Analysis of the trends in self-reported work-related ill health with special reference to the trend reversal in 2006/07

HSE Statistics Branch
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Executive summary

- LFS ill health estimates in 2005/06 and 2006/07 depart from the long-term trend, with the former below the trend and the latter above.

- The ill health figures are dominated primarily by two conditions. A decrease in stress drove the downward change in 2005/06, while an increase in MSD drove the upward change in 2006/07. The fact that these two occurrences followed in successive years exaggerates the significance of the change between those two years.

- Differences between results from specific industry sectors point to a genuine change rather than a statistical 'blip'. Public sector data in particular were the main driver of the changes.

- Stable LFS trends on general sickness absence suggest the changes may have been in the extent of attribution of ill health to work, rather than the actual levels of ill health.

- Data from other sources is consistent with a lack of movement in general sickness absence figures, supporting the theory that what changed over the period of investigation was attribution rates.

- A change in the timing of the LFS survey period had no impact on results. Nor did the inclusion of an extra module of questions on work conditions.

- Investigation of other data sources does not provide any evidence to contradict the findings of the LFS survey series. In particular, the psychosocial working conditions survey shows a very similar trend for stress over the time period under investigation. However, more recent information from some of the data sources would be required for us to examine whether these are fully in line with the LFS trend estimates.

Conclusion

The discontinuity seen in 2005/06 and 2006/07 appears to be genuine and not caused by a statistical quirk. The discontinuity was caused by changes to particular categories of ill health in particular industry sectors.

These changes serve to highlight the importance of not placing too much emphasis on changes over a single year. What is important is what these annual measurements reveal about the long-term trend.

Analysis of the trends in self reported work related ill health with special reference to the trend reversal in 2006/07

1. Context:

1.1. HSE commissions a module of questions in the national Labour Force Survey (LFS), to gain a view of work-related illness based on individuals' perceptions. The Self-reported Work-related Illness (SWI) survey module has been included in the LFS annually since 2003/04, and periodically prior to then. This survey module provides an indication of the prevalence (including long standing as well as new cases) of work-related illness in the previous 12 months, of incidence (new cases) in the same period, and of annual working days lost due to work-related illness.

1.2. The SWI incidence data for the year 2006/07 showed an unusually sharp increase from the previous year, in marked contrast with the trend over the previous five years, which had seen the rate fall steadily. This report investigates whether this change represented a genuine trend reversal or a statistical 'blip'.

1.3. Much of the analysis undertaken related to the change between 2005/06 and 2006/07 and the investigation centred on why the 2006/07 data had departed from the previous downward trend. However we now have data from 2007/08 which allows us to see more clearly how the change fits into the long term trend. This new data suggests that the 2005/06 figures may have also been out of line with the long-term trend and in particular, how an unusually low rate in 2005/06 served to exaggerate the observed increase in 2006/07.

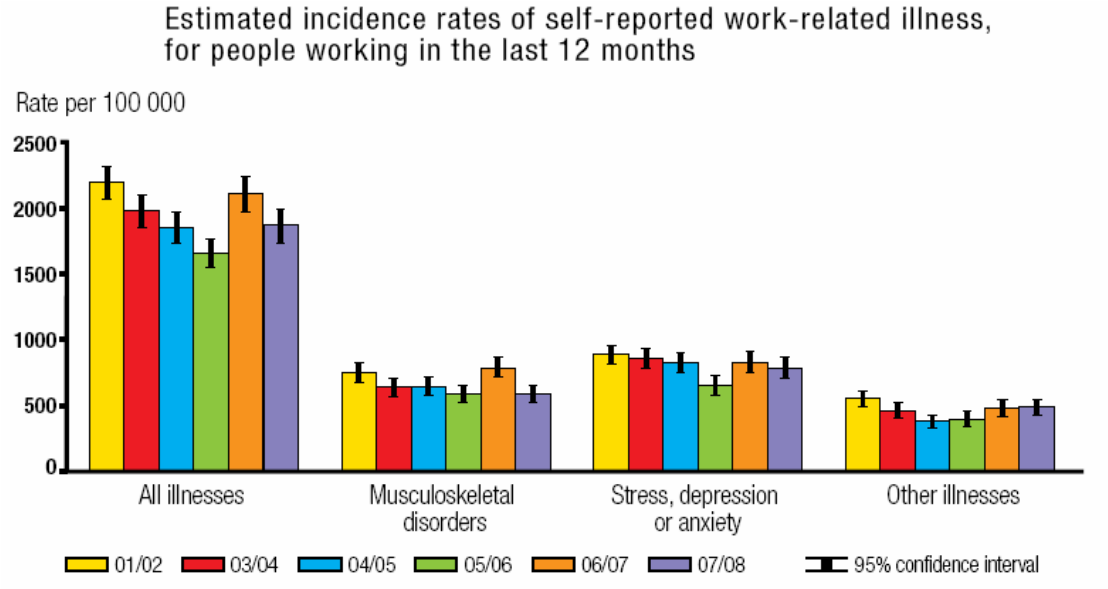
1.4. Although the statistical precision of the survey estimates is not particularly high (for example the 95% confidence limits around the 2006/07 estimate cover a range of +/- 6% around the central estimate), it is clear that such a large rise between 2005/06 and 2006/07 cannot be explained by statistical variability. However, it is possible that the observed change will include a chance component.

2. The nature of the changes

2.1. Much of the overall rate for ill health is driven by the two dominant work-related ill health conditions, musculoskeletal disorders (MSD) and stress, depression or anxiety (from here on in, abbreviated to 'stress').

Over the long term since 2001/02, both have shown a fairly stable (slightly downward) trend. However, both conditions have one year of data which is out of line with the overall trend. These are the drivers for the changes in the overall ill health rates.

The dip in the overall figures for 2005/06 is driven primarily by a sharp decrease in reports of work-related stress. The jump in the overall rate for 2006/07 is driven by a combination of stress returning to its previous level and MSD increasing sharply, before reverting to the long term trend in 2007/08.



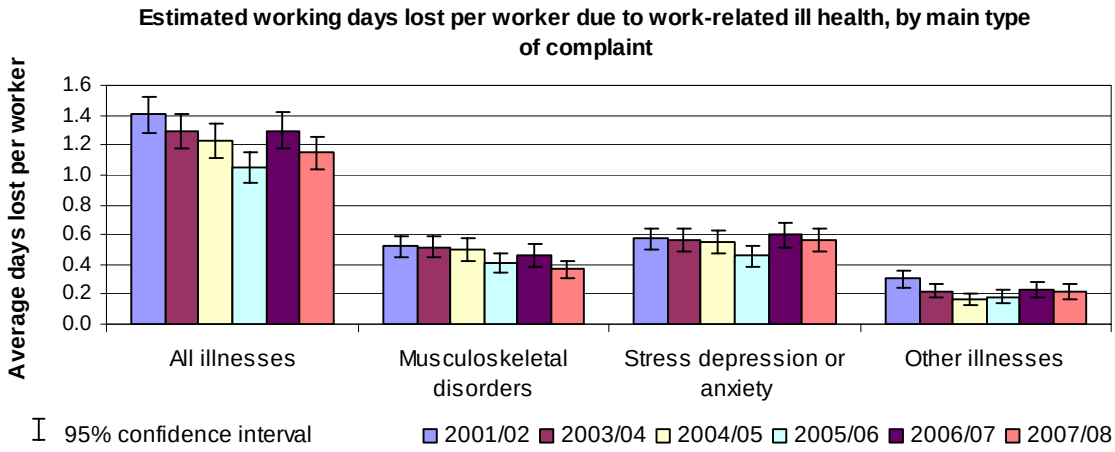
2.2. The overall pattern in ill health rates has not been consistent across all industries. Of the ten major SIC industries, four (manufacturing, education, health and social work and public administration) appear to be driving the overall pattern, by showing a marked decrease in 2005/06 followed by an upturn in 2006/07. The remaining five showed no obvious departure from the long term trend. These changes are shown graphically in Annex 1.

It seems reasonable to infer that if the changes occurred across some industries and not others, this represents a genuine effect and not a statistical quirk in 2006/07 (or 2005/06). There is no clear common factor between those industries which departed from the long-term trend and those which did not, although all three “public sector” industries were in the group which departed from the trend.

3. Sickness absence figures

3.1. Estimates of working days lost to ill health are also included in the SWI surveys. The data on days lost due to work-related illness show a similar pattern to the number of new *cases* of work-related illness.

The average number of days lost from work for each case of reported illness was very similar in 2006/07 (21.6 days) to what it was in 2005/06 (21.2 days), implying that the change between these two years is due to the initial identification of work-related illness, not the amount of sickness absence taken by those who were ill.



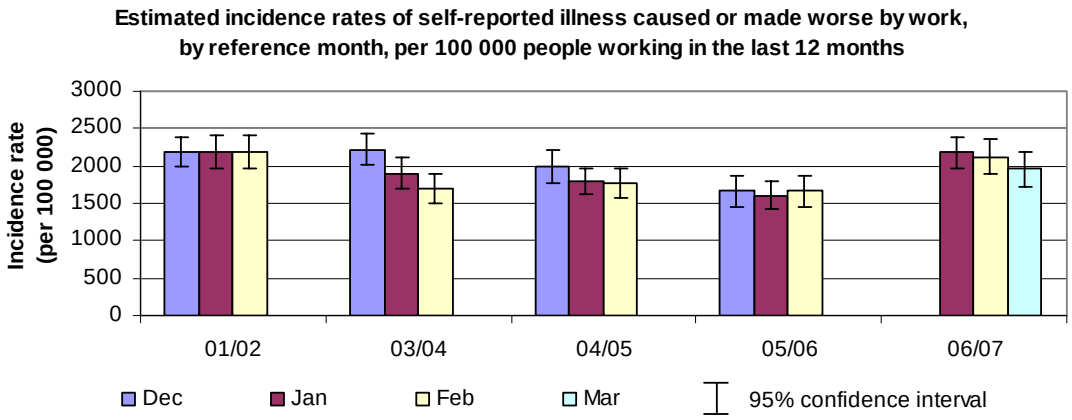
3.2. The LFS also asks respondents whether they have any sickness absence in the previous week (without reference to how the illness arose). From this data, there is little change between 2005/06 and 2006/07 in the overall rates of sickness absence, including absence not attributed to work-related illness. In each of these two years, the percentage of working time lost to sickness absence was 1.4%. This suggests that what changed was the levels of attribution of illness to work, i.e. someone with an illness in 2006/07 was more likely to believe this to be associated with work than someone with that illness in 2005/06.

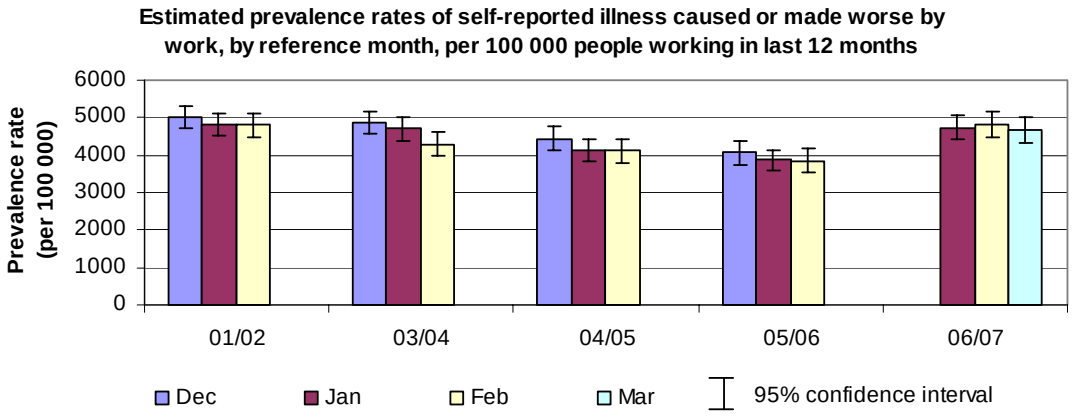
4. Investigating the survey methodology:

4.1. It was important to establish whether any aspects of the survey methodology or the questionnaire itself were changed in 2006/07, and whether these changes had an impact on reported levels of ill health. Two changes were identified and investigated. These related to a change in the time period over which the surveys were conducted, and an additional question module on working conditions.

4.2. Prior to 2006/07, the SWI questions were asked of respondents in the months of December, January and February. However in 2006/07, the data collection changed such that surveys were now conducted in January, February and March. Had there been a seasonal effect such that responses in December in March would differ substantially, then this could have affected the annual trend.

By comparing the data from January and February only, which was collected in each of the years, it was evident that the change between 2005/06 and 2006/07 was still of the same order and that therefore the change in the data collection period had no effect on the annual trend. The graphs below illustrate this.





4.3. The 2006/07 LFS question contained an additional module of health and safety related questions, commissioned by the European statistical office Eurostat. This module had not previously been included. A copy of the questions can be found in annex 3, and a detailed examination of whether the presence of these questions might have biased responses to the work-related ill health questions is set out in annex 2. Briefly, this concludes that the balance of evidence is that this bias did not operate, and to the extent that it may have influenced some responses, it was not an important factor in the observed changes.

5. Comparing other relevant data sources

There are a number of other data sources available which look broadly at the issue of work-related ill health and sickness absence. None of them include an equivalent measure to the self-reported work-related ill health figures in the Labour Force Survey but nevertheless the trends over time may be revealing.

Some of these data sources go back for many years but only trends since 2001 have been assessed since this was the first of the comparable SWI surveys. It should also be noted that many of these sources are industry specific and have been compared at this stage only with overall LFS figures, but the data are mostly taken from the public sector where the LFS changes were most pronounced.

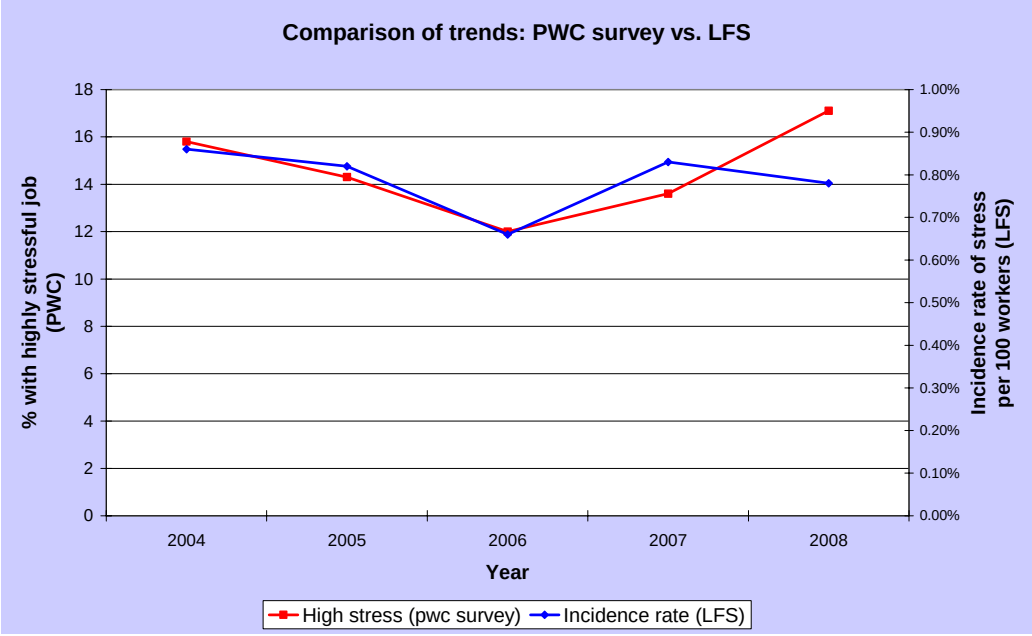
Sickness absence or ill health statistics are taken from:

Psychosocial working conditions surveys, *HSE, 2004-2008*.
Civil service sickness absence reports, *Cabinet Office, 2001-2006*.
Local government sickness absence surveys, *LGE, 2001/02-2006/07*.
NHS sickness absence survey, *The NHS Information Centre, 2001-2005*.

Full descriptions of these data sources are given in Annex 4. It should be noted that the comparisons that have been made have not been scientifically rigorous, but merely a visual inspection of trends and whether the data sources appear to support or contradict the findings from the LFS.

5.1. The psychosocial working conditions survey contains a question which asks respondents to rate the stressfulness of their current job on a five-point scale from “extremely stressful” to “not at all stressful”. The top two responses, “extremely stressful” and “very stressful” can be combined into a single measure of “high stress”.

The “high stress” percentage is plotted below against estimated incidence of work-related stress from the LFS in the same years. Calendar year 2007 in the plot below refers to the LFS survey from 2006/07, etc.



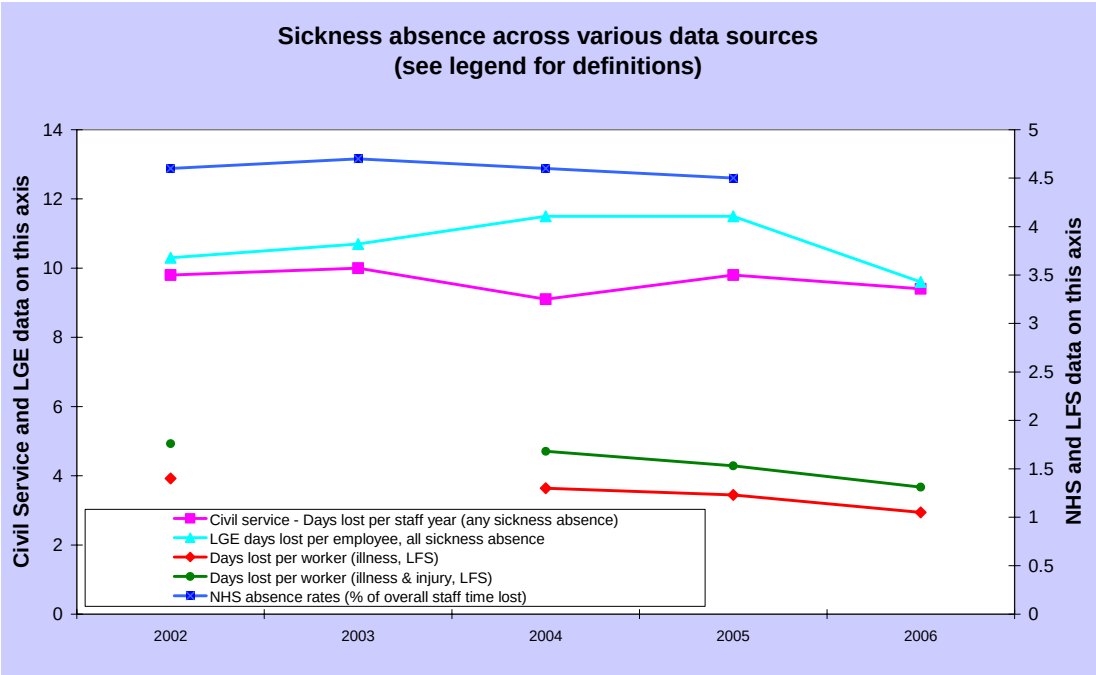
The job stressfulness question is very consistent with the LFS incidence over the period of interest (2005-2007) suggesting the dip in the LFS figures on stress incidence in 2005/06 represented a genuine, temporary, shift in population levels.

5.2. Industry specific overall sickness absence figures have been taken from the Cabinet Office reports on civil service sickness absence; the LGE sickness absence survey for local authorities; and the NHS sickness absence survey.

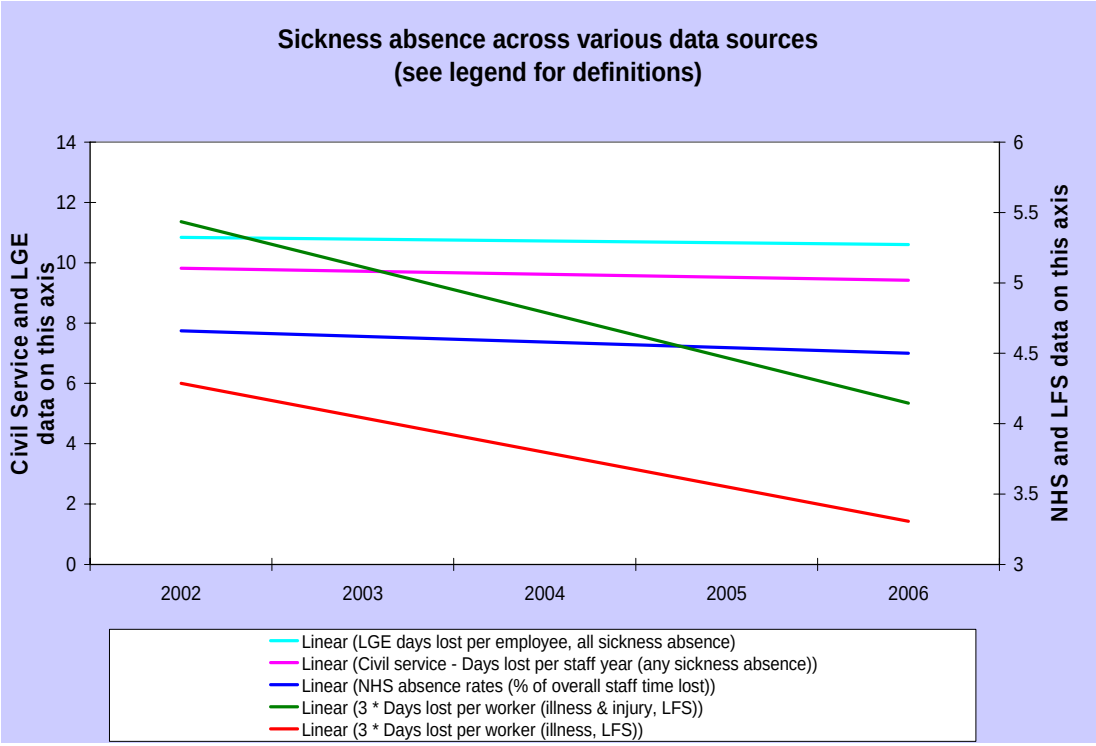
These figures are shown in the chart below alongside the LFS sickness absence figures for ill health, and for ill health & injuries combined.

It should be noted however that these do not as yet give us any information on the current issue of the unusual rise in ill health figures in 2006/07, since the other data sources have not yet been updated.

The idea of including them in the current analysis is to investigate whether in a future analysis they will be useful in determining whether the discontinuity in the LFS figures was a genuine representation of a population shift, or a statistical quirk.



Applying a linear trend line to each of these sources gives the following picture. Note that the LFS figures have been multiplied by three to put them on a similar scale to more clearly show the comparison of trends.



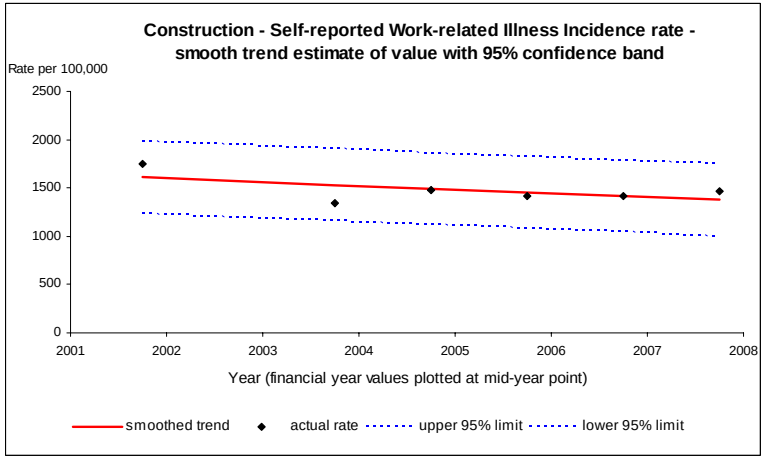
The extent of the general downward trend in the LFS figures is not matched by the other industry-specific figures, however they **are** all moving in the same direction, very broadly speaking. These data sources may be a useful indicator, in future years, of the plausibility of significant rises and falls in the LFS data. However at present the data is not up to date enough to answer our questions.

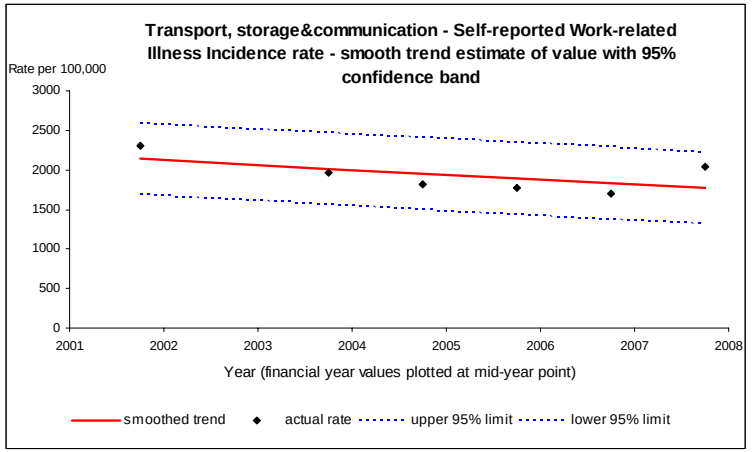
6. Summary of findings

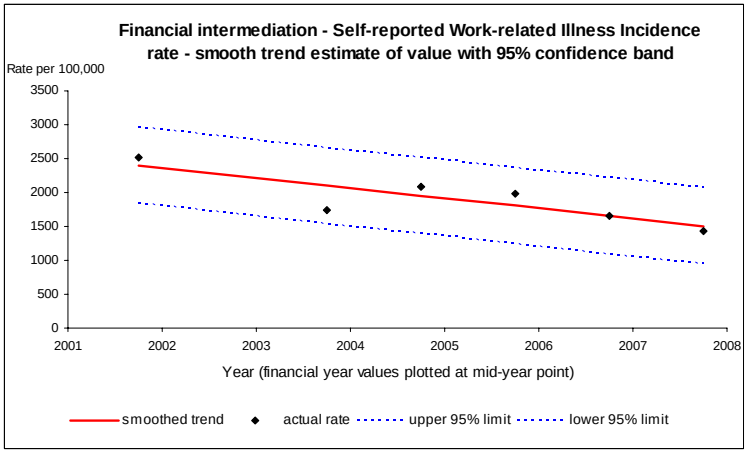
The LFS trends are driven by the two most common work-related ill health problems, namely stress and musculoskeletal disorders. Both conditions follow a reasonably steady trend with the exception of one year (2005/06 for stress; 2006/07 for MSD).

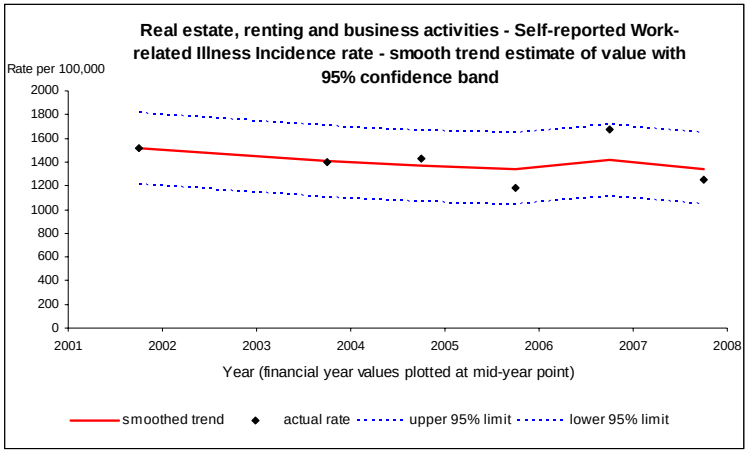
This investigation suggests that the changes seen over this two year period were genuine and not a result of a statistical blip or of any changes to survey methodology. Data from 2007/08 indicates a return to the previous steady trend for both conditions.

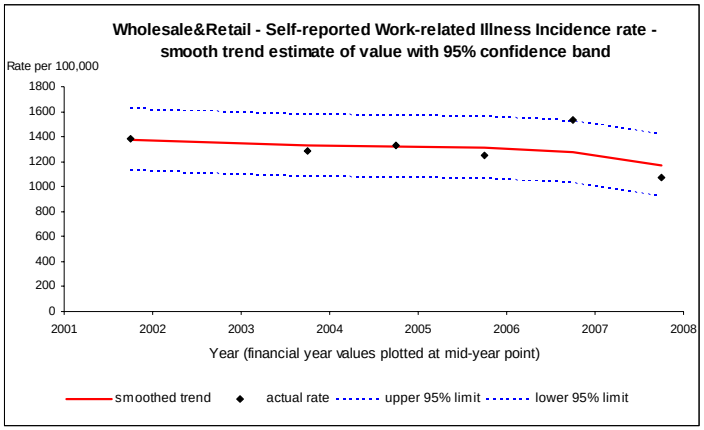
Annex 1 - Sector specific trends
1. Sectors showing flat or downward trends











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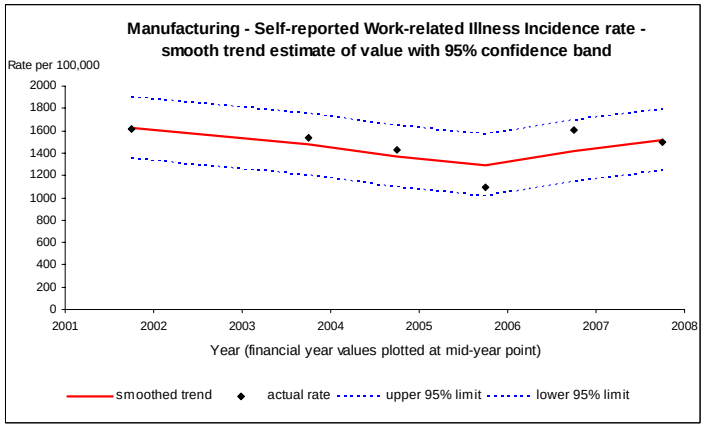
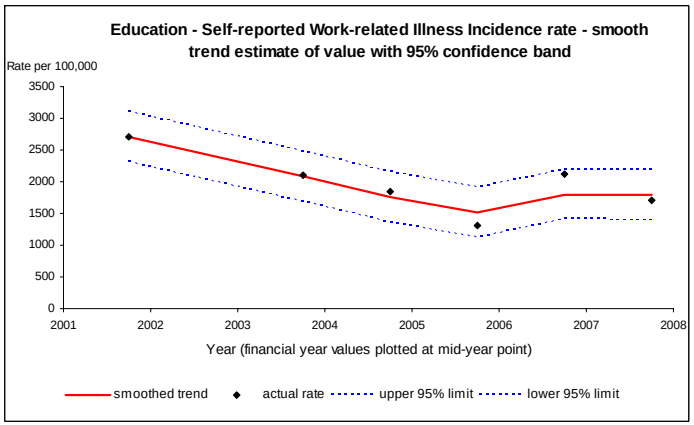
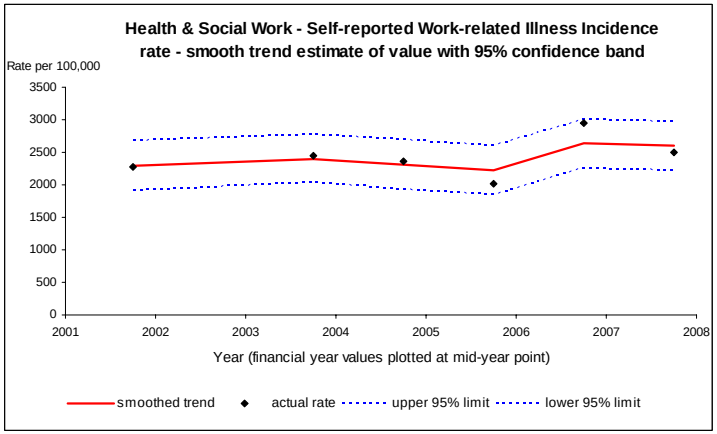
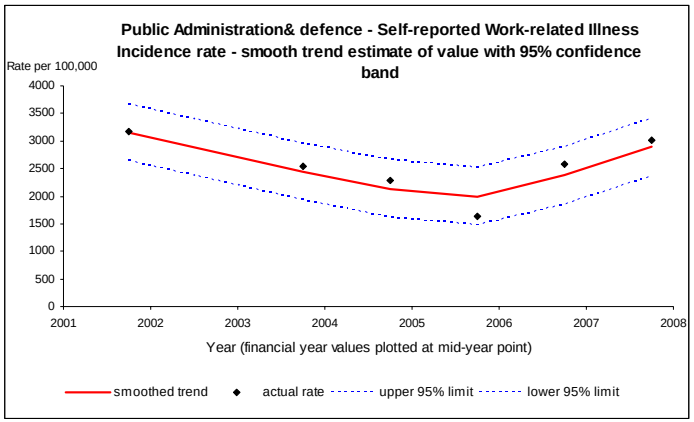
2. Sectors showing recent upward trends






Health & Social Work - Self-reported Work-related Illness Incidence rate - smooth trend estimate of value with 95% confidence band
Rate per 100,000
3500
3000
2500
2000
1500
1000
500
0
2001
2002
2003
2004
2005
2006
2007
2008
Year (financial year values plotted at mid-year point)
smoothed trend
actual rate
upper 95% limit
lower 95% limit


Public Administration& defence - Self-reported Work-related Illness Incidence rate - smooth trend estimate of value with 95% confidence band
Rate per 100,000
4000
3500
3000
2500
2000
1500
1000
500
0
2001
2002
2003
2004
2005
2006
2007
2008
Year (financial year values plotted at mid-year point)
smoothed trend
actual rate
upper 95% limit
lower 95% limit

Annex 2. Possible impact of Eurostat questions

Background

In 2006/07 there was a large increase in the level of work-related ill health reported on the LFS. In this year, questions were added to the survey for Eurostat that asked about the respondent's health. From other surveys (Fit3, WHASS) we know people will report a higher level of work-related ill health if they are already thinking about their health and safety issues. These questions were asked at the end of the interview and therefore should not have affected the responses. But due to the number of proxy interviews performed and that everybody in the household is interviewed there was a possibility that some respondents was exposed to the questions before their own interview. This could occur in two ways,

1. A member of the household performed a proxy interview before receiving their own interview.
2. A member of the household overheard an interview before their own was conducted.

The purpose of this analysis is to test whether either of these potential biases had an effect on the results in 2006/07.

Analysis

In order to test the effects of these potential biases a variable was constructed that identified households where possible subsequent hearing and/or overhearing could occur. Using a logistic regression, the significance of this variable was tested by modelling observed work-related ill health prevalence. Other variables were included in the model e.g. SIC, SOC, current worker, proxy, "multiple residents in household" and gender, to isolate the effect of the bias variable.

The bias variable was derived from the following variables:

$N =$ Number of respondents in household
$P =$ Binary variable indicating proxy response in household
$T =$ Type of interview (1 – Telephone, 2 – Face to Face)
$R =$ Binary variable indicating one respondent answered all interviews in household

Bias groups:

$B = 1$ (Subsequent interview bias)
$B = 2$ (Overhearing bias)
$B = 3$ (Both biases)
$B = 4$ (No bias)

Conditions for bias groups:

$$(N>1)\ \&\ (P=1)\ \&\ (R=0)\ \&\ (T=1) \Rightarrow B=1$$
$$(N>1)\ \&\ (P=1)\ \&\ (R=1) \Rightarrow B=1$$
$$(N>1)\ \&\ (P=0)\ \&\ (T=2) \Rightarrow B=2$$
$$(N>1)\ \&\ (P=1)\ \&\ (R=0)\ \&\ (T=2) \Rightarrow B=3$$
$$(N>1)\ \&\ (P=0)\ \&\ (T=1) \Rightarrow B=4$$
$$(N=1) \Rightarrow B=4$$

"Multiple residents in household" is defined as 0 if $N=1$ and 1 if $N>1$.

The analysis was performed using workers who worked in the last 12 months in 2003/04 – 2007/08. The number of respondents in each bias category is shown below.

Potential Biases for Respondent	No of Respondents
None	85,746
Subsequent interview bias	145,831
Overhearing bias	17,548
Both biases	16,140
Total	265,265

Results

Plotting the rate of work-related ill health (WRI) against the bias groups suggests that overhearing bias does not affect the responses at all, while subsequent interviewing has some effect in 2006/07 It is clear that the overall levels of prevalence differ between the groups. However this is not relevant to the current analysis. It is caused by systematic differences between types of respondent: in particular, personal respondents tend to report higher levels of ill health than proxy respondents, and face to face interviews tend to yield higher reporting levels than telephone interviews.

What is relevant here is what happens to the trend in 2006/07. Any bias caused by the Eurostat questions would show itself by a steeper increase between 2005/06 and 2006/07 in the bias groups compared with the 'no bias' group.

It is clear from the graph that the overhearing bias is effectively non-existent. This group shows a very similar pattern to the 'no bias' group. The non-existence of this bias is further demonstrated by the fact that the 'both biases' group shows the same pattern as the 'subsequent interviews bias' group, i.e. any potential bias is coming from subsequent interviews. Therefore a binary bias variable was constructed ("No Bias" & "Overhearing"=0 and "Subsequent Interview" & "Both"=1)

A logistic regression was preformed using the control variables and binary bias group. Bias group was a significant factor with on average a respondent in the bias group 9% less likely to report WRI. When an interaction term is included between bias and year only one coefficient is significant and this is in 2005/06, it is significantly lower than might be expected on average.

The logic that constructed the bias group variable was only valid in 2006/07 as this was the only year in which Eurostat questions were asked. In order to see what caused this effect in 2005/06, further regression analysis took place which included interaction terms between the underlying variables that constructed the bias group and year. Both proxy and multiple residents show decreases in their 2005/06 interaction term coefficients (The results of these regressions are shown in Annex A). Separately these coefficients are not significant but these effects are combined when the bias group variable is constructed. The graphs (Page 19) plot the rate of WRI against proxy, multiple residents and the binary bias variable to illustrate the effect the underlying variable have on bias in 2005/06. Allowing year interaction terms with proxy, multiple residents and bias makes the bias variable overall not significant.

If the effect of the hypothesised bias in 2006/07 is forced into the model regardless of its significance level, it contributes an increase of 4.2% to the 2006/07 rate. However the effect is far from statistically significant ($p>0.5$).

Conclusion

This analysis does not suggest the extra questions for Eurostat had an effect on the rate of work-related ill health in 2006/07. The results of the regression analysis that suggested the rate was significantly lower in 2005/06 for the bias group can be explained by low rates of work-related ill health for both proxy respondents and respondents for multiple resident household. These variables form the basis from which the bias group variable was constructed.

Logistic Regression with bias-year interaction term

					95% Conf. Interval	
wri	Odds Ratio	Std. Err.	z	P>z	Lower	Upper
_Isex_2	1.036	0.024	1.52	0.127	0.990	1.085
_Iage4gp_2	1.493	0.030	19.84	0.000	1.435	1.554
_Iage4gp_3	0.963	0.046	-0.79	0.429	0.877	1.058
_Iage4gp_4	0.551	0.129	-2.54	0.011	0.348	0.873
_Isoccmajl_2	0.940	0.036	-1.61	0.108	0.871	1.014
_Isoccmajl_3	1.181	0.043	4.59	0.000	1.100	1.269
_Isoccmajl_4	0.808	0.033	-5.2	0.000	0.746	0.876
_Isoccmajl_5	1.361	0.054	7.8	0.000	1.260	1.471
_Isoccmajl_6	0.872	0.040	-2.96	0.003	0.796	0.955
_Isoccmajl_7	0.941	0.048	-1.19	0.233	0.852	1.040
_Isoccmajl_8	1.184	0.053	3.8	0.000	1.086	1.292
_Isoccmajl_9	0.874	0.035	-3.33	0.001	0.807	0.946
_Isrsicsec_2	0.888	0.109	-0.97	0.332	0.698	1.129
_Isrsicsec_3	0.819	0.069	-2.39	0.017	0.695	0.965
_Isrsicsec_4	0.922	0.079	-0.95	0.340	0.779	1.090
_Isrsicsec_5	0.747	0.063	-3.46	0.001	0.633	0.881
_Isrsicsec_6	0.997	0.088	-0.03	0.976	0.839	1.185
_Isrsicsec_7	0.824	0.070	-2.29	0.022	0.698	0.973
_Isrsicsec_8	1.153	0.095	1.72	0.085	0.981	1.356
_Isrsicsec_9	0.937	0.084	-0.73	0.463	0.786	1.116
_Isrsicse~10	0.141	0.143	-1.93	0.053	0.019	1.027
_Itypint_2	1.022	0.021	1.05	0.295	0.982	1.063
_Iproxybin_1	0.695	0.018	-13.77	0.000	0.659	0.732
_Imulthhld_1	0.898	0.026	-3.79	0.000	0.849	0.949
_Iscworker_1	0.546	0.019	-17.45	0.000	0.510	0.584
_Iyea~200405	0.907	0.040	-2.25	0.025	0.832	0.988
_Iyea~200506	0.894	0.040	-2.53	0.011	0.819	0.975
_Iyea~200607	0.980	0.042	-0.48	0.633	0.900	1.066
_Iyea~200708	0.862	0.038	-3.37	0.001	0.790	0.940
_Ibiasgpbi~1	0.909	0.040	-2.16	0.031	0.833	0.991
_IyeaXbi~5_1	1.005	0.060	0.08	0.936	0.894	1.129
_IyeaXbi~6_1	0.882	0.054	-2.06	0.039	0.782	0.994
_IyeaXbi~7_1	1.059	0.062	0.97	0.331	0.944	1.188
_IyeaXbi~8_1	1.049	0.064	0.79	0.431	0.932	1.181

Significance of interaction term: 0.027109

Logistic Regression with proxy-year interaction term

					95% Conf. Interval	
wri	Odds Ratio	Std. Err.	z	P>z	Lower	Upper
_Isex_2	1.032	0.024	1.33	0.182	0.986	1.080
_Iage4gp_2	1.487	0.030	19.67	0.000	1.429	1.547
_Iage4gp_3	0.960	0.046	-0.86	0.392	0.874	1.054
_Iage4gp_4	0.548	0.129	-2.56	0.010	0.346	0.868
_Isoccmajl_2	0.942	0.036	-1.54	0.122	0.873	1.016
_Isoccmajl_3	1.182	0.043	4.6	0.000	1.101	1.269
_Isoccmajl_4	0.808	0.033	-5.18	0.000	0.746	0.876
_Isoccmajl_5	1.363	0.054	7.84	0.000	1.262	1.473
_Isoccmajl_6	0.870	0.040	-3	0.003	0.794	0.953
_Isoccmajl_7	0.943	0.048	-1.16	0.244	0.854	1.041
_Isoccmajl_8	1.185	0.053	3.82	0.000	1.086	1.293
_Isoccmajl_9	0.874	0.035	-3.32	0.001	0.807	0.946
_Isrsicsec_2	0.889	0.109	-0.96	0.335	0.699	1.130
_Isrsicsec_3	0.820	0.069	-2.37	0.018	0.696	0.967
_Isrsicsec_4	0.922	0.079	-0.95	0.344	0.780	1.091
_Isrsicsec_5	0.747	0.063	-3.46	0.001	0.634	0.881
_Isrsicsec_6	0.997	0.088	-0.04	0.971	0.839	1.185
_Isrsicsec_7	0.824	0.070	-2.29	0.022	0.698	0.973
_Isrsicsec_8	1.154	0.095	1.73	0.084	0.981	1.356
_Isrsicsec_9	0.938	0.084	-0.72	0.473	0.788	1.117
_Isrsicse~10	0.141	0.143	-1.93	0.054	0.019	1.030
_Itypint_2	1.021	0.021	1.01	0.314	0.981	1.063
_Iproxybin_1	0.698	0.033	-7.61	0.000	0.637	0.766
_Imulthhld_1	0.851	0.021	-6.64	0.000	0.811	0.893
_Iscworker_1	0.546	0.019	-17.45	0.000	0.510	0.585
_Iyea~200405	0.914	0.031	-2.63	0.009	0.854	0.977
_Iyea~200506	0.856	0.030	-4.41	0.000	0.799	0.917
_Iyea~200607	1.007	0.034	0.2	0.841	0.942	1.076
_Iyea~200708	0.916	0.032	-2.53	0.011	0.856	0.980
_Ipro~200405	0.976	0.066	-0.36	0.716	0.855	1.114
_Ipro~200506	0.905	0.063	-1.42	0.155	0.789	1.038
_Ipro~200607	1.009	0.067	0.13	0.896	0.885	1.150
_Ipro~200708	0.864	0.061	-2.07	0.038	0.752	0.992

Significance of interaction term: 0.111886

Logistic Regression with “multiple resident”-year interaction term

					95% Conf. Interval	
wri	Odds Ratio	Std. Err.	z	P>z	Lower	Upper
_Isex_2	1.031	0.024	1.33	0.183	0.985	1.080
_Iage4gp_2	1.487	0.030	19.68	0.000	1.430	1.547
_Iage4gp_3	0.960	0.046	-0.84	0.398	0.874	1.055
_Iage4gp_4	0.549	0.129	-2.56	0.011	0.347	0.869
_Isoccmajl_2	0.942	0.036	-1.54	0.122	0.873	1.016
_Isoccmajl_3	1.182	0.043	4.6	0.000	1.101	1.269
_Isoccmajl_4	0.808	0.033	-5.2	0.000	0.745	0.876
_Isoccmajl_5	1.363	0.054	7.83	0.000	1.261	1.473
_Isoccmajl_6	0.870	0.040	-3	0.003	0.794	0.953
_Isoccmajl_7	0.942	0.048	-1.18	0.239	0.853	1.040
_Isoccmajl_8	1.185	0.053	3.82	0.000	1.086	1.293
_Isoccmajl_9	0.874	0.035	-3.32	0.001	0.807	0.946
_Isrsicsec_2	0.889	0.109	-0.96	0.337	0.699	1.130
_Isrsicsec_3	0.821	0.069	-2.36	0.018	0.696	0.967
_Isrsicsec_4	0.923	0.079	-0.94	0.350	0.781	1.092
_Isrsicsec_5	0.748	0.063	-3.44	0.001	0.634	0.883
_Isrsicsec_6	0.998	0.088	-0.02	0.985	0.840	1.186
_Isrsicsec_7	0.825	0.070	-2.27	0.023	0.699	0.974
_Isrsicsec_8	1.155	0.095	1.74	0.081	0.982	1.358
_Isrsicsec_9	0.939	0.084	-0.71	0.479	0.788	1.118
_Isrsicse~10	0.141	0.143	-1.93	0.053	0.019	1.028
_Itypint_2	1.020	0.021	0.99	0.324	0.980	1.062
_Iproxybin_1	0.665	0.016	-17.26	0.000	0.635	0.697
_Iscworker_1	0.547	0.019	-17.42	0.000	0.511	0.585
_Iyea~200405	0.869	0.056	-2.19	0.028	0.767	0.985
_Iyea~200506	0.889	0.056	-1.85	0.064	0.785	1.007
_Iyea~200607	0.944	0.059	-0.92	0.360	0.835	1.068
_Iyea~200708	0.826	0.053	-2.98	0.003	0.728	0.936
_Imulthhld_1	0.824	0.041	-3.88	0.000	0.748	0.909
_IyeaXmu~5_1	1.057	0.076	0.77	0.440	0.918	1.218
_IyeaXmu~6_1	0.920	0.067	-1.15	0.252	0.799	1.061
_IyeaXmu~7_1	1.089	0.077	1.21	0.226	0.948	1.252
_IyeaXmu~8_1	1.092	0.079	1.21	0.228	0.947	1.259

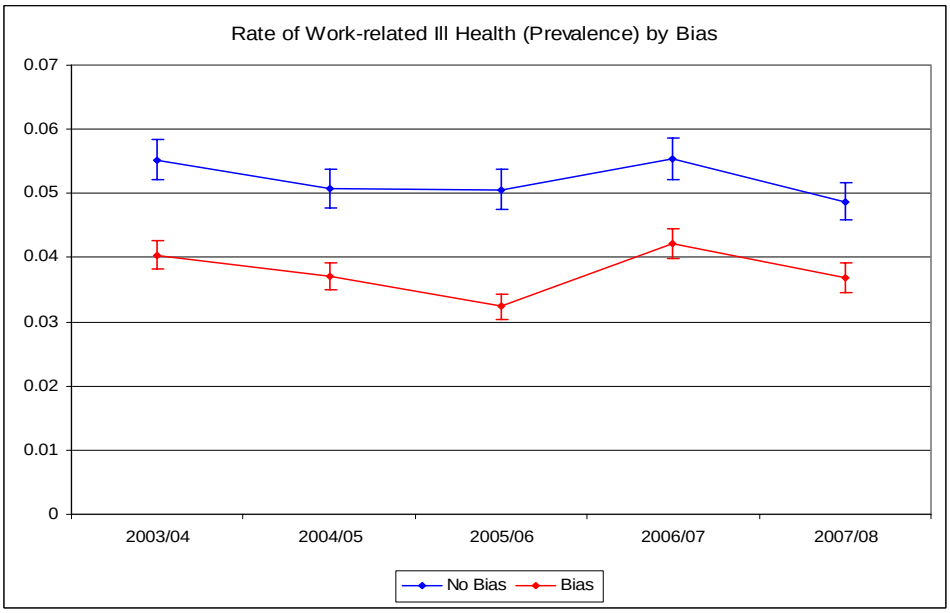
Significance of interaction term: 0.103289

Logistic Regression with all interaction terms

					95% Conf. Interval	
wri	Odds Ratio	Std. Err.	z	P>z	Lower	Upper
_Isex_2	1.036	0.024	1.53	0.126	0.990	1.085
_Iage4gp_2	1.493	0.030	19.85	0.000	1.435	1.554
_Iage4gp_3	0.963	0.046	-0.8	0.426	0.876	1.057
_Iage4gp_4	0.552	0.129	-2.53	0.011	0.348	0.874
_Isoccmajl_1	0.844	0.038	-3.81	0.000	0.773	0.921
_Isoccmajl_2	0.793	0.037	-4.92	0.000	0.723	0.870
_Isoccmajl_3	0.997	0.045	-0.08	0.939	0.912	1.089
_Isoccmajl_4	0.682	0.034	-7.74	0.000	0.619	0.751
_Isoccmajl_5	1.149	0.053	3.03	0.002	1.050	1.257
_Isoccmajl_6	0.735	0.040	-5.66	0.000	0.661	0.818
_Isoccmajl_7	0.795	0.046	-3.98	0.000	0.710	0.890
_Isoccmajl_9	0.737	0.036	-6.26	0.000	0.670	0.811
_Isrsicsec_1	7.131	7.233	1.94	0.053	0.977	52.059
_Isrsicsec_2	6.341	6.439	1.82	0.069	0.867	46.398
_Isrsicsec_3	5.841	5.908	1.74	0.081	0.804	42.413
_Isrsicsec_4	6.577	6.655	1.86	0.063	0.905	47.782
_Isrsicsec_5	5.330	5.392	1.65	0.098	0.734	38.705
_Isrsicsec_6	7.117	7.201	1.94	0.052	0.979	51.712
_Isrsicsec_7	5.880	5.947	1.75	0.080	0.810	42.687
_Isrsicsec_8	8.228	8.320	2.08	0.037	1.134	59.704
_Isrsicsec_9	6.684	6.763	1.88	0.060	0.920	48.564
_Itypint_2	1.022	0.021	1.04	0.298	0.981	1.063
_Iscworker_1	0.546	0.019	-17.47	0.000	0.510	0.584
_Iyea~200405	0.869	0.056	-2.18	0.029	0.767	0.986
_Iyea~200506	0.889	0.057	-1.85	0.065	0.785	1.007
_Iyea~200607	0.944	0.059	-0.91	0.362	0.835	1.068
_Iyea~200708	0.828	0.053	-2.93	0.003	0.730	0.940
_Iproxybin_1	0.745	0.041	-5.35	0.000	0.668	0.830
_Ipro~200405	0.961	0.076	-0.5	0.615	0.823	1.122
_Ipro~200506	0.965	0.080	-0.43	0.665	0.820	1.135
_Ipro~200607	0.963	0.075	-0.48	0.633	0.827	1.123
_Ipro~200708	0.785	0.064	-2.94	0.003	0.669	0.922
_Ibiasgpbi~1	0.899	0.050	-1.91	0.056	0.806	1.003
_Ibia~200405	0.987	0.080	-0.16	0.870	0.842	1.157
_Ibia~200506	0.895	0.075	-1.32	0.188	0.759	1.056
_Ibia~200607	1.042	0.084	0.52	0.606	0.890	1.220
_Ibia~200708	1.127	0.093	1.46	0.144	0.960	1.324
_Imulthhld_1	0.857	0.051	-2.59	0.010	0.762	0.963
_Imul~200405	1.082	0.095	0.9	0.368	0.911	1.285
_Imul~200506	1.007	0.089	0.08	0.934	0.847	1.199
_Imul~200607	1.072	0.093	0.81	0.420	0.905	1.270
_Imul~200708	1.081	0.096	0.88	0.377	0.909	1.286

	Significance compared with Models with:	
Interaction Terms	No interactions (Sig. of adding interaction terms to base model)	All Interactions (Sig. of removing interaction term from full model)
All Interactions	0.0230	-
Bias & Multiple Resident	0.1259	0.0267
Proxy & Multiple Resident	0.0442	0.1022
Proxy & Bias	0.0049	0.8099

Ill Health Prevalence Rates



Annex 3: Eurostat questions

494. **ExposA**
At your workplace or in the course of your work, are you exposed to ..
1. harassment or bullying?
2. violence or the threat of violence?
3. time pressures or overloaded with work?
4. None of these

APPLIES IF RESPONDENT IN WORK

495. **ExposAM**
Which of these is the greatest risk to your mental well-being?
1. harassment or bullying
2. violence or the threat of violence
3. time pressures or overload of work

APPLIES IF MORE THAN ONE RESPONSE IN CODES 1 TO 3 GIVEN AT ExposA

496. **ExposB**
And at your workplace or in the course of your work are you exposed to ..
1. chemicals, dusts, fumes, smokes or gases?
2. noise or vibration?
3. difficult work postures, work movements or the handling of heavy loads?
4. the risk of accidents?
5. None of these

APPLIES IF RESPONDENT IN WORK

497. **ExposBM**
Which of these is the greatest risk to your physical health?
1. chemicals, dusts, fumes, smokes or gases ?
2. noise or vibration?
3. to difficult work postures, work movements or the handling of heavy loads?
4. the risk of accidents?

APPLIES IF MORE THAN ONE RESPONSE IN CODES 1 TO 3 GIVEN AT ExposB

Annex 4: External data sources

Psychosocial working conditions survey:

This is an annual survey of employees commissioned by HSE using a module in the Office for National Statistics (ONS) omnibus survey. It is primarily used to investigate working conditions under the themes of job demands, control, management support, peer support, role, relationships and organisational change.

An additional question is used as a general indicator of population levels of job stress. This question asks respondents to rate the level of stressfulness of their job on a scale: extremely stressful; very stressful; moderately stressful; mildly stressful; not at all stressful. The surveys can be found on the HSE website at http://www.hse.gov.uk/statistics/publications/illhealth.htm.

Civil service sickness absence reports:

The Cabinet Office commissions a contractor to collect general sickness absence statistics directly from every government department. The information includes average days lost per worker as well as information on length of spells, number of spells, demographics of the workforce and reasons for absence. The information is collated into an annual report, published online at http://www.civilservice.gov.uk/about/statistics/sickness.asp

Local government sickness absence management surveys:

LGAR (the Local Government Analysis and Research department) collect information directly from local authorities across England and Wales using a survey of employers. The information includes average days lost per full time employee, causes of sickness absence and interventions in place to manage sickness absence. Reports are available from the LGAR website at http://www.lgar.local.gov.uk.

NHS sickness absence surveys:

Until 2006, the NHS Information Centre collected data on sickness absence across NHS trusts by means of a survey, reports of which can be found at http://www.ic.nhs.uk/statistics-and-data-collections/workforce/nhs-sickness-and-absence. The Department of Health now has responsibility for collecting this information but there have been no recent updates.