# Appendices to ‘Self-reported fitness-for-work in Britain: trends and implications’ (Baumberg 2011).

In Vickerstaff,S; Phillipson,C; and Wilkie, R (eds), [*Work, Health and Well-being: The challenges of managing health at work.*](http://www.policypress.co.uk/display.asp?K=9781847428080&)Policy Press.

*My aim in using Web Appendices is to allow greater transparency of my work beyond that allowed by space constraints in any given publication – but the trade-off for this is that these appendices are not as well-written or well-checked as the main text (this is particularly the case for Web Appendix B here, for which I decided to remove this from both the chapter and my thesis in its entirety, save for the short reference below). My apologies for anything that is unclear, but hopefully this is better than the absence of the appendices altogether. You are welcome to contact me if you want further details or access to the Stata code for constructing LFS trends.*

*Ben Baumberg, 3/1/2012*

## Web Appendix A (from footnote 7)

In the text of the article, I wrote, “...the estimates of Bartley and Owen are reconstructed using the General Household Survey (GHS),7 and analyses of WLD in the Labour Force Survey (LFS) by the author are added.” The footnote said “See Web Appendix A, available from [www.benbaumberg.com](http://www.benbaumberg.com),” and it is this that is available here.

### Creating trend data from the LFS

The combined sample size for the LFS data is 746,000 observations, consisting of around 10,000 observations for each year of 1992-2006, 60,000 observations for each year of 1985-1991, and 180,000 observations for 1984. This appendix details the changes over time in question wording, question filtering, response rates and proxy variables.

***Question wording***

Before 1997, there was a single WLD question asking about limitations on ‘the kind of work you can do’. From 1997 this was supplemented with a further question on ‘the amount of paid work’. I therefore combined the two separate post-1997 WLD questions into a single variable, with individuals classified as having a WLD if they report *either* type of limitation.

There are also very minor changes in question wording in 1995 and 1996 (from ‘*limit* the kind of work’ 1994 to ‘*affect* the kind of work’ 1995, and from ‘*which affect* the kind of work that you *can do*’ 1995 to ‘*which would affect* the kind of work that you *might do*’ 1996). I have assumed that these minor changes did not affect the reported prevalence of WLD, but if these years are excluded then the overall rise in WLD in the chained series is from 10.1% to 14.2% rather than to 16.0% (the apparent rise is 1.3 percentage points 1994-5 and 0.5 percentage points 1995-6).

***Question filtering***

There are a number of changes in question filtering:

* From 1984-8, individuals were only asked the WLD question if they reported having a ‘health problem or disability’ from a list given on a showcard (including an ‘other health problems or disabilities’ option).
* From 1989-1996, the WLD question was asked to all working-age respondents.
* From 1997-, the question was again filtered, now based on whether the individual reported a longstanding illness (a ‘health problem or disability’ expected to last for more than a year).

The discontinuity from the 1988/89 change is likely to be smaller than the 1996/7 change – the screening question is similar to WLD but broader, whereas the 1997 screening question refocuses WLD on *longstanding* health problems.

***Response rates and proxies***

There has been a decline in response rates in the LFS, but this took place since 1997 so cannot explain the rise 1984-1997.[[1]](#footnote-1) Proxy responses in the LFS are much higher than other surveys ([Bajekal et al 2004:135](#_ENREF_2)), but the level of proxy responses has been constant over time (authors’ calculations). Hence there is no reason to think that methodological factors are behind the rise in WLD – especially as methodological changes are more likely to produce one-off steps in WLD rather than the consistent rise we see over the 1990s.

### The General Household Survey

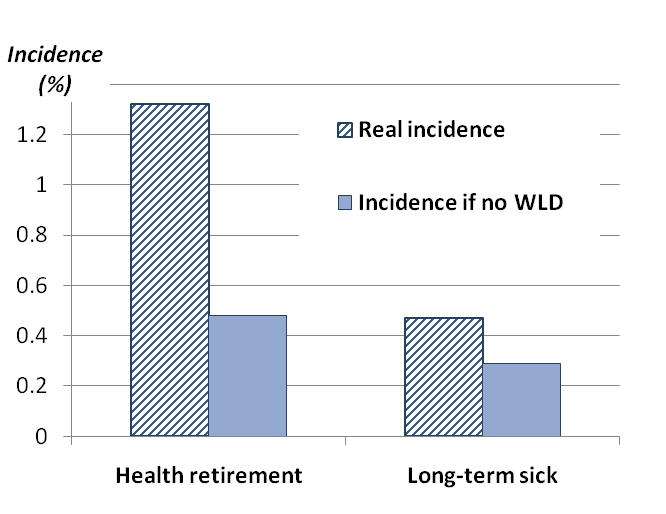
The GHS trend data is more commonly used; indeed, the 1972-2004 GHS data is available as a single dataset from the UK Data Archive, and similar analyses have previously been conducted by others (see main text for citations). All analyses using the GHS are unweighted, as weights were only introduced to the GHS in 2000. The correlation between the weighted and unweighted data 2000-2006 for these variables is however very high (r>0.98).

## Web Appendix B (from footnote 4)

In the text of the article, I wrote, “WLD [work-limiting disability] is also important over time; among people in work, those reporting a WLD are much more likely to have a health-related job loss two to three years later even after controlling for their actual level of health.4” The footnote said, “Author’s calculations using the Whitehall II survey; see Web Appendix B for details, available from [www.benbaumberg.com](http://www.benbaumberg.com),” and it is this that is available here.

The main finding is from the figure below, which shows that among people in work, those reporting a WLD are much more likely to have a health-related job loss 2-3 years later *even after controlling for their actual level of health.*

#### Figure 1: Incidence of health-related job loss at follow-up wave, if there was no WLD at baseline wave

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These results show a hypothetical scenario that asked ‘what would happen if everyone with a work-limiting disability (WLD) didn’t have one, but their health and working conditions are otherwise unchanged?’ This demonstrates the strong predictive power that WLD has on health-related job loss, even after controlling for health itself.

Note: author’s calculations using the Whitehall II survey of civil servants, among those working at the baseline wave. ‘Health retirements’ refer to those who left the Civil Service by the follow-up wave 2-3 years later, and who said that their route of leaving the civil service was ‘retirement on health grounds’. ‘Long-term sick’ refers to those who said they were not working at the follow-up wave and who described their status as ‘long-term sick’.

Unfortunately making this analysis fully transparent could take up as much space again as the book chapter. Perhaps the best way to understand this is to read the chapters using Whitehall II in my PhD thesis, which will be made available via my personal website at some point during 2012. Before this, the following sub-sections should make some aspects of this more transparent.

#### Constructing a scale of WLD in Whitehall II

The Short-Form 36 (SF-36) scale is a commonly used battery of 36 questions on health, of which eight relate to WLD (Ware and Sherbourne 1992). The exact wording of the eight WLD sub-questions is as follows (bold text is copied from the original WII questionnaire; underlined text at the start of each question refers to the abbreviated name of each variable that is used in the rest of this appendix.

**Physical health (PH)**

*“During the* ***past 4 weeks****, have you had any of the following problems with your work or other regular daily activities* ***as a result as a result of your physical health****?”*

1. PH-cut time: *“Cut down on the* ***amount of time*** *you spent on work or other activities”*
2. PH-do less: *“****Accomplished less*** *than you would like”*
3. PH-limit type: *“Were limited in the* ***kind*** *of work or other activities you could do”*
4. PH-difficulty: *“Had* ***difficulty*** *performing the work or other activities (for example, it took extra effort)”*

**Mental health (MH)**

*“During the* ***past 4 weeks****, have you had any of the following problems with your work or other regular daily activities* ***as a result of any emotional problems*** *(such as feeling depressed or anxious)?”*

1. MH-cut time: *“Cut down on the* ***amount of time*** *you spent on work or other activities”*
2. MH-do less: “***Accomplished less*** *than you would like”*
3. MH-careless: *“Didn’t do work or other activities as* ***carefully*** *as usual”*

**Pain**

1. Pain: *“During the* ***past 4 weeks****, how much did* ***pain*** *interfere with your normal work (including both work outside the home and housework)?”*

[Five response options: *“Not at all” / “Slightly” / “Moderately” / “Quite a bit” / “Extremely”* ]

These WLD questions were combined into a summary measure of WLD by estimating the latent level of WLD for each individual (Bartholomew et al 2008). This was done using an Item Response Theory model conducted using the GLLAMM command in Stata (Zheng and Rabe-Hesketh 2007). Data from all four waves containing WLD data (waves 3-6) were used, although no adjustment was made for the clustering of observations in particular people. A two-parameter logistic model was then created, with 30 integration points to ensure convergence. Empirical Bayes predictions of the latent WLD variable were obtained for each pattern of responses using the GLLAPRED command; these predictions were then matched to the patterns in the main dataset.[[2]](#footnote-2)

Although models that allowed two underlying WLD variables – roughly corresponding to mental health and physical health – had a significantly better fit, I was here only concerned with a summary overall measure of WLD. The resulting scale was highly skewed, and as a compromise between robustness and ease of interpretation this has been split into a three-level ordinal variable: no WLD, mild WLD (where people responded positively to at least one of the eight WLD sub-questions), and full WLD (the 10% of the sample with the highest latent WLD scores).

#### Measures of health-related job loss in Whitehall II

**Long-term sickness**

Individuals reported their employment status in slightly different ways in each of waves 4-6. These were firstly recoded into employed vs. non-employed (for all those who are not currently in paid employment). They were then recoded into long-term sick vs. other (for those who specifically said that their reason for not-working was long-term sickness).

*Waves 4 and 6*

“Are you currently in paid employment?” [Yes/No; a note instructs the respondent to move to a different question if they answer ‘yes’. The following question is then:]

“If you are not currently in paid employment, would you classify yourself as:” [Unemployed – Retired – Long term sick – Other (please specify. Respondents were instructed to only tick one box]

*Wave 5*

“Are you in paid employment at present?” [Yes/No; ‘if you are in paid employment please go to Question 1.5. If you are NOT in paid employment at present:]

“How would you classify yourself? (Please mark one box only)” [Unemployed – Retired – Long-term sick – Housewife/husband – Student – Other (please specify)]

*Wave 3*

At wave 3, however, respondents were not asked directly about their employment status, instead being asked two closely related questions:

* Firstly, respondents were asked: “**If you have left the civil service**; please give your last civil service grade title and your leaving date. Please also state if you are working elsewhere, your current occupation and industry.” [Spaces are supplied for leaving date, last grade, current occupation, and industry]
* Respondents were then asked: “**If retired**, please give your last civil service grade title and your leaving date. Please also state your retirement date and reasons for stopping work.” [Spaces are supplied for retirement date, last grade title, and reason for stopping work].

It was not necessary (or possible) to derive a measure of long-term sickness at wave 3, as the analysis was conducted only on those who were working at baseline.

**Health retirement**

Although ‘retirement pathway’ from WII has been used elsewhere (Hyde et al 2004), we need to be aware of three cautions about the raw data:.

* Ill-health retirements overlap with early retirements in the civil service. This is because the definition of a retirement as an ‘ill-health retirement’ or ‘early retirement’ partly reflects the outcome of a struggle between the Civil Service Department in question and the Treasury.[[3]](#footnote-3)
* Women are much more likely to be health-retired than men. This may be because they have lower pension entitlements (following interrupted careers), which makes it harder for them to take early retirement.
* The data refers to retirement *from the Civil Service.* As a result, relatively high minorities of ‘retired’ respondents are still working outside of the Civil Service, or ‘un-retire’ themselves at a later wave.[[4]](#footnote-4)

Turning to the data themselves, there are specific questions on retirement pathways at waves 4-6. Respondents were asked “by which route did you leave the civil service? (Please mark one box only).” The answer categories are also similar across waves (each wave has “Retirement at 60 – Voluntary early retirement – Retirement on health grounds – Voluntary compulsory redundancy – Redundancy – Transfer to company through privatisation – Left to take a post outside the civil service – Left to become self-employed – Other (please specify)”). However, wave 5 also contains the category ‘Transfer to an NDPB’ (Non-Departmental Public Body), which was a pressing issue in the late 1990s when wave 5 was conducted.

Wave 3 respondents were asked to describe their ‘reason for stopping work’ in their own words. This was coded by the Whitehall II team into six different categories.[[5]](#footnote-5) For the purposes of the analyses below, I simply needed to know if people had left the civil service by wave 3, so it was not necessary to re-code these categories.[[6]](#footnote-6)

#### Control variables used

|  |  |  |
| --- | --- | --- |
| **Variable** | **Description** | **Waves  available** |
| ***Demographics and administrative*** | | |
| Lag to next wave | Length of follow-up to following wave, in years *Where this was not supplied in the data, it was estimated as: (i) the difference in ages between successive waves; or (ii) if age was not available, assuming that missing questionnaires were completed at the mid-point for that wave. (This procedure is used by the WII team).* | 3-5 |
| *Wave dummies* Wave 3 Wave 4 Wave 5 Wave 6 | WII study wave, numbered according to the WII sweeps. *The central year for each wave was 1991 (wave 3), 1995 (wave 4), 1997 (wave 5) and 2001 (wave 6).* | 3-6 |
| *Age dummies* Age 39-45 Age 45-50 Age 50-55 Age 55-60 Age 60-65 | Age group *Where age was not supplied in the data, it was estimated as the sum of initial age and lag to following wave, as described above.* | 3-6 |
| Male | Gender (dummy where Male=1, Female=0) | 3-6 |
| Married | Marital status (dummy where married or cohabiting=1, Other=0) | 3-6 |
| *Children dummies* Num children: 0 Num children: 1-2 Num children: 3+ | Number of own children, reported at wave 3 | 3 |

|  |  |  |
| --- | --- | --- |
| ***SES*** | | |
| **Label** | **Description** | **Waves** |
| *Last Civil Service Grade* Last grade: Clerical/Support Last grade: Prof/Exec Last grade: Administrative | Civil Service grade *The initial 12 non-industrial grades have been recoded by the Whitehall II team into administrative (unified grades 1-7), professional & executive (SEO, HEO and EO), and clerical & support (clerical officer and clerical assistant) grades. For this study, individuals working outside the Civil Service have been assigned their last Civil Service grade recorded in the data.* | 3-6 |
| *Class*Non-CS job: RG1/2 Non-CS job: RG3/6 [Reference category: CS job] | Registrar General's social class for those that have left the Civil Service *Note that this is not applicable to models that predict retirement, as by definition all of those who report a social class have already left the Civil Service.* | 3,5,6 |
| *Education* Education: NoQual/O-lev Education: Alev/HND Education: BA+ | Education, reported at wave 5:  1=No qualifications / O-levels / GCSEs 2=A-levels / HNDs 3=Degree or above | 5 |
| Council house | Respondent lives in accommodation that is rented from local authority, reported at wave 3 | 3 |
| Car available | Car or van normally avilable for own (or household) use, reported at wave 3 | 3 |
| *Financial problems* Finance problems: none Finance problems: slight Finance problems: moderate/high | Financial problems, derived from two questions (on not having enough money for food/clothing that 'you should have', and difficulty in paying bills) - *Respondents were classified as having 'moderate/high' financial problems if they said they always/often/sometimes (rather than seldom/never) did not have enough money for suitable food/clothing, AND they had very great/great/some (rather very little/no) difficulty in paying bills.  - Respondents were classified as 'none' if they said that it never happened that they did not have enough money for suitable food/clothing AND they had very little or no diffiuclties in paying their bills. - Remaining respondents were classified as having 'slight' problems.* | 3-6 |
| Housing problems | Reported housing problems (e.g. too small, repairs, damp) *Respondents were classified as having housing problems if they had very great/great/some problems with housing (rather than slight/very little/none).* | 3-6 |

|  |  |  |
| --- | --- | --- |
| ***Longstanding illness*** | | |
| **Label** | **Description** | **Waves** |
| LSI | Longstanding illness *At each wave, respondents were asked if they had a longstanding illness (LSI), although the wording varied ('longstanding illness, disability or infirmity' at waves 3 and 4, 'longstanding illnesses, diseases or medical conditions for which you have sought treatment in the last 12 months' at waves 5 and 6).  Respondents were then asked to describe these LSIs in their own words. These have been coded at a fine-grained level by the WII team, but using two different coding schemes (a specially constructed WII coding scheme for waves 3-5, and ICD-10 for wave 6). LSI does not appear to have been coded further, nor used in any WII publications.  For the purposes of this study, I have developed a broader coding scheme that enabled me to consistently code LSIs across all four waves, and which also provided large enough groups for analysis. The individual dummy variables for each LSI are described further below. An Excel table detailing the specific matching between the three coding schemes is available from the author.* | 3-6 |
| LSI Brain (oth+stroke) | Longstanding illlness: brain problems, including stroke but excluding migraines | 3-6 |
| LSI Cancer | Longstanding illness: cancer | 3-6 |
| LSI Depression | Longstanding illness: depression | 3-6 |
| LSI Ear | Longstanding illness: ear problems | 3-6 |
| LSI Eye | Longstanding illness: eye problems | 3-6 |
| LSI Gastro | Longstanding illness: digestive or excretory system problems | 3-6 |
| LSI Genitourinary | Longstanding illlness: genitourinary (reproductive system/prostate) problems | 3-6 |
| LSI Heart (maj+angina) | Longstanding illness: major heart problems, including angina *Respondents were classified as having a major heart problem if they EITHER reported angina in a separate, specific question, OR if they described their longstanding illness as a major heart problem: - Separate question: this is a derived variable supplied by the WII team for angina pectoris (including pains only in the left chest) - Longstanding illness: major heart conditions included valve disease, heart attack, ischaemic heart disease, heart failure, coronary artery bypass graft, atrial filibration, and heart problems not otherwise specified.* | 3-6 |
| LSI Heart (minor) | Longstanding illness: minor heart problems *This included hypertension, circulation diseases, haemorrhoids, high cholesterol, and varicose veins.* | 3-6 |
| LSI Infect disease | Longstanding illness: infectious diseases | 3-6 |
| LSI MH (oth+addiction) | Longstanding illness: mental health problems, excluding depression | 3-6 |
| LSI Migraines | Longstanding illness: migraines | 3-6 |
| LSI Musculo | Longstanding illness: musculoskeletal problems | 3-6 |
| LSI Resp (all) | Longstanding illness: respiratory problems | 3-6 |
| LSI Skin/allergy | Longstanding illness: skin or allergy problems | 3-6 |
| LSI Other+Blood | Longstanding illness: longstanding illnesses not otherwise classified, including blood disorders | 3-6 |
| ***Health (other)*** | | |
| **Label** | **Description** | **Waves** |
| Diabetes | Diabetes *Binary derived variable supplied by the WII team, based on self-reported diabetes or self-reported diabetes medication.* | 3-6 |
| Resp illness | Respiratory illness *Binary derived variable supplied by the WII team, based on three questions that make up part of the MRC chronic bronchitis questionnaire (bringing up phlegm from your chest first thing in the morning in winter, bringing up phlegm in the morning on most days for three months in winter, increased cough/phlegm for 3+ weeks in past 3 years).* | 3, 5 |
| *Bodily pain* Pain: None Pain: Very mild Pain: Mild Pain: Moderate to severe | Bodily pain within the past 4 weeks *Recoded from the original five response categories, with 'moderate', 'severe' and 'very severe' being combined.* | 3-6 |
| Phys functioning  (scale SF36) | Physical functioning scale from SF-36 (0-100 range) *Derived variable supplied by the WII team, using the established scale from the Short-Form 36 (SF-36) questionnaire. This is based on 10 individual responses as to how far people's health limits them in the following activities: vigorous activities (e.g. running), moderate activities (e.g. moving a table), lifting/carrying groceries, climbing several flights of stairs, climbing one flight of stairs, bending/kneeling/stooping, walking >1 mile, walking 1/2 mile, walking 100 yards, bathing/dressing yourself.* | 3-6 |
| GHQ Caseness | Psychiatric morbidity, as measured through GHQ caseness *The General Health Questionnaire (GHQ-30) is a common 30-question scale that screens for psychiatric morbidity. For WII, a cut-off score of 5 is conventionally used for a 'case' of psychiatric morbidity, following the testing and validation in Stansfeld and Marmot 1992.* | 3, 5, 6 |
| *Negative affectivity* Negative affect: High(4-15) Negative affect: Mod(2-3) Negative affect: Low(0-1) | Negative affectvity *Negative affectivity (NA) is a derived variable supplied by the WII team, and is measured using a sub-scale of the Bradburn affect balance scale. The five questions ask: "During the past few weeks, how often have you felt: (i) very lonely or remote from other people; (ii) depressed or very unhappy; (iii) bored; (iv) so restless you couldn't sit long in a chair; (v) upset because someone criticized you.   Each question is scored 0-3, and the 0-15 score was supplied by the WII team. This was converted into three groups of roughly equal size for the purposes of analysis: low (a score of 0-1), moderate (2-3) and high (4-15).  Only 75% of respondents were given negative affectivity questions at wave 1, while all were asked at wave 2.* | 1+2 *(see left)* |
| MH (scale SF36) | Mental health scale from SF-36 (0-100 range) *Derived variable supplied by the WII team, using the established scale from the Short-Form 36 (SF-36) questionnaire. This is based on 5 individual responses as to how much of the time (i) 'have you been a very nervous person; (ii) have you felt so down in the dumps that nothing could cheer you up' (iii) have you felt calm and peaceful; (iv) have you felt downhearted and low; (v) have you been a happy person?' The 6 answer categories for each of the 5 questions are converted to a 0-100 scale, which was supplied by the WII team.* | 3-6 |

1. LFS Performance and Quality Monitoring Report Jan-Mar 2008,

   <http://www.statistics.gov.uk/downloads/theme_labour/JM08PQM.pdf>, accessed 14/5/08; LFS Data Archive document ‘LFS variables 1975-1991’, p7. [↑](#footnote-ref-1)
2. The ordinal variable WLD-pain was turned into a binary variable (no interference vs. any interference with normal work), because attempts to model a mixture of binary and ordinal data in both GLLAMM and GENLAT suffered from computational problems. [↑](#footnote-ref-2)
3. Mandatory retirement ages have generally been 60 for both men and women in the Civil Service, although they used to be 65 for men and more recently increased to 65 in some Departments for both genders. Prior to restructuring, most Departments had early retirement schemes, except for those retiring on grounds of ill-health whose pensions were paid *in full* by the Treasury – hence early retirement is the outcome of a battle between the Department and the Treasury (personal communication from WII team, 2009).

   During 1995-6, a variety of other early retirement schemes were introduced, funded by the Treasury, generally targeted at those aged 53-58. Severance (preretirement redundancy) and early retirement peaked at 13,480 in 1995-6 and fell to 1,600 by 1998, out of a total (restructured) workforce count of 460,000 in 1999 (Mein and Elllison 2006):192. [↑](#footnote-ref-3)
4. For example, at wave 5, 741 of the 2083 who report taking early retirement were still working but outside of the Civil Service, as were 133 of the 941 people who report retiring at the normal age. A small number of people retired at one wave also report not being retired at the following wave – for example, 125 people said they had retired from the Civil Service at wave 5 but not wave 6, with 70 working outside the Civil Service, 32 working in the Civil Service, and 16 being long-term sick. The issue of whether job strain affects movement between types of jobs is not considered in detail within this thesis, but is discussed in the final chapter when considering possible future research on this topic. [↑](#footnote-ref-4)
5. These categories are ‘retired early due to ill health’ – ‘retired early to take up another job’ – ‘retired early due to work circumstances’ – ‘retired at normal retirement age’ – ‘sacked/"retired" on inefficiency grounds’ – ‘under 50 and state “redundancy’’. The coding note states that those that retired within less than 6 months of their 60th birthday should be classified as ‘retired at normal retirement age’; those retiring >6mths before this are classified as ‘retired early due to work circumstances’. [↑](#footnote-ref-5)
6. These variables were however recoded for some of the descriptive analyses in this chapter. The variables supplied by the WII team were re-coded as follows: health retirement used the code for ‘retired early due to ill health’; while early retirement used the codes for ‘retired early due to work circumstances’, ‘sacked/"retired" on inefficiency grounds’ and ‘under 50 and state “redundancy”’. [↑](#footnote-ref-6)