

# Full Report: Sickness Absence in the Labour Market, February 2014

Coverage: **UK**

Date: **25 February 2014**

Geographical Area: **Region**

Theme: **Labour Market**

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## Key points

The key points are:

- 131 million days were lost due to sickness absences in the UK in 2013, down from 178 million days in 1993.
- Minor illnesses were the most common reason given for sickness absence but more days were lost to back, neck and muscle pain than any other cause.
- Sickness absence rates have fallen for both men and women since 1993 with men consistently having a lower sickness absence rate than women.
- Sickness absence increases with age but falls after eligibility for the state pension.
- Sickness absence has fallen for all age groups since 1993, but has fallen least for those aged 65 and over.
- Lower sickness absence rates in the private sector but the gap with the public sector has narrowed over past 20 years.
- Of the larger public sector organisations sickness rates are highest for those working in the health sector.
- Self-employed less likely than employees to have a spell of sickness.
- Largest workforces report highest sickness levels.
- Sickness absence lowest for Managers, directors and senior officials.
- Sickness absence lowest in London.

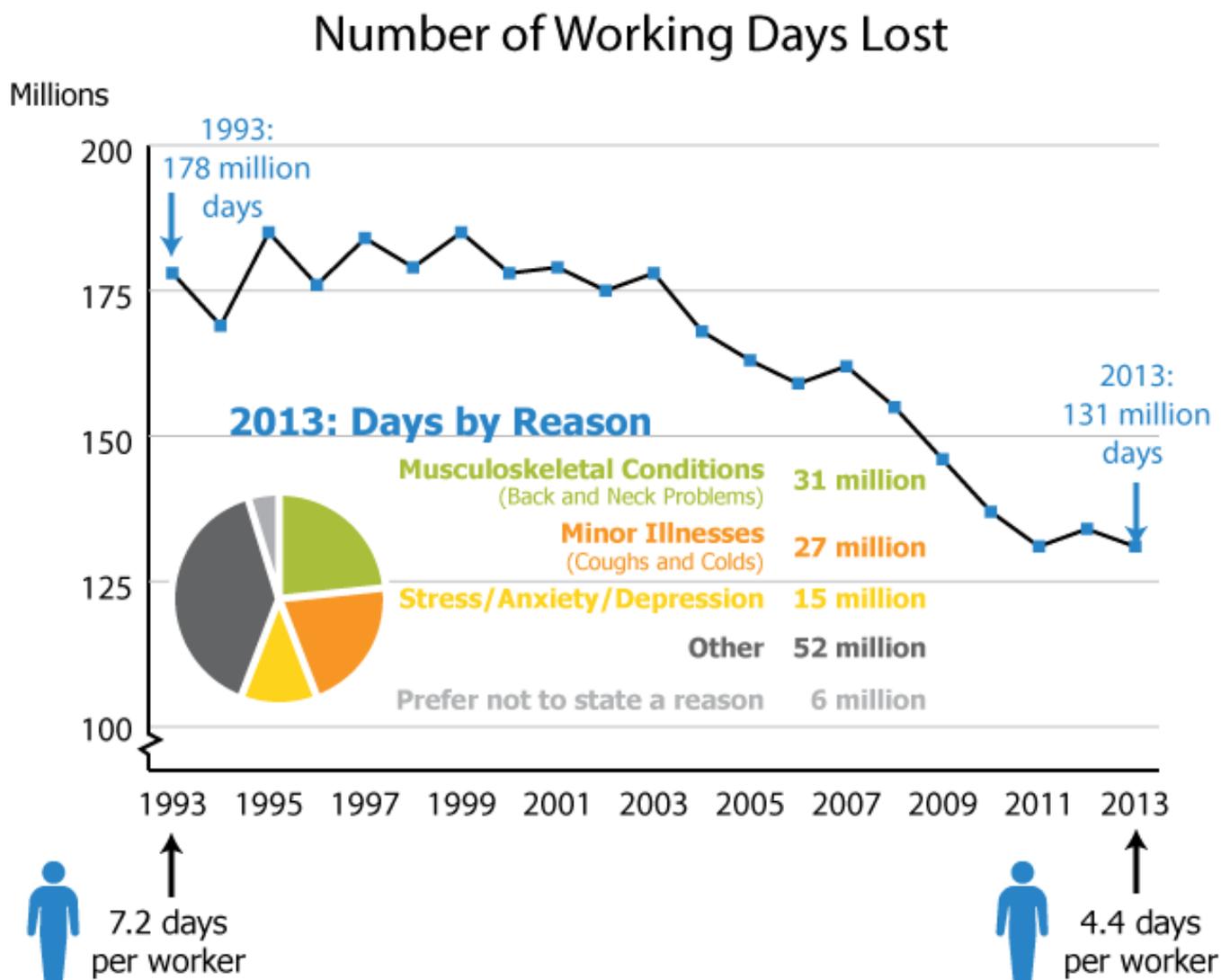
## Sickness Absence in the Labour Market

(These figures include all people aged 16 and over in employment and are for the whole of the UK. Annual averages for each of the years have been calculated).

**131 million days were lost due to sickness absences in the UK in 2013, down from 178 million days in 1993.**

In 2013, using a four quarter average of the Labour Force Survey, around 131 million working days were lost through absences due to sickness or injury, a fall of around 27% since 1993 where 178 million working days were lost.

### Number of working days lost due to sickness absence, 1993 to 2013, and the top reasons for sickness absences in 2013, UK



Source: Labour Force Survey - Office for National Statistics

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(37 Kb)

The number of days lost through sickness absences remained fairly constant through the 1990's until 2003 before falling to 2011 and has been similar for the past few years. The percentage of hours lost to sickness since 1993 has fallen more than the total number of days lost because over

the past twenty years employment has increased. Looking at the number of working days lost per worker, in 1993, around 7.2 days were lost and by 2013 this had fallen to 4.4 days.

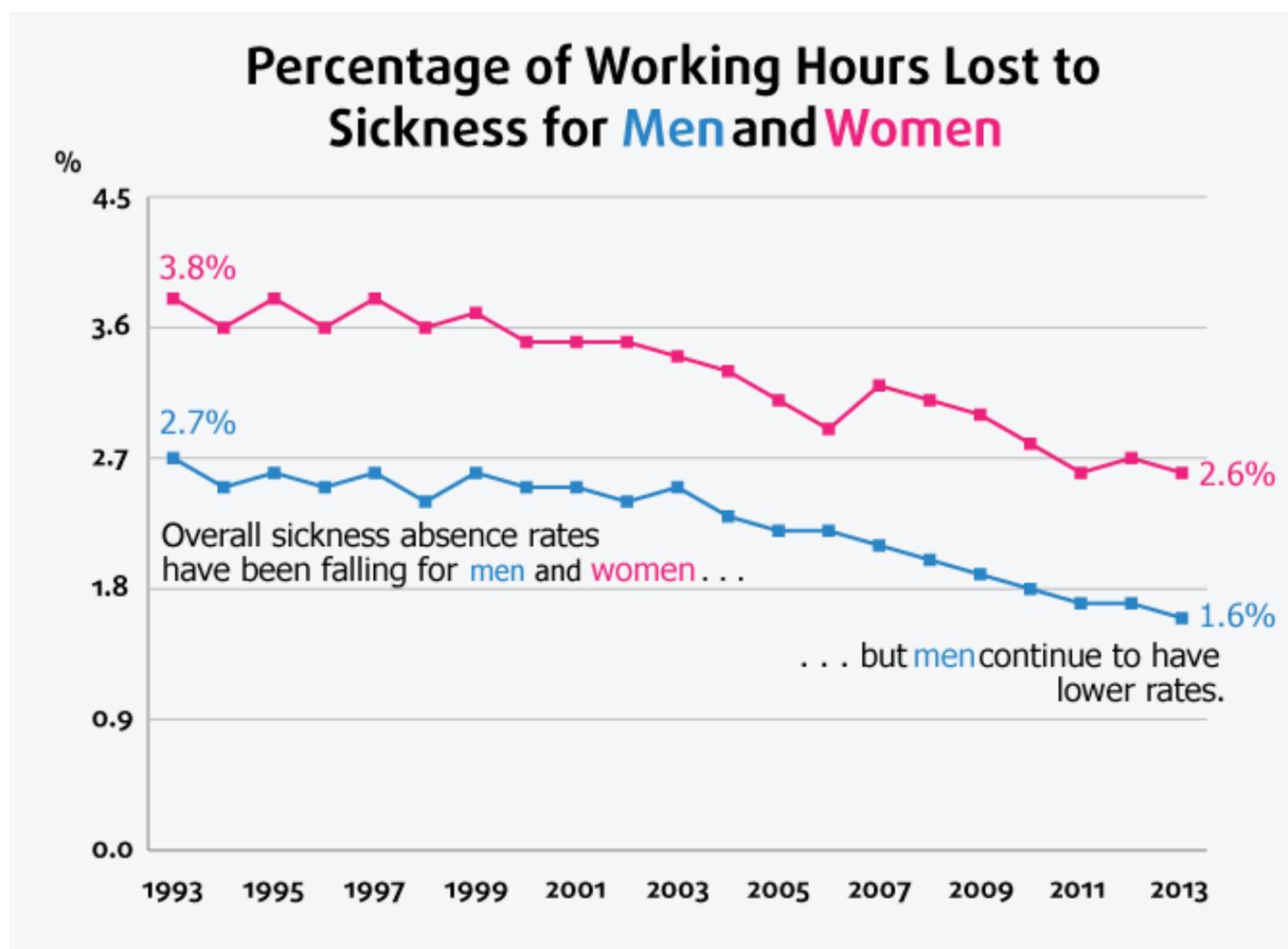
**Minor illnesses were the most common reason given for sickness absence but more days were lost to back, neck and muscle pain than any other cause**

The most common reason given for sickness absence in 2013, accounting for 30%, was minor illnesses which cover sickness such as cough and colds. This type of illness tends to have shorter durations and accounted for around 27.4 million days lost, whereas the greatest number of days lost were actually due to musculoskeletal problems in 2013, at 30.6 million days lost. Mental health problems such as stress, depression and anxiety also contributed to a significant number of days of work lost in 2013 at 15.2 million days. Note that these mental health problems exclude things such as manic depression and schizophrenia which are grouped as serious mental health problems and accounted for just 1% of the reasons given for sickness.

**Sickness absence rates have fallen for both men and women since 1993 with men consistently having a lower sickness absence rate than women**

For those aged 16 and over, men consistently had a lower sickness absence rate than women. However, both sexes have seen a fall in their sickness absence rates over the past 20 years. In 2013 men lost around 1.6% of their hours due to sickness, a fall of 1.1 percentage points from 1993 when 2.7% of men's hours were lost to sickness. Over the same period women have seen a reduction of their hours lost from 3.8% to 2.6%.

## Sickness absence rates for men and women, 1993 to 2013, UK.



Source: Labour Force Survey - Office for National Statistics

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#### Sickness absence increases with age but falls after eligibility for the state pension

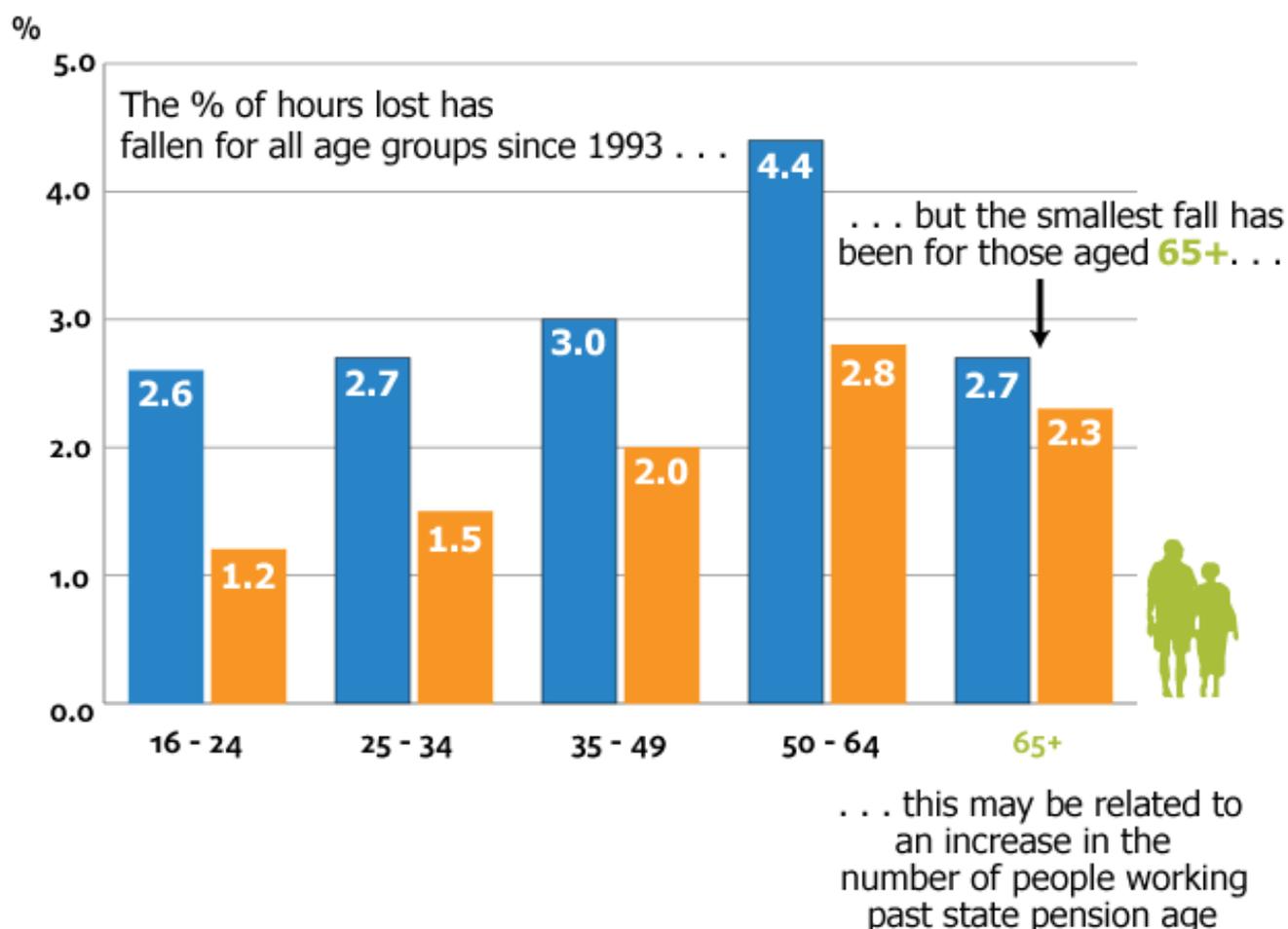
In 2013, around 1.2% of hours were lost to sickness for workers aged 16 to 24 and for those aged 25 to 34, 1.5% of hours were lost. As people get older they are more likely to develop health problems and sickness absence rates tend to increase with age, around 2.0% and 2.8% of hours were lost to sickness for those workers aged 35 to 49 and 50 to 64, respectively. However, rates of sickness are lower for those who continue to work after they are eligible for their state pension and workers aged 65 and over lost a lower percentage of hours to sickness at 2.3% compared to workers aged 50 to 64. Workers aged 65 and over may lose a lower percentage of hours to sickness than those aged 50 to 64 as those with health problems are more likely to have left the labour market rather than remaining in employment.

## Sickness absence has fallen for all age groups since 1993, but has fallen less for those aged 65 and over

Focusing on all age categories over the past 20 years, each category saw a decline in their sickness absence rates between 1993 and 2013. Those workers aged between 50 and 64 had the greatest fall at around 1.7 percentage points, followed by those aged between 16 and 24 at 1.5 percentage points. Older workers, aged 65 and over, had the smallest fall at 0.5 percentage points between 1993 and 2013. There has been a large increase in the number of people continuing to work beyond their state pension age, with around 10% of workers aged 65 and over in employment in 2013 compared to 5% in 1993 and this may be a factor in why sickness rates have fallen at a slower rate for this age group.

Sickness absence rates by age group, 1993 and 2013, UK.

### Percentage of Working Hours Lost to Sickness by Age Group: 1993 and 2013



Source: Labour Force Survey - Office for National Statistics

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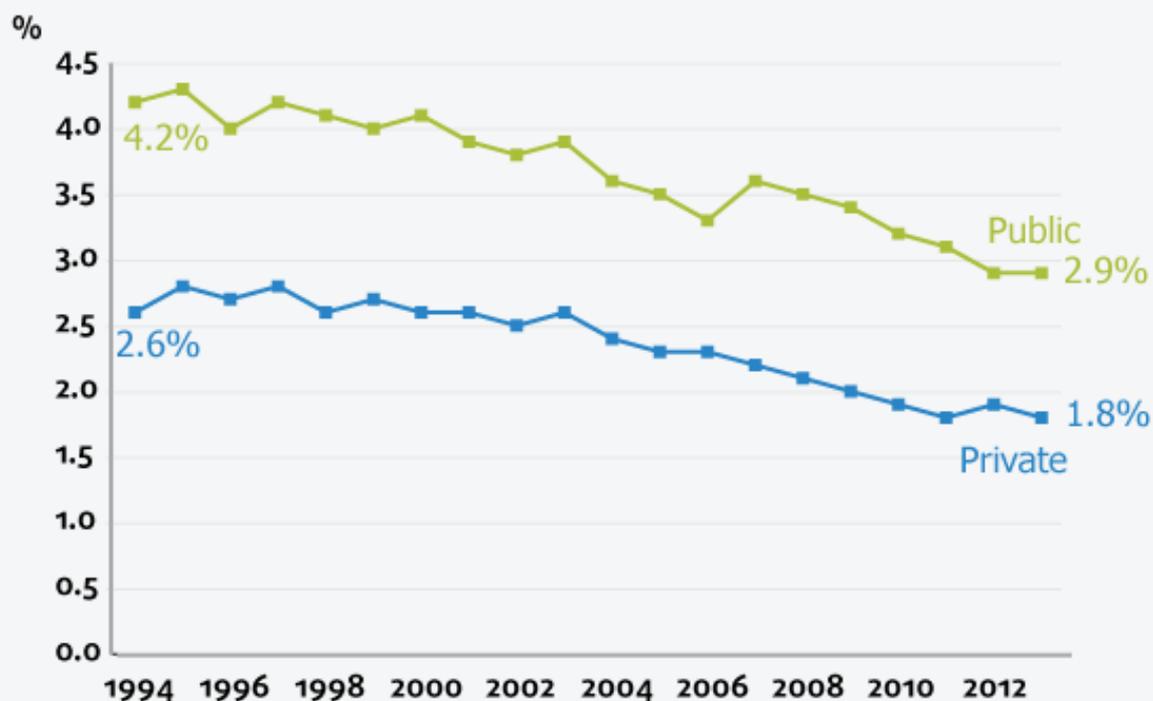
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### **Lower sickness absence rates in the private sector but the gap with the public sector has narrowed over past 20 years**

In 2013, the percentage of hours lost to sickness in the private sector was lower than in the public sector at 1.8% and 2.9% respectively. Since 1994, the earliest data available, the percentage of hours lost to sickness in the private sector has continuously been lower than that of the public sector. The sickness absence rate has fallen for each sector since 1994, 0.8 percentage points in the private sector and 1.3 percentage points in the public sector. The fall in the public sector has been slightly greater than that of the private sector and as such the gap in sickness absence rates between the two sectors has declined throughout the period. The Chartered Institute of Personnel and Development (CIPD) carry out regular surveys of employees and in Autumn 2013 published their [Employee Outlook - Focus on employee well-being](#) that included questions on sickness absence. This survey is much smaller than the Labour Force Survey (LFS), consisting of 2,229 employees for the Autumn 2013 report, weighted to represent the UK workforce. The survey asks information not available on the LFS and they found that when looking at presenteeism, which are those who go to work when they are genuinely ill, employees in the public sector were more likely (39%) to say they had seen an increase in their workplace than employees in the private sector (26%).

## Sickness absence rates for workers in the public and private sectors, 1994 to 2013, UK

## Percentage of Working Hours Lost to Sickness by Workers in the Public and Private Sectors



Source: Labour Force Survey - Office for National Statistics

### Download chart

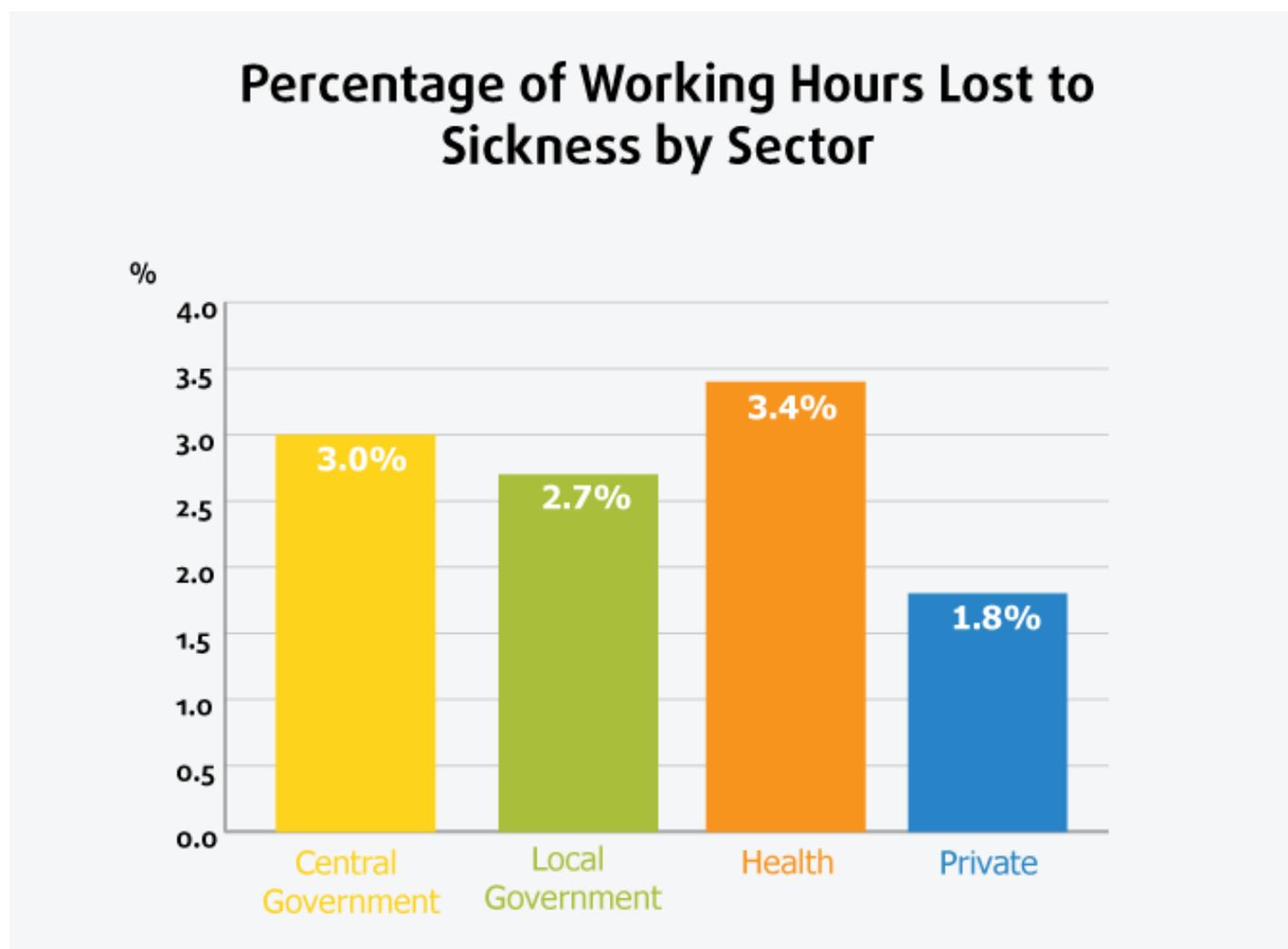
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### Of the larger public sector organisations sickness rates are highest for those working in the health sector

Sickness rates vary within the public sector and focusing on the larger organisations those working in a Health authority or NHS trust continuously had the greatest sickness absence rate throughout the 2003 to 2013 period, with around 3.4% of workers' hours lost to sickness in 2013. This compares with rates of around 3% in Central Government and 2.7% in Local Government.

Sickness absence rates in larger public sector organisations and in the private sector, 2013, UK.



Source: Labour Force Survey - Office for National Statistics

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Looking at the differences between men and women in the two sectors, whilst women working in the public sector saw the biggest decline in their sickness absence rate, by 1.6 percentage points since 1994, they lost the highest percentage of their hours at 3.2% in 2013. Meanwhile, men in the public sector saw the next biggest decline in their sickness absence rate since 1994, by 1.1 percentage points. However, it was men working in the private sector that lost the fewest hours to sickness in 2013 at 1.5% compared to the 2.5% for men working in the public sector.

There are a number of factors to consider when interpreting the differences between the public and private sectors such as:

- There are differences in the types of jobs between the two sectors and some jobs have higher likelihoods of sickness than others.
- Individuals within the private sector are also more likely to not be paid for a spell of sickness than individuals within the public sector.
- On average, women have more sickness absence than men and the public sector employs a higher proportion of female workers.
- The analysis only counts someone as sick if they work fewer hours than contracted for. It would exclude someone who is sick and makes up for the lost hours at a later point in the week. It may be possible that individuals in smaller workforces are under more pressure to make up any lost hours and these workforces are more prominent in the private sector. However no data is collected on hours that are made up due to sickness.

### **Self-employed less likely than employees to have a spell of sickness**

In 2013, self-employed people, at 1.2% of working hours, lost fewer hours to sickness than employees, at 2.1%. Looking back to 1993, the sickness absence rate for those that are self-employed has been continuously lower than that of employees. The percentage of working hours lost to sickness has fallen for both employees and the self-employed over time but at a steeper rate for employees and as such the gap in the sickness rates has declined. One possible explanation for the lower sickness absence rates amongst self-employed workers is that as self-employed people do not generally have the same sick-leave cover as employees they have more of an incentive to make up any hours lost due to sickness. Also self-employed individuals are more likely to lose out financially if they lose working hours to sickness absence.

## Sickness absence rates for employed and self-employed workers, 1993 to 2013, UK.



Source: Labour Force Survey - Office for National Statistics

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#### Largest workforces report highest sickness levels

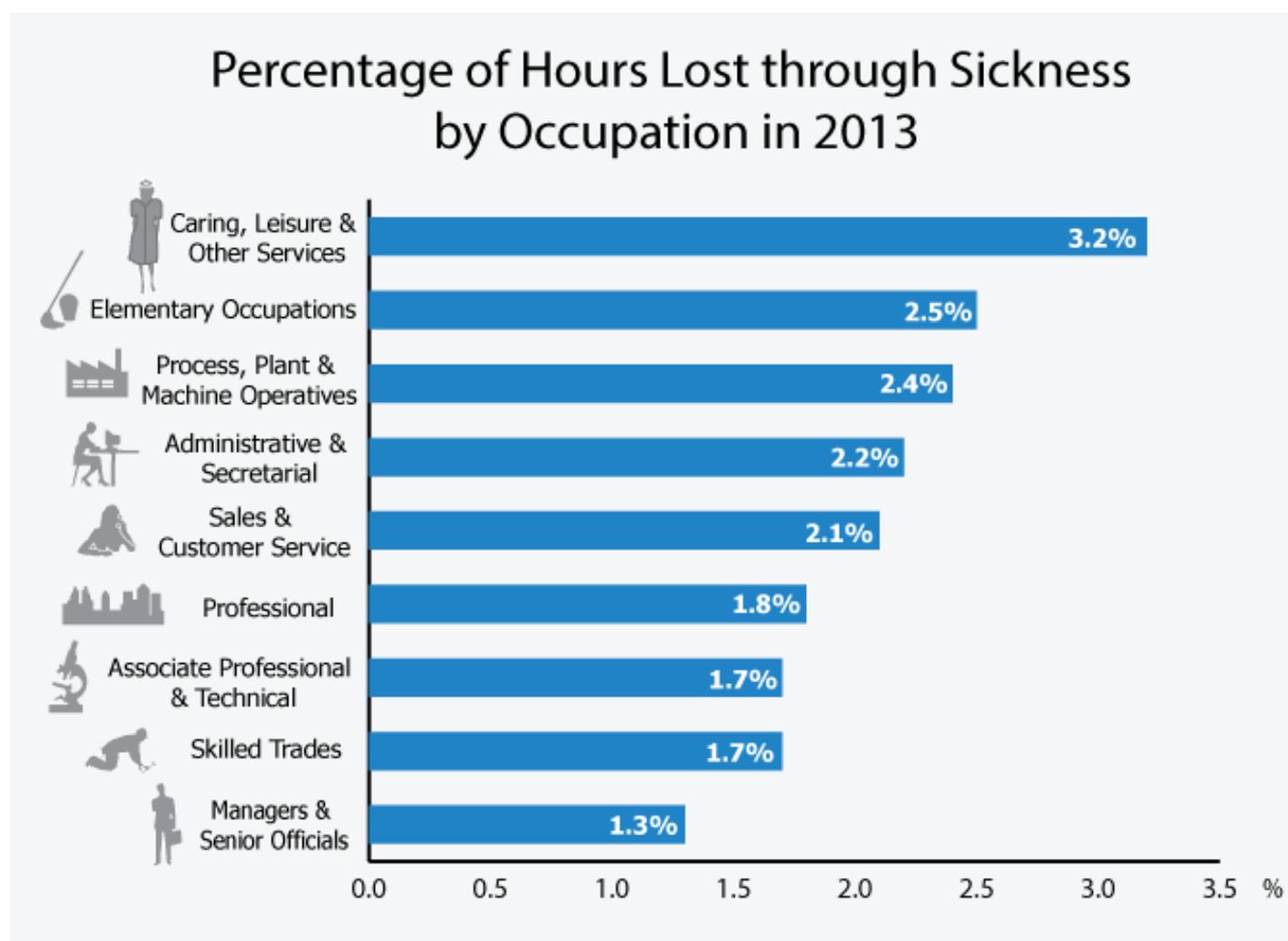
Workers in larger organisations with more than 50 employees had higher percentages of working hours lost to sickness than smaller organisations. For those firms sized 50 to 499 and 500 or more, around 2.3% of working hours were lost to sickness in 2013. Those working in the smaller firms, sized 25 to 49, lost a similar percentage of hours to the larger firms at 2.2%, whilst the smallest firms with fewer than 25 members of staff had the lowest percentage of hours lost at 1.7%. Sickness

absences in small workplaces may be less common as workers may not feel able to take time off due to work commitments and not having colleagues to cover their work. The CIPD's survey found that whilst employees reported various reasons for going to work when they were ill, the most common reason, at 45%, was employees not wanting to let their team down.

### Sickness lowest for Managers, directors and senior officials

Looking at the different occupational groups, those working in the caring, leisure and other service occupations lost the highest percentage of hours to sickness in 2013 at 3.2%. This group is dominated by women, who are more likely to have a spell of sickness than men, which may explain why this group is highest. The lowest percentage of hours lost to sickness was for managers, directors and senior officials at 1.3% in 2013. Sickness absences may be less common in the managers, directors and senior officials occupation group as workers may not feel able to take time off due to work commitments. The CIPD's survey found that looming deadlines was more of an issue for senior and middle managers going to work when they were ill compared to those with no management responsibility.

### Sickness absence rates by occupation group, 2013, UK.



Source: Labour Force Survey - Office for National Statistics

## Download chart

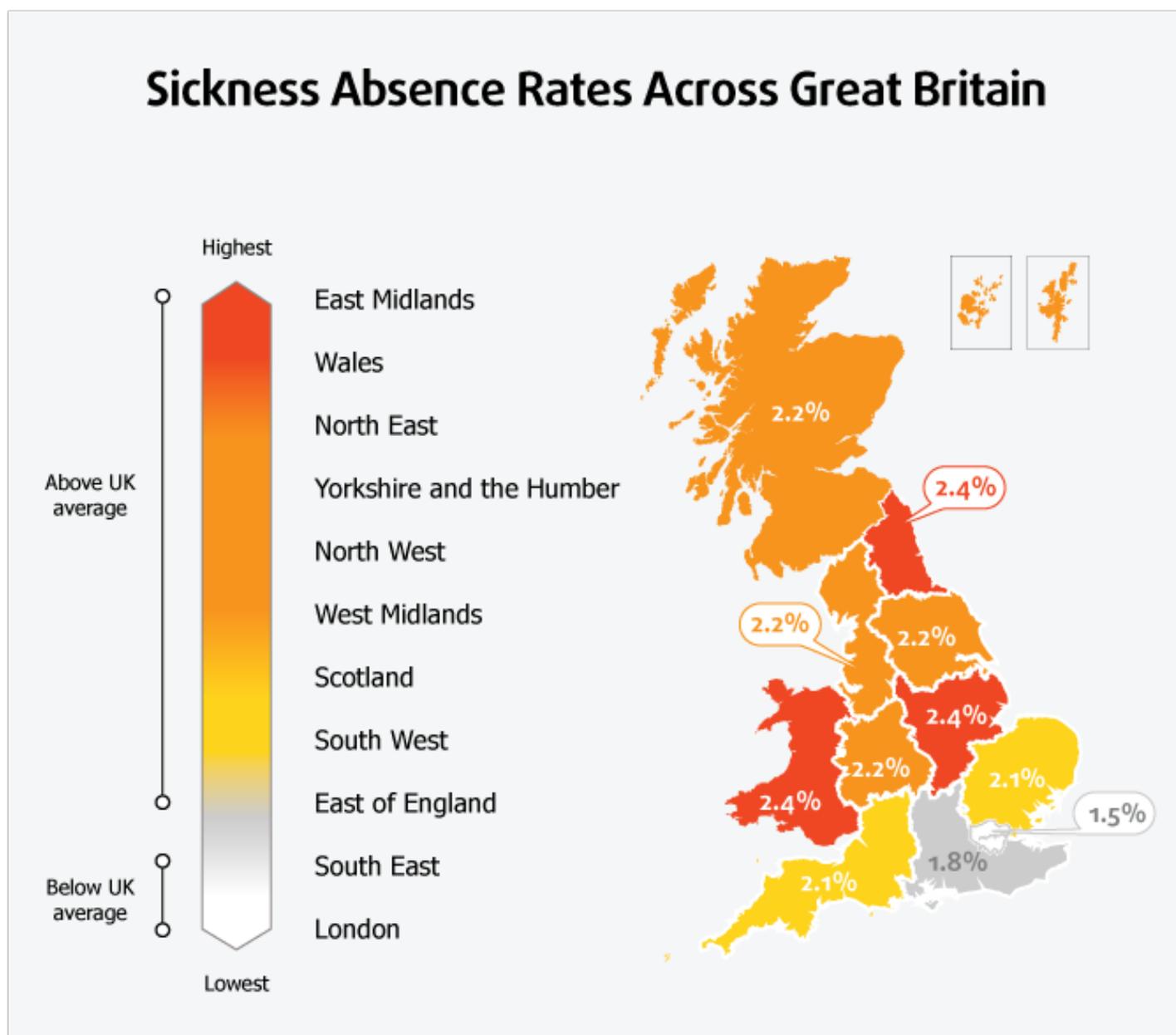
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## Sickness absence lowest in London

Using the Annual Population Survey for the period October 2012 to September 2013, and looking at the different parts of Great Britain, workers in London had the lowest percentage of hours lost to sickness, at 1.5%. This may be down to the fact that the London workforce when compared to other parts of GB has a younger work force and more self-employed people. The South East, with the second lowest percentage of hours lost at 1.8%, also has a higher than average percentage of self employed workers and more private sector workers. Both London and the South East also had a higher than average percentage of workers in the managers, directors and senior officials and professional occupations. These characteristics are associated with lower than average sickness absence rates.

## Sickness absence rates across Great Britain, October 2012 to September 2013.



Source: Annual Population Survey (APS) - Office for National Statistics

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### Incidences of sickness higher for women, those in the public sector and those in larger workplaces

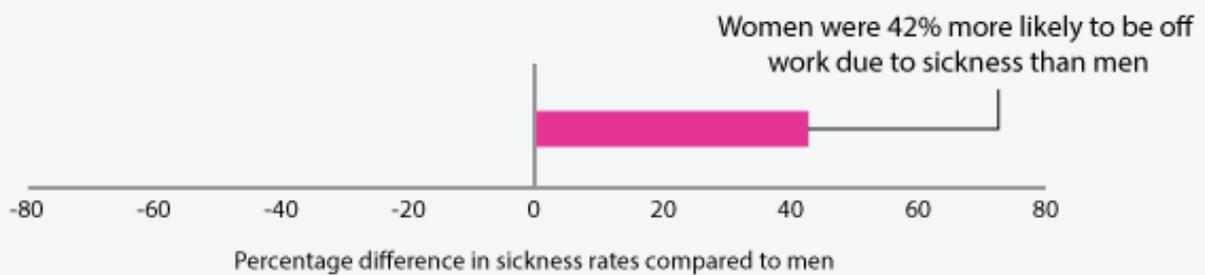
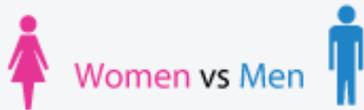
The differences in the sickness rates across the regions of England and devolved countries of Great Britain are down to their different types of workforces. When controlling for the various factors that influence sickness there is no significant difference in incidences of sickness. The factors that may influence sickness have been explored within this report such as the sex and age of the worker, their

occupation and the sector and the size of the organisation they work in. Often many of these factors are linked, for example sickness absence is generally higher in the public sector and also higher for women. A higher percentage of women than men work in the public sector and using a statistical modelling technique known as logistic regression it is possible to identify how much each individual factor influences sickness. A detailed explanation of this technique is explained at the end of this report and the results are summarised as follows for the period October 2012 to September 2013.

- Women were 42% more likely to have time off work through sickness than males.
- Compared to workers in the professional occupational group those working in process plant and machine operations occupations were 71% more likely to have an instance of sickness. Compared to professionals, sickness was also more likely among many of the other occupational groups, with it 48% more likely for those working in skilled trades occupations, 47% more likely for those working in sales and customer service occupations, and 45% more likely for those working in caring, leisure and other service occupations.

Logistic regression of sickness absence part 1, October 2012 to September 2013, UK

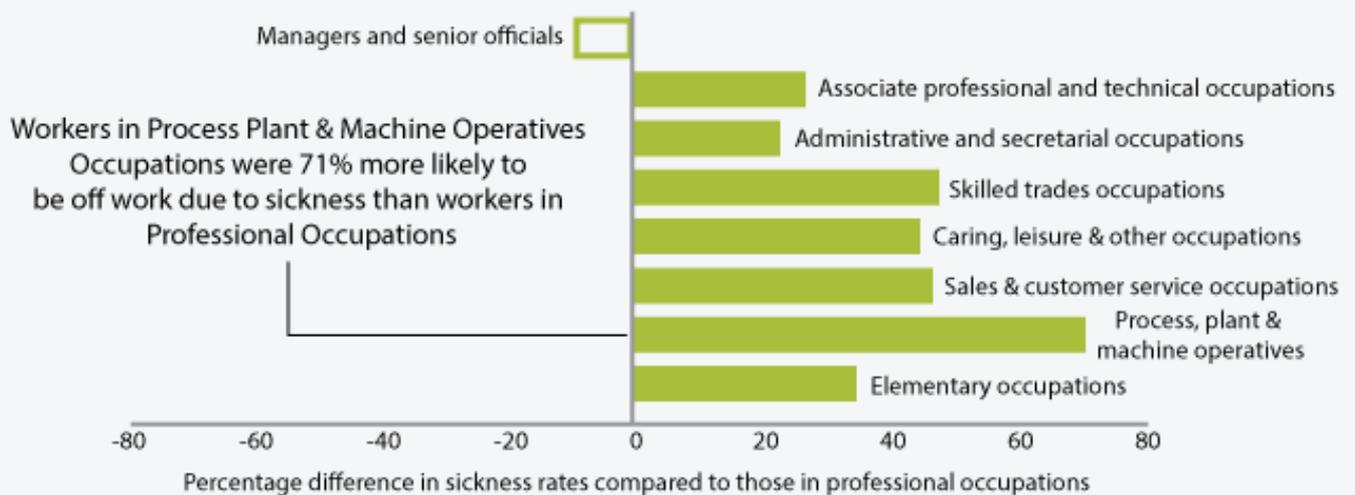
## How Different Factors Influence Sickness Absence



vs



The Professional Occupation Group



Denotes that compared to professional occupations the difference was not statistically significant

Source: Annual Population Survey (APS) - Office for National Statistics

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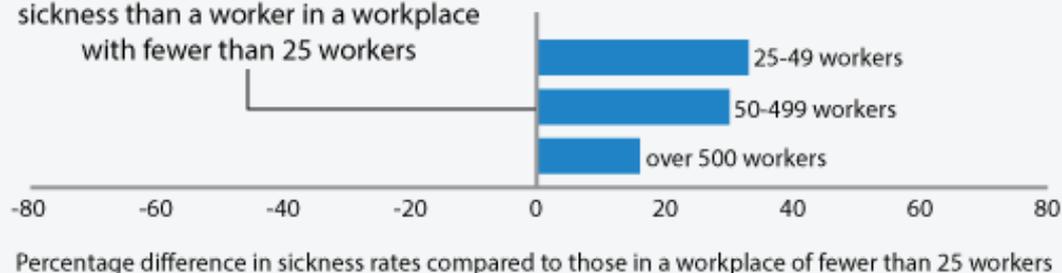
- Those in a workplace with 50 to 499 workers were 31% more likely to have time off through sickness than those working in a small workplace of less than 25 workers.
- Public sector workers were 24% more likely to be off work due to sickness than someone who works in the private sector.

## Logistic regression of sickness absence part 2, October 2012 to September 2013, UK

### How Different Factors Influence Sickness Absence

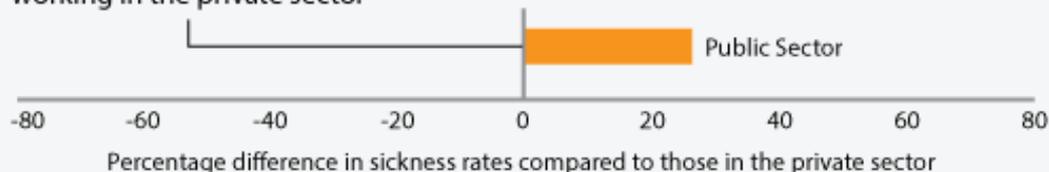
**Workplace Sizes** vs Workplaces with fewer than 25 workers

A worker in a workplace with 50 to 499 workers was 31% more likely to be off work due to sickness than a worker in a workplace with fewer than 25 workers



**Public Sector** vs Private Sector

Those working in the public sector were 24% more likely to be off work due to sickness than those working in the private sector



Source: Annual Population Survey (APS) - Office for National Statistics

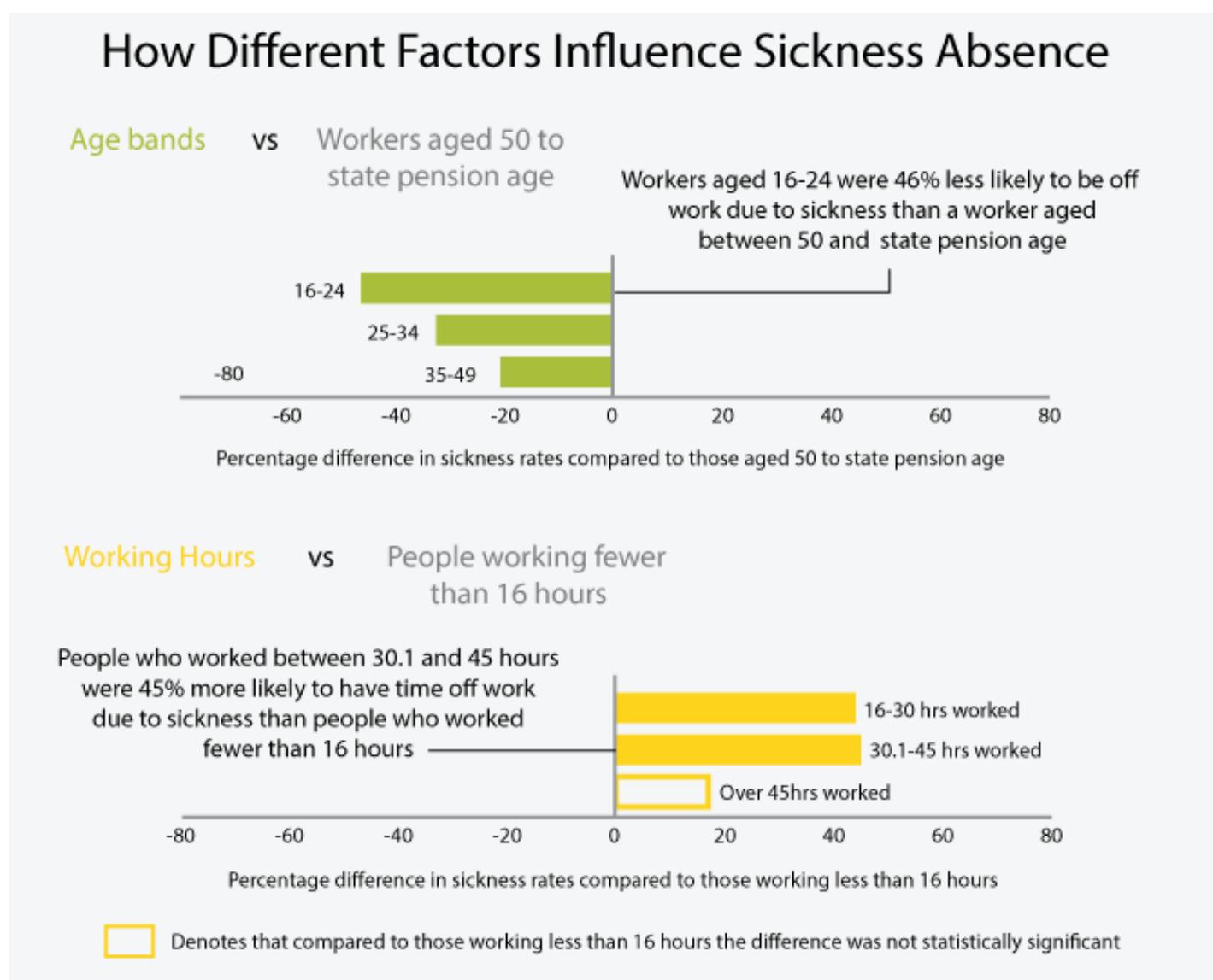
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- Workers aged 16 to 24 were 46% less likely to be off work due to sickness than a worker aged between 50 and state pension age.
- Compared to those working less than 16 hours in the reference week, those who worked between 30.1 and 45 hours were 45% more likely to have time off due to sickness.
- When controlling for the different factors that may influence sickness there was no significant difference in sickness among the different regions of England and devolved countries of the UK.

## Logistic regression of sickness absence part 3, October 2012 to September 2013, UK



Source: Annual Population Survey (APS) - Office for National Statistics

## Download chart

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## Notes

1. Chartered Institute of Personnel and Development (CIPD), 'Employee Outlook, Focus on employee well-being', pp 10-11, Focus Autumn 2013

[Employee Outlook - Focus on employee well-being](#)

2. For all the data included in this report please click this link:

[All data used in "Sickness Absence in the Labour Market" \(123.5 Kb Excel sheet\)](#)

## Background notes

1. Email: [labour.market@ons.gov.uk](mailto:labour.market@ons.gov.uk)

1. The main analysis uses the quarterly LFS datasets to generate annual averages
2. The regional and logistic regression analysis uses the October 2012 to September 2013 APS dataset
3. The APS data gives more robust estimates but the LFS data was used for the main analysis as it is timelier and would allow analysis of a time series back to 1993. The APS could only go back to 2004
4. A day is defined here as 7 hours and 30 minutes
5. The sickness absence rate is the percentage of working hours lost due to sickness absences
6. The LFS variables used to calculate sickness absence levels and rates are YLESS6, TTACHR and TTUSHR
7. The LFS variables ILLNE11 and ILLFST11 are used to look at the type of sickness/injury causing the absence
8. Sickness absence rates do not account for the total length of absence because the Labour Force Survey can only measure up to seven days off work during the interviewee's reference week.
9. Full description of main condition of illness categories from the Labour Force Survey:

- Minor illnesses: coughs, colds and flu, sickness, nausea and diarrhoea
- Headaches and migraines
- Back pain
- Neck and upper limb problems (arthritis in hand joints, stiff neck)
- Other musculoskeletal problems
- Eye, ear, nose and mouth/dental; to include sinusitis and toothache
- Heart, blood pressure and circulation problems
- Stress, depression, anxiety (common mental health problems)
- Manic depression, schizophrenia and other serious mental health problems
- Other respiratory conditions (asthma, Chronic Obstructive Pulmonary Disease [OPD], bronchitis, pneumonia)
- Other gastrointestinal problems (irritable bowel syndrome [IBS], piles, bowel cancer, stomach ulcer)
- Genito-urinary; to include urine infections, menstrual problems, pregnancy problems
- Diabetes
- Other (accidents, poisonings, infectious diseases, skin disorders and anything else not covered above).

Please note: Following publication of the report and discussions with Full Fact, ONS added an extra portion of the pie chart included within the chart on number of working days lost due to sickness and the top reasons. This was to illustrate more clearly the number of people who do not state their reason for sickness.

2. Details of the policy governing the release of new data are available by visiting [www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html](http://www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html) or from the Media Relations Office email: [media.relations@ons.gsi.gov.uk](mailto:media.relations@ons.gsi.gov.uk)

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This document is also available on our website at [www.ons.gov.uk](http://www.ons.gov.uk).

## Appendices

### Sickness absence methodology

#### Calculating sickness absence estimates from the Labour Force Survey and Annual Population Survey

To note: The denominator for calculating sickness absence rates has been updated since the last Sickness Absence in the Labour Market release published in 2012. The previous method used total hours *usually* worked for all individuals. However, further analysis found that using total hours *actually* worked for individuals who were not absent from work due to sickness or injury provided a better measure than total hours *usually* worked as this takes account of individuals working on flexi time, holidays, appointments etc. Using total hours *actually* worked for individuals who were not absent from work in the reference week due to sickness or injury is a better reflection of a 'normal' working week and is less likely to over-estimate the total number of hours worked than total hours *usually* worked.

#### Calculating sickness absence rates

Individuals that are in employment are asked to record the number of hours they would *usually* work in the reference week. They are then asked to record the *actual* number of hours they worked in the reference week. Those individuals who *actually* worked fewer hours than they *usually* would are asked to record why this was the case. One of the answer options to this question is 'sick or injured'. For those individuals who worked fewer hours than usual due to sickness or injury, the total number of hours lost to sickness or injury during the reference week can be calculated. This is done by subtracting the actual hours worked from the usual hours worked.

The total number of hours worked is the sum of the total hours *actually* worked for those who were not absent from work in the reference week due to sickness or injury and the total hours *usually* worked for individuals who were absent from work in the reference week due to sickness or injury. The total number of hours *actually* worked is used for individuals who were not absent from work due to sickness as this will provide a better reflection of a normal working pattern, taking account of individuals working on flexi time, holidays, appointments etc.

The total number of hours lost due to sickness or injury can then be taken as a percentage of the total number of hours worked to get a 'sickness absence rate'.

$$\text{sickness absence rate} = \frac{\text{total hours lost due to sickness or injury}}{\text{total hours worked}} \times 100$$

*Total hours worked = Total actual hours for those with no sickness absence + Total usual hours for those with sickness absence*

The data used in this calculation refers to the reference week that a respondent has been sampled to provide information for. Each quarterly LFS dataset contains information about 13 weeks, with around a thirteenth of the sample responding about each of the 13 weeks. Therefore if

this calculation is done using a quarterly LFS dataset then the sickness absence rate gives the average percentage of hours lost due to sickness or injury for that quarter. Sickness absence is very seasonal however, so it is better to report on annual averages unless data can be seasonally adjusted. This can be done in two ways, either all four quarters of LFS data can be used to generate an annual average or the Annual Population Survey (APS) can be used to produce figures for a 12 month period.

### Estimating working days lost due to sickness or injury

The total number of days lost due to sickness or injury can then be calculated by converting the number of hours lost in to days lost by defining 'a day' as 7 hours and 30 minutes. No adjustment is needed for part time workers as this method does not use reported days lost due to sickness or injury (where 'a day' is open to individual interpretation and may differ between full and part time workers), but instead uses the difference between usual and actual hours to get the total hours lost. If we assume an average full day is 7 hours and 30 minutes then the total hours lost can be divided by 7.5. However, this would only give you the number of days lost in an average week. To estimate the number of days lost due to sickness or injury in a year the total hours lost first need to be multiplied by 52 before being divided by 7.5.

$$\text{total days lost due to sickness or injury in the year} = \frac{(\text{total hours lost due to sickness or injury} \times 52)}{7.5}$$

### Estimating average days lost per worker

The average number days lost per worker due to sickness or injury can be calculated by dividing the total number of days lost by the total number of workers estimated to have been in employment for that period.

$$\text{average days lost per worker} = \frac{\text{total days lost due to sickness or injury in the year}}{\text{average number of workers in the year}}$$

This can also be done for more specific groups within the sample. For example, to calculate the average days lost per public sector worker the calculation would be as follows:

$$\text{average days lost per public sector worker} = \frac{\text{total sick days lost in the year for public sector workers}}{\text{average number of public sector workers in the year}}$$

### Calculating total days lost by type of sickness or injury

The LFS and APS also collect information relating to the type of sickness or injury that caused a period of sickness absence. This data can be used to estimate the number of days lost by different types of sickness or injury. Not all respondents who worked fewer hours than usual in the reference

week due to sickness or injury are asked the questions about the type of sickness or injury. However the majority are asked the questions, and the data that is collected can be used to calculate proportions which can then be applied to give adjusted estimated total days lost for each reason. This can be done as follows:

$$\% \text{ share of hours lost for REASON A} = \frac{\text{total hours lost due to REASON A}}{\text{total hours lost for ALL REASONS}} \times 100$$

$$\text{estimated days lost due to REASON A} = \frac{\% \text{ share of hours lost for REASON A}}{100} \times \text{total days lost}$$

### Calculating sickness incidence rates and levels

As well as measuring the percentage of hours lost or estimating the number of days lost, it is also possible to look at the sickness *incidence* rates and levels. This measures how many people had a sickness absence during the reference week. What is defined as 'a sickness absence' can vary and must be made clear in any analysis; for example it could be defined as 'one hour or more' or 'a day or more'. By using the 'hours lost to sickness' calculation cases on the dataset can be flagged as either having had a sickness absence in the reference week or not having had a sickness absence in the reference week. See the technical notes below for more details.

### National and regional sickness absence analysis

There are limitations to the data however, because the data is only collected about sickness or injury in the reference week the sample sizes are relatively small. When looking at national estimates the LFS data gives reliable figures but regional estimates from the LFS are less robust. The APS has a larger sample size that allows for analysis at the regional level, as well as at the national level, and this is the recommended source for sickness absence data. The APS is not as timely as the LFS data and the LFS data has a longer consistent time series (back to 1993 compared to 2004 for the APS) so the LFS may be the preferred source for some sickness absence analysis at a national level. In relation to sickness absence analysis, sample sizes on the APS are very small at geographic areas lower than the regional level, such as local authority or unitary authority areas. It is not recommended that analysis is done at a level lower than the regional level. However, if analysis is conducted at lower geographic levels, caveats should be included to warn about the reliability of the estimates.

### A note on ONS' previous sickness absence method

ONS previously used a different method to estimate sickness absences. This required respondents to first record the days that were scheduled to be worked in the reference week. They are then asked if they took any of these days off due to sickness or injury, which days those were if so, and the type of sickness or injury causing the absence. An issue was identified with these questions as figures did not match those obtained when looking at those who had worked fewer hours than

usual due to sickness or injury. Investigations showed that, despite instructions, many respondents who had taken the whole reference week off due to sickness or injury responded that they were not working at all and were therefore not asked about having days off due to sickness or injury. This meant that sickness absence was being underestimated using this method. Changes were made to the questionnaire in 2010 that has improved the situation although there are still some issues with using this method. This method no longer has a consistent time series for analysis as the improvements in 2010 have caused a break in the series. Even with the improvements this method still appears to underestimate sickness absence compared to other measures. Part of the reason is that this method only captures 'days' which can be interpreted very differently by respondents and it can not take in to account different working patterns easily or measure the impact of part days being lost due to sickness absences. Therefore the method detailed above using actual and usual hours is currently the preferred method for estimating sickness absence using LFS and APS data.

ONS previously used a different method to calculate the sickness absence rate. The denominator for calculating sickness absence rates was the total hours *usually* worked for all individuals. However, further analysis found that using total hours *actually* worked for individuals who were not absent from work due to sickness or injury provided a better measure than total hours *usually* worked as this takes account of individuals working on flexi time, holidays, appointments etc. Using total hours *actually* worked for individuals who were not absent from work in the reference week due to sickness or injury is a better reflection of a 'normal' working week and is less likely to over-estimate the total number of hours worked than total hours *usually* worked.

### Technical notes and syntax

This section gives some additional practical guidance for users who want to calculate the above estimates using LFS or APS data.

### Calculating sickness absence rates

The variables TTUSHR (total usual hours), TTACHR (total actual hours) and YLESS6 (why worked fewer hours than usual) are used to calculate sickness absence rates.

The best way to do this is to create a new variable that calculates the number of hours lost due to sickness or injury. Lets call this HRSOFFSICK, it can be calculated with the SPSS code below:

```
COMPUTE HRSOFFSICK=-8.
```

```
DO IF YLESS6=6.
```

```
    COMPUTE HRSOFFSICK=TTUSHR-TTACHR.
```

```
ELSE.
```

```
    COMPUTE HRSOFFSICK=-9.
```

```
END IF.
```

VARIABLE LABELS HRSOFFSICK 'Hours lost due to sickness or injury'.

MISSING VALUES HRSOFFSICK (-8,-9).

EXE.

The total number of hours lost can be generated as follows (this should be done on weighted data):

TABLES

```
/FORMAT BLANK MISSING('')
```

```
/OBSERVATION= HRSOFFSICK
```

```
/GBASE=CASES
```

```
/TABLE=HRSOFFSICK BY (STATISTICS)
```

```
/STATISTICS
```

```
sum( HRSOFFSICK( F7.0 )).
```

And the total hours, called 'tothours' here can be generated with the SPSS code as follows (again on weighted data):

```
COMPUTE tothours=-8.
```

```
IF TTACHR>0 tothours=TTACHR.
```

```
IF YLESS6=6 tothours=ttushr.
```

```
MISSING VALUES tothours (-8,-9).
```

TABLES

```
/FORMAT BLANK MISSING('')
```

```
/OBSERVATION= tothours
```

```
/GBASE=CASES
```

```
/TABLE=tothours BY (STATISTICS)
```

```
/STATISTICS
```

```
sum( tothours( F7.0 )).
```

The sum of hours lost divided by the sum of total hours multiplied by 100 gives the sickness absence rate.

To generate sickness absence rates for different groups these figures can be created in crosstabs, for example, to generate the rates by gender the following tables can be run (again weighted):

#### TABLES

```
/FORMAT BLANK MISSING('.')
/OBSERVATION= HRSOFFSICK
/GBASE=CASES
/TABLE=HRSOFFSICK BY SEX > (STATISTICS)
/STATISTICS
sum( HRSOFFSICK( F7.0 )).
```

#### TABLES

```
/FORMAT BLANK MISSING('.')
/OBSERVATION= tothours
/GBASE=CASES
/TABLE=tothours BY SEX > (STATISTICS)
/STATISTICS
sum( tothours( F7.0 )).
```

### **Estimating working days lost due to sickness or injury**

Once you have estimates for hours lost due to sickness or injury these can be converted in to days lost per year by multiplying by 52 and dividing by 7.5. The estimates generated from HRSOFFSICK refer to an average week therefore to get an estimate for the year they need to be multiplied by 52. This gives total hours lost and if we assume an average full day to be 7 hours and 30 minutes then dividing by 7.5 gives total days lost.

### **Estimating average days lost per worker**

The total days lost can be converted in to average days lost per worker. Running a frequency on ILODEFR will give an estimate of workers where ILODEFR=1. The calculated total days lost can then be divided by this estimate.

## Calculating total days lost by type of sickness or injury

As not all the respondents who worked fewer hours than usual due to sickness or injury are asked the questions about type of illness some adjustment is required to calculate the total days lost by type of sickness or injury. Using the data available for those who worked fewer hours than usual and responded about the type of illness we can generate figures for the number of hours lost by each type of illness. These figures can not be used as they are as they would underestimate the length of sickness absence, instead we can use the proportions here and apply them to the total number of days lost already calculated. For example, if we had estimated that 150 million days had been lost to sickness or injury and 10% of the total hours lost was due to back pain then we would estimate that 10% of 150 million days, 15 million days, were lost due to back pain.

These estimates will be based on the *main* reason for the absence and two variables need to be combined to calculate this. This can be done as follows, creating a variable called TYPICK:

```
COMPUTE TYPICK=-9.
```

```
DO IF ILLNE11 = -9.
```

```
    COMPUTE TYPICK=ILLFST11.
```

```
ELSE.
```

```
    COMPUTE TYPICK=ILLNE11.
```

```
END IF.
```

```
EXECUTE.
```

```
VARIABLE LABELS TYPICK 'Type of sickness or injury (combined)'.
```

```
VALUE LABELS TYPICK
```

- 1 'Back pain'
- 2 'Neck and upper limb problems'
- 3 'Other musculoskeletal problems'
- 4 'Stress, depression, anxiety'
- 5 'Serious mental health problems'
- 6 'Minor illnesses'
- 7 'Respiratory conditions'
- 8 'Gastrointestinal problems'

- 9 'Headaches and migraines'
- 10 'Genito-urinary problems'
- 11 'Heart, blood pressure and circulation problems'
- 12 'Eye/ear/nose/mouth/dental problems'
- 13 'Diabetes'
- 14 'Other'
- 15 'Prefers not to give details' .

MISSING VALUES TYPICK (-8,-9).

EXECUTE.

The first three options can be combined in to one category called 'musculoskeletal problems'.

### Calculating sickness incidence rates and levels

The HRSOFFSICK variable can be used to measure sickness incidence. To get a measure of the number of people who had a sickness absence of a specified period or longer. To estimate the number of people who had any time off sick in their reference week the data could be filtered by IF HRSOFFSICK>0. If you defined 'a day' as 7 hours and 30 minutes, to estimate the number of people who had at least a day off sick in their reference week the data could be filtered by IF HRSOFFSICK=>7.5.

### Logistic regression methodology

To analyse the impact of some of the different factors that may affect the likelihood of being off from work due to sickness a statistical technique known as a logistic regression can be used.

Logistic regression is less restrictive than ordinary sum of squares regression since it does not require normally distributed data, but like ordinary regression, logistic regression provides a coefficient which measures each independent variable's partial contribution to variations in the dependent variable.

The basic logistic regression analysis starts with logit transformations of the dependant variable through the utilisation of maximum likelihood estimation. This is done with the odds ratio, which in this analysis has been used to show the likelihood of having a spell of sickness when comparing one group to others.

The odds ratio can be described as follows;

$$\text{Odds}_i = \left[ \frac{p_i}{1-p_i} \right] = e^{\beta_0 + \beta_1 X_1 + \dots + \beta_n X_n}$$

Where  $p_i$  is the probability of an event  $i$  occurring,  $e$  is an exponential function and  $\beta_0 + \beta_1X_1 + \dots$  represents the regression model.

Therefore the odds ratio of an event occurring can be denoted as equalling the exponential of the regression model, or for each individual event, the exponential of its co-efficient,  $\beta$ . Within Stata it is possible to run the logistic regression to either give you the co-efficient,  $\beta$ , which you can then take the exponential of (this is done using the command `logit`) or to give the odds ratio rather than the co-efficient (this is done using the command `logistic`).

Looking at our analysis into the impact of factors on the likelihood of being off work due to sickness between October 2012 and September 2013 the regression equation is as follows;

$$\text{Sickness absence} = \beta_0 + \beta_1\text{occupation} + \beta_2\text{sex} + \beta_3\text{workplace size} + \beta_4\text{sector} + \beta_5\text{age groups} + \beta_6\text{hours worked} + \beta_7\text{region}$$

Where occupations are broken down into 9 categories (1 digit SOC2010 coding) and the reference category is those working in professional occupations. For sex, males are the reference category. Workplace size is broken down into four categories, 1-25 workers, 25-49 workers, 50-499 workers and over 500 workers, and 1-25 workers is the reference category. For sector the private sector is the reference category.

Age groups have been broken down into four categories, those aged 16-24, 25-34, 35-49 and those aged 50 to state pension age. The reference category for this variable was those aged between 50 and state pension age. Hours worked consists of four categories, under 16 hours worked in the reference week, between 16.1 and 30 hours worked, between 30.1 and 45 hours worked, and over 45 hours worked. The reference category here is those who worked less than 16 hours in the reference week.