

3. How much of a problem is work-related ill health in the GB rail industry?

3.1 In our 2011 baseline paper we reported on a number of indicators for the scale of work-related ill health in rail. These included self-reported estimates of work-related ill health from the national Labour Force Survey (LFS)¹¹; occupational diseases reported to ORR under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR); and national sickness absence estimates. This data has been updated and supplemented with additional sources to provide a more detailed picture of the extent and nature of ill health in the rail industry by 2014.

Key findings - HSE and ORR data on work-related ill health in rail workers

- Latest LFS data¹³ provided by HSE indicates that between 2% and 6% of railway operatives¹² suffer ill health caused or made worse by work. This is broadly comparable with the construction sector.
- Evidence from 'The Health and Occupation Research' network (THOR) data¹⁴ suggests that railway operatives may suffer higher levels of work-related respiratory diseases compared with the wider working population. The level of skin disease appears to be comparable to all workers.
- Railway operatives appear to be at no higher risk of death from mesothelioma (serious asbestos-related disease) than the wider working population. The occupation group for (all) vehicle body builders/repairers, which may include some rail workers, does show a higher number of deaths from mesothelioma caused by past exposures to asbestos, than the average for all workers.
- Over the four years of ORR's first health programme, 320 cases of occupational disease were reported to us under RIDDOR: the vast majority were cases of hand arm vibration syndrome (HAVS) reported by Network Rail. The relatively small number (18) of other RIDDOR diseases reported from across the industry included upper limb conditions due to repetitive work, occupational asthma, occupational dermatitis and leptospirosis.
- We suspect that there remains a degree of under-reporting of disease to ORR under RIDDOR, particularly of HAVs cases by rail industry contractors working with vibrating tools.

¹¹ Labour Force Survey: <http://www.hse.gov.uk/statistics/sources.htm#fs>

Key findings - Rail industry data on sickness absence in rail workers

- RSSB research¹⁹ estimates an average Lost Time Rate (LTR) for all sickness absence of 3.9% across the rail industry, which represents more than one million days lost per year.
- The RSSB estimate of 3.9% LTR compares with the Office of National Statistics (ONS) estimate of 1.8% for the private sector as a whole, 1.9% for construction, and 3% for transport, storage and distribution.

HSE data on work-related ill health in railway operatives¹²

3.2 In our 2011 baseline paper, we presented LFS data on work-related ill health in railway operatives for the period 2003/04 to 2009/10, and provided comparisons with similar occupations and industry groups. HSE has updated the analysis of LFS data for the combined period 2006/07 to 2011/12 and 2013/14 (no LFS data on ill health was collected by HSE in 2012/13)¹³. Because there is a large overlap between the periods used for the baseline and this updated analysis, it is not possible to look at change over time; rather the latest data should be viewed as a revised baseline for 2014. The estimates for railways operatives, which include rail construction and maintenance operatives, train and tram drivers, and rail transport operatives, represent a sub-set of the wider rail workforce. Some of these may, for example, be employed in the construction industry but work on the rail network, and there will be some rail workers who are not captured in this data set.

¹² Railway operatives are defined using the Standard Occupational Classification (SOC): for some data the 2010 classification has been used, (8143 rail construction and maintenance operatives; 8231 train and tram drivers; 8234 rail transport operatives), for other data the 2000 classification has been used (3514 train drivers; 8143 rail construction and maintenance operatives; 8216 rail transport operatives). The coverage of the SOC2010 and SOC2000 classification is largely the same.

¹³ HSE updated health data report for ORR: <http://www.hse.gov.uk/statistics/adhoc-analysis/work-related-ill-health-railway-operatives.pdf>.

Figure 4 - Estimated prevalence and rates of self-reported illness caused or made worse by current or most recent job, by occupation/industry, for people working in the last 12 months, averaged 2006/07 to 2011/12 & 2013/14

	<i>Illness ascribed to their current/most recent job</i>					
	Averaged estimated prevalence (thousands)			Averaged rate per 100,000 employed in the last 12 months		
	central	95% C.I.		central	95% C.I.	
		lower	upper		lower	upper
Railway operatives ¹²	2	1	3	4,150	2,340	5,960
Construction operatives (SOC 814)	6	5	8	4,230	3,220	5,240
Road transport drivers (SOC 821)	29	26	32	3,260	2,890	3,620
Transport (SIC: Section H)	56	51	61	3,610	3,310	3,900
All occupations (illness ascribed to current or most recent job)	1,012	992	1,032	3,360	3,290	3,420

Railway operatives are defined by the following Standard Occupational Classification (SOC) 2010 codes: 8143 Rail construction and maintenance operatives; 8231 Train and tram drivers; and 8234 Rail transport operatives.

Figures in italics (grey shaded row) for railway operatives are estimates based on fewer than 30 sample cases. The central estimates for these figures can be volatile because of the small sample sizes. The range around the central estimate (i.e. lower and upper 95% confidence intervals) should be quoted here, rather than the exact value.

No ill health data was collected by HSE in 2012/13.

Source: LFS data from HSE¹³

3.3 The updated LFS data indicates that annually between 2% and 6% of railway operatives suffer ill health caused or made worse by work. Based on the range of values for the prevalence rate per 100,000 workers (between 2,340 and 5,960 for rail) it seems reasonable to conclude that the prevalence of work-related ill health in railway operatives is broadly comparable with the construction sector (3% to 5%).

3.4 HSE has also reported on data from the 'The Health and Occupation Research' network (THOR)¹⁴; this captures reports of work-related ill health from a sample of specialist consultants in respiratory disease (SWORD scheme) and skin disease (EPIDERM scheme).

¹⁴ THOR scheme: <http://www.hse.gov.uk/statistics/sources.htm>

- 3.5 THOR data indicates that railway operatives suffer higher levels of work-related respiratory diseases compared with all workers, while the rate of skin disease in railway operatives appears to be comparable to all workers.
- 3.6 HSE data for 2002-2010 on mesothelioma deaths (one of the most serious asbestos-related diseases) indicate that the risk for railway operatives is no higher than for all workers. The occupation group for (all) vehicle body builders and repairers, which may include some railway workers, does however show a greater number of deaths from mesothelioma (caused by past exposures to asbestos) when compared to the average for all occupations.

Figure 5 – HSE data from mesothelioma register for rail industry occupations

Mesothelioma proportional mortality ratios (PMRs) for males aged 16-74 in Great Britain by SOC 2000 occupation group, 2002-2010						
SOC 2000 Code	Occupation Description	Deaths	Expected Deaths	PMR	95% Confidence Interval	
					Lower	Upper
3514	Train drivers	15	16.8	89.5	50.1	147.6
8143	Rail construction & maintenance operatives	3	7.6	39.5	8.1	115.3
8216	Rail transport operatives	16	34.7	46.2	26.4	74.9
5232	Vehicle body builders & repairers	42	19.5	215.1	155.0	290.8

A Proportional Mortality Ratio (PMR) is a summary measure used to compare mortality from a particular cause among a particular occupation, e.g. mesothelioma in train drivers, with the mortality of the general working population. If the PMR is greater than or less than 100 for a particular occupation, then the observed number of mesothelioma deaths in that occupation is relatively greater than or less than the average for all occupations.

Source: HSE¹³

Relevance of HSE cancer burden research to the rail industry

- 3.7 Although HSE's 2012 cancer burden research does not provide risk estimates specifically for the rail industry, it may be helpful in identifying priority areas for our industry in managing potential carcinogenic risks. In this research rail is captured within the wider land transport group, which also includes road and pipeline transport. Within the land transport sector, the cancer burden research¹⁵ estimates 284 deaths per year (based on 2005 data) from occupational exposures to DEEE, with a further 123 deaths due to past asbestos exposures.

¹⁵ HSE cancer burden research by industry: <http://www.hse.gov.uk/statistics/tables/index.htm#cancer>

3.8 Many workers involved in rail renewals and construction may have similar work-related exposures to those working in the wider construction industry, which bears the largest burden of occupational cancers across all industry sectors. The HSE cancer burden research found that most cancers in the construction industry were caused by exposure to asbestos (estimated at more than 2,500 deaths per year) and silica (estimate of more than 600 deaths per year), with DEEE (more than 200 deaths), and painters (more than 200 deaths) also contributing significantly to cancer deaths.

ORR published data on work-related ill health in rail

3.9 Since July 2013, ORR has published available occupational health data for the rail industry on our National Rail Trends (NRT) data portal⁵⁸. This includes occupational diseases reported to us under RIDDOR, and data on manual handling and shock/trauma incidents captured by existing industry incident reporting databases (SMIS for the mainline and LUSEA for London Underground Limited). This report presents trends in this data over the four years of our first health programme.

RIDDOR data on occupational disease 2010-14

3.10 We have updated the RIDDOR disease data published on our NRT data portal¹⁶ to include the first six months of 2014/15 in Figure 6 below. It should be noted that since 2010 there have been changes in RIDDOR disease reporting requirements. From 1 October 2013, RIDDOR 2013 replaced RIDDOR 1995. This saw the previous list of reportable conditions in Schedule 3 replaced by Regulations 8 and 9, requiring reports for just six short latency diseases plus occupational cancers. The trigger for reporting diseases also changed under RIDDOR 2013. From 1 October 2013, reports are required not only for diagnoses of new symptoms (as in RIDDOR 1995), but also where symptoms have significantly worsened. Further guidance on these changes can be found on ORR's web site¹⁷.

¹⁶ RIDDOR disease reports: <http://dataportal.orr.gov.uk/displayreport/report/html/6b27a1f8-72c7-4287-835c-386cc74f785b>

¹⁷ ORR guidance on reporting diseases: <http://orr.gov.uk/what-and-how-we-regulate/health-and-safety/investigating-health-and-safety-incidents/reporting-riddor-incidents/reporting-occupational-diseases>

Figure 6 - Occupational disease cases reported to ORR under RIDDOR 2010/11 to 2014/15 (1 April to 30 September 2014 only)

Disease Type	2010/11	2011/12	2012/13	2013/14	1 April – 30 Sept 2014/15
Carpal tunnel syndrome	4	0	2	2	3
Cramp in the hand or forearm due to repetitive movements	0	0	2	0	0
Hand Arm Vibration Syndrome (HAVS)	34	95	97	76	57
Legionellosis (infectious disease due to biological agents)	0	0	0	0	0
Leptospirosis (infectious disease due to biological agents)	0	1	3	0	0
Occupational asthma	0	0	0	1	1
Occupational cancers	0	0	0	0	0
Occupational dermatitis	1	0	0	0	0
Tendonitis or tenosynovitis in hand or forearm	1	1	0	0	0
Total	40	97	104	79	61

This data comprises the number of RIDDOR reportable diseases reported through the Safety Management Information System (SMIS) and the ORR web form. No further calculations are undertaken on the received data. The RIDDOR disease data in this table has been classified using the reporting criteria under RIDDOR 1995 for 1 April to 30 September 2013, and the revised reporting criteria under RIDDOR 2013 from 1 October 2013 to 30 September 2014. 2014/15 data is for 1 April to 30 September 2014 only.

3.11 In our 2011 baseline paper we reported a total of seven cases of occupational disease reported to us under RIDDOR between January 2005 and September 2010. The level of reporting has increased significantly over the four years of our first health programme, with a total of 320 RIDDOR disease cases reported in this period. The data is dominated by HAVS cases, predominantly reported by Network Rail. Of the 75 HAVS cases reported to us by Network Rail in 2013/14, around three quarters were newly diagnosed cases or those where symptoms had significantly worsened. The remainder were repeat diagnoses of existing stable HAVS cases which had not been previously reported to us under RIDDOR.

3.12 We are confident that the increase in HAVS cases reported under RIDDOR between 1 April 2010 and 30 September 2014 (total of 359 HAVS cases) reflects the marked improvements in Network Rail's HAVS health surveillance arrangements. We expect to see this trend continue in the short term as their health surveillance and reporting systems mature further. This data shows the value of health surveillance in

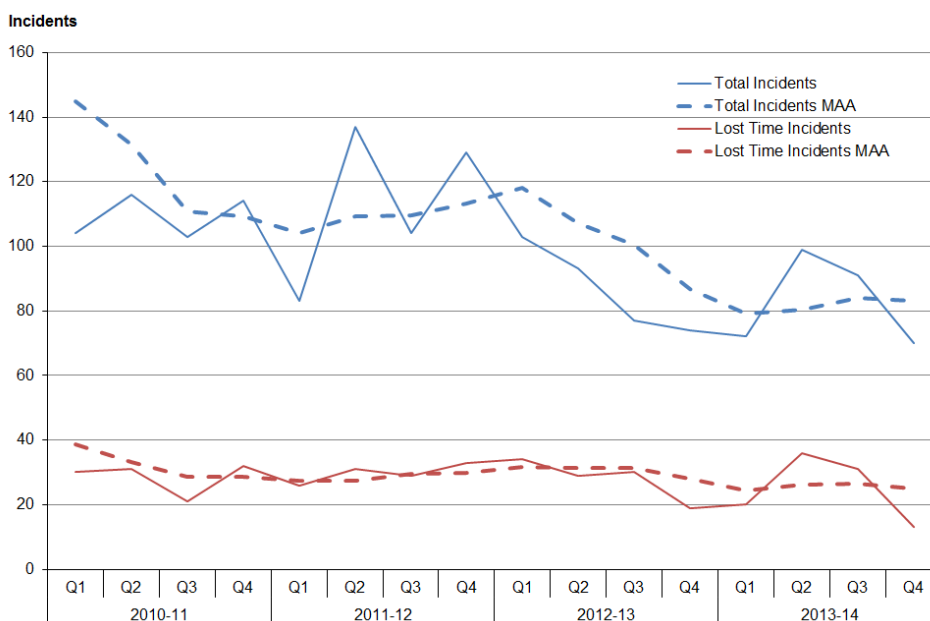
identifying vulnerable workers early, but also the need for better risk assessment and more robust control of exposure to hand arm vibration among staff working on mainline infrastructure maintenance.

3.13 The dominance of Network Rail HAVS cases in the RIDDOR data suggests possible under-reporting of HAVS by other rail companies undertaking similar types of work with vibrating tools. Between 1 April 2010 and 31 March 2014 a total of seven HAVS cases were reported to ORR by companies other than Network Rail. With a rail contractor workforce of more than 100,000, involving higher risk work with vibrating tools (for example manual ballast tamping/levelling, breaking out concrete in renewals and enhancements, and surface preparation in bridge and vehicle refurbishment) the low level of HAVS reporting is open to question. While reports arising from work on construction sites enforced by HSE are reportable to HSE, those in connection with rail renewals, enhancements, refurbishment or maintenance operations should be reported to ORR. We will continue to challenge rail companies on their reporting arrangements under RIDDOR, particularly reporting of HAVS cases on mainline and London Underground Ltd (LUL) infrastructure, to ensure consistent legal compliance and protection of workers' health.

Rail industry manual handling and shock/trauma data

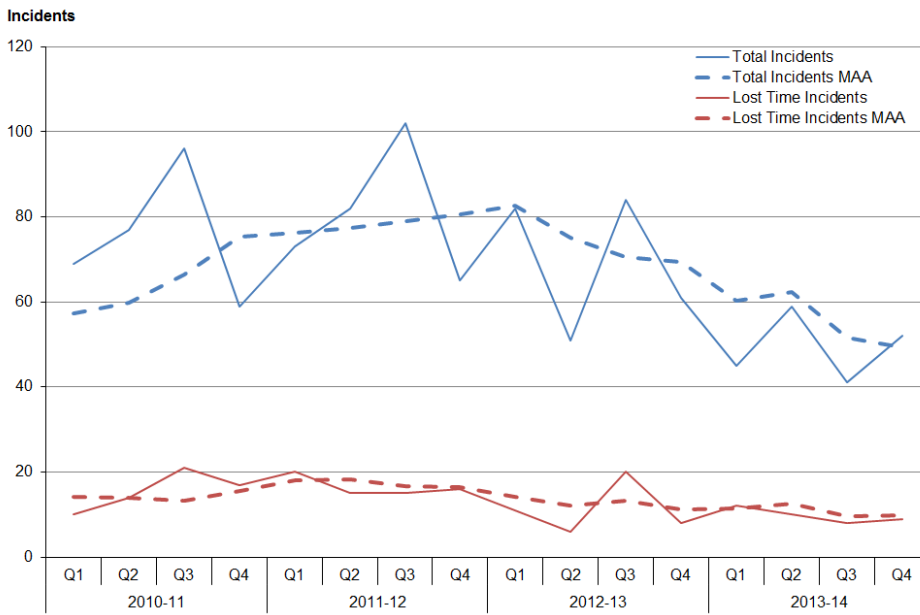
3.14 The graphs below show the trends in industry data on manual handling and shock/trauma incidents during our first health programme. Moving annual average (MAA) data is used to smooth out fluctuations and show trends in both mainline (SMIS) and LUL (LUSEA) datasets from 2010/11 to 2013/4. Further detail and discussion on this data can be found in Annex B.

Figure 7 – Moving annual average trends in mainline manual handling incidents by quarter, 2010/11 to 2013/14



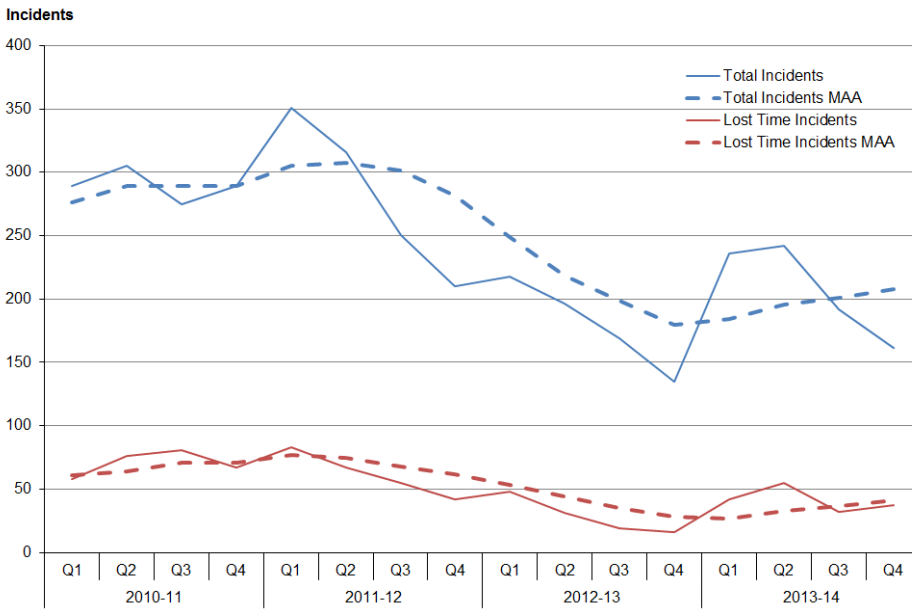
Source: ORR analysis of SMIS data supplied by RSSB

Figure 8 – Moving annual average trends in LUL manual handling incidents by quarter, 2010/11 to 2013/14



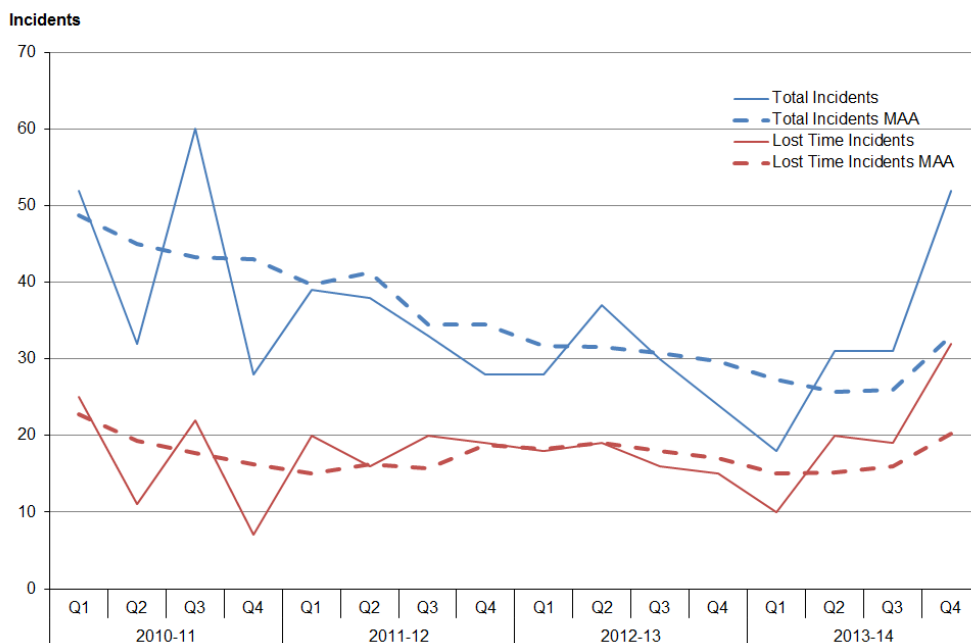
Source: ORR analysis of LUSEA data supplied by London Underground Ltd

Figure 9 – Moving annual average trends in mainline shock/trauma incidents by quarter, 2010/11 to 2013/14



Source: ORR analysis of SMIS data supplied by RSSB

Figure 10 - Moving annual average trends in LUL shock/trauma incidents by quarter, 2010/11 to 2013/14



Source: ORR analysis of LUSEA data supplied by London Underground Ltd

Review for ORR of management referrals on health

3.15 An analysis for ORR by a leading occupational health service provider (OHP) of anonymised data on management referrals provides useful insight, and may allow for potential benchmarking of rail companies against their wider client base. The sample analysis was carried out for ORR’s internal use. It captured referral data from the OHP’s rail clients, representing approximately 50,000 workers from a sample of train operators (TOCs) and infrastructure contractors, between April 2012 and November 2014. Based on management referrals, the incidence of work-related ill health among their rail clients was broadly comparable with the rest of the transport sector. It showed 12% of rail referrals over the period were judged to be work-related, compared with 13% for the wider transport sector and 18% across all industry sectors. The comparatively lower incidence of work-related referrals in rail may in part reflect good use of occupational health services, including medical assessment for fitness to work, within the rail sector, meaning that some workers with chronic health problems or other incapacity may leave the industry.

3.16 In common with other industry sectors, referrals due to MSDs and mental health predominated. MSDs accounted for 26% of rail referrals (of which 18% were deemed work-related) and 18% were for mental health disorders (of which 30% were deemed work-related) over the sample period. Of the MSD referrals, back pain and lower limb disorders were the largest groups. The lower limb cases included arthritic conditions in the hip and knee seen in staff needing to work on, or repeatedly climb in and out of, moving trains, or walk on uneven ballast. The rail infrastructure clients appeared to have a very low level of referrals for MSDs (15% of all referrals in 2013/14) despite the manual nature of the job. This may reflect in part the healthy worker effect but also the safety culture of these organisations.

- 3.17 The proportion of management referrals for MSD and mental health among rail clients was slightly below the transport and all industry averages. The proportion of referrals for endocrine (mainly diabetes) and cardiovascular/cerebrovascular conditions was slightly higher, most likely reflecting the need for medical evidence of continued fitness for work in safety critical roles such as train drivers. With an ageing workforce and generally low staff turnover, particularly within TOCs, there appears to be scope for more emphasis on health promotion in this group of workers. The predominance of MSD and mental health referrals within the rail data supports the case for more early intervention and support in these specific areas, including physiotherapy and employee assistance.
- 3.18 The proportion of referrals for respiratory disorders such as asthma and bronchitis (2% total) in rail clients was comparable with the all transport average and marginally below the all industry average (3%).

Rail industry data on sickness absence

- 3.19 At the start of our first health programme we identified the challenges created by an absence of reliable data on work-related ill health across the rail industry. Since then the RSSB Board has highlighted the poor quality of health and wellbeing data for mainline rail, and the difficulties this creates for proactive risk management and informed, targeted investment. It is encouraging that the Industry Roadmap¹⁸ includes a dedicated strategic theme on reporting and monitoring, with the aim of agreeing a common health data collection and reporting system. However progress has been slow and active industry support will be needed to deliver on this work.
- 3.20 RSSB's 2014 research on the costs of impaired health across the rail network¹⁹ provides useful indicators on the extent of sickness absence in the industry. Although not a direct measure of work-related ill health, broader sickness absence estimates are a more widely available indicator measure for comparing rail with other industry sectors. RSSB suggests that the best estimate of the Lost Time Rate (LTR) for all sickness absence across the rail sector is approximately 3.9%, based on their 2014 research findings and an Association of Train Operating Companies (ATOC) study in 2012. 3.9% of total time lost to sickness absence was calculated to equate to 1.06 million days per year. The RSSB study acknowledges that absence rates will be variable across the industry, but suggests LTRs for Train Operating Companies (TOCs) of 3.75%, for infrastructure contractors of 3.5%, and for Freight Operating Companies (FOCs) of 2.5%. This aligns with published absence data, for example Go Ahead Rail Division reported an average absence rate of 3.8% for 2014.
- 3.21 This latest rail industry estimate of 3.9% sickness absence compares with the ONS private sector average for 2013 of 1.8%²⁰. The ONS report highlights the particular

¹⁸ Industry Roadmap: <http://www.rssb.co.uk/improving-industry-performance/workforce-passenger-and-the-public/workforce-health-and-wellbeing>

¹⁹ RSSB impaired health research: <http://www.rssb.co.uk/Library/improving-industry-performance/2014-02-report-WHWP-costs-of-impaired-health-across-network.pdf?web=1>

²⁰ ONS sickness absence 2014 report: <http://www.ons.gov.uk/ons/rel/lmac/sickness-absence-in-the-labour-market/2014/rpt---sickness-absence-in-the-labour-market.html>

challenges faced by an ageing workforce, with sickness absence rates for those aged 50-64 (at 2.8%) almost double that of workers aged 25-35 (at 1.5%). Latest estimates from the Chartered Institute of Personnel and Development (CIPD) in their 2014 Absence Management Survey Report²¹ indicate lost time absence rates of 2.9% for all industry; 3% for transport, storage and distribution; and 1.9% for construction. A small sample of published figures on the average number of sickness absence days per employee appears to support the conclusion that sickness absence rates in the rail industry may be higher relative to all industry and construction, for example.

Figure 11 - Comparison of average sickness absence per employee across sectors

Company data	Average days absence per employee	
	2010	2013
Transport for London	10.1	8.6
Network Rail	8.8	6.5
CIPD all industry	7.7	7.6
CIPD construction	9.7	4.9

Source: TfL Health Safety and Environment Reports 2013 and 2011²²; Network Rail Sustainability Update 2013/14²³; CIPD 2010 and 2013 Absence Management Surveys²⁴.

Other rail industry ill health data

3.22 Since 2012 ORR has used the Network Licence to incentivise Network Rail (NR) to report against a range of health metrics in their published Annual Return²⁵. A review in 2012/13 by ORR's Independent Reporter indicated low confidence in the quality of the initial health data in NR's Annual Return. ORR has worked with NR on improving their processes for capturing HAVS cases in particular, and we will repeat the Reporter assessment once the agreed improvements to health data quality are embedded. There is, however, evidence that inclusion of health in their Annual Return has helped to drive better understanding by NR of data on health outcomes for MSDs, stress, noise, HAVS, asbestos and lead, and has contributed to far more robust health data collection and analysis. Network Rail's 2014 Annual Return²⁶ indicates that 37% of all referrals to their occupational health provider were for musculoskeletal conditions (mainly to back and lower limbs), with 18% for

²¹ CIPD 2014 Absence Management report: <https://www.cipd.co.uk/hr-resources/survey-reports/absence-management-2014.aspx>

²² TfL: <https://www.tfl.gov.uk/corporate/publications-and-reports/>

²³ Network Rail: <http://www.networkrail.co.uk/publications/sustainability-update/workplace/>

²⁴ CIPD: <http://www.cipd.co.uk/research/absence-management-survey.aspx>

²⁵ Network Rail Annual Returns: <http://www.networkrail.co.uk/publications/Annual-return/>

²⁶ Network Rail 2014 Annual Return: <http://www.networkrail.co.uk/publications/annual-return-2014.pdf>

psychological conditions. In both cases, around 85% cases were judged to be non-work-related.

3.23 In recent years responses from the Trade Union Congress (TUC) biennial survey of health and safety representatives have consistently identified stress as the main hazard they face at work. Latest results from the 2014 TUC survey for the transport and communications sector²⁷ confirm stress as the most frequently identified hazard (63% respondents), with bullying and harassment (45%) and back strains (40%) also in the top five concerns. An analysis of the 2014 survey returns from the train drivers' union, ASLEF, health and safety representatives (sample size of 30 respondents) showed stress, long working hours, and back strain as the most frequently identified hazards (77% respondents ranked them in the top five concerns), with stress (24%) and working hours (24%) emerging as the most important.

²⁷ TUC biennial safety representatives survey 2014: <http://www.tuc.org.uk/health-and-safety/health-and-safety-reps-survey-2014>