Labour Market Disadvantage amongst Disabled People: A Longitudinal Perspective

John Rigg

Contents

Centre for Analysis of Social Exclusion

The ESRC Research Centre for Analysis of Social Exclusion (CASE) was established in October 1997 with funding from the Economic and Social Research Council. It is located within the Suntory and Toyota International Centres for Economics and Related Disciplines (STICERD) at the London School of Economics and Political Science, and benefits from support from STICERD. It is directed by Howard Glennerster, John Hills, Kathleen Kiernan, Julian Le Grand, Anne Power and Carol Propper.

Our Discussion Paper series is available free of charge. We also produce summaries of our research in CASEbriefs, and reports from various conferences and activities in CASEreports. To subscribe to the CASEpaper series, or for further information on the work of the Centre and our seminar series, please contact the Centre Manager, Jane Dickson, on:

Telephone:	UK+20 7955 6679
Fax:	UK+20 7955 6951
Email:	j.dickson@lse.ac.uk
Web site:	http://sticerd.lse.ac.uk/case

Editorial Note and Acknowledgements

Abstract

Considerable cross-sectional evidence has highlighted the lower employment rates and earnings amongst disabled people in Britain. But very little is known about the progression of disabled people in employment. This study uses data from the Labour Force Survey (LFS) to examine the labour market progression of disabled people in Britain along several dimensions: earnings growth, low-pay transition probabilities, changes in labour market participation, the rate of training and the rate of upward occupational mobility. The analysis also explores the extent of heterogeneity in the labour market progression of disabled people with respect to differences in age, education, occupation and disability severity.

The evidence indicates that the earnings trajectories of disabled people lag behind those for non-disabled people, especially for men. The median annual change in earnings is 1.4 percent lower for disabled men and 0.6 percent lower for disabled women compared to non-disabled men and women respectively. Moreover, disabled people are approximately three times more likely to exit work than their non-disabled counterparts, a difference that increases markedly for more-severely disabled people. The evidence highlights the need for policy to tackle the barriers that disabled people face in the workplace, not merely in access to jobs.

JEL Code: J71
Key words: Disability, labour market, longitudinal, dynamics

1. Introduction

Only half as many disabled people are in work compared to non-disabled people. For disabled people who manage to secure employment, earnings are typically lower: as much as a third lower for disabled men (Burchardt, 2000b). This snapshot of the adverse labour market position of disabled people has been well established using a variety of large-scale cross-sectional surveys. But remarkably little is known about the progression of disabled people in work. This paper investigates the labour market progression of disabled people in Britain using pooled data from the Labour Force Survey (LFS), from Autumn 1997 to Spring 2005.

There are three distinct features to the research:

First, the paper provides further detail to what is currently known about the point-in-time earnings disadvantage experienced by disabled people. The relationship between disabled people and different labour market institutions (such as the national minimum wage) may compress or exacerbate disability-related earnings differentials at different points of the earnings distribution. Estimates are provided for the first time on the extent to which the earnings shortfall experienced by disabled people varies with the level of earnings.

Second, the paper assesses the progress of disabled people in relation to several dimensions of labour market performance:

(i)   Changes in earnings (including earnings growth above particular thresholds) and low-pay transition probabilities;
(ii)   changes in labour market participation (such as changes in hours worked and exiting work); and
(iii)   other 'broader' markers of labour market progress (such as rates of training and upward occupational mobility). All analysis is conducted separately for men and women. Additional subgroup analysis is performed to examine the extent of heterogeneity in the labour market trajectories of different types of disabled people, classified by age, education and occupation. This constitutes the main empirical contribution of the paper.

Third, the paper examines variations in labour market progression by disability severity. Cross-sectional evidence has highlighted that greatest labour market disadvantage is concentrated amongst individuals with greatest severity of disability. The paper considers whether an analogous situation exists with

respect to labour market progression: is earnings growth, for example, lower for more-severely disabled people?

The paper is organised as follows. The next section, Section 2, reviews existing evidence on disability-related differences in work attachment and levels of earnings. New estimates are also provided using the 1995 Disability Discrimination Act (DDA) definition of disability using LFS data. Sections 3 to 5 present evidence on disability-related differences for the three points listed above. A summary and conclusions are contained in Section 6.

2.   Labour market disadvantage amongst disabled people: Existing research and new evidence

The adverse labour market position of disabled people in relation to rates of work attachment (the proportion of people employed or self-employed) and levels of earnings has been well-documented using a variety of cross-sectional data sources. Findings from a selection of studies are reported in Table 1, along with new calculations from the Labour Force Survey (LFS).[1] All estimates in Table 1 are based on large-scale cross-sectional surveys,[2] either specialist disability surveys or more general purpose surveys.[3]

The definition of disability in the specialist surveys is based on a maximum of 108 questions concerning a person's ability to perform various tasks (labelled 'daily activities limited' in Table 1). The specialist surveys are widely regarded as the most rigorous and thorough survey instrument for assessing disability, although they have been criticised by some disability organisations for failing to take sufficient account of the judgements of disabled people themselves (Disability Alliance, 1988; cited in Burchardt, 2000b). This definition of disability was used in the OPCS 1985 survey and in the Disability Follow-Up to

---

[1]   The 'own' calculations from the LFS in Table 1 are designed to provide an up-date to existing cross-sectional estimates. They also provide a point of reference for subsequent estimates in the present study which, as described below, are based on a sub sample of the point-in-time disabled population.

[2]   Note that the LFS has a short (five quarters), 'rolling-panel' component, introduced in winter 1992/93.

[3]   For results from a survey of disabled people carried out in 1995 aimed at providing a baseline to monitor the employment provisions of the Disability Discrimination Act, see Meager et al. (1999). For longitudinal disability research based on the British Household Panel Survey (BHPS), see Burchardt (2000a, 2000b, 2001 and 2003) and Jenkins and Rigg (2004).

the Family Resources Survey (FRS) in 1996/7. The studies summarised in Table 1 by Berthoud et al. (1993) and Burchardt (2000b) draw upon these data.[4]

Evidence on the labour market circumstances of disabled people is also available from studies based on more general purpose surveys. The definitions of disability vary widely, with some definitions referring explicitly to work-limitations. The study by Blackaby et al. (1999) cited in Table 1 uses data from both the LFS and General Household Survey (GHS). The definitions of disability used by Blackaby et al. (1999) in the LFS asks specifically about health problems or disabilities that affect a person's ability to work. The GHS, on the other hand, asks respondents more generally whether they have a limiting long-standing illness or disability which affects their activities in any way.

The definition of disability in Sefton et al (2004), as well as the present study, is based on the 1995 Disability Discrimination Act (DDA).[5] The definition does not refer specifically to work-limitations. Individuals are classified as disabled according to the DDA if they report having a health problem or disability that substantially limits their ability to carry out normal day-to-day activities and is expected to last more than a year. For comparative purposes, estimates are also reported in Table 1 for an LFS work-limited definition of disability.

The evidence reported in Table 1 highlights considerable variation in estimates of disability prevalence and disability-related labour market differentials. Estimates vary according to the study period, definition of disability, source of data, sex and model specification.

In 1985, the prevalence of disability amongst working-age people was six percent according to the OPCS specialist disability survey (Berthoud et al, 1993). The prevalence of disability for both men and women had doubled just over a decade later according to data from the disability specialist survey carried out in 1996/7 (Burchardt 2000b). The prevalence of disability is slightly higher according to the DDA definition of disability in the pooled LFS data from 1997 to 2005, at 15 percent for both men and women. The rise in disability prevalence amongst the working-age population has been well-documented, although reasons for its rise are less well understood. Possible explanations involving increases in impairment, rates of disability and rates of reporting have all been advanced (see the discussion in Burchardt, Ch. 3, 2000b).

---

[4]   For further evidence from the Disability Follow-Up to the Family Resources Survey, see Grundy et al (1999).

[5]   Note that the multivariate results for Sefton et al (2004) reported in Table 1 exclude sensory disabled, about 10 percent of all DDA disabled people.

All estimates in Table 1 confirm that work attachment is substantially lower amongst disabled people. The difference between the proportion of disabled and non-disabled people in work ranges from 42 to 46 percentage points for men and 33 to 39 percentage points for women. Taking individual characteristics into account reduces these differences for men, but leaves the estimates for women more or less unaffected. It is possible that these estimate from multivariate analysis under-state the differences in rates of work attachment. These models typically include variables, such as education, the levels of which may be 'adversely' (in terms of earnings) affected by being disabled.

A number of barriers to disabled people entering employment have been identified in previous research, including: lack of qualifications, training and experience, financial disincentives, difficulties with application forms and interviews, inaccessible transport, lack of understanding on the part of employment advisers, employers' perceptions that the job can't be done by a disabled person and discrimination on the part of employers (Burchardt, 2001). Some disabled people not in employment may not be able or willing to work. However, even after allowing for this, the transition rate into employment is over four times higher amongst non-disabled compared to disabled people, clearly indicating an asymmetry in the barriers facing disabled and non-disabled would-be workers (Burchardt, 2001). It is not just rates of job entry that are lower amongst disabled people, but rates of job retention are also lower for disabled people, especially following the onset of a disability (Burchardt, 2001, Jenkins and Rigg, 2004).

Notes to Table 1:
1. Employed or self employed.
2. ONS based on a maximum of 108 questions about ability to perform various activities. ADL means Limited in Activities of Daily Living.
3. Not significant
4. Health problems or disabilities that limit the kind of work that respondent can do.
5. Same as in note 5. In addition respondent expects health problem or disability to last more than a year.
6. Long standing illness, disability or infirmity that limits respondent's activities.
7. Not significant.
8. As defined in the 1995 Disability Discrimination Act (DDA): health problems or disabilities that substantially limit respondent's ability to carry out normal day to day activities and are expected to last for more than a year.
9. Figures refer to non sensory disabled, approximately 90% of the DDA disabled population. The differences in employment rates (without controls) for the sensory DDA disabled are 53 percentage points for men, and 54 percentage points for women

Table 1: Per cent in work and earnings for disabled and non disabled people

Study	Data Source	Study Period	Definition of Disability	Sex	Prevalence of disability (%)	Percentage point difference in rate of work attachment[1]		Percent difference in gross hourly earnings.	
						W/out controls	With controls	W/out controls	With controls
Berthoud et al (1993)	Office of Population Census	1985	ADL[2]	Male	6			-26	-19-25
				Female	6			-13	[3]
Burchardt (2000b)	Family resource survey Disability Follow Up	1996-1997	ADL[2]	Male	12	-46		-24	-36
				Female	12	-39		-13	-18
Blackaby et al (1999)	Labour Force Survey	Winter1992/3-Winter 1995/96	Work limited[4]	Male				-21	
				Female				-17	
		Winter 1993/4-Winter 1995/96	Long standing work limited[5]	Male				-11	
				Female				-10	
	General Household Survey	1983-1991	ADL[6]	Male				-6	-7
				Female				-6	-2
Sefton et al (2004)	Labour Force Survey	Autumn 1997-Winter 2002	ADL (DDA)[8]	Male		-42	-35[9]		
				Female		-33	-35[9]		
Own calculations	Labour Force Survey	Autumn 1997-Spring 2005	ADL (DDA)[9]	Male	15	-42	-39	-9	-9
				Female	15	-33	-34	-6	-4
			Work limited[5]	Male	16	-44	-41	-17	-11
				Female	15	-38	-38	-11	-6

Not only is work less common amongst disabled people, but for those in work, earnings are usually found to be significantly lower. Estimates of disability-related earnings differentials vary considerably between surveys and definitions of disability. For disabled men, the largest earnings gaps are found in studies based on the specialist disability surveys. Both Berthoud et al (1993) and Burchardt (2000b) report that the gross hourly earnings of disabled men (before controlling for differences in personal characteristics) is around a quarter less than non-disabled men. By contrast, Blackaby et al (1999) report a far lower (bivariate) earnings differential for disabled men of six percent using data from the GHS. The range of estimates of earnings differentials is almost as wide for women, from 17 percent in Blackaby et al (1999) using a work-limited definition of disability in the LFS, to six percent based on the limitations of daily living activities in the GHS. For estimates within the same study, disability-related differences in earnings are typically larger for men than women, though the extent of these differences varies widely.[6]

Perhaps not surprisingly, definitions of disability based on work-limitations (but not long-standing work limitations) tend to produce larger differentials than definitions based on limitations of daily activities. For instance, and most noticeably, the earnings differential for men is 17 percent in the LFS using a work-limited measure, but only around half as large according to the DDA definition (own calculations). Taking account of differences in individual characteristics typically reduces disability-related earnings differentials. For the DDA disabled (own calculations), the gap falls for women from 6 to 4 percentage points and remains the same for men. By contrast, Burchardt (2000b) finds that earnings differentials increase substantially once controls are introduced, from 24 to 36 percent for men, and 13 to 18 percent for women. As with the multivariate estimates of differences in rates of work attachment, the multivariate estimates of earnings differentials may 'over-control' for disability, to the extent that disability affects the level of other covariates in the models7 which in turn affect the level of earnings. Finally, it is likely that many of the factors that contribute to the lower rate of work attachment amongst disabled people, are also relevant in accounting for disability-related differences in earnings.

---

[6]   The reservation wage is higher for disabled people, reflecting the more generous provision of benefits for disabled people. Other things equal, this would be expected to lead to a higher (not lower) mean wage for disabled people since there would be fewer disabled people with low wages.

[7]   Occupation and education are the two most obvious covariates that may be affected by disability and that are usually included in these models.

In sum, disabled people represent a sizeable share of the working-age population (15 percent according to the DDA definition in the LFS). The prevalence of disability amongst the working-age population has risen steadily over the last twenty years. Rates of work attachment are far lower amongst disabled people, only a relatively modest part of which can be explained by differences in individual characteristics (such as the lower level of qualifications among disabled people). Most studies find that disabled people earn significantly less than non-disabled people: approximately 9 percent for men and 6 percent for women according to the DDA definition of disability in the LFS. Estimates of disability-related earnings differentials vary considerably. However, the differentials are generally larger: for disabled men than women (most notably for estimates within the same study); when a work-limited rather than activities limited definition of disability is used; and before earnings differentials are adjusted for differences in individual characteristics.

3. Labour market disadvantage amongst disabled people: further cross-sectional evidence

The DDA concept of disability forms the basis of the definition of disability in the present study. Most of the analysis concerns the progression of disabled people in employment. LFS respondents are interviewed for up to five consecutive quarters; the measures of labour market progression refer to changes over the year interval from the first to the fifth quarter. Disability status is available in all five waves. For analytical purposes, the disabled sample is restricted to individuals who are DDA disabled at the beginning and the end of the observation window (waves 1 and 5).[8] This restriction ensures that outcomes are not 'contaminated' by changes in disability status; it also ensures that the spotlight is directed towards people with a 'long-term' disability, where the economic disadvantages associated with disability are most acute.[9] This 'two-period' definition of disability has been advocated by Burkhauser and Daly (1998) and implemented in other British longitudinal disability research (e.g. Jenkins and Rigg, 2004). Just over four-fifths of people who are DDA disabled in wave 1 of the LFS are also disabled in wave 5.

---

[8]　Where confusion may arise, individuals in this sample are labelled 'long-term' DDA disabled to distinguish them from the point-in-time DDA disabled discussed in relation to Table 1.

[9]　Results for this definition of disability are compared with individuals who do not report a disability in wave 1 and 5. Consequently, individuals who experience either an 'intermittent' or 'occasional' disability (disabled in either wave 1 or 5) are dropped from the analytical sample (approximately nine percent of all observations). On the complex pattern of disability trajectories, see Burchardt (2000a).

This section presents results on the cross-sectional labour market circumstances for people with a long-term DDA disability. The level of these outcomes provides a benchmark for subsequent analysis on changes in outcomes over time and by disability severity. Moreover, results are computed for disability-related earnings differentials for different points in the earnings distribution. This is the first time that the nature of the disability-related earnings differential with respect to the level of earnings has been examined.

The multivariate estimates control for a wide range of individual characteristics including sets of dummies for age, highest educational qualification, marital status, ethnicity, number of dependent children (including a dummy variable for whether any are under 4 years old), job tenure, occupational class, region of residence and survey year. The regressors for job tenure and occupational class are not included in the work attachment regressions. Descriptive statistics for all variables used in the analysis are contained in Appendix Table A1.

The cross-sectional labour market outcomes for the long-term DDA disabled sample are shown in Table 2. Individuals disabled in both waves 1 and 5 are slightly more severely disabled on average than those disabled at a point-in-time[10] and this is reflected by weaker labour market attachment and larger earnings differentials. For instance, the proportion of long-term DDA disabled women in work is 44.5 percentage points lower than non-disabled women after controls (reported in Table 2), compared to a difference of 33 percentage points for point-in-time DDA disabled women (reported in Table 1). Individuals with a long-term DDA disability also earn less than individuals in the point-in-time DDA disabled sample: compared to non-disabled people, earnings amongst long-term DDA disabled people is between two and four percentage points lower than the point-in-time DDA disabled (depending on sex and model specification).

Evidence on the incidence of low-pay for two low-earnings thresholds is also shown in Table 2. The thresholds are the lowest decile and the lowest quartile of the contemporaneous (quarterly) earnings distribution. As expected, low-pay is significantly more prevalent amongst disabled than non-disabled people. For instance, the proportion of disabled women in the lowest decile of the earnings distribution is four percentage points higher than for non-disabled women, a difference that reduces only slightly (by 0.5 percentage points) after controlling for individual characteristics.

---

[10]   The average number of health problems in wave 1 for the long-term DDA disabled sample is 2.68 compared to 2.51 for the point-in-time DDA disabled sample. As elaborated in Section 5, the number of health problems provides a reasonable proxy for disability severity.

Information on hours worked is also present in Table 2. The results show that disabled people also work fewer hours – around one-and-a-half to two hours per week less on average – and the rate of full-time employment is lower – by approximately five percentage points. These differences do not necessarily reflect a disability-related disadvantage. For instance, it might be that disabled individuals are systematically different to non-disabled individuals in their trade-off between leisure and work, preferring on average to work fewer hours. However, it is likely that these differences, at least in part, reflect particular difficulties (such as increased levels of stress) experienced by disabled people - both in the workplace and life generally.

Disability-related differences in mean earnings (such as those reported in Tables 1 and 2) may mask considerable heterogeneity in the impact of disability at different points of the earnings distribution. The relationship between disabled people and different labour market institutions may serve to compress or exacerbate disability-related earnings differentials at different points of the earnings distribution. The national minimum wage, for example, may help compress disability-related earnings differentials towards the lower part of the earnings distribution. Alternatively, if employers' doubts over a disabled person's ability to do a job are inversely related to the level of educational qualifications (educational qualifications may act as a signal of ability), then this would compress disability-related earnings differentials as the level of earnings increase. There are likely to be a multiple of factors operating simultaneously that affect different parts of the earnings distribution. The net effect on the shape of the disability-related earnings shortfall over the earnings distribution is unclear.

Cross-sectional evidence on disability-related earnings differentials for the 10th, 25th, 50th, 75th and 90th percentile of the sex-specific earnings distributions is shown in Figure 1. The estimates are net of individual characteristics and are computed using simultaneous quantile regressions. The estimates are also contained in Appendix Table A2, along with results from tests of equality for disability regressors for different quantiles.

Table 2: Labour market outcomes for disabled and non-disabled people: cross sectional evidence

Labour market outcomes	Sex	Non-disabled	Disabled	Disabled – Non disabled[1]	
				Without control[2]	With controls[3]
Per cent in work[4]	Male	87.6	33.4	-54.3***	-49.5***
	Female	76.4	32.6	-43.8***	-44.5***
Mean log gross hourly earnings in main job	Male	2.1	2.01	-12.5***	-10.9***
	Female	1.9	1.83	-8.6***	-6.8***
Per cent in low pay[5]					
Low pay -= lowest decile of distribution	Male	6.1	8.9	2.8***	3.0***
	Female	12.2	16.2	4.0***	3.5***
Low pay -= lowest quartile of distribution	Male	15.2	21.5	6.3***	6.0***
	Female	31.5	38.2	6.7***	5.5***
Usual hours worked in main job (per week)					
Mean	Male	40.1	38.4	-1.7***	-1.8***
	Female	28.9	27.4	-1.5***	-1.7***
Per cent full time (>=30 hours	Male	92.9	86.9	-5.9***	-4.7***
	Female	56.8	50.9	-5.8***	-7.4***

Notes:
1. Figures are coefficients from disability regressors: OLS estimation is used for mean earnings and hours worked; probit regression models are fitted for other (binary) outcomes (marginal effects are reported).
2. The sample is restricted to observations with non-missing values for all controls.
3. Controls include age, highest educational qualification, marital status, ethnicity, number of dependent children (including whether any are under 4 years old), job tenure, occupation, region of residence and survey year. Regressors for job tenure and occupation are not included in the work attachment regressions.
4. Includes employees and self employed.
5. Based on contemporaneous (quarterly) distribution of log hourly earnings.

Disabled equals DDA disabled in waves 1 and 5. Non-disabled equals not DDA disabled in waves 1 and 5. Individuals with 'intermittent' disability (DDA disabled in either wave 1 or 5) are excluded from the sample.
Descriptive statistics for all variables used in the analysis are reported in Appendix Table A1.
Standard errors are adjusted for multiple observations of the same individuals in waves 1 and 5.
*significant at 10%; **significant at 5%; *** significant at 1%

Figure 1: Cross-sectional disability related earnings differentials
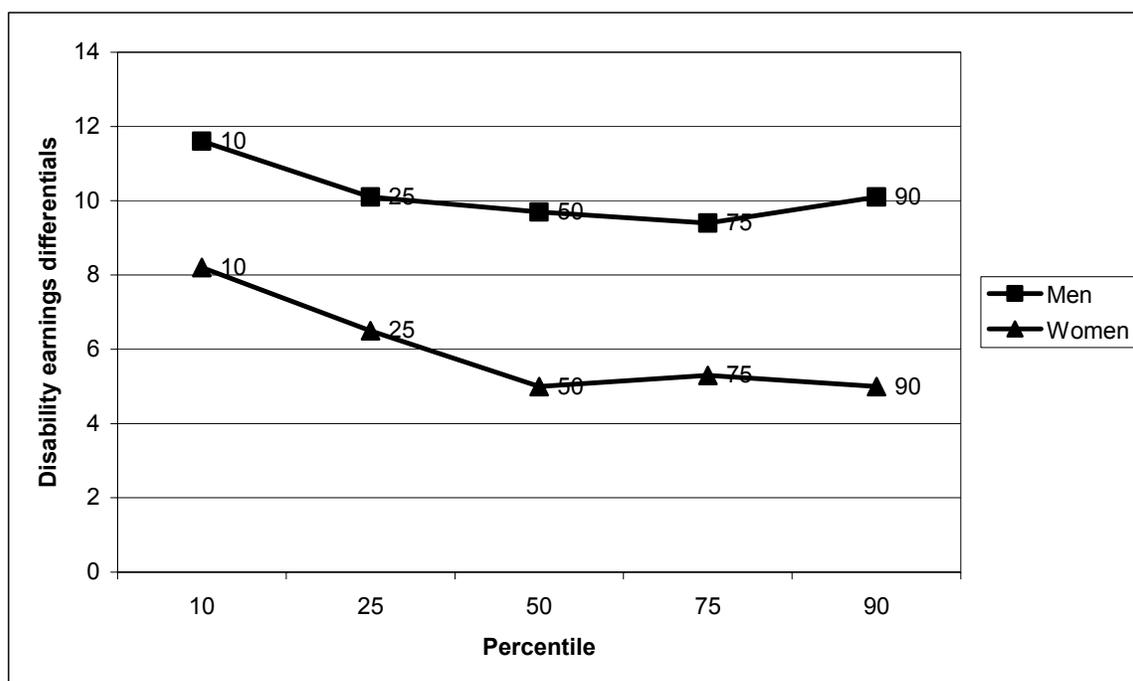
Several features are evident from Figure 1. First, all points on both curves are significantly different from zero: Disability-related shortfalls in earnings are evident throughout the earnings distribution and are not a phenomenon of disabled people with either low- or high-earnings.

Second, the disability-related earnings gap is larger for men than it is for women at each point of the respective earnings distribution.

Third, for both disabled men and women, the earnings shortfall is larger towards the lower part of the earnings distribution. This is especially pronounced for women: the shortfall in earnings at the 10th percentile is eight percent compared to a gap of five percent at the median. Thus, it is low-paid disabled people, especially women, who experience greatest shortfall in earnings compared to their non-disabled counterparts.[11] If the national minimum wage is serving to compress disability-related earnings differentials for low-paid workers, its effects are more than offset by other factors, such as, for example, higher levels of discrimination associated with lower levels of human capital.

---

[11]   In specifications without controls (not reported), the gap in disability-related earnings is smaller (not larger) at lower levels of earnings. This underscores the importance of allowing for differences in individual characteristics between disabled and non-disabled people.

Finally, although there are differences in the extent of the disability-related earnings shortfall between different points of the earnings distribution, these differences are more modest than the extent of overall disability-related shortfall.[12] Thus, whilst there may well be factors that affect different types of disabled people (which in turn are associated with particular earnings profiles), disabled people as a whole appear to be affected by similar factors that account for disability-related differences in earnings.

4. Labour market progression amongst disabled people

4.1 Introduction
This section assesses the progression of disabled people in employment. The indicators of progress are grouped under three broad headings:

(i)   Earnings growth. Change in earnings is clearly a key indicator of labour market progress. Evidence is presented, not just on disability-related differences in mean earnings growth, but also on whether disabled people are less likely to experience earnings growth beyond particular thresholds (i.e. 'large' increases in earnings of more than 20 percent). Disability-related differences in low-pay transitions are also examined: Are disabled people less likely to exit low-pay and more likely to fall into low-pay?

(ii)   Changes in labour market participation. Estimates are computed for disability-related differences in changes in hours worked and the probability of exiting work. A greater reduction in labour market participation by disabled people cannot automatically be interpreted as evidence that disabled people are performing less well than non-disabled people. Both reductions in hours worked and exits from work (which includes, for example, taking early retirement), may reflect systematic differences between disabled and non-disabled people in their trade-off between leisure and work. However, it is more likely that any disability-related differences emerge from increased pressure and stress that disabled people face - both at work and in life generally (as mentioned above). To this extent, a greater reduction in labour market participation by disabled people would constitute less satisfactory progress.

(iii) 'Broad' indicators of labour market progress. Evidence is also discussed with respect to two other more general markers of labour market

---

[12]   In terms of Figure 1, the vertical distance between the points is generally smaller than the distance between each point and the horizontal axis.

progress: the rate of training and the rate of upward occupational mobility.

All analysis is conducted separately for men and women. The final part of this section (Section 4.4) presents additional subgroup analysis to examine whether key measures of labour market progress amongst disabled people vary by age, education and occupation.

4.2   Earnings growth

The progression of disabled and non-disabled people with respect to earnings is reported in Table 3. The figures refer to annual changes in log gross hourly pay in the main job (wave 1 to 5) and may include movements between jobs. The estimates in the final two columns refer to differences between disabled and non-disabled people after controlling for individual characteristics. The controls in the models for the penultimate column include a set of 'basic' individual characteristics, such as education and age (see the notes to the table for details). In addition to these individual characteristics, the estimates for the models presented in the final column also control for initial earnings (dummies for different deciles of the earnings distribution in wave 1). The cross-sectional evidence in Table 2 drew attention to the disproportionately high incidence of disabled people in the lower part of the earnings distribution. Given that individuals with lower levels of earnings tend to experience larger proportionate rises in earnings, failure to adequately take account of the lower pay of disabled people may under-state any shortfall in disabled people's earnings growth.

Evidence is presented in Table 3 for disability-related differences in both mean and median changes in earnings. Any subdued growth in earnings experienced by disabled people could arise from disability-related differences at any point of the earnings growth distribution. For instance, it may reflect a lower incidence of large rises in earnings or it may reflect a disproportionately high incidence of reductions in earnings. Thus, estimates are also provided on the probability of experiencing a change in earnings for a range of thresholds of the earnings growth distribution: increases of at least 5, 10 and 20 percent as well as a reduction of at least 5 percent.

In general, the evidence in Table 3 indicates that changes in earnings for disabled people lag behind that for non-disabled people, especially for disabled men. However, conclusions on the extent of the disability shortfall are contingent on the measure of earnings growth and model specification. On the one hand, there is no significant difference in mean earnings growth for disabled men and women, either without controls or with 'basic' controls only. Moreover, disabled women do not lag significantly behind non-disabled women for any of the six measures of earnings growth in the model with basic controls.

Table 3: Earnings growth and low pay transition rates for disabled and non disabled people

Labour market progression	Sex	Non disabled	Disabled	Disabled – Non Disabled[1]		
				Without controls[2]	With basic controls[3]	With basic controls + initial earnings[4]
Percentage change in log gross hourly earnings from main job						
Mean	Male	6.5	5.5	-1.0	0.0	-2.8***
	Female	6.3	6.8	0.5	1.0	-1.3**
Median	Male	5.5	4.2	-1.4***	-0.8	-2.0***
	Female	5.6	5.2	-0.46*	0.0	-1.0**
> = 5%	Male	51.3	47.1	-4.2***	-2.2**	-5.4***
	Female	51.6	50.0	-1.6*	-0.5	-3.0***
> = 10%	Male	39.8	35.2	-4.6***	-2.4**	-5.7***
	Female	39.3	37.8	-1.5*	0.0	-2.6***
> = 20%	Male	24.0	20.3	-3.7***	-1.9**	-4.5***
	Female	23.2	23.2	0.0	1.4*	-0.8
< = -5%	Male	25.9	27.1	1.2	0.4	2.9***
	Female	24.8	24.8	0.0	0.0	1.7**
Transitions into and out of low pay [5]						
Exit lowest decile	Male	55.2	44.9	-10.3***	-13.5***	
	Female	55.0	47.4	-7.6***	-8.2***	
Enter lowest decile	Male	2.2	3.3	1.1***	0.8***	
	Female	6.0	7.5	1.5***	1.1***	
Exit lowest quartile	Male	38.0	30.2	-7.8***	-9.5***	
	Female	26.7	24.1	- 2.7**	-2.2	
Enter lowest quartile	Male	4.8	6.7	1.9***	1.1***	
	Female	9.7	11.6	1.9***	1.3**	

Notes:
1. Figures are coefficients from disability regressors: OLS estimation is used for mean change in earnings, quantile regressors are fitted for median change in earnings and probit regression models are fitted for other (binary) outcomes (marginal effects are reported).
2. The sample is restricted to observations with non-missing values for all controls.
3. Controls include age, highest educational qualification, marital status, ethnicity, number of dependent children (including whether any are under 4 years old), job tenure, occupation, region of residence and survey year.
4. Dummies for deciles of the earnings distribution in wave 1. Models with initial earnings are not fitted for low pay transition regressions.
5. Based on distribution of contemporaneous (quarterly) log hourly earnings. Transitions refer to movements within the earnings distribution i.e. all individuals are employed in waves 1 and 5.

On the other hand, median earnings growth[13] is significantly lower for disabled men and women in the model without controls and in the model with the full set of controls (including initial earnings). Moreover, most measures of earnings growth indicate that disabled men lag significantly behind non-disabled men, irrespective of model specification. In the specification that allows for initial earnings (final column of Table 3), disability-related differences are typically large and always significant for men and often large and usually significant for women. According to this specification, median earnings increased by 2 percent less for disabled compared to non-disabled men, and by 1 percent less for disabled compared to non-disabled women.

Furthermore, results from this specification indicate that disabled men are approximately five percentage points less likely to experience a rise in earnings of at least 5, 10 or 20 percent. The coefficients are smaller for reductions in earnings and only significant in the model with the full set of controls (the marginal effect is 2.9 percentage points, just over half the size of the coefficients on the increases in earnings regressions). This evidence suggests that the differences in earnings growth observed between disabled and non-disabled men in mean changes in earnings arise more from a relative 'absence' of disabled men experiencing increases in earnings than a relative 'excess' of disabled men experiencing reductions in earnings.

Results are also reported in Table 3 on low-pay transition rates for movements into and out of the lowest decile and the lowest quartile of the contemporaneous earnings distribution.[14] The estimates indicate that disabled men and women are both less likely to exit low-pay and more likely to enter low-pay than non-disabled individuals. Disability-related differences in low-pay transition probabilities are large, typically highly significant irrespective of model specification, robust to the choice of low-pay cut-off and apply to both disabled men and women. For example, 55.2 percent of non-disabled men in the lowest earnings decile have moved into a higher earnings decile a year later. Disabled

---

[13]   Arguably preferred to mean earnings growth given the possibility of bias introduced to the latter due to outliers.

[14]   Note that transitions into the lowest decile and quartile of the earnings distribution refer to reductions in earnings for people in the same job or movements into a new job with lower earnings. The figures do not include people who move from being out of work to a 'low-paid' job.

men are 10.3 percentage points less likely to exit the lowest earnings decile than non-disabled men, a gap that increases to 13.5 percent once individual characteristics are controlled for. Disability-related differences in low-pay exit rates amongst women are somewhat smaller than amongst men but the differences are still relatively large.

In sum, earnings growth for disabled men typically lags behind that for non-disabled men, although this finding is sensitive to the measure of earnings growth and to the model specification. For women, disability-related differences in earnings growth are often not significant. Disabled men are significantly less likely to experience increases in earnings and significantly more likely to experience reductions in earnings, the former being larger than the latter. In terms of model specification, controlling for the initial level of earnings is important (disabled people have lower earnings and people with lower earnings typically have higher earnings growth). Controlling for initial earnings substantially increases the estimates of disability-related differences in earnings growth. In models that control for initial earnings, all estimates of disability-related differences in earnings growth are significant for men and almost all are significant for women.[15]

4.3   Progression in Non-earnings-related outcomes

Evidence on annual changes in labour market participation and 'broad' measures of labour market progress are reported in Table 4. The indicators for labour market participation refer to changes in hours worked, movements between full- and part-time work and exits from work. The 'broader' indicators of labour market progress refer to the rate of training and the rate of occupational improvement.

The results in Table 4 clearly indicate that disabled people are more likely to reduce their labour market participation. Not only are rates of exit from work higher for disabled people, but disabled people who remain in work are more likely to move from full- to part-time work. The greater propensity to move

---

[15]   Earnings growth is inversely related to age. It is possible that the relatively broadly defined age regressors used in the regressions (see Table A1) could be more finely specified and that this would absorb part of the explanatory power of initial earnings on earnings growth. Further investigation confirmed that alternative specifications of individual age slightly improved the fit of most (but not all) of the earnings growth models, but that the coefficients on the initial earnings regressors remained substantively unaltered. Furthermore, in specifications that produced a slightly better fit, the impact was to very slightly increase the coefficient on the disability regressor (disabled people are older on average). Given that the results were almost identical irrespective of formulation of age regressors, the more parsimonious specification was retained for all models.

from full- to part-time work amongst disabled people is highly significant in both models with and without controls. In the specification with controls, the transition from full- to part-time work is almost one percentage point higher for disabled men and over two percentage points higher for disabled women. Disabled people are also more likely to reduce the average number of hours worked, though these differences are relatively weak once individual characteristics are controlled for.

Table 4: Changes in non earnings related labour market outcomes for disabled and non disabled people

Labour market progression	Sex	Non Disabled	Disabled	Disabled – Non disabled	
				Without Controls.	With Controls[2]
Received job-related education or training	Male	44.6	37.6	-7.0***	-1.8**
	Female	50.5	46.8	-3.7***	-0.6
Improve occupation (%)[3]	Male	8.5	7.1	-1.4***	-0.2
	Female	7.9	7.1	-0.8	0.1
Change in labour market participation					
Mean change in hours worked	Male	-0.4	-0.7	-0.4***	-0.2*
	Female	0.0	-0.2	-0.2**	-0.1
Move from full- to part-time (%)[4]	Male	1.7	3.1	1.4***	0.9***
	Female	8.1	9.9	1.8***	2.1***
	Female	11.7	8.7	-3.0***	-2.6***
Exit work (%)	Male	3.6	12.1	8.5***	7.5***
	Female	5.5	12.6	7.1***	7.6***

Notes:
1. Figures are coefficients from disability regressors: OLS estimation is used for hours worked, probit regression models are fitted for other (binary) outcomes (marginal effects are reported). The sample is restricted to observations with non-missing values for all controls.
2. Controls include age, highest educational qualification, marital status, ethnicity, number of dependent children (including whether any are under 4 years old), job tenure, occupation, region of residence and survey year.
3. A binary variable, where one denotes a transition to a higher occupation (3 occupational groupings are identified).
4. Full time equals > = 30 hrs per week.

Disabled equals DDA disabled in waves 1 and 5. Non-disabled equals not DDA disabled in waves 1 and 5. Individuals with 'intermittent' disabilities (DDA disabled in either wave 1 or 5) are excluded from the sample.
Descriptive statistics for all variables used in the analysis are reported in Appendix Table A1.
*significant at 10%; **significant at 5%; *** significant at 1%

One of the most striking results in Table 4 is the far higher rate of exits from work amongst disabled people. Disabled men are more than three times as likely to leave work as non-disabled men, whilst disabled women are more than twice as likely to exit work. The size of the marginal effects alters little with introduction of the controls and remains highly significant.

The bivariate results on rates of job-related education or training in Table 4, reveal that disabled people are significantly less likely to receive training than non-disabled people. The rate of training is 7 percentage points lower for disabled men and 3.7 percentage points lower for disabled women compared to their non-disabled counterparts. However, after allowing for individual characteristics, only the lower incidence of job-related training amongst disabled men remains significant. The size of the relative shortfall in training is reduced substantially in the model with controls to less than two percentage points.

Finally, there is little evidence in Table 4 to suggest that the occupational progression of disabled people is less favourable than for non-disabled people. Although upward occupational mobility is significantly lower for disabled men in the specification without controls, the difference between disabled and non-disabled men becomes insignificant once the controls are introduced. The difference between disabled and non-disabled women is not significant in either specification.

4.4   Subgroup analysis by age, education and occupation

The evidence in this section to-date has focused on the progress of disabled people as a whole; no distinction as been made between different types of disabled people (aside from those between men and women). This section explores the extent of heterogeneity in the labour market progression of disabled men and women with respect to differences in age, education and occupation: Do disabled people tend to do more favourably if they are younger or older, less-well educated or better educated, a manual worker or a non-manual worker? The estimates in Table 5 come from regressions of changes in labour market outcomes on disability status interacted with either age, education or occupation. The coefficients on the main effect for the disability reference group and the coefficients on the disability interaction terms are reported. For instance, the first row of the upper panel of Table 5 shows that 'prime' working age disabled men experience 3.1 percent lower earnings growth than their non-disabled peers (this is the main effect for the reference group). Both younger and older disabled men experienced more favourable earnings growth compared to 'prime' working-age disabled men, by 1.1 and 1.3 percent respectively, allowing for differences in earnings growth by age that exist between non-disabled men. However, these differences between 'prime' working-age

disabled men and either older of younger disabled men (the interaction terms) are not statistically significant at conventional levels.

The age breakdowns in Table 5, Panel A, distinguish between younger workers (aged 18 to 25 years), 'prime' working-age individuals (aged 26 to 49 years) and older working age individuals (aged 50 years or more). The younger age category includes school and university leavers; it is possible that disabled people in this age group (often new entrants to the labour force) find it especially hard to establish a foothold in the workplace. On the other hand, it may be older disabled workers who struggle in particular – many of them will have experienced relatively recent disability onset and may take longer to adapt to their new circumstances than younger disabled people.

Perhaps somewhat surprisingly, it is 'prime' working-age disabled men who experience less favourable labour market progression than either younger of older disabled working-age men. This finding applies to earnings growth, exits from low-pay, rates of training and labour market withdrawal, though most of the interaction terms are not significant. As attention amongst policy-makers is increasingly turning towards disabled people aged 50 years or more in the Pathways to Work initiatives, the findings in Table 5 should sound a note of caution: at least in terms of labour market progression, it is disabled men aged 26 to 49 years and not older disabled men who fair least well.

In general, age-related differences for disabled women are smaller than for men. The most notable finding is a distinct increase in the propensity to exit work with age, which increases significantly with each age category amongst disabled women. The significantly lower rate of exits from work amongst the youngest group of disabled people (aged 18 to 25 years) is a finding that is common to both men and women. It could be that these young disabled people are more able to cope with the consequences of a disability (a relatively high proportion will have acquired their disability during childhood when perhaps it is easier to make adjustments).

Table 5: Labour Market Progression amongst Disabled People by Subgroup

Labour Market Progression	Male			Female		
	Interaction Term	Main Effect	Interaction Term	Interaction Term	Main Effect	Interaction Term
Panel A: Labour Market Progression by Age Subgroups						
Age	18-25	26-49	50 or more	18-25	26-49	50 or more
Percentage change in log gross hourly earnings from main job	1.3	-3.1***	1.1	-0.4	-0.9	-0.4
Exit lowest quartile of earnings	11.4	-15.7***	14.2***	-1.4	-0.7	-4.0
Received job-related education or training	2.8	-3.8***	3.6**	-2.0	-0.2	-1.5
Exit work (%)	-2.1***	7.6***	-0.2	-2.4***	6.8***	1.2**
Panel B: Labour Market Progression by Education Subgroups						
Education	Degree or higher	Some	Non	Degree or higher	Other	Non
Percentage change in log gross hourly earnings from main job	0.0	0.7	-3.0	-1.8	1.5*	-0.3
Exit lowest quartile of earnings	-11.1	-5.7**	-11.8***	-11.2*	-0.7	-3.8
Received job-related education or training	-0.5	-1.5	-2.9	1.7	-0.6	-3.1
Exit work (%)	-0.4	6.9***	-0.5	-1.4**	6.6***	2.2***
Panel C: Labour Market Progression by Education Subgroups						
Occupation	Professional/ Managerial	Skilled Non-manual	Manual	Professional/ Managerial	Skilled Non-manual	Manual
Percentage change in log gross hourly earnings from main job	-1.0	1.7	-2.3	-1.0	1.7	-2.3
Exit lowest quartile of earnings	4.0	-5.8	-5.3	4.0	-5.8	-5.3
Received job-related education or training	5.1*	-4.8**	1.8	5.1*	-4.8**	1.8
Exit work (%)	- 0.7	6.8***	0.2	-0.7	6.8***	0.2

Notes:
Figures are coefficients from disability regressors: OLS estimation is used for change in earnings, probit regression models are fitted for other (binary) outcomes (marginal effects are reported).
Controls include age, highest educational qualification, marital status, ethnicity, number of dependent children (including whether any are under 4 years old), job tenure, occupation, region of residence and survey year. Additionally, for the change in earnings regressions, controls are included for initial earnings (deciles of the earnings distribution in wave 1).
Disabled equals DDA disabled in waves 1 and 5. Non-disabled equals not DDA disabled in waves 1 and 5. Individuals with 'intermittent' disabilities (DDA disabled in either wave 1 or 5) are excluded from the sample.
Descriptive statistics for all variables used in the analysis are reported in Appendix Table A1.
*significant at 10%; **significant at 5%; *** significant at 1%

Turning to the results in Table 5, Panel B, there are relatively few significant differences in the labour market progression of disabled people according to the level of educational qualification. One clear finding is the inverse association between the rate of exit from work and the level of educational qualification amongst disabled women. Disabled women with no educational qualifications are 2.2 percentage points more likely to exit work than disabled women with 'some' (but not university) education, who are in turn 1.4 percentage points more likely to exit work than disabled women with a university degree (after controlling for differences in the rate of exits from work by education between non-disabled women). Moreover, although few of the interaction terms are significant, the broad pattern of results for both disabled men and women indicate that changes in earnings-related outcomes are more favourable for disabled people with a 'medium' level of educational qualification ('some' qualifications but less than a university degree).

Finally, the results in the lower panel of Table 5 indicate that it is disabled men and women in manual occupations who often experience least favourable labour market trajectories. The most obvious illustration of this is the rate of training amongst disabled women in manual occupations, which is 5.3 percentage points lower than it is for disabled women in skilled, non-manual occupations (allowing for differences in rates of training between occupations). Given that changes in labour market outcomes tend to be less favourable for people in manual occupations, progress would appear to be particularly difficult for manual workers with a disability. However, as with the breakdowns by age and education in Panels B and C of Table 5, the differences between disability groups by occupation are rarely significant.

5.   Labour market outcomes by disability severity

5.1   *Defining disability severity*
Disabilities are wide ranging in both their nature and the extent to which they present limitations. The correlation between disability severity and economic disadvantage has been well-documented, especially with respect to income (see, for example, Grundy et al, 1999, and Burchardt, 2000b). These studies use the official Disability Follow-Up Survey to the Family Resources Survey (FRS) and classify disabled people into ten categories of disability severity, with severity category 1 the least disabled and severity category 10 the most disabled. In terms of labour market outcomes, Grundy et al. (1999) find that work attachment falls sharply with disability severity, from 44 percent for severity categories 1 and 2 to just 5 percent or less for severity categories 9 and 10. Furthermore, Burchardt (2000b) reports that the mean hourly gross earnings of

disabled employees in severity categories 3 to 10 was 18 percent lower than that for employees in severity categories 1 and 2.

This section provides evidence on the labour market disadvantage of disabled people, classified by severity of disability. It expands on current research by providing a more detailed picture of cross-sectional labour market outcomes by disability severity. It also examines whether labour market progression differs according to disability severity: Is earnings growth, for example, lower for more- compared to less-severely disabled people?

It is not possible to directly observe disability severity with LFS data. However, the LFS does ask respondents whether they have any of a list of 17 health problems covering musculoskeletal problems (arms, hands, feet, legs, neck and back), sensory perception, chest and breathing problems, allergies, circulation, digestion, mental health, learning difficulties and epilepsy. In the following analysis, the number of health problems is used as a proxy for disability severity. The long-term DDA disabled sample (individuals DDA disabled in waves 1 and 5) is subdivided into two sub samples: individuals with less than three health problems, labelled as 'less-severely disabled', and individuals with 3 or more health problems, labelled as 'more-severely disabled'. The number of health problems is taken as the mean number of health problems in waves 1 and 5. Just under two-fifths (57 and 56 percent of men and women respectively) who are disabled fall into the less-severely disabled category. In relation to the Disability Follow-up Study to the FRS, the size of the two LFS disability severity sub samples corresponds approximately to severity categories 1 to 4 (less-severely disabled) and categories 5 to 10 (more-severely disabled).

There are a number of conceptual limitations to the use of a count of health problems as a proxy for disability severity. One problem concerns aggregation. The approach implicitly assumes that one health problem is as serious as another, whereas some health problems are clearly more serious than others. Nonetheless, it seems plausible to assume that, on the whole, more health problems are associated with worse health. There is some empirical support for this. For instance, data from the British Household Panel Survey (BHPS) shows that people with "very poor" self-assessed health report some eight times as many health problems as those with "excellent" self-assessed health.[16] Moreover, this approach has been successfully implemented in studies of health by, for example, Berthoud (2000) and Burgess et al. (2004).

---

[16]   The results from the BHPS cited in this and the following paragraph are own calculations. Results are based on waves 1 to 12 and weighted using the cross-sectional individual respondent weights. All individuals are part of the so-called "Essex" (original) sample. For further detail on the BHPS, see Taylor et al. (2004).

A second concern with the use of a count of health problems as a proxy for disability severity involves the related assumptions, first, that disabled people have worse health than non-disabled people, and second, that more-severely disabled people have worse health than less-severely disabled people. The BHPS is also helpful in shedding light on the validity of these assumptions. On the first assumption, data from the BHPS show that people who are registered disabled have more than three times as many health problems as non-registered disabled people.[17] On the second assumption – that more-severely disabled people report worse health than less-severely disabled people – it is instructive to observe that registered disabled people in the BHPS report some 11 percent more health problems than people who have a limitation of daily activities, a broader classification of disability and one that has been used in BHPS-based disability research (Burchardt, 2000a, 2000b).

Moreover, a count of health problems appears to perform sensibly as a proxy for disability severity, at least as judged by rates of economic activity. The rate of work attachment is 30 percentage points lower in the LFS more-severely compared to the less-severely disabled sub sample. This is similar to the 25 percentage point difference in rates of work attachment between severity categories 1 to 4 and 5 to 10 in the Disability Follow-Up Study reported by Grundy et al. (1999).[18]

5.2   Cross-sectional evidence

Cross-sectional multivariate evidence from the LFS on labour market outcomes by disability severity is reported in Table 6. There is a sharp increase in labour market disadvantage associated with disability severity across a range of outcomes: rates of work attachment, mean earnings, incidence of low-pay and rates of full-time work. For example, compared to the proportion of non-disabled women in work, the rate of work attachment amongst less-severely disabled women is 33 percentage points lower, whilst the rate of work attachment amongst more-severely disabled women is 56.4 percentage points

---

[17]   Registered disabled people in the BHPS also report much worse self-assessed health: Approaching half (45 percent) say that they have "poor" or "very poor" health compared to approximately one in twenty (6 percent) for people who are not registered disabled.

[18]   Mean hourly gross earnings are 9 percent lower for employees in the LFS more-compared to less-severely disabled category. It is not possible from published research to compare the earnings gap between individuals in severity categories 1 to 4 and categories 5 to 10 in the Disability Follow-Up Study. The closest comparison comes from Burchardt (2000b) who reports a mean earnings gap of 18 percent between individuals in severity categories 1 and 2 compared to those in categories 3 to 10.

lower. All differences between more- and less-severely disabled people are highly significant.

Table 6: Cross sectional labour market outcomes by disability severity

Labour market outcome	Sex	Non disabled[1]	Difference, non-less severely disabled[1]	Difference, non – more severely disabled[1]	Difference, less severely – more severely disabled[1]
Per cent in work[2]	Male	86.3	-37.8***	-66.6***	-28.6***
	Female	75.2	-33.0***	-56.4***	23.4***
Mean log gross hourly earnings in main job	Male	2.2	-9.3***	-14.7***	5.4***
	Female	1.9	-5.3***	-9.8***	4.5***
Per cent in low-pay[3]					
low-pay = lowest quartile of distribution	Male	15.4	5.0***	7.8***	2.8***
	Female	31.9	4.4***	7.9***	3.5**
Usual hours worked in main job (per week)					
Per cent full-time (>=30 hours)	Male	92.7	-3.8***	-7.6***	-3.8***
	Female	56.6	-5.8***	-11.3***	-5.5***

Notes:
1. Controls include age, highest educational qualification, marital status, ethnicity, number of dependent children (including whether any are under 4 years old), job tenure, occupation, region of residence and survey year. Regressors for job tenure and occupation are not included in the work attachment regressions.
2. Includes employees and self employed.
3. Based on distribution of contemporaneous (quarterly) log hourly earnings.

Less severely disabled equals DDA disabled in waves 1 and 5 plus < a mean of 3 health problems in waves 1 and 5.
More severely disabled equals DDA disabled in waves and 5 plus a mean of > = 3 health problems in waves 1 and 5.
Non-disabled equals not DDA disabled in waves 1 and 5. Individuals with 'intermittent' disabilities (DDA disabled in either waves 1 or 5) are excluded from the sample.
Descriptive statistics for all variables used in the analysis are reported in Appendix Table A1.
*significant at 10%; **significant at 5%; *** significant at 1%

5.3   *Longitudinal evidence*
The cross-sectional evidence above drew attention to the greater labour market adversity experienced by more-severely disabled people. But do more-severely disabled people also experience less favourable labour market trajectories compared to both non-disabled and less-severely disabled people? Evidence for a selection of indicators of labour market progression is shown in Table 7. All

estimates are net of individual characteristics.[19] The final column of the table reports the difference in labour market progression between less- and more-severely disabled people.

The most striking finding to emerge from the results in Table 7 is the very high outflow rates from work amongst more-severely disabled people. For both men and women, the difference in the probability of exiting work between more-severely disabled and less-severely disabled people is approximately twice as large as the difference between less-severely disabled and non-disabled people. The problem of job retention for disabled people has been highlighted in previous sections. The problem appears to be especially acute for both men and women with more severe disabilities.

More-severely disabled women have less favourable labour market trajectories than other women - both less-severely disabled and non-disabled women - with respect to all markers of labour market progress in Table 7. However, many of these differences, especially between the two disability subgroups, are not statistically significant at conventional levels. One finding to emerge is the greater propensity for more-severely disabled women to experience reductions in earnings of at least 5 percent, which accounts for almost all of the disability-related differences for disabled women as a whole.[20]

With the notable exception of exits from work, the changes in outcomes for more-severely disabled men are all more favourable than those for less-severely disabled men. However, none of these differences are statistically significant at conventional levels (though note the relatively small cell sizes for some of the outcomes; see Appendix Table A1). Explanations for this more benign pattern of results for more- compared to less-severely disabled men are not immediately apparent. One explanation may arise if the type of more-severely disabled men to exit work were disproportionately more likely to have adverse labour market trajectories than less-severely disabled men.

---

[19]   These controls include initial earnings in the earnings growth equations (see the note to the table).

[20]   E.g. The 1.7 percentage point higher probability of a reduction in earnings of at least 5 percent reported in the final column of Table 3.

25

Table 7: Change in labour market outcomes by disability severity

Labour market progression	Sex	Non disabled[1]	difference, non-less severely disabled[1]	difference, non-more severely disabled[1]	difference, less severely -more severely disabled[1]
Change in log gross hourly earnings in main job					
Mean	Male	6.4	-2.7***	-1.8	0.9
	Female	6.1	-0.7	-2.0	-1.3
> = 20%	Male	24.0	-4.6***	-3.0*	1.6
	Female	23.1	-0.3	-1.5	-1.2
< = -5%	Male	26.0	2.7***	2.0	-0.7
	Female	25.0	0.4	4.8***	4.4***
Transitions into and out of low pay[2,3]					
Exit lowest quartile	Male	37.9	-10.4***	-4.8	5.6
	Female	26.4	-1.9	-2.2	-0.3
Enter lowest quartile	Male	4.9	1.0**	0.8	-0.2
	Female	9.8	0.9	2.0*	1.1
Received job-related education or training	Male	44.2	-2.1**	-0.9	1.2
	Female	50.5	-0.2	-2.7*	-2.5
Improve occupation (%)[3]	Male	8.4	-0.3	-0.2	0.1
	Female	7.8	0.3	-0.6	-0.9
Change in labour market participation					
Move from full - to part- time (%)	Male	1.7	0.9***	0.8**	-0.1
	Female	8.1	1.8***	2.7**	0.9
Exit work (%)[4]	Male	4.0	5.0***	12.3***	7.3***
	Female	5.8	5.6***	11.9***	6.3***

Notes:
1. Controls include age, highest educational qualification, marital status, ethnicity, number of dependent children (including whether any are under 4 years old), job tenure, occupation, region of residence and survey year. In addition, the equations for changes in earnings (but not low pay transitions) have controls for deciles of the earnings distribution in wave 1.
2. Transitions refer to movements within the earnings distribution i.e. all individuals are employed in waves1 and 5
3. Based on distribution of contemporaneous (quarterly) log hourly earnings. A binary variable, where one denotes a transition to a higher occupation (3 occupational groupings are identified).
4. > = 30 hrs

Less severely disabled equals DDA disabled in waves 1 and 5 plus < a mean of 3 health problems in waves 1 and 5.
More severely disabled equals DDA disabled in waves and 5 plus a mean of > = 3 health problems in waves 1 and 5.
Non-disabled equals not DDA disabled in waves 1 and 5. Individuals with 'intermittent' disabilities (DDA disabled in either waves 1 or 5) are excluded from the sample.
Descriptive statistics for all variables used in the analysis are reported in Appendix Table A1.

*significant at 10%; **significant at 5%; *** significant at 1%

6. Summary and conclusions

Considerable cross-sectional evidence has highlighted the lower employment rates and earnings amongst disabled people in Britain. But remarkably little is known about the progression of disabled people in work. This study is the first to document the labour market trajectories of disable people in Britain. The labour market progress of disabled people is judged along several dimensions including earnings growth, low-pay transition probabilities, changes in labour market participation, the rate of training and the rate of upward occupational mobility. The analysis also explores the extent of heterogeneity in the labour market progression of disabled people with respect to differences in age, education, occupation and disability severity.

In general, the evidence indicates that changes in earnings of disabled people lags behind that of non-disabled people, especially for men. However, this finding is sensitive to the measure of earnings growth and to the model specification. The median growth in annual earnings for disabled men is a significant 1.4 percent lower than it is for non-disabled men. This difference decreases to 0.8 and becomes insignificant after controlling for 'standard' individual characteristics (such as age and education), but increases to a significant 2.0 percent once initial earnings are added to the set of controls.[21] Disability-related earnings differentials follow a similar pattern for women, though the estimates are somewhat smaller. Moreover, disabled people are significantly more likely to enter low-pay and significantly less likely to exit low-pay, a finding that is robust to the choice of low-pay threshold, model specification and individual sex.[22]

One of the most striking results is the far higher rate of exits from work amongst disabled people. Even after allowing for differences in individual characteristics, disabled men and women are both approximately three times more likely to exit work. Disabled people who remain in work are also more likely to reduce their labour market participation, though disability-related differences are relatively modest. The far higher outflow rates from work for disabled people emphasise the opportunity for policy to facilitate job retention

---

[21] Disabled people have lower earnings and people with lower earnings have higher earnings growth on average.

[22] The only exception is the exit rate from the lowest quartile of the female earnings distribution in the model with controls for individual characteristics (see Table 3), which is lower for disabled women but not statistically significant at conventional levels.

for disabled people. Access to Work and the Disability Discrimination Act are examples of initiatives designed to support disabled people in work, but the low job retention rates suggest that there is scope for further policy in this area.

Subgroup analysis of the disabled sample generally reveals few significant differences in labour market progression of disabled people by age, education or occupation. One, perhaps surprising, finding, Is that it is 'prime' working-age disabled men who experience less favourable labour market progression than either younger of older disabled working-age men, though differences between disabled subgroups are often not statistically significant.

There is a sharp increase in labour market disadvantage associated with disability severity across a range of cross-sectional outcomes. However, labour market trajectories are not typically found to be significantly different for more-compared to less-severely disabled people. A notable exception is the very high outflow rates from work amongst more-severely disabled people. For both men and women, the difference in the probability of exiting work between more-severely disabled and less-severely disabled people is approximately twice as large as the difference between less-severely disabled and non-disabled people.

The government has introduced a range of legal, fiscal and labour market initiatives aimed at improving the labour market position of disabled people. The major legal reform was the introduction of The Disability Discrimination Act (1995), designed to protect disabled people against discrimination and to facilitate access to employment. The Disability Rights Commission, established in April 2000, provides advice, information and support to disabled people in securing their rights under the DDA. Changes to the tax and benefit system have included the Disabled Persons Tax Credit, aimed at providing incentives for low-income working disabled people. Active labour market programmes include the New Deal for Disabled People, introduced in July 2001. In February 2005, the government announced a national expansion of the Pathways to Work programme to take effect from 2008. This combines active labour market programmes along with reforms to Incapacity Benefit aimed at increasing rates of employment amongst older working-age disabled people.

Motivated by evidence on the low rates of employment amongst disabled people, much of government policy has focused on facilitating transitions into employment by disabled people. The forthcoming large-scale implementation of the Pathways to Work programme is a further step in this direction. This paper has drawn attention to the less favourable trajectory of disabled people in employment, especially with respect to earnings growth and job retention. Whilst policies to promote movements into work amongst disabled people are broadly welcome, the evidence in this paper suggests that there remains plenty

of scope to tackle the barriers faced by disabled people in the workplace, not least in terms of remaining in work.

References

Berthoud, R, Lakey, J, McKay, S. (1993) *The Economic Problems of Disabled People*. London: Policy Studies Institute.

Berthoud, R. (2000) *Seven Years in the Lives of British Families: Evidence on the Dynamics of Social Change from the British Household Panel Survey*. Bristol: The Policy Press.

Blackaby et al. (1999) *Earnings and Employment Opportunities of Disabled People*, DFEE Research Report No. 133

Burchardt, T. (2000a), 'The Dynamics of Being Disabled', *Journal of Social Policy*, 29: 4, 645–68.

Burchardt, T. (2000b), *Enduring Economic Exclusion: Disabled People, Income and Work*, Work and Opportunity Series No. 21, York: The Joseph Rowntree Foundation. Disability and Disadvantage 501.

Burchardt, T. (2001), 'Moving in, Staying in, Falling out: Employment Transitions of Disabled People': Manuscript prepared for BHPS 2001 Conference, 5-7 July, Colchester, Essex.

Burchardt, T. (2003), *Being and Becoming: Social Exclusion and the Onset of Disability*, CASE report 21. London: London School of Economics.

Burgess, S. et al (2004), *The Impact of Low Income on Child Health: Evidence from a Birth Cohort Study*, CASEpaper 85, London: London School of Economics.

Burkhauser, R. and Daly, M. (1998), 'Disability and Work: the Experiences of American and German Men', *Economic Review* (Federal Reserve Bank of San Francisco), 2: 17–29.

Grundy, E, Ahlburg, D, Ali, M, Breeze, E. and Sloggett, A. (1999), *Disability in Great Britain: Results from the 1996/7 Disability Follow-up to the Family Resources Survey*, DSS Research Report No. 94. London: HMSO.

Jenkins, S, P. and Rigg, J. (2004) 'Disability and Disadvantage: Selection, Onset and Duration Effects', *Journal of Social Policy*, 33; 3, 479-501.

Meager, N, Bates, P, Dench S, Honey, S. and Williams, M. (1998), *Employment of Disabled People: Assessing the Extent of Participation*, Department for Education and Employment Research Report No. 69. London: HMSO.

Sefton, T. et al. (2004), *Ethnic Minorities, Disability and the Labour Market: A Review of the Data*, University of Hull.

Taylor, M. (ed.) (2004), *British Household Panel Survey User Manual*, Institute for Social and Economic Research, University of Essex, Colchester.

Appendix Tables

Appendix A1: Descriptive statistics for all variables used in analysis

Variable	Male Observations	Mean	Std Dev	Female Observations	Mean	Std Dev
Disability variables						
DDA disabled: cross-sectional	500,277	0.153	0.36	494,460	0.153	0.36
Work limited disabled: cross-sectional	465,257	0.163	0.369	460,571	0.152	0.359
Long term DDA disabled[1]	307,867	0.113	0.317	308,573	0.112	0.315
Occasional or intermittent disability[2].	307,867	0.091	0.288	308,573	0.095	0.294
Long term less-severely DDA disabled[3]	307,810	0.065	0.246	308,472	0.063	0.243
Long term more-severely DDA disabled[4]	307,810	0.049	0.215	308,472	0.049	0.216
Cross-sectional outcomes						
In work[5]	500,141	0.779	0.415	494,804	0.683	0.465
Log gross hourly earnings in main job	246,104	2.148	0.613	250,824	1.901	0.558
Low Lowest decile of distribution	246,104	0.071	0.257	250,824	0.131	0.337
pay[6]= Lowest quartile of distribution	246,104	0.172	0.378	250,824	0.329	0.47
Usual hours worked in main job (per week)	385,019	39.99	11.101	336,901	29.252	12.131
Per cent full time (>=30 hours)	385,019	0.92	0.272	336,901	0.583	0.493
Change in outcomes						
Change in log hourly earnings	63,307	0.643		65,963	0.619	
Exit lowest decile of contemporaneous log gross hourly pay	3,269	0.553	0.497	7,347	0.542	0.498
Enter lowest decile of contemporaneous log gross hourly pay	60,038	0.023	0.151	58,616	0.061	0.24
Exit lowest quartile of contemporaneous log gross hourly pay	8,620	0.376	0.484	19,900	0.263	0.44
Enter lowest decile of contemporaneous log gross hourly pay	54,687	0.051	0.219	46,063	0.099	0.299
Change in hours worked	115,439	-0.409	7.852	100,474	0.006	7.069
Move from full time to part time (%)	108,102	0.018	0.133	58,512	0.082	0.275
Received job-related education or training	97,709	0.44	0.496	93,612	0.502	0.5
Improve occupation (%)	67,715	0.084	0.277	66,383	0.078	0.268
Exit work (%)	123,370	0.044	0.204	107,885	0.061	0.24
Non- Disability Regressors						
Individual age (years)						
30-39	523,555	0.348	0.476	510,581	0.389	0.488
40-49	523,555	0.214	0.41	510,581	0.228	0.42
50+[7]	523,555	0.175	0.38	510,581	0.102	0.303
Highest Educational Qualification						
Degree or other	494,544	0.162	0.369	490,276	0.134	0.341

Variable	Male			Female		
	Observations	Mean	Std Dev	Observations	Mean	Std Dev
Some	494,544	0.684	0.465	490,276	0.677	0.468
None	499,452	0.933	0.249	494,088	0.927	0.261
Demographic Structure						
Not in cohabiting union	523,555	0.352	0.478	510,581	0.362	0.481
1	522,183	0.165	0.371	509,645	0.206	0.405
2	522,183	0.164	0.371	509,645	0.198	0.399
No of resident children= 3+	522,183	0.073	0.26	509,645	0.09	0.286
Whether any child is aged less than 4 years	522,183	0.132	0.338	509,645	0.169	0.375
Length of Time with Current Employer						
< 3 mths	390,114	0.051	0.221	339,320	0.058	0.234
> = 3 to < 6 mths	390,114	0.049	0.216	339,320	0.056	0.231
>6 = to < 12 mths	390,114	0.075	0.264	339,320	0.09	0.286
> = 1 to < 2 yrs	390,114	0.108	0.31	339,320	0.128	0.335
> = 2 to < 5 yrs	390,114	0.197	0.398	339,320	0.223	0.416
> = 5 to < 10 yrs	390,114	0.158	0.365	339,320	0.172	0.377
> = 10 to < 20 yrs	390,114	0.208	0.406	339,320	0.198	0.399
Occupation						
Professional/Managerial	391,673	0.421	0.494	340,296	0.341	0.474
Skilled Non-manual	391,673	0.104	0.305	340,296	0.355	0.478
Region of Usual Residence						
Midlands	523,555	0.161	0.367	510,581	0.158	0.365
London	523,555	0.109	0.312	510,581	0.115	0.319
South	523,555	0.311	0.463	510,581	0.306	0.461
Rest of UK Except North England	523,555	0.177	0.382	510,581	0.179	0.383
Calendar year						
1998	523,555	0.136	0.343	510,581	0.135	0.342
1999	523,555	0.132	0.339	510,581	0.132	0.338
1900	523,555	0.127	0.333	510,581	0.127	0.333
2001	523,555	0.129	0.335	510,581	0.130	0.336
2002	523,555	0.125	0.331	510,581	0.125	0.331
2003	523,555	0.121	0.326	510,581	0.122	0.327
2004[8]	523,555	0.094	0.292	510,581	0.094	0.292

Notes to Appendix A1:
1. DDA disabled in waves 1 and 5
2. DDA disabled in either waves 1 or 5.
3. DDA disabled in waves 1 and 5 plus mean number of health problems in waves 1 and 5 is less than 3.
4. DDA disabled in waves 1 and 5 plus mean number of health problems in waves 1 and 5 is 3 or more.
5. Includes employees and self employed.
6 Based on contemporaneous (quarterly) distribution of log hourly earnings.
7. Maximum = 59 female and 64 male
8. Includes spring 2005.

Table Appendix A2: Test of Equality

Percentile	Men	Women
10	11.6***	8.2***
25	10.1***	6.5***
50	9.7***	5.0***
75	9.4***	5.3***
90	10.1***	5.0***
10 - 25 = 0	4.4**	5.3**
25 - 50 = 0	0.7	10.2***
50-75 = 0	0.3	1.0
75 - 90 = 0	2.1	0.4
10 - 90 = 0	2.1	9.1***
25 - 75 = 0	1.3	3.6*

Figures in the upper part of the table are coefficients from disability regresssors from earnings equations (see figure 1 for a plot of these estimates). Figures in the lower part of the table are F – statistics from tests of equality. Disabled equals DDA disabled in waves 1 and 5. Non-disabled equals not DDA disabled in waves 1 and 5 Individuals with 'intermittent' disability (DDA disabled in either wave 1 or 5) are excluded from the sample. Estimates are net of controls for: age, highest educational qualification, marital status, ethnicity, number of dependent children (including whether any are under 4 years old), job tenure, occupation, region of residence and survey year.

Descriptive statistics for all variables used in the analysis are reported in Appendix Table A1.
*significant at 10%; **significant at 5%; *** significant at 1%

Table Appendix A3: Quantile regressions for the 10th 50th 90th percentile of the change in earnings distribution for disabled and non disabled people

Change in earnings (percentile)[1]	Sex	Non Disabled	Disabled	Disabled – Non Disabled[2]		
				Without Controls[3]	With Controls[4]	With Controls + Initial earnings[5]
10	Male	-22.65	-22.50	0.05	0.67	-2.90**
	Female	-22.68	-22.90	-0.21	-0.99	-3.02**
50	Male	5.60	4.15	-1.44***	-0.74	-1.94** *
	Female	5.61	5.16	-0.44	0.07	-1.03**
90	Male	37.61	33.29	-4.3***	-1.06	-3.35***
	Female	37.75	38.18	0.43	2.49**	-1.68*

	Sex	10th percentile-50th percentile	50th percentile-90th percentile	10th percentile-90th percentile
Without controls[6]	Male	1.09	3.45	4.42
		(0.30)	(0.06)	(0.04)
	Female	0.03	0.67	0.18
		(0.87)	(0.41)	(0.67)
With controls[6]	Male	1.52	0.08	1.70
		(0.22)	(0.78)	(0.19)
	Female	0.42	2.54	3.91
		(0.51)	(0.11)	(0.05)
With controls + Initial earnings[7]	Male	0.88	3.08	0.10
		(0.35)	(0.08)	(0.75)
	Female	6.40	0.51	1.13
		(0.01)	(0.47)	(0.29)

Notes:
1. Based on distribution of change in log hourly earnings.
2. Figures are coefficients from disability regressors from quantile regressions.
3. The sample is restricted to observations with all non-missing values for all controls.
4. Controls includes sets of dummies for occasional disability, age, highest educational qualification, marital status, ethnicity, number of dependent children (including whether any are under 4 years old), job tenure, occupation, region of residence and survey year.
5. Dummies for each decile of the earnings distribution in wave 1.
6. As in note 50.
7. As in note 51.

Disabled equals DDA disabled in waves 1 and 5. Non-disabled equals not disabled in all five waves. The numDescriptive statistics for all variables used in the analysis are reported in Appendix Table A1.
* significant at 10%; ** significant at 5%; *** significant at 1%
See Appendix Table A2 for estimates and notes.