



HEALTH AND SAFETY  
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# Health Sector



## Analysis of Work-related Injury and Illness, 2001 to 2014



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# Analysis of Work-related Injury and Illness, 2001 to 2014

## Health Sector

Sectoral Analysis No. 1: Health Sector  
by O. Kenny, B. Maître and H. Russell (April 2018)

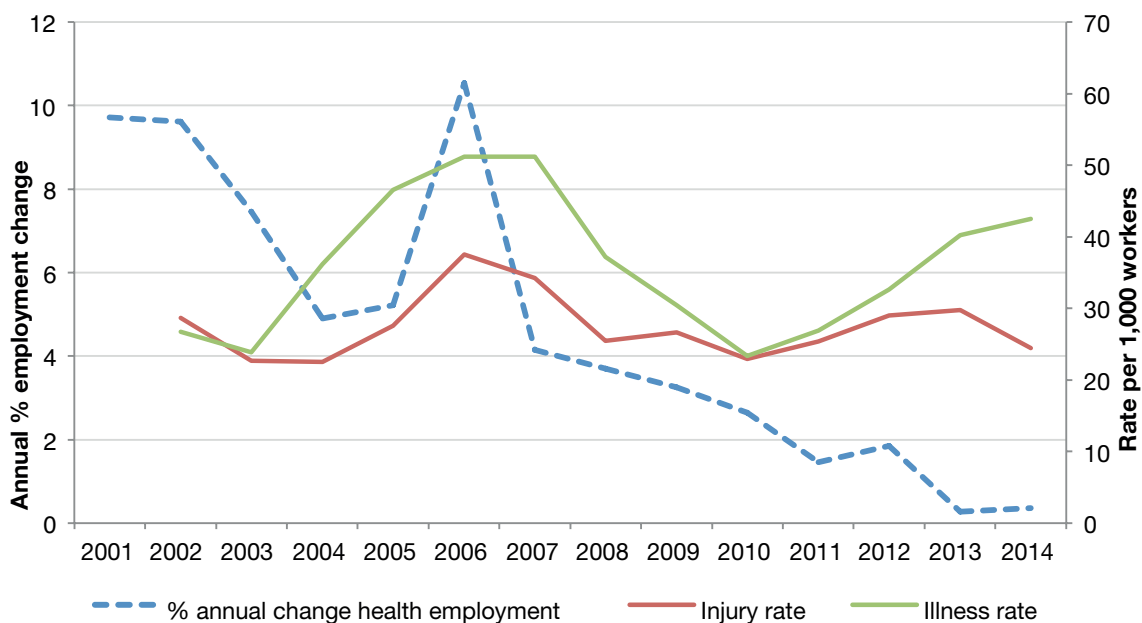


# Analysis of Work-related Injury and Illness, 2001 to 2014

The following analysis draws on the Central Statistics Office's (CSO) Quarterly National Household Survey (QNHS) to explore work-related injuries and illnesses in the health sector (see Box 1 for details on data sources and measures). The results are based on workers' self-reports of work-related illness and injury. All injuries and illnesses are included, regardless of whether or not they resulted in an absence from work, as many people continue to work while sick or injured. Findings across the economy as a whole are explored in Russell *et al.* (2015 and 2016).<sup>i</sup> This research briefing provides a within-sector picture of the health sector over the period 2001–2014.

The health sector employed an average of almost 250,000 people in Ireland in 2013–2014. Health was one of the few sectors to show positive employment growth throughout the 2000s, even during the severe recession, though the rate of growth in 2013 and 2014 had slowed to less than half of one per cent (see Figure 1). During the boom period (2001–2007), the health sector accounted for 10.1% of total employment. However, this had risen to 12.9% by the recession (2008–2011) and again to 13.1% in the early recovery period (2012–2014).<sup>ii</sup>

Figure 1: Rates of work-related injury and illness (two-year moving average), and annual percentage change in employment in the health sector, 2001–2014



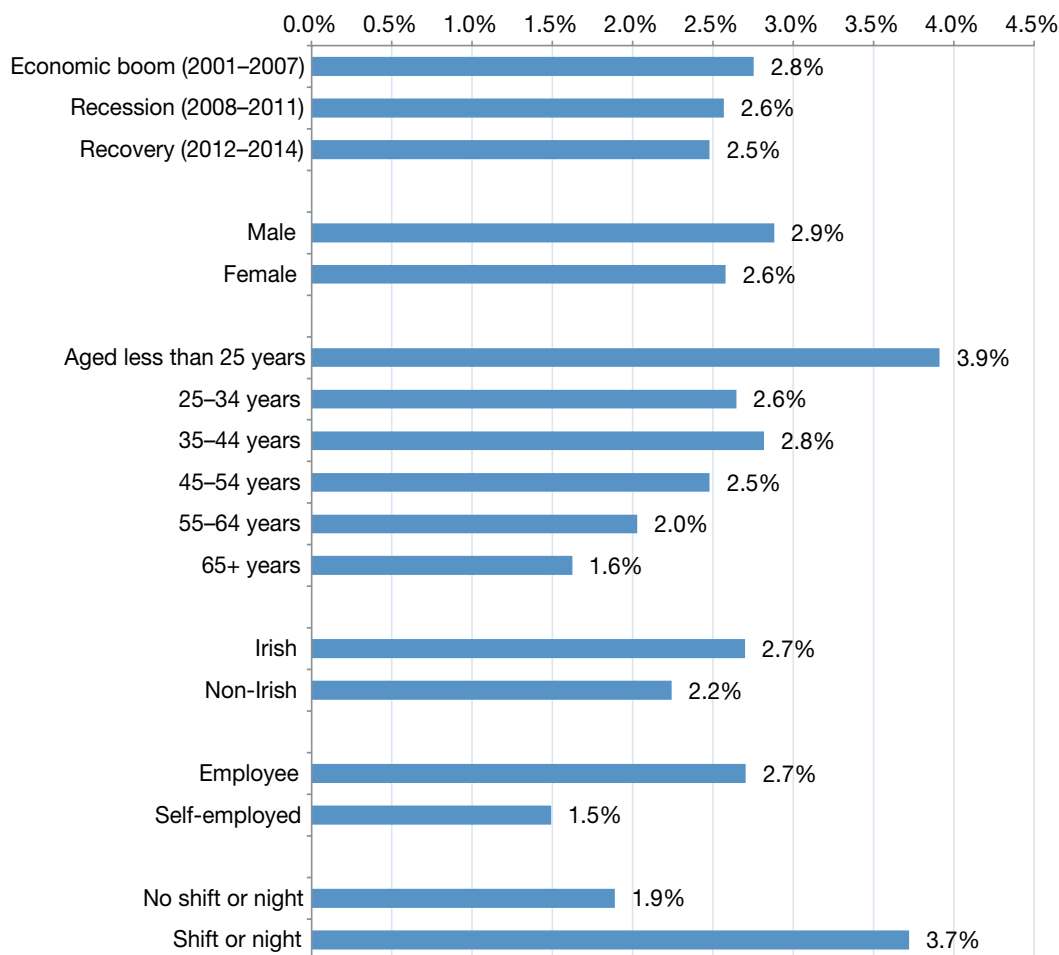
Source: QNHS modules on work-related accidents and illnesses, authors' analysis.

Note: The illness rate in 2011 is not directly comparable to adjacent years due to changes in question wording in 2012.

The rate of work-related injury and illness per 1,000 workers in this sector fluctuated over the period. There were increases during the period 2003 to 2006, followed by a fall in rates from 2006 to 2010. Rates began to rise again in 2011, 2012 and 2013, especially for illness; however, both rates fell in 2014.<sup>iii</sup> This volatility is partly due to small numbers. For most of the period, illness rates exceeded injury rates. This is different to the pattern across all sectors, in which the rates of injury mainly exceed those of illness. The exceptions to this pattern for other sectors are a three-year period during the height of the boom and the more recent recovery years.

Figure 2 describes the relationship between risk of injury in the health sector and a range of worker and job characteristics. The probabilities are calculated using a logit regression model, which allows us to compare 'like with like'.<sup>iv</sup>

Figure 2: Modelled percentage experiencing injury in the health sector, 2001–2014



Source: QNHS modules on work-related accidents and illnesses, authors' analysis.

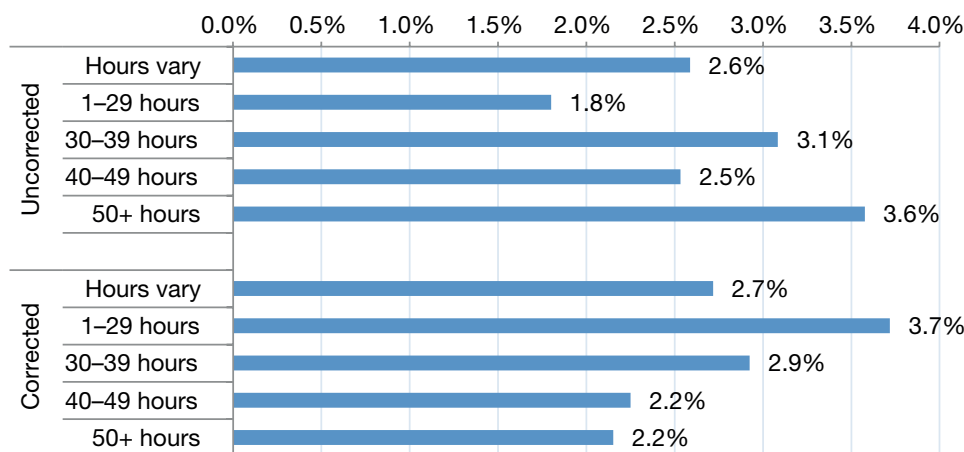
Note: Results are taken from a logit model in which job tenure and hours of work are also included (see Russell *et al.*, 2015, for an explanation and description of the modelling strategy).

Figure 2 shows that while there are no significant differences in injury risks among health sector workers depending on time periods, gender or nationality, there are some age differences; those aged under 25 years have the highest injury risk (3.9%), a risk significantly higher than that for those aged between 55 and 64 years (2.0%).

Working patterns and contract type are also important. Self-employed health sector workers have a significantly lower injury rate (1.5%) than employees (2.7%), holding other factors constant. This may be due to occupational position or educational background, which is not observed directly. Professionals such as GPs, physiotherapists, and psychologists make up a sizable proportion of the self-employed in this sector. Shift and night work are associated with significantly increased injury risks: 3.7% of those working nights or shifts reported a work-related injury, compared to 1.9% of those who do not work such patterns. This working pattern is common among health sector workers, with 37.4% working shift and night work compared to 25.7% of workers across all sectors.

Hours, as well as patterns of work, were influential in the economy-wide analysis (Russell *et al.*, 2015). Figure 3 shows that those working the fewest hours (less than 30 hours per week) have the lowest risk of injury (1.8%). However, after making adjustments to account for the fact that those working fewer hours are exposed to work-related hazards for a shorter period of time, we found that *per hour worked*, this group had the highest injury risk (3.7%) and that this is significantly higher than the risk for those working more than 40 hours per week (2.2%).<sup>v</sup>

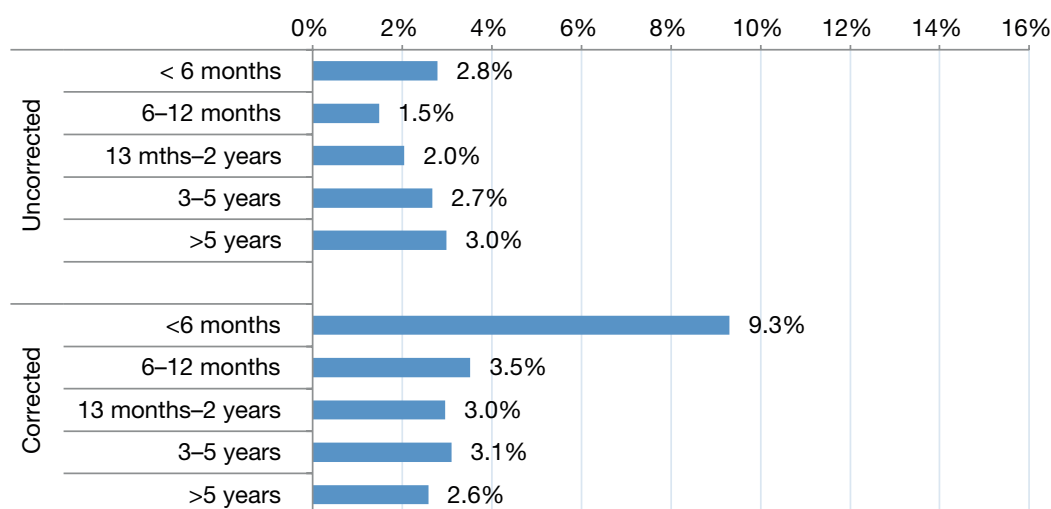
Figure 3: Modelled percentage experiencing injury in the health sector by working hours, with and without corrections for exposure (per hour worked)



Source: QNHS modules on work-related accidents and illnesses, authors' analysis.  
 Note: Models include the full set of controls outlined in Figure 2.

The relationship between job tenure and injury risk is also potentially affected by the length of exposure to work-related hazards. Figure 4 shows that 2.8% of those employed in the health sector for less than six months had experienced an injury; however, this group was not exposed to a full year of employment. Adjusting the rates for those employed for less than one year to produce an annual equivalent rate shows that new recruits who were in the job for less than six months had a 9.3% annual equivalent injury rate.<sup>vi</sup> This rate is significantly higher than the rate for those in the job more than five years (2.6%).<sup>vii</sup>

Figure 4: Modelled percentage experiencing injury in the health sector by job tenure, with and without corrections for exposure (per month worked)

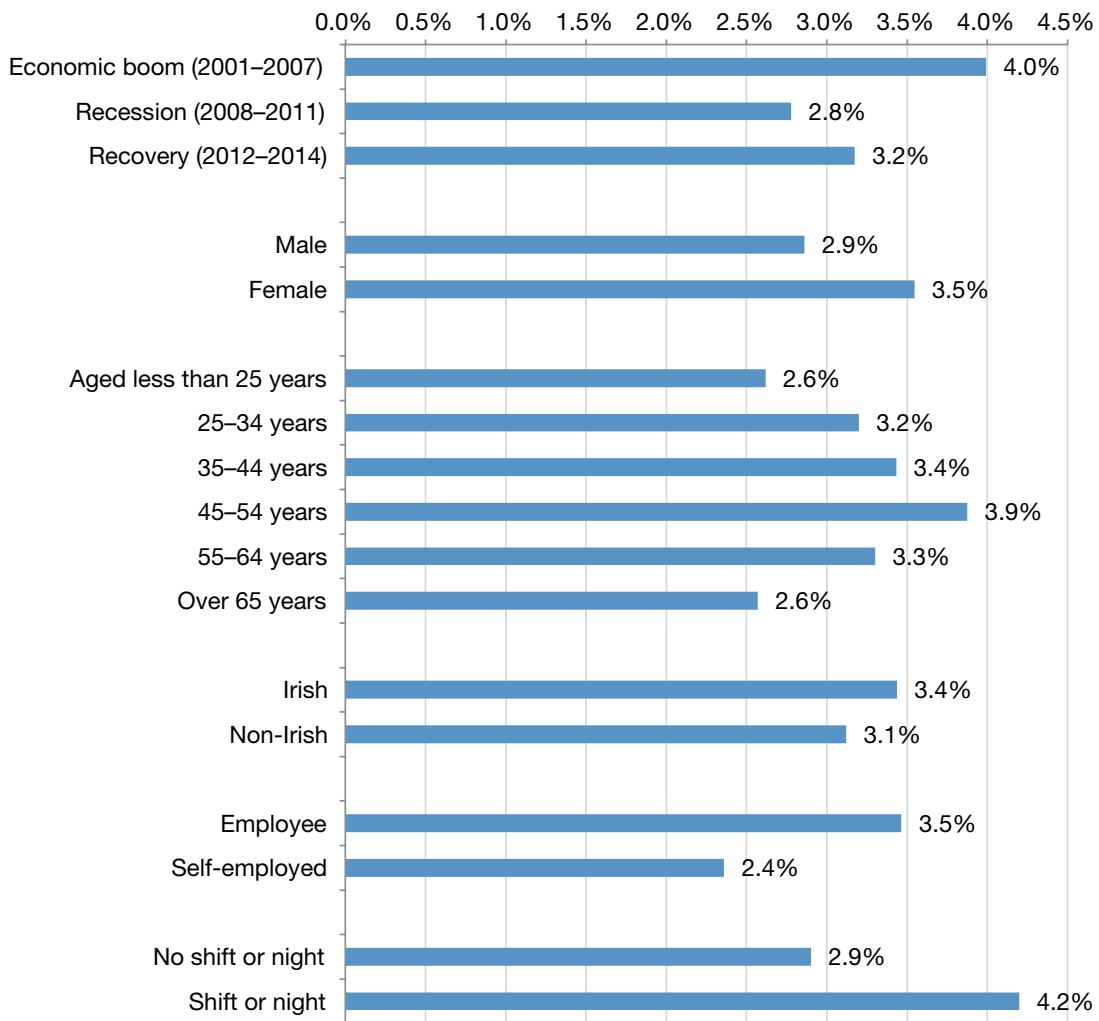


Source: QNHS modules on work-related accidents and illnesses, authors' analysis.  
 Note: Models include the full set of controls outlined in Figure 2.

# Work-related illness in the health sector

As noted in Figure 1, illness rates fluctuated over the period. These shifts over time can be affected by changes in the composition of the health workforce. Over the period 2002 to 2014, the main illness experienced by workers in the health sector was due to musculoskeletal disorders, at 46%, a similar level experienced by workers across all sectors, at 47%. Stress, anxiety and depression were also more prevalent among health workers, at 22%, compared to 16% overall. In Figure 5 we see that, taking out any workforce effects, the rates of work-related illness in the health sector were significantly higher in the boom period (4.0%) compared to the recession period (2.8%). Illness rates in the recovery period are slightly higher than those in the recession but the difference is not significant. This is probably because they are only beginning to increase from the recessionary low but are not at levels seen in the boom period.

Figure 5: Modelled percentage experiencing illness in the health sector, 2001–2014



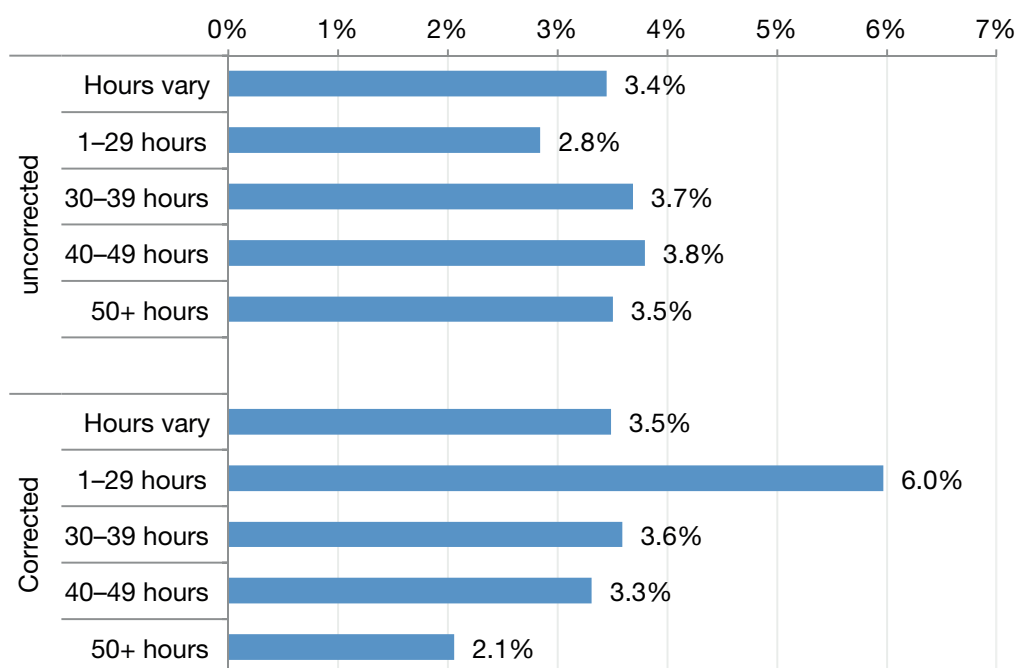
Source: QNHS modules on work-related accidents and illnesses, authors' analysis.

Note: Results are taken from a logit model in which job tenure and hours of work are also included (see Russell *et al.*, 2015, for an explanation and description of the modelling strategy).

As in the case of injury, the risks of illness were not strongly differentiated by personal characteristics such as gender, age or nationality. There are significant differences in rates by work patterns, however; shift or night work is associated with a significantly greater risk of illness, at 4.2% compared to 2.9% for those not working shift or night hours. Moreover, employees have a significantly higher illness risk (3.5%) than the self-employed (2.4%).

Figure 6 shows that before taking account of full-time equivalent (FTE) hours, those working the fewest weekly hours (1–29) had the smallest proportionate risk (2.8%). However, when we consider the rates 'per hour worked', this group have a significantly higher illness rate (6.0%) compared to those working variable hours and those working 30 or more hours per week (between 2.1% and 3.6%). Again, this may be linked to the unmeasured benefits of occupational position or educational background. Lower occupational ranking health sector staff are more likely to work part-time, for example as support staff and carers, while those working the greatest number of hours are likely to be consultants and other professionals.

Figure 6: Modelled percentage experiencing illness in the health sector by working hours, with and without corrections for exposure (per hour worked)

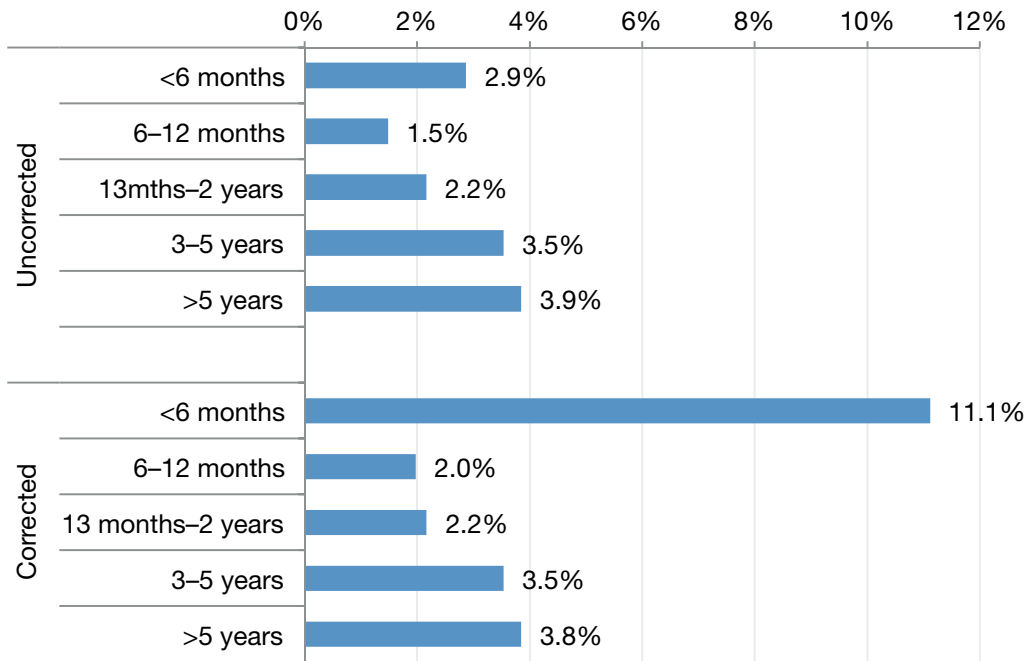


Source: QNHS modules on work-related accidents and illnesses, authors' analysis.  
 Note: Models include the full set of controls outlined in Figure 5.

Finally, we examine the relationship between job tenure and work-related illness. We might expect those with shorter job tenures to have higher risks for musculoskeletal disorders due to having less experience or training in safer working practices, or to have higher risks of stress-related illness, due to lower job security (see Russell *et al.* (2016) for more detail on types of work-related illnesses). Alternatively, new recruits may have better health if medical examinations form part of the selection procedures.



Figure 7: Modelled percentage experiencing illness in the health sector by job tenure, with and without corrections for exposure (per month worked)



Source: QNHS modules on work-related accidents and illnesses, authors' analysis.  
 Note: Models include the full set of controls outlined in Figure 5.

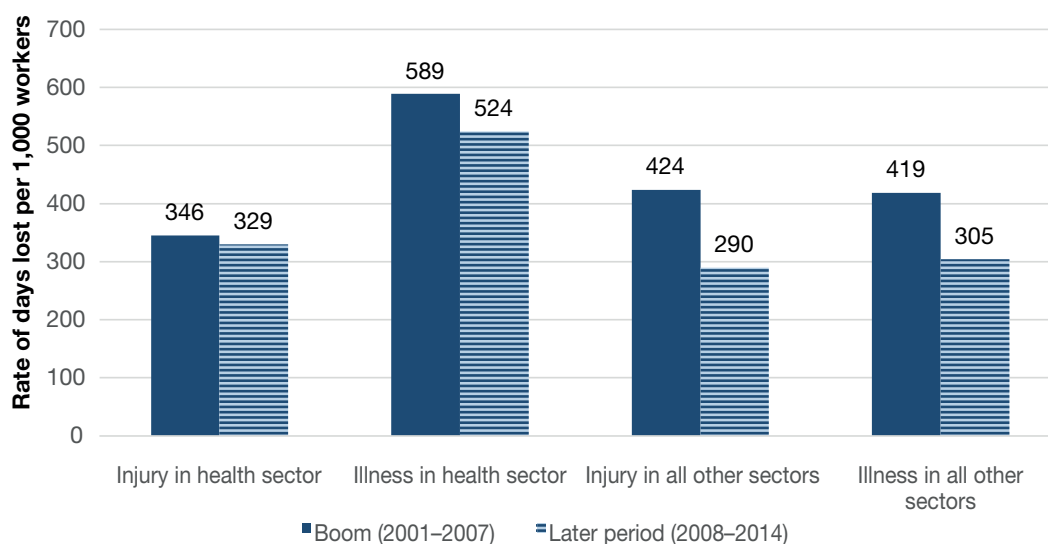
Figure 7 indicates that those with the longest job tenure (over five years) had a higher risk of work-related illness (3.9%); this was significantly higher than the risk for those with tenures between six months and two years (1.5% to 2.2%). However, when we calculate full-year equivalence rates for those who are in employment for under a year, those in the job for less than six months emerge as having the highest illness rate (11.1%). This is significantly higher than the proportions for those with any other tenure length (2.0% to 3.8%).

## Days lost due to illness and injury

The number of days lost in the health sector due to injury and illness over the years 2001 to 2014 fluctuated significantly. The annual average number of days lost due to injury in the health sector rose from just over 62,000 in the 2001–2007 period to just under 92,000 in 2008–2014, making it the sector with the highest annual average days lost to injury during this latter period, up from fourth highest during the boom.<sup>viii</sup> For illness, the annual average number of days lost increased from nearly 106,000 in 2001–2007 to 146,000 in 2008–2014; again, this represents the highest level of average days lost of all the sectors during 2008–2014, up from third highest. In the economy-wide analysis, the annual average number of days lost for illness and injury declined during the recession years, before rising again.

Some of this increase in days lost to injury and illness may be a result of increased employment in the health sector, as outlined above. To account for this, Figure 8 shows the annual average number of days lost to injury and illness per 1,000 workers in the health sector, for both time periods.

Figure 8: Annual average number of days lost to injury and illness per 1,000 workers in the health sector and all other sectors, 2001–2007 and 2008–2014



Source: QNHS modules on work-related accidents and illnesses, authors' analysis.

Note: 'All other sectors' excludes the health sector for total number of injury and illness days lost and for numbers employed.

In the boom period (2001–2007), an average of 346 days were lost to injury per 1,000 workers in the health sector, compared to 424 days lost for all other sectors (excluding health). While the period 2008–2014 saw a notable drop in the rate across all other sectors, to 290 per 1,000 workers, there was only a marginal decline in the health sector (to 329 per 1,000 workers). This meant that by 2008–2014, the rate of days lost to injury in the health sector was higher than the rate across other sectors.

The rate of days lost to illness in the health sector during the boom (589 per 1,000 workers) was much higher than it was for all other sectors (419 per 1,000 workers). As with injury rates, between 2001–2007 and 2008–2014 other sectors saw a greater decline in these rates than the health sector. In the second period (2008–2014), the rate of days lost to illness in the health sector was at 524 per 1,000 workers, much higher than the rate across all other sectors (305 per 1,000 workers). This difference may be due to better sickness leave policies in the public sector generally and in the health sector particularly, where workers are exposed to psychological rather than physical stressors, which are associated with longer sickness absences (Hussey *et al.*, 2012).

# Inspections

Our economy-wide research found that a higher inspection rate was associated with a lower risk of work-related injury and illness, while controlling for cyclical effects in employment levels. Table 1 outlines the number of health and safety inspections carried out in the health sector since 2003. The inspection rate calculates how many inspections were carried out per 1,000 workers. The inspection rates in the health sector are relatively low, which may be related to the size of organisations within the sector. The inspection rate peaked in 2010 at two inspections per 1,000 health sector workers.

Adding inspection rates to the models that also control for the period (boom, recession, recovery), we find that higher inspection rates are associated with a reduced risk of work-related illness, but no such significant effect is found for injuries (analysis available from authors).<sup>ix</sup>

Table 1: Health and safety inspections in the health sector, 2003–2015

Year	Inspections in health sector	Employed in health (,000s)	Inspection rate per 1,000 workers	Inspection rate all sectors
2003	129	170.18	0.76	5.9
2004	133	178.53	0.74	6.1
2005	148	187.85	0.79	6.9
2006	237	202.80	1.17	7.5
2007	257	216.28	1.19	6.4
2008	326	224.28	1.45	7.5
2009	371	231.58	1.60	9.4
2010	488	237.70	2.05	8.9
2011	442	241.18	1.83	8.3
2012	465	243.68	1.91	7.5
2013	428	246.33	1.74	6.5
2014	324	247.2	1.31	5.6
2015	246	250.7	0.98	5.5

Source: Number of inspections taken from Health and Safety Authority (HSA) annual reports (only available from 2003 onwards).  
Numbers employed taken from QNHS, averaged across four quarters.

## Summary

- Overall, there has been a rising trend of injury and illness in the health sector since 2010.
- Shift or night work is relatively common in the health sector and this group of health workers face a greater risk of injury (3.7%) than other workers in the sector (1.9%), as well as a greater risk of work-related illness (4.2% compared to 2.9%).
- Self-employed health workers who may be well educated and in professional occupations have a lower rate of both injury (1.5% versus 2.7%) and illness (2.4% versus 3.5%).
- Adjusting for length of exposure, new recruits face a greater risk of injury (9.3%) than workers with more than five years' experience (2.6%). They also have a higher risk of illness (11.1%) than workers with any other tenure length (2.0% to 3.8%).
- The annual average number of days lost to both injury and illness in the health sector rose substantially between the boom period (2001–2007) and the following period (2008–2014). As employment in this sector also increased, we calculated the rate of days lost per 1,000 workers for injury and illness, and found that both these rates fell slightly across the two periods, though in 2008–2014 they were still higher, particularly in the case of illness, than those of all other sectors.
- Inspection rates are relatively low in the health sector compared to those in all sectors. When the economic period is controlled for, higher inspection rates are related to a lower risk of illness but not of injury.

## Box 1: Description of data sources and measures

## Data sources

The main data source for these sectoral analyses is the annual special modules on work-related accidents and illnesses that form part of the QNHS carried out by the CSO. This survey is carried out in private households and the responses are unconnected to any workplace reporting. The module is restricted to those who are employed at the time of the survey or who are not currently employed but who worked during the 12-month reference period. For example, in 2015, in the case of injuries respondents were asked:

'How many, if any, injuries did you incur at work (excluding commuting) during the period January 2014 to December 2014?'

For illnesses the following question was asked:

'How many, if any, illnesses or disabilities have you experienced during the 12 months January 2014 to December 2014, that you believe were caused or made worse by your work?'

Respondents were also asked how many days they had taken off work as a result of these injuries or illnesses.

In 2013, the module was part of a European-wide labour force survey and a number of changes were introduced, including a change in question wording, to allow the data to be harmonised across the EU (see Russell *et al.*, 2016, for details). This means that caution is needed when interpreting trends over time in the injury and illness rates based on the QNHS data.

While the QNHS provides the best randomised national sample of work-related injuries and illnesses, a number of limitations should be borne in mind. One such issue is the 'healthy worker effect', whereby the least healthy or most seriously injured workers leave the labour market, while the healthier workers remain. The likelihood of 'unhealthy' workers leaving the labour market depends both upon the extent to which employers accommodate those with disabilities or illness, which may vary by sector, and the level of compensation available through the welfare system. A further limitation is that those who have not worked in the last 12 months are excluded from the QNHS module, leading to an underestimation of the extent of work-related illnesses and injuries.

An additional difficulty with the illness statistics arises from the fact that there may be a significant time lapse between exposure to a workplace hazard and the emergence of an illness. This is particularly the case for many cancers and for musculoskeletal problems (Drummond, 2007). The tendency of workers with a chronic illness or a disability to change to a less demanding job may also influence the association between work-related illness and sector or hours of work found in the data.

A final caveat concerning the QNHS module data is that, despite a large number of respondents, work-related injuries and illnesses are uncommon and therefore the actual case numbers are relatively small. This is especially true when the figures are broken down by sector or other characteristics, such as nationality or shift work status. The statistical models take this issue into account but descriptive tables, for example on the number of days lost, should be treated with caution.

## Employment rates

As the recorded accidents, illnesses and days lost occur over a 12-month period, and because employment levels fluctuate seasonally, employment rates were calculated using the average employment level across the four quarters of the relevant year. This provides a better basis for calculating the incidence rate than any one particular quarter. Rates of injury, illness and days lost are derived from the numbers experiencing injury and illness in each sector, divided by the number employed in that sector and multiplied by 1,000 to give an incidence rate per 1,000 workers.

## Endnotes

- <sup>i</sup> Russell, H., B. Maître and D. Watson (2015). *Trends and patterns in occupational health and safety in Ireland*. Dublin: ESRI; Russell, H., B. Maître and D. Watson (2016). *Work-related musculoskeletal disorders and stress, anxiety and depression in Ireland: Evidence from the QNHS 2002–2013*. Dublin: ESRI. Please see full reports for further details and reference lists.
- <sup>ii</sup> This could be an effect of relativity, whereby the proportion of employment in this sector, which is largely driven by public sector employment, appeared higher as a result of falling employment in other, mostly private, sectors.
- <sup>iii</sup> Both rates fell in 2014 compared to 2013, but this cannot necessarily be seen from the moving average rates in Figure 1.
- <sup>iv</sup> Where relevant, all the results in the charts have been tested for statistically significant difference. Any in-text references to statistically significant (or not) differences in results can be taken to mean that statistical models were applied to reach such conclusions.
- <sup>v</sup> Following methods used by Davies and Jones (2005, p. 54), we constructed injury rates using annual average working hours per week (overall sample mean of 35.5 hours per week). A full list of references can be found in Russell *et al.* (2015 and 2016).
- <sup>vi</sup> We adjust the rates for those employed for less than one year to produce an annual equivalent rate. These adjusted figures should be seen as illustrative as they assume that the monthly/hourly risk and other factors remain stable.
- <sup>vii</sup> This may represent a significant difference from some of the other categories where the error bars overlap only slightly (not shown in the chart here) but as the reference category in the model was >5 years we cannot be certain of this.
- <sup>viii</sup> Due to a smaller number of unweighted cases, where any days were lost in the health sector, figures cannot be presented for the recession (2008–2011) and recovery (2012–2014) periods separately. In addition, there is no information for 2012 due to a change in question wording.
- <sup>ix</sup> As there is only one observation of the inspection rate per year it is difficult to disentangle this effect from other changes that have followed the same pattern. In some sectors, the inspection rate is too strongly correlated with the boom/recession/recovery periods to allow an estimation. The economy-wide models include a continuous variable that records annual employment change within sectors. This within-year variation allows us to apply a more robust test of the inspection rates.



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