



# The Dynamics of Disability and Social Inclusion

*Brenda Gannon and Brian Nolan*

# NATIONAL DISABILITY AUTHORITY

The National Disability Authority (NDA) was established in June 2000 as an independent statutory body operating under the aegis of the Department of Justice, Equality and Law Reform.

The NDA's functions, as set out in the National Disability Authority Act of 1999, are:

- To advise the Minister on issues of policy and practice in relation to disability
- To assist the Minister in the co-ordination and development of policy in relation to people with disabilities
- To undertake, commission or collaborate in research on issues relating to disability
- To assist in the development of statistical information for planning, delivering and monitoring services for people with disabilities
- To advise in relation to standards for programmes and services for people with disabilities
- To monitor the implementation of standards and codes of practice for services for people with disabilities

The NDA is committed to the creation of an inclusive Irish society, one in which people with disabilities have equal rights and opportunities to participate in the economic, social and cultural life of the nation.

# THE EQUALITY AUTHORITY

The Equality Authority was established in 1999. It has a broad mandate to promote equality of opportunity and to combat discrimination in the areas covered by the Employment Equality Acts 1998 and 2004 and the Equal Status Acts 2000 to 2004.

The Employment Equality Acts 1998 and 2004 prohibit discrimination in the workplace. The Equal Status Acts 2000 to 2004 prohibit discrimination in the provision of goods and services, accommodation and educational establishments. Separate provision is made in relation to registered clubs. Both Acts prohibit discrimination, including indirect discrimination and discrimination by association, sexual harassment and harassment, and victimisation. Both Acts allow positive action (in pursuit of full equality in practice under the Employment Equality Acts) and require a reasonable accommodation of people with disabilities subject to exemptions. Both Acts are subject to exemptions. Both Acts cover nine grounds – gender, marital status, family status, age, disability, race, sexual orientation, religion and membership of the Traveller community. The disability ground is broadly defined to include people with physical, intellectual, learning, cognitive or emotional disabilities and a range of medical conditions.

The functions of the Equality Authority include the provision of information on the working of the Acts and on the Maternity Protection Acts 1994 and 2004, the Adoptive Leave Act 1995 and the Parental Leave Act 1998, to monitor and keep under review the Acts and to make recommendations to the Minister for Justice, Equality and Law Reform for change. The powers afforded to the Equality Authority to carry out its functions include: to conduct equality reviews and action plans, to prepare Codes of Practice, to conduct inquiries, to provide legal assistance to claimants under the Employment Equality Acts and the Equal Status Acts at its discretion on a strategic basis, to take cases in its own name in certain circumstances and to conduct research.



# **THE DYNAMICS OF DISABILITY AND SOCIAL INCLUSION**

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First Published July 2006 by

The Equality Authority  
2 Clonmel Street  
Dublin 2

© 2006 The Equality Authority

ISBN-10 1-905628-23-4

ISBN-13 978-1-905628-23-0

The views expressed in this report are those of the authors and do not necessarily represent those of the Equality Authority or the National Disability Authority.

# FOREWORD

*The Dynamics of Disability and Social Inclusion* provides timely insight into the experience and situation of people with disabilities. It is published at a time that coincides with the preparation of a new National Anti Poverty Strategy. It suggests that people with disability must be a particular focus within the targets, indicators, actions and investments to be established by the strategy.

This report makes use of data from the Living in Ireland Surveys, 1995 to 2001. It explores the impact on employment, income and relative income poverty, and social participation for people who acquire a disability, for people who cease reporting a disability and for people who have a disability over the whole period examined. Acquiring a disability is found to be associated with a decline in the probability of being in employment and a decline in household income. Those who ceased to report a disability over the period are found to have increased probability of employment and increased household income. Those with a disability over the whole period register a pronounced reduction in likelihood of being in employment and lower household income.

The impact of having a disability that emerges from this report must focus attention on the barriers experienced by people with disabilities in securing employment. These barriers stretch from the workplace into labour market programmes, the education system and wider society. Employers, service providers and policy makers all have a key contribution to make in dismantling these barriers and creating a society where the experience of disability is no longer linked to exclusion and poverty.

*The Dynamics of Disability and Social Inclusion* is a joint venture of the Equality Authority and the National Disability Authority. It reflects the benefits that can flow where shared objectives are advanced through pooling resources and expertise. It builds on previous joint work which was commissioned and published as *Disability and Social Inclusion in Ireland*.

We are grateful to Brenda Gannon and Brian Nolan for their expert and insightful work on this report.



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**Niall Crowley**  
Chief Executive Officer,  
The Equality Authority

This research, a joint publication between the National Disability Authority and the Equality Authority, provides an important opportunity to examine in detail the impact of disability on social inclusion in Ireland and to examine how that impact changes over time. Specifically the research allows us to better understand the experience of disability over time in the areas of employment, income and social participation. By examining this dynamic we can better plan policy and programme interventions to promote return to work and training at critical points and how and when to intervene to prevent that important decline into poverty associated with disability.

The sharp drop in participation in the workforce following onset of a disability, highlighted by this research, points to the importance of having a comprehensive employment strategy for people with disabilities, which addresses among other issues the retention of employment following onset of a disability.

The research findings on the poverty risk faced by people with long-term disabilities show how this has to be a core concern of an effective anti-poverty programme.

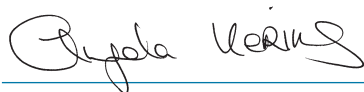
Promoting the inclusion of people with disabilities is a key goal of the National Disability Authority and achieving this requires an array of social policies and programmes working coherently to respond to and support the person experiencing disability across their lifespan.

Through a range of measures the National Disability Strategy sets important new challenges for Irish society and provides a framework in which the inclusion of people with disabilities can be enhanced. The Disability Act 2005, the cornerstone of the strategy, provides for new accessibility measures to ensure that people with disabilities enjoy access to public services, information, buildings, heritage and ICT. It also provides an employment target to promote the employment of people with disability across the public sector.

The statutory Sectoral Plans on disability for six key Government departments, published in July 2006, set out a range of policies and programmes to promote increased participation of people with disabilities in Irish society. Improved accessibility of public transport and of public streets are two areas where the sectoral plans aim to reduce some of the obstacles to fuller participation by people with disabilities in the life of the community.

The research in this report sets out the challenge to achieve a more inclusive society. The National Disability Strategy is a key tool towards that end. The NDA will work with other stakeholders to achieve the goal of maximum participation of people with disabilities in Irish society as full and equal citizens.

The National Disability Authority joins the Equality Authority in thanking Brian Nolan and Brenda Gannon for their expert work on this document and for their significant contribution to our sector.



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**Angela Kerins**

Chairperson,  
National Disability Authority

# **AUTHORS' ACKNOWLEDGEMENTS**

Very helpful comments on the content of this study were received from Laurence Bond (Equality Authority) and Eithne FitzGerald (National Disability Authority).

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# EXECUTIVE SUMMARY

## Introduction

Previous research in large-scale representative household surveys has shown that people reporting chronic illness or disability fare worse than others in terms of employment, income and social participation. This study uses data from the Living in Ireland Surveys (LISs), 1995-2001, to see how employment, income and relative income poverty, and social participation changed when someone moved from not experiencing disability to reporting disability (referred to as disability onset) or vice versa (referred to as disability exit), which provides a valuable insight into the impact of disability holding other things constant. The position of those reporting disability throughout the years of the LIS was also studied, to get a sense of the effects of such persistent disability.

Disability can be identified in a relatively crude but still valuable fashion in a general household survey such as this. In any year about 20% of the adult population reported having a chronic illness or disability. Tracking individual adults from 1995 to 2001, about twice that many reported such an illness or disability at some point over the seven years.

## The Impact of Disability Onset

The onset of disability for adults of working age in the survey was found to be associated with a decline of about 20 percentage points in the probability of being in employment, taking a range of personal and household characteristics into account. This fall was more pronounced when the chronic illness or disability hampered the person in their daily activities, when the person was already in a low-income household, and for women and those with low levels of education.

Disability onset was also seen to be associated with a decline in household income, of the order of 15% on average. Household income fell partly because of reduced employment, but also because some of those remaining in employment worked fewer hours. There was also a marked increase, of 7 percentage points, in the probability of falling below a widely-used relative income poverty threshold (60% of median income).

As far as social participation is concerned, only onset of severely hampering disability was associated with a significantly lower level of participation, whereas disability that hampered the individual to some extent or not at all did not have that effect.

## The Impact of Disability Exit

When an adult moved from reporting to not reporting disability in the survey there was an increase of about 7 percentage points in the probability of their being in employment, having controlled for personal and household characteristics. There was also an increase of about 10% in predicted household income. Despite this there was no independent statistically significant effect on the likelihood of their being in poverty. Similarly, the estimated impact of exit on social participation was not statistically significant.

## The Impact of Persistent Disability

As well as examining what happened on disability onset and exit, the experience of those reporting persistent illness/disability over all seven years of the panel survey was also investigated in some depth. Persistent disability of this sort was associated with a very pronounced reduction, of 42 percentage points, in the likelihood of being in employment when a range of other personal and household characteristics was taken into account. It was also strongly linked to lower income, predicted household income being 20% lower than for someone otherwise similar but with no experience of disability over the period. The probability of being below the relative income poverty threshold was 13 percentage points, with reduced employment the key channel through which disability increased poverty risk. Finally, having a chronic illness or disability throughout the life of the panel significantly reduced the expected level of social participation.

## The Challenge

The results pose a major challenge for policy in relation to tackling the many-faceted barriers to obtaining and maintaining employment that face people with disabilities, as well as in designing income support policies that provide them with an adequate standard of living.



## INTRODUCTION

In a recently completed research study for the Equality Authority and the National Disability Authority we examined various aspects of social inclusion and social exclusion for people with disabilities, using available data from representative household surveys of the Irish population (Gannon and Nolan 2005). That study investigated the extent of social exclusion for people with disabilities under the following headings: Education, Earnings, Poverty and Deprivation, and Social Life and Social Participation. Data from the Living in Ireland Surveys and the Quarterly National Household Survey was employed to analyse the extent of exclusion in a cross section context, that is to say using those datasets as a “snapshot” to compare the position of people with disabilities with others in Irish society at the time the surveys were carried out. Labour force participation, an absolutely central dimension of overall participation in society, was analysed from a disability perspective using the same data sources in a previous study by the same authors for the Equality Authority (Gannon and Nolan 2004a).

These studies showed that on almost all the measures studied, people with chronic illness or disability fared worse than others in their own age group. This is strongly associated with the degree to which they are hampered in their daily lives by their illness or disability. Those with a chronic illness or disability tend to have lower levels of educational attainment than others, and only a minority are in work. People with chronic illness or disability are more than twice as likely to be at risk of poverty, and more than twice as likely to be poor, using official measures of poverty. People with a chronic illness or disability are also less likely to be in a club or an association, to talk to their neighbours, friends or relatives most days, or to have a social afternoon or evening out.

The Living in Ireland Surveys, carried out from 1994 to 2001, were not simply a set of repeated cross-section surveys interviewing a new set of respondents each year. Instead, the design employed was a longitudinal one, in other words the same people were followed up from one year to the next and re-interviewed insofar as possible. This means that not only the circumstances of those individuals at a point in time, but also how they evolved over time can be studied. While this is a very valuable aspect of the data in exploring a wide range of socio-economic phenomena, it is particularly useful in trying to capture the impact of disability on social exclusion. In a cross-section, one can seek to “control” statistically for the effects of other relevant factors such as gender, age, or educational level in assessing the impact of disability on income, poverty, social participation and so on. However, one cannot be sure that all the relevant factors have been properly controlled for, and it is not possible to identify the specific channels of influence or causal mechanisms through which disability has an impact.

With longitudinal data, on the other hand, we can see individuals who move from not experiencing disability at one point to subsequently reporting disability, and others who move from reporting disability to not doing so – which we will refer to as disability “onset” and “exit” respectively. The change in the outcomes of interest – employment status, household income and poverty, social

participation – as the person moves into or out of disability can then be studied directly. This improves our capacity to estimate the effects of disability with precision and allows the channels whereby these effects operate to be traced with more confidence. (Our analysis applies only to adults, and therefore will not capture onset during childhood.)

It is also the case that the duration of disability may well influence the scale and nature of its effects. Ideally, longitudinal data would allow us to observe an individual's situation pre-onset, around the time of onset, and as the specific disability experience either lengthens or ends, and provide a basis for distinguishing these effects. In practice, the numbers in the sample inevitably constrain the depth of the analysis, and we will have to focus particularly on those reporting disability throughout the sample – for whom we have not observed onset or exit – in investigating duration and the effects of experiencing disability long-term. (Some of these people will have acquired the disability during childhood or even had it from birth, while others will have experienced onset during adulthood but before the survey began.) Nonetheless, it is useful to have this framework in mind: we want to capture the impact of disability onset, exit and duration.

In doing so, we have to take into account the fact that those experiencing disability may have had pre-existing disadvantages, such as family background or low education level. (Disability acquired in childhood or teenage years may of course itself have impacted on educational attainment, but we will not be capturing that dimension here.) These other factors could well independently affect the outcomes we are interested in; looking at someone with a disability who has limited education (not itself related to the presence of disability), one could then mistakenly attribute for example low income to the presence of disability, when in fact it was primarily a consequence of educational attainment. In comparing people in a cross-section, as in our previous studies, it was clearly essential to try to abstract from or “control for” such effects, and that remains true in analysing longitudinal data, even when we are comparing the situation of the same individual at two different points in time.

Suppose for example we observe someone who experiences the onset of disability and at the same time moves from being in work to being unemployed. If that person has a low level of education, then they may have been prone to unemployment anyway, even in the absence of disability. If on the other hand they have a high level of education and would have been very unlikely to experience unemployment in the absence of a disability, we can with more certainty attribute the change in their labour force status to disability onset. So the analysis will need to incorporate a variety of individual and household characteristics into the analysis, as well as measures of disability onset, duration and exit.

This report aims to exploit this potential of the longitudinal data from the Living in Ireland surveys, presenting an investigation of the dynamic relationship between disability and social exclusion which complements the cross-sectional analysis in Gannon and Nolan (2005). It investigates how employment, income, poverty and social participation are observed to change from the reported date of onset of disability or exit from disability, as well as the situation of those reporting disability throughout the life of the panel.

As we emphasised in our previous reports, the measurement of disability in a survey context poses considerable definitional and methodological difficulties, and disability can be captured in only a very crude fashion in a general household survey like the Living in Ireland Survey. The survey asks whether one has a chronic or longstanding illness or disability, and follows up to obtain some additional information about the nature of the illness or disability and how much it limits or hampers the person. This does not reflect a “medical model” of disability; the respondent is asked to assess the extent to which he or she is hampered in daily activities, which will be affected not only by the specific impairments involved but also social, attitudinal and environmental barriers to participation. The information available cannot serve as substitute for the in-depth information that would be obtained via a full-scale national survey on disability prevalence and impact. However, as previous studies have demonstrated, it does allow for significant improvement in our understanding of the impact of disability on key outcomes such as income, living standards, and social participation that are measured in some considerable depth in the survey.

The structure of the study is as follows. Chapter 2 describes the Living in Ireland Survey and the pattern of disability dynamics it reveals, in terms of duration of disability experienced, the numbers and distinguishing characteristics of those observed with an “onset” of disability over the life of the panel survey and those observed with an “exit” from disability over the life of the panel survey. Chapter 3 then focuses on employment, Chapter 4 on earnings and household income, and Chapter 5 on social participation across various dimensions. In each case we investigate what happens to the outcome in question as onset and exit are observed, and also examine the situation of those reporting chronic illness or disability throughout the life of the panel survey. Chapter 6 brings together and summarises the key findings.

## THE DYNAMICS OF DISABILITY

### 2.1 Introduction

If we look at a cross-sectional “snapshot” of people who report that they currently have a chronic illness or disability, this will include people with very different experiences of disability. Some will have had a chronic illness or disability from birth, some will have developed a disability or chronic illness recently which will in all likelihood affect them long-term, and others will only experience that disability for a short period. We would expect the impact of these different patterns of disability on social inclusion to be very different. This is in essence why it is important to complement a cross-sectional picture with the analysis of the dynamics of disability over time and how it affects crucial aspects of societal participation.

In this study we will be using the longitudinal data obtained in the Living in Ireland survey from 1995 to 2001, and the chapter starts with a description of this panel dataset, which is unique in an Irish context. We then outline the analytic framework adopted in using these data to look at the impact of disability on key aspects of social inclusion on which the study is focused. This involves distinguishing those observed as experiencing an “onset” of disability during the period covered by the survey – and thus acquire that disability during adulthood – those experiencing an “exit” from disability, and those experiencing chronic illness and disability over the entire seven-year period of the panel survey. The chapter also describes the numbers observed in each of these groups and their characteristics, as background to the analysis presented in the rest of the study.

### 2.2 The Living in Ireland Surveys

The Living in Ireland Survey was conducted by the Economic and Social Research Institute (ESRI) each year from 1994 to 2001, as part of the European Community Household Panel organised by Eurostat, the Statistical Office of the European Communities. The first wave of the survey in 1994 obtained information for 4,048 households, where possible interviewing each adult in the household. (More detail is given in Gannon and Nolan, (2004) and a full description is in Callan et al, (1996).) What is critical from the point of view of the present study is that the initial sample was then followed in subsequent years for re-interview. All individuals in the initial survey were to be followed and household and individual interviews were to be conducted as long as the person still lived in a private household. (New households were included where a person already in the sample moved to another household.) The fact that the same people were interviewed each year, insofar as possible, means that it is possible to study changes in the characteristics and circumstances of those individuals and their households over time, the unique feature of longitudinal or panel data. The European Community Panel

Survey ran up until 2001, when it was discontinued, and so the wave conducted in 2001 was also the eighth and last wave of the Living in Ireland survey.

By that point there had been substantial “attrition”, in other words a substantial number of those included in the initial survey had dropped out over time, as is common in panel surveys. In the case of the Living in Ireland Survey, slightly more than half the individuals interviewed in the original survey were no longer in the panel by 2000. At that point the Irish panel was supplemented by 1,500 new households, also included in the base for the final survey in 2001, which helped in ensuring a more comprehensive and accurate picture of those years, but the analysis of dynamics has to rely on those who were in the panel for a longer period. In this study we focus on what is known as the “balanced panel” of individuals present throughout the life of the survey.

With attrition on this scale, it was obviously important to see whether it was substantially affecting the composition of the sample in terms of age profile, urban-rural split, household composition and socio-economic status. The overall impact in those terms seems to have been relatively small, and weights were developed to counteract such effects where they were detected. A comprehensive description of the response pattern in the Living in Ireland Survey over the full eight years, the supplementation in 2000, the problem of attrition and the weights developed to deal with it are given in Whelan et al (2003). Gannon (2005) analysed attrition specifically in terms of those reporting chronic illness or disability and its impact on the estimated impact of disability on labour force participation, using the procedure suggested by Wooldridge, and found no evidence to suggest that the results were affected by such attrition.

The Living in Ireland Survey included several questions directly focused on illness or disability, as described in Gannon and Nolan (2005). Respondents were asked:

*“Do you have any chronic physical or mental health problem, illness or disability?”*

Those who said they did were then asked

- *“What is the nature of this illness or disability?”*
- *“Since when have you had this illness or disability?”*
- *“Are you hampered in your daily activities by this physical or mental health problem, illness or disability?”* with response categories “severely”, “to some extent”, or “not at all”.

The question posed about illness or disability in the initial, 1994 survey was slightly different so we do not use that year's results, basing our analysis on the seven years from 1995 to 2001. This leaves us with a total of 2,727 adults who responded fully in each wave.

In studying the dynamics of disability one has to be aware that, in addition to panel attrition in general, there may be a specific concern about attrition due to chronic illness or disability. In other words, those who already have a chronic illness or disability may be more likely than others to drop out of the panel survey over time, and “onset” of such a disability may itself be associated with an increased likelihood of drop-out. We can look at the panel data to see whether more of the people reporting a chronic illness or disability in one wave have dropped out by the next one, and evidence from the European Community Household Panel suggests that there does seem to be some such effect across the participating countries. We cannot see whether, in addition, some others who dropped out experienced onset of disability after they were last observed in the panel and this contributed to their dropping out. The implications for dynamic analysis of those remaining in the panel are difficult to assess, since we do not know how similar or different those who dropped out are, but the fact that those who are available for such analysis might not be entirely representative needs to be kept in mind.



## 2.3 The Analytical Framework

We now outline the analytical framework we will employ in assessing the impact of disability on key outcomes of interest, the rationale for this approach and what it involves. This framework is used to address the core questions towards which the study is directed: what impact does disability have on an individual's labour force participation, his or her household income, the likelihood that this income will fall below conventional income poverty thresholds, and the extent of their social networks and participation?

As emphasised in our introductory chapter, it is particularly useful to be able to look at observed movements into chronic illness or disability – which following Jenkins and Rigg (2003) we label as 'onset' – because we can then see what happens to the outcomes we are interested in, such as labour force status and income, as disability occurs. In doing so it is helpful to first identify all those individuals who could potentially experience disability onset at a particular point, and see how many actually experience onset. We can then compare the outcomes of interest for those experiencing onset with those who could have but did not experience it. This comparison gives us the most direct measure of the impact of disability onset, via a “control group” who do not experience onset but are similar in other respects.<sup>1</sup>

As well as analysing what happens when someone starts a period of disability, it is also valuable to be able to capture the extent to which labour force status, income etc. change when a disability spell ends. Adopting the same approach as with onset, we can compare those observed in the panel survey to “exit” disability with those who could have exited but did not do so. To be in a position to potentially exit, one clearly has to be reporting a chronic illness or disability; taking all those who could have exited, the comparison is between those who do and do not experience exit.

As brought out in our introductory chapter, looking at disability onset and exit, while very informative, will not capture the impact of how long a disability lasts. To explore the impact of persistent, long-term disability we will complement our analysis of disability onset and exit by also examining those who report a chronic illness or disability throughout the period covered by the panel survey, in each year from 1995 to 2001.

So the analytical framework to be adopted in subsequent chapters involves looking in turn at the impact of disability onset, disability exit, and long-term or persistent disability on the outcomes of interest in the study – employment, income, poverty and social participation. Before going on to that analysis, we look in the rest of this chapter at those actually observed in the panel survey to experience onset, exit and persistent disability, on whom we will be focusing in the remainder of the study.

## 2.4 Disability Onset

We now discuss how we define and measure disability onset, and the types of individual observed in the sample as experiencing it. Since only adults were interviewed, only onset after 16 will be included – disability acquired in childhood might have a rather different impact, since educational attainment might well be affected as already noted. One way of capturing onset would be to simply take all adults not reporting disability in any of the surveys from 1995 to 2000 as “at risk”, and take every case

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<sup>1</sup> The “control group” analogy is not of course exact because the two groups have not been selected at random, as they would be in a randomised control trial, and those who actually experience disability onset may have characteristics that pre-dispose them to doing so – such as low socio-economic status – which in fact distinguish them from others in the at risk population; this is what is known as a “selection” problem and means that the socio-economic characteristics of the individual also have to be incorporated into the analysis of the impact of disability onset.

where we subsequently observe a spell of disability starting as “onset”. (The “at risk” population could only be measured up to 2000, since 2001 was the last survey and we could not observe subsequent onset). That would mean that a particular individual could count as being at risk up to a maximum of six times. An individual could also experience onset more than once – in fact, with seven year's data an individual could report up to three distinct “onsets”.<sup>2</sup>

However, Jenkins and Rigg's British study take a more restrictive definition that concentrates on more sustained spells of disability following longer periods of “no disability”. They define “at risk of onset” as not having a chronic illness or disability for at least two years, and “onset” as then having a chronic illness or disability which lasts for at least two years. With that more restrictive definition one needs a window of four years to capture onset of chronic illness or disability – for example, individuals who had no chronic illness or disability in 1995 and 1996 are at risk, and if they become chronically ill or disabled in 1997 and remain so until at least 1998 they are defined as having an onset of chronic illness/disability. Our sample only covers 7 years, so by definition an individual can then only have one onset of chronic illness/disability. This “tighter” measure of disability onset is the one we adopt in the present study, because it allows us to focus on the impact of more sustained disability and reduces the possible impact of measurement error in reporting disability.<sup>3</sup>

In Table 2.1 we look at the numbers observed as at risk and the frequency of “onset”. A total of 2,727 adults were followed throughout the period from 1995 to 2001, so we have  $(2,727 \times 7) = 19,089$  observations in all. Out of these observations, the respondent reported having a chronic illness or disability in 3,948 cases or 21% of the total – so that is the average cross-sectional disability rate over the period. However, not all the observations will be included as “at risk of onset” – because some people reported disability throughout and thus were never “at risk” in that sense, for example. We see from the table that 2,331 persons were “at risk of onset” over a total of 8,169 observations when we use a two-year definition of “at risk”. A total of 235 individuals are then observed to experience onset, in other words start reporting the presence of a chronic illness or disability and do so for at least two years in a row.

**Table 2.1: Onset of Chronic Illness/Disability, Living in Ireland Survey 1995-2001**

	Total at Risk	Onset of Chronic Illness/Disability	At Risk but No Onset
Number of Persons	2,331	235	2,096
Number of Observations	8,169	235	7,934
% of Total Observations	100	2.9	97.1

What sort of people are most likely to experience onset? We can first look at some characteristics and see the percentages reporting onset, in Table 2.2. (next page) This shows that onset of chronic illness/disability is more likely to be reported by older people and by those with lower levels of education qualifications. The probability of onset rises sharply for those over 55 years of age and is much higher for those with no educational qualifications beyond primary level than for those with higher attainment levels – which is in itself associated with age, since older people have lower levels of education on average than younger ones.

<sup>2</sup> For example a person reporting no disability in 1995 could subsequently report such a disability every second year, and register as having an onset in 1996, 1998 and 2000.

<sup>3</sup> See also Burkhauser and Daly (1998). Some results based on the less restrictive one-year measure of onset are available from the authors.

**Table 2.2: Onset of Chronic Illness/Disability by Selected Characteristics**

Gender	% Experiencing Onset of Chronic Illness/Disability
Men	2.8
Women	2.9
Age	
15-24	0.6
25-34	2.1
35-44	1.6
45-54	2.1
55-64	4.9
65+	5.9
Education	
Primary/None	4.8
Secondary	2.1
Third Level	1.7

This brings out that simply looking at individual characteristics one by one can mask the true underlying relationships, so we now employ multivariate statistical analysis to more reliably estimate the effect of each characteristic holding the other ones constant. We estimate statistical models (logistic regression) that predict the likelihood that someone who was at risk of onset will then report a chronic illness or disability, depending on a set of characteristics that might affect that probability. The explanatory variables we use include age, gender, education, labour force status and household composition. For those with a disability onset we use values for the explanatory variables measured two years before onset (and thus not affected by it), while for those with no onset we use the values in the first year they are observed in the panel, i.e. 1995. The results from estimating this statistical model are presented in Table 2.3.

These results give the estimated probability of someone with the relevant characteristics experiencing onset of disability, relative to someone in the reference category – in this case taken as a single man aged 16-24, with post-primary or higher education, no children, living alone, and not in work. Only where the number has asterisks after it is it statistically significant, in other words the variation is not likely to be simply attributable to the random variation to be found in any sample survey. The first such number (or “coefficient”) is 2.92 for the age category “45-54”, which means that someone aged 45-54 is 2.92 times more likely to experience onset of disability compared to a man aged 16-24 with the characteristics described above, other things being equal. Someone aged 65 or over is eight times more likely to experience onset of a disability than a 16-24 year old man with the reference characteristics.<sup>4</sup>

<sup>4</sup> Here we use one asterisk to mean statistically significant at the 10% level, and two asterisks significant at the 5% level. “Significant at the 10% level” means that we would expect the result to arise simply due to normal random variation in the sample in only 10% of cases; similarly with the 5% level that would be expected to arise in only 5% of cases.

**Table 2.3: Logistic Regression Model of Onset of Chronic Illness/Disability**

	Probability of Onset: Odds Ratio
Female	1.0571
No Education Qualifications	1.3348
Working	0.9570
Two Adults in Household	0.8362
Three or More Adults in Household	0.9594
One Child in Household	0.7289
Two or More Children in Household	1.1681
Age 25-34	2.1189
35-44	1.9182
45-54	2.9210**
55-64	5.4861**
65+	8.3649**
Year	1.0296
Mean of Onset	0.03
N	8169

Pseudo R<sup>2</sup> = 0.0545

\*\* Statistically significant at 5% level \* Statistically significant at 10% level

Reference category: male, education qualification beyond primary, not working, single adult household, no children, aged 16-24.

Apart from age, the other socio-demographic characteristics are not statistically significant in distinguishing those who experience onset – the small number of cases observed to do so reduces the likelihood of detecting such effects, but it does suggest that the apparent greater likelihood of onset for those with lower education in Table 2.5 was indeed associated with their older age profile.

The extensive research literature on health inequalities suggests that people already in poverty may be more susceptible to chronic illness/disability onset (Burchardt, 2003). When income poverty status before onset – measured by whether the individual was in a household falling below 60% of median income (see Chapter 4) – is included in the model it is also significant, with individuals living in such households 1.7 times more likely to experience onset of chronic illness or disability than others.

These results provide useful background to the analysis in subsequent chapters of what happens as onset occurs. We also want to look at what happens to employment, income etc. when a disability spell ends, and so we now turn to how that is captured in the survey and how many people are observed as “exiting” disability.

## 2.5 Disability “Exit”

As with onset, we want to compare those observed in the panel survey to “exit” disability with those “at risk” of exiting who did not do so. We define “at risk of exit” as having a chronic illness or disability for at least two years consecutively, and “exit” as following such a period of disability by at least two years not reporting a chronic illness or disability. Once again this is a more restrictive definition than could be used, since we could simply treat anyone observed as having a disability in one year and not having it the next as “exiting”, but for the same reasons as discussed in the context of onset we concentrate on this tighter measure of exit. As in the case of onset, it means that any individual can only be observed “exiting” disability once over the seven years of survey data.

**Table 2.4: Exit from Chronic Illness/Disability, Living in Ireland Survey 1995-2001**

	Total at Risk	Exit from Chronic Illness/Disability	At Risk but No Exit
Number of Persons	518	138	380
Number of Observations	1,251	138	1,113
% of Total Observations	100	11.0	89.0

We see from Table 2.4 that 138 exits are observed, out of a total of 1,251 “opportunities to exit” – occasions when someone in the sample had reported disability in the previous two years and was then observed for two more years.

Table 2.5 looks in a descriptive fashion at the characteristics of those observed as exiting disability, and shows the opposite pattern to that seen for those experiencing onset: the percentage exiting (as a proportion of all those at risk) seems to fall with age and with level of educational attainment. It also suggests women were more likely to exit than men.

**Table 2.5: Exit from Chronic Illness/Disability by Selected Characteristics**

Gender	% Experiencing Exit from Chronic Illness/Disability
Men	9.7
Women	12.4
<b>Age</b>	
15-24	20.0
25-34	20.0
35-44	12.4
45-54	13.7
55-64	8.5
65+	8.5
<b>Education</b>	
Primary/None	9.2
Secondary	13.3
Third Level	17.1

However, once again the regression analysis which estimates the effects of specific characteristics when others are held constant, presented in Table 2.6, does not find significant education effects, suggesting those in the simple cross-tabulation mostly reflected age. The results do suggest that those aged 35-44, women, those who are in work prior to exit, and those with two or more children are more likely to exit disability. (Poverty status was also tested in the statistical model, but unlike the results for disability onset did not prove significant in predicting exit.)

**Table 2.6: Logistic Regression Model of Exit from Chronic Illness/Disability**

	Probability of Exit: Odds Ratio
Female	1.5248*
No Education Qualifications	0.7977
Working	1.8329**
Two Adults in Household	1.4838
Three or More Adults in Household	1.1460
One Child in Household	1.2727
Two or More Children in Household	1.6790*
Age 25-34	0.4911
35-44	0.3745*
45-54	0.4888
55-64	0.4345
65+	0.4886
Year	0.8800
Mean of Onset	0.11
N	1251

Pseudo R<sup>2</sup> = 0.0401

\*\* Statistically significant at 5% level \* Statistically significant at 10% level.

Reference category: male, education qualification beyond primary, not working, single adult household, no children, aged 16-24.

## 2.6 Persistent Disability

As brought out in our introductory chapter, while looking at disability onset and exit is very informative it will not capture the impact on income or participation of how long a disability lasts. In defining onset and exit we have focused on individuals spending at least two years reporting disability, but there is clearly still likely to be a marked difference between someone who experiences disability for only two or three years and someone affected for a substantially longer period. To explore the impact of persistent, long-term disability we will complement our analysis of disability onset and exit by also examining those who report a chronic illness or disability throughout the period covered by the panel survey, in each year from 1995 to 2001. Table 2.7 looks at the numbers involved, and at where they fit in terms of the overall extent of reported experience of disability in the survey using a framework developed by Burchardt (2000) to categorise different types of disability experience or “trajectories”.

We see that 180 individuals in the sample reported disability in each year from 1995 to 2001, representing almost 7 per cent of all respondents. At the other extreme, just under six out of ten respondents in the sample did not report chronic illness or disability in any year between 1995 and

**Table 2.7: Persistent Chronic Illness/Disability, 1995-2001**

Chronic Illness or Disability 1995-2001	Number of Cases	%
Chronic Illness/Disability in all 7 Years	180	6.6
Chronic Illness/Disability in 6 Years	101	3.7
Chronic Illness/Disability in 4 or 5 Years, Consecutively	82	3.0
Chronic Illness/Disability in 4 or 5 Years, Not Consecutively	155	5.7
Chronic Illness/Disability in 2 or 3 Years, Consecutively	128	4.7
Chronic Illness/Disability in 2 or 3 Years, Not Consecutively	161	5.9
Chronic Illness/Disability in Just One Year	322	11.8
No Chronic Illness/Disability in Any Year	1598	58.6
Total	2,727	100

2001. This means that 41% of respondents had at least one year when they reported such an illness or disability;<sup>5</sup> those reporting disability in all 7 years account for 16% of those who reported disability at some point over the panel survey. While they represent what is in some sense an extreme in terms of duration, they allow us to assess the impact of such persistent disability on the outcomes of interest here, namely employment, income and poverty, and social participation.

The fact that we observe these individuals reporting a disability in each of the surveys does not mean that their disability “spell” lasted only 7 years. By their nature panel surveys only observe people over a specific period or observation “window”, so we will not know when some of the “spells” of disability observed started or ended – they are what is known as “censored” in the data. Someone reporting in the first survey that they have a chronic illness or disability could well have had it before the panel survey started, but we did not observe it beginning – a case of what is called “left censoring”. Similarly for those reporting an illness or disability in the last survey we do not observe when this spell finishes – a case of “right censoring”. Those who report chronic illness or disability in all seven years are both left and right censored by definition – we do not know how long their spell of disability has lasted when we first observed them, nor how much longer it will continue after we last observe them.<sup>6</sup>

Looking in a descriptive fashion at the characteristics of those experiencing disability throughout the panel, we see from Table 2.8 that persistent disability is most frequent in the older age groups and the lowest educational attainment categories.

When we analyse this more formally, the regression analysis presented in Table 2.9 suggests that those with low education and those aged 35 or over are indeed more likely than better educated and/or younger respondents to have experienced persistent disability – though surprisingly that probability is not highest at older ages. On the other hand, women, those who were in work when first observed in 1995, and those with two or more children have a reduced probability of experiencing persistent disability. (Once again we also tested poverty status in the statistical model but it was not significant in this case.)

<sup>5</sup> Gannon and Nolan (2004) reported that 30% of adults had experienced chronic illness or disability over this period, but this applied to the population of working age only.

<sup>6</sup> Those reporting the presence of a chronic illness or disability were in fact also asked in the Living in Ireland surveys about how long they had it, and responses to this question in 1995 showed an average duration of the illness/disability for these individuals at that point of 6 years.

**Table 2.8: Rates of Persistent Chronic Illness/Disability**

Gender	% Experiencing Persistent Chronic Illness/Disability
Men	7.1
Women	6.2
Age	
15-24	1.5
25-34	3.2
35-44	4.0
45-54	6.8
55-64	7.5
65+	12.8
Education	
Primary/None	11.1
Secondary	4.3
Third Level	2.4

The final point to be made about the disability onset, exit and persistence measures we have described is they are based purely on whether the respondent says that they have a longstanding illness or disability. Our previous studies have shown the value of the additional information also obtained in the surveys about whether the person felt that their illness or disability hampered them in their daily activities severely, to some extent or not at all. In a dynamic perspective, this is clearly also likely to be very important: there may be a marked difference in the impact of onset of a chronic illness that hampers the person severely versus such a disability that does not hamper them at all. We incorporate this into our analysis of disability onset, and also to some extent in our analysis of persistent disability (although this is complicated by the fact that the reported degree to which the individual is hampered changes from year to year for some of the persistently disabled). However, the disability “exits” we observe are insufficiently spread over the severity categories to allow for meaningful analysis in that context.



**Table 2.9: Logistic Regression Model of Persistent Chronic Illness/Disability**

	Probability Odds Ratio
Base Values (1995)	
Female	0.5461**
No Education Qualifications	1.6558**
Working	0.2166**
Two Adults in Household	0.6832
Three or More Adults in Household	0.7909
One Child in Household	0.7093
Two or More Children in Household	0.5675**
Age 25-34	2.8088*
35-44	4.526**
45-54	3.8917**
55-64	2.7246**
65+	3.2222**
N	19089

Pseudo R<sup>2</sup> = 0.1035

\*\* Statistically significant at 5% level \* Statistically significant at 10% level.

Reference category: male, education qualification beyond primary, not working, single adult household, no children, aged 16-24

## 2.7 Conclusions

In this chapter we have described the data on which the study relies, from the Living in Ireland surveys from 1995 to 2001, which is unique in an Irish context in following a large representative sample over time. We then outlined the analytic framework to be adopted in using these data to look at the impact of disability on key aspects of social inclusion. This involves distinguishing those observed as experiencing an “onset” of disability during this period, those experiencing an “exit” from disability, and those experiencing chronic illness and disability over the entire seven-year period of the panel survey. Subsequent chapters will be examining how employment, household income, poverty and social participation appear to be affected by these different disability experiences.

The chapter then looked at the numbers observed in the sample falling into each of these groups and their characteristics. The measure of disability “onset” to be used focuses on those who reported no chronic illness or disability for two years, followed by two years when they do report illness or disability. Their situation can be compared with those “at risk” of onset who did not actually experience it – in other words, those who reported two consecutive years without disability in the panel and were then observed for a further two years without disability. (Someone who reported disability throughout the panel is thus not “at risk” in this sense, because disability onset cannot be observed.) We observed 235 individuals in the panel experiencing “onset” defined in this way. Multivariate analysis of the characteristics associated with an increased risk of onset then showed that older people are more likely to become ill or disabled. Having been in a low-income household in the previous year was also associated with an increased probability of disability onset.

Disability “exit” was defined and measured in a similar way, as a situation where the person was

observed in the panel reporting two consecutive years with a disability followed by two years without such a disability. They can be compared with those “at risk” of exit who do not experience it – those reporting disability for two years in a row but not then reporting two disability-free years. The number of cases observed with a disability “exit” defined in this way was 138. Among all those “at risk”, women and those in work (prior to exit) seemed more likely than others to report exiting disability.

The final group to be studied is those reporting persistent illness/disability over the seven years of the panel survey. A total of 180 cases had that experience, accounting for 7% of all respondents and 16% of those who reported disability at any point over the life of the survey. Those experiencing persistent disability were seen to be disproportionately male, older and poorly educated.

We go on in the rest of the study to examine the relationship between these disability experiences and key socio-economic outcomes, starting in the next chapter with employment.

## THE DYNAMICS OF DISABILITY AND WORK

### 3.1 Introduction

Our aim in this chapter is to make use of the dynamic information in relation to disability onset, exit and persistence to deepen our understanding of the impact of disability on paid work among those of working age. Cross-sectional analysis has shown that those reporting a chronic illness or disability are much less likely to be in employment than those who say they have no such illness or disability. Gannon and Nolan (2004a) found that about 40% of those reporting a longstanding/chronic illness or disability and of working age in the Living in Ireland Survey were in employment, with the remainder mostly not active in labour force (rather than unemployed). This compared with an employment rate of close to 70% for those not reporting such an illness or disability. Other data sources such as the Census of Population and the Quarterly National Household Survey also show people with disabilities having much lower employment rates than others (see also NDA, 2005).

Very much the same picture is seen if we use the full information obtained over the life of the panel from 1995-2001 to capture the cross-sectional relationship between disability and employment. If we look over the full dataset at the labour market status of an individual when he or she was reporting the presence of chronic illness or disability, we find that 42% of those reporting illness/disability were in employment at that time, and more than half were inactive in labour force terms, with only 5% unemployed. By contrast, the employment rate was 69% for those not then reporting chronic illness or disability.

However, some key points must be kept in mind in interpreting this cross-sectional pattern for people with disabilities. Not all of that difference in employment rates may be attributable to the presence or absence of disability per se, because those who report disability may also have other characteristics that disadvantage them in the labour market – for example in terms of age, gender, education and skills, or geographic location. Interpretation is further complicated by the fact that some of those other disadvantages may themselves sometimes have been affected by the presence of a long-standing disability – for example, the level of education and skills acquired. Finally, what matters in terms of labour market outcomes is not so much whether a disability is present or not, but the extent to which a disability restricts the individual in their activities and the way it is perceived in the labour market.

One can take these complexities into account to a certain degree in carrying out analysis of cross-sectional data, notably by incorporating other relevant characteristics of individuals into statistical models aimed at explaining or predicting the likelihood that an individual will be in employment. Gannon and Nolan (2004a, b) carried out this type of analysis taking the severity as well as the presence of chronic illness or disability into account, and incorporating age, gender, educational

attainment, family composition and location into the estimated statistical model. The results showed that those reporting a longstanding/chronic illness or disability that hampers them in their daily activities or restricts the kind of work they can do have a significantly reduced probability of participating in the paid labour force. For men who report being severely hampered or restricted, that reduction is as much as 60 percentage points or more, while for women it is about 50 percentage points. For those who report being hampered or restricted “to some extent” rather than severely the effect is much smaller but still substantial. On the other hand, for those reporting a longstanding/chronic illness or disability that did not hamper or restrict them, the probability of being in the labour force was similar to others of the same age, gender and educational attainment and not reporting any such condition.

With cross-sectional data it is however difficult to be sure that one has adequately taken into account the influence of other factors and thus reliably identified the impact of disability itself. It is also hard to identify the specific channels of influence or causal mechanisms through which this impact comes about. That is why, as explained in the introductory chapter, information on an individual over time allows the analysis of the impact of disability to be deepened. The longitudinal data in the Living in Ireland survey was in fact exploited to some extent in Gannon and Nolan (2004a) to look at disability and labour force participation over time rather than in a single snap-shot. The number of years of chronic illness or disability reported over the life of the panel, and the pattern of disability trajectories, was described for adults of working age only, the base population of relevance in the context of labour force participation. Gannon and Nolan (2004a) went on to find a stark difference in labour force participation between those reporting a chronic illness or disability throughout the life of the panel and those not reporting chronic illness or disability. On average, those reporting chronic illness or disability consistently over the seven years 1995-2001 spent only 1.6 years in work over the period, whereas those who never reported such an illness or disability spent 3.5 of the years in work. Tracking individuals from before the onset of disability through the period of onset and beyond, a substantial and sustained decline in their employment rate was also seen. This was not however investigated by estimation of an appropriate statistical model to control for other factors, nor was disability exit included in the analysis.

The aim of this chapter is to build on those results to deepen the dynamic analysis of disability and labour force participation. It builds on our previous work by carrying out a more in-depth statistical investigation of the impact of disability onset and persistent disability, by incorporating disability exit, and by extending the period of analysis as data for 2001 is now available. Given its focus on labour force participation it is confined to adults of working age, whereas in other chapters all those aged 16 or over are included in the analysis. We start in Section 3.2 by comparing the labour force participation of persons reporting an onset of disability with those who were at risk but did not experience onset. We then look in Section 3.3 at participation rates for those who “exit” from a spell of chronic illness or disability. Section 3.4 focuses on the labour force situation of those who reported persistent disability over the course of the panel survey. Finally the conclusions from the analysis are summarised in Section 3.5.

## 3.2 Disability “Onset” and Employment

We begin our dynamic analysis by looking at what happens to labour force participation when the onset of disability is observed. Specifically, we look at the labour force status of those who are observed over the life of the panel to have an onset of disability using the restricted definition adopted by Jenkins and Rigg and discussed in Chapter 2 – in other words, people who are observed in the panel for two years in a row not reporting a chronic illness or disability, and then for a further two years reporting such an illness or disability. Table 3.1 shows the labour force status of such individuals in the year before the onset of illness/disability, in the year of onset, and in the year following onset of the illness/disability.

**Table 3.1: Labour Force Participation for Those With Onset of Disability, Age 16-64, Living in Ireland Surveys, 1995-2001**

	I Year Before Onset	Year of Onset Of Chronic Illness/Disability	Year After Onset
	%	%	%
Employed	61.4	46.4	42.8
Unemployed	4.8	4.2	4.8
Inactive	33.7	49.4	52.4

Number of cases = 166

We see that around 60% of those who become ill or disabled were in employment in the year before onset. Their employment rate falls to about 46% in the year of onset of the illness or disability. One year after onset the employment rate remains well below what it was before the onset of chronic illness or disability, and the inactivity rate is over half compared with one-third before onset. These results are broadly similar to those presented in Gannon and Nolan (2004a) using data from 1995 to 1999, but can be taken with more confidence because they are based on a greater number of cases in the longer panel now available.<sup>7</sup>

These figures, although still based on only a relatively small number of cases in the data, certainly suggest that onset of disability is indeed associated with a substantial decline in the employment rate. Two further points are worth noting about the level of their employment rate before and after onset. The first is that even before onset their employment rate was below the overall average, at about 60% rather than 70%. Secondly, though, their employment rate in the year after onset, at just over 40%, is as low as the overall average for all those reporting chronic illness or disability, which will include some people who have been in that situation for much longer (as well as some only reporting it for the first time). So loosely speaking, in terms of the 40%-70% contrast in employment rates between those with versus without a disability highlighted earlier, for these individuals about two-thirds of that gap seems to be reasonably attributable to the onset of disability and the fact that it has lasted at least over two waves of the panel; the remaining one-third of the gap is then attributable to “selection effects” – the pre-existing labour market disadvantages that these individuals had, in terms of education etc., before onset.

It is particularly interesting to know what distinguishes the people who leave employment following onset of a chronic illness or disability from those who do not, so we look at their profiles in terms of some key characteristics. Table 3.2 compares the profile of those who leave employment in the year of onset, those who remain employed in the year of onset but have left by the following year, and those who remained in employment throughout. We see that women and persons with low levels of educational qualifications constitute a much higher proportion of those who leave employment than of those who do not. On the other hand the groups are not markedly different in terms of age or family composition. Unfortunately the sample sizes in these different groups are not large enough to support a formal statistical analysis to see whether these suggestive differences are in fact significant in statistical terms.

<sup>7</sup> See Gannon and Nolan (2004a) Table 7.8, p. 50. individuals at that point of 6 years.

**Table 3.2: Characteristics of Those Experiencing Onset of Chronic Illness/Disability by Employment Status, Age 16-64**

	Employed in Year Before Onset, not Employed in Year of Onset	Employed in Year Before and Year Of Onset, not Employed in Year After Onset	Employed in Year Before, Of and After Onset
	%	%	%
Female	59	64	40
No Qualifications	45	54	29
Inter/Junior Cert	38	18	29
Leaving Cert	10	9	18
Third Level	7	18	25
Mean Age	45	52	46
Mean Number of Children	1.0	0.6	0.8
Mean Number of Adults	2.4	2.7	2.5

Where statistical analysis does help is in trying to identify more precisely the impact of disability onset on the probability of being in employment. For this purpose we take the sample of working age adults over the panel from 1997 to 2001 (in other words, those we can observe as “at risk of onset”), and identify all cases where (a) the person was in employment in a given year and (b) we have observed them in the sample in the following year. We then try to identify what characteristics seem to be associated with going from employment into non-employment. A particular sample individual may then feature in this analysis a number of times, depending on how often he or she is observed to be in employment and we also have information about the subsequent year. This gives us a total of about 5,000 observations for analysis. (Only employment status from 1997 onwards is used here because we are still measuring disability onset as occurring only for those who report no chronic illness or disability for two successive years, and the earliest dates this could be in the panel are 1995 and 1996.)

On this basis we estimate what is called a probit model to see how much disability onset seems to affect the probability of leaving work having been employed in the previous year. This type of model calculates the impact of different characteristics on the probability of falling into a particular category. It seeks to separate out for example the different impacts of disability onset, age, gender etc. on the probability of being in work. This allows us look at the contribution which disability onset on its own makes, having “controlled” for other factors. It calculates probabilities relative to what is called an omitted reference category, and the results are in Table 3.3 in terms of the implied marginal effects of each variable compared with someone who did not experience onset, is a man, is in the omitted age category of under 25, and so on.

We take a step by step approach to analysing the effects of different characteristics on the probability of someone stopping work after the onset of a disability. The first column of Table 3.3 looks at the influence of the onset of disability and the year (to reflect general economic conditions at the time). In the second column, age and gender are added to the possible explanatory factors. In the third column, household circumstances are added, and finally education is added in the fourth column. This approach allows us to isolate what changes in employment status can be attributed to disability onset per se, versus other personal or household characteristics.

The first column of the table shows that if the only explanatory variable included in the model is disability onset and the year of the survey, then individuals with an onset are 23 percentage points more likely to stop working than the omitted category, who were at risk but did not experience onset. About 5% of that reference category stopped working from one year to the next, so this is the baseline figure against which the effects of an onset of chronic illness or disability are assessed. This means that about 28 per cent of people with an onset will stop work compared to only 5 per cent of those without an onset.

**Table 3.3: Onset of Chronic Illness/Disability and Probability of Stopping Work, Age 16-64**

	Onset of Chronic Illness/Disability Only	+ Personal Characteristics	+ Household Characteristics	+ Education
Onset of Chronic Illness/Disability	0.2314**	0.2082**	0.2043**	0.1939**
Female		0.0650**	0.0649**	0.0673**
Age 25-34		-0.0233**	-0.0224**	-0.0247**
35-44		-0.0292**	-0.0351**	-0.0391**
45-54		-0.0291**	-0.0309**	-0.0369**
55-64		0.0010	0.0081	-0.0057
Two Adults in Household			-0.0040	-0.0012
Three or More Adults in Household			0.0060	0.0059
One Child in Household			0.0088	0.0078
Two or More Children in Household			0.0309**	0.0296**
No Education Qualifications				0.0357**
Year	-0.0032	-0.0034	-0.0029	-0.0024
R <sup>2</sup>	0.0261	0.0769	0.0843	0.0919
N	4802	4802	4802	4802

\*\* Statistically significant at 5% level \* Statistically significant at 10% level.

Reference category: no onset, male, aged 16-24, single adult household, no children, post-primary education qualification.

When we control for age and gender in the second column, we see that women and older workers are more likely to stop working, and when this is taken into account the estimated effect of disability onset falls slightly to 20 percentage points. In the third column we incorporate some household characteristics as explanatory variables, and see that individuals in households with two or more children are more likely to stop working, but the estimated effect of disability is not affected. In the final column we introduce having no educational qualifications and this does increase the individual's probability of stopping work, but once again this makes no difference to the impact of disability onset. So the results of formal statistical analysis confirm the broad picture conveyed by the comparison of employment rates before and after disability onset, that a reduction of about 20 percentage points is associated with onset ~~per se~~.

As noted in Chapter 2, it is not only the presence but also the severity of a chronic illness or disability that may be critical in determining its impact. We can examine this by replacing the variable capturing disability onset with three variables, for onset of a chronic illness or disability that hampers the person in their daily activities severely, to some extent, or not at all (as reported by the individual in the year of onset). The results show that those reporting onset but not hampered in daily activities have a lower probability of working by 10 percentage points, compared to those without an onset of chronic illness or disability. For those who are hampered severely or to some extent by the chronic illness or disability, the percentage predicted to be working is much lower; the predicted impact of onset of a hampering disability is now a reduction of the order of 30 percentage points, controlling for other factors.

As well as the individual's own characteristics and their household composition, it might well be that the economic circumstances in which they find themselves affect whether they stay in employment having experienced onset of disability. In particular, being in a disadvantaged household before onset may affect the relationship between disability onset and employment. We tested for such an effect by including as an additional explanatory variable whether in the year before onset the person was in a household falling below 60% of median income, which as we discuss in the next chapter is a commonly-used poverty threshold. The results show that coming from such a household does increase the likelihood that the person will stop working after disability onset, by about 7 percentage points. (Inclusion of this variable leaves the estimated coefficient on the onset variable itself unchanged).

If the likelihood of being in work declines substantially when disability onset occurs, it is also clearly of interest to look at what happens when someone who has been reporting a chronic illness or disability stops doing so – does their employment rate go back up? In the next section we turn to exit from disability and the probability of being in work.

### 3.3 Disability “Exit” and Employment

We are now interested in persons for whom we observe the ending of a spell of chronic illness or disability, and as explained earlier, focus for this purpose on individuals who reported a chronic illness or disability for two years and then reported no such illness or disability for the next two years. We found there were 72 such cases in the sample aged under 65, and Table 3.4 shows the employment rate for these people in the year before disability “exit”, the year of exit, and the following year.

Exactly 50 per cent were employed when they were reporting the chronic illness or disability. This rose to 58 per cent in the year they stopped reporting such an illness or disability, and was slightly lower in the next year. The numbers involved are however small.

**Table 3.4: Labour Force Participation for those Exiting from Chronic Illness/Disability, Age 16-64**

	Year Before Exit	Year of Exit from Chronic Illness/Disability	Year After Exit
	%	%	%
Employed	50.0	58.3	56.2
Unemployed	7.3	5.2	6.3
Inactive	42.7	36.5	37.5

Number of cases = 72



We then apply a statistical model of the probability of being in work for the entire sample of individuals who had a chronic illness or disability for the previous two years. The results in Table 3.5 show that those who exit disability are 10 percentage points more likely to be in work than those at risk who do not exit. When we enter additional explanatory variables to control for other factors such as age, gender, and household size and composition, the effect of exiting disability falls but remains statistically significant. However, when whether the person has post-primary educational qualifications is also entered, the effect of exiting disability is no longer significant. This implies that those exiting disability have other characteristics – notably educational attainment levels – that make it easier for them to find or stay in work than those who do not exit. (We would also like to have distinguished the impact of exit from a hampering versus non-hampering disability, but the number of cases available and their distribution across the severity categories did not allow this to be done reliably.)

**Table 3.5: Exit from Chronic Illness/Disability and Probability of Being in Work, Aged 16-64**

	Exit from Chronic Illness/Disability Only	+ Personal Characteristics	+ Household Characteristics	+ Education
Exit from Chronic Illness/Disability	0.1039**	0.0723**	0.0693*	0.0574
Female		-0.0372	-0.0263	-0.0371
Age 25-34		-0.0819**	-0.0778**	-0.0688**
35-44		-0.1093**	-0.1045**	-0.0932**
45-54		-0.1871**	-0.1991**	-0.1611**
55-64		-0.3434**	-0.3654**	-0.3162**
Two Adults in Household			-0.0218	-0.0295
Three or More Adults in Household			0.0282	0.0154
One Child in Household			-0.0485*	-0.0471*
Two or More Children in Household			0.0217	0.0214
No Education Qualifications				-0.0676**
Year	-0.0247**	-0.0097	-0.0087	-0.0092
Pseudo R <sup>2</sup>	0.0273	0.1950	0.2276	0.2510
N	488	488	488	488

\*\* Statistically significant at 5% level \* Statistically significant at 10% level.

Reference category: no exit, male, aged 16-24, single adult household, no children, post-primary education qualification.

So far in this chapter we have used the panel data to look at what happens to employment when transitions in disability status are observed, but the panel also allows us to follow those who have a chronic illness or disability throughout the period, and their labour market participation is the subject of the next section.

### 3.4 Persistent Disability and Employment

Over the life of the panel survey, 124 individuals of working age reported a chronic illness or disability throughout. As we saw in Chapter 2, these individuals are more likely than those with shorter or no experience of disability to be male, older, and have low education levels. We can first look at their labour force status over the seven-year period from 1995 to 2001, and contrast that with those who experienced no disability over the period. Table 3.6 shows that over half of those reporting chronic illness or disability throughout were not working in any of the survey waves. This compares with 18% for those not reporting any chronic illness or disability throughout the panel. Only 13 per cent of those reporting chronic illness or disability in all years were at work in all the surveys, compared with about 50% of those with no experience of disability.

**Table 3.6: Persistent Chronic Illness/Disability and Number of Years in Work, Age 16-64**

Number of Years in Work	Persistent Chronic Illness/Disability %	No Chronic Illness or Disability during Period %
0	56.4	17.6
1	6.4	3.7
2	5.6	4.3
3	3.2	3.8
4	5.6	3.9
5	6.4	6.9
6	3.2	8.4
7	12.9	51.3
Number of Cases	124	1480

These differences in the number of years spent in employment could be partly due to other characteristics such as gender, age or education, so we now estimate formal statistical models to try to disentangle these effects. We take all working-age adults in the sample, and look at the probability that they were in employment in a given wave of the panel – so the number of observations is again the total number of adults by the number of waves we observe them. In Table 3.7 we estimate the statistical model to look at the effect of persistent disability on the probability of being at work. The point of comparison is with those reporting no disability throughout the panel, so this is the omitted reference category.<sup>8</sup> Each adult is included in the regression each time they are observed in the panel. We look first at the results when only persistent disability is included, and then at what happens when other individual and household characteristics are added to the model as explanatory factors.

<sup>8</sup> Variables to control for other trajectories of disability were also included in the estimated model, but are not shown in the tables since the focus is on persistent disability.

**Table 3.7: Persistent Chronic Illness/Disability and Probability of Being in Work, Age 16-64**

	Persistent Chronic Illness/Disability	+ Personal Characteristics	+ Household Characteristics	+ Education
Persistent Chronic Illness/Disability	-0.4190**	-0.4695**	-0.4387**	-0.4138**
Female		-0.3547**	-0.3715**	-0.3808**
Age 25-34		0.0984**	0.0987**	0.1181**
35-44		0.0586**	0.0789**	0.1052**
44-54		-0.0165	-0.0121	0.0348
55-64		-0.2433**	-0.2712**	-0.2008**
Two Adults in Household			-0.0183	-0.0301
Three or More Adults in Household			-0.0546	-0.0558
One Child in Household			-0.0013	0.0025
Two or More Children in Household			-0.0573**	-0.0523**
Poor in Previous Year			-0.3858**	-0.3561**
No Education Qualifications				-0.1403**
Year	0.0213**	0.0279**	0.0281**	0.0260**
N	15332	15332	15321	15321
R <sup>2</sup>	0.0422	0.1780	0.2366	0.2460

\*\* Statistically significant at 5% level \* Statistically significant at 10% level.  
Reference category: no disability, male, aged 16-24, single adult household, no children, post-primary education qualification.

We see in the first column that persistent disability has a marked impact on the probability of being in work, reducing it by 42 percentage points compared with the reference category, of whom 70% were in employment in a given wave. This means that for those who always reported a disability, the predicted employment rate is only 28% (that is, 70%-42%). Controlling for age and gender (in column 2) actually increases the estimated effect of persistent disability, but when household characteristics and the individual's education levels are included (in columns 3 and 4) that effect falls back again to about the level seen without any controls. So the impact of persistent disability throughout the panel survey on the likelihood of being in work is very substantial indeed.<sup>9</sup>

Capturing the severity of persistent disability for the persistently disabled using the reported extent to which the individual was hampered was not straightforward, since those reports proved quite variable from one year to the next. However, when the degree to which the person was hampered in a majority of the seven years or in the final year was included in the model it proved highly significant, with those hampered severely least likely to be in employment and a lower but still marked effect for those hampered to some extent.

<sup>9</sup> Note that in looking at the impact of disability Gannon and Nolan (2004a) looked at the employment rate in 2000 of those who had experienced persistent disability, whereas here we have incorporated employment over the entire period from 1995 to 2001.

### 3.5 Conclusions

When observed at a point in time, about 40% of those reporting a longstanding/chronic illness or disability and of working age in the Living in Ireland Survey were in employment and 5% were unemployed, with the remainder not active in labour force; by contrast, almost 70% of those not reporting such a chronic illness or disability were in employment. This chapter has sought to deepen our understanding of these differences by looking at the employment status of people with a chronic illness or disability over time. It builds on our previous work by carrying out a more in-depth statistical investigation of the impact of disability onset and persistent disability, by incorporating disability exit, and by extending the period of analysis as more data is now available.

We first examined what happens to employment when we see an individual in the panel survey moving from not reporting a chronic illness or disability to reporting such an illness or disability – what we defined in earlier chapters as disability “onset”. We found that only about 60% of those we see experiencing onset were employed before that happened – these individuals were already more prone to unemployment and inactivity than others before onset. When disability onset then occurs, the employment rate for these individuals fell from 60% to 46%, and in the year after onset this fell a little more to 43%.

Statistical analysis of these individuals then showed that, having taken a range of personal and household characteristics into account, the onset of disability was associated with a decline of about 20 percentage points in the probability of being active in the labour force. However, where the chronic illness or disability does not hamper the person in their daily activities it was seen to have an impact of about 10% points, bringing down the estimated overall effect of onset. This means that where the chronic illness or disability does hamper the person in their daily activities, the estimated reduction in the probability of being in employment is closer to 30 percentage points. Those already in low-income households were more likely to move from being active to inactive, as were women, those with two or more children, and those with low levels of education.

Again exploiting the dynamic nature of the data, we then focused on those observed in the panel “exiting” chronic illness or disability. We found that for someone who is observed for at least two years reporting a chronic illness or disability and then two years not reporting such an illness or disability their employment rate rose on “exit”, from about 50% to 58%. Statistical analysis of these individuals suggested that exiting disability was associated with an increase of about 7 percentage points in the probability of being in employment, having controlled for personal and household characteristics, but when the person’s level of education was also included in the model this effect became statistically insignificant. We were not able to distinguish the impact of hampering versus non-hampering disability in the case of exits.

Finally, we saw that persistent disability – reporting chronic illness or disability throughout the seven years of the panel survey – was associated with a greatly reduced likelihood of being in employment. Only 13% of these individuals were in employment throughout the period. When a range of personal and household characteristics was taken into account, such persistent disability was shown by statistical analysis to be associated with a 42 percentage point reduction in the likelihood of being in employment. The scale of the effect was seen to be associated with the extent to which the individual reported being hampered by the disability.

These findings deepen our knowledge and understanding of the impact of disability on employment. They complement the evidence from previous research about the impact of persistent disability in the probability of being in work. Furthermore, they quantify the impact of disability onset on that probability, having taken other characteristics of the individual and their household into account. They show that not only persistent disability but also disability onset are associated with a very substantial reduction in the likelihood that someone will be in employment. This poses a major challenge for policy in relation to tackling the many-faceted barriers to obtaining and maintaining employment that face people with disabilities.

# THE DYNAMICS OF DISABILITY, HOUSEHOLD INCOME AND POVERTY

## 4.1 Introduction

In the previous chapter we saw that onset of disability significantly reduces the probability of staying in work, and that people experiencing persistent disability spend much less time in work and are less likely to be working than others. One would expect this to have consequences for their incomes from work, and for their overall household incomes even taking replacement of lost earnings by social welfare into account. This in turn would affect their poverty status, increasing the probability of entering poverty or remaining in that situation. In this chapter we explore these potential consequences of disability from a dynamic perspective, once again exploiting the panel nature of the Living in Ireland survey. We now include in our analysis not only those of working age but all adults in the sample.

In analysing household income, we focus on income after direct tax and social insurance contributions, in other words disposable income. To take differences in household size and composition into account, we adjust the income of the household for the number of adults and children depending on it by the use of what are known as equivalence scale. The particular scale we employ here assigns a value of 1 to the first adult in the household, 0.66 to each other adult, and 0.33 to each child: so a couple with two children “need” an income 2.32 times that of a single-adult household to reach the same standard of living. The income of the household is then scaled by the appropriate weight for the household's composition, to convert it to the equivalent for a single adult. It is assumed that all individuals in the household enjoy the living standard attributed to the household in this way. In analysing poverty we also rely on the income of the household, looking at whether it falls below relative income poverty thresholds – described in more detail at the appropriate point below.

To put our dynamic analysis into context, it is worth looking first at the cross-sectional gap in average household income between those currently reporting versus not reporting chronic illness or disability, over the whole period covered by the panel survey. Average income for those reporting chronic illness or disability turns out to be only 80% of the corresponding figure for those not reporting such a disability, and there is an even larger gap between median incomes<sup>10</sup> for the two groups. To see what light dynamic analysis can throw on this we first investigate household income for those experiencing onset of

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<sup>10</sup> The median is the value where half fall above and half below.

disability, exit from disability, and chronic illness or disability throughout the panel, in Sections 4.2-4.4 respectively. Section 4.5 focuses, for each of these different experiences of disability, on whether the household falls below conventional income poverty lines. Conclusions are summarised in Section 4.6.

## 4.2 Disability “Onset” and Household Income

We begin by exploring the relationship between disability onset and household income, using the measure of onset described in previous chapters and the detailed information about income obtained in the surveys. Income from various sources – employment, self-employment, rent interest and dividends, private pensions and social welfare pensions of various sorts – received by each member of the household is sought, with the period covered being the most recent pay period – usually last week or month – for most income sources.<sup>11</sup> Weekly household income after income tax and employee social insurance contributions is then calculated and is the measure used.

Table 4.1 presents the average weekly household income of those reporting the onset of a chronic illness or disability in the year before onset, at the time of onset, and one year after onset (when the person still is reporting disability, since we are using the two-year onset definition). Incomes reported in earlier years of the panel are not directly comparable in purchasing power terms with those reported in later years because prices had increased in the meantime, so all monetary values have been deflated to 1995 values. We have also converted to euro amounts for convenience, though the figures reported in the surveys were of course in IR£. We see that mean weekly net household equivalised income fell by 5% in the year of onset, but increases in the year after onset so much that it is actually higher than before onset.

**Table 4.1: Mean Equivalised Household Weekly Net Income and Onset of Chronic Illness/Disability, Age 16+, Living in Ireland Surveys**

	Year Before Onset	Year of Onset of Chronic Illness/Disability	Year After Onset
Mean Equivalised Household Income (€)	192.72	183.12	201.25
Number of Cases = 234			

Note: Income at constant 1995 values

We now employ more formal statistical methods to assess the relationship between disability onset and household income, including in the analysis not just those who experienced onset but also those who were “at risk of onset” but did not experience it. These represent a particularly valuable point of comparison for our onset group, because the actual change in income over time for the latter could be affected by factors other than disability (including trends in the economy), we cannot simply attribute it to disability onset. Since those other factors would also be expected to affect the comparison group, including them should allow us to distinguish more accurately the impact of onset *per se*.

Table 4.2 shows the results from estimating a probit model explaining or predicting household income among those at risk of disability onset, first simply in terms of whether disability onset actually occurs, and then adding in the range of socio-economic characteristics employed in previous chapters. We see that when no other variables are included, disability onset is a significant predictor of a decline in weekly household income – that is, comparing weekly income in the survey when a chronic illness is first

<sup>11</sup> For self-employment income, income over the previous year is generally sought in the survey and the weekly average calculated, since income from this source can vary a great deal from week to week.

reported with weekly income at the time of the previous survey. When individual and household characteristics are included the estimated effect of onset on income is reduced by about one-third but is still highly significant. In scale, it means that predicted household income in the year of onset is about 15% lower than it would otherwise be, taking the characteristics of the individual and his or her household into

**Table 4.2: Onset of Chronic Illness/Disability and Household Income**

	Chronic Illness or Disability Only	+ Personal Characteristics	+ Household Characteristics	+ Education
Onset of Chronic Illness/Disability	-0.2383**	-0.2007**	-0.1857**	-0.1493**
Female		-0.0460**	-0.0324	-0.0453**
Age 25-34		0.0754**	0.1113**	0.1479**
35-44		-0.0375	0.0921**	0.1562**
45-54		0.0223	0.0684*	0.1829**
55-64		0.0102	-0.0635*	0.1175**
65+		-0.2452**	-0.3302**	-0.0854**
Two Adults in Household			0.2556**	0.2105**
Three or More Adults in Household			0.2380**	0.2147**
One Child in Household			-0.1769**	-0.1657**
Two or More Children in Household			-0.3319**	-0.3226**
No Education Beyond Primary				-0.3781**
Year	0.0582**	0.0614**	0.0617**	0.0505**
Constant	4.724	4.7552	4.665**	4.7436**
R <sup>2</sup>	0.0191	0.0513	0.1046	0.1846
N	8159	8159	8159	8159

\*\* Statistically significant at 5% level \* Statistically significant at 10% level.

Reference category: no onset, male, aged 16-24, single adult household, no children, post-primary education qualification.

account.

Once again it is useful to distinguish amongst those experiencing onset by the severity of the disability they report. These results (not shown in the table) suggest that onset of a severely hampering disability has a much more substantial impact than one that is hampering “to some extent”, but that the latter is still associated with a decline in household income, whereas onset of a non-hampering disability is not accompanied by such a decline compared with those who do not experience onset. Those experiencing onset of a disability that hampers them to some extent face a predicted reduction of about 15% in income compared with those with no onset, whereas for those severely hampered the predicted scale of the reduction is about twice that size.

Household income could be lower for those experiencing disability onset for a variety of reasons. First and most obviously, relating back to Chapter 3, some of those affected will move from employment to non-employment. Secondly, though, even when we focus on those experiencing onset who remain in employment, their average weekly earnings decline by over one-third with onset. This seems to be mostly due to a decline in hours worked, though there is also some decline in their average hourly

earnings. The numbers affected by the latter are too small to bear more intensive investigation.

### 4.3 Disability “Exit” and Household Income

We now turn to the relationship between disability exit and household income, once again using the two-year definition of exit described in earlier chapters. For those reporting such an exit, Table 4.3 shows average equivalised weekly disposable household income in the year before exit, the year of exit, and one year after exit. We see that mean weekly net household equivalised income goes up by about 8% in the year of exit, rising by a further 3% in the year after exit.

**Table 4.3: Mean Equivalised Household Weekly Net Income and Exit from Chronic Illness/Disability**

	Year before Exit	Year of Exit from Chronic Illness/Disability	Year after Exit
Mean equivalised household income (€)	187.24	202.44	208.90
Number of cases = 138			

**Table 4.4: Exit from Chronic Illness/Disability and Household Income**

	Exit from Chronic Illness/Disability Only	+ Personal Characteristics	+ Household Characteristics	+ Education
Exit from Chronic Illness/Disability	0.1516**	0.1287**	0.1271**	0.1060**
Female		0.0705	0.1141**	0.0855**
Age 25-34		-0.3490**	-0.1632	-0.0605
35-44		-0.3223**	-0.0906	0.0135
45-54		-0.3519**	-0.2561**	-0.0410
55-64		-0.4258**	-0.4034**	-0.1494
65+		-0.4394**	-0.3663**	-0.0861
Two Adults in Household				0.2404**
Three or More Adults in Household				0.4692**
One Child in Household				-0.1931**
Two or More Children in Household				-0.2833**
No Education Qualifications				-0.3587**
Year	0.0432**	0.0476	0.0477**	0.0486**
Constant	4.515**	4.8511**	4.526**	4.536**
Pseudo R <sup>2</sup>	0.0169	0.0381	0.1446	0.2425
N	1250	1250	1250	1250

\*\* Statistically significant at 5% level \* Statistically significant at 10% level.

Reference category: no exit, male, aged 16-24, single adult household, no children, post-primary education qualification.



We then estimate the same statistical model as employed in the previous section to explain household income among all those who were at risk of exit, that is everyone observed with two consecutive years of disability and followed for two more years in the survey. The results presented in Table 4.4 show first that disability exit is indeed statistically significant in predicting an increase in household income, before any other variables are taken into account. When personal and household characteristics, including education level, are taken into account the size of this estimated “exit” effect is reduced but remains highly significant.

The size of these estimated effects suggests that, having controlled for other features of the individual and his or her household, exit from disability is predicted to be associated with an increase of about 10% in equivalised household income.

## 4.4 Persistent Disability and Household Income

As well as experiencing onset of or exit from chronic illness or disability, having a chronic illness or disability throughout the panel might well have a substantial impact on income. First, Table 4.5 shows that mean equivalised household income for individuals who have a disability throughout the panel is less than 75% of the mean for those not reporting a disability at any point.

**Table 4.5: Mean Equivalised Household Weekly Net Income and Persistent Chronic Illness/Disability**

	Persistent Chronic Illness/Disability	No Chronic Illness/Disability Experience Over Period
Mean Equivalised Household Income (€)	166.83	229.39
Number of Cases with Persistent Chronic Illness/Disability = 180		

Mean income also differs across individuals experiencing persistent disability, as Table 4.6 shows. Women with persistent disability are in households with substantially higher income than men, the middle age groups experiencing persistent disability have somewhat lower incomes, and in particular mean income varies very substantially with the individual's level of education.

**Table 4.6: Mean Equivalised Household Net Weekly Income for Those Reporting Persistent Chronic Illness/Disability**

	€
<b>Gender</b>	
Female	186.66
Male	148.61
<b>Age</b>	
25-34	175.10
35-44	165.09
45-54	155.24
55-54	169.49
65+	170.32
<b>Education</b>	
No Qualifications	139.82
Secondary	194.00
Third Level	333.96

We now apply our statistical model explaining household income, comparing those experiencing persistent disability with those who reported no disability. The results presented in Table 4.7 show first that persistent disability is statistically significant in predicting lower household income than those with no disability. When personal and household characteristics, including education level, are taken into account the size of the estimated effect of persistent disability is reduced by 40% but remains highly significant. The predicted reduction in income associated with persistent disability is close to 20%.

**Table 4.7: Persistent Chronic Illness/Disability and Household Income**

	Base	+ Personal Characteristics	+ Household Characteristics	+ Education
Persistent Chronic Illness/Disability	-0.3198**	-0.2683**	-0.2630**	-0.1863**
Female		-0.03741**	-0.0181	-0.0338**
Age 25-34		0.0907**	0.1446**	0.1861**
35-44		0.0001	0.1401**	0.2035**
44-54		0.0554*	0.0945**	0.2142**
55-64		0.0202	-0.0546*	0.1296**
65+		-0.1531**	-0.2184**	0.0143
Two Adults in Household			0.2509**	0.2097**
Three or More Adults in Household			0.2792**	0.2612**
One Child in Household			-0.1855**	-0.1708**
Two or More Children in Household			-0.3311**	-0.3141**
No Education Qualifications				-0.3712**
Year	0.0599	0.0624**	0.0593**	0.0542**
N	19061	19061	19061	4.6659
R <sup>2</sup>	0.0783	0.0980	0.1519	0.2286

\*\* Statistically significant at 5% level \* Statistically significant at 10% level.  
Reference category: no disability, male, aged 16-24, single adult household, no children, post-primary education qualification.

## 4.5 Disability Onset and Poverty

Having looked at the impact of disability on household income, we now analyse the implications for poverty, to the extent that this is captured by income. In measuring poverty for this purpose we focus on whether the income of the household falls below 60% of median income, where incomes are once again adjusted to take the greater needs of larger households into account by the use of equivalence scales. As discussed at length in previous studies, including Gannon and Nolan (2005), no one measure reliably allows one to identify those who would generally be considered as “poor”, but those below such an income threshold are certainly at enhanced risk of poverty. Indeed, falling below such an income threshold is taken in the EU's official set of indicators for social inclusion as indicating the person is “at risk of poverty”, and it is in that light that we concentrate on it here. To put the dynamic results into context, it is worth noting that the cross-sectional relative income poverty rate for those currently

reporting disability, averaged over the whole period, is 30%, almost twice the corresponding figure for those not currently reporting disability which is 16%.<sup>12</sup>

Taking a dynamic perspective and focusing first on those experiencing onset, Table 4.8 looks at how poverty risk changes with the onset of chronic illness or disability. We see that in the year of onset poverty risk increases by five percentage points, and increases slightly again the year after onset to one in three.

**Table 4.8: Poverty Risk and Onset of Chronic Illness/Disability, Age 16+**

	Year Before Onset	Year of Onset of Chronic Illness/Disability	Year After Onset
	%	%	%
Poverty Risk Rate	24.4	30.6	32.7
Number of Cases = 235			

The number of individuals going from above to below the income threshold on onset is small (only 31 cases), but their household income falls very sharply, from over €150 on average before onset to €95 per week on onset, just below the 60% of median threshold. Some of this group actually “escape” above the threshold in the year after onset, but others fall below in the year after onset having remained above on onset, so the overall percentage below the threshold remains unchanged. What seems to happen is that income from employment declines sharply for some households on onset but in the next year recovers and with more income from social welfare brings them back above the threshold. For other households affected by onset, however, income from work does not decline much in the first year but is much lower in the subsequent year, bringing them below the threshold. So there are varying experiences, but disability onset is clearly associated with an increase in the “at risk of poverty” measure.

To probe this we once again estimate a probit model, now seeking to predict the probability of being in a household with income below the 60% of median threshold. The results presented in Table 4.9 suggest that without taking any other factors into account onset is associated with an increase of over 10 percentage points in the probability of being below the income threshold – a very substantial increase. However, the personal and household characteristics of those affected clearly play a role in increasing this risk. When they are taken into account, the predicted impact of disability onset per se falls to 7 percentage points. In addition, it is interesting to see the extent to which this increase in poverty risk is driven simply by lower employment rather than other factors. We test this by including an additional explanatory variable capturing whether the person is in work. The results in the final column show that this is highly significant, and when it is included there is no further significant effect of disability onset.

## 4.6 Disability Exit and Poverty

Turning to the impact of exiting disability on household poverty, Table 4.10 shows that among those observed exiting disability the income poverty rate actually increases in the year after exit, and again in the next year. As a result, it is 10 percentage points higher a year after exit than it was before exit. Since disability exit itself would be expected to generally increase income and reduce poverty risk, clearly other factors were affecting these households over the years in question. This highlights the importance of a more sophisticated statistical analysis, comparing these people with a “control group” who were at risk of exit but did not experience it.

<sup>12</sup> Figures presented in Gannon and Nolan (2005) Chapter 5 show that the cross-sectional gap in the final year, 2001, was even wider.

**Table 4.9: Onset of Chronic Illness/Disability and Probability of Poverty**

	Onset of Chronic Illness/ Disability	+ Personal Characteristics	+ Household Characteristics	+ Education	+ Work
Onset of Chronic Illness/Disability	0.1088**	0.0871**	0.0825**	0.0716**	0.0333
Female		0.0269**	0.0136	0.0237**	-0.0573**
Age	25-34	0.0384*	-0.0459**	-0.0705**	-0.0464**
	35-44	0.0716**	-0.0475**	-0.0815**	-0.0511**
	45-54	0.0587**	0.0167	-0.0537**	-0.0396**
	55-64	0.1129**	0.1155**	-0.0043	-0.0312
	65+	0.2194**	0.1538**	0.0021	-0.0775**
Two Adults in Household			-0.1798**	0.0869**	-0.1571**
Three or More Adults in Household			-0.2748**	0.1395**	-0.2558**
One Child in Household			0.0953**	-0.1597**	0.0903**
Two or More Children in Household			0.1471**	-0.2650**	0.1307**
No Education Qualifications				0.1882**	0.1395**
Work					-0.2586**
Year	0.0115**	0.0078**	0.0088**	0.0120**	0.0156
R <sup>2</sup>	0.0045	0.0285	0.0893	0.1321	0.2176
N	19077	19077	19077	19077	19077

\*\* Statistically significant at 5% level \* Statistically significant at 10% level.

Reference category: no onset, male, aged 16-24, single adult household, no children, post-primary education qualification, not in work.

**Table 4.10: Poverty Risk and Exit from Chronic Illness or Disability, Age 16+**

	Year Before Exit	Year of Exit from chronic Illness/disability	Year After Exit
	%	%	%
Poverty Risk Rate	22.5	26.1	31.9
Number of Cases = 138			

The estimated model presented in Table 4.11 suggests first that disability exit per se was associated with a decline in poverty risk rather than an increase. The poverty rate for all those “at risk” of disability exit was trending sharply upwards over the period (as reflected in the “year” variable included in the model); those who actually exited then had a lower predicted rate than those who did not. This upward trend, seen in a sharp increase in cross-sectional income poverty for those reporting disability as documented in Gannon and Nolan (2005),<sup>13</sup> is likely to have reflected the very rapid increase in household disposable income and thus the relative income threshold. This was in excess of increases in social welfare support, and would have impacted particularly on those with a disability given the high rate of welfare dependence among that group.

However, we see from the rest of Table 4.11 that when other characteristics are added to the explanatory model the size of the estimated effect of exit declines; when education level is added, although still negative it becomes statistically insignificant. In other words, the apparent rise in poverty for those exiting a spell of disability can be attributed to factors other than that exit, such as personal and household characteristics.

**Table 4.11: Exit from Chronic Illness/Disability and Poverty Risk**

	Chronic Illness/ Disability Exit Only	+ Personal Characteristics	+ Household Characteristics	+ Education
Exit from Chronic Illness/Disability	-0.0869*	-0.0743	-0.0784*	-0.0664
Female		-0.0228	-0.0626	-0.0408
Age 25-34		0.0628	-0.1268	-0.1983*
35-44		0.0650	-0.1816*	-0.2458**
45-54		0.0694	-0.0425	-0.1871*
55-64		0.1942*	0.1309	-0.0601
65+		0.1416	-0.0177	-0.2170**
Two Adults in Household			-0.2966**	-0.2895**
Three or More Adults in Household			-0.5108**	-0.5221**
One Child in Household			0.2354**	0.2225**
Two or More Children in Household			0.2340**	0.2229**
No Education Qualifications				0.2326**
Year	0.0597**	0.0536**	0.0622**	0.0636**
Pseudo R <sup>2</sup>	0.0181	0.0262	0.1524	0.1899
N	1250	1250	1250	1250

\*\* Statistically significant at 5% level \* Statistically significant at 10% level.  
Reference category: no exit, male, aged 16-24, single adult household,  
no children, post-primary education qualification, not in work.

<sup>13</sup> See Gannon and Nolan (2005) Table 5.7, p. 56.

## 4.7 Persistent Disability and Poverty

Turning to those reporting persistent disability throughout the panel, Table 4.12 shows that their relative income poverty rate of 35% on average over the period was very high, more than twice the figure for those not experiencing disability at all during the panel.

**Table 4.12: Poverty Risk and Persistent Chronic Illness/Disability, Age 16+**

	Persistent Chronic Illness/Disability %	No Experience of Chronic Illness/Disability %
Poverty Risk Rate	35.2	14.5
Number of Cases with Persistent Chronic Illness/Disability = 180		

**Table 4.13: Persistent Chronic Illness/Disability and Risk of Poverty**

	Chronic Illness/ Disability Only	+ Personal Characteristics	+ Household Characteristics	+ Education	+ Work
Persistent Chronic Illness/Disability	0.2234**	0.1808**	0.1669**	0.1237**	0.0394**
Female		0.0278**	0.0143	0.0237**	-0.0558**
Age	25-34	0.0313	-0.0518**	-0.0733**	-0.0486**
	35-44	0.0607**	-0.0559**	-0.0851**	-0.0537**
	45-54	0.0383*	-0.0007	-0.0614**	-0.0435**
	55-64	0.0802**	-0.0844**	-0.0166	-0.0361*
	65+		0.1649**	0.1058**	-0.0831**
Two Adults in Household			-0.1724**	-0.1549**	-0.1552**
Three or More Adults in Household			-0.2685**	-0.2607**	-0.2542**
One Child in Household			0.0953**	0.0874**	0.0901**
Two or More Children in Household			0.1487**	0.1409**	0.1314**
No Education Qualifications				0.1774**	0.1354**
Working					-0.2537**
Year	0.0113**	0.0085**	0.0096**	0.0123**	0.0156**
R <sup>2</sup>	0.0240	0.0413	0.1006	0.1383	0.2187
N	19077	19077	19077	19077	19077

\*\* Statistically significant at 5% level \* Statistically significant at 10% level.  
Reference category: no disability, male, aged 16-24, single adult household, no children, post-primary education qualification, not in work.

Since this could in part be attributable to other factors, we once again estimate a statistical model incorporating age, gender, education and work, and household composition directly into the analysis. The results presented in Table 4.13 show that those reporting chronic illness or disability throughout the panel are much more likely to be below the income poverty threshold than those in the reference category, who experienced no disability over the panel period. The relative income poverty rate for the latter was 14%, while the estimated coefficient for persistent disability suggests a 22 percentage point increase – so the predicted at risk rate for those reporting persistent disability is 36%.

The next column shows that when we control for age and gender, the magnitude of the estimated effect of persistent disability declines slightly, with women and older persons more likely to be below the threshold. Including household composition, in the next column, shows that having more adults in the household reduces poverty risk while children increase it, but with little effect on the impact of disability. Having no education qualifications is shown in the next column to be significantly associated with an enhanced likelihood of being below the income threshold, and including it reduces the estimated impact of disability per se. Nonetheless, an increase in the relative income poverty rate of about 13 percentage points is still predicted for someone experiencing persistent disability, controlling for individual and household characteristics.

That may well reflect the impact of disability on employment, so in the final column we again add an explanatory variable capturing whether the individual reporting the chronic illness or disability is in paid work. We see that this is strongly related to the likelihood of being in a household below the income threshold, and when it is included the remaining impact of persistent disability is reduced substantially. This confirms the importance of employment as the core channel through which disability reduces household income and increases poverty risk.

## 4.8 Conclusions

This chapter has focused on the impact of disability on household income for those affected, and on the implications for poverty to the extent that is captured by household income. On a cross-sectional basis, average household income (adjusted to take household size into account) for individuals reporting a chronic illness or disability is only about 80% of the corresponding figure for those not reporting such an illness or disability. The proportion falling below conventional relative income poverty thresholds such as 60% of median income also differs markedly, with about 30% of those reporting chronic illness or disability below that threshold on average over the period compared with 17% of those not reporting such a disability. However, these gaps could be partly due to factors other than the presence of disability, which differ across the two groups. The aim of the chapter has been to exploit the longitudinal nature of the Living in Ireland Survey data to identify more accurately the impact of disability itself.

We focused first on those observed to experience onset of disability during the period of the survey. Estimates from a statistical model of household income for all those “at risk” of onset shows onset itself to be associated with a decline in household income. in the year it occurs. When other individual and household characteristics are included in the model the estimated effect of onset is reduced by about one-third but is still highly significant. It suggests that household income in the year of onset is about 15% lower than it would have been if the person had not become ill/disabled. For those experiencing onset of a disability that hampers them severely, the predicted reduction is about twice that size.

Household income is lower for those affected by disability onset partly because some move from employment to non-employment, but also because some of those remaining in employment see their earnings fall. This in turn reflects two distinct processes: a decline in hours worked, which seems to be the dominant element, and some decline in hourly earnings.

The corresponding model estimated in relation to exit from disability suggests it is associated with an increase in household income. Personal and household characteristics account for some of this apparent effect, but when they are taken into account exit itself is still accompanied by an increase of about 10% in equivalised household income.

Persistent disability over the life of the panel survey was then shown to be statistically significant in predicting lower household income. When personal and household characteristics, including education level, are taken into account the size of the estimated effect of persistent disability is reduced by 40% – so they are a distinctive group in other respects – but it remains highly significant. The predicted reduction in income associated with persistent disability, compared with someone with no experience of disability over the period, is about 20%.

We then looked at the impact of disability on whether households fall below an income threshold set as 60% of median household income. This is a measure aimed at capturing those “at risk of poverty” rather than of poverty per se, but is widely used and a useful reference point. We tracked what happened to the income of the household as disability onset was observed. Statistical analysis showed that onset is associated with a very substantial increase in the probability of being below the income threshold. Personal and household characteristics of those affected were seen to play some role in increasing this risk, but even when they are incorporated in the model the predicted impact of disability onset per se is to increase the relative income poverty rate by 7 percentage points. Much of this increase in poverty risk was attributable to lower employment.

Although the income poverty rate actually rose as exit from disability was observed over the period, this was against the background of an even greater increase for those reporting disability who did not exit. Statistical analysis suggested that exit per se was associated with a reduction in poverty risk, but when other characteristics were added to the explanatory model, notably education level, it became statistically insignificant.

Reporting chronic illness or disability throughout the panel was seen to substantially increase the probability of being below the income poverty threshold. Once again other individual and household characteristics contributed, but when these were taken into account the (relative income) poverty rate of those experiencing persistent disability over the seven years studied is 13 percentage points higher than for those who did not experience any disability over the period. Reduced employment seemed to be the core channel through which disability increases poverty risk.



# THE DYNAMICS OF DISABILITY AND SOCIAL PARTICIPATION

## 5.1 Introduction

In the previous chapters, we have seen how having a chronic illness or disability can lead to social exclusion in the form of lower employment rates, lower income and a higher risk of poverty. We now look at social exclusion in a broader context, and explore the effect of disability on social participation in daily activities. Once again this is intended to build on the cross-sectional analysis of this topic presented in Gannon and Nolan (2005), which showed that the presence of chronic illness or disability was associated with reduced levels of participation in such activities. We complement and deepen that cross-sectional picture by taking a dynamic perspective, looking at what happens to levels of social participation as people move from not reporting a chronic illness or disability to doing so or vice versa, and also examining the particular situation of those reporting disability throughout the panel.

In Section 5.2 we describe how social participation has been measured in the survey and look at the overall levels of participation between 1995 and 2001. We then look in Section 5.3 at levels of participation for individuals with an onset of disability, comparing participation before and after onset and with those “at risk” who did not experience onset. In Section 5.4 we present corresponding analysis of disability exit, while Section 5.5 focuses on those reporting disability throughout the panel. Conclusions are summarised in Section 5.6.

## 5.2 Disability and Social Participation 1995-2001

As in the cross-sectional analysis presented in Gannon and Nolan (2005, Chapter 6), we use the following information from the Living in Ireland Surveys relating to social participation and involvement:

- 1) Whether the respondent was a member of a club or organisation such as a sports or entertainment club, a neighbourhood group, a political party etc;
- 2) How often he or she talks to any of the neighbours
  - a. On most days;
  - b. Once or twice a week;
  - c. Once or twice a month;
  - d. Less than once a month; or
  - e. Never

3) How often he or she meets friends or relatives (not living in the same household)

- a. On most days;
- b. Once or twice a week;
- c. Once or twice a month;
- d. Less than once a month; or
- e. Never

and also whether during the last week the respondent has spoken to anyone not a member of the household, even if only on the telephone.

4) Whether he or she had an afternoon or evening out in the last fortnight, for entertainment, something that cost money; and if not the main reason

- a. Didn't want to;
- b. Full social life in other ways;
- c. Couldn't afford to;
- d. Can't leave the children;
- e. Illness; or
- f. Other (to be specified)

To put the results from the dynamic analysis we will present in context, we can look at cross-sectional participation rates for those currently reporting disability versus those reporting no chronic illness or disability, averaged over the whole panel from 1995 to 2001. (Gannon and Nolan (2005) presented such a cross-sectional comparison for 2001.) Table 5.1 shows that those currently reporting a chronic illness or disability have a lower rate of participation in a club or evening out compared to those without a disability. The percentage talking to other people regularly is similar, but fewer persons with a disability meet people on a regular basis. However, the rates of participation in terms of talking to or meeting people are high both for the “disabled” and “non-disabled” groups.

**Table 5.1: Chronic Illness/Disability and Social Participation, 1995-2001, Age 16+**

	Currently Chronic Ill/Disabled %	Not Currently Chronic Ill/Disabled %
Club	37.1	47.9
Evening Out	62.9	79.8
Talking to Others	92.1	91.7
Meeting People	93.9	96.3
Number of Cases	3948	15141

In the rest of the chapter we make use of the panel data to carry out a dynamic analysis to complement this cross-sectional picture, starting with how social participation changes as disability onset is observed

### 5.3 Onset of Disability and Social Participation

We now focus on those observed with an onset of disability, and see if their participation rates in terms of this set of indicators actually change at or after onset. In Table 5.2 we see that it is only in the case of “having an evening out” that there is any substantial decline on or after onset, with participation in clubs actually highest in the year of onset.

**Table 5.2: Onset of Chronic Illness/Disability and Social Participation**

	I Year Before Onset	Year of Onset of Chronic Illness/Disability	I Year after Onset
	%	%	%
Club	37.9	41.0	38.7
Evening Out	69.6	64.5	65.8
Talking to Others	92.8	93.2	90.6
Meeting People	96.2	94.9	95.3
All of Above	28.5	30.8	28.5

Number of Cases = 235

**Table 5.3: Onset of Chronic Illness/Disability and Probability of Social Participation**

	Chronic Illness/ Disability Onset	+ Personal Characteristics	+ Household Characteristics	+ Education
Onset of Chronic Illness/Disability	-0.0795**	-0.0629*	-0.0616*	-0.0425
Female		-0.1271**	-0.1245**	-0.1345**
Age 25-34		-0.0755**	-0.0769**	-0.0604*
35-44		-0.0534*	-0.0498	-0.1780
45-54		-0.0425	-0.0401	0.0191
55-64		-0.0479	-0.0595*	0.0339
65+		-0.1425**	-0.1544**	-0.0375
Two Adults in Household			0.0602*	0.0378
Three or More Adults in Household			0.0520**	0.0402
One Child in Household			-0.0425*	-0.0368*
Two or more Children in Household			-0.0318	-0.0274
No Education Beyond Primary				-0.1949**
Year	0.0204**	0.0226**	0.0225**	0.0190**
R <sup>2</sup>	0.0022	0.0195	0.0208	0.0420
N	8169	8169	8169	8169

\*\* Statistically significant at 5% level \* Statistically significant at 10% level.

Reference category: no onset, male, aged 16-24, single adult household,  
no children, post-primary education qualification.

Comparing these figures to Table 5.1, we see that even before onset, individuals who become disabled are drawn from the less active in terms of club membership and an evening out. This highlights once again the importance of trying to control for other characteristics, so we now employ formal statistical models to assess the impact of onset per se more accurately, incorporating all those at risk of disability onset into the analysis. For convenience, rather than analysing each indicator separately we concentrate on whether the individual participated in all four activities, so the dependent variable in the model set at 1 if they did and 0 if they did not.

Table 5.3 shows the results, and we see first that onset is indeed associated with a reduced level of participation that is statistically significant. However, when the full set of individual and household characteristics are included in the model this effect is reduced in size, and when the individual's level of education is included it is no longer statistically significant.

The cross-sectional analysis of participation presented in Nolan and Gannon (2005) suggested that the severity of the disability, in terms of the extent to which it hampered the person in his or her daily life, made a very substantial difference to the impact on social participation. We can test for this in terms of onset in our statistical model by substituting for the single “onset” indicator separate dummy variables capturing onset of disability that hampers the person severely, to some extent, or not at all. The results show that severely hampering disability is indeed associated with a significantly lower level of participation, even when other characteristics are included in the model. Disability that hampers the individual to some extent or not at all does have such an association.

## 5.4 Exit from Disability and Social Participation

Turning to those observing exiting from disability, Table 5.4 shows that once again it is only the “evening out” item that shows much change from the year before exit to the years of and after exit. Overall, a 6 percentage point increase in that indicator is seen from the year before to the year after exit.

**Table 5.4: Exit from Chronic Illness/Disability and Social Participation, Age 15+**

	I Year Before Exit	Year of Exit from Chronic Illness/Disability	I Year After Exit
	%	%	%
Club	43.8	40.9	44.5
Evening Out	68.6	71.5	74.5
Talking to Others	92.7	91.8	92.7
Meeting People	94.8	91.2	97.1
All of Above	31.9	30.4	35.1

Number of cases = 235

When we estimate our statistical model predicting participation in all four activities among all those “at risk of exit”, the results are as shown in Table 5.5. We see that there is a positive effect of the exit variable in predicting participation in all four areas, but this is not statistically significant even before other personal and household characteristics are included in the model. When those characteristics are included, the effect is reduced in size and remains insignificant.

**Table 5.5: Exit from Chronic Illness/Disability and Social Participation**

	Exit Only	+ Personal Characteristics	+ Household Characteristics	+ Education
Exit from Chronic Illness/Disability	0.0588	0.0430	0.0401	0.0312
Female		-0.0356	-0.0276	-0.0408
Age 25-34		-0.0118	-0.0680	-0.0272
35-44		-0.1192	-0.0528	-0.0081
45-54		-0.1503	-0.1227	-0.0359
55-64		-0.1602	-0.1406	-0.0422
65+		-0.2766**	-0.2396**	-0.1282
Two Adults in Household			0.0559	0.0431
Three or More Adults in Household			0.1175	0.1195**
One Child in Household			-0.0136	-0.0011
Two or More Children in Household			-0.0733	-0.0595
No Education Qualifications				-0.1688**
Year	0.0054	0.0098	0.0098	0.0101
Pseudo R <sup>2</sup>	0.0017	0.0294	0.0382	0.0644
N	1251	1251	1251	1251

\*\* Statistically significant at 5% level \* Statistically significant at 10% level.

Reference category: no exit, male, aged 16-24, single adult household, no children, post-primary education qualification.

## 5.5 Persistent Disability and Social Participation

We saw in earlier chapters that reporting a disability throughout the panel is associated with high levels of social exclusion in terms of labour force participation and risk of poverty. Table 5.6 shows that this is also true for indicators of social participation. Among those reporting chronic illness or disability throughout the panel, the proportions involved in a club is much lower than for those reporting no disability over the panel. Similarly, 59% of those with a long-term disability had an evening out compared to 81% for those who did not report chronic illness at all. The proportion regularly meeting people is slightly lower for individuals with chronic illness or disability throughout, though it is still over 90%, and there is little difference in the percentage talking to neighbours frequently.

**Table 5.6: Persistent Chronic Illness/Disability and Social Participation, 1995-2001 age 16+**

	Persistent Chronic Illness/Disability %	No Experience of Chronic Illness/Disability %
Club	33.6	49.1
Evening Out	58.9	81.4
Talking to Others	91.8	91.3
Meeting People	92.7	96.5
Number of Cases with Persistent Chronic Illness/Disability = 180		

**Table 5.7: Persistent Chronic Illness/Disability and Social Participation**

	Persistent Chronic Illness/Disability	+ Personal Characteristics	+ Household Characteristics	+ Education
Persistent Chronic Illness/Disability	-0.1458**	-0.1259**	-0.1237**	-0.0874**
Female		-0.1156*	-0.1132**	-0.1247**
Age 24-34		-0.0680**	-0.0630**	-0.0422*
35-44		-0.0531**	-0.0423*	-0.0090
45-54		-0.0391	-0.0358	0.0291
55-64		-0.0437*	-0.0489*	0.0515*
65+		-0.1475**	-0.1469**	-0.0304
Two Adults in Household			0.0551**	0.0333
Three or More Adults in Household			0.0595**	0.0502**
One Child in Household			-0.0208	-0.0129
Two Child in Household			-0.0255	-0.0169
No Education Qualifications				-0.2006**
Year	0.0075**	0.0097**	0.0096**	0.0068
R <sup>2</sup>	0.0082	0.0257	0.0267	0.0518
N	19089	19089	19089	19089

\*\* Statistically significant at 5% level \* Statistically significant at 10% level.  
Reference category: no disability, male, aged 16-24, single adult household,  
no children, post-primary education qualification.

We now apply our statistical model in order to identify the effects of persistent disability per se on social participation. Table 5.7 shows that those who report a chronic illness or disability throughout are 15 percentage points less likely to participate than the reference category, before other factors are taken into account. This reference group, people who did not report a chronic illness or disability at any point over the panel, had a participation rate of 38 per cent, so the predicted rate for those reporting disability throughout is 23 per cent.

When we control for personal characteristics such as age and gender, we find slightly lower effects of disability: women and the elderly are less likely to participate, and the effects of persistent disability are reduced by about 2 percentage points. Controlling for household composition makes little difference to the estimated impact of persistent disability, but adding absence of educational qualifications reduces the size of that effect. Even after controlling for personal and household characteristics and educational attainment this effect remains significant: compared with people who did not report a chronic illness or disability at any point, the predicted rate for those reporting disability throughout is 9 percentage points lower. (Severity of disability also plays a role, with those mostly reporting that they are severely hampered even less likely to participate.)

## 5.6 Conclusions

In this chapter we have used the panel data from the Living in Ireland Survey to analyse the relationship between social participation and disability from a dynamic perspective. Cross-sectional analysis suggests that those reporting a chronic illness or disability have lower rates of social participation on some indicators than those not reporting such illness or disability, though their levels of participation on average are quite high.

Here, when we focused on cases where disability onset is observed during the panel survey, we saw that the only indicator registering a decline in participation on onset was “having an evening out”. Results of statistical analysis of a summary indicator capturing participation in all four activities showed that onset of severely hampering disability was associated with a significantly lower level of participation, even when other characteristics were included in the model. Disability that hampered the individual to some extent or not at all did have such an association.

For those observed exiting from disability, once again it was only the “evening out” item that showed much change. The statistical model predicting participation in all four activities among all those “at risk of exit” found a positive effect of the exit variable but it was not statistically significant, even before other personal and household characteristics are included in the model.

Reporting chronic illness or disability throughout the life of the panel was found to significantly reduce the expected level of social participation, based on the single summary indicator of participation. After controlling for personal and household characteristics and education level, for those reporting disability throughout the predicted rate of participation is still 9 percentage points lower than for those with no experience of disability over the period of the panel.

## CONCLUSIONS

### 6.1 Introduction

Various aspects of social inclusion and social exclusion for people with disabilities have been analysed in previous studies for the NDA and the Equality Authority, including cross-sectional analysis of available data from representative household surveys (Gannon and Nolan 2004, 2005). On almost all the measures studied, people with chronic illness or disability fared worse than others in their own age group. It is however difficult to tease out from such a “snap-shot” precisely the role played by disability itself, as opposed to other factors – since those affected by disability may also be distinctive in other ways, such as age, education and labour market experience. The Living in Ireland Surveys followed the same people from one year to the next, and so can be used to track individuals not experiencing disability and then subsequently reporting disability, and others who move from reporting disability to not doing so. The change in the outcomes of interest – labour force status, earnings, household income and social participation – as disability status changes can then be studied directly. This improves our capacity to estimate the effects of disability with precision and allows the channels whereby these effects operate to be traced with more confidence.

This study has exploited this potential of the longitudinal data from the Living in Ireland surveys, presenting an investigation of the dynamic relationship between disability and exclusion. Specifically, it has investigated how employment, income and income poverty, and social participation change as onset of or exit from disability is observed in the panel surveys. The position of those reporting disability throughout the life of the panel was also studied, to get a sense of the effects of such persistent disability. The key questions being asked are what we can learn from the experience of these people with differing experiences of disability about how much impact disability itself has on employment, income and poverty, and social participation. As emphasised in previous reports, the measurement of disability in a survey context poses considerable definitional and methodological difficulties, and disability can be captured in only a very crude fashion in a general household survey like the Living in Ireland Survey.

The study relied on data from the Living in Ireland Survey over the period from 1995 to 2001, described in Chapter 2 and in greater detail elsewhere. In that survey, in any year about 20% of the adult population reported having a chronic illness or disability. Tracking individual adults from 1995 to 2001, about twice that many reported such an illness or disability at some point over the seven years. Our interest here has been in three different sub-sets of that total: those for whom we observe the start of a spell of disability over the life of the survey, those for whom we observe the end of such a spell, and those who reported disability in all seven years of the survey. Including in the analysis not only those observed with a disability “transition” during the panel survey but also those persistently



disabled meant that the duration of disability, which might be expected to have a major role in determining its impact, was not neglected.

## 6.2 The Impact of Disability Onset

The impact of disability “onset” was studied by focusing on persons in the survey who reported no chronic illness or disability for two years, followed by two years when they do report illness or disability. The analytical strategy employed was then to compare their situation with those “at risk” of onset who did not actually experience it – in other words, those who reported two consecutive years without disability in the panel and were then observed for a further two years without disability. (Someone who reported disability throughout the panel was not “at risk” in this sense, because the onset of disability could not be observed.) A total of 235 individuals were observed in the panel experiencing disability “onset”, defined in that way. Older people were seen to be more likely than others to experience onset, and being in a low-income household was also associated with an increased probability of onset.

We then went on to examine the relationship between disability onset and employment. When observed in a cross-section, about 70% of those not reporting a longstanding/chronic illness or disability and of working age in the Living in Ireland Survey were in employment, compared with 40% for those reporting such a condition. Focusing on those observed to experience onset, only about 60% were employed before that happened – these individuals were already more prone to unemployment and inactivity than others. When disability onset then occurs, the employment rate for these individuals fell from 60% to 46%, and in the year after onset this fell a little more to 43%.

Statistical analysis of these individuals then showed that, having taken a range of personal and household characteristics into account, the onset of disability was associated with a decline of about 20 percentage points in the probability of being active in the labour force. Where the chronic illness or disability did not hamper the person in their daily activities it was seen to reduce the probability of being in employment by about 10 percentage points, whereas when it did hamper them that reduction was closer to 30 percentage points. Those already in low-income households were more likely to move from being active to inactive, as were women and those with low levels of education.

The impact of disability onset on household income and income poverty was also examined. From a cross-sectional perspective, average household income (adjusted to take the needs of larger versus smaller households into account) for individuals in the sample reporting a chronic illness or disability was only about 80% of the corresponding average for those not reporting such an illness or disability. Focusing on those observed to experience onset of disability during the period of the survey showed onset to be associated with a decline in household income. When other individual and household characteristics were included in the statistical model the estimated effect of onset was reduced by about one-third, but was still statistically significant and substantial. Household income in the year of onset was estimated to be about 15% lower than it would have been if the person had not become ill/disabled. For those experiencing onset of a disability that hampers them severely, the predicted impact on income was considerably larger. Household income fell partly because of reduced employment, but also because some of those remaining in employment worked fewer hours.

Turning to relative income poverty, from a cross-sectional perspective 30% of those reporting chronic illness or disability fall below 60% of median household income, a widely-used measure of income poverty, compared with 17% of those not reporting such a disability. Disability onset was then seen to be associated with very substantial increase in the probability of being below that income threshold. Personal and household characteristics of those affected played some role in increasing this risk, but even when they were taken into account disability onset per se increased the “at risk of poverty” rate by 7 percentage points. Much of this increase in poverty risk was attributable to lower employment.

The relationship between social participation and disability onset was also analysed from a dynamic perspective. Cross-sectional figures show those reporting a chronic illness or disability with lower rates of social participation on some indicators than those not reporting such illness or disability, though their levels of participation on average are quite high. When disability onset was observed during the panel survey, however, only one of our four social participation indicators registered a decline. Statistical analysis suggested that only onset of severely hampering disability was associated with a significantly lower level of participation, whereas disability that hampered the individual to some extent or not at all did not have such an association.

### 6.3 The Impact of Disability Exit

The impact of disability “exit” was studied by focusing on persons observed in the panel reporting two consecutive years with a disability followed by two years without such a disability. They were compared with those “at risk” of exit who did not experience it – those reporting disability for two years in a row but not then reporting two disability-free years. The number of cases observed with a disability “exit” defined in this way was 138. Among all those “at risk”, persons initially in work were more likely than others to exit disability.

The employment rate of those observed to exit disability in this way rose from about 50% to 58% comparing the year of exit with the previous year. Statistical analysis of these individuals confirmed that exiting disability was associated with an increase of about 7 percentage points in the probability of being in employment, having controlled for personal and household characteristics.

Exit from disability was also found to be associated with an increase in household income. Personal and household characteristics accounted for some of this apparent effect, but when they were taken into account exit itself was still associated with an increase of about 10% in predicted household income. Exit from disability appeared to be associated with some reduction in poverty risk, but when other characteristics were added to the explanatory model, notably the person's education level, that effect was no longer statistically significant. Similarly, the estimated impact of exit on social participation was not statistically significant.

### 6.4 The Impact of Persistent Disability

As well as examining what happened on disability onset and exit, we also looked at those reporting persistent illness/disability, that is over all seven years of the panel survey. A total of 180 cases had that experience, accounting for 7% of all respondents and 16% of those who reported disability at any point over the life of the survey. Those experiencing persistent disability were disproportionately older and less well educated than others.

Persistent disability was associated with a greatly reduced likelihood of being in work, with only 13% of these individuals in employment throughout the period of the panel, compared with half of those of working age with no reported disability experience. When a range of other personal and household characteristics was taken into account, such persistent disability was estimated to be associated with a 42 percentage point reduction in the likelihood of being in employment. This represents a very substantial reduction, with all the implications that has both for income and for broader participation in the life of society.

Persistent disability over the life of the panel survey was also strongly linked to lower household income. Even when the personal and household characteristics, including education level, of the individual were taken into account, the predicted household income of someone reporting persistent disability was 20% lower than someone who was otherwise similar but had no experience of disability over the period.

Persistent chronic illness or disability also substantially increased the probability of being below the relative income poverty threshold. When other individual and household characteristics were taken into account, the predicted “at risk of poverty” rate was 13 percentage points higher for someone who experienced persistent disability, compared with those who experienced no disability over the panel period. Once again reduced employment seemed to be the key channel through which disability increased poverty risk.

Finally, having a chronic illness or disability throughout the life of the panel significantly affected the expected level of social participation. After controlling for personal, and household characteristics, the predicted rate of participation (in all four aspects measured) for those reporting disability throughout the panel was 9 percentage points lower than for those with no experience of disability over the period.

## **6.5 The Challenge Posed by the Research**

The findings of the study, summarised in this chapter, serve to deepen our knowledge and understanding of the impact of disability on key outcomes. They complement the evidence from previous research about the impact of persistent disability on the probability of being in work, on household income and poverty, and on social participation. Furthermore, they quantify the impact of disability onset on that probability, having taken other characteristics of the individual and their household into account. Perhaps the single most important finding is that disability onset and persistent disability, even when everything else we know about the person and their household are taken into account, are each associated with a very substantial reduction in the likelihood of being in work, and primarily through this channel also result in lower household income and a higher risk of poverty. This poses a major challenge for policy in relation to tackling the many-faceted barriers to obtaining and maintaining employment that face people with disabilities, as well as in designing income support policies that provide an adequate standard of living for those relying on that support while also promoting employment.



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