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## **Scottish Longitudinal Study (SLS) Research Working Paper Series**

### **Research working paper 1**

#### **Movement from ill health related economic inactivity into employment and its impact on health: evidence from the Scottish Longitudinal Study**

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# Summary

**Objectives:** Using data from Scotland, a country with high rates of ill health and economic inactivity, this study investigated the likelihood of movement from health related economic inactivity into employment, and whether this was associated with demographic characteristics or socio-economic status. It also examined whether those who had moved into employment were more or less likely to report a longstanding limiting illness.

**Methods:** Analysis of longitudinal census data (1991-2001) from the Scottish Longitudinal Study. Poisson regression with robust standard errors was used to calculate prevalence ratios (and 95% confidence intervals) for employment status and longstanding limiting illness (controlling for demographic characteristics and SES).

**Results:** 2774 of the baseline sample of 3748 people aged 25 to 49 who reported ill health related economic inactivity in 1991 were traced in 2001 and provided information on their employment status, and 2647 also provided information on longstanding limiting illness. Overall 12.9% (95% CI 11.7 to 14.2%) were employed in 2001. Lower socio-economic status was associated with a reduced likelihood of employment. Of those employed in 2001, 30.4% (25.6 to 35.2%) reported a longstanding limiting illness compared to 92.7% (91.7 to 93.8%) of the not employed (age adjusted prevalence ratio of 0.34 (0.29 to 0.39)). The association between employment and longstanding limiting illness was not attenuated by adjusting for socio-economic status.

**Conclusion:** Moving to employment maybe beneficial for health, but it is rare for those economically inactive due to sickness or disability and subject to socio-economic status.

# 1 Introduction

Across Europe, long term ill health is associated with poverty and social exclusion.[1-6] An important factor behind this is the higher rates of economic inactivity (not actively seeking employment) amongst those with a health condition compared to those without.[1,3,5,7] For example, in the UK only around 50% of working age (18-60/65) people with long term ill health or a disability are in employment compared to 80% for those without.[8] Rates of economic inactivity due to ill health have increased across Western Europe over the last decade (despite concurrent improvements in overall population health). For example, in the UK the rate of economic inactivity due to sickness or disability increased amongst those of working age from 4.4% in 1991 to 5.7% in 2001.[9] There is also a social gradient in economic inactivity due to ill health with rates higher in lower socio-economic groups. This has led to concerns about socio-economic inequalities in the social consequences of ill health.[10]

The majority of people who are economically inactive due to ill health claim social security benefits. Across the UK, 8.4 percent of the working age population claim social security benefits on the grounds of ill health compared to 2.6 percent for unemployment and 2.3 percent for lone parenthood.[11] Ill health related claims also account for the largest chunk of social security expenditure, amounting to around 1.5% of GDP.[12] The high costs of these benefits and the social exclusion faced by the high numbers of people claiming them has become an increasingly salient policy concern across Europe[12], and in many countries, increasing the economic activity rates of those with a health condition has been at the centre of 'welfare to work' reforms. This has particularly been the case in the UK, where there has been an explosion of large scale interventions to tackle ill health related economic inactivity since 1991.[13]

Further, it has been suggested that moving into employment from economic inactivity is beneficial for health. For example, two recent British longitudinal studies showed that moving to employment from economic inactivity was associated with recovery from limiting illness and poor mental health.[14,15] Recent policy documents in the UK have promoted this position.[16] However, it is unclear what the health impact of the transition to employment is for those who are economically inactive due to ill health, as numbers were too low to study in previous research.[15] This indicates that moving into employment may be quite rare for people who are economically inactive due to ill health and that therefore ill health itself may still be a significant barrier to gaining employment.[17] Research into inequalities in the social consequences of ill health would also suggest that the likelihood of moving into employment amongst the economically inactive will vary by socio-economic status (SES).

Scotland has one of the worst health records of any Western European country amongst those of working age[18] and, correspondingly, high rates of ill health related economic inactivity[19] and social security receipt due to ill health.[20] As in the rest of the UK and Europe, health related economic inactivity has a high policy profile in Scotland and so this study examines three inter-related questions:

1. What was the likelihood of working age people in Scotland who reported being economically inactive due to sickness or disability in 1991 moving into employment by 2001?
2. Was the likelihood of moving into employment related to demographic characteristics or socio-economic status?
3. Were those who had moved into employment more or less likely to report a longstanding limiting illness than those who were still economically inactive in 2001?

This is the one of the first longitudinal studies in Europe to examine long term movement into employment from economic inactivity due to ill health or disability, to examine demographic and socio-economic inequalities in this, and to consider the association with any changes in health status.

## 2 Methods

### 2.1 Data

The Scottish Longitudinal Study (SLS) is a replica of the established England and Wales (ONS) Longitudinal Study. The SLS is an anonymised record linkage study connecting a representative 5.3% sample of the 1991 Scottish census to the 2001 census, vital events (births, deaths and

marriages) and National Health Service data (cancer registrations and hospital episodes). Detailed information on the design of the SLS has been published.[21]

## **2.2 Sampling**

Figure 1 presents a flowchart of the samples used in the study. The baseline sample (3748 individuals) included adults aged 25 to 49 in 1991 who were economically inactive because of sickness or disability, who were not resident in a communal establishment and who reported a longstanding limiting illness. An editing rule used in the 1991 census meant that nearly all individuals economically inactive because of sickness or disability were coded as having a longstanding limiting illness.[22] In 2001 when such a rule did not apply nearly all the economically inactive due to sickness or disability did actually report a longstanding limiting illness.[23]

The first outcome was the baseline sample's employment status in 2001 (whether employed or not). As Figure 1 shows the sample size was reduced to 2774 because of deaths of Scottish residents and non appearance for other reasons (migration from Scotland or non response) in the 2001 census and very slightly because of missing data on employment status in 2001.

The second outcome was the baseline sample's longstanding limiting illness status in 2001. The sample size was further reduced to 2647 because of non response to this question in 2001.

## **2.3 Variables**

### **2.3.1 Economic activity**

In 1991 people's economic activity was established by a single question asking about their paid work in the week preceding the census (twelve tick box answers were listed). Those answering "was unable to work because of long term sickness or disability" were included in the baseline sample. In 2001 people were asked whether they did any paid work in the week preceding the census and people away from their work because of illness, maternity leave, holiday or temporary lay off were asked to respond "yes". Additional questions were asked of those not employed to ascertain whether they were unemployed or economically inactive and the reason for their economic inactivity (including being permanently sick or disabled).

### **2.3.2 Longstanding limiting illness**

The 1991 census asked: "Does the person have any long-term illness, health problem or handicap which limits his / her daily activities or the work he / she can do? (Include problems which are due to old age)? In 2001 the question asked was very similar but "handicap" had been changed to "disability".

### **2.3.3 Demographics and socio-economic status**

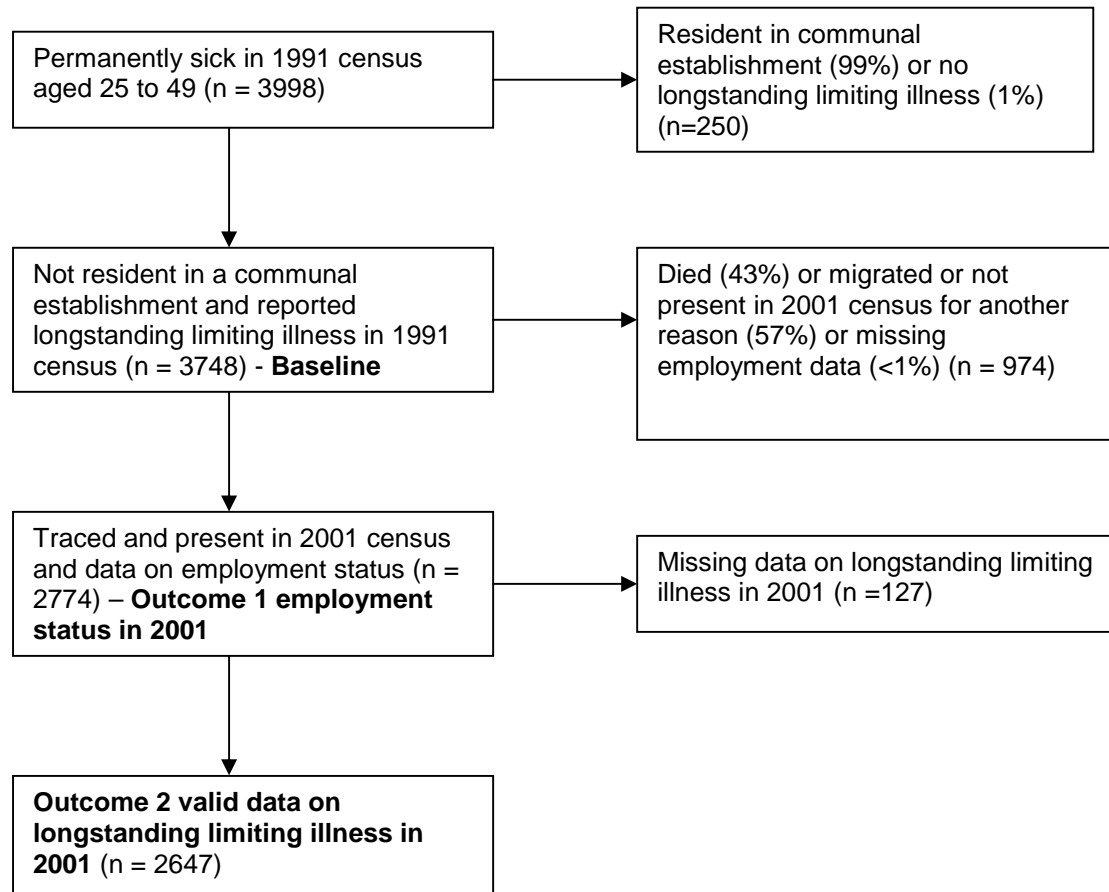
All demographic and SES information came from the 1991 census. Age was categorised into five year bands. As SES is a multifaceted construct[24] four variables were utilised: social class, education level (whether had or not a higher education or professional qualification), housing tenure (owner occupied, private rented or social rented), and household car access (yes or no). Social class was coded using the Registrar General's classification and was based on information on last held occupation in the preceding ten years. Respondents were categorised into three groups: non manual occupations (I, II, IIIN), manual occupations (IIIM, IV and V) and not worked in the preceding 10 years. The small number (n=18, <1%) whose last job had been in the armed forces or who provided an inadequate description were included in the manual category.

## **2.4 Analysis**

All analysis was conducted using Stata version 9. First the prevalence of being employed in 2001 by demographic characteristics and SES in 1991 was calculated. Second the prevalence of longstanding limiting illness in 2001 by demographic characteristics, SES and employment status was calculated. To obtain prevalence ratios (and confidence intervals) for employment status and

longstanding limiting illness and to control for the impact of demographic and SES differences, Poisson regression with robust standard errors was used.[25]

**Figure 1: Samples**



Source: Scottish Longitudinal Study

### 3 Results

Table 1 (first three columns) shows the demographic and socio-economic characteristics in 1991 of the three samples. In the last column of table 1 the distribution of the same characteristics is given for all adults in Scotland who were not living in communal establishments and aged 25 to 49. Compared to the general population of 25 to 49 year olds those who were economically inactive due to sickness or disability in 1991 (baseline sample, first column table 1) were less likely to be in the three younger age groups and more likely to be in the older two, less likely to be non-manual social class and more likely to have not worked in the preceding ten years, less likely to live in a car owning household, less likely to report a higher education qualification, less likely to live in an owner occupied household and more likely to live in social rented accommodation (one sample tests of proportion, all  $p < 0.05$ ).

In total 74% of the baseline sample appeared in the 2001 Scottish census. Increasing age (lowest rate 70.6% amongst those aged 45 to 49), sex (70.4% of males and 77.9% of females), housing tenure (owner occupied 78.2%, privately rented 66.9% and social rented 72.8%), car access (77% compared to 71.8% for no car) and social class (non manual 73.2%, manual 76.7% and not work in preceding 10 years 72.3%) were all associated (chi square test,  $p < 0.05$ ) with whether people from the baseline sample appeared in the 2001 census.

**Table 1: Demographic and socio-economic characteristics in 1991 census of the baseline sample, outcome 1 and 2 samples and all Scottish household residents aged 25 to 49 in 1991 census.**

	Baseline	Outcome 1	Outcome 2	Scottish household residents aged 25 to 49
	(n = 3748) % (n)	(n = 2774) % (n)	(n = 2647) % (n)	(n = 1745043) %
Sex				
Male	50.4 (1890)	47.9 (1328)	47.8 (1265)	49.0
Female	49.6 (1858)	52.1 (1446)	52.2 (1382)	51.0
Age				
25 to 29	11.7 (438)	12.3 (340)	12 (317)	22.2
30 to 34	15.6 (585)	16.4 (456)	16.3 (432)	21.3
35 to 39	17.5 (654)	17.6 (489)	17.9 (475)	19.2
40 to 44	25.1 (941)	24.9 (692)	25.0 (661)	20.3
45 to 49	30.2 (1130)	28.7 (797)	28.8 (762)	16.9
Occupational social class				
Non manual	14.9 (560)	14.8 (410)	15.2 (403)	44.3
Manual	36.8 (1379)	38.1 (1056)	38.4 (1016)	37.1
Not worked in preceding 10 years	48.3 (1809)	47.2 (1308)	46.4 (1228)	18.6
Higher qualification				
Yes	4 (148)	3.9 (109)	4 (107)	19.8
No or not stated	96 (3600)	96.1 (2665)	96 (2540)	80.2
Housing tenure				
Owner occupied	28.2 (1058)	29.8 (827)	30.1 (798)	61.8
Privately rented	4 (151)	3.6 (101)	3.6 (96)	6.8
Social rented	67.7 (2539)	66.5 (1846)	66.2 (1753)	31.5
Car ownership				
Yes	42.8 (1603)	44.5 (1234)	45.1 (1193)	74.3
No	57.2 (2145)	55.5 (1540)	54.9 (1454)	25.7

Source: Scottish Longitudinal Study (first three columns) and 1991 Scottish Census (last column).

### 3.1 Employment in 2001

Overall 12.9% (95% CI 11.7 to 14.2%) were in employment at the time of the 2001 census. Table 2 shows little difference in the employment rate by sex but a declining likelihood with increasing age. Lower SES (however measured) in 1991 was associated with lower rates of employment compared to high SES.

Limiting the analysis to only those who had worked in the ten years preceding the 1991 census (n = 1466) showed 19.2% (95% CI 17.2 to 21.3%) to be employed in 2001 but low SES compared to the highest and increasing age were still associated with a decreased likelihood of employment (results not shown).

Of all those not employed in 2001, and for who more detailed information on economic activity status was available (2301 (95.3%) out of 2415), most were still economically inactive due to sickness or disability (79.7%) or economically inactive for another reason (17.6%) with few being economically active but unemployed (2.7%).

**Table 2: Employment at the time of the 2001 census for those who were economically inactive due to sickness or disability in 1991 by demographic and socio-economic characteristics in 1991 (outcome 1 sample, n= 2774).**

	Employed % (95% CI)	Prevalence ratio <sup>1</sup> (95% CI)
Sex		
<b>Male</b>	<b>12.4 (10.6 to 14.1)</b>	<b>1</b>
<b>Female</b>	<b>13.5 (11.7 to 15.2)</b>	<b>1.09 (0.90 to 1.33)</b>
Age		
<b>25 to 29</b>	<b>24.1 (19.6 to 28.7)</b>	<b>1</b>
<b>30 to 34</b>	<b>18.2 (14.7 to 21.7)</b>	<b>0.75 (0.58 to 0.99)</b>
<b>35 to 39</b>	<b>15.3 (12.1 to 18.5)</b>	<b>0.64 (0.48 to 0.84)</b>
<b>40 to 44</b>	<b>9.7 (7.5 to 11.9)</b>	<b>0.40 (0.30 to 0.54)</b>
<b>45 to 49</b>	<b>6.5 (4.8 to 8.2)</b>	<b>0.27 (0.20 to 0.37)</b>
Occupational social class		
<b>Non manual</b>	<b>23.4 (19.3 to 27.5)</b>	<b>1</b>
<b>Manual</b>	<b>17.6 (15.3 to 19.9)</b>	<b>0.78 (0.63 to 0.98)</b>
<b>Not worked in preceding 10 years</b>	<b>5.9 (4.6 to 7.2)</b>	<b>0.27 (0.20 to 0.35)</b>
Higher qualification		
<b>Yes</b>	<b>22 (14.2 to 29.8)</b>	<b>1</b>
<b>No or not stated</b>	<b>12.6 (11.3 to 13.8)</b>	<b>0.59 (0.41 to 0.83)</b>
Housing tenure		
<b>Owner occupied</b>	<b>19.2 (16.5 to 21.9)</b>	<b>1</b>
<b>Privately rented</b>	<b>13.9 (7.1 to 20.6)</b>	<b>0.78 (0.47 to 1.29)</b>
<b>Social rented</b>	<b>10.1 (8.7 to 11.4)</b>	<b>0.55 (0.45 to 0.66)</b>
Household car ownership		
<b>Yes</b>	<b>17.8 (15.6 to 19.9)</b>	<b>1</b>
<b>No</b>	<b>9.1 (7.7 to 10.5)</b>	<b>0.52 (0.43 to 0.63)</b>

Source: Scottish Longitudinal Study

<sup>1</sup> Prevalence ratios for sex and age are unadjusted while all others are age and sex adjusted

### 3.2 Longstanding limiting illness in 2001

Overall 95.4% of the outcome 1 sample also answered the longstanding limiting illness question and thus appeared in the outcome 2 sample.

The overall rate of longstanding limiting illness in 2001 was high at 84.4% (95% CI 83.1 to 85.8%) compared to a rate of 19.1% for all people aged 35 to 59 in the 2001 Scottish census. However as shown in table 3, just under a third of those moving into employment in 2001 now reported a longstanding limiting illness, one third the rate of the not employed. There were smaller variations in longstanding limiting illness by SES, with lower SES in 1991 being associated with a higher likelihood of a longstanding limiting illness in 2001. Adjusting for SES did not change the reduced risk of longstanding limiting illness associated with moving into employment in 2001 (table 4).

**Table 3: Longstanding limiting illness in 2001 census by employment status in 2001 and demographic and socio-economic characteristics in 1991 (outcome 2 sample, n = 2647)**

	Longstanding limiting illness	
	% (95% CI)	Prevalence ratio <sup>1</sup> (95% CI)
Sex (in 1991)		
<b>Male</b>	<b>86.6 (84.8 to 88.5)</b>	<b>1</b>
<b>Female</b>	<b>82.4 (80.4 to 84.4)</b>	<b>0.95 (0.92 to 0.98)</b>
Age (in 1991)		
<b>25 to 29</b>	<b>70.7 (65.6 to 75.7)</b>	<b>1</b>
<b>30 to 34</b>	<b>76.6 (72.6 to 80.6)</b>	<b>1.08 (0.99 to 1.18)</b>
<b>35 to 39</b>	<b>84.4 (81.2 to 87.7)</b>	<b>1.19 (1.10 to 1.30)</b>
<b>40 to 44</b>	<b>88.7 (86.2 to 91.1)</b>	<b>1.25 (1.16 to 1.35)</b>
<b>45 to 49</b>	<b>90.9 (88.9 to 93.0)</b>	<b>1.29 (1.19 to 1.39)</b>
Employment status (in 2001)		
<b>Not employed</b>	<b>92.7 (91.7 to 93.8)</b>	<b>1</b>
<b>Employed</b>	<b>30.4 (25.6 to 35.2)</b>	<b>0.34 (0.29 to 0.39)</b>
Occupational social class (in 1991)		
<b>Non manual</b>	<b>76.4 (72.3 to 80.6)</b>	<b>1</b>
<b>Manual</b>	<b>80.3 (77.9 to 82.8)</b>	<b>1.03 (0.97 to 1.10)</b>
<b>Not worked in preceding 10 years</b>	<b>90.5 (88.8 to 92.1)</b>	<b>1.16 (1.10 to 1.23)</b>
Higher qualification (in 1991)		
<b>Yes</b>	<b>81.3 (73.9 to 88.7)</b>	<b>1</b>
<b>No or not stated</b>	<b>84.6 (83.2 to 86.0)</b>	<b>1.03 (0.94 to 1.12)</b>
Housing tenure (in 1991)		
<b>Owner occupied</b>	<b>79.3 (76.5 to 82.1)</b>	<b>1</b>
<b>Privately rented</b>	<b>87.5 (80.8 to 94.2)</b>	<b>1.09 (1.00 to 1.18)</b>
<b>Social rented</b>	<b>86.6 (85.0 to 88.2)</b>	<b>1.08 (1.04 to 1.12)</b>
Household car ownership (in 1991)		
<b>Yes</b>	<b>80.8 (78.6 to 83.0)</b>	<b>1</b>
<b>No</b>	<b>87.4 (85.7 to 89.1)</b>	<b>1.07 (1.04 to 1.11)</b>

Source: Scottish Longitudinal Study

<sup>1</sup> Prevalence ratios for sex and age are unadjusted while all others are age and sex adjusted

**Table 4: Prevalence ratio for longstanding limiting illness in 2001 by employment status in 2001 (outcome 2 sample, n = 2647) adjusted for SEP in 1991 census.**

	Model 1	Model 2	Model 3	Model 4	Model 5
<b>Not employed</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>Employed</b>	<b>0.34</b>	<b>0.33</b>	<b>0.34</b>	<b>0.34</b>	<b>0.34</b>
	<b>(0.29 to 0.40)</b>	<b>(0.29 to 0.39)</b>	<b>(0.29 to 0.39)</b>	<b>(0.29 to 0.39)</b>	<b>(0.29 to 0.40)</b>

Source: Scottish Longitudinal Study

Model 1 age, sex and occupational social class adjusted

Model 2 age, sex and higher qualification adjusted

Model 3 age, sex and housing tenure adjusted

Model 4 age, sex and household car ownership adjusted

Model 5 age, sex, occupational social class, higher qualification, housing tenure and household car ownership adjusted

## 4 Discussion

This study has found that: (1) few of those economically inactive due to sickness or disability in the 1991 census had moved into employment in 2001; (2) younger age groups and those with higher SES were most likely to move into employment; and (3) moving into employment was associated with a reduced likelihood of reporting a longstanding limiting illness.

That the majority of those economically inactive due to sickness or disability in 1991 had not moved into employment in 2001 is perhaps not surprising. Many had not worked in the 10 years preceding the 1991 census. However, the employment rate was still low when the analysis was limited to exclude these long term jobless. These results for the economically inactive differ considerably from those relating to the unemployed. Research linking working age men (aged 35 to 60 in 1991) in the England and Wales censuses found that of those unemployed in 1981, 70% were employed in 1991.[2] This suggests that the unemployed have a much higher long term chance of moving into employment than those economically inactive due to sickness or disability.[2] Furthermore, from social security data, it is well known that health related economic inactivity tends to be long term, for example, in the UK in 2005 over 84% of recipients of long-term sickness benefit (Incapacity Benefit) had been in receipt of it for more than a year and 35% for over 8 years.[26] This finding suggests that the many welfare to work interventions 1991-2001 were not that successful in terms of helping the economically inactive find employment, despite general increases in employment 1991-2001.[13] This, as authors of a systematic review of UK welfare to work policy concluded[13], may be because such interventions did not cover a high proportion of people who were economically inactive due to a health condition. It may well be that the additional and wider reaching programmes introduced since 2001 (e.g. Pathways to Work, Conditions Management Programme) may increase the future chances of movement into employment amongst this group, indeed since 2005 the number of Incapacity Benefit claimants has started to decline.[26] However, given the geographical concentration of sickness benefit claimants (particularly in areas of de-industrialisation such as Glasgow, Scotland), it can be argued that, in addition to such welfare to work schemes, increasing the demand for labour in old industrial areas will be crucial to increase the employment of people who are economically inactive due to a health condition and thereby further reduce the claimant rates.[27]

The study also adds to the emerging literature on demographic and socio-economic inequalities in the social consequences of ill health. The study found that younger people and people with higher SES were more likely to be in employment in 2001. For younger people, this may reflect recovery from illness or a lower prevalence of chronic disease. It may also be due to the higher demand within the labour market for younger workers. In terms of SES, the findings reflect those of Burstrom et al.[3,7] and Bambra and Pope.[10] The Burstrom et al.[3,7] studies compared economic inactivity rates in the UK and Sweden during the 1980s and 1990s. They found a socio-economic gradient in ill health related economic inactivity, although this was more pronounced in the UK. Similarly, Bambra and Pope examined the employment rates of disabled people in the UK before and after the introduction of the Disability Discrimination Act. They found that the employment rates for disabled people decreased by an average of 7% and that the employment rates of disabled people from the lowest occupational groups (IV/V) decreased by 11% after the DDA whilst the employment rates of disabled people in professional occupations (I/II) did not change significantly.[10] This study further reinforces the conclusion that inequalities in the employment consequences of ill health may be an important, but somewhat overlooked, issue in terms of tackling health inequalities.[10]

This study adds to the literature that shows gaining employment is associated with a reduced likelihood of reporting a longstanding limiting illness for the economically inactive.[14] A recent review of the effects of reemployment on the health of the unemployed concluded that there is strong evidence showing reemployment improves health[28] although the type and quality of employment gained may also be important in this regard.[29] Moving into employment has been shown to be strongly associated with subsequent improvements in mental health.[15] Secondly, it is likely that improvements in health will enhance subsequent employment opportunities given ill health is a barrier to employment.[17] Moreover, health selection cannot be ruled out. Although the analysis was limited to those who were economically inactive because of a sickness or disability, it is conceivable that differences in the type and severity of illness at baseline could explain the association (however the most severely ill were perhaps excluded from the study because residents of communal establishments e.g. hospitals, were excluded at baseline and given the long period until follow up). However other, unmeasured, confounders may also explain the association.

## 4.1 Strengths and weaknesses

The size of the SLS means it contains a large number of people who were economically inactive due to sickness or disability. As they represent a relatively small fraction of the working age population they are not usually analysed as a separate group (often being amalgamated with other economically inactive groups) when studying the impact of employment on health in survey research.[14] Although the Labour Force Survey, the main source of UK labour market information, has a longitudinal element, it follows people for only the relatively short period of 18 months. Additionally the census has a very good response rate (estimated at 98.1% population coverage in 1991)[30] compared to such voluntary population surveys.

At follow up longstanding limiting illness and employment status were assessed at the same time making it impossible to unpack the direction of association. The longstanding limiting illness question mentions limitations to work so it is not independent in definition from employment status.

Some of the baseline sample were not enumerated in 2001 (who had not been recorded as having died) and it is likely that the majority had migrated from Scotland to elsewhere in the UK rather than still being resident in Scotland and not responding in 2001, although it was not possible to accurately quantify this. In the very unlikely event that *all* these individuals were both alive (only deaths of Scottish residents are recorded in the SLS) and in employment in 2001, the employment rate would have been 30.9%. For those responding to the Scottish census in 2001 there was some missing data however employment status was available for nearly everyone responding in 2001. The missing data rate for longstanding limiting illness was 4.6%. Although the not employed had a slightly higher rate than the employed, this level of missing data would not have greatly changed the association between employment status in 2001 and longstanding limiting illness.

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