

Health and safety in construction in Great Britain, 2013

Work-related injuries and ill health

Contents

Summary	2
What is construction?	3
Other definitions	3
Industry coding errors	5
Economic Context	5
Ill health	6
Occupational cancer	7
Injuries	8
Overview	8
Fatal injuries	8
Major injuries	9
Over seven day injuries	10
Occupations	11
Fatal injuries to members of the public	12
Labour Force Survey (LFS) injuries and days lost	13
Enforcement	14
Links to data sources and tables	15



Summary

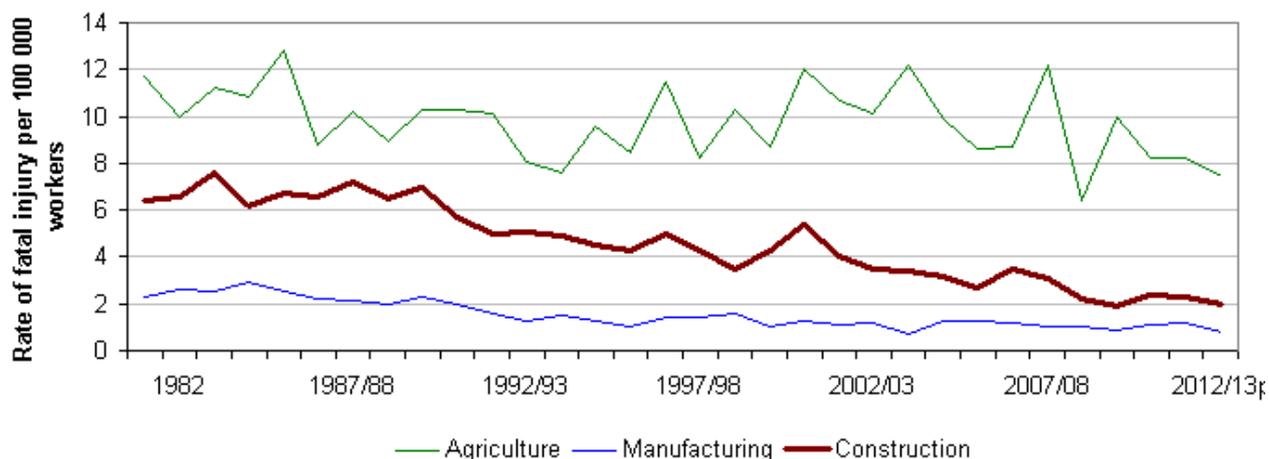
The information in this document relates to Health and Safety Statistics for 2012/13. The document can be found at: www.hse.gov.uk/statistics/industry/construction/

There have been significant reductions in the number and rate of injury over the last 20 years or more. Nevertheless, construction remains a high risk industry. Although it accounts for only about 5% of the employees in Britain it accounts for 27% of fatal injuries to employees and 10% of reported major injuries.

The latest results in construction show:

- 39 fatal injuries to workers. 12 of these fatalities were to the self-employed. This compares with an average of 53 over the previous five years – including an average of 18 to the self-employed (RIDDOR);
- about 3 700 occupational cancer cases are estimated to arise each year as a result of past exposures in the construction sector (CAN04);
- there were an estimated 74 thousand total cases and 31 thousand new cases of work-related ill health (LFS, 2012);
- an estimated 1.4 million working days were lost in 2011/12, 818 thousand due to ill health and 584 thousand due to workplace injury, making a total of 0.7 days lost per worker (LFS, 2012).

Figure 1 Long term trends in rates of fatal injury to workers, 1981 - 2012/13 (RIDDOR)



What is construction?

HSE uses the Standard Industrial Classification of Economic Activities 2007 (SIC 2007) scheme to define industries. Under SIC 2007, construction (Section F) includes:

- Construction of buildings – Division 41;
- Civil engineering – Division 42; and
- Specialised construction activities – Division 43.

In practice, there is overlap between these divisions and so construction is treated as a whole. It does not, however, include architects, engineers, etc. who are part of practices not run by construction companies.

Other definitions

In addition to the SIC 2007 definition of construction, construction work could be defined by using occupation or work activity, an additional European code used in newer RIDDOR reports. The main construction occupations are:

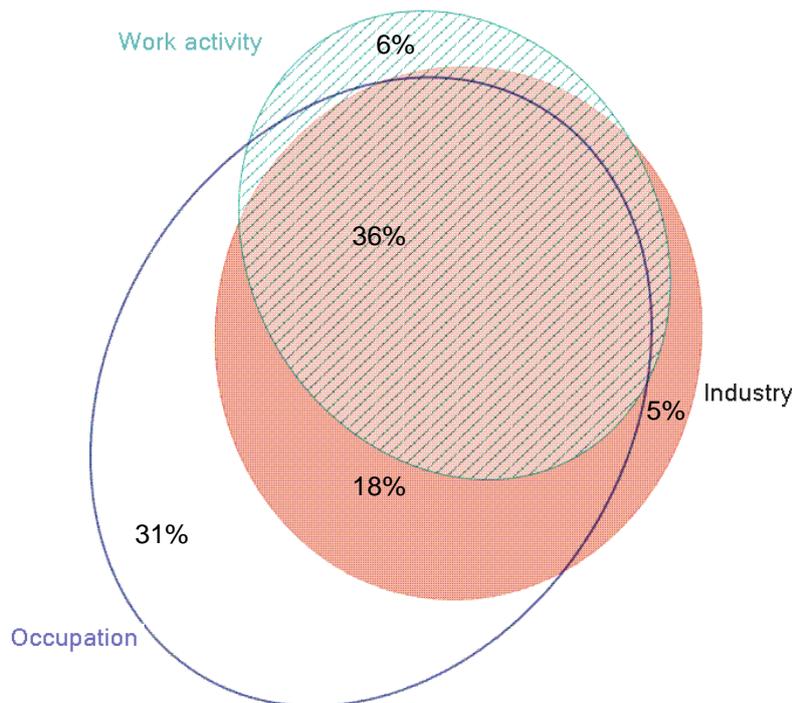
Standard Occupation Code 2010	Worker Jobs	% self-employed ¹
1122: Production managers and directors in construction	126 000	25%
2121: Civil engineers	36 000	15%
2433: Quantity surveyors	27 000	10%
2434: Chartered surveyors	15 000	15%
2436: Construction project managers and related professionals	32 000	20%
5216: Pipe fitters	4 000	22%
5225: Air-conditioning and refrigeration engineers	6 000	40%
5241: Electricians and electrical fitters	128 000	40%
5242: Telecommunications engineers	20 000	15%
5249: Electrical and electronic trades n.e.c.	15 000	18%
5311: Steel erectors	4 000	28%
5312: Bricklayers and masons	65 000	59%
5313: Roofers, roof tilers and slaters	40 000	64%
5314: Plumbers and heating and ventilating engineers	138 000	51%
5315: Carpenters and joiners	182 000	63%
5319: Construction and building trades n.e.c.	199 000	75%
5321: Plasterers	48 000	71%
5322: Floorers and wall tilers	8 000	74%
5323: Painters and decorators	95 000	73%
5330: Construction and building trades supervisors	38 000	37%
8129: Plant and machine operatives n.e.c.	3 000	16%
8141: Scaffolders, staggers and riggers	21 000	23%
8142: Road construction operatives	18 000	13%
8149: Construction operatives n.e.c.	49 000	34%
8221: Crane drivers	4 000	10%
8229: Mobile machine drivers and operatives n.e.c.	26 000	18%
9120: Elementary construction occupations	110 000	35%

¹ Own view

Relevant Work Activity Codes	
3	Construction - new building
4	Construction - civil engineering, infrastructures, roads, bridges, ports
5	Construction - remodelling, repairing, extending, building maintenance
6	Demolition

It would be too easy for there to be a simple relationship between the Industry, Occupation and Work Activity Codes. The relationship between them in RIDDOR reports is illustrated in Figure 2.

Figure 2 Alternative definitions of construction



The percentages shown are of the total number of injuries to employees reported in 2012/13, meeting one or more of the possible *construction* criteria – SIC Code, Occupation or Work Activity code. So, for example, 31% of possible construction incidents had a construction related occupation, but not a construction related work activity or SIC Code.

Occupation

Three fifths (61%) of injuries to employees with one of these 'construction occupations' have a construction SIC.

Just over one in eight (13%) are coded as manufacturing. This is not surprising as, for example, some electrical work is production or maintenance in a factory. The same is true of joinery.

Some of the occupations also have wider definitions than might be expected, for example 9120: Elementary construction occupations includes grave diggers!

About a third (33%) have a construction work activity code, but another fifth (20%) are coded as maintenance and repair. Although this should not include building maintenance, it is obvious that the code has often been used in this way.

Work Activity

In theory *work activity* should be closest to work that the Construction Design and Management Regulations 2007 applied to. 87% of reports with a construction work activity are coded to a construction SIC. One quarter (25%) of reports involved construction of a new building; half (53%) involved remodelling, repairing, extending, building maintenance, 17% were civil engineering and 5% demolition.

Just over 2% were within manufacturing, but that is understandable as maintenance and minor construction is often carried out in-house. A similar proportion have an education SIC code. Are these also minor construction and maintenance projects? Possibly, but 18% of these reports (29% of demolition) involve under 16 year olds. None of these budding contractors appear to have demolished any structure or building, though some tripped over or bumped into one! The new codes are, therefore, useful, but need to be treated with some caution.

SIC

As an overall definition of construction the SIC code remains the best option, not least because it is the only one that aligns with the ONS employment estimates, allowing us to calculate injury rates and compare risks between industries. The other codes do, however, help to identify some reports which were coded to the wrong industry, as reported.

Industry coding errors

There are coding errors in the industry codes assigned by reporters. The main coding problem is typical of that for all reports. 346 were originally coded as *Other Service Activities* although they appear to be construction incidents. About half as many were coded to *Public Administration*. The net effect of the changes has been to increase the number of employee reports coded as construction by about 700, or 6%. Any apparent changes since September 2011 may be influenced by this recoding, though this does not affect fatalities as they are coded individually, not automatically.

The main challenges involved in identifying incorrectly coded reports tend to be in the marginal areas. For example if a hotel chain directly employs a painter or carpenter to maintain its hotels is that work part of the hotel or construction industries? It all depends what you are trying to count.

On the whole HSE wants to be able to code injury reports in the same way that the Office for National Statistics codes their survey reports. This means that we can calculate rates and compare risks between different industries. An injury to a hotel worker doing construction should only be counted as construction if they work for a separate subsidiary or division that primarily does construction. Deciding this from the limited information provided in a Riddor report is neither easy nor infallible.

Focusing on the activity of the injured person's employer, at the place where the incident happened, can result in counterintuitive results. For example, a delivery driver injured on a construction site is likely to be treated as a transport incident rather than a construction incident.

Economic Context

According to the Office for National Statistics² output in the construction sector grew steadily (with the exception of a mild downturn in 2004) from 2000 until early 2008, when a financial market shock affected the UK and global economic growth. The deterioration in economic conditions that followed had a marked effect on the three main sectors of the economy, and in particular construction. Between Q1 2008 and Q2 2009, construction output fell by 17.1%, while output in the production and services industries fell by 11.7% and 5.4% respectively. Quarterly estimates for Q2 2013 show that output in the construction industry remains 14.7% below its pre-downturn peak in Q1 2008.

The proportion of the construction workforce that claims to be self-employed has increased from 35% to 40% over the last five years, although the total workforce has fallen by about a fifth.

² www.ons.gov.uk/ons/dcp171778_330068.pdf

Ill health

The Labour Force Survey (LFS) and voluntary reporting of occupational diseases by doctors (THOR and THOR-GP) provide data about health risks in different industries and occupations. Unfortunately, there is no new LFS health data for 2012/13. Additional data, for example, for previous years, may be found in the various tables.

When comparing results from THOR and the LFS it is important to understand that cases reported under THOR have been diagnosed by doctors while those reported under LFS are cases of self-reported illness caused or made worse by current or most recent job for people working in the last 12 months.

Health issue	THOR – estimated rate of new cases of work-related illness per 100 000 persons (3 year average 2010 to 2012)	LFS – estimated rate of new cases of self-reported illness per 100 000 employed in the last 12 months (3 year average 2009/10 to 2011/12)
Work related ill health	1 526 (THORGP04) This is higher than the rate (1 350) for all industries.	1 380 (1.4%) (WRIIND4_3YR) This is of a similar order (not statistically significantly different) to that for all industries 1 500 (1.5%) or previous rates. There were an estimated 31 000 new cases of illness caused or made worse by a current or most recent job.
Work related musculoskeletal disorders	1 1048 (THORGP05). This is 60% higher than the rate (640) for all industries. It is about the same as that for manufacturing, but half that in agriculture.	630 (MSDIND4_3YR) This is not statistically significantly higher than the all industry rate (500) or previous estimates.
Work related mental ill-health/self-reported stress, depression or anxiety	112 (THORGP06). This is almost a fifth of the rate (516) for all industries. It is the lowest rate for all industry sections.	420 (STRIND4_3YR) This is statistically significantly lower than the all industry rate (670)
<p><i>The values quoted above are the central estimates from the LFS survey. The respective tables include the confidence interval (an indicator of the reliability) for each estimate.</i></p>		

Vibration white finger, carpal tunnel syndrome, occupational deafness and dermatitis are the most common cases of non-lung diseases in the construction industry under IIDB³.

There has been a significant decline in the incidence of allergic contact dermatitis since 2005 when the marketing and use of cement containing >2 ppm of chromate was restricted in the EU.

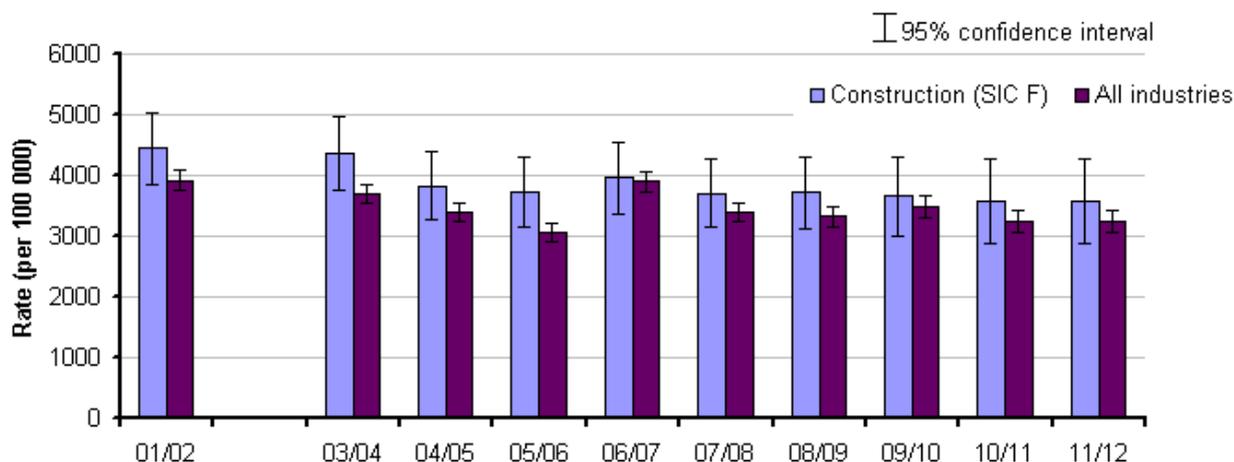
The Labour Force Survey also estimated that:

- averaged over the period 2009/10 to 2011/12 74 000 people whose current or most recent job in the last year was in construction, suffered from an illness (longstanding and new cases) which was caused or made worse by this job. The associated rate, 3 270 (3.3%) working in the last year, was similar to that for all industries (3 200 per 100 000 people – 3.2%) (WRIIND2_3YR); and
- an estimated 818 thousand working days were lost due to ill health in 2011/12 – 0.4 days per worker (WDLIND⁴, but see also WRIIND6_3YR).

³ www.hse.gov.uk/statistics/sources.htm

⁴ WDLIND is used for consistency with the health data, but INJIND2 provides more up to date estimates for injury.

Figure 3 Estimated rates of total cases of self-reported work-related illness caused or made worse by their current or most recent job for people working in the last 12 months (LFS)⁵



Airborne materials from spray painting, welding or cutting/grinding metals; dusts from stone, cement, brick or concrete were all implicated by respondents to the Labour Force Survey as significant causes of "breathing or lung problems". These are common in some construction work, see www.hse.gov.uk/statistics/causdis/asthma/.

Examining the rate of total cases over time, using smoothing techniques which aim to reduce irregularities (random fluctuations) in the time series, suggests a downward trend. The smoothed trend indicates a fall of around 31% between 2001/02 and 2012/13, with a range of possibilities (95% confidence interval) 20% to 43%.

Occupational cancer

Analysis by industry has shown that the construction industry has the largest burden of occupational cancer amongst the industrial sectors, over 40% of the occupational cancer deaths and cancer registrations were from construction. Most of them were caused by past exposures to asbestos and silica. In addition solar radiation, coal tars and pitches were responsible for an additional 1 300 cancer registrations, mostly causing NMSCs (skin cancer other than melanoma), see Tables CAN04 (www.hse.gov.uk/statistics/tables/can04.xls) and CAN05 (www.hse.gov.uk/statistics/tables/can05.xls).

The most significant carcinogen is still past exposure to asbestos (69%), followed by silica (17%), painting and diesel engine exhaust (6-7% each).

Further information is available from our cancer page or from research report 931 "The burden of occupational cancer in Great Britain", see www.hse.gov.uk/research/rrpdf/rr931.pdf.

⁵ No ill health data was collected on the LFS in 2002/03.

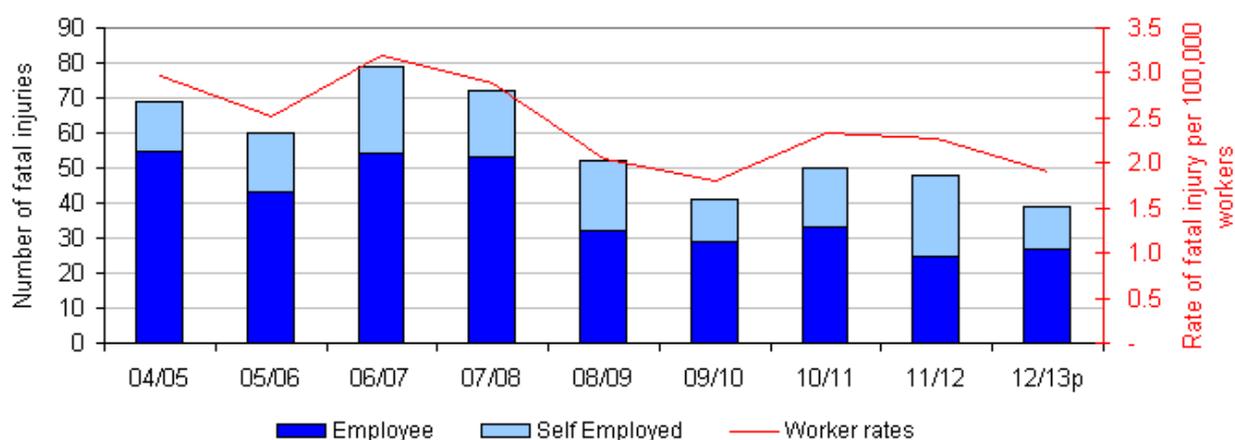
Injuries

Overview

Construction accounted for 5% of the employees⁶ in Britain and 6% of reported injuries to employees (27% fatalities, 10% major and 5% of over seven day injuries).

Fatal injuries

Figure 4 Number and rate of fatal injuries to workers in construction (RIDDOR)



There were 39 fatal injuries to workers in Construction in 2012/13p, 12 of these fatalities were to the self-employed. This compares with an average of 53 over the previous five years, including an average of 18 to the self-employed.

The rate of fatal injury per 100 000 construction workers was 1.9 in 2012/13p compared with a five year average of 2.3.

In 2012/13p, 26% of all fatal injuries to workers were in Construction and it accounts for the greatest number of fatal injuries of the industry sections.

The number of fatalities has fallen substantially since 2010/11, returning to the level seen in 2009/10. The rate reduction in 2012/13p is welcome, but could be easily reversed in a sustained recovery.

The main causes of worker fatalities were:

Injury kind	Proportion of fatalities in		
	Construction 2012/13p	Construction (2008/09-2012/13p)	All industries
■ Falls	59%	49%	25%
■ Being struck by a falling/moving object	3%	10%	16%
■ A collapse/overturn	5%	11%	10%
■ Being hit by a moving vehicle	10%	10%	15%
■ Electricity	5%	7%	4%

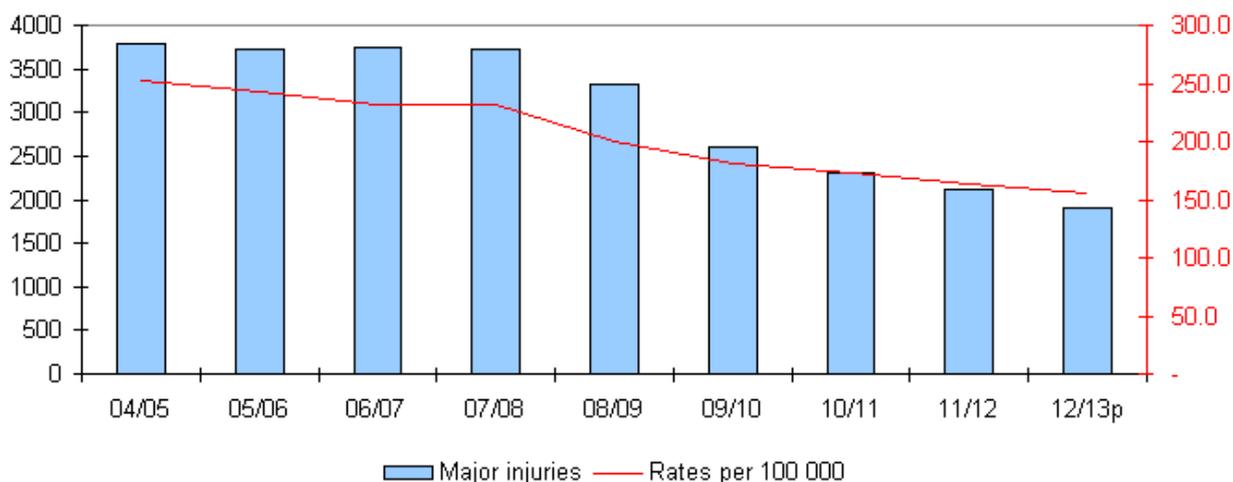
⁶ 7% of the workers.

Major injuries

There were 1 913 reported major injuries to employees in 2012/13p, compared to an average of 2 815 over the previous five years. The corresponding rates of major injury per 100 000 employees were 156 in 2012/13p and an average of 192.

There has been a general reduction in the rate of reported major injury since 2004/05. The number of reported injuries has also fallen significantly over the last five years. The fall in reported major injuries over the last two years is similar to that for all industries, but it was significantly higher in the previous three years.

Figure 5 Number and rate of major injuries to employees in construction (RIDDOR)



The most common causes of major injury to employees were:

Injury kind	Proportion of reported major injuries		
	Construction 2012/13p	Construction (2007/08-2011/12)	All industries (2008/09-2012/13)
■ Falls	28%	28%	15%
■ Slips, trips and falls on the level	28%	26%	40%
■ Being struck by moving/falling objects	15%	15%	11%
■ Handling	8% ⁷	13%	11%

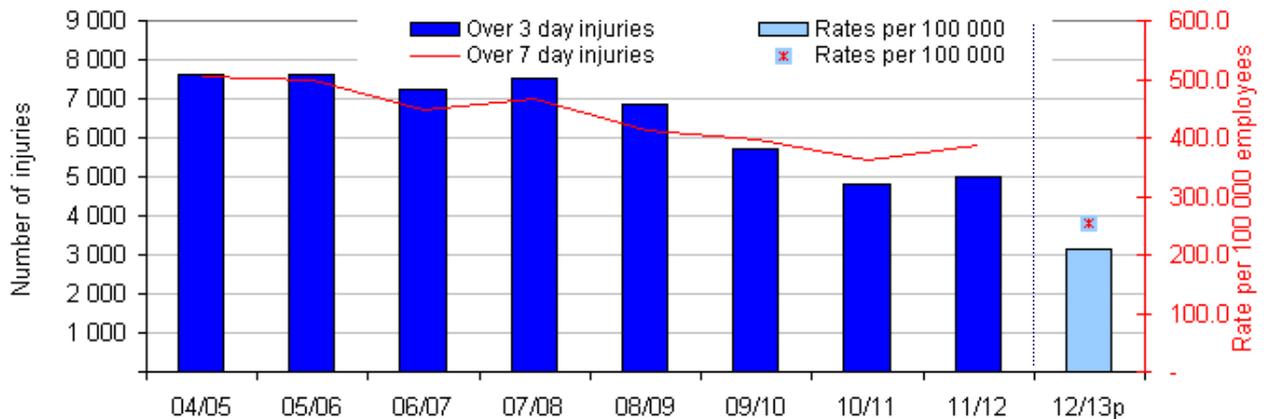
⁷ Many handling injuries seem to have been coded as *other* since the new online reporting system was introduced.

Over seven day injuries

There were 3 133 reported over seven day injuries to employees in 2012/13p, compared to an average of 5 986 over three day over the previous five years. The corresponding rates of over seven and three day injury per 100 000 employees were 255.4 in 2012/13p and an average of 405.6.

The change from over three day to over seven day reporting makes it difficult to judge whether there has been a reduction in the number and rate of non-fatal non-major injuries. Analysis indicates that the trend in the over three/seven day injury rate would have continued to flatten out, as seen in the last couple of years, following a period of sustained reduction. See www.hse.gov.uk/statistics/causinj/over-7-day-adjust.htm for further information and a longer-term quarterly series of over three/seven day injury reports.

Figure 6 Number and rate of over three day & over seven day injuries to employees in construction (RIDDER)



The most common reported causes of over seven/three day injury to employees were

Injury kind	Proportion of reported over three day injuries		
	Construction 2012/13p Over seven day	Construction 2007/08-2011/12 Over three day	All industries 2012/13p Over seven day
■ Handling	28% ⁸	36%	27%
■ Slips and trips	23%	22%	26%
■ Moving/falling objects	10%	15%	9%
■ Falls	12%	10%	5%

⁸ There has been a significant increase in the reports coded as 'other'. A lot of these would previously have been coded as handling.

Occupations

The risk of injury varies significantly with occupation. The occupations in construction with the most reported injuries are shown below.

Fatal injuries to workers in construction

Occupation ⁹	2012/13p	Average 2007/08 - 2011/12
Construction operatives nec ¹⁰	7	5
Construction and building trades nec	5	6
Roofers, roof tilers and slaters	2	6
Elementary construction occupations	2	5
Carpenters and joiners	2	2
Road construction operatives	2	2
Scaffolders, staggers and riggers	1	2
Production managers, directors and supervisors in construction	1	2
Electricians and electrical fitters	1	2
Plumbers and heating and ventilating engineers	0	2
Painters and decorators	0	1

Reported non-fatal major injuries per year to employees in construction between 2006/07 and 2010/11 (main occupations)

Occupation	2012/13p	Average 2007/08 – 2010/11
Construction operatives nec	345	259
Elementary construction occupations	258	241
Carpenters and joiners	141	238
Electricians and electrical fitters	122	188
Scaffolders, staggers and riggers	97	117
Construction and building trades nec	88	239
Construction production managers and directors	84	59
Plumbers and heating and ventilating engineers	76	157
Roofers, roof tilers and slaters	64	81
Painters and decorators	56	85
Bricklayers and masons	50	90
Road construction operatives	39	84
Construction and building trades supervisors	4	152

⁹ The method of coding occupations changed in 2011/12 and variations may be influenced by this change. For further information, please see www.hse.gov.uk/statistics/soc2010.htm. In addition, occupations are unknown in about 20% of cases.

¹⁰ Not elsewhere classified. These categories tend to be used in cases where the actual occupation is not entirely clear. Consequently, injury numbers for these occupations may be artificially high.

Reported non-fatal, non-major injuries per year to employees in construction (main occupations)

Occupation	Over seven day 2012/13p	Over-3-day injuries Average 2007/08 – 2010/11
Construction operatives nec	538	475
Elementary construction occupations	347	486
Carpenters and joiners	324	622
Plumbers and heating and ventilating engineers	256	524
Road construction operatives	184	314
Electricians and electrical fitters	163	368
Construction and building trades nec	150	417
Bricklayers and masons	108	213
Scaffolders, staggers and riggers	100	176
Painters and decorators	84	122
Roofers, roof tilers and slaters	64	128
Construction production managers and directors	63	77
Construction and building trades supervisors	20	293

According to the Labour Force Survey (INJOCC1_3YR) estimated over three day absence injury rates are:

- Skilled construction and building trades – 1 730 per 100 000 workers; and
- Elementary trades and related occupations – 1 580 per 100 000 workers.

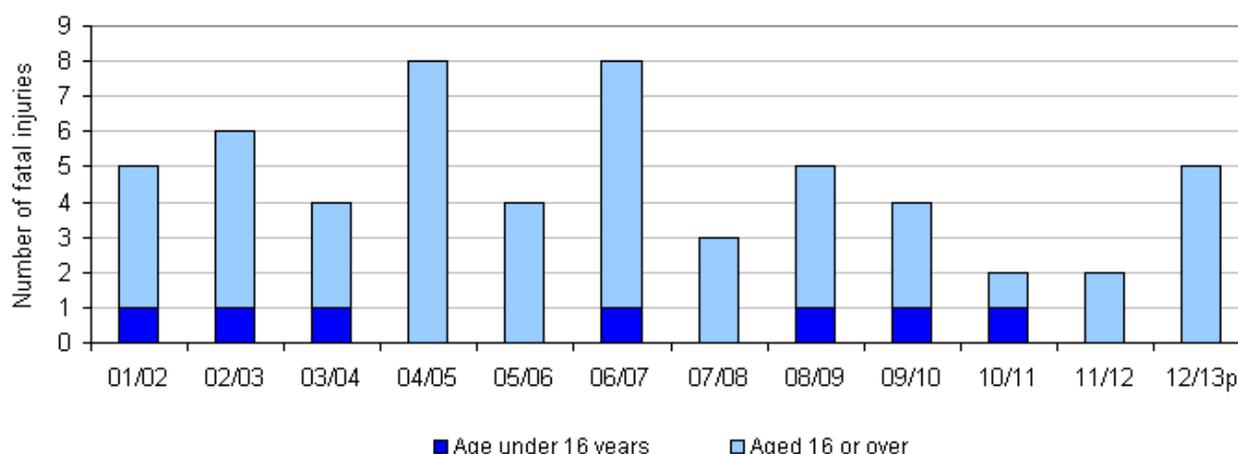
The LFS also indicates that workers in skilled construction and building trades lose an estimated average of about a third of a working day per year due to self-reported workplace non-fatal injury (0.37 days). The estimate for elementary trades was 0.53 days (INJOCC2_3YR). Both rates were statistically significantly higher than the average lost days per worker across all occupations (0.17 days). The average lost days for all construction in 2011/12 was 0.3 days per worker (WDLIND, see also INJIND2_3yr).

Fatal injuries to members of the public

There were five fatal injuries to members of the public in 2012/13p compared to an average of three a year over the previous five years. 18 members of the public lost their lives in the last five years, but 27 in the previous five years. Statistically speaking, the numbers are small and considerable year-on-year variation can be expected.

A quarter of fatal injuries to the public over the previous five years were due to falls and another quarter to slips/trips.

Figure 7 Fatal injuries to members of the public in construction (RIDDOR)



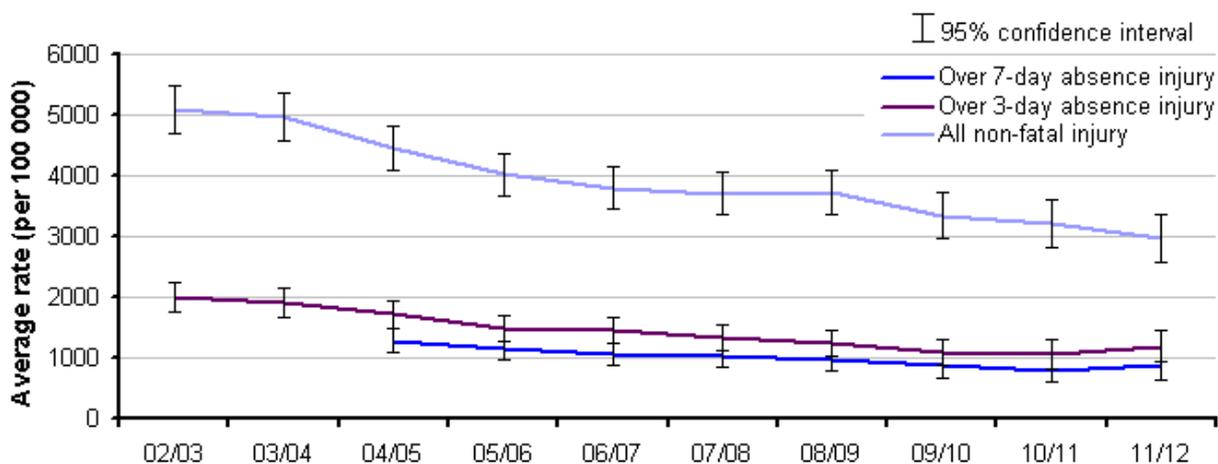
Labour Force Survey (LFS) injuries and days lost

The latest Labour Force Survey estimates (based on results averaged over 2009/10 to 2012/13) show that construction:

- accounted for around 12% of over seven day absence injuries, 13% of over three day and 11% of all non-fatal injuries;
- had an estimated over seven day absence injury rate of 860 per 100 000 workers (ie just under one in a hundred construction workers suffered such an injury each year). This is statistically significantly lower than the rate between 2001 and 2007 (INJIND4_3YR);
- the latest over seven day absence injury rate was statistically significantly higher than the rate of 520 per 100 000 workers across all industries (INJIND4_3YR).

Results from the LFS suggest that just over half of reportable injuries to employees are recorded under RIDDOR and the level for construction is similar to this¹¹. (REPIND1_3YR). Only about 9% of non-fatal injuries to the self-employed are reported.

Figure 8 Estimated averaged rates of all self-reported workplace non-fatal injury and injury with over three day absence for people working in the last 12 months (LFS)¹²



The LFS (INJIND2_3YR) also indicates that between 2010/11 and 2012/13 the average estimated total number of working days lost (full-day equivalent) due to workplace injury attributed to the current or most recent job was about 0.59 million, equating to just over a quarter of a day (0.3) per worker. The average days lost per worker for all industries was 0.17 days per worker and the rate for construction was statistically significantly higher than this.

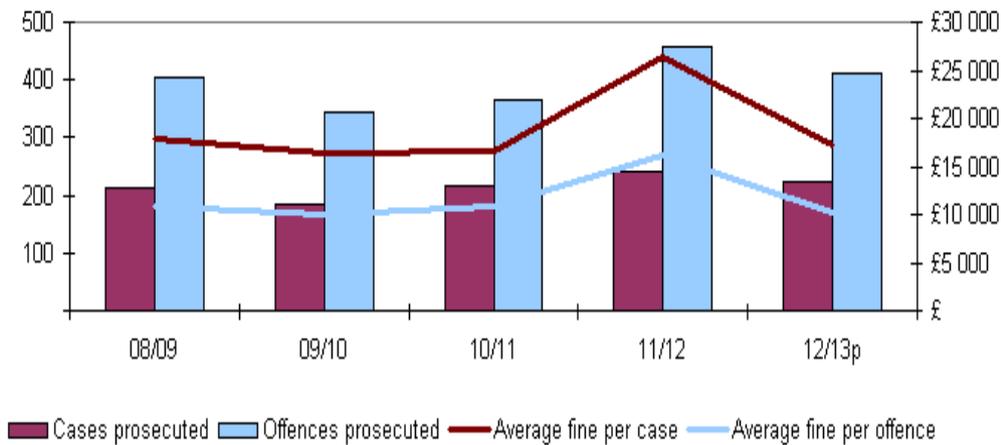
¹¹ Employees: all industry 53% (95% CI: 50 to 57%), construction 49% (95% CI: 37% to 62%)

¹² Three year averaged rates are displayed e.g. 2009/10 to 2012/13, (centred on 2010/11)

Enforcement

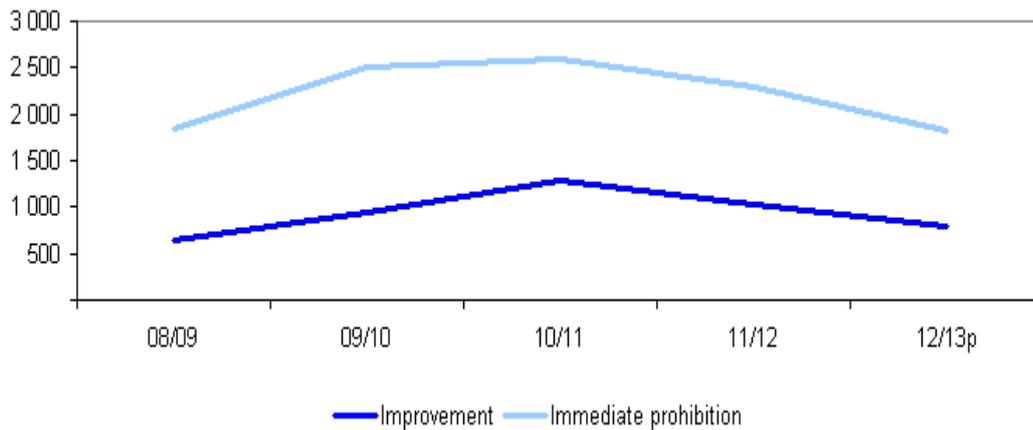
In 2012/13p the number of offences¹³ heard decreased by 10% on the previous year but remain higher than the number heard in the previous 3 years. The number of cases heard has not changed significantly in the five years to 2012/13p.

Figure 9 Prosecutions in construction



The number of enforcement notices issued has fallen for a second year, returning to the level seen in 2008/09.

Figure 10 Notices in construction



¹³ Case refers to a prosecution against a single defendant. The defendant may be an individual person or a company. There may be one or more breaches of health and safety legislation (offences) in each case.

Links to data sources and tables

Data Sources	Web Address (URL)
Labour Force Survey (LFS)	www.hse.gov.uk/statistics/sources.htm#lfs
Voluntary reporting of occupational diseases by specialist doctors (THOR)	www.hse.gov.uk/statistics/sources.htm#thor
Voluntary reporting of occupational diseases by General Practitioners (THOR GP)	www.hse.gov.uk/statistics/sources.htm#odin
Tables	Web Address (URL)
INJIND1_3YR	www.hse.gov.uk/statistics/lfs/injind1_3yr.xls
INJIND2_3YR	www.hse.gov.uk/statistics/lfs/injind2_3yr.xls
INJOCC2_3YR	www.hse.gov.uk/statistics/lfs/injocc2_3yr.xls
INJOCC3_3YR	www.hse.gov.uk/statistics/lfs/injocc3_3yr.xls
MSDIND2_3YR	www.hse.gov.uk/statistics/lfs/msdind2_3yr.xls
MSDIND4_3YR	www.hse.gov.uk/statistics/lfs/msdind4_3yr.xls
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WRIIND6_3YR	www.hse.gov.uk/statistics/lfs/wriind6_3yr.xls
WDLIND	www.hse.gov.uk/statistics/lfs/wdlind.xls
THORGP04	www.hse.gov.uk/statistics/tables/thorgp04.xls
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THORS05	www.hse.gov.uk/statistics/tables/thors05.xls
THORR01	www.hse.gov.uk/statistics/tables/thorr01.xls
THORR04	www.hse.gov.uk/statistics/tables/thorr04.xls
Other tables	www.hse.gov.uk/statistics/tables/index.htm

National Statistics

The *RIDDOR* and LFS figures in this report are National Statistics.

National Statistics are produced to high professional standards set out in the National Statistics Code of Practice. They undergo regular quality assurance reviews to ensure that they meet customer needs. They are produced free from any political interference.

An account of how the figures are used for statistical purposes can be found at www.hse.gov.uk/statistics/sources.htm .

For information regarding the quality guidelines used for statistics within HSE see www.hse.gov.uk/statistics/about/quality-guidelines.htm

A revisions policy and log can be seen at www.hse.gov.uk/statistics/about/revisions/

Additional data tables can be found at www.hse.gov.uk/statistics/tables/.

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Next Update: October 2014

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