

Data Sources

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Summary

The information in this document relates to Health and safety statistic for 2014/15. The document can be found at: www.hse.gov.uk/statistics/sources.htm.

Table of preferred sources for injuries and ill health

For the table of preferred sources for injuries and ill health see: www.hse.gov.uk/statistics/preferred-data-sources.htm

RIDDOR (Reporting of Injuries, Diseases and Dangerous Occurrences Regulations)

RIDDOR places a legal duty on employers and other specified duty holders to report certain workplace incidents to the relevant enforcing authority, namely HSE, local authorities (LAs) and the Office of Rail and Road (ORR). These Regulations have been amended several times since introduction, the most recent being RIDDOR 2013 which took effect 1 October 2013.

Since 1 April 2006, enforcement of health and safety on railways has been the responsibility of ORR, and since that date they have provided relevant figures that fall within the scope of RIDDOR. More information on railway safety can be found at www.rail-reg.gov.uk/

Incidents falling within scope of RIDDOR are fatal, specified and non-fatal injuries; defined occupational diseases; dangerous occurrences; and certain gas incidents. Aggregated statistics based on these reported incidents are provided in these 'statistics' web pages, and a brief description is given below.

In recent years there have been three changes that have impacted on the statistics:

- In September 2011 the reporting arrangements changed, although RIDDOR itself did not. Reporting is now done predominantly online.
- In April 2012 the legal reporting threshold changed, from of over-3-days' incapacitation to over-7-days. However the requirement for employers to still record (but not report) over-3-day injuries still remains.
- In October 2013 there was implementation of a full-scale review of RIDDOR.

The main effects of each of these changes on published RIDDOR statistics is summarised at www.hse.gov.uk/statistics/riddor-notification.htm

A technical description is available, showing the data items (fields) contained in the RIDDOR datasets as used in these statistics:

- RIDDOR injury statistics – cross-year comparability (www.hse.gov.uk/statistics/tables/riddor-injury-statistics.htm)
- RIDDOR lookups post-Sep 2011 (www.hse.gov.uk/statistics/tables/riddor-look-ups-post0911.xlsx)
- RIDDOR lookups pre-Sept 2011 (www.hse.gov.uk/statistics/tables/riddor-look-ups-pre0911.xlsx)

For details on current reporting methods, please visit www.hse.gov.uk/riddor/index.htm

Deaths of all employed people and members of the public arising from work activity are reportable to the relevant enforcing authority. There are three categories of reportable injury to workers defined under the Regulations: fatal; specified (changed from 'major' in October 2013); and over-7-day (changed from 'over-3-day' in April 2012). Examples of major (and specified) injuries include: fractures (except to fingers, thumbs or toes) and amputations. Over-7-day injuries include other injuries to workers that lead to their absence from work, or inability to do their usual job, for over seven days. Reporting requirements generally exclude incidents that occur to persons travelling in a vehicle, as part of their work, whilst on a public highway.

Injuries which are not reportable under RIDDOR are: road traffic accidents involving people travelling in the course of their work, which are covered by road traffic legislation; accidents reportable under separate merchant shipping, civil aviation and air navigation legislation; and accidents to members of the armed forces.

Although fatal injuries to the self-employed, arising out of accidents at premises which the deceased person either owned or occupied, are technically not reportable under RIDDOR, any such incidents are presented in the published figures.

While the enforcing authorities are informed about almost all relevant fatal workplace injuries, it is known that non-fatal injuries are substantially under-reported. Currently, it is estimated that around half of all such injuries to employees are actually reported, with the self-employed reporting a much smaller proportion. These results are achieved by comparing reported non-fatal injuries, with results from the Labour Force Survey - Injuries.

Under-reporting is one major limitation on the use of RIDDOR data for statistical purposes, especially where reporting is uneven (e.g. some industries have higher or lower reporting levels than the average). As often happens with changes in administrative data sources, another major limitation can be due to changes to reporting legislation, often resulting in discontinuities to data series over time, and which can be more pronounced the finer the levels of detail. Other notable limitations include the lack of actual days off work as a result of an injury (separate from the generic over-7-day category).

Summary of RIDDOR main strengths and weaknesses

Strengths

- It is an administrative source, so already available and not subject to the complexities or costs of survey methodology;
- The ease of understanding the basic concepts, and which have changed relatively little in nearly 30 years;
- It is comparable with international definitions;
- A richness of the data at individual record-level. In particular (a) details about the injury sustained, and (b) free-text descriptions which may be useful for operational staff and ad-hoc research

Weaknesses

- Under-reporting (apart from fatalities);
- The effect on trends analysis due to changes in reporting legislation;
- The actual time off work (in days), which is not available.

On first publication, RIDDOR data is classified as provisional and marked with a 'p' suffix. The following year data are finalised, denoted 'r' - revised. Typically, the finalised figures for non-fatal injuries are approximately 1-2% higher than the provisional figures due to the inclusion of late reports. Fatal injuries are much smaller in number, and can go down as well as up, by up to +/-3% on finalisation. Late reports are less relevant for fatal injuries; however the change from provisional to final usually reflects more up-to-date information following the detailed investigations of these incidents.

Selected incidents that have a high potential to cause death or serious injury are reportable under RIDDOR as dangerous occurrences. A dangerous occurrence may be reportable whether or not someone is injured, and if so an injury report may also be made.

RIDDOR Regulation 11(1) places a duty on certain conveyors of gas (including LPG), to notify HSE of an incident involving a fatal or major injury that has occurred as a result of the distribution or supply of flammable gas. Regulation 11(2) requires specified gas installation businesses to notify HSE of gas appliances or fittings they consider to be dangerous.

RIDDOR also places a requirement on employers to report prescribed occupational diseases, although such reports are small in number.

More details can be found on the RIDDOR website at www.hse.gov.uk/riddor/index.htm.

The detailed quality report for injury statistics reported under RIDDOR can be found at www.hse.gov.uk/statistics/pdf/riddor-background-quality-report.pdf

Readily available RIDDOR data tables can be found within the index of tables.

Electricity Safety, Quality and Continuity Regulations 2002 (as amended) (ESQCR)

Regulation 31 of ESQCR places a duty on those working on, or owning power network apparatus such as generators, distributors, meter operators and others to report deaths or injuries to members of the public, or near misses, fires or explosions which have occurred as a result of work on or near to electrical systems by others, or incidents arising from leisure and other non-work activities in proximity to electrical plant, or from equipment failure.

Prior to October 2006, such safety-related incidents were reported to the Engineering Inspectorate of the former Department for Trade and Industry, and HSE since. The annual basis for reporting is the planning year 1 April to 31 March.

From October 2013 reporting arrangements changed and removed an element of 'dual-reporting' that previously occurred for certain incidents (injuries to employees, and some dangerous occurrences) which prior to October 2013 were covered by ESQCR and may have also met the criteria for reporting under RIDDOR.

More information on ESQCR is available at www.hse.gov.uk/esqcr/index.htm.

Labour Force Survey

The Labour Force Survey (LFS) is a large nationally representative survey of households living at private addresses in the UK currently consisting of around 38,000 responding households each quarter. It provides a rich source of information about the labour market, and is designed, developed and managed by the Office for National Statistics (ONS) in Great Britain and by the Department of Finance and Personnel in Northern Ireland on behalf of the Department of Enterprise, Trade and Investment (DETINI).

HSE commissions questions in the LFS, to gain a view of work-related illness and workplace injury based on individuals' perceptions. The HSE questions are included in two survey modules - 'The Workplace Injury survey' module and the 'Self-reported Work-related Illness (SWI) survey' module. Each questionnaire module has a core set of questions with a small number of additional questions asked periodically. Whilst information is collected from Northern Ireland, this information is not routinely published since HSE's jurisdiction is restricted to Great Britain only.

The workplace injury survey module (see www.hse.gov.uk/statistics/lfs/annex1.htm) was first included in the LFS in 1990, with a limited question set included annually since 1993/94. The LFS gives annual estimates of the levels of workplace injury by a range of demographic and employment-related variables, and complements the flow of non-fatal injury reports made by employers and others under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR). Results are available on a consistent basis from 2000/01.

The SWI survey module (see www.hse.gov.uk/statistics/lfs/annex2.htm) has been included in the LFS annually from 2003/04 to 2011/12, and periodically prior to then (earliest results are from 1990, although results prior to 2001/02 are not directly comparable with later time periods). The module was suspended for one year in 2012/13, but from 2013/14 reverted to an annual data collection. This survey module provides an indication of the annual prevalence (including long standing as well as new cases) and incidence (new cases) of work-related illness and its distribution by major disease groups and a range of demographic and employment-related variables. It captures the most widely based definition of work-related ill health. As individuals are asked to self-report any work-related illness they believe to have suffered over the previous 12 months, responses obviously depend on lay-people's perceptions of medical matters. Whilst such perceptions are of interest and are important in their own right, they cannot be taken as a precise measure of the "true" extent of work-related illness. People's beliefs may be mistaken: they may ascribe the cause of illness to work when there is no such link; and may fail to recognise a link with working conditions when there

is one e.g. due to the possible multifactorial nature of ill health or the delay between exposure and ill health (which can be several decades in the case of cancer). Even with these discrepancies, individuals are uniquely well-placed to assess the role that work factors play in their illness. They are in a position to follow in detail how particular aspects of work have impacted them and to observe their body's response.

Research undertaken in 1995 (www.hse.gov.uk/statistics/2002/swi95.pdf) and 2010 (www.hse.gov.uk/research/rrhtm/rr970.htm) indicates a reasonable degree of reliability in self reports of work-related ill health in the LFS, and when sensibly interpreted, such surveys provide valid and relevant information not available from other sources.

Both the workplace injury and the SWI survey modules have since 2003/04 (and periodically prior to this) also provided information about the number of working days lost due to workplace injury and work-related ill health, with the exception of 2012/13 when no ill health data was collected. Estimates of working days lost for both workplace injuries and work-related ill health are expressed as full-day equivalent days to take account of the variation in daily hours worked (for example part-timers who work a short day or people who work particularly long hours). This information is available by a range of demographic and employment-related variables.

Due to a routing error in the 2007/08 and 2008/09 surveys, coverage of the SWI survey module was restricted to people working in the last 12 months rather than people ever employed (as in earlier surveys from 2001/02). Hence, all published estimates are restricted to people working in the last 12 months for comparison purposes.

From November 2011, results (from 2001/02) were published using the Standard Industrial Classification (SIC2007). A full explanation of the impacts and reasons for this change can be found on the ONS website in the LFS User Guide - Volume 3 (www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/methodologies/labourforcesurveyuserguidance).

From October 2012, results (from 2001/02) were published based on the new Standard Occupational Classification, SOC2010. More details about SOC2010 are available on the ONS website at www.ons.gov.uk/methodology/classificationsandstandards/standardoccupationalclassificationsoc/soc2010

ONS revise the LFS weights (estimates for the population) following a census. A new policy was introduced in 2016, to revise weights annually rather than periodically between censuses, providing users with the most up to date estimates. The frequency was changed to every other year from 2018. Revisions are generally made to the previous three years. Any revisions made to the work-related illness and workplace injury published estimates are noted in the revision log at www.hse.gov.uk/statistics/about/revisions/revision-log.htm.

Since estimates derived from the LFS are based on a sample (rather than the full population), they are subject to a margin of error. The main factor which determines the width of an estimates margin is the number of sample cases an estimate is based on. In published reports and tables, the sampling errors are often expressed as 95% confidence intervals. Each of these represents a range of values which has a 95% chance of containing the true value in the absence of bias. Confidence intervals should be quoted in preference to the prevalence or incidence central estimate or rate whenever there are less than 30 sample cases. In order to reflect some of the variability in the days lost estimates (measure from person to person) as well as the sample numbers involved, confidence intervals should be quoted for days lost estimates and rates based on fewer than 40 cases taking time off. Estimates based on fewer than 20 sample cases are deemed unreliable and are not published.

More detailed information:

- Survey design and methods used are given in a technical note at www.hse.gov.uk/statistics/lfs/technicalnote.htm
- Further information about the statistical quality in a quality report for self-reported workplace injury and work-related ill health at www.hse.gov.uk/statistics/pdf/lfs-background-quality-report.pdf
- Published reports can be accessed via the publications/release schedule at www.hse.gov.uk/statistics/publications/swi.htm

Summary of the LFS's main strengths and weaknesses

Strengths

- Provides the most widely based definition of work-related illness and workplace injuries based on a large well established nationally representative survey;
- Provides a comprehensive picture of workplace injuries and work-related ill health by a range of demographic and job-related factors, and a consistent time-series;
- Individuals are uniquely well-placed to report details of an accident resulting in an injury and to assess the role that work factors play in their illness;
- The LFS complements information from other data sources - there is no one definitive source that covers all aspects of either work-related illness or workplace injury.

Weaknesses

- Estimates of work-related illness and workplace injury are based on survey data, and there is an element of uncertainty about these sample estimates. This generally increases as the sample size decreases.
- Cases of workplace injury and work-related illness are based on self reports and have not been medically verified;
- Around one third of responses to the LFS are by proxy, usually a spouse;
- The LFS is a household survey, and not industrially stratified, so provides no guarantee of adequate coverage by any industry.
- Only limited information is available on causal factors, particularly for ill health.

A number of readily available tables can be accessed through the HSE statistics index of tables at www.hse.gov.uk/statistics/lfs/index.htm.

NOTE: The Office for National Statistics (ONS) is the provider of the LFS data, but the analysis and interpretation of these data published on the HSE web site are the sole responsibility of HSE.

Voluntary reporting of occupational diseases by General Practitioners (THOR GP)

THOR GP is a surveillance scheme in which general practitioners (GPs) are asked to report new cases of work-related ill health. It was initiated in June 2005. Participating GPs report anonymised information about newly diagnosed cases to the Centre for Occupational and Environmental Health (COEH), Manchester University.

The pool of voluntary reporters currently participating in this project consists of around 250 GPs already trained at a postgraduate level in Occupational Medicine by the University of Manchester. The specific course is offered by distance learning and COEH is one of only a very few sites in the UK that offers this type of specialist GP training. Consequently volunteer GPs reporters practice in areas widely distributed across the UK. The GPs reporters are instructed to make their decisions as to whether a new case should be identified as being attributable to work on the balance of probabilities (i.e. whether it is more likely than not). Reports are collected via web forms each month. When reporting a case the GPs are asked to classify it into a broad disease category and to provide information on age, gender, job, industry, type of exposure, and absence from work.

An audit of the accuracy of the recording of sickness absence within the surveillance scheme revealed that there was a considerable level of underreporting. This was primarily because some reporters tended to forget to arrange for updating of the database on occasions when they signed off patients for further sickness absence after the initial period of sickness absence. The published estimates are adjusted to correct for this under recording.

At the start of THOR-GP data collection, all participating GPs reported incident cases every month (these GPs are termed core reporters), thus permitting the rapid collection of relatively large incident data sets for analysis and interpretation. As the scheme progressed, in common with other THOR schemes, an increasing proportion of GPs were asked to report incident data during only one randomly selected month of the year (these GPs are termed sample reporters). This helped to contain costs and also to reduce the potential of GPs to 'fatigue' in their reporting.

In line with the practice in the specialist THOR schemes, estimates for the number of cases seen by the reporting group as a whole were calculated by multiplying the case numbers reported by sample reporters by

12. However, it became apparent when applying this approach to the data for 2010, that the reporting rate per reporting month was much higher for sample reporters than for core reporters. The reasons for this difference are unclear, but may be related to multiple consultations at GP level and the fact that these may be dealt with by different practice members. Work is in hand to clarify the reasons for this difference. As well as work quantify and explain the difference in core: sample reporting rates amongst GPs, the THOR team are undertaking work to refine denominator estimates, with the long-term aim of improving the accuracy and reliability of incidence estimates. Further information on the incidence rate calculation in THOR-GP is provided in a separate report at www.hse.gov.uk/statistics/calculation-thor-gp-data.pdf.

Summary of THOR GP strengths and weaknesses

Strengths

- Reported cases are clinical assessed and reported by general practitioners who have been trained at the postgraduate level in occupational medicine
- Cases are reported according to predefined criteria
- It collects information on all types of work-related ill health seen in GP clinics throughout GB
- It collects not only the information on diagnosis/symptom and the associated occupation and industry but also the information on suspected work-related causes, certified sick leave days and clinical referrals which are not available from other data sources
- It allows the estimations of incidence rates and trends for broad ill health categories in GB
- It uses methods developed from other, more long-standing clinical based reporting schemes and the quality of the data collected are continuously assessed and improved
- It is complimentary to other sources of data of work-related ill health at the national level
- All information collected is anonymous. No identifiable information about a patient is collected

Weaknesses

- Only a small number of GPs (1% of all GPs in GB) are reporting for one randomly assigned month per year. The incidence rate and trend analyses are often based on a few actual reported cases. The incidence rate estimates may subject to wide random variations
- It can only capture work-related ill health cases seen in GP consultations
- The estimated incidence rates and trends are influenced by patients' healthcare seeking behaviours and reporting behaviours of the reporters and are sensitive to methodology changes
- The estimates of incidence rates and trends are based on many assumptions and subject to uncertainties which prevent drawing firm conclusions

Tables for THOR and THOR-GP can be found within the index of tables at www.hse.gov.uk/statistics/tables/index.htm#thor.

The Data Quality Report for THOR-GP at www.hse.gov.uk/statistics/pdf/thorgp-background-quality-report.pdf

For more information on THOR GP, please visit the University of Manchester website - THOR GP (www.population-health.manchester.ac.uk/epidemiology/COEH/research/thorgp/)

Voluntary reporting of work-related ill health by specialist doctors (THOR)

The Health and Occupation Reporting network (THOR) is a voluntary surveillance scheme for work-related ill health. Under this network specialist doctors undertake to systematically report all new cases that they see in their clinics. These reports are collated and analysed by a multidisciplinary team at the Centre for Occupational and Environmental Health, Manchester University. The THOR network currently consists of 2 specialist reporting schemes and one for general practitioners (see above). These are SWORD (based on reports from hospital consultants specialising in respiratory disease) and EPIDERM (based on reports from consultant dermatologists). A third scheme, OPRA (based on reports from occupational physicians),

operated until the end of 2010. Until the end of 2009 two additional schemes were also in operation - SOSMI (based on reports from consultant psychiatrists) and MOSS (based on reports from consultant rheumatologists). The databases for several of these schemes now extend back for more than ten years and thus provide a powerful resource for investigating the increased risks of particular types of ill health in relation to occupations, industries and causal agents or work activities.

In all of the THOR schemes, there is a sampling process whereby most participating doctors are asked to send in reports for one month in each year, and the numbers of cases that they report are multiplied by 12 in arriving at the estimated annual totals. To avoid any systematic seasonal biases the sampled doctors are randomly allocated their reporting month, and this allocation changes from year to year. Not all reporting doctors are sampled; some are so called 'core' reporters, who report cases every month throughout the year. Cases reported by them are included in the estimated annual totals without any scaling up. The estimated annual totals are generally based on smaller (often considerably smaller) numbers of actual reported cases, and are subject to random variation due to sampling error. Decisions as to whether particular cases of ill health are work-related are a matter for the professional judgement of the reporters, who are asked to decide on the balance of probabilities.

The THOR schemes for clinical specialists' reporting only cover a subset of the total cases of work-related disease. This is because quite a proportion of cases will either never come to the attention of a hospital consultant or will be dealt with by a general practitioner. Moreover, many workers will not have access to an occupational physician at their place of work. Therefore, the subset of cases that are recorded within the THOR schemes will largely consist of either the serious or difficult-to-resolve cases that are referred to specialists by general practitioners or the more general cases from industrial sectors that are well covered by occupational physicians. Given this, the numbers of cases recorded in the THOR schemes clearly underestimate the total burden of work-related ill health. Nevertheless, the subset of cases that are recorded should be identified by reasonably consistent process each year thereby making it possible to assess trends over time.

Figures published by HSE relate to Great Britain only, although the THOR schemes do collect reports from doctors throughout the UK.

The incidence rates for THOR cases, per 100 000 workers in each occupation or industry, are calculated using denominators from Annual Population Survey (APS). The analyses by occupation use the Standard Occupational Classification (SOC).

Any analysis of the raw THOR data currently presented on the HSE website in order to identify trends over time should be undertaken with caution. Those wishing to draw inferences regarding apparent changes in reported numbers of cases should be aware that there can be several potential explanations for differences between one year and the next. For example, participation by specialist doctors in the schemes is voluntary and so the number of reporters may vary with time. In addition, there is evidence that some reporters may be less inclined to report as time goes on.

A more sophisticated longer term statistical analysis is being undertaken to take account of the kinds of factors identified above which complicate the measurement of trends. This has involved the use of a multi-level statistical model. Within this model data is analysed in a process which effectively calculates the trends over time in the level of reporting by individual reporters and then summates these individual trends as part of the process of calculating the overall trend. This modelling approach takes full account of changes in the number of reporters over time. It also enables some allowance to be made for the fact that individual reporters may vary in factors such as the density of cases they see and the stringency of the criteria, which they apply when deciding whether particular cases are work-related. For further information, see the report provided by the THOR team in the University of Manchester at www.hse.gov.uk/statistics/pdf/thortrends16.pdf

Summary of THOR strengths and weaknesses

Strengths

- All consultant physicians within the particular specialties in the UK are invited to take part in the reporting and the participation rate and response rate have been consistently high
- Reported cases are clinically assessed by consultant physicians
- They collect not only the information on diagnosis and the associated job and industry but also the information on suspected causal agents to allow further investigations of work-related causes of ill health and identification of novel work-related health risk
- They allow the assessments of the reported incidence, incidence rates and monitoring the trends over time

- They are long-standing clinical based reporting schemes date back more than 20 years. The quality of the data collected are continuously assessed and improved
- They are complimentary to other sources of data of work-related ill health and probably provide the best available data on the causal agents for occupational asthma and occupational contact dermatitis in GB.
- All information collected is anonymous. No identifiable information about a patient is collected

Weaknesses

- Majority of the reporters are reporting for one randomly allocated month in each year with a small group of about 20 reporters are reporting every month
- They can only capture more serious cases of ill health that have been referred to specialist physicians' consultations and will underestimate the total burden of work-related ill health
- The estimated incidence rates and trends are influenced by patients' healthcare seeking behaviours, clinical referral patterns and reporting behaviours of the reporters and therefore are sensitive to methodology changes
- The estimates of incidence rates and trends are based on many assumptions and subject to uncertainties which prevent drawing firm conclusions

Tables for THOR and THOR-GP can be found within the index of tables at www.hse.gov.uk/statistics/tables/index.htm#thor.

The Data Quality Report for THOR-GP at www.hse.gov.uk/statistics/pdf/thor-background-quality-report.pdf.

For more information on THOR, please visit the University of Manchester website (www.population-health.manchester.ac.uk/epidemiology/COEH/research/thor/)

Industrial Injuries Disablement Benefit Scheme (IIDB)

The Industrial Injuries Disablement Benefit (IIDB) scheme, administered by the Department for Work and Pensions (DWP), compensates employed earners who have been disabled by a prescribed occupational disease (PD). Diseases are prescribed where an occupational cause is well established, and where the terms of prescription can be framed to identify cases of genuine occupational origin. For diseases in which the clinical features do not in themselves allow attribution to occupation, and which may have common non-occupational as well as occupational causes, the terms of prescription are usually defined based on epidemiological evidence of occupational circumstances in which the risk is at least doubled, since this implies that at least half of cases would not have occurred but for those particular occupational circumstances. Any individual case who worked in those occupational circumstances can thus be judged to be "occupational" on the balance of probabilities.

Diseases that are difficult to define clearly - such as some musculoskeletal disorders and work-related stress - are not currently covered by the scheme; although these diseases may be associated with work activities, it isn't possible to define circumstances where the risks are as much as doubled. The scheme can thus be used to give an indication of the scale of annual incidence of those diseases for which the evidence about occupational causation is strongest.

For diseases that are prescribed on the basis of a doubling of risk the IIDB figures potentially overestimate the annual incidence by a factor of up to two: if certain occupational circumstances confer at least a doubling of risk then at most one half of disease cases arising from those circumstances will be caused by non-occupational factors (if the risk is exactly two the occupational proportion will be exactly one half). In reality, however, assessed IIDB cases will usually understate the scale of disease incidence because cases may arise from circumstances other than those covered by the terms of the prescription, individuals may be unaware of the possible occupational origin of their disease or the availability of compensation, and because the scheme does not cover the self-employed.

For most diseases, benefit is payable if the extent of disability (from a single PD or from a number of PDs together) is assessed at 14% or more. However, the published statistics include all newly assessed cases including those assessed at 1-13% disability. Occupational deafness is a special case since a threshold of 20% disability is linked to the definition of deafness for the purposes of the scheme. Therefore assessed cases of hearing loss with less than 20% disability are not included in the statistics.

Care should be taken in interpreting the annual totals for all prescribed diseases and their trend. Prescribed diseases do not represent the full spectrum of work-related illness. Figures for individual diseases making up

the total are liable to be strongly affected by any changes in prescription criteria and factors affecting the take-up of claims (e.g. the contraction of traditional industries where the availability of compensation is well known, and the shift in employment to newer industries where it may be less well known). Much of the total is accounted for by lung diseases, vibration white finger, and deafness, and many such cases are a legacy of past working conditions which would be judged inadequate or in some cases illegal by today's standards.

Summary of IIDB strengths and weaknesses

Strengths

- A large number (more than 5,000) of clinically validated individual disease cases are recorded each year in the scheme.
- The scheme permits an assessment of the incidence of rare diseases and time trends (with caution); it is HSE's only data source for certain conditions.
- The scheme gives a lower bound estimate of the total incidence of diseases which are most clearly occupational in origin rather than the wider category of work-related diseases.
- The scheme has been running since the late 1940s and for many diseases there are several decades of information; HSE holds electronic data since the mid-1980s. The method of data collection has been unchanged since April 2002.

Weaknesses

- Coverage is limited to diseases which can be clearly defined and attributed to occupation either based on clinical features or where there is epidemiological evidence to allow attribution in certain circumstances on the balance of probabilities.
- For those diseases that are included, annual incidence will tend to be underestimated due to:
 - cases arising from circumstances other than those covered by the terms of the prescription;
 - individuals being unaware of the possible occupational origin of their disease;
 - a lack of knowledge regarding the availability of compensation;
 - the scheme not including self-employed workers which is a particular issue in occupations with a high proportion of self-employed.
- Large increases in claims can coincide with media campaigns, as well as with newly prescribed diseases where an initial backlog of cases may have been assessed rather than a steady stream of incident cases. Any analysis of trends must take this into account.
- Many of the diseases reflect occupational conditions in the past rather than current working conditions.

Tables of data for IIDB can be found within the index of tables at www.hse.gov.uk/statistics/tables/index.htm#iidb.

The current set of data have been rounded to the nearest 5 cases, or to "-" if less than 5 cases. This has been done to maintain the anonymity of DWP customers.

For more information on the IIDB, please visit the website of the Industrial Injuries Advisory Council.

Death certificates as a source of deaths from asbestos-related and other occupational lung diseases

Mesothelioma and asbestosis mortality statistics for Great Britain are derived from the mesothelioma and asbestosis registers maintained by HSE which include all deaths where the description of the cause of death on the death certificate mentioned the word 'mesothelioma' and 'asbestosis' respectively. The information on the registers from the death records includes date of birth, date of death, sex, last occupation and postcode of residence at death. Published information is based on the date each death occurred rather than the date the death was registered, which for some mesothelioma and asbestosis deaths can be many months later.

Mesothelioma and asbestosis death records are supplied to HSE electronically by the Office for National Statistics (ONS) - for deaths in England and Wales - and the National Records of Scotland (NRS) - for Scottish deaths. Records are currently selected by ONS and NRS from their data collection systems via the mesothelioma cause of death code. ONS also search for strings 'meso', 'mesa' and 'asb' within the cause of death text descriptions. This combined approach helps to ensure that any deaths that may have been miscoded, or where mesothelioma has been misspelt are identified.

Some death certificates mention both asbestosis and mesothelioma. Such deaths are included on both registers in order to keep track of cases where both diseases were present. However, on some death certificates - particularly those that also mention mesothelioma - the term asbestosis appears to be used incorrectly to indicate role of asbestos exposure as a causal agent rather than to describe the disease that led to death. Thus separate figures are provided for deaths certificates that mention asbestosis together with other asbestos related diseases. The best indication of the number of deaths where the disease asbestosis contributed as a cause of death is to exclude those deaths that also mention mesothelioma.

The mesothelioma and asbestosis mortality statistics are updated annually to include figures for the year two years behind the current year. The delay is a result of the substantial time periods that can be involved in the death certification process. When we publish a figure for the latest available year it will include all deaths occurring in that year which are registered up to 15 months after the year end. This means that the data will be approximately complete when first published. However, there may eventually be a small number of further registrations after this 15-month period, in which case figures are updated during subsequent annual updates.

A series of validation checks includes checking for important missing information, such as date of birth or death, and checking for duplicates are carried out each year and queries are followed up with ONS and NRS. Coding of mesothelioma site is also carried out at this stage where possible, however, in many cases there is insufficient information recorded on the death certificate to do this.

Summary of strengths and weaknesses

Strengths

- The registers provide a long term series of data collected on a consistent basis for over 4 decades.
- The data includes all deaths where mesothelioma and asbestosis contributed as a cause of death - not just those where these diseases were recorded as the underlying cause of death.

Weaknesses

- The completeness of the registers depends on those certifying deaths recognising and recording that mesothelioma or asbestosis was a cause of death. Under ascertainment would have been more likely in the past than in recent years.
- The asbestosis register may include some deaths where the disease asbestosis was not present if the term was used incorrectly to indicate that asbestos exposure took place.

Tables on asbestos-related and other occupational lung diseases can be found within the index of tables at www.hse.gov.uk/statistics/tables/index.htm#lung.

HSE's Costs to Britain model

HSE's Costs to Britain model has been developed to estimate the economic costs of injury and new cases of ill health arising from **current working conditions and working practices**. Cost estimates are available on a consistent basis annually from 2004/05.

The economic cost estimate includes estimates of both:

- Financial (or direct) costs incurred, either in terms of payments that have to be made or income/output that is lost). Financial costs are structured into four broad categories: 'productivity costs', 'health and rehabilitation costs', 'administrative and legal costs' and 'compensation'.
- The monetary valuation of the impact on quality / loss of life of affected workers (referred to as human costs).

As well as estimating the total net costs to society (Britain), the Costs to Britain model also estimates the cost breakdown between the three different stakeholder groups to whom the costs fall: the affected individual, employers and government/taxpayer. (Note: The total cost to society (Britain) is a net cost since it accounts for transfers between stakeholder groups e.g. sick pay is a transfer from employers to individuals).

The general principle used in the Costs to Britain model for estimating economic costs is, for each cost component, to apply the formula:

$$\text{Cost} = \text{Quantity} \times \text{Unit price}$$

Data on 'quantity' (i.e. the number of annual injury and ill health cases) comes from two sources:

- RIDDOR (see www.hse.gov.uk/statistics/sources.htm#riddor): for the number of annual fatal injuries; and
- Labour Force Survey (see www.hse.gov.uk/statistics/sources.htm#lfs): for the estimated annual number of people suffering a non-fatal workplace injury or work-related ill health (the latter are restricted to self-reports of newly occurring ill health to best capture costs arising from current working conditions). The Labour Force Survey also provides an estimate of the number of workers who leave the labour market each year as a result of a workplace injury or ill health.

Data on 'unit price' for estimating the various financial costs come from a wide range of sources including ONS surveys on earnings, NHS data on treatment costs and DWP figures on benefit rates. Human costs are based on the values from the Department for Transport (DfT) for what individuals would be willing to pay to have reduced risk of death or avoid reductions in quality of life which result from injury.

The cost estimates are subject to uncertainty, due to both sampling error in the estimated number of annual workplace injury and ill health cases and the underpinning assumptions used to assign costs. The cost model accounts for the former uncertainty and estimates are often expressed as 95% confidence intervals - the range of values which has a 95% chance of containing the true cost. When comparing costs over time, it is important that any judgement on change in costs is based on a consideration of the confidence interval, rather than the central estimate itself.

Summary of the model's main strengths and weaknesses

Strengths

- Provides one of the most comprehensive and robust estimates of the economic costs of workplace injury and work-related ill health for any country in the world
- Provides a single measure of the scale of current health and safety failings by providing a means of adding different health and safety outcomes (for example fatalities and minor injuries) so they can be presented in a single summary measure
- Captures a wide-range of cost impacts, acknowledging where gaps exist
- Provides an indicator of movements in the overall performance of the health and safety system
- Total cost estimate includes not only direct financial costs but also a monetary valuation of the impact on quality and loss of life of affected workers – important in the economics of public policy
- Provides indication of the distribution of costs by, for example, different cost bearers and between injury and ill health.

Weaknesses

- Does not generally include the cost of long-latency work-related ill health cases, such as cancer, which are caused by historic working conditions (HSE has published separate research on the costs of work-related cancer in Great Britain – see <http://www.hse.gov.uk/research/rrhtm/rr1074.htm>)
- Does not provide a breakdown of costs by ill health type or nature of injury due to both limitations in the survey incidence data and the availability of suitable valuations of the impact on quality of life ('human costs') specific to different types of work-related ill health.

- Changes in costs over time do not account for changes in the costs associated with people whose ill health or injury results in their permanent withdrawal from the labour market: because of data limitations around the estimate of the number of such cases, these costs are held constant across years.

European Survey of Enterprises on New and Emerging Risks (ESENER) Survey

HSE collaborated with the EU-Occupational Safety and Health Agency (EU-OSHA) on their 2014 European Survey of Enterprises on New and Emerging Risks survey (ESENER) to secure UK data on how health and safety is managed in the workplace. The survey asks those 'who know best' about safety and health in establishments about the way safety and health risks are managed at their workplace, with a particular focus on psychosocial risks.

Some 49,320 establishments were surveyed across 36 European countries in summer/autumn 2014. Within the UK, the total sample was 4,250 establishments (including a sample boost funded by the Health and Safety Executive to ensure sufficiently reliable results at a more detailed industry level). The survey covered establishments with five or more employees and included all sectors of economic activity except for private households (SIC 2007 Section T) and extraterritorial organisations (SIC 2007 Section U).

The survey fieldwork was carried out by TNS Deutschland GmbH and its network of fieldwork centres around the UK. The sample was selected using multi-stratified sampling procedures. The final data set included weighting factors to ensure that survey results are representative of establishments across the UK in terms of sector of activity and size.

Since estimates derived from the ESENER survey are based on a sample (rather than the full population) they are subject to a margin of error. The main factor that determines the width of an estimates margin is the number of sample cases an estimate is based on. In HSE published reports and tables, the margins of error are often expressed as 95% confidence intervals. Each of these represents a range of values which has a 95% chance of containing the true value in the absence of bias. Estimates based on 20 or fewer sample cases have been suppressed as deemed unreliable for general publication.

For more detailed information about the survey design and methods see www.hse.gov.uk/statistics/pdf/esener-technical-report.pdf.

Surveillance of workers exposed to lead

Under the Control of Lead at Work Regulations (CLAW) 2002 and the former 1980 and 1998 Regulations, all workers with significant exposure to lead are required to be under medical surveillance by an appointed doctor or one of HSEs medical inspectors. Exposure to lead is described as significant if one or more of the following conditions are met (i) the workers exposure is liable to exceed half the occupational exposure limit for lead in the atmosphere; 0.15 mg/m³ for lead other than lead alkyls and 0.10 mg/m³ for lead alkyls, (ii) the worker has a recorded blood-lead concentration that equals or exceeds 20µg/100ml for women of reproductive capacity or 35µg/100ml for all other employees, or (iii) an appointed doctor certifies that the worker should be under medical surveillance as there is substantial risk of ingestion or dermal absorption of lead. The surveillance includes the measurement of each worker's 'blood-lead level'; the amount of lead in samples of their blood, expressed in micrograms per 100 millilitres (µg/100ml). Annual returns give summary statistics for each workplace based on the maximum blood-lead level recorded for each worker under surveillance.

The Approved Code of Practice issued with the Regulations lays down levels of blood-lead concentration above which the appointed doctor is required to decide whether to certify that the worker should no longer be exposed to lead. If a worker's blood-lead level reaches or exceeds this 'suspension level' a repeat measurement must be made, and if this is still at or over the level the worker should be suspended from working with lead. At the doctors discretion employees can be removed from working with lead even if the blood lead concentration is below the suspension limit. The number of such workers suspended is also recorded annually and analysed in the statistics. Under the 1980 Regulations the suspension levels were 70µg/100ml for males (80µg/100ml up to 1986) and 40µg/100ml for females of reproductive capacity (to protect the health of any developing foetus). The suspension levels were lowered in the 1998 Regulations (and remain unchanged in the 2002 Regulations) to 60 and 30 µg/100ml respectively, with new 'action levels' of 50 and 25 µg/100ml. The 1998 Regulations also introduced suspension and action levels for young persons aged under 18 years of 50 and 40 µg/100ml respectively. In most cases, female employees under 18 years of age will also be women of reproductive capacity and the lower action and suspension levels

apply. If an individual's blood-lead level reaches the action level the employer should investigate the circumstances leading to the heightened level and so far as reasonably practicable, give effect to measures designed to reduce the blood-lead concentration to a level below the appropriate action level. This could include issue of personal protective equipment or suspension from working with lead for a period.

Statistics for blood lead levels are subject to a number of limitations. Firstly, the coverage of the statistics is defined by the extent of medical surveillance that occurs in practice and this may not be completely aligned with what should take place under the CLAW regulations. The basic decision as to whether surveillance is required rests with each employer. Over-coverage can occur if exposure in a lead-using workplace has fallen to levels which are no longer "significant" by the criteria set out in the Approved Code of Practice. The application of these criteria has some flexibility, and in any case employers where blood lead surveillance has been established, may decide to continue it on a precautionary basis even when not strictly required by the regulation. If any such measurements are included this will result in the implied estimate of the numbers of workers with potentially significant exposure being overestimated, though the statistics will also correctly reflect the fact that these workers have consistently low levels of lead in their blood. Conversely, measurements not included because employers have not adequately assessed the potential for lead exposure in their workforce (or are unaware of their duty to do so) will lead to an underestimate of the number with potentially significant exposure. HSE inspectors may identify such workplaces from time to time, and they will then be included. The nature of the data collection and processing are also subject to potential human error, in particular, whether the HSE appointed doctors fill out their annual blood lead returns accurately. Finally, comparison of recent data with that for earlier years may be affected by changes to the measurement categories over time.

Summary of strengths and weaknesses

Strengths

- The blood lead data constitutes a long-term data series that provides annual estimates of size of the population with the highest occupational exposures to lead.
- The data series is based on a relatively large number of blood lead measurements in all workers undergoing medical surveillance, rather than a sample survey approach. This permits a detailed view of the distribution of lead exposure in each of the main industry sectors with the highest potential for ongoing exposure.

Weaknesses

- Coverage is dependent on the extent of compliance with the CLAW regulations - potentially including workers that need not be under surveillance because exposures are not significant, as well as not including those that should be under surveillance.
- The completeness and accuracy of the data is subject to human error and dependent on whether reporting doctors fill out their annual blood lead returns accurately.
- The current data collection arrangements do not permit the tracking of consecutive blood lead levels for particular individuals.
- The data provides limited information about the number of people exposed to lead at lower levels who would not be required to undergo medical surveillance under the CLAW regulations.

More Information on working with lead can be found at:

- Exposure to lead (www.hse.gov.uk/statistics/causdis/lead/index.htm)
- Working safely with lead (www.hse.gov.uk/statistics/causdis/lead/index.htm)
- Control of Lead at Work Regulations 2002. Approved code of practice and guidance (www.hse.gov.uk/pubns/books/l132.htm).
- Tables of data on lead exposure can be found within the index of tables at (www.hse.gov.uk/statistics/tables/index.htm#lead).

Enforcement

Enforcement notices cover improvement notices that require employers to put right a contravention of health and safety legislation within a specified time limit; prohibition notices that require that a work activity that gives, or will give, rise to a risk of personal injury is stopped; and deferred notices that require a work activity is stopped within a specified time. Both HSE and local authorities issue enforcement notices relating to health and safety breaches.

Offences prosecuted refer to individual breaches of health and safety legislation, a prosecution case may include more than one of these offences.

Where enforcement statistics are allocated against a particular year, for notices this refers to the date the notice was issued; for prosecutions this relates to the date of the final hearing and where a verdict has been reached.

In Scotland, HSE and local authorities investigate potential offences but cannot institute legal proceedings. HSE and local authorities send a report to the Crown Office and Procurator Fiscal Service (COPFS). COPFS makes the final decision whether to institute legal proceedings and which offences are taken.

Summary of main strengths and weaknesses

Strengths

- Data provides a consistent time series giving an indication of changes in health and safety compliance over time;
- Prosecutions data are based on formal decisions made by courts of law and are therefore representative of the most serious health and safety breaches;
- By publishing clear figures relating to the negative consequences of non-compliance, this serves as an additional motivation for companies to comply with the law;
- Good level of detail in the data including tabulations available at regional and industry level and fines incurred.

Weaknesses

- Local authority data for enforcement notices are based on a voluntary return from local authorities across Great Britain, therefore figures presented are derived from an estimation method;
- Prosecutions data are based on cases completed in the year but do not set out when the offence took place. It can be many months and sometimes several years from breach to hearing and the final completion of a case;
- Assumptions based on changes in the number of enforcement notices issued need to be put in context with the enforcement strategy/policy of HSE and local authorities, which is subject to change;
- Several factors can influence fluctuations in the number of enforcement notices issued, for example, targeted blitzes in certain industries or a change in approach to proactive inspection.

Tables of data on enforcement can be found within the index of tables at

www.hse.gov.uk/statistics/tables/index.htm#enforcement. For more information about enforcement data see the Enforcement Data Quality Statement at www.hse.gov.uk/statistics/data-quality-statement.htm.

Employment

In November 2011, HSE moved to a single data source for compiling employment related statistics - the Annual Population Survey (APS). The APS is a household sample survey, designed, developed and managed by the Office for National Statistics (ONS) in Great Britain and by the Department of Finance and Personnel in Northern Ireland (DFP(NI)) on behalf of the Department of Enterprise, Trade and Investment (DETINI). It was launched in 2004, and is comprised of 12 months of survey data that is disseminated quarterly (with a 3 month lag).

The APS is weighted to reflect the characteristics of the general population. It provides detailed information on a range of employment structures and is used primarily to produce jobs-related denominator data (estimates of main and second jobs combined) for calculating rates of illness and injury for HSE's annual statistics release. It is also used more generally to examine the employment structure across Great Britain (typically by industry and occupation) to ensure that the risks to people's health and safety from work-related activities are properly controlled.

There is no single source of employment data, but rather a range of data sources with different strengths and weaknesses, differing definitions of employment and therefore different estimates. Prior to using the APS, a number of other employment data sources were used. The move to the APS as the sole employment data source resulted in a one off jump or drop in the RIDDOR injury rates, particularly within industry sectors, compared to that previously published using the Workforce Jobs (WJ) series and the Business Register and Employment Survey (BRES). However, this was a one-off change, and a back-series of data to 2004 was provided to allow for time-series trend analysis where appropriate.

ONS revise the LFS weights (estimates for the population) following a census. A new policy was introduced in 2016, to revise weights annually rather than periodically between censuses, providing users with the most up to date estimates. The frequency was changed to every other year from 2018. Revisions are generally made to the previous three years. Any revisions made to the work-related illness and workplace injury published estimates are noted in the revision log at www.hse.gov.uk/statistics/about/revisions/revision-log.htm.

Summary of strengths and weaknesses

Strengths

- The single data source is consistent and therefore comparisons can be made over time.
- Provides a large range of demographic and job-related variables, allowing detailed analysis
- More reliable information by geographical areas, particularly at the local authority level.

Weaknesses

- Unable to create a complete time series of ill health and injury rates as the APS only started in 2004.
- The 3 month lag is out of sync with our fatalities release. This means that we cannot use the correct time period (April to March) in line with the main statistics release.
- The APS is a household survey, and not industrially stratified, so provides no guarantee of adequate coverage by any industry.

Note: The Office for National Statistics (ONS) is the provider of the APS data. The analysis and interpretation of these data are the sole responsibility of HSE.

For further information on the APS, please visit the Office for National Statistics (ONS) website at

www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/methodologies/aboutforcesurveyuserguidance

Psychosocial Working Conditions Survey

This ongoing annual series of surveys provides data on selected psychosocial working conditions from face to face interviews with a random probability sample of British working households. The series, beginning in 2004, has been delivered through modules in the ONS Omnibus survey series. Response rates for the surveys are around 60-70%, and the number of eligible workers interviewed per month ranged between 500 and 900. The survey is designed to monitor key working conditions on the areas underpinning HSE's Management Standards for Work-Related Stress, namely demand, control, support, role, relationships and change.

For complete annual survey reports see www.hse.gov.uk/statistics/publications/illhealth.htm.

European data sources

Eurostat

Fatal Injuries

Despite issues with comparability, Eurostat publishes data on fatal accidents at work in as standardised a form as possible. Fatalities cover 8 common industry groupings, rates are standardised to take account of the different structure of working populations across member states, and fatalities due to road traffic accidents are removed to account for GB and Ireland who do not record work related road traffic accidents.

For further details on the scope and coverage of the fatalities data please see the metadata provided by Eurostat at: http://ec.europa.eu/eurostat/cache/metadata/en/hsw_acc_work_esms.htm.

To download European data on fatal accidents please visit the Eurostat database at <http://ec.europa.eu/eurostat/data/database>.

Non-fatal Injuries

Unlike fatal injuries, where reporting is thought to be relatively complete, non-fatal injuries may be subject to under-reporting in some countries. The differences arise in countries such as GB, Ireland and Denmark where employers report accidents to a national labour inspectorate (such as HSE). In other countries such as Germany, Spain or Italy, reports are made through insurance systems with a relatively low level of under-claiming. This difference, and the inclusion of road traffic accidents in statistics from countries other than GB and Ireland, means that HSE do not draw direct comparisons from this data and instead use the self-reported accident data gathered in the European Union Labour Force Survey (EU LFS).

Europe-Wide Surveys

The European Union Labour Force Survey (EU LFS) is a large household survey carried out in the 28 Member States of the European Union, 2 candidate countries and 3 countries of the European Free Trade Association (EFTA). In 2013 the EU-LFS included an ad hoc module asking about accidents at work, work-related health problems, and exposure to factors that can adversely affect mental well-being or physical health in the previous 12 months.

Eurostat tries to ensure comparability with a common questionnaire, although national statistical institutes in each country run the surveys so differences may still arise in sample selection and conducting the interviews.

Data is available in Eurostat's online database at <http://ec.europa.eu/eurostat/data/database>.

For further information and publications see also the European Labour Force Survey website at <http://ec.europa.eu/eurostat/web/lfs/overview>.

European Working Conditions Surveys (EWCS)

Eurofound (the European Foundation for the Improvement of Living and Working Conditions) is a European Union body set up to contribute to the planning and design of better living and working conditions in Europe. Every five years the foundation conducts a survey to study working conditions in Europe – the latest survey was run in 2015. For more details on the

European Survey of New and Emerging Risks (ESENER)

Eurofound (the European Foundation for the Improvement of Living and Working Conditions) is a European Union body set up to contribute to the planning and design of better living and working conditions in Europe. Every five years the foundation conducts a survey to study working conditions in Europe – the latest survey was run in 2015. For more details on the background to the European Working Conditions Survey please visit the EWCS homepage on the Eurofound website at www.eurofound.europa.eu/surveys/ewcs/index.htm. To view the latest data, use the data visualisation tool (www.eurofound.europa.eu/surveys/data-visualisation/sixth-european-working-conditions-survey-2015).

European Survey of New and Emerging Risks (ESENER)

The European Survey of New and Emerging Risks (ESENER) ran in 2014 and surveyed businesses with 5 or more employees in all sectors. EU-OSHA undertook telephone interviews with 49,320 establishments, in 36 countries across Europe. Key areas of focus were psychosocial risks such as stress, violence and harassment. For more background on the survey, and to view the results visit the mapping tool on the website of the European Agency for Safety and Health at Work at <http://osha.europa.eu/sub/esener/en>.

Data tables on European comparisons can be found within the index of tables at www.hse.gov.uk/statistics/tables/index.htm#europeancomparisons and further information on the ESENER survey can be found above.

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