduce us to, who might want to participate in the research?
 9. Would you like a copy of the transcription of this interview? (Experts may want to review and add any further comments).
 10. Would you like to be kept informed of this project? (prompt, Research website, Affinity, LinkedIn group)

Thank you very much for taking the time to participate in this study. Do you have any questions at this point?

If any other questions come to mind at a later date and you want to talk about your contribution or the research project in general then please do contact me.

In terms of next steps, just so that you know what is going to happen to all of this information – we will be collecting views from 10 experts and 40 OSH practitioners, we will then analyse the data and use that to inform the next stage of the research (which is a survey within organisations – see the information sheet). If you'd be interested, we can send you a summary report of our findings.

Appendix D: Interview protocol for the interviews with OSH practitioners

PREAMBLE AND CONSENT

This research collaboration between UEA Norwich Business School and Affinity Health at Work, is sponsored by the Institution of Occupational Safety and Health (IOSH).

We are looking at Occupational Safety and Health leadership behaviours in work contexts characterised by distributed working - that is, workers who spend some time during their working work away from their line manager. These workers may include *[teleworkers, drivers and maintenance crews - tailor to organisation]*. By occupational safety and health we mean physical and mental health, safety and wellbeing. Good occupational safety and health leadership involves the structures, behaviours and abilities that ensure effective occupational safety and health for distributed workers.

We are interviewing 40 people, like yourself, from around a dozen companies. After the interviews, we are going to design a questionnaire. The questionnaire will be sent out to line managers and distributed workers in the organisations at the start of 2016. We will use findings from the interviews and survey develop guidance for leading and managing occupational safety and health of distributed workers. We will report our findings in the Autumn of 2016. Participating organisations will receive a high level report of anonymised findings pertinent to their organisation later this year.

Do you have any questions about the research?

We're going to spend the next hour or so, talking to you about your experiences. Although I have some questions that I would like to cover, it'll be more like a conversation.

This interview will be voice recorded and transcribed. We will not identify you on the interview notes or transcription: you are assured complete anonymity. All data will be kept on password protected computers. Only the research team will have access. The data will also be used to generate publications for scientific journals and a report for the Institution of Occupational Safety and Health. These publications will not identify either yourself or the organisation. You can withdraw from the study at any time.

So, could I just ask if you consent to participate in this interview?

Please refer to the research [information sheet](#) for more information and details of the timetable.

QUESTIONS

You and your organisation (2 minutes)

Q1. Before we start, could you tell me something about your company/organisation [prompts: public/private, sector and size]

Q2. Could I please clarify your role? [*Prompt: area of responsibility; in respect of OSH*]

- a. How long have you held this role?
 - b. How long have you worked for this organisation?
 - c. Do you have OSH qualifications, and if so, what are these?
-

The distributed workforce (10 minutes)

Q3. What distributed (or remote) workers are there within your area of responsibility?

[*Prompts: haulage work, construction work, 'your workers on other premises' and 'other workers on your premises', homeworking and teleworking.*]

- a. In what ways are they distributed / remote?
 - b. What are the main hazards, risks or day to day pressures that each group (of distributed workers) might face?
 - c. If there are teleworkers,
 - i. Are your organisation's teleworking policies for fixed (that is to say teleworking occurs on pre-set days) or flexible working?
 - ii. How many days tend to be teleworked fixed and/or flexibly.
 - iii. How might OSH leadership and management differ according to frequency of days teleworked (if at all)
-

Leadership and Management Responsibilities (15 minutes)

Q4. What are your responsibilities in relation to the occupational safety and health of these workers?

- a. How do you fulfil this? [*Prompt: distance/frequency of supervisor/management/leader contact? Means of communications? Explicit procedures vs. flexible safety guidelines?*]
- a. What are the barriers you face, given the distributed nature of the work?
- b. What are the enablers that help? In what ways?
- c. What do you consider the most important ways in leading to ensure the safety and health of these workers?

Q5. What are line managers' responsibilities in relation to occupational safety and health of these workers?

- a. In your experience, how do they fulfil this? [*Prompt: distance/frequency of supervisor/management/leader contact? Means of communications? Explicit procedures vs. flexible safety guidelines?*]
 - d. What barriers do you think they face, given the distributed nature of the work?
 - e. What are the enablers that help? In what ways?
 - f. What do you consider the most important ways in which line managers ensure the safety and health of these workers?
-

Q6. Critical Incidents (30 minutes) (2 were randomly selected for each interviewee)

I'm now going to ask you about your experiences of the leadership and management of occupational safety and health of these distributed workers within your organisation.

PROMOTION

CIT A. From your experience, can you describe a specific occasion when the wellbeing, safety and health for distributed workers has been promoted? By this, we mean steps to promote the health, wellbeing and safety, for example so that work is seen as a positive aspect of health and wellbeing.

- a. What happened? Describe the situation. *[Prompt: what was the promotion directed at?]*
- b. When did it happen?
- c. Why did this happen?
- d. Who did it happen to *[prompt: the distributed workers, their managers, supervisors, leaders, others]*
- e. What did the workers do?
- f. What did their line managers do? *[prompt: what behaviours and competencies did they display]*
 - i. What was effective (why)?
 - ii. What was less effective (why)?
 - iii. Is there anything different that line managers could have done?
- g. What did you do? *[prompt: what behaviours and competencies did you display]*
 - i. What was effective (why)?
 - ii. What was less effective (why)?
 - iii. On reflection, is there anything different you could have done?

PREVENTION

CIT B. From your experience, can you describe a specific occasion when risks or hazards in respect of the health and safety of distributed (or remote) workers have been prevented? By prevention, we mean ways in which you remove the hazard or risk.

- a. What happened? Describe the situation. *[Prompt: what was the hazard or risk]*
- b. When did it happen?
- c. Why did this happen?
- d. Who did it happen to *[prompt: the distributed workers, their managers, supervisors, leaders, others]*
- e. What did the workers do?
- f. What did their line managers do? *[prompt: what behaviours and competencies did they display]*
 - i. What was effective (why)?
 - ii. What was less effective (why)?
 - iii. Is there anything different that line managers could have done?
- g. What did you do? *[prompt: what behaviours and competencies did you display]*
 - i. What was effective (why)?
 - ii. What was less effective (why)?
 - iii. On reflection, is there anything different you could have done?

ONGOING MANAGEMENT AND EARLY RESPONSE

CIT C. From your experience, can you describe a specific occasion when there was an early response or ongoing management of risks and hazards that arose in respect of the health and safety of a distributed (or remote) worker? For example, the ongoing identification of risks, hazards and aspects of wellbeing and the development of means to address them.

- a. What happened? Describe the situation. *[Prompt: what was the hazard or risk?]*
- b. When did it happen?
- c. Why did this happen?
- d. Who did it happen to *[prompt: the distributed workers, their managers, supervisors, leaders, others]*
- e. What did the workers do?
- f. What did their line managers do? *[prompt: what behaviours and competencies did they display]*
 - i. What was effective (why)?

- ii. What was less effective (why)?
 - iii. Is there anything different that line managers could have done?
- g. What did you do? *[prompt: what behaviours and competencies did you display]*
 - i. What was effective (why)?
 - ii. What was less effective (why)?
 - iii. On reflection, is there anything different you could have done?

MITIGATION

CIT D. From your experience, can you describe a specific occasion when harm from hazards/risks that can't be removed in respect of the health and safety of a distributed (or remote) worker as mitigated? By mitigation we mean measures directed at minimising the potential harm from unavoidable hazards.

- a. What happened? Describe the situation. *[Prompt: what was the hazard or risk?]*
 - b. When did it happen?
 - c. Why did this happen?
 - d. Who did it happen to *[prompt: the distributed workers, their managers, supervisors, leaders, others]*
 - e. What did the workers do?
 - f. What did their line managers do? *[prompt: what behaviours and competencies did they display]*
 - i. What was effective (why)?
 - ii. What was less effective (why)?
 - iii. Is there anything different that line managers could have done?
 - g. What did you do? *[prompt: what behaviours and competencies did you display]*
 - i. What was effective (why)?
 - ii. What was less effective (why)?
 - iii. On reflection, is there anything different you could have done?
-

CLOSE (2 minutes)

- 1) Thank you very much for taking the time to participate in this study. Would you like a copy of the transcript of this interview?
- 2) Do you have any questions at this point? If any other questions come to mind at a later date, then please do contact me.
- 3) In terms of next steps, we are hoping to be able to send the questionnaire out to some distributed workers and their line managers in your organisation at the beginning of 2016. Does that sound like something you might be able to help us with? *[Prompt: find the 'go to' person to help administer the survey and obtain organisational support].*
- 4) We have a website to keep you up to date with the project, and a LinkedIn group which you are welcome to join. I'll email you the links.

Leadership and management

1. Perceived support from organisations and managers and good leader-worker relationships predict OSH-related outcomes. Instrumental support appears important, as does knowledge exchange between units. Communication and access to ICTs (especially video-conferencing etc) may be important for facilitating this. *Chen et al. (2008) Gray-Stanley et al. (2010), Greer & Payne (2014), Madlock (2013), McDonough et al. (2014), Zohar et al. (2014), Mihhailova, Oun, & Turk (2011), Golden & Veigo (2008), Weymouth et al. (2007)*
2. Transformational leadership important for motivating safe behaviours and wellbeing, but only if leader is trusted and/or workers focussed on their hopes/aspirations *Conchie (2013), Whitford & Moss (2009)*
3. Leaders' demonstrating commitment to safety (safety climate) important for safety *Huang et al. (2013, 2014)*
4. Distributed workers may benefit in many ways (e.g. job satisfaction, feedback, personal development, empowerment) if managers also engage in similar distributed work (perhaps because this enables better understanding of teleworkers context) *Golden & Fromen (2011), Long et al. (2013)*
5. Competent leadership related to worker job satisfaction. *Yang et al. (2012)*
6. Managers' workload may get in the way of effective OSH leadership, *Weymouth et al. (2007)*

Interaction

7. Face-to-face communication and instant messaging related to stress from interruptions for distributed workers/lack of interruptions a positive feature of telework *Fonner and Roloff (2012), Konradt et al. (2000), Nurmi (2011)*
8. Communication/support a challenge for distributed working, including around OSH – especially if natural face-to-face communication a problem or ICTs have to be used instead (e.g. for asynchronous working) – can cause problems with role ambiguity, workload etc. *Greer & Payne (2014), McDonough et al. (2014), Mihhailova (2009), Nesheim & Gressgård (2014), Nurmi (2011), Weymouth et al. (2007), Mihhailova, Oun, & Turk (2011)*
9. Email messages should be clear and to the point *Nurmi (2011)*

Motivation and emotion

10. Motivation (and motivational strategies such as planning, supervisors using motivating language) predicts safety behaviour/wellbeing indicators. *Conchie (2013), Greer & Payne (2014), Madlock (2013), Mulki & Jaramillo (2011), Nesheim & Gressgård (2014)*

Safety systems/infrastructure

11. Sophisticated safety climate [subsuming support structures and processes and investment] important for safety. *Torner & Pousette (2009), Huang et al (2013, 2014), McDonough et al. (2014), Zohar et al. (2014)*

Appendix E: Qualitative analysis of risk factors

To identify the main risks, both physical and psychosocial, we conducted content analysis (King, 1998). The risk most often reported in relation to physical risks was driving in relation to accidents, both distributed workers' own driving but also others' driving (mentioned by 22 OSH practitioners). Also accidents with tools were seen as a risk, although only mentioned by 6 OSH practitioners.

Slips, trips and falls were another issue, often perceived to be a particular problem because OSH practitioners had limited chances of predicting these risks and related to distributed workers or on other sites to consider and manage these unpredictable risks. Working with dangerous substances such as chemicals, blood-borne diseases and asbestos were commonly reported physical risks. Risks concerning driving and working with dangerous hazards could be exacerbated by poor weather conditions. Finally, ergonomic risks were often seen for people working with computers. Distributed workers on the go with laptops had additional ergonomic risks from carrying their laptops around and working on them in confined spaces such as on trains and planes.

Common psychosocial risks were of a relational nature and concerned isolation and the related lack of knowledge sharing. Emotional demands in dealing with members of the public who suffered from psychological issues or irate customers were seen as an issue, often exacerbated by the lack of a line manager present to step in and support if needed. Abuse, physical and verbal, was a frequently mentioned risk. High workload was often seen as a problem and often occurred in relation to conflicting demands on safety versus productivity. Table E1 presents an overview of the risks mentioned by OSH practitioners.

Table E1. Risks mentioned by OSH practitioners

Risk	Frequency
Risk of accidents with vehicles in the course of work but not on the way to and from work	22
Abuse	17
Chemical or biological substances in the form of liquids, fumes or dust	15
Workload/work demands	13
Increased risk of slips, trips and falls	13
Isolation	12
Emotional demands	11
Role conflict	10
Heat, cold or drought	10
Lifting	8
Risk of accidents with machines or hand tools	6
Knowledge sharing	6
Tiring or painful positions, sitting for long	4
Repetitive arm movements	4
Loud noise	4
Working with animals	2
Career progression	1
Group conflict	1

Working with animals was mentioned by two OSH practitioners, one of whom worked on a farm. As we did not include farms in our survey we decided not to measure this risk in the survey, as animals were unlikely to be perceived a risk by the majority of distributed workers. One OSH practitioner mentioned risks concerning the career progression. As distributed workers did not work closely together, it could create tension in the group if one person got promoted, as colleagues did not understand the reasons for promotion. We did not include measures of these either, as these risks were only mentioned by one OSH practitioner.

Physical risks

Accidents with vehicles were reported most often. Accidents related both to distributed workers' own driving which was often exacerbated by the weather, but also potentially being the victim of the public's driving. Andrew, an OSH practitioner in utilities explained:

'The classics, you have got road risks and again not always within our control, and that is from other drivers and weather. We have toolbox talks and safety. Around adverse weather because we have found previously that's caused a few near misses, not accidents but near misses.' (Andrew, an OSH practitioner, utilities).

Traffic management, both in relation to roadworks but also police directing traffic was related to noise issues. Dave, an OSH practitioner responsible for maintenance and construction, stated manual handling/lifting and noise to be major problems for road workers:

'Obviously that brings in health things like manual handling and noise.' (Dave, OSH practitioner, maintenance and construction)

Roger, an OSH practitioner in telecommunications summarised the main risks as driving accidents caused by the public, falls, and lifting:

'For the engineers - they're the ones who give us the biggest headache. So they've got a whole variety of risks that they face. So you've got quite a lot of working at height, you've got a fair amount of working in underground spaces, because our network people, up poles or down holes is the way that we usually describe it. We've got working by the side of the road, working in the carriageway, and that's another big area for us. You've got quite a lot of manual handling type risk because it's not terribly heavy work but there is some degree of physical exertion and lifting and so forth required.' (Roger, OSH practitioner, telecommunications)

He also warned that many of these risks were exacerbated by the weather, the cold and the wet:

'In isolation those things don't sound terribly important to safety but in reality when you get to the midst of winter you then end up in a position where you've got people working in the hours of darkness whereas previously they weren't and that introduces all sorts of potential risks around things like work on the highways so you need different types of equipment.' (Roger, OSH practitioner, telecommunications)

Accidents related to driving were, however, not the only the only causes of harm: Using tools was reported as a frequent risk:

'Yes, obviously there's always the risk of accident, they use all these power tools so there's always the risk if you're using power tools around an incident there or sharp tools, likewise a risk of if you're in the property and the doors locked you're in there on your own.' (Sally, OSH practitioner, local authority)

Several risks were related to biological, chemical and liquid hazards, police officers would encounter members of the public with untreated HIV or other blood-borne diseases:

'One of the things we've got going on at the moment is one of the challenges in the organisation is we will come across people who may well have a blood-borne virus, Hep C, HIV, and obviously that presents a risk to the officer potentially. And one of the concerns we have at the moment is often around an officer saying there's potential exposure if they get blood on their uniform.' (Diana, OSH practitioner, police)

Other distributed workers experienced problems with other types of biological hazards:

'So engineers spend a reasonable amount of time below ground in chambers and so forth and they were having to do gas tests to prove the atmosphere, there was a risk of a flammable environment and so forth, or a toxic environment. We knew that gas tests weren't being done by people, in a rush they would just assume that everything was alright, they'd wave the gas meter around at the entrance and it wouldn't go off and they'd climb in.'

(Roger, OSH practitioner, telecommunications)

And as with driving, working with substances could be made worse due to poor weather:

'Yes, and the fire fighters actually on site who were clearing the spill didn't need to wear breathing apparatus. It only becomes dangerous if it rained, with water this chemical would have caused a gas, but it didn't rain. So we know that and the fire service were on site by then and they covered it all.' (Aaron, OSH practitioner, police)

OSH practitioners with responsibilities for distributed workers who would go into people's properties also reported asbestos to be a big problem:

'Then the other big one would be asbestos. The clients tend to have inaccurate, out of date databases of asbestos records.' (Jake, OSH practitioner, maintenance and construction)

Other problems were also encountered trips, falls and slips, that were difficult to control because distributed workers would not use the, or have access, to the necessary equipment when on other sites:

'One that comes to mind we had about 18 months ago a fall from height where someone who wasn't authorised borrowed a defective ladder and they tried climbing down it on a slippery floor while carrying a suitcase.' (Janine, OSH practitioner, goods transportation)

Ergonomic problems were reported among those practitioners responsible for teleworkers. Although OSH practitioners tried to mitigate risk through providing appropriate equipment, they often found that workers would not necessarily use the equipment. Thus problems would occur with regards to sitting for long periods and having work characterised by repetitive movements. One OSH practitioner explained:

'I would think ergonomics is a big issue because we're very good at providing ergonomic equipment for the office. So we have a variety of mice, keyboards, stand desks so people can stand up or sit depending on how they want to do. Ergonomic chairs, some are standard chairs but others are just specific because people have problems and we don't necessarily supply the same equipment to all our home workers because a lot of them will have, especially these days, laptops or iPads which they can just take out and use wherever they like.' (Jim, OSH practitioner, international educational services provider)

However, Jim also highlighted that for people travelling, exposure to ergonomic risks would be even greater because distributed workers did not have access to ergonomic chairs and computer mice when working on trains:

'But the ergonomic risks may be higher for those people (who travel a lot) because they're out a lot and they probably can be seen at service station, they've got their laptop bag on a small table working away on trains when they're commuting somewhere so there are the OSH risks around that.' (Jim, OSH practitioner, international educational services provider)

Emily, OSH practitioner working for an occupational health service, put it simply when asked about what the main problem was concerning ergonomics risks:

'It's sitting for long periods.' (Emily, OSH practitioner, occupational health service)

To capture these broad aspects of physical risks, we used the list of risk listed in the Second ESENER (European Survey of Enterprises on Emergent and New Risk) developed by the European Agency for Occupational Safety and Health.

We included the following in the survey:

How often do you experience the following at work?

- Lifting or moving people or heavy loads
- Loud noise
- Heat, cold or drought
- Risk of accidents with machines or hand tools
- Risk of accidents with vehicles in the course of work but not on the way to and from work
- Chemical or biological substances in the form of liquids, fumes or dust
- Increased risk of slips, trips and falls
- Tiring or painful positions, including sitting for long periods
- Repetitive hand or arm movements

Psychosocial risks

Dealing with the public or going into people's houses in certain areas carried risks in the form of abuse, both physical and verbal:

'Drunk or under the influence of something or other. I would suggest they're a risk because they're very unpredictable people. You do have customers who get really ticked off, we get a lot of customers trying to trick their way to get a free journey or using false tickets. You'd be amazed at how often it happens. They're a risk because they tend to be the ones that kick off and you can't say don't talk to me like that, you can't do this, you get that. We have 2 classes of assault if you like, we have physical assault obviously and we class a physical assault as even if you are touched, if you have multi contact you've been assaulted.'

Somebody pushing passed you, somebody grabbing your hand to make a point, we class that as a physical assault. And then verbal assault of which we get recorded we probably get 1 to 3 a day.' (Adam, OSH practitioner, public transportation)

Peter, an OSH practitioner in the police service even stated it was the most frequent risk; this was often linked to the turbulence arising from dealing with the public:

'It will be assault, assaults are the thing we get most of, and in any arrest situation there is quite often an injury associated with it as well. It's either an assault or a sort of manual handling restraint, detention kind of injury, so tweaks and pulls and falling off kerbs and stuff.' (Peter, OSH practitioner, police)

We therefore included a three-item measure of physical and verbal abuse from Rogers and Kelloway (1997). Items included were:

- Threatened with physical violence while at work?
- Physically assaulted while at work?
- Verbally abused while at work?

A range of other psychosocial risks was also mentioned. One frequently mentioned risk was isolation:

'So I think there's that risk of isolation which is why we try and encourage if your passing the office please drop in, we do get to see you and you get to see other people as well.' (Jim, OSH practitioner, international educational services provider)

There was an acknowledgement of the risk of spending too much time on your own:

'Yes to a certain extent, if you're working all day on your own your brain starts ticking over, we've got, our team is actually we've got quite an old team with several health problems and what have you in there.' (Sally, OSH practitioner, local authority)

To capture the risks concerning isolation for distributed workers, we used the measure by Mulki and Jaramillo (2011) that was included in our literature review:

- I am well integrated into the department/company where I work (reverse coded)
- I am kept in the loop regarding company social events/functions (reverse coded)
- I am part of the company network (reverse coded)

Lack of knowledge sharing was also seen as a challenge, and OSH practitioners made attempts to promote knowledge sharing. Janine, one OSH practitioner put it like this:

'It gives them a chance to establish a network and develop people they can talk to when they get an operational issue, and they have got other people they have met and know they can pick up the phone to.' (Janine, OSH practitioner, goods transportation)

To capture issues concerning knowledge sharing we used the three item measure developed by Nesheim and Gressgård (2011), which was identified in our literature review.

- I frequently get in touch with people at other locations to get good advice
- People at other locations often get in touch with me to give me good advice
- I frequently contribute with advice to people at other locations

Work pressure and high workload was another psychosocial risk often mentioned. Andrew, an OSH practitioner stated:

'Very much so, and you do still get people doing the wrong things for the right reason. And that's the most frustrating thing that they believe they should try and do it because there is that perceived pressure. And I won't say it is not only perceived, there is work load pressure where ever you go in the world and it is no different at our company. The task list might be a bit longer or they have got to get X Y or Z done.' (Andrew, OSH practitioner, utilities)

We therefore included a measure of workload/work pressure from Edwards et al. (2008), the HSE Indicator Tool. To keep the questionnaire short, we only include three items:

- I have unachievable deadlines
- I have to neglect some tasks because I have too much to do
- I have unrealistic time pressures

Often, work pressure was seen as the conflict between working safety and getting the job done:

'Yes there are certainly pressures to getting jobs done, we are under more and more pressure from the councils now to making sure we complete work within the time frame defined. So that pressure does get fed down to a degree to the operatives. And we are telling them to drive safer and slower at the site and be more careful of the risk assessments, and make sure the site is safer and safer every day. Then the problem is they are probably doing less digging to be honest so it's now harder to do the same job as it was five years ago, ten years ago. Because you have got to spend more time doing the procedures and qualities. So yes I think they do find some pressures, people do in different ways like we all do.' (Jason, OSH practitioner, energy)

One particular issue was the conflicting demands distributed workers experienced from OSH practitioners and the line managers. Getting line managers on board and get them to understand safety concerns could mitigate this risk. Roger, with responsibility for distributed workers within telecommunications, explained it this way:

'What we can do as a community of safety professionals and advisors and risk people and so forth is provide the information to managers but we need managers who are skilful enough to take that information and blend it with their day to day management of people,

through that route. Because if you try to deliver it through other routes, so as dedicated health and safety communications, but it's not supported through the messaging that's going through the management teams in other areas, you're wasting your time.' (Roger, OSH practitioner, telecommunications)

We therefore included three items capturing role conflict, also part of the HSE Indicator Tool (Edwards et al., 2008):

- I am clear what is expected of me at work
- I am clear what my duties and responsibilities are
- I am clear about my goals and objectives

Emotional demands were also a common risk and it was reported that this may be even more of an issue among distributed workers because the manager may be not close by to intervene when facing irate clients or customers. Diana, an OSH practitioner responsible for police officers explained:

'That's right, for instance there might be a change to the general day stopping times. It (the traffic) might stop 10 minutes, but Applethorpe well that might be cut and the customer gets stroppy. And then the individual worker gets agitated and then it all kicks off. And I think that that's more of an impact side that it has on not seeing the manager or the manager not being closer.' (Diana, OSH practitioner, police)

To measure emotional demands, we included a reduced three items measure used by Xanthopoulou et al. (2008):

- Is your work emotionally demanding?
- Do you face emotionally charged situations in your work?
- In your work, do you deal with people who incessantly complain, although you always do everything to help them?

Appendix F: Detailed qualitative analysis of established frameworks

In this appendix, we outline the detailed second step of the analysis of the interviews that identified which behaviours from established leadership frameworks were mentioned by OSH practitioners. We first present the data that supported the established frameworks and then move on to detail how preliminary supportive evidence was found for a cascade effect whereby OSH practitioners could influence line managers' leadership behaviours. Finally, we also found that OSH practitioners reported they would bypass line managers and try to influence the health and safety of distributed workers directly.

Established leadership frameworks: detailed analysis

Health and safety leadership

Unsurprisingly, specific health- and safety-specific leadership behaviours were mentioned often by OSH practitioners. These behaviours included putting health and safety on the agenda and ensuring health and safety issues were communicated and monitored within the organisation. They also included involving staff in decisions concerning health and safety and openly assuming responsibility for distributed workers' health.

Health-specific leadership would be more closely related to health and wellbeing outcomes and safety-specific outcomes would be more strongly related to safety outcomes. The content of the items could be used directly but interviewees did not use the concept 'health promotion', but rather health and safety directly. Thus six out of seven items were reworded: health promotion was replaced with health and safety in separate items. The last item included both health and safety. In order to capture the difference between health and safety, this item was split into two.

Safety-specific leadership evolved around putting safety on the agenda and following up safety issues making sure that it was an integrated part of the daily working lives of both managers and workers. One OSH practitioner reported how the managing director in the company played an active role in keeping safety on the agenda for managers:

'Our managing director, we have something on at the minute called safety by action and it's challenging the managing director... So he's having meetings with them (managers) and he'll always speak about safety to them and he'll want to know exactly what they're doing on safety. Not just talking about it, he wants to know what they're actually doing, going out and seeing what actions they've taken as well. (Tom, OSH practitioner, engineering and construction)

Putting safety on the agenda was also reported to be an important issue for line managers who would take action to incorporate safety monitoring in their teams:

'So we've got this thing what we call a daily activity safety star which is a, they have to fill it in prior to starting work every day, identify hazards and brief the team. The team have to sign on to it, when anybody visits the site doesn't matter who it is they have to be briefed on the hazards. So the charge hands and team leaders take ownership for their site.' (Janine, OSH practitioner, goods transportation)

OSH practitioners also reported that although putting safety on the agenda was important during formal meetings, informal discussions were equally important in sending the message that safety was a prioritisation within the organisation:

'When you (line managers) are interacting with the engineer, perhaps they've got a problem and you go out to see them to help them solve the problem, take some time to talk about safety. Take some time to, you know... Are you happy with everything, this is all good, is there anything I can help you with in terms of, you know, and while we're here let's have a quick look and do a quick check and talk through how you would do some basic safety task to make sure you're still ok with the knowledge. Be prepared before you go out, you know, look at the company intranet and look at the latest safety coms and have in your back pocket a few questions that you might ask just to make sure your people are picking up on this information. It's the little things like that that generate the impression that actually oh yes, the manager thinks it's really important, I'd better do something about that. And it's that sort of behaviour. But you've got to be prepared to have those conversations and be knowledgeable enough to have those conversations.' (Roger, OSH practitioner, telecommunications)

Assuming responsibility for safety was reported as an important element, as was balancing performance and safety considerations:

'They're all pretty much of the same mind as me, in that mindset. And it's getting people in that mindset to understand, you know, we're coming to work, we're coming to work to do a job but we don't want to kill yourself or anybody else around you. It's difficult to explain really but it's like, hmm, dare I say a fellowship of trying to be safe and deliver a job at the same time.' (Naomi, OSH practitioner, maintenance and construction)

The following seven items focused on safety-specific leadership were therefore included in the questionnaire, adapted from Gurt et al. (2011).

My immediate manager:

- assumes responsibility for my safety
- includes me in decisions concerning safety issues
- routinely discusses with me the objectives that are to be accomplished concerning safety

- discusses safety related issues with me
- reflects on how to increase my safety
- informs me about safety at work issues
- invites me to contribute my experience towards the implementation of safety initiatives/projects

For a full description of the scale, see Appendix H.

Health-specific leadership was also seen to be important. Part of this involved keeping an eye on the health and wellbeing of distributed workers:

'I think then if that practice is embedded, if then the line manager identifies a change in behaviour, or that contact isn't being made, or there's evidence of changes in the performance, those would be the sorts of triggers that would perhaps lead to a further conversation. Say oh I've noticed you've not been in touch this way, is everything ok, or you've been very quiet or you didn't come into the team meeting, is there anything that you need to talk to me about or is there anything I can do.' (Randall, OSH practitioner, advisory service)

As with safety-specific leadership, it was reported to be important that line managers assumed responsibility for distributed worker health:

'Like back to the military you know, you're responsible as a corporal for your group, your group of people. And that's not just they don't go home at 5 o'clock at night when you're out on exercise, you are totally responsible for everything they do, the welfare, the wellbeing and everything. That's the sort of the brother's keeper approach that you need to apply at work.' (Sonny, OSH practitioner, engineering and construction)

Also OSH practitioners expressed the need for line managers to put a healthy life style on the agenda:

'I would want all of my line managers to encourage and promote that their staff adopt and maintain a healthy lifestyle, that they are aware of the individual and their wellbeing. As I say we have return to work conversations following any absences. It's checking in really and having those conversations that might flag up if there is something there that needs support with.' (Randall, OSH practitioner, advisory service))

Based on this analysis, we included 7 items on health-specific leadership from Gurt et al. (2011).

My immediate manager:

- assumes responsibility for my health
- includes me in decisions concerning health issues

- routinely discusses with me the objectives that are to be accomplished concerning health
- discusses health related issues with me
- reflects on how to increase my health
- informs me about health at work issues
- invites me to contribute my experience towards the implementation of health initiatives/projects

Transactional leadership (contingent reward)

Expressing clear expectations to line managers and distributed workers about what was expected of them was reported by OSH practitioners to be an important pathway to ensuring good OSH:

'They (distributed workers) also need to understand what you're looking for and what your expectations are. So really that's the important thing for me.' (Sally, OSH practitioner, local authority)

An important part of transactional leadership and more specifically contingent reward was to provide a two-way communication during face-to-face communication, whereby it was possible for line managers to communicate what the expectations were once distributed workers were out on their own:

'We like to make the awareness part as up front as possible and allow them to question issues and get their feedback. But essentially it's a chance for the company to establish with them what they expected to do and how they are expected to behave et cetera, when they are working away from the office environment.' (Ray, OSH practitioner, oil and gas)

It was also expressed that being promoted could be a reward of displaying good health and safety behaviours:

'So how do I deliver that - to say this is important to them, and it's not always, again it's perhaps that stick and carrot. And managers use that tool as well to say yes I know some guys will wear it because I tell them it's the best thing to do and it's brownie points for them and they can move up the ladder and it's going to give them a good... if you want to move on it's the best thing to do.' (Jason, OSH practitioner, energy).

Based on this analysis, we included the five-item scale on contingent reward by Podsakoff et al. (1990).

My immediate manager:

- always gives me positive feedback when I perform well
- commends me when I do a better than average job

- gives me special recognition when my work is very good
- personally compliments me when I do outstanding work
- does not acknowledge my good performance (reversed)

A full description of the scale can be found in Appendix H.

Transformational leadership

Idealised influence was reported to play an important role in ensuring good OSH. Leading by example was seen as an important aspect of OSH leading line managers:

'Leading by example is one of the key things to us; you have got to be seen to preach what you teach. If you don't do that then people won't respect you in a safety environment or in any environment. So it's making sure that supervisors lead by that example.' (Jason, OSH practitioner, energy).

OSH practitioners emphasised the importance of managers functioning as role models, they needed to model good behaviours if distributed workers were to follow them:

'They need to walk the walk. I mean they need to live and breathe the behaviours that they want to see in their people. So you have to be really clear that the manager is not just saying stuff that this is what they actually believe and this is what they really want from their people. Whether it be performance, productivity or safety it doesn't really matter, that lived experience of the recipient is vital and it's got to be really visible and really believed by the people who are delivering it. Because as soon as you are out of sight of the manager, if you don't believe that's what they want that's not what you'll get.' (Diana, OSH practitioner, police)

Formulating a vision that includes both safety, health and performance and making people understand why certain behaviours are desired was reported to be an important part of good OSH:

'It is making the message more about the why rather than the compliance. If people understand why they are doing it they often will do it, if they don't understand why they are doing it they are very resistant to change.' (Janine, OSH practitioner, goods transportation)

Intellectual stimulation was reported to be important. Rather than telling distributed workers what to do, they were involved in the process of developing good health and safety procedures. The aim was to make them understand why these issues were important:

'I think involving people in the process, rather than just saying this is it and you can use it I think to involve the members of staff and to get their buy in. And for them to see they have had some ownership in developing this issue to meet their needs, I think that's key. And I think the key thing is to just not tell them it's there and use it, for them to have an

understanding and know why it's been brought in, it's been brought in for their benefit rather than a management tool.' (Owen, OSH practitioner, third party contractor, business and domestic services)

Finally, the coaching and mentoring element was perceived to be crucial to managing distributed workers:

'I'd like them (supervisors) to be out onsite more and giving more guidance to our guys and have the ability to, I suppose maybe on a lesser scale, maybe the same, mentor the chaps.' (Jake, OSH practitioner, maintenance and construction)

Based on this analysis, we included all seven items from the short version of the short measure of transformational leadership developed by Carless, Wearing and Mann (2000).

My immediate manager:

- is clear about his/her values and practices what he/she preaches
- instils pride and respect in others and inspires me by being highly competent
- communicates a clear and positive vision of the future
- encourages thinking about problems in new ways, and questions assumptions
- fosters trust, involvement and cooperation among the workers
- gives encouragement and recognition to us workers
- treats me as an individual, and supports and encourages my development

A full description of the scale can be found in Appendix H.

A good quality relationship (LMX)

LMX was also mentioned by most OSH practitioners. Of the three dimensions of trust, respect and obligations, the items relating to trust in the LMX questionnaire were most often mentioned, as was the understanding of the individual's needs. Respect was mentioned five times and obligation was mentioned only once. We therefore only included two items from the LMX questionnaire. Despite the label of the dimension "trust", the two items do not specifically mention trust.

It was perceived to have a good working relationship with distributed workers to ensure the distributed workers would engage with their line manager.

'These are but also establishing relationships with people, you can't engage with people if you haven't got a good working relationship. And we have a big, big focus on the engagement and I would say engaging with distributed workers is probably harder than people you use on a daily basis. It's harder it's not rocket science is it, if you don't see anybody for weeks on end so that communication is very, very important. Even if it's a quick

phone call or even a quick text how are you doing, quick email, it's that communication bit is very, very important.' (Jim, OSH practitioner, international educational services provider)

'I think if the relationship is good then potentially those flags are easily identifiable and you would hope that that good relationship would enable an open and honest conversation.'

(Randall, OSH practitioner, advisory services)

Based on this analysis we included two items from the trust dimension from Graen and Uhl-bien (1995). It is important to note that these two items captured aspects of a good quality relationship but did not explicitly mention trust.

- How well does your immediate manager understand your problems and needs?
- How would you characterise your working relationship with your immediate manager?

A full description of the items can be found in Appendix H.

Cascading leadership

OSH practitioners mentioned several times how they aimed to set an example for line managers, in the hope that line managers would mirror these behaviours in their interaction with their distributed workers.

The following quote shows that line managers are not only kept informed about safety issues but are actively involved in ensuring safety initiatives. They are expected to mirror these behaviours and ensure that distributed workers engaged in safety monitoring. The cascade was expressed explicitly by one OSH practitioner as follows:

'It's getting the line managers to understand what health and safety is all about. And getting them on side too, because what you don't want is tell the line manager one thing and then he thinks a different way and tells the employee something else. So also it's about the communication between the line manager and the employee.' (Billy, OSH practitioner, energy)

OSH practitioners emphasised the importance of driving the message through their line managers; they needed to drive the message on good OSH to their line managers:

'It's just taking personal responsibility to make sure that I'm aware of it; I'm constantly looking at it. I'm driving that message down to the supervisors and I'm watching it they are then pushing it down to the guys if you see what I mean. So I suppose that's the most important thing for me is to make sure that it is taken seriously and that it's never forgotten.' (Tom, OSH practitioner, local authority)

OSH practitioners reported that it was not only about driving the message; it was also about making sure that distributed workers comply with regulations:

'I mean mine's linking in with the group and making sure that any strategies, health and safety strategies, best practices that is cascaded down. And similar any reporting is done correctly and in line with our reporting policies. That people who are reporting in line with legislation, the HSE and the environmental agency, or north of the border, communication, make sure that any lessons learnt and that from accidents are cascaded. Make sure the resources are correct as far as levels of safety advisors.' (Sonny, OSH practitioner, engineering and construction)

Bypassing line managers: OSH practitioners leading distributed workers

OSH practitioners not only influenced the health and safety of distributed workers through line managers, but also directly tried to establish a relationship with distributed workers that enabled them to put health and safety on the agenda. One OSH practitioner in goods transportation described it this way:

'A lot of it is a case of establishing relationships with people on the sites so they will ring up when they have got a query or a question. Or there will be other bits and pieces you will pick up as you go along and it's just getting an idea of what is going on in different area. Is just establishing that rapport and being available.' (Janine, OSH practitioner, goods transportation)

She details it further in terms of making sure that health and safety is on the agenda:

'I think actually going in and seeing people rather than being stuck behind a desk, behind email. I actually spend time talking to people on site, being visible to people, if you are not visible then it becomes something that's not worried about, not considered. It disappears into the woodwork.' (Janine, OSH practitioner, goods transportation)

Part of setting health and safety on the agenda was organising specific direct meetings with distributed workers, to discuss health and safety-related issues with them:

'Yeah distance is probably one of the biggest problems and it's very, very difficult to get all of the drivers together for one chat in one place. So if we have a change of plan or something that needs to be relayed to the drivers something that can't be done by a memo or a telephone conversation then it tends to be I have to arrange a group chat with the drivers at the depot. And then I have to arrange for the depot managers to keep all of the drivers back on a certain day and then I can make a trip to that depot so that we can have that chat with them as a separate group. It works well.' (Jonathan, OSH practitioner, goods transportation)

Assuming direct responsibility for distributed workers was also reported to be important.

'Yes, we do team and task as well as site, so we will go out and measure the state of the site but we will also do team inspections. So we will look for behaviours and we will look for compliance with what we know they should be doing. And generally look at the way they act

in a given condition as well. So it's very important.' (Jonathan, OSH practitioner, goods transportation)

Summary

In summary, it would appear that most leadership behaviours OSH practitioners displayed in their interaction with distributed workers evolved specifically around health- and safety-specific leadership behaviours. To keep the distributed worker questionnaire as short as possible we therefore only asked distributed workers to rate their OSH practitioner on these behaviours. We included a filter question, whereby only those workers who responded that they had direct contact with their OSH practitioner were asked questions of their OSH practitioner's leadership behaviours.

Appendix G: Survey questionnaires

Appendix G1: Distributed worker questionnaire



IOSH Sponsored Research: Health and Safety Leadership of Distributed (Or Remote) Workers

Distributed (or remote) Worker Survey

Your organisation has agreed to participate in the research project sponsored by the Institution of Occupational Safety and Health (IOSH). It is a survey that aims to explore how occupational safety and health can be successfully managed among distributed (or remote) workers (those workers who work away from the main location of their work at least some of the time). We are also interested in learning about how the leadership behaviours of line managers and occupational safety and health professionals can help promote safe and healthy work.

Your response counts!

The questionnaire asks about your experiences. To get a precise picture of how your organisation can support healthy and safe working for distributed/remote workers, we need as many responses as possible. It is therefore important you complete the questionnaire.

How do you benefit from participating?

Your organisation will receive a summary report. They can use this report to get an overview of what is currently being done to manage healthy and safe working among distributed workers and can help them identify areas where they can improve their practices and leadership.

Your responses are confidential

The University of East Anglia follows strict procedures for data protection and your responses will be treated anonymously. No-one will be able to recognise your responses in the reports or in any published material.

Read more about the project

You can read more about the project on <https://www.uea.ac.uk/norwich-business-school/research/iosh-project>. If you have any questions for the research team, please contact Rachel Nayani r.nayani@uea.ac.uk, telephone: 01603 593340.

We look forward to receiving your response!

In order to take part, we need you to sign the slip below. After signing, please tear off the bottom part and return it in the envelope provided, along with your completed questionnaire.

I confirm that I wish to take part in the questionnaire as described above.

Print name (BLOCK CAPITALS).....

Signature.....

Date.....

Signature (Research Team Member).....

Date.....

ID:

IOSH Sponsored Research: Health and Safety Leadership of Distributed (or Remote) Workers

Distributed Worker Survey

Thank you for taking part in this survey. Your experiences are very important to us.

This questionnaire is for completion by **Distributed (or remote) Workers**. By this we mean workers who spend all or part of their week working away from a main location. For example, this includes working onsite, at other companies, in public or domestic spaces, at the roadside, in the countryside, driving, homeworking, and so on.

If you are not a distributed (or remote) worker, or have any questions, please contact the research team: r.nayani@uea.ac.uk.

This questionnaire is about the different ways of managing the health and safety of workers who work away from the main location at least some of their work time.

The questions are about your work and your opinion. There are no right or wrong answers. It is very important that you answer all the questions. Don't spend too much time of each question, but give the answer that first comes to mind. Some of the questions might seem similar but they are slightly different, so please answer each of them.

It should take you about 15 minutes to complete the questionnaire.

1. How many years have you been working with your current employer?

Number of years _____

2. How many years have you been in your current role?

Number of years _____

These questions are about the ways your immediate manager works with you. Please answer as fully as you can.

3. My immediate manager:	Never	Seldom	Sometimes	Often	Always
always gives me positive feedback when I perform well	☐	☐	☐	☐	☐
is clear about his/her values and practices what he/she preaches	☐	☐	☐	☐	☐
commends me when I do a better than average job	☐	☐	☐	☐	☐
coaches me on how to manage my safety	☐	☐	☐	☐	☐
instils pride and respect in others and inspires me by being highly competent	☐	☐	☐	☐	☐
communicates a clear and positive vision of the future	☐	☐	☐	☐	☐
encourages thinking about problems in new ways, and questions assumptions	☐	☐	☐	☐	☐
fosters trust, involvement and cooperation among the workers	☐	☐	☐	☐	☐
makes it clear to me that the organisation / company cares for my health	☐	☐	☐	☐	☐
gives me special recognition when my work is very good	☐	☐	☐	☐	☐
coaches me on how to manage my health	☐	☐	☐	☐	☐
makes it clear to me that the organisation / company cares for my safety	☐	☐	☐	☐	☐
gives encouragement and recognition to us workers	☐	☐	☐	☐	☐
makes me feel valued	☐	☐	☐	☐	☐
personally compliments me when I do outstanding work	☐	☐	☐	☐	☐
makes sure I am in the right frame of mind	☐	☐	☐	☐	☐

to do the job at hand					
treats me as an individual, and supports and encourages my development	☐	☐	☐	☐	☐
understands different workers have different needs	☐	☐	☐	☐	☐

4. My immediate manager:	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally agree
includes me in decisions concerning health issues	☐	☐	☐	☐	☐
assumes responsibility for my health	☐	☐	☐	☐	☐
discusses health related issues with me	☐	☐	☐	☐	☐
invites me to contribute my experience towards the implementation of safety initiatives/projects	☐	☐	☐	☐	☐
does not acknowledge my good performance	☐	☐	☐	☐	☐
assumes responsibility for my safety	☐	☐	☐	☐	☐
includes me in decisions concerning safety issues	☐	☐	☐	☐	☐
informs me about health at work issues	☐	☐	☐	☐	☐
routinely discusses with me the objectives that are to be accomplished concerning safety	☐	☐	☐	☐	☐
invites me to contribute my experience towards the implementation of health initiatives/projects	☐	☐	☐	☐	☐
discusses safety related issues with me	☐	☐	☐	☐	☐
reflects on how to increase my safety	☐	☐	☐	☐	☐
reflects on how to increase my health	☐	☐	☐	☐	☐
routinely discusses with me the objectives that are to be accomplished concerning health	☐	☐	☐	☐	☐
informs me about safety at work issues	☐	☐	☐	☐	☐

5. Please answer the following:	Not much	A little	A fair amount	Quite a lot	A great deal
How approachable do you find your immediate manager?	☐	☐	☐	☐	☐
How much trust do you have in your immediate manager?	☐	☐	☐	☐	☐
How well does your immediate manager understand your problems and needs?	☐	☐	☐	☐	☐
How well would you say your immediate manager knows you?	☐	☐	☐	☐	☐

6. Please answer the following:	Extremely bad	Worse than average	Average	Better than average	Extremely good
How would you characterise your <u>working</u> relationship with your immediate manager?	☐	☐	☐	☐	☐
How would you characterise your <u>personal</u> relationship with your immediate manager?	☐	☐	☐	☐	☐

The following questions are about aspects of your health, safety and wellbeing at work. Please answer as fully as you can.

7. How do you rate your health in general?

☐ Very poor ☐ Poor ☐ Acceptable ☐ Good ☐ Very Good

8. Thinking of the past few weeks, how much of the time has your job made you feel each of the following?

	Never	Seldom	Sometimes	Often	All the time
Tense	☐	☐	☐	☐	☐
Enthusiastic	☐	☐	☐	☐	☐
Depressed	☐	☐	☐	☐	☐
Worried	☐	☐	☐	☐	☐
Optimistic	☐	☐	☐	☐	☐
Gloomy	☐	☐	☐	☐	☐
Uneasy	☐	☐	☐	☐	☐
Motivated	☐	☐	☐	☐	☐
Miserable	☐	☐	☐	☐	☐

9. How often do you experience the following at work?	Never	Seldom	Sometimes	Often	All the time
Lifting or moving people or heavy loads	☐	☐	☐	☐	☐
Loud noise	☐	☐	☐	☐	☐
Heat, cold or drought	☐	☐	☐	☐	☐
Risk of accidents with machines or hand tools	☐	☐	☐	☐	☐
Risk of accidents with vehicles in the course of work but not on the way to and from work	☐	☐	☐	☐	☐
Chemical or biological substances in the form of liquids, fumes or dust	☐	☐	☐	☐	☐
Increased risk of slips, trips and falls	☐	☐	☐	☐	☐
Tiring or painful positions, including sitting for long periods	☐	☐	☐	☐	☐
Repetitive hand or arm movements	☐	☐	☐	☐	☐

10. Please answer the following:	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally agree
I feel 'emotionally attached' to this organisation / company	☐	☐	☐	☐	☐
This organisation / company has a great deal of personal meaning for me	☐	☐	☐	☐	☐
I feel a strong sense of belonging to my organisation / company	☐	☐	☐	☐	☐

11. Please answer the following:	Never	Rarely	Sometimes	Often	All of the time
All in all, how often are you satisfied are you with your work?	☐	☐	☐	☐	☐
In general, I don't like my job	☐	☐	☐	☐	☐
In general, I like working here	☐	☐	☐	☐	☐

12. In total, how many spells of sickness absence have you had in the past 12 months?

☐ None ☐ 1 ☐ 2 ☐ 3 ☐ More than 3

13. In total, how many work days have you been off sick over the past 12 months?

Please enter number of days _____

14. How many workdays have you gone to work even if you were sick in the past 12 months?

Please enter the number of days _____

15. Please answer the following:	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally agree
I am well integrated into the department/organisation where I work	☐	☐	☐	☐	☐
I am kept in the loop regarding organisation / company social events/functions	☐	☐	☐	☐	☐
I am part of the organisation / company social network	☐	☐	☐	☐	☐
I frequently get in touch with people at other locations to get good advice	☐	☐	☐	☐	☐
People at other locations often get in touch with me to give me good advice	☐	☐	☐	☐	☐
I frequently contribute with advice to people at other locations	☐	☐	☐	☐	☐

16. Please answer the following:	Never	Seldom	Sometimes	Often	Always
I have unachievable deadlines	☐	☐	☐	☐	☐
I have to neglect some tasks because I have too much to do	☐	☐	☐	☐	☐
I have unrealistic time pressures	☐	☐	☐	☐	☐
I am clear what is expected of me at work	☐	☐	☐	☐	☐
I am clear what my duties and responsibilities are	☐	☐	☐	☐	☐
I am clear about my goals and objectives	☐	☐	☐	☐	☐

17. In the past year, while at work have you been:	Yes	No
Threatened with physical violence?	☐	☐
Physically assaulted?	☐	☐
Verbally abused?	☐	☐

18. Please answer the following:	Never	Seldom	Sometimes	Often	Always
Is your work emotionally demanding?	☐	☐	☐	☐	☐
Do you face emotionally charged situations in your work?	☐	☐	☐	☐	☐
In your work, do you deal with people who incessantly complain, although you always do everything to help them?	☐	☐	☐	☐	☐
Do you work at different times to your immediate manager, for example night shifts, or working in other countries?	☐	☐	☐	☐	☐
Are you able to get in touch with your immediate manager, (or someone who can help), when you need them?	☐	☐	☐	☐	☐

19. Please answer the following:	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally agree
I use all the necessary safety equipment to do my job	☐	☐	☐	☐	☐
I use the correct safety procedures for carrying out my job	☐	☐	☐	☐	☐
I ensure the highest levels of safety when I carry out my job	☐	☐	☐	☐	☐

20. Within the past 12 months, while on the job have you:	Yes	No
Been involved in any near-misses?	☐	☐
Reported any near-misses?	☐	☐
Been involved in any incidents that were recorded?	☐	☐
Missed any days due to any work-related injuries?	☐	☐
Been involved in incidents that weren't recorded?	☐	☐

The next set of questions is about your job and how you go about your work. Please answer the questions as fully as you can.

21. Typically, how many hours a week do you work away from a main location? _____

22. What sort of worker best describes you? (Tick more than one box if needed)

- ☐ Lone worker (spending part of your work time alone)
- ☐ Home worker (spending part of your work time working from home)
- ☐ Construction site worker
- ☐ Engineering site worker
- ☐ Public transport worker
- ☐ Goods transport worker
- ☐ Security and police worker
- ☐ Plant operations and maintenance worker
- ☐ Roadside construction worker
- ☐ Domestic property worker
- ☐ Mobile worker (frequent travel from site to site or travelling for business)
- ☐ Services consultant
- ☐ Public space worker
- ☐ Domestic care worker
- ☐ Other (please state) _____

23. How many years have you held a job for which you work away from a main office or location (e.g. remotely)?

- ☐ Less than 5 years
- ☐ 5-10 years
- ☐ More than 10 years

24. As part of your day to day job, where do you mainly work? (Tick all that apply)

- ☐ My own organisation's premises
- ☐ Customers' premises
- ☐ Other organisation / company's premises
- ☐ A car or another vehicle
- ☐ An outside space (for example a construction site, agricultural field, roadside or in public spaces)
- ☐ My own home
- ☐ Other [please state]

25. In a typical week, how many hours do you spend?

Hours per week

Driving

Working from home

Working alone

Working remotely, that is away from a main office or location

Working at the main office

Working at another organisation / company's premises

Other (please state)

26. Please answer the following:	Never	About once a month	Several times a month	About once a week	Several times a week	Daily	Hourly
In a typical month, how often do you switch between working in different places? <i>(For example moving from site to site, changing between driving and working from home etc.)</i>	☐	☐	☐	☐	☐	☐	☐
Typically, how often do you and your immediate manager communicate with each other?	☐	☐	☐	☐	☐	☐	☐
In a typical month, how often is your immediate manager available when you need them?	☐	☐	☐	☐	☐	☐	☐
<i>Please answer this question if you spend time at another organisation / company's premises as part of your job.</i>							
Typically, how often do you and managers from another organisation / company communicate with each other about health and safety?	☐	☐	☐	☐	☐	☐	☐

27. Typically, is your immediate manager

- ☐ In the main location full-time?
- ☐ Away from the main location for some of the time?
- ☐ Away from the main location all the time?

28. Typically, how often do you use the following to communicate with your immediate manager, when you're not in the same location?

	Never	About once a month	Several times a month	About once a week	Several times a week	Daily	Hourly
Face-to-face	☐	☐	☐	☐	☐	☐	☐
Skype / Lync / videoconference / Facetime etc.	☐	☐	☐	☐	☐	☐	☐
Landline phone	☐	☐	☐	☐	☐	☐	☐
Mobile phone	☐	☐	☐	☐	☐	☐	☐
Memos	☐	☐	☐	☐	☐	☐	☐
Email	☐	☐	☐	☐	☐	☐	☐
Instant messaging	☐	☐	☐	☐	☐	☐	☐
Other [please state]	☐	☐	☐	☐	☐	☐	☐

29. Typically, how often do you experience the following problems with IT that's used for communication with your immediate manager, when you're not in the same location?

	Never	About once a month	Several times a month	About once a week	Several times a week	Daily	Hourly
Technical problems	☐	☐	☐	☐	☐	☐	☐
Spam	☐	☐	☐	☐	☐	☐	☐
Misinterpretation of messages	☐	☐	☐	☐	☐	☐	☐
Ability/willingness to use IT	☐	☐	☐	☐	☐	☐	☐
Information overload	☐	☐	☐	☐	☐	☐	☐

Availability of IT	☐	☐	☐	☐	☐	☐	☐
Impolite messages	☐	☐	☐	☐	☐	☐	☐

30. How often do you access information about safe and healthy working through each of the following means?

	Never	About once a Month	Several times a month	About once a week	Several times a week	Daily	Hourly
Telephone	☐	☐	☐	☐	☐	☐	☐
Email	☐	☐	☐	☐	☐	☐	☐
Web	☐	☐	☐	☐	☐	☐	☐
Intranet	☐	☐	☐	☐	☐	☐	☐
Apps that help you in your work	☐	☐	☐	☐	☐	☐	☐
Face to face	☐	☐	☐	☐	☐	☐	☐
Meetings/toolbox talk	☐	☐	☐	☐	☐	☐	☐

31. How often do you use the following for health & safety purposes?

	Never	About once a month	Several times a month	About once a week	Several times a week	Daily	Hourly
Taking photos	☐	☐	☐	☐	☐	☐	☐
Texting for advice	☐	☐	☐	☐	☐	☐	☐
Satellite communications	☐	☐	☐	☐	☐	☐	☐
Mobile phone signal enhancing equipment	☐	☐	☐	☐	☐	☐	☐
GPS tracking	☐	☐	☐	☐	☐	☐	☐
Buddy system	☐	☐	☐	☐	☐	☐	☐
Ringling back to base	☐	☐	☐	☐	☐	☐	☐
Personal alarm	☐	☐	☐	☐	☐	☐	☐

32. Do you routinely assess risks in the course of your remote working?

☐ Never
 ☐ About
 once a
 month
 ☐ Several
 ☐ About
 ☐ Several
 ☐ Daily
 ☐ Hourly
 times a
 once a
 times a
 Month
 Week
 Week

33. To what extent do you consider workplace safety to be a concern?

☐ Low concern
 ☐ A bit of a concern
 ☐ Moderate concern
 ☐ High concern

34. Are there hazards in your workplace that have a recognised risk of harm for you? (Please tick the box that best describes your work)

- ☐ **'High' hazards** for example working at height, or at depth, working with chemicals, machinery, and hazardous substances, *that may potentially lead to multiple casualties.*
- ☐ **'High' hazards** for example working at height, or at depth, working with chemicals, machinery, and hazardous substances, *that are potentially life-threatening for you.*
- ☐ **'Medium' hazards**, for example may lead you to slip, trip over things, or fall over; where you are required to lift or carrying objects, or road-use.
- ☐ **'Low' hazards**, for example where you spend most of your time in an office environment.

35. Please answer the following:	Never	Seldom	Sometimes	Often	Always
I receive the health and safety training I need	☐	☐	☐	☐	☐
My organisation / company offers a variety of training that is relevant to my distributed (or remote) working	☐	☐	☐	☐	☐

36. Please answer the following:	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally agree
I implement ideas for safety improvements myself	☐	☐	☐	☐	☐
I suggest ideas for safety improvements to colleagues	☐	☐	☐	☐	☐
I suggest ideas for safety improvements to my line manager, supervisor or others	☐	☐	☐	☐	☐

37. Are you informed of any of the following policies about health and safety when working remotely?

	Yes	No	Not applicable
Lone worker policy	☐	☐	☐
Working from home policy	☐	☐	☐
Working in unsafe environments policy	☐	☐	☐
Travelling / working abroad policy	☐	☐	☐
Policies about the amount of time spent travelling/driving	☐	☐	☐
Policies about access to specialist health advice	☐	☐	☐
Other [please state]	☐	☐	☐

38. In the past 12 months how many sessions or meetings have you attended, that promoted health and safety for remote working?

Number of sessions _____

Please answer the following questions about yourself.

39. What are your contracted hours per week?

Number of hours _____

40. How many hours do you actually work per week in total?

Number of hours _____

41. How old are you?

Years _____

42. Are you:

☐ Male

☐ Female

43. At what stage did you complete your education?

☐ Primary school

☐ Secondary school

☐ Bachelor (undergraduate)

☐ Master (postgraduate)

☐ PhD or above

Please answer these additional questions if you are in contact with your health and safety person.

44. Typically, how often are you in contact with your Health and Safety professional (such as your health and safety advisor, or the person who provides functional expertise in health and safety?)

☐ Never	☐ About	☐ Several	☐ About	☐ Several	☐ Daily	☐ Hourly
	once a	times a	once a	times a		
	month	Month	Week	Week		

If Never is selected, please finish the survey (thank you!)

Otherwise, please answer the questions overleaf about the ways your health and safety person works with you.

45. My health and safety person:	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally agree
includes me in decisions concerning health issues	☐	☐	☐	☐	☐
assumes responsibility for my health	☐	☐	☐	☐	☐
discusses health related issues with me	☐	☐	☐	☐	☐
invites me to contribute my experience towards the implementation of safety initiatives/projects	☐	☐	☐	☐	☐
assumes responsibility for my safety	☐	☐	☐	☐	☐
includes me in decisions concerning safety issues	☐	☐	☐	☐	☐
informs me about health at work issues	☐	☐	☐	☐	☐
routinely discusses with me the objectives that are to be accomplished concerning safety	☐	☐	☐	☐	☐
invites me to contribute my experience towards the implementation of health initiatives/projects	☐	☐	☐	☐	☐
discusses safety related issues with me	☐	☐	☐	☐	☐
reflects on how to increase my safety	☐	☐	☐	☐	☐
reflects on how to increase my health	☐	☐	☐	☐	☐
routinely discusses with me the objectives that are to be accomplished concerning health	☐	☐	☐	☐	☐
informs me about safety at work issues	☐	☐	☐	☐	☐

Thank you for completing this survey, your views and experiences are really valuable!

Appendix G2: Line manager questionnaire



IOSH Sponsored Research: Health and Safety Leadership of Distributed (Or Remote) Workers

Line Manager Survey

Your organisation has agreed to participate in the research project sponsored by the Institution of Occupational Safety and Health (IOSH). It is a survey that aims to explore how occupational safety and health can be successfully managed among distributed (or remote) workers (those workers who work away from the main location of their work at least some of the time). We are also interested in learning about how the leadership behaviours of line managers and occupational safety and health professionals can help promote safe and healthy work.

Your response counts!

The questionnaire asks about your experiences. To get a precise picture of how your organisation can support healthy and safe working for distributed/remote workers, we need as many responses as possible. It is therefore important you complete the questionnaire.

How do you benefit from participating?

Your organisation will receive a summary report. They can use this report to get an overview of what is currently being done to manage healthy and safe working among distributed workers and can help them identify areas where they can improve their practices and leadership.

Your responses are confidential

The University of East Anglia follows strict procedures for data protection and your responses will be treated anonymously. No-one will be able to recognise your responses in the reports or in any published material.

Read more about the project

You can read more about the project on <https://www.uea.ac.uk/norwich-business-school/research/iosh-project>. If you have any questions for the research team, please contact Rachel Nayani r.nayani@uea.ac.uk, telephone: 01603 593340.

We look forward to receiving your response!

In order to take part, we need you to sign the slip below. After signing, please tear off the bottom part and return it in the envelope provided, along with your completed questionnaire.

I confirm that I wish to take part in the questionnaire as described above.

Print name (BLOCK CAPITALS).....

Signature.....

Date.....

Signature (Research Team Member)..... Date.....

ID

**IOSH Sponsored Research: Health and Safety Leadership of Distributed (Or Remote)
Workers
Line Manager Survey**

Thank you for taking part in this survey. Your experiences are very important to us.

This questionnaire is for completion by **Line Managers**, who manage workers who spend at least part of their week working away from a main location. Throughout this questionnaire, we refer to these workers as ‘distributed (or remote) workers’.

If you are not a line manager, or have any questions, please contact the research team:
r.nayani@uea.ac.uk.

This questionnaire is about the different ways of managing the health and safety of workers who work away from the main location at least some of their work time.

The questions are about your work and your opinion. There are no right or wrong answers. It is very important that you answer all the questions. Don’t spend too much time of each question, but give the answer that first comes to mind. Some of the questions might seem similar but they are slightly different, so please answer each of them.

It should take you around 15 minutes to complete the questionnaire.

1. How many years have you been working with your current employer?

Number of years _____

2. How many years have you been in your current role?

Number of years _____

3. How many years have you been a line manager?

Number of years _____

4. How many distributed (or remote) workers are you responsible for? By 'distributed', we mean workers who spend all or part of their day away from a main location.

Number of workers _____

5. Typically, how often are you in contact with your Health and Safety professional (such as your health & safety advisor, or the person who provides functional expertise in health and safety)?

☐ Never	☐ About	☐ Several	☐ About	☐ Several	☐ Daily	☐ Hourly
	once a	times a	once a	times a		
	month	Month	Week	Week		

These questions are about the ways your health and safety professional (such as your health and safety advisor, or the person who provides you with health and/or safety advice) works with you. Please answer as fully as you can.

6. My health and safety professional:	Never	Seldom	Sometimes	Often	Always
always gives me positive feedback when I perform well	☐	☐	☐	☐	☐
is clear about his/her values and practices what he/she preaches	☐	☐	☐	☐	☐
commends me when I do a better than average job	☐	☐	☐	☐	☐
coaches me on how to manage my safety	☐	☐	☐	☐	☐
instils pride and respect in others and inspires me by being highly competent	☐	☐	☐	☐	
communicates a clear and positive vision of the future	☐	☐	☐	☐	☐
encourages thinking about problems in new ways, and questions assumptions	☐	☐	☐	☐	☐
fosters trust, involvement and cooperation among line managers	☐	☐	☐	☐	☐
makes it clear to me that the organisation / company cares for my health	☐	☐	☐	☐	☐
gives me special recognition when my work is very good	☐	☐	☐	☐	☐
coaches me on how to manage my health	☐	☐	☐	☐	☐
makes it clear to me that the organisation / company cares for my safety	☐	☐	☐	☐	☐
gives me encouragement and recognition	☐	☐	☐	☐	☐
makes me feel valued	☐	☐	☐	☐	☐
personally compliments me when I do outstanding work	☐	☐	☐	☐	☐

makes sure I am in the right frame of mind to do the job at hand	☐	☐	☐	☐	☐
treats me as an individual, supports and encourages my development	☐	☐	☐	☐	☐
understands different line managers have different needs	☐	☐	☐	☐	☐

7. My health and safety professional:	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally agree
includes me in decisions concerning health issues	☐	☐	☐	☐	☐
assumes responsibility for my health	☐	☐	☐	☐	☐
discusses health related issues with me	☐	☐	☐	☐	☐
invites me to contribute my experience towards the implementation of safety initiatives/projects	☐	☐	☐	☐	☐
does not acknowledge my good performance	☐	☐	☐	☐	☐
assumes responsibility for my safety	☐	☐	☐	☐	☐
includes me in decisions concerning safety issues	☐	☐	☐	☐	☐
informs me about health at work issues	☐	☐	☐	☐	☐
routinely discusses with me the objectives that are to be accomplished concerning safety	☐	☐	☐	☐	☐
invites me to contribute my experience towards the implementation of health initiatives/projects	☐	☐	☐	☐	☐
discusses safety related issues with me	☐	☐	☐	☐	☐

reflects on how to increase my safety	☐	☐	☐	☐	☐
reflects on how to increase my health	☐	☐	☐	☐	☐
routinely discusses with me the objectives that are to be accomplished concerning health	☐	☐	☐	☐	☐
informs me about safety at work issues	☐	☐	☐	☐	☐

8. Please answer the following:	Not much	A little	A fair amount	Quite a lot	A great deal
How approachable do you find your health and safety professional?	☐	☐	☐	☐	☐
How much trust do you have in your health and safety professional?	☐	☐	☐	☐	☐
How well does your health and safety professional understand your problems and needs?	☐	☐	☐	☐	☐
How well would you say your health and safety professional knows you?	☐	☐	☐	☐	☐

9. Please answer the following:	Extremely bad	Worse than average	Average	Better than average	Extremely good
How would you characterise your <u>working</u> relationship with your health and safety professional?	☐	☐	☐	☐	☐
How would you characterise your <u>personal</u> relationship with your health and safety professional?	☐	☐	☐	☐	☐

The following questions are about aspects of your health and wellbeing at work. Please answer as fully as you can.

10. How do you rate your health in general?

☐ Very poor ☐ Poor ☐ Acceptable ☐ Good ☐ Very Good

11. Thinking of the past few weeks, how much of the time has your job made you feel each of the following?

	Never	Seldom	Sometimes	Often	All the time
Tense	☐	☐	☐	☐	☐
Enthusiastic	☐	☐	☐	☐	☐
Depressed	☐	☐	☐	☐	☐
Worried	☐	☐	☐	☐	☐
Optimistic	☐	☐	☐	☐	☐
Gloomy	☐	☐	☐	☐	☐
Uneasy	☐	☐	☐	☐	☐
Motivated	☐	☐	☐	☐	☐
Miserable	☐	☐	☐	☐	☐

12. Please answer the following:	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally agree
I feel 'emotionally attached' to this organisation / company	☐	☐	☐	☐	☐
This organisation / company has a great deal of personal meaning for me	☐	☐	☐	☐	☐
I feel a strong sense of belonging to my organisation / company	☐	☐	☐	☐	☐

13. Please answer the following:	Never	Rarely	Sometimes	Often	All of the time
All in all, how often are you satisfied are you with your work?	☐	☐	☐	☐	☐
In general, I don't like my job	☐	☐	☐	☐	☐
In general, I like working here	☐	☐	☐	☐	☐

The following questions are about safe and healthy working at your company. Please answer as fully as you can.

14. Please answer the following:	Never	Seldom	Sometimes	Often	Always
My organisation / company offers a variety of training that is relevant to distributed (or remote) workers' work and equipment	☐	☐	☐	☐	☐
My organisation / company ensures new workers are able to perform high risk tasks before moving them on to this type of work	☐	☐	☐	☐	☐
My organisation / company understands that we often face unexpected circumstances on the job	☐	☐	☐	☐	☐
Safety issues are included in meetings	☐	☐	☐	☐	☐
There are good communications about safety issues	☐	☐	☐	☐	☐
Relevant safety issues are communicated	☐	☐	☐	☐	☐
My Health & Safety professional encourages employees here to work in accordance with safety rules – even when the work schedule is tight	☐	☐	☐	☐	☐
My Health & Safety professional accepts employees here taking risks when the work schedule is tight	☐	☐	☐	☐	☐
My Health & Safety professional encourages employees here to participate in decisions which affect their safety	☐	☐	☐	☐	☐
Fear of sanctions (negative consequences) from my Health & Safety professional discourages employees here from reporting near-miss accidents	☐	☐	☐	☐	☐
My Health & Safety professional looks for causes, not guilty persons, when an accident occurs	☐	☐	☐	☐	☐
My Health & Safety professional treats employees involved in an accident fairly	☐	☐	☐	☐	☐

15. My distributed (or remote) workers:	Totally Disagree	Disagree	Neither agree nor disagree	Agree	Totally Agree
achieve the objectives of the job	☐	☐	☐	☐	☐
meet their performance criteria	☐	☐	☐	☐	☐
demonstrate expertise in all job-related tasks	☐	☐	☐	☐	☐
fulfill all the requirements of the job	☐	☐	☐	☐	☐

The next set of questions is about the workers within your area of responsibility and the ways you go about your work. Please answer the questions as fully as you can.

16. What sort of worker best describes the distributed (or remote) workers that you are responsible for? (Tick more than one box if needed)

- ☐ Lone workers (spend part of their work time alone)
- ☐ Home workers (who spend part of their work time working from home)
- ☐ Construction site workers
- ☐ Engineering site workers
- ☐ Public transport workers
- ☐ Goods transport workers
- ☐ Security and police workers
- ☐ Plant operations and maintenance workers
- ☐ Roadside construction workers
- ☐ Domestic property workers
- ☐ Mobile workers (workers who frequently travel from site to site or travel for business)
- ☐ Services consultants
- ☐ Public space workers
- ☐ Domestic care workers
- ☐ Other (please state) _____

17. Typically, how often do you and your distributed (or remote) workers communicate with each other?

- | | | | | | | |
|--------------------------------|---|--|--|---|--------------------------------|---------------------------------|
| ☐ Never | ☐ About
once a
month | ☐ Several
times a
Month | ☐ About
once a
Week | ☐ Several
times a
Week | ☐ Daily | ☐ Hourly |
|--------------------------------|---|--|--|---|--------------------------------|---------------------------------|

18. Typically, how often do you use the following to communicate with your distributed (or remote) workers, when you're not in the same location?

	Never	About once a month	Several times a month	About once a week	Several times a week	Daily	Hourly
Face-to-face	☐	☐	☐	☐	☐	☐	☐
Skype / Lync / videoconference / Facetime etc.	☐	☐	☐	☐	☐	☐	☐
Landline phone	☐	☐	☐	☐	☐	☐	☐
Mobile phone	☐	☐	☐	☐	☐	☐	☐
Memos	☐	☐	☐	☐	☐	☐	☐
Email	☐	☐	☐	☐	☐	☐	☐
Instant messaging	☐	☐	☐	☐	☐	☐	☐
Other [please state]	☐	☐	☐	☐	☐	☐	☐

19. Typically, how often do you experience the following problems with IT that's used for communication with your distributed (or remote) workers, when you're not in the same location?

	Never	About once a month	Several times a month	About once a week	Several times a week	Daily	Hourly
Technical problems	☐	☐	☐	☐	☐	☐	☐
Spam	☐	☐	☐	☐	☐	☐	☐
Misinterpretation of messages	☐	☐	☐	☐	☐	☐	☐
Ability/willingness to use IT	☐	☐	☐	☐	☐	☐	☐
Information overload	☐	☐	☐	☐	☐	☐	☐
Availability of IT	☐	☐	☐	☐	☐	☐	☐

Impolite messages ☐ ☐ ☐ ☐ ☐ ☐ ☐

20. How often do you use the following for health & safety purposes?

	Never	About once a month	Several times a month	About once a week	Several times a week	Daily	Hourly
Taking photos	☐	☐	☐	☐	☐	☐	☐
Texting for advice	☐	☐	☐	☐	☐	☐	☐
Satellite	☐	☐	☐	☐	☐	☐	☐
Mobile phone signal enhancing equipment	☐	☐	☐	☐	☐	☐	☐
Checking that emails are being read	☐	☐	☐	☐	☐	☐	☐
Checking employees are using their mobiles	☐	☐	☐	☐	☐	☐	☐
GPS tracking	☐	☐	☐	☐	☐	☐	☐
Toolbox talk receipt confirmation	☐	☐	☐	☐	☐	☐	☐

21. Do the distributed (or remote) workers in your work area routinely assess risks when working remotely?

☐ Never
 ☐ About
once a
month
 ☐ Several
times a
Month
 ☐ About
once a
Week
 ☐ Several
times a
Week
 ☐ Daily
 ☐ Hourly

22. To what extent do you consider workplace safety to be a concern?

☐ Low concern
 ☐ A bit of a concern
 ☐ Moderate concern
 ☐ High concern

23. Are there hazards in the workplace that have a recognised risk of harm for the workers in your work area? (Please tick the box that best describes the level of hazards)

- ☐ **'High' hazards** for example working at height, or at depth, working with chemicals, machinery, and hazardous substances, *that can potentially lead to multiple casualties.*
- ☐ **'High' hazards** for example working at height, or at depth, working with chemicals, machinery, and hazardous substances, *that are potentially life-threatening for the worker.*
- ☐ **'Medium' hazards**, for example may lead workers to slip, trip over things, or fall over; where workers are required to lift or carrying objects, or road-use.
- ☐ **'Low' hazards**, for example where workers spend most of their time in an office environment.

24. Please answer the following:	Never	Seldom	Sometimes	Often	Always
I ensure my distributed (or remote) workers receive the health and safety training they need	☐	☐	☐	☐	☐
My organisation / company offers a variety of training that is relevant to distributed (or remote) workers' work and equipment	☐	☐	☐	☐	☐

25. Do you keep workers informed of any of the following policies geared up to distributed (or remote) working?

	Yes	No	Not applicable
Lone worker policy	☐	☐	☐
Working from home policy	☐	☐	☐
Working in unsafe environments policy	☐	☐	☐
Travelling / working abroad policy	☐	☐	☐
Policies about the amount of time spent travelling/driving	☐	☐	☐
Policies about access to specialist health advice	☐	☐	☐
Other [please state]	☐	☐	☐

26. In the past 12 months how many sessions or meetings have you had, that promoted health and safety for remote working?

Number of sessions _____

27. How often do you check whether distributed (or remote) workers follow health and safety procedures?

- ☐ Never ☐ About once a month ☐ Several times a Month ☐ About once a Week ☐ Several times a Week ☐ Daily ☐ Hourly

Please answer the final few questions about yourself

28. What are your contracted hours per week?

Number of hours _____

29. How many hours do you actually work per week in total?

Number of hours _____

30. How old are you?

Years _____

31. Are you:

- ☐ Male ☐ Female

32. At what stage did you complete your education?

- ☐ Primary school
☐ Secondary school
☐ Bachelor (undergraduate)
☐ Master (postgraduate)
☐ PhD or above

Thank you for completing this survey, your views and experiences are really valuable!

Appendix G3: OSH practitioner questionnaire



IOSH Sponsored Research: Health and Safety Leadership of Distributed (Or Remote) Workers

Health and Safety Professional Survey

Your organisation has agreed to participate in the research project sponsored by the Institution of Occupational Safety and Health (IOSH). It is a survey that aims to explore how occupational safety and health can be successfully managed among distributed (or remote) workers (those workers who work away from the main location of their work at least some of the time). We are also interested in learning about how the leadership behaviours of line managers and occupational safety and health professionals can help promote safe and healthy work.

Your response counts!

The questionnaire asks about your experiences. To get a precise picture of how your organisation can support healthy and safe working for distributed/remote workers, we need as many responses as possible. It is therefore important you complete the questionnaire.

How do you benefit from participating?

Your organisation will receive a summary report. They can use this report to get an overview of what is currently being done to manage healthy and safe working among distributed workers and can help them identify areas where they can improve their practices and leadership.

Your responses are confidential

The University of East Anglia follows strict procedures for data protection and your responses will be treated anonymously. No-one will be able to recognise your responses in the reports or in any published material.

Read more about the project

You can read more about the project on <https://www.uea.ac.uk/norwich-business-school/research/iosh-project>. If you have any questions for the research team, please contact Rachel Nayani r.nayani@uea.ac.uk, telephone: 01603 593340.

We look forward to receiving your response!

In order to take part, we need you to sign the slip below. After signing, please tear off the bottom part and return it in the envelope provided, along with your completed questionnaire.

I confirm that I wish to take part in the questionnaire as described above.

Print name (BLOCK CAPITALS).....

Signature.....

Date.....

Signature (Research Team Member).....

Date.....

ID

**IOSH Sponsored Research: Health and Safety Leadership of Distributed (Or Remote)
Workers**

Health and Safety Professional Survey

Thank you for taking part in this survey. Your experiences are very important to us.

This questionnaire is for completion by **health and safety professionals**, such as a health and safety advisors, or those who provide health and/or safety expertise/ advice to others. If you are not a health and safety professional, or have any questions, please contact the research team: r.nayani@uea.ac.uk.

This questionnaire is about the different ways of managing the health and safety of workers who work away from the main location at least some of their work time.

The questions are about your work and your opinion. There are no right or wrong answers. It is very important that you answer all the questions. Don't spend too much time on each question, but give the answer that first comes to mind. Some of the questions might seem similar but they are slightly different, so please answer each of them.

It should take you between 10 and 15 minutes to complete the questionnaire.

Number of years

1. How many years have you been working with your current employer?
2. How many years have you been in your current role?
3. How many years have you been responsible for safety and/or health in your organisation / company?

Number of workers

4. Approximately how many workers does your organisation / company employ?
5. Approximately how many workers in total are there in your area of responsibility?
6. How many distributed (or remote) workers are you responsible for? By 'distributed', we mean workers who spend all or part of their day away from a main location.
7. How many line managers are you responsible for?
8. Typically, how often are you in face to face contact with the line managers in your area of responsibility?

☐ Never

☐ About
once a
month

☐ Several
times a
Month

☐ About
once a
Week

☐ Several
times a
Week

☐ Daily

☐ Hourly

These questions are about the ways you go about working with the line managers who have responsibility for distributed (or remote) workers in your area of responsibility. Please answer as fully as you can.

9. Please answer the following:	Never	Seldom	Sometimes	Often	Always
I always give line managers positive feedback when they perform well	☐	☐	☐	☐	☐
I am clear about my values and practice what I preach	☐	☐	☐	☐	☐
I commend line managers when they do a better than average job	☐	☐	☐	☐	☐
I coach line managers on how to manage safety	☐	☐	☐	☐	☐
I instil pride and respect in line managers and inspire them by being highly competent	☐	☐	☐	☐	☐
I communicate a clear and positive vision of the future	☐	☐	☐	☐	☐
I encourage line managers to think about problems in new ways and question assumptions	☐	☐	☐	☐	☐
I foster trust, involvement and cooperation among line managers	☐	☐	☐	☐	☐
I make it clear to line managers that the organisation / company cares for their health	☐	☐	☐	☐	☐
I give line managers special recognition when their work is very good	☐	☐	☐	☐	☐
I coach line managers on how to manage their health	☐	☐	☐	☐	☐
I make it clear to line managers that the organisation / company cares for their safety	☐	☐	☐	☐	☐
I give encouragement and recognition to line managers	☐	☐	☐	☐	☐

I make line managers feel valued	☐	☐	☐	☐	☐
I personally compliment line managers when they do outstanding work	☐	☐	☐	☐	☐
I make sure line managers are in the right frame of mind to do the job at hand	☐	☐	☐	☐	☐
I treat line managers as individuals, and I support and encourage their development	☐	☐	☐	☐	☐
I understand different line managers have different needs	☐	☐	☐	☐	☐

10. Please answer the following:	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally agree
I include line managers in decisions concerning health issues	☐	☐	☐	☐	☐
I assume responsibility for line managers' health	☐	☐	☐	☐	☐
I discuss health related issues with line managers	☐	☐	☐	☐	☐
I invite line managers to contribute their experience towards the implementation of safety initiatives/projects	☐	☐	☐	☐	☐
I do not acknowledge line managers' good performance	☐	☐	☐	☐	☐
I assume responsibility for line managers' safety	☐	☐	☐	☐	☐
I include line managers in decisions concerning safety issues	☐	☐	☐	☐	☐
I inform line managers about health at work issues	☐	☐	☐	☐	☐
I routinely discuss with line managers the objectives that are to be accomplished concerning safety	☐	☐	☐	☐	☐
I invite line managers to contribute their experience towards the implementation of health initiatives/projects	☐	☐	☐	☐	☐
I discuss safety related issues with line managers	☐	☐	☐	☐	☐
I reflect on how to increase safety for line managers in my area of responsibility	☐	☐	☐	☐	☐
I reflect on how to increase health for line managers in my area of responsibility	☐	☐	☐	☐	☐
I routinely discuss with line managers	☐	☐	☐	☐	☐

the objectives that are to be accomplished concerning health

I inform line managers about safety at work issues

☐
☐
☐
☐
☐

11. Please answer the following:

Not
much

A little

A fair
amount

Quite a
lot

A great
deal

How approachable do line managers find you?

☐
☐
☐
☐
☐

How much trust do line managers have in you?

☐
☐
☐
☐
☐

How well do you understand line managers' problems and needs?

☐
☐
☐
☐
☐

How well would you say you know the line managers in your area of responsibility?

☐
☐
☐
☐
☐

12. Please answer the following:

Extremely
bad

Worse than
average

Average

Better than
average

Extremely
good

How would you characterise your
working relationship with the line
managers in your area of
responsibility?

☐☐☐☐☐

How would you characterise your
personal relationship with the line
managers in your area of
responsibility?

☐☐☐☐☐

The next set of questions is about your area of responsibility and the ways you go about your work. Please answer the questions as fully as you can.

13. What sort of worker best describes the distributed (or remote) workers that you are responsible for? (Tick more than one box if needed)

- ☐ Lone workers (spend part of their work time alone)
- ☐ Home workers (spend part of their work time working from home)
- ☐ Construction site workers
- ☐ Engineering site workers
- ☐ Public transport workers
- ☐ Goods transport workers
- ☐ Security and police workers
- ☐ Plant operations and maintenance workers
- ☐ Roadside construction workers
- ☐ Domestic property workers
- ☐ Mobile workers (workers who frequently travel from site to site or travel for business)
- ☐ Services consultants
- ☐ Public space workers
- ☐ Domestic care workers
- ☐ Other (please state) _____

14. Typically, how often do you and the line managers in your area of responsibility communicate with each other?

- ☐ Never
 ☐ About once a month
 ☐ Several times a Month
 ☐ About once a Week
 ☐ Several times a Week
 ☐ Daily
 ☐ Hourly

15. Typically, how often do you and the distributed (or remote) workers in your area of responsibility communicate with each other?

- ☐ Never
 ☐ About once a month
 ☐ Several times a Month
 ☐ About once a Week
 ☐ Several times a Week
 ☐ Daily
 ☐ Hourly

16. Typically, how often do you use the following to communicate with line managers when you're not in the same location?

	Never	About once a month	Several times a month	About once a week	Several times a week	Daily	Hourly
Face-to-face	☐	☐	☐	☐	☐	☐	☐
Skype / Lync / videoconference / Facetime etc.	☐	☐	☐	☐	☐	☐	☐
Landline phone	☐	☐	☐	☐	☐	☐	☐
Mobile phone	☐	☐	☐	☐	☐	☐	☐
Memos	☐	☐	☐	☐	☐	☐	☐
Email	☐	☐	☐	☐	☐	☐	☐
Instant messaging	☐	☐	☐	☐	☐	☐	☐

Other [please state]

☐ ☐ ☐ ☐ ☐ ☐ ☐

17. Do you use IT to help you promote safe and/or healthy working in your work area?

☐ Yes ☐ No

18. Typically, how often do you experience the following problems with IT that's used for communication with line managers when you're not in the same location?

	Never	About once a month	Several times a month	About once a week	Several times a week	Daily	Hourly
Technical problems	☐	☐	☐	☐	☐	☐	☐
Spam	☐	☐	☐	☐	☐	☐	☐
Misinterpretation of messages	☐	☐	☐	☐	☐	☐	☐
Ability/willingness to use IT	☐	☐	☐	☐	☐	☐	☐
Information overload	☐	☐	☐	☐	☐	☐	☐
Availability of IT	☐	☐	☐	☐	☐	☐	☐
Impolite messages	☐	☐	☐	☐	☐	☐	☐

19. Do the distributed (or remote) workers in your work area routinely assess risks when working remotely?

☐ Never ☐ About once a month ☐ Several times a Month ☐ About once a Week ☐ Several times a Week ☐ Daily ☐ Hourly

20. To what extent do you consider workplace safety to be a concern?

☐ Low concern ☐ A bit of a concern ☐ Moderate concern ☐ High concern

21. Are there hazards in the workplace that have a recognised risk of harm for the workers in your work area? (Please tick the box that best describes the level of hazards).

- ☐ **'High' hazards**, for example working at height or at depth, working with chemicals, machinery, or hazardous substances, *that may potentially lead to multiple casualties.*
- ☐ **'High' hazards** for example working at height, or at depth, working with chemicals, machinery, and hazardous substances, *that are potentially life-threatening for the worker.*
- ☐ **'Medium' hazards**, for example that may lead workers to slip, trip over things, or fall over; where workers are required to lift or carrying objects, or road-use.
- ☐ **'Low' hazards**, for example where workers spend most of their time in an office environment.

22. In the past 12 months how many sessions or meetings have you promoted, about health and safety for remote working?

Number of sessions _____

23. How often do you check whether distributed (or remote) workers follow health and safety procedures?

☐ Never ☐ About once a month ☐ Several times a Month ☐ About once a Week ☐ Several times a Week ☐ Daily ☐ Hourly

24. How often do you check whether line managers ensure their distributed (or remote) workers follow health and safety procedures?

☐ Never ☐ About once a month ☐ Several times a Month ☐ About once a Week ☐ Several times a Week ☐ Daily ☐ Hourly

25. How often do you use the following for health & safety purposes?

	Never	About once a month	Several times a month	About once a week	Several times a week	Daily	Hourly
Taking photos	☐	☐	☐	☐	☐	☐	☐
Texting for advice	☐	☐	☐	☐	☐	☐	☐
Satellite	☐	☐	☐	☐	☐	☐	☐
Mobile phone signal enhancing equipment	☐	☐	☐	☐	☐	☐	☐
Checking that emails are being read	☐	☐	☐	☐	☐	☐	☐
Checking employees are using their mobiles	☐	☐	☐	☐	☐	☐	☐
GPS tracking	☐	☐	☐	☐	☐	☐	☐
Toolbox talk receipt confirmation	☐	☐	☐	☐	☐	☐	☐

26. Please answer the following:	Never	Seldom	Sometimes	Often	Always
----------------------------------	-------	--------	-----------	-------	--------

I ensure line managers receive the health and safety training they need to manage distributed (or remote) workers	☐	☐	☐	☐	☐
---	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

My organisation / company offers a variety of training that is relevant to distributed (or remote) workers' work and equipment	☐	☐	☐	☐	☐
--	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

27. Do you keep line managers informed of any of the following policies geared up to distributed (or remote) working?

	Yes	No	Not applicable
Lone worker policy	☐	☐	☐
Working from home policy	☐	☐	☐
Working in unsafe environments policy	☐	☐	☐
Travelling / working abroad policy	☐	☐	☐
Policies about the amount of time spent travelling/driving	☐	☐	☐
Policies about access to specialist health advice	☐	☐	☐
Other [please state]	☐	☐	☐

Please answer the following questions about yourself and add any comments as indicated.

28. Please indicate any Health & Safety qualifications you may have

- ☐ IOSH Affiliate member
- ☐ IOSH Associate member
- ☐ IOSH Technician member
- ☐ IOSH Graduate member
- ☐ IOSH Chartered member
- ☐ IOSH Chartered fellow
- ☐ NVQ level 3 Certificate in health & safety
- ☐ NVQ level 5 Diploma in health & safety
- ☐ IEMA Environmental management
- ☐ IEMA Environmental management (international)
- ☐ NEBOSH National General Certificate in Occupational Health and Safety
- ☐ NEBOSH International General Certificate in Occupational Health and Safety
- ☐ NEBOSH Certificate in Fire Safety and Risk Management
- ☐ NEBOSH National Certificate in Construction Health and Safety
- ☐ NEBOSH National Certificate in Fire Safety and Risk Management: Conversion Course
- ☐ NEBOSH National Certificate in Construction Health and Safety: Conversion Course
- ☐ NEBOSH National Diploma in Occupational Health and Safety
- ☐ International Diploma in Occupational Safety and Health
- ☐ International Certificate in Occupational Safety and Health
- ☐ Level 6 Diploma in Occupational Safety and Health
- ☐ Level 2 Award in Supervising Staff Safely
- ☐ Level 2 Award in Risk Assessment
- ☐ Level 2 Award in Manual Handling Risk Assessment
- ☐ Level 2 Award in Fire Risk Assessment
- ☐ Level 2 Award in Environmental Sustainability
- ☐ Level 2 Award in DSE Risk Assessment
- ☐ Level 2 Award in COSHH Risk Assessment
- ☐ Construction (Design and Management) Regulations
- ☐ Health and Safety for Directors

☐ Masters, Health and Safety Postgraduate Degree

29. Please tell us what you see as the main challenges to ensuring good health and safety for distributed (or remote) workers

30. Please tell us what helps you ensure good health and safety for distributed (or remote) workers.

Hours per week

31. What are your contracted hours per week?

32. How many hours do you actually work per week in total?

33. How many hours a week do you spend on health and safety?

34. How old are you?

Years _____

35. Are you

☐ Male ☐ Female

36. At what stage did you complete your education?

- ☐ Primary school
- ☐ Secondary school
- ☐ Bachelor (undergraduate)
- ☐ Master (postgraduate)
- ☐ PhD or above

Finally, please answer this supplementary question.

37. Typically, how often are you in contact with the distributed (or remote) workers in your area of responsibility?

- | | | | | | | |
|--------------------------------|---|--|--|---|--------------------------------|---------------------------------|
| ☐ Never | ☐ About
once a
month | ☐ Several
times a
Month | ☐ About
once a
Week | ☐ Several
times a
Week | ☐ Daily | ☐ Hourly |
|--------------------------------|---|--|--|---|--------------------------------|---------------------------------|

If Never is selected above, please finish the survey (thank you!)

Otherwise, please answer the following questions about the ways you work with the distributed (or remote) workers in your area of responsibility.

38. Please answer the following:	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally agree
I include distributed (or remote) workers in decisions concerning health issues	☐	☐	☐	☐	☐
I assume responsibility for distributed (or remote) workers' health	☐	☐	☐	☐	☐
I discuss health related issues with distributed (or remote) workers	☐	☐	☐	☐	☐
I invite distributed (or remote) workers to contribute their experiences towards the implementation of safety initiatives/projects	☐	☐	☐	☐	☐
I assume responsibility for distributed (or remote) workers' safety	☐	☐	☐	☐	☐
I include distributed (or remote) workers in decisions concerning safety issues	☐	☐	☐	☐	☐
I inform distributed (or remote) workers about health at work issues	☐	☐	☐	☐	☐
I routinely discuss with distributed (or remote) workers the objectives that are to be accomplished concerning safety	☐	☐	☐	☐	☐
I invite distributed (or remote) workers to contribute my experience towards the implementation of health initiatives/projects	☐	☐	☐	☐	☐
I discuss safety related issues with distributed (or remote) workers	☐	☐	☐	☐	☐
I reflect on how to increase safety for distributed (or remote) workers in my area of responsibility	☐	☐	☐	☐	☐
I reflect on how to increase health for distributed (or remote) workers in my area of responsibility	☐	☐	☐	☐	☐
I routinely discuss with distributed (or remote) workers the objectives that are to be	☐	☐	☐	☐	☐

accomplished concerning health

I notify distributed (or remote) workers about
safety at work issues



Thank you for completing this survey, your views and experiences are really valuable!

Appendix H: Established scales used in this report

In this appendix, we provide an outline of the scales used in chapter 4 of this report.

Appendix H1: Leadership scales

Note that questions were adapted for each questionnaire as follows: distributed workers were asked to rate their line manager's leadership, line managers to rate their OSH practitioner's leadership and OSH practitioners to rate their own leadership behaviours.

Transformational Leadership Scale: Carless et al. (2000)	
<i>Item</i>	<i>Response categories</i>
My immediate manager is clear about his/her values and practices what he/she preaches	Never, Seldom, Sometimes, Often, Always
My immediate manager instils pride and respect in others and inspires me by being highly competent	Never, Seldom, Sometimes, Often, Always
My immediate manager communicates a clear and positive vision of the future	Never, Seldom, Sometimes, Often, Always
My immediate manager encourages thinking about problems in new ways, and questions assumptions	Never, Seldom, Sometimes, Often, Always
My immediate manager fosters trust, involvement and cooperation among the workers	Never, Seldom, Sometimes, Often, Always
My immediate manager treats me as an individual, and supports and encourages my development	Never, Seldom, Sometimes, Often, Always
My immediate manager gives me encouragement and recognition	Never, Seldom, Sometimes, Often, Always
Transactional Leadership (contingent reward) Scale: Podsakoff et al. (1990)	
<i>Item</i>	<i>Response categories</i>
My immediate manager always gives me positive feedback when I perform well	Never, Seldom, Sometimes, Often, Always
My immediate manager commends me when I do a better than average job	Never, Seldom, Sometimes, Often, Always
My immediate manager gives me special recognition when my work is very good	Never, Seldom, Sometimes, Often, Always
My immediate manager personally compliments me when I do outstanding work	Never, Seldom, Sometimes, Often, Always
My immediate manager does not acknowledge my good performance	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
LMX Scale: Graen and Uhl-Bien (1995)	

<i>Item</i>	<i>Response categories</i>
How well does your immediate manager understand your problems and needs?	Not much, A little, A fair amount, Quite a lot, A great deal
How would you characterise your working relationship with your immediate manager?	Extremely bad, Worse than average, Average, Better than average, Extremely good
Safety-Specific Leadership	
Scale: Adapted for safety-specific leadership. from Gurt et al. (2011)	
<i>Item</i>	<i>Response categories</i>
My immediate manager discusses safety related issues with me	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
My immediate manager routinely discusses with me the objectives that are to be accomplished concerning safety	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
My immediate manager invites me to contribute my experience towards the implementation of safety initiatives/projects	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
My immediate manager reflects on how to increase my safety	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
My immediate manager includes me in decisions concerning safety issues	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
My immediate manager assumes responsibility for my safety	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
My immediate manager informs me about safety at work issues	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
Health-Specific Leadership (modified)	
Scale: Adapted from Gurt et al. (2011)	
<i>Item</i>	<i>Response categories</i>
My immediate manager discusses health related issues with me	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
My immediate manager invites me to contribute my experience towards the implementation of health initiatives/projects	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
My immediate manager includes me in decisions concerning health issues	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
My immediate manager assumes responsibility for my health	Totally disagree, Disagree, Neither agree nor disagree,

	Agree, Totally agree
My immediate manager informs me about health at work issues	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree

Appendix H2: Health, safety and wellbeing scales

Physical risks	
Scale: European Agency for Safety and Health at Work (2014)	
<i>Item</i>	<i>Response categories</i>
How often do you experience the following at work?	Never, Seldom, Sometimes, Often, All the time
1. Lifting or moving people or heavy loads	
2. Loud noise	
3. Heat, cold or drought	
4. Risk of accidents with machines or hand tools	
5. Risk of accidents with vehicles in the course of work but not on the way to and from work	
6. Chemical or biological substances in the form of liquids, fumes or dust	
7. Increased risk of slips, trips and falls	
8. Tiring or painful positions, including sitting for long periods	
9. Repetitive hand or arm movements	
Workplace isolation	
Scale: Multi & Jaramillo (2011)*	
<i>Item</i>	<i>Response categories</i>
I frequently get in touch with people at other locations to get good advice	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
People at other locations often get in touch with me to give me good advice	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
I frequently contribute with advice to people at other locations	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
Knowledge sharing	
Scale: Nesheim & Gresgård (2014)*	
<i>Item</i>	<i>Response categories</i>
I am well integrated into the department/ organisation where I work	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
I am kept in the loop regarding organisation / company social events/functions	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
I am part of the organisation / company social network	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
Work demands	
Scale: Edwards et al. (2008)	
<i>Item</i>	<i>Response categories</i>
I have unachievable deadlines	Never, Seldom, Sometimes, Often, Always
I have to neglect some tasks because I have too much to do	Never, Seldom, Sometimes, Often, Always
I have unrealistic time pressures	Never, Seldom, Sometimes, Often, Always

Role conflict Scale: Edwards et al. (2008)	
<i>Item</i>	<i>Response categories</i>
I am clear what is expected of me at work	Never, Seldom, Sometimes, Often, Always
I am clear what my duties and responsibilities are	Never, Seldom, Sometimes, Often, Always
I am clear about my goals and objectives	Never, Seldom, Sometimes, Often, Always
Emotional demands Scale: Xanthopoulou et al. (2013)	
<i>Item</i>	<i>Response categories</i>
Is your work emotionally demanding?	Never, Seldom, Sometimes, Often, Always
Do you face emotionally charged situations in your work?	Never, Seldom, Sometimes, Often, Always
In your work, do you deal with people who incessantly complain, although you always do everything to help them?	Never, Seldom, Sometimes, Often, Always
Abuse Tailored from Rogers and Kelloway (1997)	
<i>Item</i>	<i>Response categories</i>
In the past year, while at work have you been: 1. Threatened with physical violence? 2. Physically assaulted? 3. Verbally abused?	Yes, No
Wellbeing Scale: Lai et al. (2015)	
<i>Item</i>	<i>Response categories</i>
Thinking of the past few weeks, how much of the time has your job made you feel each of the following? 1. Tense 2. Depressed 3. Worried 4. Gloomy 5. Uneasy 6. Miserable	Never, Seldom, Sometimes, Often, All the time
Wellbeing Scale: Warr (1990)	
<i>Item</i>	<i>Response categories</i>
Thinking of the past few weeks, how much of the time has your job made you feel each of the following? 1. Enthusiastic 2. Optimistic 3. Motivated	Never, Seldom, Sometimes, Often, All the time
Commitment Scale: Ilen and Meyer (1990)	
<i>Item</i>	<i>Response categories</i>
I feel 'emotionally attached' to this organisation / company	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
This organisation / company has a great deal of personal meaning for me	Totally disagree, Disagree, Neither agree nor disagree,

	Agree, Totally agree
I feel a strong sense of belonging to my organisation/ company	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
Job satisfaction Scale: Cammann et al. (1979) as in Golden & Veiga (2008)*	
<i>Item</i>	<i>Response categories</i>
All in all, how often are you satisfied are you with your work?	Never, Rarely, Sometimes, Often, All of the time
In general, I don't like my job	Never, Rarely, Sometimes, Often, All of the time
In general, I like working here	Never, Rarely, Sometimes, Often, All of the time
Absence Scale: Rugulies et al. (2007)	
<i>Item</i>	<i>Response categories</i>
In total, how many spells of sickness absence have you had in the past 12 months?	None, 1, 2, 3, More than 3
In total, how many work days have you been off sick over the past 12 months?	[enter number]
Presenteeism Scale: Johns (2010)	
<i>Item</i>	<i>Response categories</i>
How many workdays have you gone to work even if you were sick in the past 12 months?	[enter number]
Safety compliance Scale: Neal and Griffin (2006)	
<i>Item</i>	<i>Response categories</i>
I use all the necessary safety equipment to do my job	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
I use the correct safety procedures for carrying out my job	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
I ensure the highest levels of safety when I carry out my job	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
Safety proactivity Scale: Parker et al. (2006)	
I implement ideas for safety improvements myself	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
I suggest ideas for safety improvements to colleagues	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
I suggest ideas for safety improvements to my line manager, supervisor or others	Totally disagree, Disagree, Neither agree nor disagree, Agree, Totally agree
Safety outcomes Scale: Huang et al. (2013)	
<i>Item</i>	<i>Response categories</i>
Within the past 12 months, while on the job have you:	Yes, No

1. Been involved in any near-misses? 2. Reported any near-misses? 3. Been involved in any incidents that were recorded? 4. Missed any days due to any work-related injuries? 5. Been involved in incidents that weren't recorded?	
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* From literature review

Appendix H3: Items developed in respect of the extent of distributed working

Training Scale: Huang et al. (2013).	
<i>Item</i>	<i>Response categories</i>
I ensure line managers receive the training they need to manage distributed (or remote) workers' health and safety	Never, Seldom, Sometimes, Often, Always
Distributed working	
<i>Item</i>	<i>Response categories</i>
Typically, how many hours a week do you work away from a main location?	[Number]
As part of your day to day job, where do you mainly work? 1. My own organisation's premises 2. Customers' premises 3. Other organisation / company's premises 4. A car or another vehicle 5. An outside space (for example a construction site, agricultural field, roadside or in public spaces) 6. My own home 7. Other [please state]	[Tick all that apply]
In a typical week, how many hours do you spend? Driving 1. Working from home 2. Working alone 3. Working remotely - that is away from a main office or location 4. Working at the main office 5. Working at another organisation / company's premises 6. Other (please state)	[Number]
How many years have you held a job for which you work away from a main office or location?	[Number]
In a typical month, how often do you switch between working in different places? (For example moving from site to site, changing between driving and working from home etc.)	Never, About once a month, Several times a month, About once a week, Several times a week, Daily, Hourly

Appendix I: Toolkit

Out of sight, out of mind? Managing distributed workers' occupational safety and health

Appendix I1: OSH practitioner self-reflection framework for working with distributed workers

This self-reflection framework sets out abilities that were found during the research to be particularly key for OSH practitioners when working with distributed/remote workers. By distributed/remote workers we mean workers who spend all or part of their week working away from a main location. For example, this includes working onsite, at other companies, in public or domestic spaces, at the roadside, in the countryside, driving, homeworking, and so on.

Distributed workers present particular challenges in terms of OSH: for example, additional risks, such as the isolation of remote working and the physical hazards associated with working outside or driving; and more difficulty getting messages across because workers are not based at a central or permanent site. Supporting OSH for distributed workers therefore requires additional abilities from their OSH practitioners over and above those needed to support OSH for a non-distributed workforce. There are also facilitators of and barriers to OSH practitioners' activities that are specific to dealing with distributed workers.

The framework set out below is not designed to be a complete self-reflection framework for OSH practitioners; in fact many of the general procedural and task based abilities and role requirements of OSH practitioners are not included. Rather this framework aims to give a sense of the particularly important areas to consider when dealing with distributed workers – getting communication right, knowing your workers, taking a participative approach and cascading Occupational Safety and Health (OSH) via line managers.

The final page of this document provides some suggestions on how OSH practitioners can use the framework to reflect on the behaviours they use in their role to support OSH for distributed workers, explore any development needs they may have and plan actions to meet these needs.

With respect to particular procedural recommendations when working with distributed workers, our research suggested the following considerations:

- Ensure that all OSH resources (such as policies, guidance, legislation and processes) are accessible to all workers at all times
- Consider developing generic or broad risk assessments and inspection checklists that can be adapted for any local environment
- Ensure your OSH training is fit for purpose and consider developing training specific to distributed workers (such as lone workers and confined spaces)
- Use a range of communication methods to keep the whole workforce up to date with news and changes
- Make regular visits to sites, including sites that are not managed by you to get an idea of how others do things differently
- Develop a protocol for each site (for instance directions, particular hazards and issues)

The research also identified facilitators and barriers to OSH practitioners' work, and to cascading their messages to managers. The results of this work and other research outputs are available at www.iosh.co.uk/outofsight.

Ability	Sub-category	Behavioural Indicator
Getting the OSH message across to distributed workers	Visible, approachable and available	• Visit workers at each site/location • Conduct training yourself rather than outsourcing or sending training sheets • Be an ambassador for Health and Safety and act as a role model • Ensure you are known by name not just as 'the safety person' • Ensure you are available, or have support in place, if help and support is needed • Provide workers with a variety of contact details for you (email address, phone number, pager)
	Open, flexible communication	• Hold regular OSH meetings, reviews and briefs both face to face and using teleconferencing • Arrange informal group chats (using technology such as Skype) to bring different sites together • Attend operational/distributed worker team meetings • Hold 'market stall' events connecting service groups (such as HR, OH, Finance) with workers • Arrange informal social events to involve all workers • Create opportunities to meet workers informally (such as in their lunch hour)
	Recognising the differing needs and engaging with all distributed workers	• Recognise that everyone responds to OSH messaging in different ways and adapt to the situation and worker accordingly (for instance using performance drivers in discussions with managers) • Ask if there is anything stopping workers doing their job rather than telling them what not to do • Explain <i>why</i> you are asking them to do things • Clarify the benefits of the OSH approach in their role • Use a whole range of communication tools such as presentations, toolbox talks, email, newsletters, one to one chats, Skype
Listening to and understanding distributed workers and their roles	Gaining knowledge of worker roles	• Gain as much understanding as possible about the difference between distributed and non-distributed worker roles • Develop an understanding of each distributed worker job by spending time working with them (not just observing) • When developing distributed worker protocols, ask yourself questions from the worker perspective (such as 'How is this going to help me?') • When on site, ask managers/ reps if you can accompany them on a tour so that you see what they see • Make multiple visits to ensure you experience the diversity in their role
	Respectful approach to worker input and trusting workers	• Enable people to be able to report anything without it being trivialised • Take time to listen to worker opinions and suggestions • Ensure everything reported is dealt with

Ability	Sub-category	Behavioural Indicator
		appropriately and that feedback is given to the worker on action • Trust workers' input • Give confidence to workers that if they feel unsafe they can say no and stop • Make sure workers know you are there to help and make work safer for them • Always record and investigate accidents and near misses • Remain objective and never take sides
Empowering and collaborating with distributed workers	Empowering	• Trust that workers are trying to do it right • Allow operational staff to take ownership of their procedures and protocols such as providing flexible risk assessment templates • Develop initiatives to encourage ownership in operational staff (such as a daily star activity system) • Connect groups and sub-groups of workers together to enable them to share learnings and develop insights together
	Collaborative working	• Involve a number of sites in developing solutions by (for instance) setting up multi-site group chats • Involve all groups of workers (such as shift-workers) in safety initiatives and communicate that all groups are equally important • Involve workers in the OSH process and gain their buy-in to initiatives and procedures • Establish a network of colleagues that you, and workers, can talk to and share ideas
Cascading to distributed workers via managers	Providing knowledge and support	• Ensure line managers have sufficient training, knowledge and support • Make sure managers are kept up to date on all procedures • Develop the OSH skillset of senior management
	Frequent communication	• Build rapport and relationships with line and senior management • Be in constant contact with management
	Enabling	• Enable opportunities for line managers to get together and share OSH issues • Increase opportunities for management to be face to face with their workers • Embed OSH as a line management responsibility • Get leadership to drive OSH messages • Raise the attention of senior managers to any issues and ensure that they are sufficiently concerned to act • Ensure that management lead by example

Using the self-reflection framework

We recommend that OSH practitioners use this framework to reflect on the behaviours they use in their role to support OSH for distributed workers, explore any development needs they may have and plan actions to meet these needs.

If you are an OSH practitioner, you might want to use the following steps:

1. Identify those behaviours that you feel are definitely part of your approach, those that are sometimes part of your approach, and those you never do.
2. For those that are sometimes part of your approach, and those you never do, consider whether they are important to your work with distributed workers or not. Based on this, identify priority areas in which you want to make changes.
3. Develop an action plan for the changes you would like to make.
4. Share the action plan with the distributed workers with whom you work to get their input on what changes they would like to see you make.
5. If you feel that it will be difficult for you to make these behavioural changes on your own, consider seeking support. For example, informal coaching or support from your manager might be helpful; you might find it helpful to get some formal coaching or mentoring; and/or you might want to attend a training course to develop the relevant skills.
6. Finally, you may find the following useful for gaining more information about supporting occupational safety and health for distributed/remote workers:
 - HSE guidance on:
 - Home workers: www.hse.gov.uk/toolbox/workers/home.htm
 - Lone workers: www.hse.gov.uk/toolbox/workers/lone.htm
 - IOSH guides:
 - Remote working: www.iosh.co.uk/homeworking
 - Mobile workers: www.iosh.co.uk/mobileworkers
 - Keeping your staff healthy and safe abroad: www.iosh.co.uk/withoutborders
 - IOSH toolkit on occupational health: www.ohtoolkit.co.uk
 - Eurofound/ILO guidance: *Working anytime, anywhere: the effects on the world of work*. Publications Office of the European Union, Luxembourg, and the International Labour Office, Geneva, 2017. www.eurofound.europa.eu/sites/default/files/ef_publication/field_ef_document/ef1658en.pdf
 - Information and resources may also be available through your employer, for example from: Occupational Health, Employee Assistance Programme/Welfare Service and Human Resources.

Out of sight, out of mind? Managing distributed workers' occupational safety and health

Appendix I2: Line manager behavioural framework for managing OSH in distributed workers

This behavioural framework sets out the types of management/leadership behaviour that were found during the research to be associated with better occupational safety and health for distributed/remote workers. It is designed to provide an overview to help line managers to understand what they need to do. It also aims to help OSH practitioners design guidance and training for line managers.

By distributed/remote workers we mean workers who spend all or part of their week working away from a main location. For example, this includes working onsite, at other companies, in public or domestic spaces, at the roadside, in the countryside, driving, homeworking, and so on.

Behavioural area	Description
Transactional leadership	Gives positive feedback, recognition and compliments when team members perform well.
Transformational leadership	Gives a clear, positive vision, including being clear about their own values and practising what they preach and inspiring others by being highly competent. Treats team members as individuals, giving encouragement, recognition and support for development. Fosters trust, involvement, team working, new ways of thinking, questioning of assumptions and pride in others.
Leader-member exchange	Develops good working relationships with team members and understands individuals' problems and needs. Recognises potential and ensures people know where they stand. Uses own power to help team members solve problems at work and 'bail them out'. Creates enough confidence that team members would defend and justify their decisions.
Health-specific leadership	Takes responsibility for team members' health. Discusses health-related issues, involves team members in decisions and initiatives relating to health issues keeps the team informed on health at work matters.
Safety-specific leadership	Takes responsibility for employee safety and reflects on how to increase safety. Discusses safety related issues and objectives, includes team members in decision and initiatives relating to safety and keeps the team informed on safety at work matters.

The research also created questionnaire (self-report and self plus one other) to help managers assess whether the relevant behaviours are part of their management repertoire or not. These questionnaires and other research outputs are available at www.iosh.co.uk/outofsight.

Out of sight, out of mind? Managing distributed workers' occupational safety and health

Line manager self-report questionnaire

Use the following questionnaire to assess your behaviour

The questionnaire in this document is designed to allow you to assess the extent to which the behaviours identified as effective for supporting occupational safety and health (OSH) for distributed/remote workers are part of your management repertoire. The aim is to help you to reflect upon your own behaviour and management style.

By distributed/remote workers we mean workers who spend all or part of their week working away from a main location. For example, this includes working onsite, at other companies, in public or domestic spaces, at the roadside, in the countryside, driving, homeworking, and so on. Distributed workers present particular challenges for you as a line manager in terms of supporting their OSH: for example, additional risks, such as the isolation of remote working and the physical hazards associated with working outside or driving; and more difficulty getting messages across because workers are not based at a central or permanent site.

The questionnaire looks in turn at five management/leadership behavioural areas identified as being important for managers to support occupational safety and health for distributed/remote workers. You are asked to consider a range of specific manager behaviours and put a tick in the column that most closely represents your level of agreement with each statement. You can then use the instructions at the end of each table to calculate your score on the behavioural area covered by that table. Note: the term Distributed worker direct reports (DWDR) is used throughout to refer to distributed workers who report directly to you/who you manage.

The overall assessment process in Appendix I2 (see page 245) allows you to use the scores from the questionnaire to identify your priority areas of concern, from which you can develop an action plan to improve your effectiveness in supporting occupational safety and health (OSH) for distributed/remote workers that work for you.

Some tips and ideas on how you can use your assessment to improve your effectiveness in supporting occupational safety and health for distributed/remote workers, through your management behaviour, are provided in Appendix I6 (see pages 292–293).

Finally, Appendix I2 (see pages 248–252) provides a summary of the management/leadership behaviours required to support occupational safety and health for distributed/remote workers.

Further information on the research that underlies this questionnaire and other research outputs are available at www.iosh.co.uk/outofsight.

Transactional leadership ¹⁰					
Behaviour	Never	Seldom	Sometimes	Often	Always
I always give DWDRs* positive feedback when they perform well					
I give DWDRs special recognition when their work is very good					
I commend DWDRs when they do a better than average job					
I personally compliment DWDRs when they do outstanding work					
I acknowledge DWDRs' good performance					
Note down the total number of ticks in each column					
Now multiply each column total by the number indicated to calculate your column score	x 1 =	x 2 =	x 3 =	x 4 =	x 5 =
Add the column scores together and note the total score (maximum score is 25)					
Now divide your total score by 25 and multiply by 100	(...../25) x 100 =				

*DWDR = Distributed worker direct reports, i.e. Distributed workers that work directly for you/who you manage

¹⁰ Adapted from Podsakoff, P. M., MacKenzie, S. B., Moorman, R. H., & Fetter, R. (1990). Transformational leader behaviors and their effects on followers' trust in leader, satisfaction, and organizational citizenship behaviors. *The Leadership Quarterly*, 1(2), 107-142.

Transformational leadership ¹¹					
Behaviour	Never	Seldom	Sometimes	Often	Always
I communicate a clear and positive vision of the future					
I treat DWDRs as individuals, and support and encourage their development					
I give DWDRs encouragement and recognition					
I foster trust, involvement and cooperation among DWDRs					
I encourage thinking about problems in new ways, and question assumptions					
I am clear about my values and practice what I preach					
I instil pride and respect in others and inspire DWDRs by being highly competent					
Note down the total number of ticks in each column					
Now multiply each column total by the number indicated to calculate your column score	x 1 =	x 2 =	x 3 =	x 4 =	x 5 =
Add the column scores together and note the total score (maximum score is 35)					
Now divide your total score by 35 and multiply by 100	(...../35) x 100 =				

¹¹ Adapted from Carless, S. A., Wearing, A. J., & Mann, L. (2000). A short measure of transformational leadership. *Journal of Business and Psychology*, 14(3), 389-405.

Leader-member exchange (Leadership style focussed on relationship between the leader and those that work for them)¹²					
Behaviour	Not at all	A little	A fair amount	Quite a lot	A great deal
To what extent do you...					
...ensure that your DWDRs know where they stand with you and how satisfied you are with what they do?					
...recognise DWDRs' potential?					
...use your power to help DWDRs solve problems in their work?					
...'bail out' your DWDRs at your own expense?					
...create confidence in your DWDRs such that they would defend and justify your decision if you were not present to do so?					
...understand DWDRs' problems and needs?					
How would you characterise your working relationship with your DWDRs?	Extremely bad	Worse than average	Average	Better than average	Extremely effective
Note down the total number of ticks in each column					
Now multiply each column total by the number indicated to calculate your column score	x 1 =	x 2 =	x 3 =	x 4 =	x 5 =
Add the column scores together and note the total score (maximum score is 35)					
Now divide your total score by 35 and multiply by 100	(...../35) x 100 =				

¹² Adapted from Graen, G. B., & Uhl-Bien, M. (1995). Relationship-based approach to leadership: Development of leader-member exchange (LMX) theory of leadership over 25 years: Applying a multi-level multi-domain perspective. *The Leadership Quarterly*, 6(2), 219-247.

Health-specific leadership ¹³					
Behaviour	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally agree
I discuss health related issues with DWDRs					
I invite DWDRs to contribute their experience towards the implementation of health initiatives/projects					
I include DWDRs in decisions concerning health issues					
I assume responsibility for DWDRs' health					
I inform DWDRs about health at work issues					
Note down the total number of ticks in each column					
Now multiply each column total by the number indicated to calculate your column score	x 1 =	x 2 =	x 3 =	x 4 =	x 5 =
Add the column scores together and note the total score (maximum score is 25)					
Now divide your total score by 25 and multiply by 100	(....../25) x 100 =				

¹³ Adapted from Gurt, J., Schwennen, C., & Elke, G. (2011). Health-specific leadership: Is there an association between leader consideration for the health of employees and their strain and well-being? *Work & Stress*, 25(2), 108-127.

Safety-specific leadership ¹⁴					
Behaviour	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally agree
I discuss safety related issues with DWDRs					
I routinely discuss with DWDRs the objectives that are to be accomplished concerning safety					
I invite DWDRs to contribute their experience towards the implementation of safety initiatives/projects					
I reflect on how to increase DWDRs' safety					
I includes DWDRs in decisions concerning safety issues					
I assume responsibility for DWDRs' safety					
I inform DWDRs about safety at work issues					
Note down the total number of ticks in each column					
Now multiply each column total by the number indicated to calculate your column score	x 1 =	x 2 =	x 3 =	x 4 =	x 5 =
Add the column scores together and note the total score (maximum score is 35)					
Now divide your total score by 35 and multiply by 100	(...../35) x 100 =				

¹⁴ Adapted from Gurt, J., Schwennen, C., & Elke, G. (2011). Health-specific leadership: Is there an association between leader consideration for the health of employees and their strain and well-being? *Work & Stress*, 25(2), 108-127.

Summary table

You have now calculated a percentage score for each of the five management/leadership behavioural areas that have been identified as important for supporting occupational safety and health for distributed/remote workers. In order to take an overview of these score, please complete the following summary table. The following page gives suggestions on what you can do once you have your completed summary.

Behavioural area	Percentage
Transactional leadership	
Transformational leadership	
Leader-member exchange	
Health-specific leadership	
Safety-specific leadership	

What do I do next?

In order to improve your effectiveness as a line manager supporting occupational safety and health for distributed/remote workers, we suggest the following steps:

1. Look for the behavioural area in which you received the lowest score and focus on this as top priority. If you have identified several areas that you would like to develop, take them one at a time – you don't have to change everything at once!
2. Look back at the questionnaire to explore what behaviours are relevant to this area. Identify the ones that you indicated you do least and consider what you need to do in order to show these behaviours more often. It may simply be a matter of being more aware of how you are behaving at the moment and making small shifts to add the relevant additional (or alternative) behaviours to your repertoire. On the following page there is also a summary of the five behavioural areas, with a description of each.
3. You may find it helpful to check out with the distributed workers that work for you whether they would find it helpful for you to show more of these particular behaviours and how that would be different from what you do at the moment. You could ask them to give you feedback on how you are doing.
4. Develop an action plan to help you address the areas you want to change. You might find it helpful to check the action plan with the distributed workers that work for you to get their input on this as well.
5. If you feel that it will be difficult for you to make these behavioural changes on your own, consider seeking support. For example, informal coaching or support from your own manager and/or from the HR department might be helpful; you might find it helpful to get some formal coaching or mentoring; and/or you might want to attend a training course to develop the relevant skills.
6. Finally, you may find the following useful for gaining more information about supporting occupational safety and health for distributed/remote workers:
 - HSE guidance on:
 - Home workers: www.hse.gov.uk/toolbox/workers/home.htm
 - Lone workers: www.hse.gov.uk/toolbox/workers/lone.htm
 - IOSH guides:
 - Remote working: www.iosh.co.uk/homeworking
 - Mobile workers: www.iosh.co.uk/mobileworkers
 - Keeping your staff healthy and safe abroad: www.iosh.co.uk/withoutborders
 - IOSH toolkit on occupational health: www.ohtoolkit.co.uk
 - Eurofound/ILO guidance: *Working anytime, anywhere: the effects on the world of work*. Publications Office of the European Union, Luxembourg, and the International Labour Office, Geneva, 2017. www.eurofound.europa.eu/sites/default/files/ef_publication/field_ef_document/ef1658en.pdf
 - Information and resources may also be available through your employer, for example from: Occupational Health, Employee Assistance Programme/Welfare Service and Human Resources.

Out of sight, out of mind? Managing distributed workers' occupational safety and health

Summary of the line manager behavioural framework for managing OSH in distributed workers

This behavioural framework sets out the types of management/leadership behaviour that were found during the research to be associated with better occupational safety and health for distributed/remote workers.

Behavioural area	Description
Transactional leadership	Gives positive feedback, recognition and compliments when team members perform well.
Transformational leadership	Gives a clear, positive vision, including being clear about their own values and practising what they preach and inspiring others by being highly competent. Treats team members as individuals, giving encouragement, recognition and support for development. Fosters trust, involvement, team working, new ways of thinking, questioning of assumptions and pride in others.
Leader-member exchange	Develops good working relationships with team members and understands individuals' problems and needs. Recognises potential and ensures people know where they stand. Uses own power to help team members solve problems at work and 'bail them out'. Creates enough confidence that team members would defend and justify their decisions.
Health-specific leadership	Takes responsibility for team members' health. Discusses health-related issues, involves team members in decisions and initiatives relating to health issues keeps the team informed on health at work matters.
Safety-specific leadership	Takes responsibility for employee safety and reflects on how to increase safety. Discusses safety related issues and objectives, includes team members in decision and initiatives relating to safety and keeps the team informed on safety at work matters.

Out of sight, out of mind? Managing distributed workers' occupational safety and health

Line manager self plus one other questionnaire – to be used as part of a development programme (with training/coaching/action learning support)

Use the following questionnaires to assess your behaviour

The questionnaires set out in this document are designed to allow you to assess the extent to which the behaviours identified as effective for supporting occupational safety and health in distributed/remote workers are part of your management repertoire. The aim is to help you to reflect upon your own behaviour and management style by comparing your perception of your own behaviour, to another person's ('other') perception of your behaviour. These questionnaires are designed to be used as part of a development programme (training, coaching, action learning or other), so that you have support in undertaking the feedback process.

By distributed/remote workers we mean workers who spend all or part of their week working away from a main location. For example, this includes working onsite, at other companies, in public or domestic spaces, at the roadside, in the countryside, driving, homeworking, and so on. Distributed workers present particular challenges for you as a line manager in terms of supporting their OSH: for example, additional risks, such as the isolation of remote working and the physical hazards associated with working outside or driving; and more difficulty getting messages across because workers are not based at a central or permanent site.

How to use this document:

1. Please complete the questionnaire in Section One. This questionnaire looks in turn at five behavioural areas identified as being important for you to support occupational safety and health in distributed/remote workers. You will be asked to consider a range of specific management behaviours and put a tick in the column that most closely represents your level of agreement with each statement. If you do not know the answer to any question, please, for the sake of this particular version of the questionnaire, tick the middle option (e.g. 'Sometimes'). You can then use the instructions at the end of each table to calculate your score on the behavioural area covered by that table. Note: the term Distributed worker direct reports (DWDR) is used throughout to refer to distributed workers who report directly to you/who you manage.
2. Please give your 'other' questionnaire provided at the end of this document to your chosen recipient and ask them to complete it. You will see some hints and tips at the end of this section about how to choose that 'other' person.
3. Once you have completed your questionnaire from Section One, and received back the completed response from your 'other' respondent, you can use Section Two to compare the scores from both questionnaires and to identify your priority areas of concern.
4. Take the results of this process along to the development session for which you have been asked to complete them (training, coaching, action-learning or other).

Hints and tips about getting feedback from another person:

- In order to get the most benefit from these questionnaires, we ask that you get feedback from another person with whom you work.

- This person needs to be someone who has a good knowledge of the way that you manage the distributed workers that work for you. The best-case scenario would be for this to be a distributed worker direct report (DWDR). If this is not possible/appropriate, it could be your manager, or a colleague who has seen how you manage distributed workers. It is important that this person has knowledge of, and has observed, your management approach when managing distributed workers.
- It is important that this person is as honest and open as they can be when completing the questionnaire. Please be sensitive to how the other person might feel about giving you honest feedback and consider this in both choice of, and approach to, your respondent. You will not receive their full responses to the questionnaire, but will receive a summary of their responses. However, the person will be asked to retain their full responses in order that, should they feel comfortable sharing, you can explore in more detail where your perceived strengths and development areas may lie.

Further information on the research that underlies this questionnaire and other research outputs are available at www.iosh.co.uk/outofsight.

SECTION ONE: SELF REPORT QUESTIONNAIRE FOR YOU, THE MANAGER

Transactional leadership ¹⁵					
Behaviour	Never	Seldom	Sometimes	Often	Always
I always give DWDRs* positive feedback when they perform well					
I give DWDRs special recognition when their work is very good					
I commend DWDRs when they do a better than average job					
I personally compliment DWDRs when they do outstanding work					
I acknowledge DWDRs' good performance					
Note down the total number of ticks in each column					
Now multiply each column total by the number indicated to calculate your column score	x 1 =	x 2 =	x 3 =	x 4 =	x 5 =
Add the column scores together and note the total score (maximum score is 25)					
Now divide your total score by 25 and multiply by 100	(...../25) x 100 =				

*DWDR = Distributed worker direct reports, i.e. Distributed workers that work directly for you/who you manage

¹⁵ Adapted from Podsakoff, P. M., MacKenzie, S. B., Moorman, R. H., & Fetter, R. (1990). Transformational leader behaviors and their effects on followers' trust in leader, satisfaction, and organizational citizenship behaviors. *The Leadership Quarterly*, 1(2), 107-142.

Transformational leadership ¹⁶					
Behaviour	Never	Seldom	Sometimes	Often	Always
I communicate a clear and positive vision of the future					
I treat DWDRs as individuals, and support and encourage their development					
I give DWDRs encouragement and recognition					
I foster trust, involvement and cooperation among DWDRs					
I encourage thinking about problems in new ways, and question assumptions					
I am clear about my values and practice what I preach					
I instil pride and respect in others and inspire DWDRs by being highly competent					
Note down the total number of ticks in each column					
Now multiply each column total by the number indicated to calculate your column score	x 1 =	x 2 =	x 3 =	x 4 =	x 5 =
Add the column scores together and note the total score (maximum score is 35)					
Now divide your total score by 35 and multiply by 100	(...../35) x 100 =				

¹⁶ Adapted from Carless, S. A., Wearing, A. J., & Mann, L. (2000). A short measure of transformational leadership. *Journal of Business and Psychology*, 14(3), 389-405.

Leader-member exchange (leadership style focussed on relationship between the leader and those that work for them)¹⁷					
Behaviour	Not at all	A little	A fair amount	Quite a lot	A great deal
To what extent do you...					
...ensure that your DWDRs know where they stand with you and how satisfied you are with what they do?					
...recognise DWDRs' potential?					
...use your power to help DWDRs solve problems in their work?					
...'bail out' your DWDRs at your own expense?					
...create confidence in your DWDRs such that they would defend and justify your decision if you were not present to do so?					
...understand DWDRs' problems and needs?					
How would you characterise your working relationship with your DWDRs?	Extremely bad	Worse than average	Average	Better than average	Extremely effective
Note down the total number of ticks in each column					
Now multiply each column total by the number indicated to calculate your column score	x 1 =	x 2 =	x 3 =	x 4 =	x 5 =
Add the column scores together and note the total score (maximum score is 35)					
Now divide your total score by 35 and multiply by 100	(...../35) x 100 =				

¹⁷ Adapted from Graen, G. B., & Uhl-Bien, M. (1995). Relationship-based approach to leadership: Development of leader-member exchange (LMX) theory of leadership over 25 years: Applying a multi-level multi-domain perspective. *The Leadership Quarterly*, 6(2), 219-247.

Health-specific leadership ¹⁸					
Behaviour	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally agree
I discuss health related issues with DWDRs					
I invite DWDRs to contribute their experience towards the implementation of health initiatives/projects					
I include DWDRs in decisions concerning health issues					
I assume responsibility for DWDRs' health					
I inform DWDRs about health at work issues					
Note down the total number of ticks in each column					
Now multiply each column total by the number indicated to calculate your column score	x 1 =	x 2 =	x 3 =	x 4 =	x 5 =
Add the column scores together and note the total score (maximum score is 25)					
Now divide your total score by 25 and multiply by 100	(. / 25) x 100 =				

¹⁸ Adapted from Gurt, J., Schwennen, C., & Elke, G. (2011). Health-specific leadership: Is there an association between leader consideration for the health of employees and their strain and well-being? *Work & Stress*, 25(2), 108-127.

Safety-specific leadership ¹⁹					
Behaviour	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally agree
I discuss safety related issues with DWDRs					
I routinely discuss with DWDRs the objectives that are to be accomplished concerning safety					
I invite DWDRs to contribute their experience towards the implementation of safety initiatives/projects					
I reflect on how to increase DWDRs' safety					
I includes DWDRs in decisions concerning safety issues					
I assume responsibility for DWDRs' safety					
I inform DWDRs about safety at work issues					
Note down the total number of ticks in each column					
Now multiply each column total by the number indicated to calculate your column score	x 1 =	x 2 =	x 3 =	x 4 =	x 5 =
Add the column scores together and note the total score (maximum score is 35)					
Now divide your total score by 35 and multiply by 100	$(\text{.....}/35) \times 100 =$				

¹⁹ Adapted from Gurt, J., Schwennen, C., & Elke, G. (2011). Health-specific leadership: Is there an association between leader consideration for the health of employees and their strain and well-being? *Work & Stress*, 25(2), 108-127.

'OTHER' QUESTIONNAIRE AND BRIEFING NOTES

Thank you for agreeing to take part in this exercise.

The questionnaire set out in this document is designed to allow managers to assess whether the behaviours identified as effective for supporting occupational safety and health in distributed/remote workers are part of their management repertoire or not. The aim is to help managers to reflect upon their behaviour and management approach.

You have been chosen to provide feedback on the following manager because you have knowledge of, and have observed, their management approach when managing distributed workers. If you feel this is not the case, please talk to the manager and suggest they find someone else to provide the rating.

.....

Please complete the following questionnaire. The questionnaire looks in turn at five behavioural areas identified as being important for managers to support occupational safety and health in distributed/remote workers. You will be asked to consider a range of specific manager behaviours and, thinking about the manager who asked you to complete the questionnaire, to put a tick in the column that most closely represents your level of agreement with each statement. If you have not observed any particular manager behaviours that a question refers to, for the sake of this particular scoring system, please highlight the middle option (e.g. 'Sometimes') rather than leaving any questions blank. Note: the term Distributed worker direct reports (DWDR) is used throughout to refer to distributed workers who report directly to this manager/whom this manager manages.

Once you have completed the questionnaire, please use the instructions at the end of each table to calculate your score for the manager.

Please then return the completed summary table on the final page to the manager. You do not have to return the whole questionnaire, however it may be useful to retain a copy for any follow up conversations you may have with that manager.

If you would like to know more about the research behind this questionnaire, please visit www.iosh.co.uk/outofsight.

Transactional leadership ²⁰					
Behaviour	Never	Seldom	Sometimes	Often	Always
This manager...					
...always gives DWDRs* positive feedback when they perform well					
...gives DWDRs special recognition when their work is very good					
...commends DWDRs when they do a better than average job					
...personally compliments DWDRs when they do outstanding work					
...acknowledges DWDRs' good performance					
Note down the total number of ticks in each column					
Now multiply each column total by the number indicated to calculate your column score	x 1 =	x 2 =	x 3 =	x 4 =	x 5 =
Add the column scores together and note the total score (maximum score is 25)					
Now divide your total score by 25 and multiply by 100	(...../25) x 100 =				

*DWDR = Distributed worker direct reports, i.e. Distributed workers that work directly for this manager/whom this manager manages

²⁰ Adapted from Podsakoff, P. M., MacKenzie, S. B., Moorman, R. H., & Fetter, R. (1990). Transformational leader behaviors and their effects on followers' trust in leader, satisfaction, and organizational citizenship behaviors. *The Leadership Quarterly*, 1(2), 107-142.

Transformational leadership ²¹					
Behaviour	Never	Seldom	Sometimes	Often	Always
This manager...					
...communicates a clear and positive vision of the future					
...treats DWDRs as individuals, and supports and encourages their development					
...gives DWDRs encouragement and recognition					
...fosters trust, involvement and cooperation among DWDRs					
...encourages thinking about problems in new ways, and question assumptions					
...is clear about their values and practices what they preach					
...instils pride and respect in others and inspires DWDRs by being highly competent					
Note down the total number of ticks in each column					
Now multiply each column total by the number indicated to calculate your column score	x 1 =	x 2 =	x 3 =	x 4 =	x 5 =
Add the column scores together and note the total score (maximum score is 35)					
Now divide your total score by 35 and multiply by 100	(...../35) x 100 =				

²¹ Adapted from Carless, S. A., Wearing, A. J., & Mann, L. (2000). A short measure of transformational leadership. *Journal of Business and Psychology*, 14(3), 389-405.

Leader-member exchange (leadership style focussed on relationship between the leader and those that work for them)²²					
Behaviour	Not at all	A little	A fair amount	Quite a lot	A great deal
To what extent does this manager...					
...ensure that his/her DWDRs know where they stand with him/her and how satisfied he/she is with what they do?					
...recognise DWDRs' potential?					
...use his/her power to help DWDRs solve problems in their work?					
...'bail out' DWDRs at his/her own expense?					
...create confidence in his/her DWDRs such that they would defend and justify his/her decision if he/she were not present to do so?					
...understand DWDRs' problems and needs?					
How would you characterise this manager's working relationship with his/her DWDRs?	Extremely bad	Worse than average	Average	Better than average	Extremely effective
Note down the total number of ticks in each column					
Now multiply each column total by the number indicated to calculate your column score	x 1 =	x 2 =	x 3 =	x 4 =	x 5 =
Add the column scores together and note the total score (maximum score is 35)					
Now divide your total score by 35 and multiply by 100	(...../35) x 100 =				

²² Adapted from Graen, G. B., & Uhl-Bien, M. (1995). Relationship-based approach to leadership: Development of leader-member exchange (LMX) theory of leadership over 25 years: Applying a multi-level multi-domain perspective. *The Leadership Quarterly*, 6(2), 219-247.

Health-specific leadership ²³					
Behaviour	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally agree
This manager...					
...discusses health related issues with DWDRs					
...invites DWDRs to contribute their experience towards the implementation of health initiatives/projects					
...includes DWDRs in decisions concerning health issues					
...assumes responsibility for DWDRs' health					
...informs DWDRs about health at work issues					
Note down the total number of ticks in each column					
Now multiply each column total by the number indicated to calculate your column score	x 1 =	x 2 =	x 3 =	x 4 =	x 5 =
Add the column scores together and note the total score (maximum score is 25)					
Now divide your total score by 25 and multiply by 100	$(\text{.....}/25) \times 100 =$				

²³ Adapted from Gurt, J., Schwennen, C., & Elke, G. (2011). Health-specific leadership: Is there an association between leader consideration for the health of employees and their strain and well-being? *Work & Stress*, 25(2), 108-127.

Safety-specific leadership ²⁴					
Behaviour	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally agree
This manager...					
...discusses safety related issues with DWDRs					
...routinely discusses with DWDRs the objectives that are to be accomplished concerning safety					
...invites DWDRs to contribute their experience towards the implementation of safety initiatives/projects					
...reflects on how to increase DWDRs' safety					
...includes DWDRs in decisions concerning safety issues					
...assumes responsibility for DWDRs' safety					
...informs DWDRs about safety at work issues					
Note down the total number of ticks in each column					
Now multiply each column total by the number indicated to calculate your column score	x 1 =	x 2 =	x 3 =	x 4 =	x 5 =
Add the column scores together and note the total score (maximum score is 35)					
Now divide your total score by 35 and multiply by 100	(. / 35) x 100 =				

²⁴ Adapted from Gurt, J., Schwennen, C., & Elke, G. (2011). Health-specific leadership: Is there an association between leader consideration for the health of employees and their strain and well-being? *Work & Stress*, 25(2), 108-127.

Please complete the table below by taking the percentages that you have calculated from the bottom row of each of the five behavioural areas in the questionnaire.

THE 'OTHER' SUMMARY FEEDBACK TABLE

Ability	Percentage
Transactional leadership	
Transformational leadership	
Leader-member exchange	
Health-specific leadership	
Safety-specific leadership	

Please return this page to the manager to whom you are providing feedback.

SECTION TWO: OVERALL ASSESSMENT

Please make sure you have feedback from your 'other' before completing this section. You should have self and 'other' percentage scores for the five behavioural areas that have been identified as important for supporting occupational safety and health in distributed/remote workers. You can then complete the 'your summary feedback' table below as follows:

1. Transfer your scores (from Section One) and the 'other' scores (provided by your chosen 'other') into the first two blank columns in the table.
2. Calculate the difference between the 'other' score and your self-score and enter it in the third column.
3. Use these scores to identify priority areas of concern: look for those where you gave yourself a low score or received a low score from your 'other' rater; also look at areas where you scored yourself higher than your 'other' rater. These indicate areas that might need attention. If you have a number of these, perhaps use the size of the score/difference to help you prioritise.
4. Take the summary table and your priority areas along to the development session for which you have been asked to complete this rating (training, coaching, action learning or other).

YOUR SUMMARY FEEDBACK TABLE

Ability	Your percentage	'Other' percentage	Difference between self and other
Transactional leadership			
Transformational leadership			
Leader-member exchange			
Health-specific leadership			
Safety-specific leadership			

Out of sight, out of mind? Managing distributed workers' occupational safety and health

Appendix I3: Examples of hazards and risks encountered by different types of distributed workers

The purpose of this document is to provide an overview of the hazards and risks faced by distributed workers – workers who spend part or all of their time away from a main office location. It is not an exhaustive list of all the hazards and risks faced, but is information gained during the research. As such it may serve as an aide memoire to assist managers and OSH practitioners in considering the hazards and risks for differing types of distributed (or remote) work.

Overall the study found that distributed workers:

- Often move between different work environments, sometimes on a daily or even hourly basis
- Many are faced with uncertain environments, often with changes to hazards and risks, requiring a dynamic approach to risk assessments
- Many of the workers in the study were often lone workers, which can exacerbate the impact of some risks and the likelihood of new or emerging risks

The hazards and risks listed are relevant to particular types of distributed, or remote, workers. The list is not exhaustive, but it illustrates the range of work that can be considered as distributed. Further explanations of the types of work included in the table are as follows:

- Public transport work: driving trains, buses and other forms of public transport, working on stations, depots and transport locations
- Engineering work: repair, maintenance, replacement of engineering services, utilities, plant or equipment
- Environmental engineering/consulting: work comprising for example, surveying and environmental assessments
- Security and police work: comprising security operators, police officers and others working in security roles
- Goods transport work: driving vans or lorries, comprising driving and working at customer sites and depots
- Plant operations and maintenance work: operating and maintaining machinery
- Roadside construction work: comprising maintenance, repair or installation of services and utilities
- Domestic property work: for example, inspections, maintenance and meter reading
- Domestic care work: comprising care work, nursing, social services work
- Public spaces work: comprising repairs, maintenance and landscaping
- Mobile work: work that involves frequent travel from site to site or travelling for business), travelling and home working
- Services consulting: work involves business travel and/or work being hosted by other organisations
- Home work: work that is undertaken at the worker's home (for part or all of the work time)
- Agricultural work: working with livestock and agricultural machinery and equipment
- Lone work: spend part or all of work time alone

Many distributed workers in the research rated themselves as working in high hazard environments, at least for some of their work time. For example, working at height, or at depth, working with chemicals, machinery, and hazardous substances, that can potentially lead to multiple casualties and/or that are potentially life-threatening for the worker.

Examples of hazards and risks encountered by different types of distributed workers

Examples of hazards	Example risks of harm	Nature of harm	Examples of distributed work
Contact with members of the public	- Aggressive, unwanted and difficult behaviour - Exposure to people with blood-borne viruses (e.g. Hepatitis C and HIV) - Exposure to dangerous substances, such as through hypodermic needles carried by members of the public - Exposure to firearms, knives or other dangerous items	Physical risks (assault, transmission of disease) Psychosocial risks (work-related stress and trauma)	- Public transportation work - Goods transport work (delivery drivers) - Roadside construction work - Engineering work - Domestic property work - Public spaces work - Domestic care work - Security and police work
Contact with aggressive or feral animals/insects	Biting, kicking, stampeding, butting	Physical risks (disease, illness, cuts and bruises) Psychosocial risks (trauma)	- Domestic property work - Public spaces work - Agricultural workers - Goods transport work (delivery drivers) - Environmental engineering/consulting
Environmental conditions (such as weather and daylight/darkness)	- Exposure to extremes of cold leading to hypothermia, or heat leading to dehydration - Exposure to sun leading to sunstroke or sunburn - Risks of falls or accidents due to slippery surfaces - Risks of falls or accidents due to low visibility	Physical risks (disease, illness, accident)	- Engineering work - Environmental engineering/consulting - Plant operations and maintenance work - Roadside construction work - Mobile work - Agricultural workers - Domestic property maintenance workers - Public spaces workers
Driving (road)	- Traffic accidents, frustrations of traffic; Road rage incidents from third party drivers - Cab distractions (e.g. mobile phones, satellite navigation) - Unfamiliar delivery destination - Other road users and pedestrians - Going up and down steps on the side of	Physical risks (accident, illness) Psychosocial risks (such as work-related stress) Ergonomic risks (muscular-skeletal strain)	- Public transportation work - Goods transportation work - Engineering work - Environmental engineering/consulting - Plant operations and maintenance work - Roadside construction work - Security and police work - Domestic property work

Examples of hazards	Example risks of harm	Nature of harm	Examples of distributed work
	- the vehicle - Obstructions in the road such as from vandalism - Long journeys, hours and/or shifts without opportunity to eat and drink nutritionally or rest adequately - Vehicle failure such as fires (container vehicles) - Additional considerations for pregnancy (e.g. change in body shape affecting van seat position) - Boredom and reduced levels of alertness during long journeys*		- Mobile work - Services consulting
Driving (rail)	- Obstructions in the rail, such as from vandalism - Public fatalities through falls onto the line / Suicide incidents - Risks associated with dealing with the public (see above)	Physical risks (accident, illness) Psychosocial risks (such as work-related stress)	Public transportation workers
Heights, such as pylons, buildings and plants	Falls (e.g. due to equipment failure, inadequate equipment or incorrectly applied equipment)	Physical risks (accident)	- Engineering work - Plant operations and maintenance work - Roadside construction work - Domestic property work
Overseas locations	- Road accidents where driving in unfamiliar conditions - Overseas health risks (e.g. communicable diseases, extreme weather conditions) - Geographical risks such as earthquake, volcano, extreme weather - Dangerous political or social locations presenting risks of assault, robbery or abduction - Flying risks associated with adverse	Physical risks (accident, illness, disease, assault)	- Environmental engineering/consulting - Mobile work - Services consulting

Examples of hazards	Example risks of harm	Nature of harm	Examples of distributed work
	weather*		
Dangerous substances such as gas, chemicals and electricity	- Exposure to gas leaks - Exposure to chemical spills - Exposure to dangerous chemical fumes - Risks associated with severing power cables (e.g. when digging) - Contact with live power cables - High risk activities (e.g. dealing with gas leaks, power cables, chemical spills)	Physical risks (accident, illness, disease)	- Engineering work - Roadside construction work - Security and police work - Domestic property work
Working in public and domestic locations	- Exposure to chemicals and dangerous substances: asbestos, hypodermic needles - Discovering illegal activities (e.g. drug taking, marijuana farms) - Unsafe premises, including unsafe stairways, floors that collapse - Passive smoking - Allergic reaction (e.g. to plants, dust) - Working on slopes (e.g. strimming grass on banks) - Hitting services when digging in domestic gardens	Physical risks (accident, illness) Psychosocial risks (such as work-related stress)	- Security and police work - Domestic property work - Domestic care work
Loading and lifting weights, such as equipment, goods or people	Manual handling (e.g. of wheelchair ramps)	Physical risks (accident) Ergonomic risks (muscular-skeletal strain)	- Public transport work - Goods transport work - Engineering work - Plant operations and maintenance work - Roadside construction work
Hazards associated with warehouse working	Falls from height and slips (in the warehouse)	Physical risks (accident)	Goods transportation workers
Working in confined spaces, such as holes, or in plant equipment	- Exposure to fumes or dangerous substances - Lack of clean air	Physical risks (illness)	- Engineering work - Plant operations and maintenance work - Roadside construction work

Examples of hazards	Example risks of harm	Nature of harm	Examples of distributed work
Handling cash (particularly late at night on return to the depot)	• Theft, assault	Physical risks (assault) Psychosocial risks (such as work-related stress)	• Public transportation workers
Hazards associated with working at home	• Poorly set up display screen equipment (e.g. laptop on the kitchen table) • Trip hazards in domestic setting	Physical risks (accident) Ergonomic risks (muscular-skeletal strain)	• Home work (including workers who spend part of their time working from home)
Hazards associated with machinery handling	• Contact with machinery, trapping fingers, repetitive strain injury, etc. • Excessive noise from machinery* • Vibration from machinery* • Contact with sharp or blade machinery, risk of cuts or severing of limbs* • Contact with heavy machinery in excavation, risk of crushing, impact with debris etc.* • Accessing heavy machinery, falls and slips*	Physical risks (accident, illness) Ergonomic risks (muscular-skeletal strain)	• Goods transport work • Engineering work • Plant operations and maintenance work • Roadside construction work • Domestic property work • Public spaces work • Agricultural work
Hazards associated with high work demands	• Conflict between safety needs and customer service (e.g. needing to be on time) • Stressful sales environment – high demand, low control • Time pressure • Shift working, such as working during the nighttime*	Psychosocial risks (such as work-related stress)	• Goods transport work • Engineering work • Mobile work • Services consulting
Hazards associated with lone working	• Isolation	Psychosocial risks (such as work-related stress)	• Public transport work • Goods transport work • Engineering work • Environmental engineering/consulting • Plant operations & maintenance work

Examples of hazards	Example risks of harm	Nature of harm	Examples of distributed work
			• Security and police work • Domestic property work • Mobile work • Services consulting • Home work

* Risks identified from the literature review

Note: Not all hazards are covered in this list.

Further details on the research and other research outputs are available at www.iosh.co.uk/outofsight.

Out of sight, out of mind? Managing distributed workers' occupational safety and health

Appendix I4: Real-life examples of occupational safety and health leadership and management for distributed workers

The purpose of this document is to provide employers and practitioners with real-world examples of what organisations have done to prevent, mitigate, manage, and respond to occupational safety and health (OSH) risks and to provide health promotion for distributed workers. It aims to encourage and inspire others to take action to support and protect the safety and health of this group of workers.

By distributed/remote workers we mean workers who spend all or part of their week working away from a main location. For example, this includes working onsite, at other companies, in public or domestic spaces, at the roadside, in the countryside, driving, homeworking, and so on.

The examples are taken directly from research interviews with practitioners within organisations that have distributed workers working for them. They are divided into four sections, each containing a number of examples as follows:

Section	Examples included
A. Mitigating OSH risks to distributed workers – i.e. measures directed at minimising the potential harm from unavoidable hazards	1. Police organisation mitigating risks presented by exposure to blood and body fluids 2. Construction company mitigating risks presented by high voltage cables 3. Goods transportation company mitigating risks presented by a low bridge 4. Video to mitigate risks presented by overhead cables 5. Mitigating night shift-working risks 6. Mitigating risks of home working
B. Early response and management of OSH risks to distributed workers – i.e. ongoing identification of risks, hazards and aspects of wellbeing and development of means to address them	1. Early response to fall from height incident 2. Early response to a dog-bite incident and ongoing management/prevention 3. Responding to and preventing road accidents 4. Early response to allergic reactions 5. Identifying home workers' mental health problems
C. Preventing OSH risks to distributed workers – i.e. removing the hazard or risk	1. Preventing risks to workers laying electrical power cables 2. Risk prevention for inspectors visiting other organisations' construction sites 3. 'Positive intervention' to prevent risks 4. Satellite communication devices for communication in remote spots
D. Occupational safety and health promotion for distributed workers – i.e. taking steps to promote the health, wellbeing and safety, for example so that work is seen as a positive aspect of health and wellbeing	1. Toolbox talks for health promotion 2. Wellbeing events 3. Putting supervisors and management at the heart of OSH

Recommendation: In some cases, the risks or OSH needs involved were identified as a result of an incident or accident; in others, they were flagged up by the distributed workers themselves or emerged over time. In all cases, it is recommended that employers take a collective approach to decision-making and designing solutions, so that workers and other relevant stakeholders are involved in the solution development. This can be done by setting up a specific working group or by building on existing collaborative opportunities, such as team meetings and multi-disciplinary committees.

A. Mitigating OSH risks to distributed workers

This section sets out six examples where an employer organisation has put in place measures directed at minimising the potential harm from unavoidable hazards

1. Police organisation mitigating risks presented by exposure to blood and body fluids

One of the risks to which police and security workers are exposed is dealing with people who may have a blood-borne virus (for instance Hep C, HIV). The organisation worked with the Police Federation representatives to establish procedures for decontamination of uniform in respect of blood and body fluid splatter, and to give reassurance to the officers. It is not possible to remove the risk totally because police officers do have to deal with the individuals who have the blood-borne virus; although the risk presented by such contamination is very low, the need to protect officers was fully recognised.

The organisation is taking the following steps to mitigate these risks:

- Reviewing the guidance given to officers to make sure it is suitable and sufficient.
- Where there is significant contamination, arranging for officers to exchange their uniforms straightaway and they are disposed of via incineration.
- Working to achieve a common understanding of the actual level of risk, where the perceived level of risk was greater than the reality.
- Exploring onsite chemical decontamination, through provision of a spray bottle used to spray-decontaminate the spots, followed by returning the garment for washing.

2. Construction company mitigating risks presented by high voltage cables

The organisation recognised that it needed to prevent harm to employee working in the close vicinity of high voltage (HV) cables. It recognised that some of the HV cables their workers were dealing with could be in a poor state and presented risks when exposed, including risk of electrocutional burning.

To mitigate these risks, the organisation:

- Put in place a process to establish a hatched area around HV cables to indicate where they are positioned and to require hand-digging in that area.
- Provided insulated handles on shovels.
- Established a requirement to make sure that when an operative hits a cable, the area is quickly cordoned off, members of the public are moved out the way and nobody enters that area until the owner repairs it.
- Providing training on HV cable issues over and above the training already in place concerning safe digging practices.
- Aim to eliminate risks, so that when an HV cable is identified, the company asks the designers to put the gas pipe or other installation in a different place that is not near the HV cable.

3. Goods transportation company mitigating risks presented by a low bridge

The organisation makes regular deliveries to a delivery address for which the route recommended by satellite navigation systems goes under a 10ft 6in (3.2m) railway bridge. Their vans are in excess of 10 ft 6 in so they don't fit under this bridge. To avoid drivers going on this route, the organisation:

- Put notices up in the drivers' restroom and notices in the drivers' notes.
- When a new driver starts, this route is mentioned at their induction and the transport despatch team makes a point of verbally telling them.
- Encourages drivers to talk to each other and pass on knowledge about customers and routes, including drivers who are going on holiday giving briefing to those who are going to cover their work, by having a friendly ethos in the company in which people look after each other.

4. Utilities company mitigating risks presented by overhead cables

A utilities company had a serious accident where an engineer came into contact with some overhead power cables. The workers had not followed the procedure they should have followed. The reasons for this were not entirely clear but the general consensus view was the training that they had received had been insufficient or had not been assimilated, and there were conflicting priorities around getting the job done versus safety.

In response to the accident, the organisation is rolling out revised training including a video featuring the two men who were involved in the incident, who talk openly about what happened, what it meant to them, and what the consequences were. The company uses this to get across the message. They have also got the unions involved in endorsing the messaging and have taken a collective approach to finding channels that people are more likely to take notice of.

Traditionally the company would have sacked workers for this kind of breach of safety procedure, but instead, on this occasion, it has encouraged them to be open, which has generated discussion within the business about how the business is taking the issue seriously.

"So that's a good example of how you can turn adversity to your advantage...And you've got to find hard-hitting ways of getting that message across to people. So you can send out all the bits of paper you like, and put all the bits of stuff on the intranet you like, but you have to use other channels as well."

5. Mitigating night shift-working risks

The organisation had a culture of under-reporting of accidents and incidents for night shift workers, so there was no focus on identifying root causes. It recognised that it needed to get night shift managers and supervisors to take issues more seriously. So it created a focus on night shifts, to emphasise that they are just as important as all the other shifts and implemented the following changes:

- Directors and managers do tours at night and interact with the staff.
- Safety reps have been established for the night shift.
- Risk assessments have been reviewed and night shift workers involved in the risk assessments.
- Safety conferences have been set up directed at managers who are carrying out investigations of the incidents to ensure they understand the human factors involved and explore the incident to establish the facts and the root cause.
- Safety behaviour training is being put in place.

6. Mitigating risks of home working in an advice and mediation organisation

An organisation that employs a number of home workers established the following procedures to mitigate the potential risks that home working might pose:

- Before someone becomes a home worker, a risk assessment is conducted that considers the individual and the working arrangements. This happens before the

final decision is taken or any equipment is ordered and involves a trained individual working through a specific checklist and a home assessment.

- These risk assessments are followed up annually, using the same checklist, to make sure that the situation hasn't changed, equipment is being used and maintained, and the individual is working safely.
- If the assessment indicates that the individual is not using an appropriate working arrangement, in terms of DSE requirements, trip hazards etc, they are given the opportunity to put it right and then reassessed.
- For home workers who have school aged children and work at times when the children are not at school, in order to prevent risks arising from the worker having to juggle childcare and work, the organisation requires them to confirm that they have appropriate childcare set up and ensures expectations are made clear.
- The company reminds home workers regularly that they need to report any accidents because their home is their workplace.
- The company makes sure that home workers understand how to operate the equipment properly; and if there is an equipment fault or malfunction, home workers are asked to report this promptly. It has a team of technical support people who will go out and visit if a home worker doesn't know how to use a piece of equipment or has problems with a piece of equipment. It conducts annual electrical appliance testing so home workers bring their cables in once a year and those are swapped over.

B. Early response and management of OSH risks to distributed workers

This section sets out five examples of organisations that have undertaken ongoing identification of risks, hazards and aspects of wellbeing and develop means to address them.

1. Early response to fall from height incident

A distributed worker in the organisation didn't follow the work instructions despite having received full training and the result was a fall from height. In the immediate aftermath, as well as having the individual who fell airlifted to hospital:

- The OSH practitioner and the senior director who was responsible, visited site the next morning
- The area was cordoned off for 5 days, and additional security brought in
- An investigation team was set up the next working day (the incident happened on a Friday and the investigation team was formed on the Monday), which brought in one of the top people from the organisation's Europe business and undertook a review of the evidence, including conducting interviews with all concerned

The investigation team produced a full internal report within 6 weeks, which was reviewed by an internal incident review panel. The organisation recognised that it needs to formally appoint, assess and provide closer supervision for newly formed teams and their team leaders, to help teams form effectively. It also recognised that OSH practitioners need to be involved in the planning and delivery of projects. In addition, due to the seriousness of the breach of safety, the individuals involved had their contracts terminated.

2. Early response to a dog-bite incident and ongoing management/prevention

One of the distributed workers in the organisation was bitten twice as a result of a dog-fight at one of the premises they were visiting. In addition to ensuring that the worker got hospital treatment and the police were called to deal with the dangerous dog, the organisation immediately initiated a full and transparent internal communication process: phone conversations took place between the individual's line manager, the line

manager's manager, the OSH practitioner, the OSH practitioner's line manager and up to director level. While the line manager knew what to do, the OSH practitioner was available to provide reassurance, a second opinion and advice/technical knowledge where necessary.

The organisation's aim is that there shouldn't be any surprises to anybody within the business, so the relevant directors and the HR director who is responsible for OSH are kept informed on any incidents. They make sure the board is fully aware of it and the director from the relevant area reports back to the board on what happened and what was done to prevent it happening again.

In terms of ongoing management/prevention, for a scheduled appointment, there is the opportunity to warn the client that there is an operative coming to their house and to ask, if they have a dog, to ensure that it is secure and away from where they are going to be. However, for unscheduled appointments, it is harder to control risks: here, the worker needs to be trained to look for signs of whether there is an animal or other risks at the site, and how to put themselves in the safest position possible. If somebody visits a site and there are animals there or other conditions that present a risk, this is put on the organisation's information system so that other operatives have an opportunity to read site information, to reduce the future risk. Operatives tend to work in the same areas consistently and there is a hand-over if they do move, which is backed up on the electronic system.

3. Responding to and preventing road accidents

During a day of bad weather, with quite a lot of snow and various road accidents, a distributed worker in the organisation, driving a company car, ended up in a ditch on her way to work. Because this particular incident was during the drive to work rather than driving for work, it was handled informally and the person was advised that anytime they felt in any way concerned, then either they should not work or they should work from home.

In terms of preventing work-related driving problems, the OSH practitioner sends out emails to tell people when bad weather is due to advise them to take the right equipment: blanket, triangle, and flask and, depending on where they are travelling, spade. Also, when it is going to be really hot, the OSH practitioner advises workers to take water with them. The organisation has policies and procedures in place around driving, and workers have the option to say 'today I am not going to travel' if there is a forecast of bad weather. It also organised an information campaign around driving to make people aware of the dangers and how best to manage them.

4. Early response to allergic reactions

The organisation had an issue where a distributed worker had been removing ivy from the side of a building. When he returned to the depot his supervisor, who was a first-aider, identified that he had an allergic reaction by the symptoms he was showing (his leg was swollen, his chest came up in a rash, he was complaining of having a tight chest) and took him straight up to the local hospital. The hospital put him on a drip, his reaction went right down, and he was back at work the next day, but he visited his GP to get further investigations. Once these have been concluded, everything will be recorded on the worker's records, so that he can be protected in future.

For these situations, as well as dealing with the immediate health needs of the individual, the organisation does an incident report, thoroughly investigates it, and looks at preventative measures. They also have occupational health support so can get advice from them if needed in order to put in place preventative measures.

In the case of the particular individual in this incident, he wasn't aware of having any allergies so the organisation will wait for more information from GP and may refer him to

occupational health at that point in time if necessary. They will also make sure that he has dust masks, eye protection, and a dust suit whenever he's going to be in that sort of situation again – or potentially keep him out of that situation if possible.

5. Identifying home workers' mental health problems

The organisation has had two incidents where it received a complaint from a customer about not getting a response from or not being able to get hold of a home worker. On receipt of the complaint, in each case, the line manager made contact with the individual, invited them to offer an explanation and offered to visit the individual for a chat, or asked them to come into the office. The line managers also looked more widely at the evidence in relation to the individual's work. Workload is managed electronically in this organisation and home workers are connected to the network and given equipment to record what they are doing. So line managers have access to records of what an individual has been doing, which allow analysis of what is actually going on and can form the basis for conversations to explore the situation.

In both these incidents, the underlying problems were related to mental health issues. Once the issues had been identified, the individuals were provided with occupational health support, and referrals to the employee assistance programme (where, following an assessment, people can access up to 6 face-to-face counselling sessions). Provided an individual is prepared to engage with these services and demonstrates that they are doing all that they can to improve their health and wellbeing, full support is provided. It may be appropriate to bring a home worker who is suffering mental health issues back into the office so that they have a network of support around them, including their colleagues and line manager. This also provides visibility and makes the individual's situation easier to monitor. Where the individual is in denial or won't engage with support to improve the situation, a formal policy route may have to be taken.

In one of the cases, the individual was brought back into the office, but has since gone back to a home-working arrangement, once both they and their line manager were satisfied that it was appropriate to do so. This depended on the individual's emotional resilience being good enough that they were confident that they could do the job without that level of support. In the other case, it became clear that the individual had significant mental health issues and was no longer able to perform effectively in the role. Instead, the person has been given a trial in an alternative role.

In neither of these cases was the mental health issue down to the home working, though home working may not have helped. The individuals' home issues were their predominant reason for making the request for the home working in the first place: one individual requested it in order to enable her to support an elderly parent; and in the other one there was a breakdown in the marital relationship.

C. Preventing OSH risks to distributed workers

This section sets out four examples of organisations that have found ways to remove hazards or risks in order to protect the health of distributed workers.

1. Preventing risks to workers laying electrical power cables

The organisation prevents risks for its workers laying electrical power cables in a number of ways:

- Allowing the client, who has the technical knowledge to understand where an electrical power cable needs to go, to plan the route, taking into account the multiple risks, underground and overhead.

- Conducting pre-site meeting with the client to check out risks and re-route cables when necessary if the risk is too high, for example, moving to the other side of the road in order to avoid running near an existing power cable.
- Putting in place and disseminating policies and procedures around the use of the right equipment.
- Bringing in new, updated tools that prevent damage accident or incident; for example a new safety shovel, that is designed so as not to sever a power cable if it is hit by mistake.
- Interfacing with the workers regularly; for example, by the OSH practitioner having an open door policy so workers can come in with new ideas.
- Providing a reward scheme encouraging workers to put their ideas forward to help prevent risk.
- Ensuring the training provided to workers is appropriate and sufficient.
- At supervisory/manager level: dealing with individual site risks in re-routing cables, using different digging techniques to prevent risks.
- Looking at where risks lie and how they can be managed, including where accidents or near misses have occurred and how changes can be implemented to prevent those in future.
- Talking to other utilities companies and local authorities to share ideas and information, for example on new equipment and new procedures.
- Conducting regular equipment inspections.
- Encouraging workers and supervisors to identify risks on a particular job, for example due to weather conditions (rain, poor visibility) or location (being near a school), and take appropriate action to reduce the risks presented.

2. Risk prevention for inspectors visiting other organisations' construction sites

The organisation aims to prevent risks to its inspectors by emphasising that they should not put themselves or anyone else at risk. They have this message written into everything that they do and reinforce it when issues arise. As part of this, it is made clear that, when visiting another location, if a worker feels that they are being put at risk by the host organisation's lack of OSH process, they have the right to refuse to work there. Thus risk prevention may involve making other people aware of the risks that they could be presenting to visitors.

For example, a worker was visiting a construction site in the Far East to ensure that the cranes being used there were being tested properly. There were several cranes in one location, but it was unsafe to move between them because of the site layout. So the worker refused to conduct the inspection until they were given sufficient safe access. The worker reported the situation to their line manager and the problem was escalated up the management chain. The management team supported the worker to request safe conditions.

To extract the learning from this situation, the organisation drew up a visit report that was distributed to make everyone aware of what had arisen and how to deal with similar situations in future, including reinforcing the message around not taking risks on other organisations' premises. It held meetings to communicate the message to other locations.

3. 'Positive intervention' to prevent risks

Keeping workers 100% safe is one of the organisation's values and it uses a 'positive intervention' approach to enable workers to come forward with ideas for safer ways of working. For example, a worker instigated a 'positive intervention' related to insulated shovels: he showed his line manager and OSH practitioner how the shovels being used at the time for digging near power cables were not fully insulated and that there was a better insulated shovel available on the market that would make the work a lot safer. The OSH practitioner and supervisor took it forward to the senior management team, who took the issue on board straight away and authorised replacement of the shovels. The

OSH practitioner ran a campaign and replaced all the shovels being used by the relevant workers.

4. Satellite communication devices for communication in remote spots

The organisation's distributed workers had previously just had mobile phones, but these did not function in some of the very remote areas in which some of their workers were operating. An incident occurred when one of its distributed workers had gone out in the hills, dropped 2 other people off at a site, gone on to their destination and then found that their vehicle had a flat tyre. Due to the remoteness of their location, they couldn't contact the other people on the site to tell them that they were going to be late picking them up and couldn't contact the main office because of poor mobile phone signals.

As a result, the organisation decided it needed to do something to make it easier and more secure for distributed workers to be in contact. They identified satellite communication devices that operate wherever people go and they now include a question in their risk assessment that asks whether a worker is going to be outside of mobile phone ranges. If the risk assessment identifies that remote location is going to be an issue, the worker is provided with one of these devices before they go out so they can send messages. A message from the device sends an email to an identified buddy back in the office, allowing the remote worker to check in and confirm they are OK; it has a GPS system (provided by an external company) so when the worker sends their check-in message it pinpoints exactly where they are on a map. The device also provides an emergency SOS function that goes to a third party: when an emergency call is made, the third party contacts the person's buddy within the company to check whether it is appropriate to initiate the emergency procedure and, if so, activates the emergency services anywhere in the world to make sure that somebody goes out and finds the individual wherever they are.

Initially, the organisation brought in 6 devices to see how they were used and has now brought in another 8. The device is easy to use and the associated website provides a full explanation of what the user need to do, but the organisation found it also needed to sit down with people and take them through how it works. These are potentially lifesaving technologies, because if something does go wrong the worker can call the emergency line, but it is important that to make sure that people know how they work and have set them up correctly before they've gone out.

D. Occupational safety and health promotion and communication for distributed workers

This section sets out three examples of organisations that have taken steps to promote the health, wellbeing and safety, for example so that work is seen as a positive aspect of health and wellbeing.

1. Toolbox talks for health promotion

The organisation runs two types of health and safety promotion:

1. Promotions relating to a new piece of equipment, or a new/upgraded standard – for example the introduction of testing for dust masks.
2. Promotions aiming to make general improvements in day-to-day health and safety – for example:
 - Summer promotion on sun cream, which involved talking to the workers about using sun cream, putting up posters in the facilities, sending emails out to the iPads saying 'don't forget your sunscreen'.
 - Winter promotion on safe driving, which highlighted the risks of driving on icy ground and went out as a toolbox talk.

Supervisors deliver toolbox talks individually to each person and they are also sent out via an email that workers can read at their leisure/in their lunch break etc. Everyone in the chain from worker to senior managers, and including the OSH practitioner, has to sign the toolbox talk to say it has been delivered to them and they have read and understood it. By getting individuals to sign in this way, the organisation can track who has and has not received the information and make sure everyone gets each toolbox talk.

The organisation also runs monthly meetings in the depots where all the distributed workers are asked to come in and managers talk about the business as a whole, how it is doing, and what is happening in the world. These are designed to help workers feel a part of the organisation and also offer the opportunity to reiterate messages from toolbox talks. At the same time there would be campaign posters out and about. Managers are closely involved in promotions as they do most of the monthly meetings, and are involved in making sure that the supervisors have delivered toolbox talks.

Toolbox talks will usually have photos attached to them and may sometimes include a video. The text for these talks is kept to a minimum to suit the audience: *"...we try and keep the visual aids up and the writing down..."*

2. Wellbeing events

The occupational health team in this police organisation has so far run two wellbeing events, one in each of the counties it covers and over 2 days in each county. The events aimed to be accessible to all police officers so that they could come in and get their cholesterol and blood pressure checked, take part in a rowing competition against the Chief, receive information on preventing skin cancer and meet people from various charities (a testicular cancer charity, a breast cancer charity, the British Heart Foundation).

While there was no particular issue that prompted the organisation to run these events, the introduction of a fitness test for officers has put some strain on those who are not the most physically active. So the OSH team realised that it needed to put in some support mechanisms to help them with establishing a healthier lifestyle – and also to promote healthy lifestyles to the rest of the organisation, particularly those who are office based and do a lot of sitting. The aim was to try and reach as many people in the organisation as possible, so the content was largely on common themes aimed at everybody.

The next step is to put in place mobile wellbeing events because the organisation has multiple locations around the counties it covers, many of which are some distance away. It is important to make sure that events don't just happen at the headquarters because people who are out in more distant locations, because of their shifts, duties etc, can't get there. Even mobile events present challenges because of the nature of the organisation: workers out and about doing patrols and operations so footfall through stations can be very low.

Another challenge is to motivate distributed workers to attend events. *"If I don't want to be helped, if I'm not interested in getting fit then actually I'm not going to come along potentially, it might not be a thing I want to do."*

The OSH team aims to be proactive in terms of going out to people rather than waiting for them to come to you, otherwise there's a danger that services can become reactive, just answering the telephone and being there for advice. So one of the key things about the events was that they showed the workforce, and the officers particularly, the services available to them. The team aimed to publicise the events through verbal and other means (email, intranet, flyers, posters) to get workers to come and see what was on offer to them.

It was also important to get the senior people involved. One of the most senior officers came along and did a cycle race against a couple of the other officers. The events had senior management support from the start, but it is particularly valuable if senior people are physically present for photographs etc to help publicise future events.

3. Putting supervisors and management at the heart of OSH

The organisation has introduced a plan to put supervisors and management at the heart of safety, including ensuring managers are on site and visible to the work force, ensuring supervisors understand risk assessment is a critical part of their role and are trained to conduct and brief their workforce on risk assessments before work begins on any project and following a break in work. To support this managers and supervisors were given training and there was a framework of accountability for senior managers, making sure their responsibilities for health and safety are fully understood, and a culture of taking proportionate measures when incidents do occur was established.

The organisation has been rolling the plan out in a number of different ways: communicating to the entire workforce through presentations, through posters, through email cascades. To help with roll-out of the action plan, each business unit leadership team are sponsoring an action point. The aim is also to learn and pick up ideas from operating units to see how they are doing it and ensure collective sharing of learning.

The ongoing activity now is to keep the plan current, and driven from the top of the organisation. The aim is to make it part of people's vocabulary, so that it is not seen as a bolt-on but as part of the organisation's language.

Out of sight, out of mind? Managing distributed workers' occupational safety and health

Appendix I5: Facilitators and barriers to occupational safety and health practitioners' self-reflection framework for working with distributed workers

The purpose of this document is to provide employers and practitioners with information about the factors that were identified as facilitators and barriers to occupational safety and health (OSH) practitioners behaving in ways that support OSH for distributed workers. The aim is to help employers establish the best possible context for OSH practitioners to support OSH for distributed workers by putting in place relevant facilitators and overcoming relevant barriers.

By distributed/remote workers we mean workers who spend all or part of their week working away from a main location. For example, this includes working onsite, at other companies, in public or domestic spaces, at the roadside, in the countryside, driving, homeworking, and so on. Distributed workers present particular challenges in terms of OSH: for example, additional risks, such as the isolation of remote working and the physical hazards associated with working outside or driving; and more difficulty getting messages across because workers are not based at a central or permanent site. Supporting OSH for distributed workers therefore requires additional abilities from their OSH practitioners over and above those needed to support OSH for a non-distributed workforce. There are also facilitators of and barriers to OSH practitioners' activities that are specific to dealing with distributed workers.

As part of this research, we developed a self-reflection framework for OSH practitioners for working with distributed workers. This framework, identified from the research interviews, identified four key abilities:

- **Getting the OSH message across to distributed workers:** includes being visible, approachable and available, engaging with workers in the most appropriate ways and being open and flexible about communicating with workers
- **Listening to and understanding distributed workers and their role:** includes gaining knowledge and understanding of distributed worker roles and taking a respectful approach to worker input where workers feel safe and confident to report issues
- **Empowering and collaborating with distributed workers:** includes empowering workers to take ownership of their work and safety, and establishing and using collaborative working
- **Cascading to distributed workers via managers:** includes providing knowledge and support to managers, being in frequent communication and enabling opportunities for managers to communicate about OSH

The full self-reflection framework with behavioural indicators, further details on the research and other research outputs, are available at www.iosh.co.uk/outofsight.

The interview data was also used to identify the facilitators of (those factors that support) and barriers to (those issues that get in the way of) OSH practitioners behaving in the ways set out in the self-reflection framework. Each of these were then categorised to link to the four OSH practitioner 'Working with Distributed Workers' abilities as shown in the table below.

OSH Practitioner Ability	Facilitators (those factors that support OSH practitioners to behave in line with this ability)	Barriers (those factors that get in the way of OSH practitioners behaving in line with this ability)
Getting the message across to distributed workers	• Intranet to provide constant access to up to date information, policies, guidance and training • Technology such as Microsoft Lync Up (videoconferencing) and Skype to enable virtual face-to-face communication • Mobile technology to facilitate constant contact such as iPads and mobile phones • Trackers to enable two way feedback (such as driving feedback) • Well thought through planning and training systems • Communication strategy designed with distributed workers in mind • A combination of online and face-to-face training • Training evaluation to enable practitioners to see if information has been understood • Training conducted in-house • Dashboard system to monitor inspections and learning points • Good organisational culture with solid OSH awareness	• Distance – not able to talk face to face • Cultural barriers – what we consider as OSH risks may not be the same elsewhere, plus cultural differences in perceptions of intrusiveness, and language barriers • Lack of informal/ad hoc contact and communication • Lack of visibility of OSH • Not knowing how best to communicate with workers (e.g. mode and content of communication) • Overreliance on emails • High workload meaning information not read • Time differences across shifts and time zones • Jobs not designed to enable contact time or appropriate technology • Inadequate resources such as technology to enable communication • Working in locations where mobile phone/internet signals are unreliable/absent • Organisations seeing face-to-face meetings as unnecessary cost • Distributed workers, especially home workers, not wanting to be visited (home is their domain) • Not seeing workers until there is a problem • Not knowing what has been understood/what messages have got through • Different resource availability on different work sites • Relying on technology to communicate leading to misinterpretation of tone • Loss of credibility for OSH practitioners as they are not visible • Centralisation of sites to fewer locations meaning that longer travel needed to ensure face-to-face meetings

OSH Practitioner Ability	Facilitators (those factors that support OSH practitioners to behave in line with this ability)	Barriers (those factors that get in the way of OSH practitioners behaving in line with this ability)
Listening to and understanding distributed workers and their role	• Face-to-face time on site visits • Use of technology (such as trackers and iPads and cameras to share pictures) to get real time information about distributed worker role experience • Strong organisational OSH culture • Confidential helplines and/or reporting lines • Strong, visible and accessible reporting systems • 'Safety first' message from top of organisation • Network of immediate reporting controls • Organisational culture where employees feel valued by the organisation • Supportive management	• OSH practitioners focusing so much on risk in others that they forget their own personal safety • Fear of reprisal when reporting incidents • Organisational culture where near misses are not seen as problematic and are therefore not reported • 'Out of sight, out of mind' in terms of engagement with distributed workers • Headcount challenges - ratio of OSH professionals to workers making non-transactional relationships hard • Distance between OSH practitioner and workers (i.e. spread across UK) meaning that face-to-face visits can't be made • Workers and practitioners not understanding different situations and therefore not adequately anticipating risk • Excessive paperwork involved in OSH reporting

OSH Practitioner Ability	Facilitators (those factors that support OSH practitioners to behave in line with this ability)	Barriers (those factors that get in the way of OSH practitioners behaving in line with this ability)
Empowering and collaborating with distributed workers	• Robust OSH procedures and training • Robust recruitment process to ensure that the right people are in role • Strong peer group relationships and support • Proactive working with unions • Strong safety culture across the business • Virtual community such as LinkedIn and Facebook for Distributed Workers • Operational staff take ownership in developing procedures • Organisation structurally set up to support OSH in distributed workers • Policies, procedures, information and guidance accessible and actively communicated to all • All levels of the organisation involved in programmes of improvement • Safety action groups/consultative forums focused on continuous OSH improvement • Organisational culture of two-way trust • Involving workers in trials and new initiatives	• Lack of control and influence over distributed workers • Impact of other stakeholders (such as clients) giving inaccurate briefs or inconsistent priorities to distributed workers • Impact of other workers/trades on site at same time negatively affecting distributed worker OSH decisions • Lack of initial training • Difficult to manage on 3rd party controlled sites • Workers cutting corners when not supervised • Hard to check compliance when dependent on others to carry it out • Prevailing culture of organisation at odds to OSH behaviour (such as long hours culture) • Conflicting priorities (OSH compared to need for production/customer service) • No control over distributed worker time – either not doing a job safely because of lack of time, or doing too many hours because of dedication to get the job done • 'Out of sight, out of mind' in terms of following procedures • Different shift patterns mean workers don't know each other

OSH Practitioner Ability	Facilitators (those factors that support OSH practitioners to behave in line with this ability)	Barriers (those factors that get in the way of OSH practitioners behaving in line with this ability)
Cascading to distributed workers via managers	• Regular senior executive meetings with workers • Senior management commitment to OSH • Having an OSH champion on the Senior Management team • OSH Practitioners being able to go to senior management • Support from all levels of management • Reporting from the Board at OSH meetings and briefings • Managers able to be mobile and therefore access distributed workers • Managers working similar hours/shift patterns to distributed workers • Having competent managers in place with the right training and right support • Directors and managers doing tours with all workers (including night shifts) • Good quality manager-worker relationships • Managers having experience and understanding distributed worker roles • Workers feeling manager is available for support	• Not being able to guarantee that managers will pass on the OSH information, particularly if they are also distributed workers and have limited opportunities for direct interaction with workers • Reliance on managers to comply • Senior managers not disseminating or communicating OSH information • No visible support for OSH from senior management • OSH not seen as part of the bigger organisational picture • Managers not understanding their obligations and responsibilities to promoting the OSH culture • Lack of time for managers and workers to engage • Lack of leadership visibility • Perception gap between what senior leaders think workers are doing and what they actually do

Out of sight, out of mind? Managing distributed workers' occupational safety and health

Appendix I6: An overview of managing occupational safety and health in distributed workers

The purpose of this document is to provide a quick-view summary of the insights about how line managers and OSH practitioners can best support positive occupational safety and health in distributed/remote workers. The aim is to give employers and practitioners an overview of all the findings of the research project.

By distributed/remote workers we mean workers who spend all or part of their week working away from a main location. For example, this includes working onsite, at other companies, in public or domestic spaces, at the roadside, in the countryside, driving, homeworking, and so on. Distributed workers present particular challenges in terms of OSH: for example, additional risks, such as the isolation of remote working and the physical hazards associated with working outside or driving; and more difficulty getting messages across because workers are not based at a central or permanent site.

1. There are many different types of distributed worker, from those working on construction sites, to transport and security, from operations and domestic car workers to services consultants and homeworkers. Each of these types of worker will be exposed to a different set of occupational safety and health risks.
2. OSH Practitioners working with distributed workers can influence these people's occupational safety and health both by cascading their influence through the workers' line managers and, bypassing the line manager, through direct contact with the workers themselves.
3. For OSH Practitioners working with distributed workers, the four abilities that will help support these workers' occupational safety and health are:
 - **Getting the OSH message across to distributed workers:** includes being visible, approachable and available, engaging with workers in the most appropriate ways and being open and flexible about communicating with workers
 - **Listening to and understanding distributed workers and their role:** includes gaining knowledge and understanding of distributed worker roles and taking a respectful approach to worker input where workers feel safe and confident to report issues
 - **Empowering and collaborating with distributed workers:** includes empowering workers to take ownership of their work and safety, and establishing and using collaborative working
 - **Cascading to distributed workers via managers:** includes providing knowledge and support to managers, being in frequent communication and enabling opportunities for managers to communicate about OSH
4. There are facilitators that employers can put in place that will enable OSH practitioners to support occupational safety and health for distributed workers; and there are also barriers that will get in the way of OSH practitioners doing this, which employers need to find ways of overcoming. The full table of these is available for download at www.iosh.co.uk/outofsight and is designed to help employers establish the best possible context for OSH practitioners to support OSH for distributed workers.
5. The behaviours identified as effective for supporting occupational safety and health in distributed/remote workers are essentially about good people management, with an

emphasis on creating good relationships and taking responsibility for employee health and safety.

6. The five behavioural areas for line managers of distributed workers to build into their management repertoire are:
 - **Transactional leadership:** including providing feedback and recognition for good performance
 - **Transformational leadership:** including formulating a vision, being open about values, function as a role model, treating people as individuals, trust, involvement and encouraging new ways of thinking
 - **Leader-member exchange:** including developing good working relationships and understanding individuals' problems and needs
 - **Health-specific leadership:** including taking responsibility for team members' health, discussing, involving and involving people on health at work matters
 - **Safety-specific leadership:** including taking responsibility for team members' safety, discussing, involving and involving people on safety at work matters
7. Line managers' behaviour affects distributed workers' occupational safety and health at an individual level, not through influencing the team as a whole, suggesting that it is important for the line manager to build a relationship with each worker individually.
8. Using questionnaires and feedback can be a useful way to help managers understand whether the behaviours identified as effective for supporting occupational safety and health in distributed/remote workers are part of their management repertoire or not. (Relevant questionnaires are available at www.iosh.co.uk/outofsight.) If a line manager is to be provided with feedback on others' perceptions of their behaviour, then the manager should be supported to understand this feedback (and plan/take action) through a development programme, for example training, coaching and/or action learning.
9. Distributed workers who work at the same time as their line manager are likely to have better occupational safety and health.
10. The full research report, with details of the research underpinning this guidance, as well as further details on the self-reflection framework, types of distributed workers and key risks, facilitators and barriers, together with an overall guidance document, are all available at www.iosh.co.uk/outofsight.

Appendix J: List of journal articles, conference presentations and dissemination activities reporting on this project's findings

Conferences

- International Conference on Sustainable Employability (INCOSE), Brussels, 14-16 September 2016. Title: 'Health and safety leadership among distributed workers.' Presenter: Karina Nielsen, findings from the mixed methods study. Ivan Williams distributed leaflets, including printouts of the poster presented at the International Wellbeing at Work Conference.
- 4th International Wellbeing at Work Conference, Amsterdam, 29 May-1 June 2016. Title: 'Out of sight and out of mind? Occupational safety and health for distributed workers.' Poster Presentation: Jill Joyce, IOSH, findings from the qualitative phase.
- Health and Well-being at Work Conference, Birmingham, 8-9 March, 2016. Title: 'Work and Out of sight and out of mind? Occupational safety and health for distributed workers.' Presenter: Emma Donaldson-Feilder, findings from the literature review.
- British Psychological Society Division of Occupational Psychology (DOP) Annual Division of Psychology Conference, 6-8 January, 2016. Title: 'Occupational safety and health leadership for distributed workers'. Presenter: Kevin Daniels, findings from the literature review.

Other

- Affinity Health at Work Research Consortium Master-Classes. The research has been a regularly item at the quarterly, from late 2014 through to the present time. When appropriate, Affinity Health at Work have given a longer presentation to update consortium members on findings, for example April 2015, the results of the literature review were presented.
- Health & Safety Expo, 16 June 2015. Leaflets promoting the project were distributed.
- What Works Wellbeing Seminar series, University of East Anglia, 17 February 2016. Presenter: Rachel Nayani, findings from the qualitative phase.
- ESRC Seminar Series on Using Big Data to Explore Employee Health and Wellbeing. 23 November 2015. Presenter: Kevin Daniels reported some findings from the literature review as part of an
- Royal Academy of Occupational Physicians on 2 October, 2015. Presenter: Karina Nielsen mentioned the project in her keynote and distributed leaflets promoting the project.
- SHP magazine, September 2015. A feature article on the research.

Papers

- A paper presenting the results of the literature review is under revision (as of September 2016).
- Further papers are planned as follows: quantitative health and safety leadership paper, quantitative and qualitative papers.

Web pages and social media

- <https://www.uea.ac.uk/norwich-business-school/research/iosh-project>
- This has been established and has links to Rachel Lewis' web page at Kingston and to the Affinity Health at Work web-site (linked through the Research web page).
- We have established a LinkedIn group, which currently has 51 members.
- We have established a Twitter feed for when we are able to report project findings.

Future dissemination activities

- Affinity Health at Work Research Consortium Masterclass. 1 December 2016. Presenter: Karina Nielsen, presenting the research results.
- European Association of Work and Organizational Psychology Conference, Dublin, 17-20 May 2017. Presenter: Karina Nielsen will present the mixed methods in a symposium on leadership and health.
- Research launch event hosted by Kingston University (1st June 2017)
- Work Stress and Health Conference, Minnesota, 7-10 June 2017. Presenter: Karina Nielsen will present the cascade and bypass results in a symposium on multiple rating studies.

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Highfield Drive
Wigston
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LE18 1NN
UK

+44 (0)116 350 0700
www.iosh.com

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Highfield Drive
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Leicestershire
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UK

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