RESEARCH

Poor Prescriptions

Poverty and Access to Community Health Services

Richard Layte, Anne Nolan and Brian Nolan

Combat Poverty Agency
working for a poverty-free Ireland
20th Anniversary 1986 – 2006

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Foreword

Combat Poverty is a state agency developing and promoting evidence-based proposals and measures to combat poverty in Ireland. It is the only statutory organisation for promoting and commissioning research on poverty and for evaluating and advising on the impact of public policies on poverty. Its research programme seeks to achieve a better public understanding of poverty and to influence appropriate policy responses to poverty in the context of the National Action Plan for Social Inclusion.

People who are poor experience poorer health and die younger. Consequently, they have a greater need for health care, particularly primary care as this is the first point of contact with health services.[1] Therefore, a key strategic objective for Combat Poverty is the achievement of more equitable access to better quality health services, in particular primary care. Combat Poverty also supports a community development approach to the provision of primary care through its 'Building Healthy Communities' programme.[2] This programme promotes the right to health and empowers communities to tackle the underlying causes of health inequalities.

Recent policy documents have highlighted the need to address the root causes of health inequalities and to develop good quality primary care services. The national partnership agreement for the period 2007 to 2016, *Towards 2016*, demonstrates the government's commitment to improving the health outcomes of the Irish population and developing primary care services which are person-centred and multidisciplinary. The *National Action Plan for Social Inclusion 2007–2016* commits to 'ongoing investment to ensure integrated, accessible services for people within their own community' with the establishment of 500 primary care teams by 2011. Similarly, the *National Development Plan 2007–2013* acknowledges 'the strong social class gradient in health status' and has targeted resources at those most in need. The need to address health inequalities is also recognised in the health strategy *Quality and Fairness: A Health System for You* (2001) and the primary care strategy *Primary Care – A New Direction*.

One dimension of promoting access to primary care services is the availability of medical cards. Currently, GP services are free of charge for approximately 26% of

1 Primary care is 'an approach to care that includes a range of services designed to keep people well, from promotion of health and screening for disease to assessment, diagnosis, treatment and rehabilitation as well as personal social services. The services provide first-level contact that is fully accessible by self-referral and have a strong emphasis on working with communities and individuals to improve their health and social well-being' (Department of Health and Children 2001a).

2 This programme is also supported by the Department of Health and Children and the Health Service Executive.

the Irish population who qualify for a medical card under an income means test. However, while the thresholds for medical cards have increased recently, there is still a substantial number of people living in poverty with no medical card. Recent statistics show that almost one-third (30%) of those living in income poverty (229,000 people) and 16% of those living in consistent poverty (47,000 people) do not have a medical card (CSO 2006a). For these people and families living on a low income, the cost of GP services and subsequent prescription costs could act as a deterrent in accessing primary care services. As a response to this, *Towards 2016* highlights that the Department of Health and Children and the Health Service Executive will be reviewing medical card thresholds. Similarly, the *National Action Plan for Social Inclusion 2007–2016* emphasises that people who are not able to meet the cost of GP services for themselves and their families need to be supported appropriately.

The development of policies to address health inequalities and inequities in access to primary health care services needs to be informed by up-to-date and reliable data. Therefore, Combat Poverty commissioned the Economic and Social Research Institute to undertake a study to examine health inequalities in Ireland and to investigate the Irish population's use of primary health care services.

The study uses household survey data including the Living in Ireland Survey (1995 and 2001), the Quarterly National Household Survey (2001) and the EU Survey on Income and Living Conditions (2004). By its nature, such data cannot capture the experiences of small population groups or those not living in households who may be in poverty and/or have health issues. These include people with mental health problems, ethnic minorities, Travellers, homeless people and drug users. Combat Poverty is committed to supporting organisations working with these groups to promote their access to good quality, equitable primary care services.

The study's overall message is that people living in poverty are much more likely to experience ill health. Childhood experiences and family background are important predictors of health status. This finding highlights the need to dismantle the structural barriers underpinning health inequalities.

The report also shows that those on lower incomes and who are medical card holders attend their GP more frequently than other sectors of the population. Reasons for this include that, on average, these people are older and in poorer health. In contrast, those on higher incomes are more likely to visit their GPs only once a year. A possible explanation for this is that those on lower incomes are less likely to be referred on to secondary care than higher income groups (due to waiting lists for specialist care in the public system). The report also highlights that those living in poverty are

significantly less likely to attend other primary care service providers such as opticians and dentists.

It is clear that a number of issues need to be addressed in order to promote equitable access to primary care services. These include the importance of medical cards, the provision of good quality primary care services and the involvement of communities and service users in service development and delivery.

Combat Poverty – in meeting its policy advisory remit – has developed a policy statement which sets out recommendations in a number of key health areas to ensure that the health of people experiencing poverty is improved and their access to equitable primary care, and other health care services, is enhanced. Alongside other Combat Poverty work, the findings of this report contributed to the development of the policy statement.

Helen Johnston
Director

Executive Summary

Introduction

Health is a central dimension of quality of life and a great deal of research, both Irish and international, shows that those who are disadvantaged in terms of income, education and social class are also more likely to have worse health and to die earlier. The reasons for these inequalities are diverse and complex, however it is clear that these inequalities are real and that they reflect underlying inequalities in the incomes and living standards of different groups in Irish society. Health care, and primary health care in particular, is one area where these inequalities in health can be ameliorated.

This report examines health inequalities and the way in which use of primary health care services is distributed across the population. The report is made up of a number of distinct elements:

- Analysis of household survey data to shed new light on the social determinants of health in Ireland.
- Examination of what household survey data reveal about the level of utilisation of GP services (and to a more limited extent other primary care services) by people at different levels of income.
- Analysis of the factors which seem to affect these utilisation patterns, including age, gender, health status, location and entitlement to free primary care via the medical card.
- Consideration of the role of the structure of financial incentives facing GPs in influencing equity of access, and the role of location informed by the experience of GP practices in disadvantaged areas.
- On the basis of this analysis, an assessment of the extent to which there is equitable access to primary care services for those on low income.
- Discussion of the implications of the research findings for policy and for further research to be undertaken by the Combat Poverty Agency.

The report uses three national surveys of the Irish population to give the clearest picture yet of the relationship between health, use of primary health care and poverty and disadvantage.

Poverty, class and health

A number of different health measures reveal that those in lower social classes who have lower educational qualifications, lower incomes or who are in poverty are far more likely to report worse health. Analysis of EU-SILC (2004) data shows that:

- Whereas 85% of the non-poor reported good or very good health, this was true of only 66% of those experiencing income poverty.
- Similarly, 3% of those who are not poor report bad or very bad health, whereas the figure is 9% of those who are defined as income poor.
- Consistent poverty measures show wider differentials than income poverty measures: 84% of the non-consistently poor had good or very good health compared to 57% of those living in consistent poverty.
- Differentials are wider again using presence of a chronic illness as the measure of health: whereas 23% of the general population report a chronic illness, this is true of 47% of the consistently poor and 38% of the income poor.

Differentials in health status are not confined to groups in poverty. The gradients in income, social class and education across Irish society are accompanied by clear gradients in health status with those with the highest incomes, social class or education having the best health. Health declines uniformly as income, class and education decrease. Analysis of EU-SILC (2004) data shows that:

- Whereas 11% of men in the highest income decile have a chronic illness, this increases to 20% of those in the middle of the income range and to 42% of those in the second lowest decile.
- Whereas 16% of men in the higher professional and managerial class have a chronic illness, this rises to 27% of men in the unskilled manual social class. The pattern is similar for women, although the class differential is higher (14% versus 31%).
- Whereas 7% of men with third level education report less than good health, this is true of 37% of men with primary education alone. The pattern is similar for women.

The influence of early life disadvantage

Research in other countries strongly suggests that differentials in health across society begin from a young age. In Ireland, as elsewhere, babies of unskilled, manual working-class parents are lighter at birth than the children of professional and managerial parents. The literature is divided however about whether adult social class inequalities in health are the result of the direct influence of the parents' environment at the person's birth or due to a more indirect influence via the person's own education and occupational attainment.

Analysis of LIIS (2001) data shows that a person's parents' class and educational level are an important influence on that person's health status but that this influence does not appear to work directly. Rather, parental class and education influence the child's educational and occupational attainment, which then acts on the child's health outcomes, largely through the level of income and resources which a higher social class position brings.

The utilisation of general practitioner services

GP services are at the centre of primary care services in Ireland and the extent to which GP services are equally accessible by all sections of society has been the focus of much recent discussion. While variation in visiting rates due to 'need' factors such as age and health status are to be expected, it may be that the structuring of GP care in Ireland may lead to substantial variation due to a patient's level of income as well.

Analysis of LIIS 1995 and 2001 data shows that the average number of GP visits per year was 3.3 in 2001 with the proportion attending a GP in the last year increasing marginally between 1995 and 2001 from 70% to 74%. Several factors were strongly related to GP attendance in 2001:

- Whereas 63% of those aged 16 to 24 attended a GP in the last year, this rose with age to 95% of those aged 75 or more.
- Women are far more likely than men to attend their GP: 81% attended in the last year, compared to 67% of men.
- Women had an average of 4 GP visits, compared to 2.6 among men.

- Health status is a very important driver of GP utilisation: those with very good health had 1.7 attendances on average, this rose to over 15 for those with very bad health.

- Both physical and mental health are important. Those with mental health problems have more than twice the level of GP visits than those who do not. Similarly, whereas those with a chronic illness report 7.4 visits to the GP, this falls to 2.2 among those without a chronic illness.

- Income is also important: those in the bottom income decile had 5.6 GP visits on average, this falls to 2.3 among the highest income group.

- Even controlling for other characteristics including level of health, having a medical card remains a very strong predictor of GP utilisation: those without a medical card had 2.3 visits on average, this rises to 6 for those with a medical card.

- The higher level of GP utilisation among medical card holders can be partly explained by the higher age and worse physical and mental health of this group. However, other factors clearly play a role.

Medical card eligibility, income and access to GP services

Analysis of the same individuals over time, using LIIS 1995 and 2001 data, shows that those who gain a medical card go on to use GP services more frequently, whereas those whose card is withdrawn decrease their frequency of use. This confirms the finding of the report that possession of a medical card is a very important determinant of utilisation of GP services. This might suggest that those just above the eligibility threshold are less likely than those further up the income distribution to use GP services, but this effect is not simple. Analysis shows that having a higher income (among those without a medical card) made the probability of a visit to the GP in the last year more likely, but higher income does not increase the frequency with which the person visits a GP. This suggests that having a lower level of income significantly decreases the chance that a person will seek out any GP care at all rather than suppressing the frequency of visiting.

The supply of GP services in deprived areas

It is possible that the current reimbursement system for GPs encourages them to locate in areas with more favourable health and social profiles and a higher proportion of private patients. LIIS 1995 and 2001 data provide some support for the view that GP utilisation is significantly higher in non-disadvantaged areas of Dublin city compared to disadvantaged areas. However, the extent to which this pattern reflects a population composition effect, the availability of alternative health services or a 'true' GP availability effect is open to question.

The utilisation of dental and optician services

Analysis of LIIS data shows that in 1995 the average number of dental visits was just under one per year and this remained stable up to 2001 (the latest data available). However, the proportion visiting the dentist at least once increased significantly from 35% to 44% over the same period. The frequency of dental visits is influenced by a number of factors, but patterns are very different from GP attendance:

- Dental visit frequency increases until the 35–44 age group and then falls as age increases. In 2001 46% of those in the 16–24 age group attended the dentist at least once. This increased to 55% of those aged 35 to 44 years and fell again to less than 14% of those aged 75 years or more.
- Women attend more frequently than men: 47% of women saw their dentist at least once in 2001 compared to 40% of men.
- Health status also has a role with the healthier more likely to attend at least once.
- The frequency of visits also increases with income and education: 33% of those in the bottom income decile visited their dentist at least once in 2001, this rose to 63% of those in the highest income group.
- Similarly, not having a medical card is a predictor of a higher frequency of visits: 50% visited at least once in 2001 compared to 31% of medical card holders.

The pattern of optician visits is also different from GP utilisation. As with dental services, the take-up of optician services increased between 1995 and 2001, from 22% attending at least once to 29%. Other factors highlighted by analysis of LIIS (1995, 2001) data were:

- Frequency of use increases with age. Whereas 16% of men aged 16 to 24 years visited the optician at least once in 2001, this was true of 38% of men aged 65 to 74. Among women the age gradient is less steep and more complex. Women aged 45 to 54 years have the highest levels of utilisation (46% visited in the last year in 2001).

- Women are more likely to attend than men: 33% report visiting at least once in 2001, compared to 25% of men.

- Use is higher among those with worse health: 27% of those with very good health report visiting at least once in 2001, compared to 46% of those with very bad health.

- As with dental care, use of opticians increases with education and income: 27% of those in the lowest income decile report visiting the optician in 2001, compared to 36% of those in the highest income group.

Equity in the use of primary care services in Ireland

GP utilisation is highest among lower income groups, but these groups also appear to be older and to have much worse health. This suggests that medical card holders and lower income groups in particular have a higher 'need' for health care than higher income groups. The important issue is whether their utilisation of primary care services is proportional to their health need or whether they use a higher level of services for a given health status. To put this another way would be to ask if the utilisation of health care across the income distribution is equitable.

Analysis of LIIS 1995 and 2001 data shows that even if we standardise for the higher level of health need in lower income groups, we still find that the level of GP visits for these groups is higher than an equitable distribution would suggest (i.e. lower income groups have a higher number of visits for a given level of health than higher income groups). This may be because our measures of health need overestimate the true

health of lower income groups. However, the analysis also showed that lower income groups are less likely than higher income groups to receive specialist care. It may be then that higher income groups are more likely than lower income groups to be passed on for specialist care, or spend less time waiting for this care, although we have no direct evidence for this.

For dental and optician visits on the other hand, the distribution of visits across the income distribution clearly favoured those in higher income groups. The reasons for this differential are not clear and require further research.

Policy implications

The pattern of health in the population closely follows the pattern of social inequalities in terms of income, education, social class and poverty. Policies to reduce health inequalities will, by necessity, not be confined to the Department of Health and Children since health services can only intervene after health inequalities have formed elsewhere in society.

- Policies to reduce inequalities will need to be formulated and implemented on a cross-departmental basis, preferably with strong inter-departmental coordination.

Addressing underlying inequalities

Health inequalities stem largely from differences in the life circumstances of different sections of the Irish population. Although health behaviours such as smoking, nutrition and exercise do influence outcomes, their impact is small compared to the influence of basic differences in living standards.

- Policies which focus on supporting and increasing the incomes of the disadvantaged should be a priority.

- Low earners should be taken out of the tax net and resources should be allocated to establish a system of simple and transparent in-work benefits, which will be taken up, to ensure a reasonable level of basic income, particularly for families with children.

- This approach should be accompanied by efforts to redistribute resources, primarily through the tax system, to those who, for reasons of age, circumstances or disability, are unable to work.

Increasing equality of opportunity

Individuals who are born into disadvantaged households are far less likely to get higher levels of education and good jobs than their peers from higher income families. This inequality of opportunity not only wastes the valuable talents of those who happen to have been born into poor households, but also has the indirect effect of leading to worse health throughout life and contributing to their earlier death.

- Early interventions to break the link between family of origin, educational attainment and job outcomes would be a far more effective and efficient way of trying to equalise health outcomes than supplementing income or using health services in adulthood.

Education and pre-school education in particular

Investing in education to improve educational outcomes for disadvantaged children is crucial.

- The disadvantages of poorer children begin early and so investment in pre-school education would yield considerable dividends later.

- The higher level of need within schools in disadvantaged areas should be given a higher weighting in the funding allocation mechanisms used by government to fund schools.

- More innovation and higher levels of resources should be directed at keeping young people in school both before and after the minimum leaving age.

Reforming primary care

The mix of private and public payment structures in the Irish primary care system may produce distortions in both the supply and demand for care that give rise to inefficiency in primary care and that may be detrimental to individual health outcomes. The impact of GP fees persists right up the income distribution and suggests an unmet need for care even in higher income groups.

- There are strong arguments from an equity perspective for GP care being free to all Irish citizens at the point of care.
- A more incremental approach would be to increase substantially the number of people covered by the current medical card structure by raising the income thresholds determining eligibility.[1]
- Another approach would be to extend eligibility to certain vulnerable population groups irrespective of income, for example children or large families.

Further research

The evidence base in Ireland for examining both the extent of socio-economic inequalities in health/health care utilisation and the processes leading to these inequalities is very poorly developed. A similar paucity of data exists around the provision of primary care. The EU-SILC, the main survey instrument with data on health, health care use and income only asks for information on free GP visits; national administrative databases cannot be linked at the individual level because of the absence of a personal identifier; and national figures on death rates use a different social class schema to that used in the census.

- Improve the data available on socio-economic inequalities in health by ensuring that consistent socio-economic measures are available in data sources and that databases can be linked using a personal identifier.

1 The IMO has recommended that medical card cover be extended to 40% of the population (Irish Medical Organisation 2005).


Blackpool
Credit Union

1 Introduction

1.1 Introduction

Under its second strategic objective *Access to Quality Services*, the Combat Poverty Agency aims to 'develop and promote policy proposals for people in poverty to have access to quality health and education services'. To achieve this objective, Combat Poverty works with a range of stakeholders including the health services and communities (both interest and geographical) who experience health inequalities and poverty. One aspect of this work is Combat Poverty's 'Building Healthy Communities' programme which works with communities to improve health and access to health care services (Cosgrove 2004; Crowley 2005a).

This research project aims to contribute to Combat Poverty's second strategic objective by using national representative survey data to analyse patterns of primary health care utilisation and how they relate to need, focusing on the relative position of those on low income. The particular aim is to inform consideration of the Working Group on NAPS and Health's target of increasing equity of access to effective primary health care services. This will be done by investigating the current situation in relation to equity of access, teasing out how best to think about and monitor equity in this context and identifying specific policy areas which need to be prioritised if equity is to be improved.

1.2 Content of the study

The overall study is to comprise a number of distinct inter-related elements, as follows:

- Analysis of household survey data to shed new light on the social determinants of health in Ireland.
- Examination of what household survey data reveal about the level of utilisation of GP services (and to a more limited extent other primary care services) by people at different levels of income.
- Analysis of the factors which seem to affect these utilisation patterns, including age, gender, health status, location and entitlement to free primary care via the medical card.
- Consideration of the role of the structure of financial incentives facing GPs in influencing equity of access, and the role of location informed by the experience of GP practices in disadvantaged areas.
- On the basis of this analysis, an assessment of the extent to which there is equitable access to primary care services for those on low income.
- Discussion of the implications of the research findings for policy and for further research to be undertaken by Combat Poverty.

1.3 Research on health and use of primary care in Ireland

Although research on the social patterning of health and use of health care began rather later in Ireland than in other countries, the last decade has seen a substantial increase in the number of studies published. Studies in the late 1990s showed that Ireland, in common with other European nations, has substantial inequalities in both mortality and morbidity by social class. For example, a report by the Institute of Public Health in Ireland (Balanda and Wilde 2001) found that those in the unskilled manual social class have a standardised mortality rate over 130% higher than those in professional or managerial positions. A report by TCD public health physicians (Barry *et al.* 2001) showed similar patterns.

There has been less research on inequalities in morbidity, but research from the Institute of Public Health in Ireland (2003) shows that low-income groups are 52% less likely to be satisfied with their health. An ESRI study found that the unskilled have a 275% greater risk of having a chronic illness than those in professional and managerial positions (Layte 2000). A later study from the Institute of Public Health in Ireland (2006) showed that these health inequalities begin early in life: children of fathers in the unskilled manual social class group were 93% more likely to be of low birthweight in 1999 compared to those with fathers in the higher professional group. Research using the SLÁN health and lifestyle survey has also shown significant socio-economic inequalities in perceived health (Kelleher *et al.* 2003a; Tay *et al.* 2004).

A number of studies have examined the contribution of different factors to these inequalities. Research from Combat Poverty explored the impact of nutrition poverty on health (Manandhar *et al.* 2006) and the related question of the financial cost of healthy eating in Ireland (Friel *et al.* 2004). The Institute of Public Health in Ireland meanwhile has examined the impact of employment (Doyle *et al.* 2005) and transport systems (Kavanagh *et al.* 2005) on health. Within the ESRI, research has considered a number of health behaviours such as smoking and use of contraception and their impact on health (Layte and Whelan 2005; Layte *et al.* 2007).

There has been significant work in Ireland on the supply of primary care and the role of pricing on the utilisation of care. The Irish primary care system is unique internationally in its blend of private and public provision and this has been the subject of considerable research. Madden *et al.* (2005) examined the impact of changes in the way GPs were reimbursed before and after 1989. Several studies addressed the patterning of GP use and how this is related to the availability of a medical card and

consultation charges (Nolan 2006; McGregor *et al.* 2006; O'Reilly *et al.* 2006). There has also been a considerable amount of work on the equity of primary care use in Ireland (Nolan 1993b; Layte and Nolan 2004).

In this report we extend previous work by bringing together research from a number of different sources and making use of new data such as that in the EU-SILC survey (see Appendix 1 for details of the sources of data used in this report). We also extend previous analyses performed using the Living in Ireland Survey to examine the 'lifecourse' determinants of adult health status and the manner in which parents' socio-economic position impacts on their children's health in adulthood.

1.4 Current policy context

Primary care is usually the first point of contact that individuals have with health care services and it has the potential to supply 90% to 95% of all health and personal social care services (Department of Health and Children 2001a). At present, however, primary care falls significantly short of this target because the current system has a number of fundamental structural problems. The majority of primary care is, and should be, centred on the general practitioner, but GPs need to be enmeshed within a wider primary care network which can provide an integrated set of services to individuals and families. At present the majority of GPs in Ireland work either in a single practice (35%) or with one other GP and there are few links between the different primary care services. The primary care strategy – *Primary Care: A New Direction* – published in 2001 acknowledges that Ireland's primary care infrastructure is poorly developed, is perceived as fragmented by users, has limited team working, has poor use of information technology and is focused on treatment rather than prevention. It also details how communication between GPs and the hospital sector is poor at best and often non-existent.

The primary care strategy outlines a new model of primary care that is based upon a more integrated approach to the provision of services through inter-disciplinary primary care teams. These are to include GPs, nurses/midwives, health care assistants, home helps, physiotherapists, occupational therapists, social workers and administrative personnel. The teams are envisaged to be based in a new infrastructure of community-based centres which will be open for more out-of-hours services and which will include a broader range of diagnostic services. Primary care networks of other professional groups will be established to support the primary care teams.

Unfortunately, progress on the primary care strategy has been extremely slow. The strategy envisaged 600 to 800 primary care teams by 2008, but only ten pilot schemes have been established to date and by 2007 only six of these teams were still up and running. Funding for another 100 teams was announced in December 2006 and these will be selected in 2007. The *National Action Plan for Social Inclusion 2007–2016* commits to provide 300 primary care teams by 2008, 400 by 2009 and 500 by 2011 (Office for Social Inclusion 2007).

The plan also states that out-of-hours GP services will be further developed with a view to having these services available to the whole population during the lifetime of the plan. This target on primary care is accompanied in the action plan by a wide range of other measures and targets in areas such as housing, education and social welfare benefits that may have an impact on the level of health inequalities in the Irish population.

The primary care strategy was published shortly after the national health strategy – *Quality and Fairness: A Health System for You* – and is to be implemented within its guiding principles. The key principles underpinning the strategy are equity, quality, accountability and 'people centredness' and one of the key objectives of the strategy is the reduction of health inequalities between population groups in Irish society. The central role of primary care is recognised in the overall health strategy and one of its key aims is that primary health care be reformed so that the vast majority of health care needed will be provided by primary care rather than hospital services.

These projected reforms within health care in Ireland need to be set in the context of the partnership agreement struck in 2006 – *Towards 2016: A Ten-Year Framework Social Partnership Agreement 2006–2015* (Department of the Taoiseach 2006). This agreement lays out a process through which organisational change will be achieved within a stable industrial relations environment. The agreement includes provisions for the setting up of the Health Information and Quality Authority and for service reform including more flexible working hours and team working. The national development plan for 2007 to 2013, entitled *Transforming Ireland – A Better Quality of Life for All,* also sets out how almost €55 billion at current prices will be spent over the period including €34 billion on social infrastructure, a major component of which is envisaged to be spent on health services (Government of Ireland 2007).

Fully implemented, the action plan for social inclusion has the potential to influence significantly the manner in which primary health care is delivered in Ireland and in doing so to improve the health of the population. An integrated and well-financed primary care system would provide preventative care by multi-disciplinary teams

delivered in a timely fashion. This would not only improve overall population health and reduce demand for care in the long run, but would reduce the demands on hospitals and specialist services, particularly accident and emergency departments.

1.5 Report structure

The report develops as follows. In Chapter 2 we begin the task of establishing the relationship between poverty, disadvantage and health status. This chapter describes how different measures of current health status are related to poverty, social class, income and education.

Chapter 3 focuses on the lifecourse determinants of current health status. After a discussion of the literature on social class inequalities in health and the manner in which these may relate to early life disadvantage, the chapter examines four hypotheses about the relationship between early life disadvantage and adult health.

Chapter 4 begins the examination of GP services with a discussion of the current system of care in Ireland and the incentives that it presents to both patients and providers. The chapter then uses nationally representative data to examine patterns of GP visiting by selected individual and household socio-economic characteristics. The chapter ends by examining the affordability of GP services and access to services in deprived areas of Ireland.

Chapter 5 examines the utilisation of dental and optical services in Ireland using nationally representative data. The aims of this chapter are very similar to those of Chapter 4, i.e. to give a descriptive account of the utilisation of services and how these are related to a large number of individual and household characteristics, and to assess the extent to which the utilisation of services is structured by a person's need for health care and level of income.

Chapter 6 turns to the issue of whether the pattern of primary care utilisation in Ireland is equitable across different income groups.

Chapter 7 summarises the findings of the preceding chapters, derives some conclusions and attempts to draw out the policy implications.


BFC
ACAB

2 Poverty, Disadvantage and Health Status

2.1 Introduction

In this chapter we begin the empirical task of unpacking the relationship between a number of different socio-economic measures and health. We outline the measures that we will be using before giving a descriptive picture of health status and its relationship to poverty and other socio-economic measures. Our aim is to provide an overview of the relationship of health to disadvantage measured in different ways. As already discussed, being poor may well impact on health, but those living in poverty are likely to have experienced a number of other disadvantages over their lifecourse that may also impact on health status. This means that we need to establish the independent effect of poverty on the differential in health status between groups defined using a more general measure of disadvantage. We do this by defining statistical models of the impact of social class on health, controlling for age, gender and poverty status.

2.2 Data and measures

Differential death rates by social group give some guidance to overall health inequalities, but it is also possible to use social survey evidence to examine differences in health and illness, or morbidity, between groups. In this chapter we draw upon the most recent European Union Survey of Income and Living Conditions (EU-SILC) data available, from 2004, to examine the level of health and illness using a range of different indicators.

Blaxter (1989) has suggested that there are three main types of morbidity measures: medical, functional and subjective. 'Medical' measures define health in terms of deviation from some physiological norm; the 'functional' defines ill health in terms of a lack of ability to perform 'normal' tasks and roles; and the 'subjective' is defined in terms of each individual's perception of their own general health status. The EU-SILC 2004 data set includes examples of all three of these measures. The questions employed are set out in Table 2.1.

Table 2.1: Health measures available in EU-SILC data

MEASURE	QUESTION	OUTCOME CATEGORIES
Medical	'Do you suffer from any chronic (long-standing) illness or condition (health problem)?'	'Yes' 'No'
Functional	'For at least the last 6 months have you been limited in activities people usually do, because of a health problem?'	'Yes, strongly' 'Yes, limited' 'Not limited'
Subjective	'How is your health in general?'	'Very good' 'Good' 'Fair' 'Bad' 'Very bad'

Whilst these measures are certainly simple, there is good evidence (for example in Blaxter 1989) that they are close analogues of clinically assessed health status and good predictors of outcomes such as mortality.

In this chapter we will be examining the extent to which the questions in Table 2.1 are answered differently by poor individuals compared to those who are not poor. There are a number of different poverty measures which could be used in this context, but here we concentrate on two measures: an income poverty line based on 60% of median equivalised income, and a line based on the same poverty threshold combined with deprivation of one item from a set of eight basic necessities – the so-called consistent poverty line.[2]

We also examine whether health status varies across socio-economic position measured in three different ways. The first measure is the individual's income group. We divide the population into ten income groups known as income deciles. Income deciles are constructed in three steps. In the first, the household's total net income is adjusted to take account of the number and age of the people in the household. Such 'equivalisation' involves dividing household net income by a figure determined by giving the first adult in the household the value 1, all subsequent adults the value 0.66 and each child (defined as less than 14 years) the value 0.33. This equivalised net income is then allocated to each person in the household and then the population is ordered in ascending level of income. In the third and final step the cumulative income distribution is divided into ten groups with equal numbers of individuals in each group. These deciles show an individual's position in the income distribution.

The second measure used is a measure of social 'class'. There are a number of different social class measures available including the Irish Central Statistics Office's own class schema. Most social class scales are based on the occupational position of the individual (although not always – see Prandy 1990), but vary considerably in terms of the manner in which these are grouped and the role of factors such as whether the person is self-employed, is a supervisor of others or a manager. Analysis has shown that those schemata which have more developed theoretical underpinnings are more successful at explaining social and economic phenomena and so here we use a schema based on one of the most developed conceptualisations – the Erikson/ Goldthorpe measure or EG – which has been developed for use in the comparative analysis of European countries, the European Socio-Economic Classification or 'ESeC' (see Erikson and Goldthorpe 1992). The EG is based upon nine class groups defined first by whether they are self-employed or not. The self-employed are divided into whether they employ others or not and the number of people employed. The employed are divided according to their 'employment relations' in terms of the level of

2 In this report we use the old definition of consistent poverty based on eight deprivation items. Since this report was written a new eleven-item consistent poverty measure has been accepted by government. Details of this measure are available in the glossary.

autonomy that they enjoy and the level and specificity of their skills. The nine class groupings are:

I Large employers, higher managers/professionals
II Lower managers/professionals, higher supervisory/technicians
III Intermediate occupations
IV Small employers and self-employed (non-agriculture)
V Small employers and self-employed (agriculture)
VI Lower supervisors and technicians
VII Lower sales and service
VIII Lower technical
IX Routine semi-skilled and non-skilled workers.

The third socio-economic measure that we will be using for analysis is the highest educational attainment of the individual. This is grouped into four categories: primary education alone or less, lower secondary (intermediate or junior certificate), higher secondary (leaving certificate) and third level.

2.3 Health and poverty

In this section we examine the patterning of the three health measures outlined above and, in particular, whether those who are defined as being income poor have a substantially different health status from the non-poor.

We begin with the subjective health measure. Figure 2.1 shows the distribution of answers to the subjective health measure for the adult population as well as according to whether the individual is defined as being in income poverty (using a threshold set at 60% of median income).

Figure 2.1: Self-assessed health by income poverty (EU-SILC 2004)

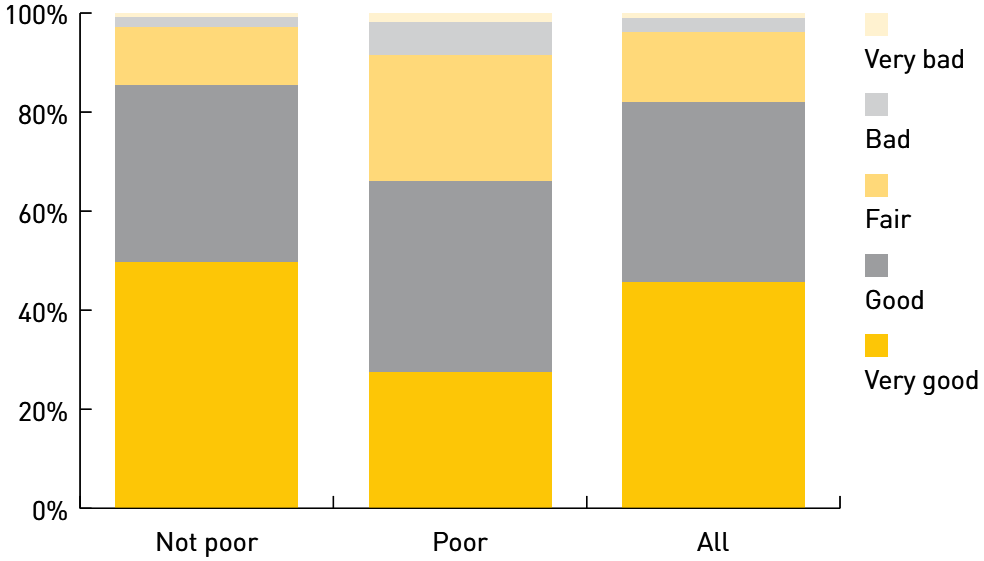
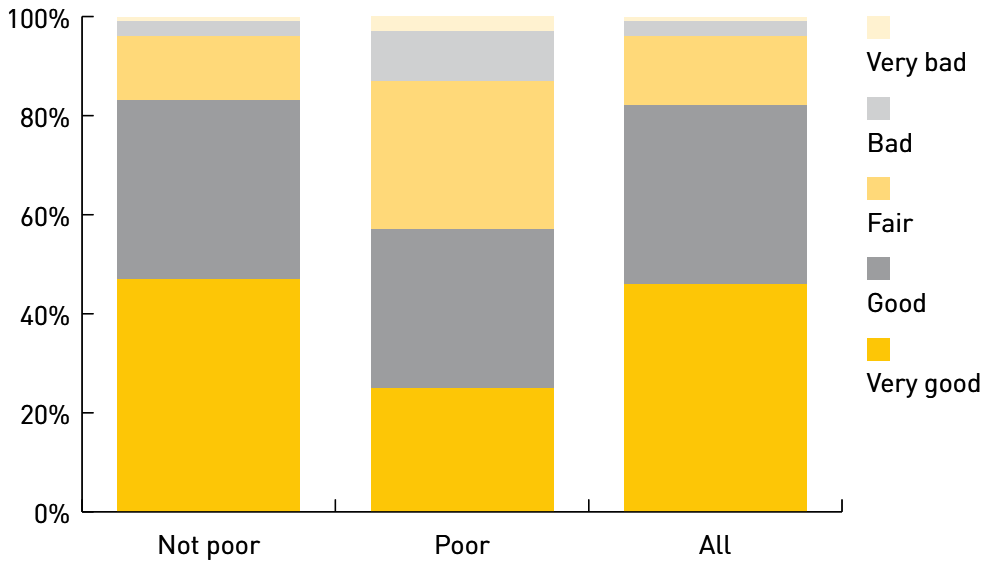


Figure 2.1 shows that across those who are aged 18 and over, the overwhelming majority of individuals define themselves as being in good or very good health (82%) with only small minorities (4%) defining themselves as having bad or very bad health. This is a very general finding in the Irish context where research tends to show very high levels of both life satisfaction and self-assessed health and wellbeing when compared to other countries. When we compare those who are income poor to those who are not, however, we see worse self-assessed health among those experiencing income poverty. A substantially smaller 66% of those experiencing income poverty report good or very good health (compared to 85% of the non-poor) and rather more (9%) report bad or very bad health (compared to 3% of the non-poor). It is important to point out, however, that the relationship between health and poverty may well be confounded by age, since older people are more likely to be in income poverty and to have poorer health. In the fourth section of this chapter we will be controlling for the age and gender of the person when assessing inequalities in health status.

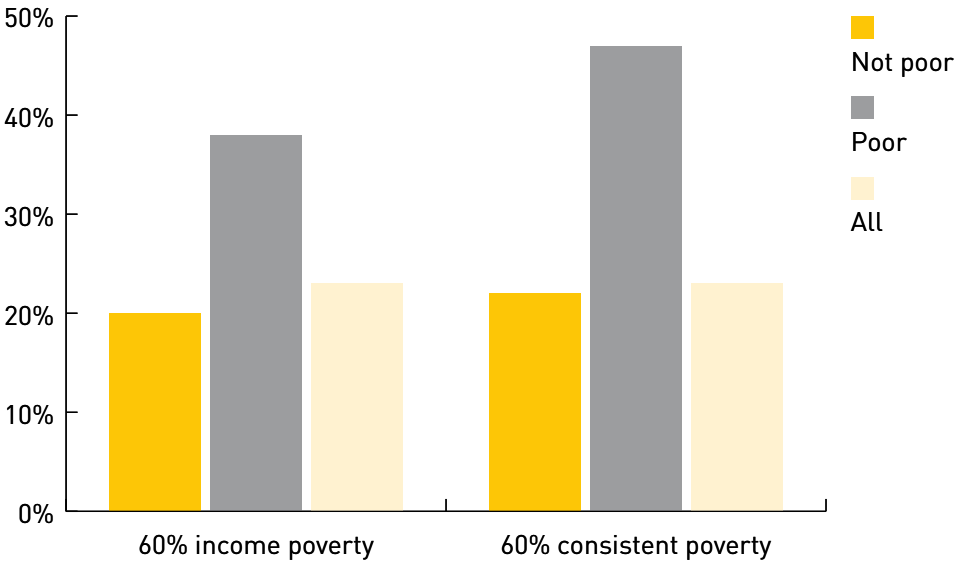
Figure 2.2 gives the distribution of the same subjective health question, this time divided according to whether the individual is defined as being in consistent poverty. It shows that 84% of non-poor individuals report good or very good health, whereas this proportion falls to 57% among the consistently poor. The proportion with bad or very bad health also increases from 4% for the non-poor to 13% for the consistently poor. The decrease in the health status of those who are consistently poor compared to those who are income poor alone has been found in past research and indicates that the socio-economic profile of those who are consistently poor is substantially more disadvantaged (Layte *et al.* 2002a).

Figure 2.2: Self-assessed health by consistent poverty (EU-SILC 2004)



Do we find the same pattern of worse health status among those defined as poor using other measures of health? Figure 2.3 shows the proportions reporting a chronic (long-standing) illness or condition according to whether they are defined as being poor or not using both income and consistent poverty measures (the columns display the proportion with a chronic illness by poverty status).

Figure 2.3: Proportion with a chronic illness by income and consistent poverty (EU-SILC 2004)



Once again, the health of those who are defined as poor using either measure of poverty is worse than that of the population generally. Whereas 23% of individuals in the general population report a chronic illness, this is true of 38% of those who are defined as poor using an income measure and 47% of those who are consistently poor.

It is important to note the lower health status among those who are consistently poor compared to those who are income poor alone.

Figure 2.4 gives the proportions with a limiting health problem by whether they are defined as poor using an income poverty line.

Figure 2.4: Proportion with a limiting health problem by income poverty (EU-SILC 2004)

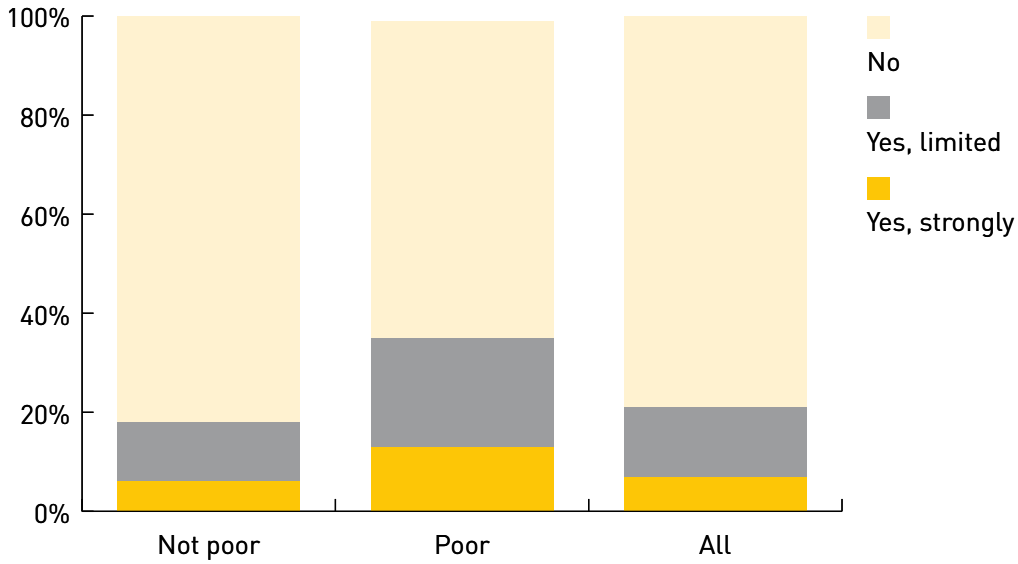
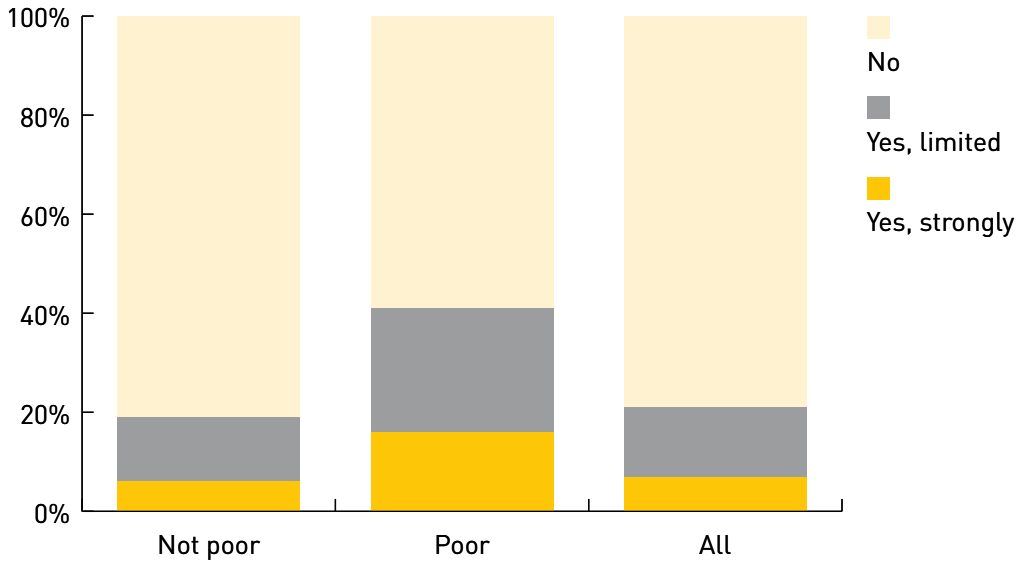


Figure 2.4 shows that 79% of the population aged 18 or more report no limiting health problem and 21% report being limited or strongly limited by a health problem. When we examine the level for those defined as income poor, however, the proportion limited to some extent or strongly rises from 21% to 35% with the proportion being strongly limited rising from 7% to 13%.

Figure 2.5 shows that the increase in the proportion with a limiting health condition among the income poor is replicated among the consistently poor, except here the differential between the general population and the consistently poor is greater, rising from 21% to 41%. Thought of in terms of odds ratios, the consistently poor are 1.95 times more likely to have a limiting condition than the general population (which includes the consistently poor as well as the non-poor). The differential between the consistently poor and non-poor is of course wider with an odds ratio of 2.15. If we examine the distribution of strongly limiting health conditions, the consistently poor are 2.66 times more likely to be strongly limited than the non-poor (16% of the consistently poor versus 6% of the non-poor).

Figure 2.5: Proportion with a limiting health problem by consistent poverty (EU-SILC 2004)

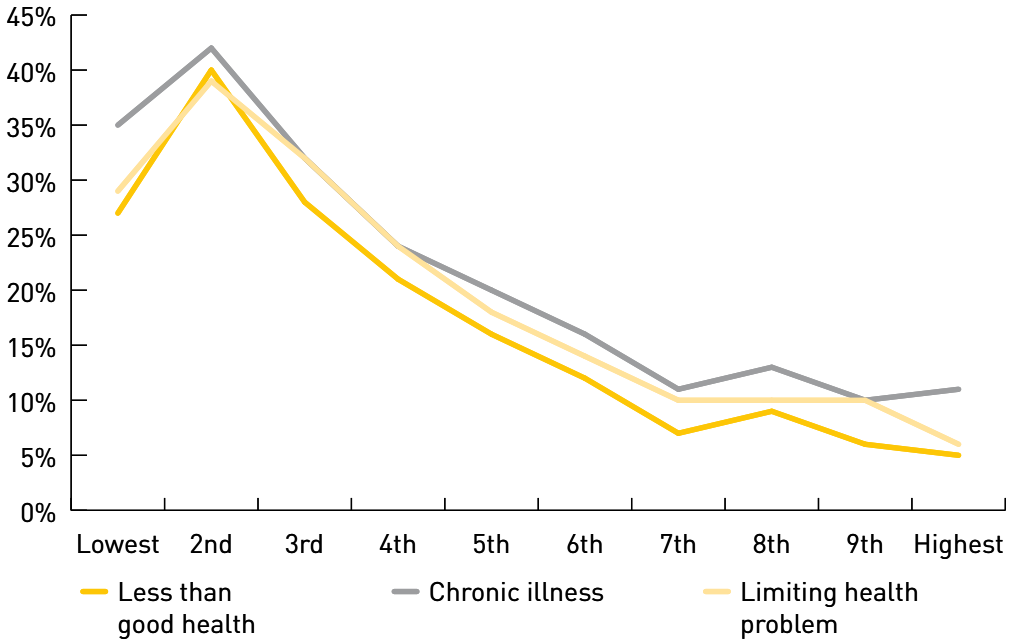


Overall, the patterns shown here confirm our expectation that those experiencing poverty will have worse health.

Past research has provided a large amount of evidence of the generalised and subtle relationship between socio-economic status and health outcomes (Acheson *et al.* 1998), although this research is less developed in the Irish context. Before we move on to more analytical methods in the next section, it is useful to get an overview of the relationship between other socio-economic measures and health status. Here we analyse three other socio-economic measures: income deciles, social class and education. However, each of these measures has a number of categories and analysis becomes unwieldy unless we reduce the complexity of the health status measures. We do this by collapsing the subjective health measure into two categories: those with good health (good plus very good) and those with less than good health (fair, bad and very bad). Similarly, we also dichotomise the 'limiting health' measure by combining those who are strongly limited with those who are limited to some degree.

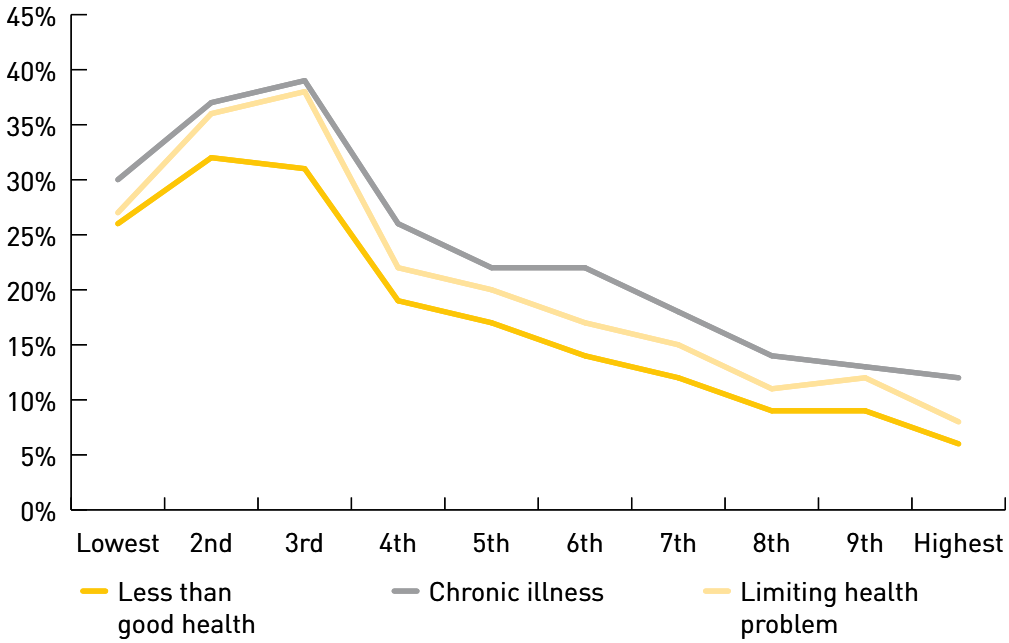
Figure 2.6 shows the relationship between the three health status measures and position in the income distribution using the income decile measure for men. In this figure, income rises from left to right (from the lowest income decile to the highest) and it is clear that there is an inverse relationship between income and health. That is, the proportion with a chronic illness, having less than good health or a limiting health problem decreases as income increases.

Figure 2.6: Health status by income decile for men (EU-SILC 2004)



This relationship is not straightforward, however, as those in the lowest income decile actually have better health status than those in the second income decile and the relationship becomes 'flat' after the seventh decile. Nonetheless, Figure 2.6 shows that whereas 11% of men in the highest income decile have a chronic illness, this increases to 20% of those in the middle of the income range (fifth decile) and to 42% of those in the second decile.

Figure 2.7: Health status by income decile for women (EU-SILC 2004)

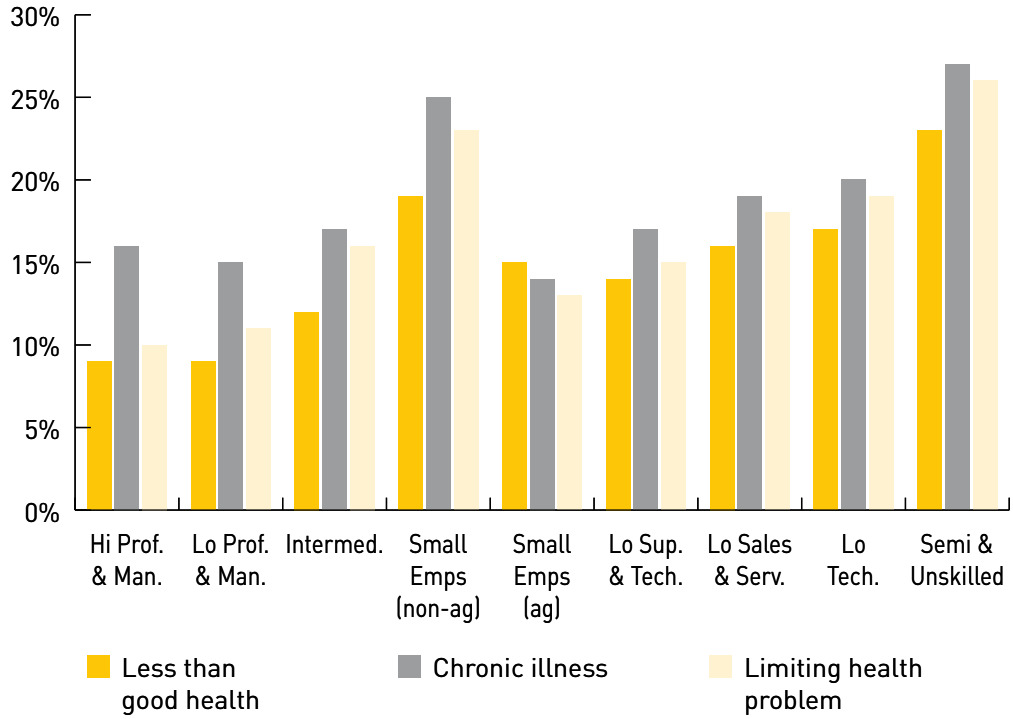


For women (see Figure 2.7), the relationship between income and health is very similar, including the pattern in the lower reaches of the income distribution, although for women it is the third income decile that has the worst average health status. The odd relationship between the first and second deciles is a common finding in income research and occurs because those with intermittent or volatile incomes such as the self-employed or farmers tend to be common in the first decile.

Overall, there is a pronounced relationship for both men and women, although, as with the poverty measures just examined, this relationship may well be complex and depend in large part on the indirect relationship between current income and past disadvantage.

Social class may be a better guide to an individual's long-term experience of deprivation and disadvantage as it tends to better represent an individual's permanent income when compared to current income which can fluctuate from year to year or even month to month. Figure 2.8 presents the relationship between our three health measures and social class for men.

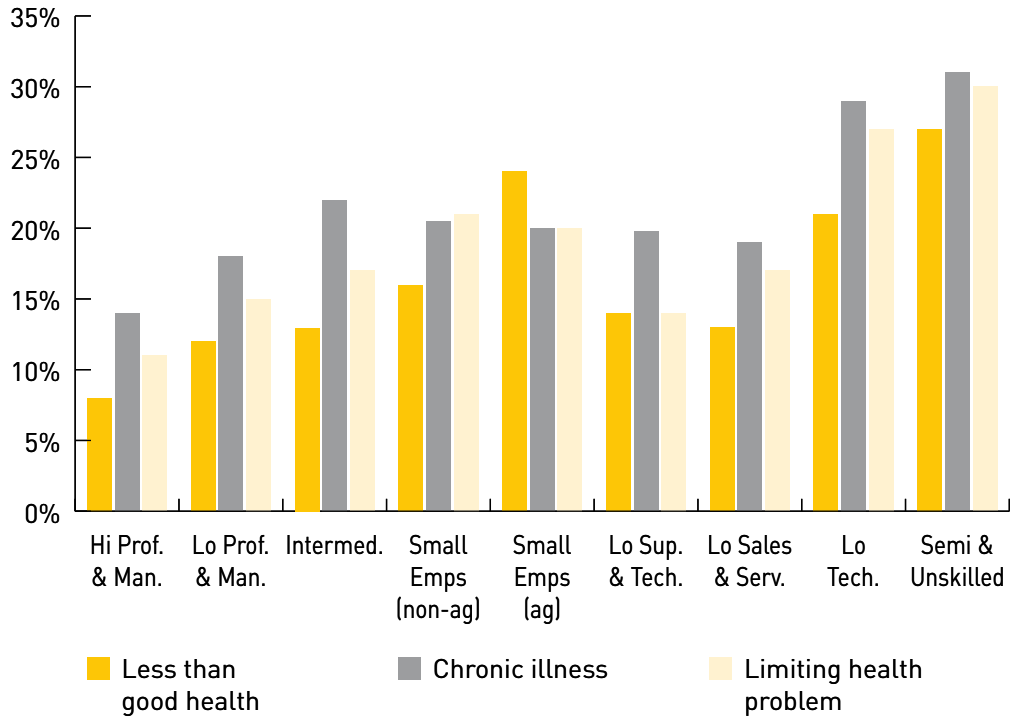
Figure 2.8: Health status by social class for men (EU-SILC 2004)



Unlike income, social class is not a continuous measure of advantage running in equal increments from the most advantaged to the least. This is most pronounced in the case of the self-employed, who may have terms and conditions which are worse than some non-manual employees, but who nonetheless have greater autonomy. Figure 2.8 shows that lower health is strongly related to social class with the non-manual groups (e.g. the professional and managerial, intermediate, supervisory and technical, and sales categories) less likely to report a chronic illness, more likely to have good or very good self-assessed health and less likely to report limiting health problems than the semi-skilled and unskilled social class. For example, 16% of men have a chronic illness in the higher professional and managerial social class and this rises to 27% of men in the semi-skilled and unskilled manual social class. The self-employed differ in health status according to whether they are involved in agriculture (V) or not (IV), with the agricultural self-employed far less likely to report poor health.

Among women (see Figure 2.9), the patterns are similar with the semi-skilled and unskilled manual groups reporting the worst health and higher non-manual groups the best. The differential between the professional and managerial class and the unskilled manual class among women is actually higher than among men with 14% of the former reporting a chronic illness compared to 31% of the latter. However, here women in the intermediate class engaged in non-manual clerical work actually have worse health than those in the supervisory and technical or sales and service classes on the chronic ill health measure.

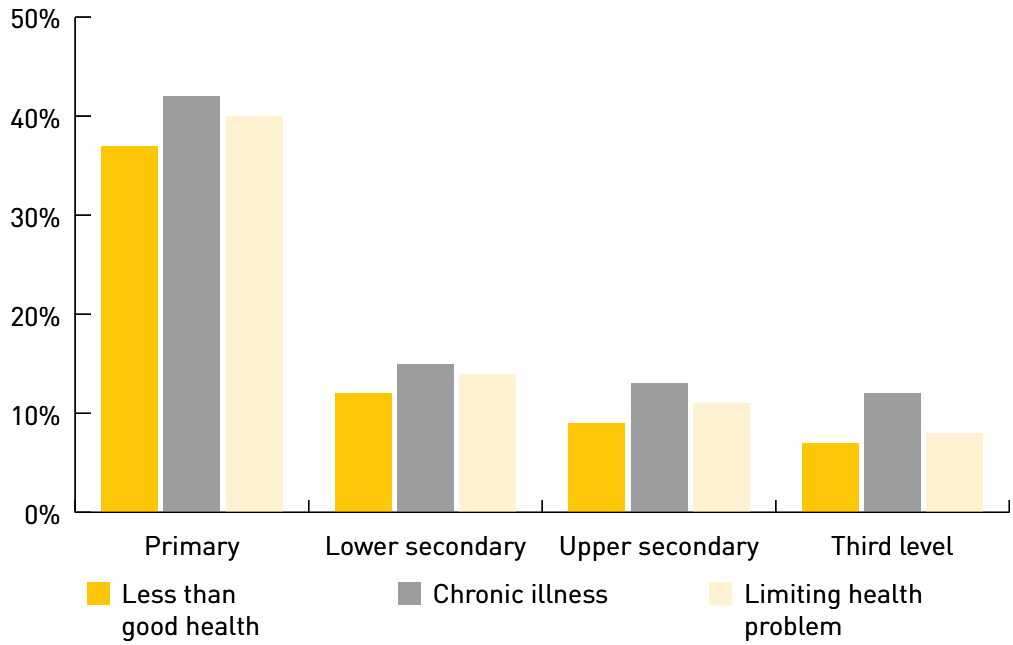
Figure 2.9: Health status by social class for women (EU-SILC 2004)



However, as before, we reiterate that these results are based on a bivariate analysis and do not control for the uneven distribution of age groups across the classes.

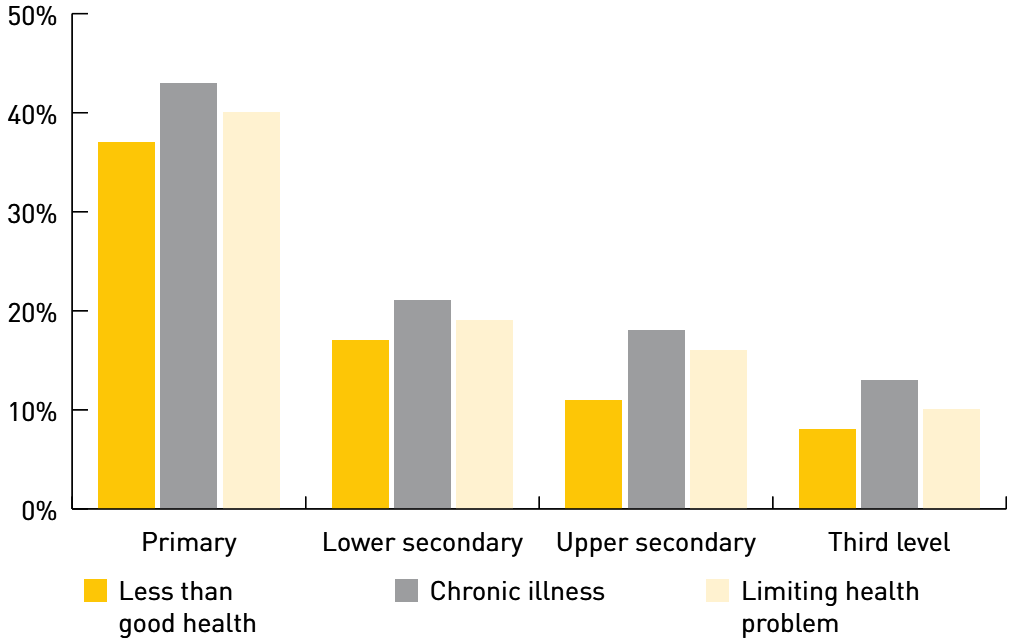
When we turn to the pattern of health across education groups (see Figures 2.10 and 2.11), we see a similar relationship to that found using income deciles and social class, with those with higher levels of qualifications less likely to report poor health. For example, whereas 7% of men with third level education report less than good health, this is true of 9% of those with upper secondary education and 12% with lower secondary education. This increase accelerates quickly as we move to men with primary education alone, where the proportion with less than good health is over three times larger at 37%. Similar patterns of increase occur for the other two health measures also.

Figure 2.10: Health status by highest level of education for men (EU-SILC 2004)



Among women (see Figure 2.11), the pattern of increasingly poor health with progressively lower qualifications is similar, although less steep, with the proportion of women with less than good health increasing from 8% to 11% through 17% to 37%. As with men, however, the proportion of those with primary education alone who have less than good health is a multiple of those with lower secondary qualifications.

Figure 2.11: Health status by highest level of education for women (EU-SILC 2004)



This large increase in poor health among those with primary education alone may be due to the fact that a large proportion of this category are in the oldest age groups who went through their schooling before the advent of free education in 1967. These older age groups are also more likely to have poorer health status, underlining the need to control for age when examining socio-economic differences in health status.

2.4 The influence of poverty on social class differentials in health

The strong relationship that we observed between poverty and poor health status in the last section suggests that low income and the experience of deprivation may have a substantial impact on overall health and wellbeing. However, as well as being complicated by the confounding effects of age, the impact of poverty may in fact also reflect the strong relationship of poverty with other processes which may also impact on health. Poor current health status can be viewed in a similar fashion to current vulnerability to poverty, i.e. as the outcome of a much longer process of generalised disadvantage which may be influenced by factors deep in the individual's past. In this sense, the association of current poverty with poor health status may actually reflect poorer living standards and circumstances in the past rather than current deprivation.

To examine this question we need to be able to isolate the influence of poverty on the inequality between groups divided by their experience of generalised disadvantage. It would clearly be a complex task to construct an indicator of a person's lifetime experience of disadvantage, but we can measure this to a certain extent using the individual's social class position, which has been shown to be strongly associated with a person's level of education, their current and past risks of unemployment and their overall vulnerability to poverty and deprivation (Layte *et al.* 2001b). This is the aim of this section.

First we establish the overall differential between social classes in their risk of poor health using a statistical model. Next we examine the role of age and gender in determining this differential. Lastly we add whether the individual is defined as being in poverty to the model and observe the decrease in the differential that occurs. The larger the decrease in the differential with the addition of each factor, the larger its role in determining social class differences in ill health. We could give results for a number of income and consistent poverty measures, but doing so would be rather onerous. Instead we choose to show the results for the 60% median income poverty line alone.

Figure 2.12: ESeC class differentials in 'less than good health' before and after controls for age, gender and income poverty (EU-SILC 2004)

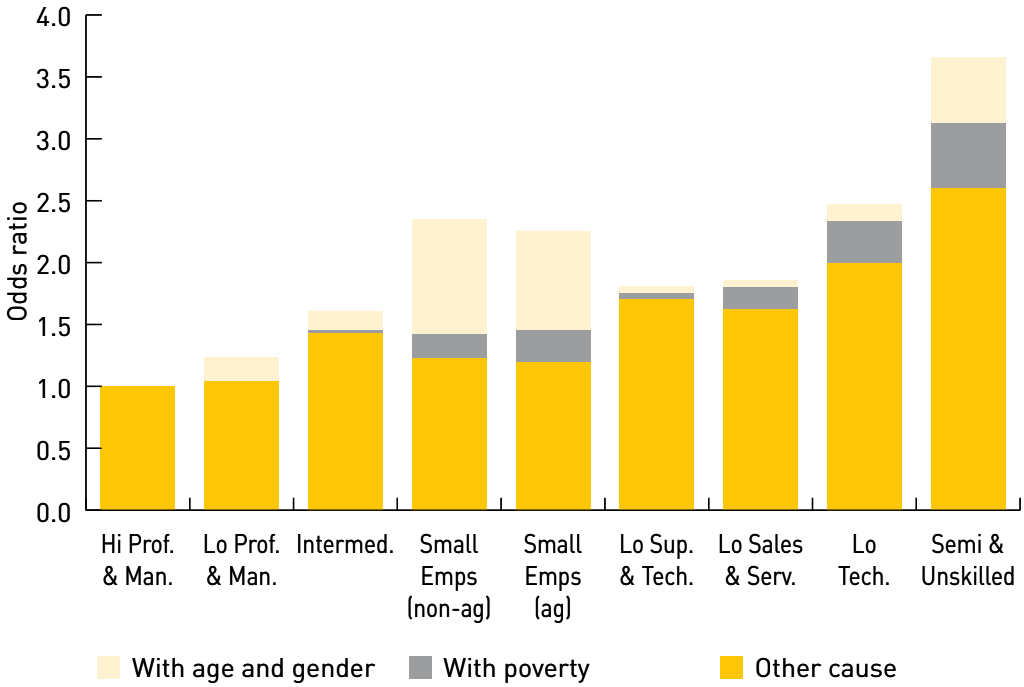


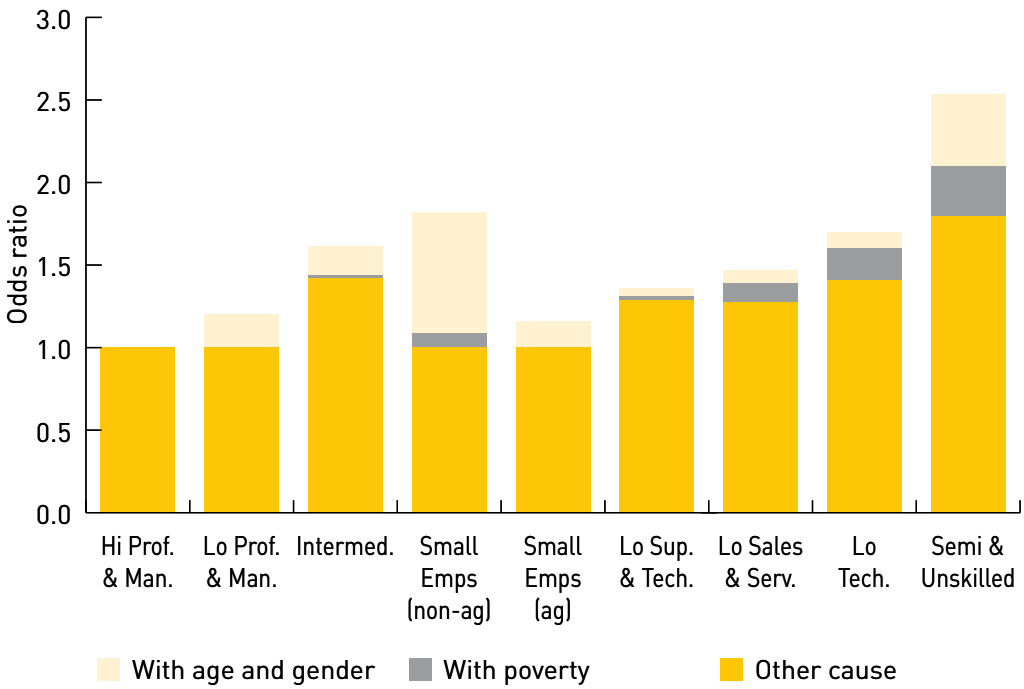
Figure 2.12 gives the results of the modelling exercise for differentials in less than good health. The fact that each of the columns for all the classes from the lower professional to the semi-skilled and unskilled manual are greater than 1 shows that these classes are more likely to report less than good health. The height of these columns reflects the average differential between the classes across both genders and all age groups, but the influence of these factors is removed in the second stage of analysis when these variables are entered into the statistical model. Adding age and gender substantially decreases the height of the columns, but only for certain classes, most notably for the two self-employed classes and the semi-skilled and unskilled. The differential between the higher professionals and managers and the self-employed outside agriculture falls from 235% to 142%. Our interest however is more in the effect of the poverty variable which Figure 2.12 shows has a clear impact on the patterns, but once again, only for certain classes, notably the manual working classes.

The inclusion of income poverty does decrease the differential for the self-employed, but the effect is largest for the semi-skilled and unskilled group for whom the differential to the professional and managerial class drops to 313% from 366%.

Interestingly, however, the inclusion of income poverty does not totally 'explain' the differentials between any of the social class groups, which remain substantial among the manual working-class groups in particular. This suggests that there are a large number of other factors as well as current poverty and deprivation which influence current health status. Nonetheless, income poverty is a statistically significant predictor of worse health in all of the figures presented in this section.

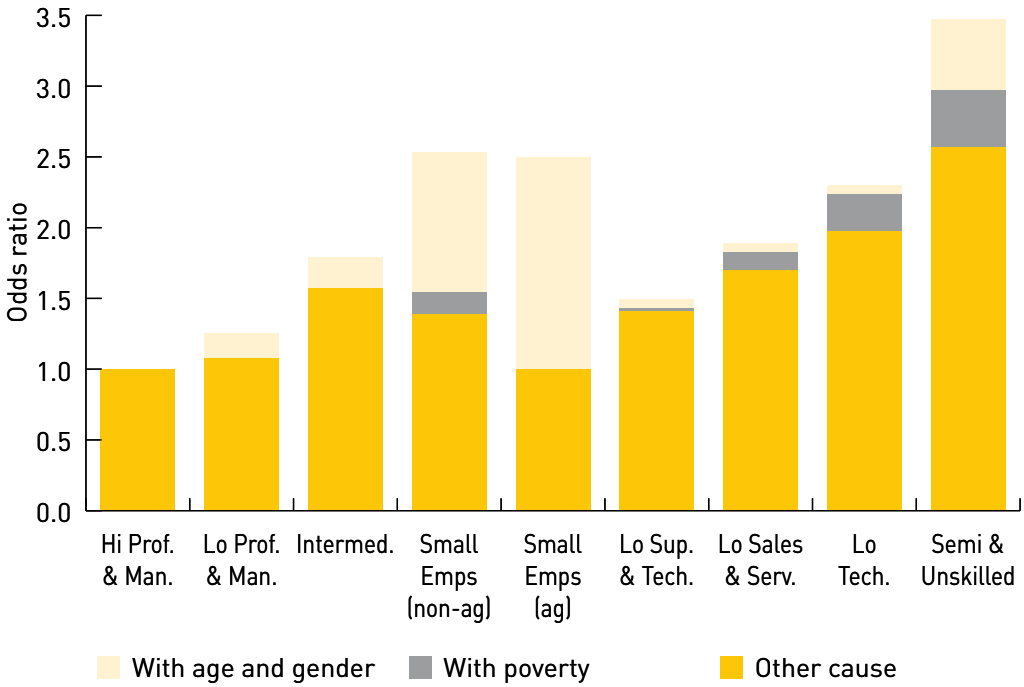
Figure 2.13 presents a similar analysis, but this time for the probability of chronic illness. Once again all other social classes have a greater risk of reporting chronic illness than the higher professional and managerial class, although this differential is small for the lower professional class and small employers in agriculture. The addition of age and gender decreases this differential, but only substantially for small employers outside agriculture and the semi-skilled and unskilled. Similarly, the addition of income poverty to the model has some impact on the differential for the lowest three classes, the lower sales and service, lower technical and semi-skilled and unskilled manuals.

Figure 2.13: ESeC class differentials in 'chronic illness' before and after controls for age, gender and income poverty (EU-SILC 2004)



For limiting health conditions (see Figure 2.14), the addition of age and gender produces limited decreases in the differentials in all classes except for the self-employed and the semi-skilled and unskilled classes. This effect is very pronounced for the self-employed in agriculture, for whom the addition of age and gender decreases the differential in risk from 150% more than that of the professional and managerial class to roughly the same risk of having a limiting health problem. The addition of income poverty to the model produces some falls in the differentials among lower sales, lower technical and semi-skilled and unskilled classes, but these decreases are not large, and substantial differentials remain even after its inclusion.

Figure 2.14: ESeC class differentials in 'limiting health problems' before and after controls for age, gender and income poverty (EU-SILC 2004)



Overall, these results show that the inequality between social classes identified in section 2.3 remains even once adjustments are made for the uneven distribution of age and gender between classes. Income poverty does have an influence on this inequality, but even once we have controlled for current poverty status large inequalities in health still remain between social classes. This result is not a surprise since we assume that previous experiences and circumstances have a major role in determining current health status (including past poverty risk). In the next chapter we examine the role of these other factors using data from the Living in Ireland Survey.

2.5 Summary and conclusions

In this chapter we sought to present a descriptive picture of the relationship between poverty, socio-economic status and current health status. We established that poverty, social class, income and education are all very strongly related to health status among both men and women with those in more advantaged positions having a decreased likelihood of illness and poor health. These analyses do not however control for the impact of age and gender on the differentials between groups. We remedied this in the fourth section by fitting models predicting the experience of less than good health, chronic illness and limiting illness. As well as showing that class differences in health are not the result of age and gender, these models showed that current income poverty also played a role but was by no means a complete explanation for social class differentials in health.

These results are consistent with previous analyses in the Irish context (Kelleher *et al.* 2003a; Tay *et al.* 2004; Crowley 2005b; Institute of Public Health in Ireland 2001; Layte 2000) and show that although current income poverty and deprivation are important determinants of health, an individual's past circumstances may be as important, if not more important, in explaining current social class inequalities in health.

3 Pathways to Adult Health: The Influence of Early Life Disadvantage

3.1 Introduction

Across industrialised countries, those who are disadvantaged in terms of income, education or occupational level also tend to be disadvantaged in terms of health status and length of life (Mackenbach and Bakker 2002). Research across a range of countries has consistently shown that those at the bottom of the social class ladder have at least twice the risk of serious illness and premature death as those at the top. Moreover, there is a continuous social gradient between the top and the bottom health standards, so those near the top of the ladder have more disease than those at the top but less than those below them, a pattern repeated all the way down the scale.

Almost all socio-economic measures including education, income and social class display this gradient to varying degrees. This gradient means that Irish men from the unskilled manual social class have death rates 130% higher than those of men from professional and managerial groups (Balanda and Wilde 2001). Differences in reported health status are just as startling, with unskilled manual working-class men in Ireland 275% more likely to report a chronic illness than men in the professional and managerial class (Layte 2000).

Substantial differentials in premature mortality have been documented for centuries, but the social, economic and medical developments of the second half of the twentieth century led many to move away from social policy as the primary instrument of improving population health. Instead, the focus increasingly fell on how health could be improved by changing lifestyles through health promotion and the prevention of degenerative diseases (Blane *et al.* 1996).

Research duly investigated the extent of behavioural differences between social groups, but found that differences in behaviour only accounted for a small proportion of the differences between social groups in health outcomes and mortality. For example, in a now famous study among British civil servants, Marmot *et al.* (1978) found that health-damaging behaviours did indeed vary inversely to civil service grade but that differences in smoking, blood pressure, obesity and exercise accounted for only a minority of the differences in mortality from heart disease between those in different grades. By the late 1970s, the search for the other factors involved in disease aetiology and the inequality between social groups turned increasingly toward the social and economic environment. Perhaps the defining moment in this change in focus was the publication of the Black Report (Townsend and Davidson 1982), which showed substantial inequalities in mortality between social class groups and directly attributed these inequalities to differences in material living standards, discounting artefactual explanations and the impact of behaviour and lifestyle.

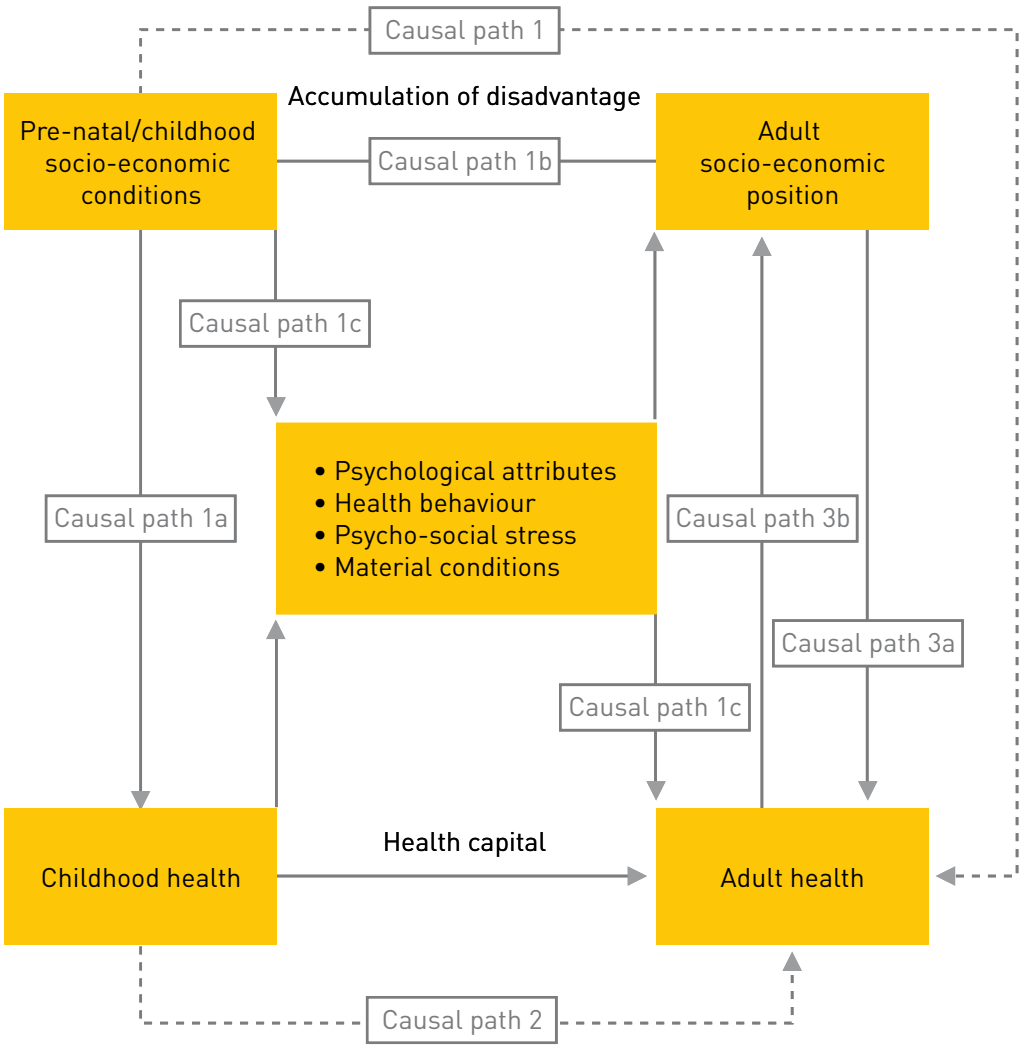
Since the publication of the Black Report, there has been a vast amount of research confirming, critiquing and developing the original finding that there are substantial inequalities in health between social class groups. Research has shown that inequalities in health and mortality can be found across a number of socio-economic indicators and that the effect is very subtly graduated with differences in outcomes even between those near the top of each distribution (Bartley *et al.* 1997; Blane *et al.* 1997; Davey Smith *et al.* 1997). Yet, even after two decades of research, the mechanisms through which exposures to disadvantage lead to disease are still not fully understood (Davey Smith *et al.* 1994).

Perhaps the most important development in understanding health inequalities has been the adoption of a lifecourse perspective, which studies the importance of exposure to different determinants of disease at different points in life (Davey Smith *et al.* 1994; Vågerô and Illsley 1995; Kuh and Ben-Shlomo 1997; Ben-Shlomo and Kuh 2002; Kuh *et al.* 2006).[3] For example, Barker and colleagues (Barker *et al.* 1989; Barker 1992, 1994) have investigated the possible 'programming' of later adult health in the womb during pregnancy or during early infancy. However, it is difficult to attribute a causal role to the impact of disadvantage in infancy on later disease as the children of families who experience disadvantage are themselves more likely to experience disadvantage in later life. There is a well-established association between the social class of fathers and the educational and occupational attainment of their children and between family of origin and own risk of poverty (Layte *et al.* 2006). This makes it difficult to establish whether neo-natal and childhood conditions contribute independently to adult socio-economic inequalities over and above adult disadvantage and conditions.

Figure 3.1 gives a schematic representation of the different pathways through which influence may pass across the lifecourse to adult health (Dike van de Mheen *et al.* 1998). At the top of Figure 3.1, causal path 1 maps the direct effect from childhood socio-economic conditions to adult health. It could be for instance that the pre-natal and childhood social and economic conditions experienced by the child are the most important determinants of later health, irrespective of later socio-economic conditions, circumstances or health behaviours. This is the mechanism of the Barker hypothesis that suggests that the mother's material conditions in pregnancy 'program' the physiology of the unborn child and strongly influence that child's later likelihood of disease. For example, low birthweight is associated with excessive catch-up in growth or 'early adiposity rebound' in childhood and this may be one indication of an underlying physiological condition which also contributes to a higher risk of cardiovascular disease among low-birthweight children in adulthood. We call this direct association between family of origin and adult disease hypothesis one.

3 This framework is also the model adopted by the Irish government in the *National Action Plan for Social Inclusion 2007–2016* and the latest social partnership agreement *Towards 2016*.

Figure 3.1: The lifecourse determination of adult health

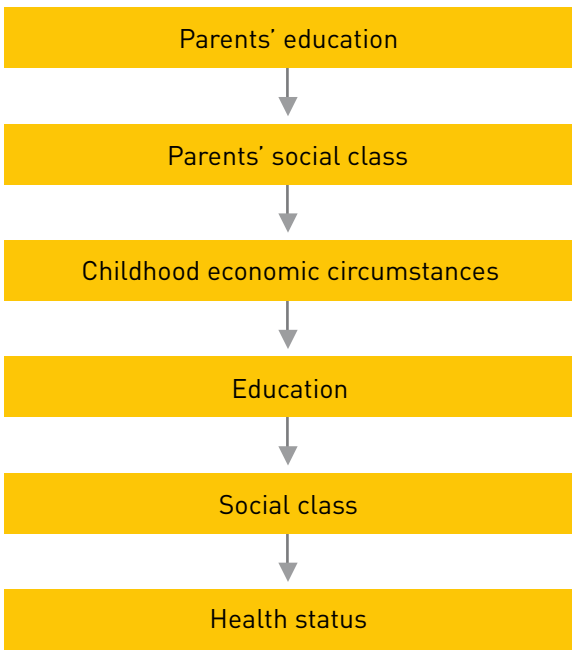


There are good grounds to believe, however, that the causal pathways between childhood socio-economic circumstances and adult health may be a good deal less direct. At its simplest, it may be that childhood circumstances determine childhood health and that these illnesses and diseases pass directly on into adulthood (the combination of causal paths 1a and 2 in Figure 3.1), i.e. sick children grow to be sick adults. In this model, health inequalities in adulthood result from the 'selection' of disadvantaged children into disadvantaged adult positions. This is a second direct link between family of origin and adult disease and we call this hypothesis two.

Lundberg (1993) has suggested that there may also be a more indirect route through which 'selection' causes socio-economic health inequalities in adulthood. From this perspective, childhood disadvantage can be described in terms of social programming (as opposed to the biological programming of hypothesis one) in the sense that earlier circumstances increase the probability of later disadvantage and worse social and economic conditions and thus poorer health. Lundberg's emphasis here is on the impact of structural factors and processes rather than individual health behaviours, although the latter certainly have a role.

Lundberg's hypothesis of social programming suggests that childhood environment influences educational achievement, which then impacts on occupational attainment and social class with these factors being related to inequality in health in adulthood. Figure 3.2 presents this hypothesis graphically, with parental education and social class impacting on the child's socio-economic circumstances, which influence educational attainment, which in turn disadvantages the child in the labour market during adulthood, hence influencing social class and health status. This is an indirect effect of family of origin and we call this hypothesis three.

Figure 3.2: Schematic representation of social programming hypothesis



Of course there could be an intermediate process between hypotheses two and three, whereby childhood conditions make childhood ill health more likely and this ill health then impacts on educational and occupational attainment (say by causing the child to miss crucial examinations and transitions). Lower educational attainment may impact on health behaviours and preferences and lower occupational attainment may impact on income in adulthood and levels of deprivation and poverty.[4]

It may be that the socio-economic disadvantage of family of origin and conditions in infancy/childhood has no independent effect on later risk of adult disease and that socio-economic conditions in adulthood are actually the crucial factor. We call this hypothesis of adult causation of social class inequalities hypothesis four. In considering the social determinants of health in Ireland these four hypotheses will frame our analysis. Table 3.1 briefly outlines each.

Table 3.1: Hypotheses to be tested

HYPOTHESIS	INFLUENCE OF EARLY DISADVANTAGE	DESCRIPTION
Hypothesis one	Direct	Family of origin's disadvantage 'programs' the child's physiology leading to disease in later life
Hypothesis two	Direct	Family of origin's disadvantage leads to childhood illness and this illness continues into adulthood
Hypothesis three	Indirect	Family of origin's disadvantage influences the child's educational attainment which then influences their adult socio-economic position, circumstances and health
Hypothesis four	None	Adult health is not influenced by family of origin either directly or indirectly

4 So far we have not mentioned selection in adulthood as a mechanism, i.e. where ill health in adulthood leads to lower socio-economic position, but this relationship has been studied in depth and shown not to account for the differences in health status and mortality risk of different social classes (Bartley and Plewis 1997).

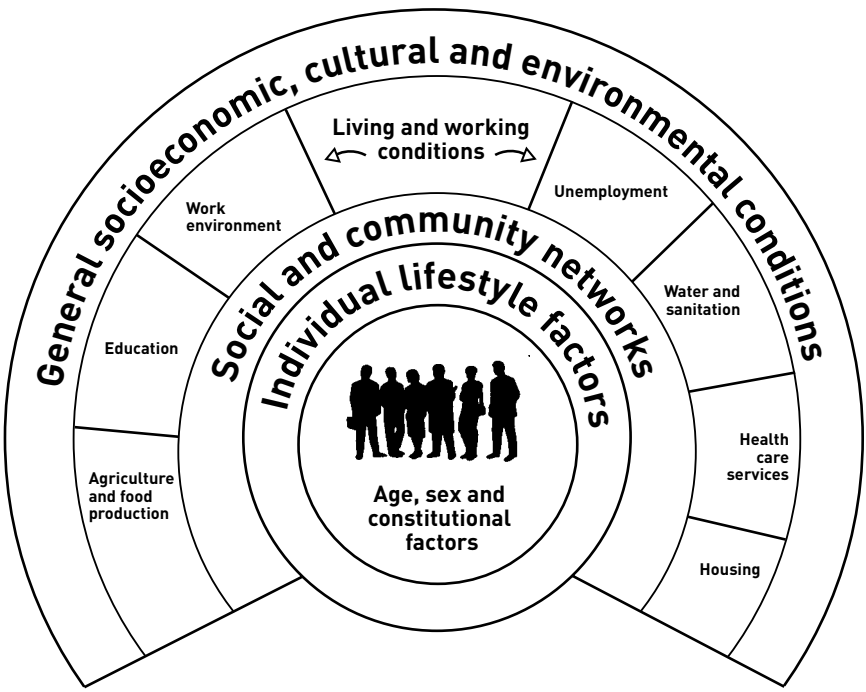
If, in the analysis to come, we find direct effects of parental disadvantage on adult health status, controlling for the individual's own characteristics, we will have evidence in support of the first two hypotheses. If, on the other hand, we find that parental background influences adult health status indirectly, this will give us evidence in support of hypothesis three. If there are no significant effects, either direct or indirect, of family background on current health, this will support hypothesis four.

3.2 Determinants of adult health

Before we focus specifically on the influence which early life and parental socio-economic position may have on adult differentials in health, here we examine some of the work that has been carried out on the wider causes of health inequalities.

In adulthood a number of domains have been shown to have an impact on health and mortality, although it should be said that the exact mechanism through which these effects occur is often unclear. It is customary at this point to present the graphic from Dahlgren and Whitehead (1991) which shows the many factors which may influence health (see Figure 3.3). It is clear from this graphic that health is influenced by a large number of different factors.

Figure 3.3: Influences on health (Dahlgren and Whitehead 1991)



In Ireland, research by Kelleher *et al.* (2003a) has shown pronounced socio-economic variation in self-assessed health across the Irish population, with receipt of a medical card being a particularly strong indicator of poor health. Given that the medical card is allocated primarily through an income means test, Kelleher *et al.*'s finding suggests a pronounced relationship with income poverty. Inclusion of education, employment status and social class led to a significant moderation in the effect of having a medical card, confirming that the availability of resources was an important determinant. Kelleher *et al.*'s analysis also showed that some of the poorer health status reported by medical card holders could be explained by higher levels of smoking among this group.

These results for Ireland tie in with the Black Report's stated preference for materialist explanations (i.e. explanations based on differences in means or resources) of inequalities in mortality between social classes and it has been shown repeatedly that a large number of disadvantages cluster around less-advantaged social class positions such as low-quality housing (Floud *et al.* 1990), worse health behaviours (Kelleher *et al.* 2003b; Kushi *et al.* 1985), lower neighbourhood social capital and support (Kaplan *et al.* 1988; Berkman and Syme 1979; Kawachi *et al.* 1976) and higher social stress (Brunner 1997; Karasek and Theorell 1990). The last of these – psychological stress, has received increasing attention in recent years as an important mediating factor through which social position impacts on cardiovascular disease (but has also been linked to other diseases through the immune system, cf. Elstad 1998).

It would be impossible given the evidence base available in the Irish context to test all of these hypotheses, but the Living in Ireland Survey (LIIS) which ran until 2001 provided a range of data that will allow us to examine the impact of family background as well as some of these wider determinants. The LIIS database contains data on housing conditions, health behaviours, social support, employment status, marital status, educational attainment, social class, income and deprivation. This gives us seven groups of variables that can be examined as well as demographic factors such as gender, age and marital status:

- Health behaviours
- Housing problems
- Social support
- Material conditions (income, deprivation)

- Labour market status
- Education
- Social class.

We discuss the creation of each of these measures from the LIIS data set below.

3.2.1 Health behaviours

Health behaviours are a very important influence on health status. Here we use two variables as proxies of the respondent's health behaviours: a measure of the extent of cigarette smoking in the present or past and a grouped body mass index (BMI – kg/m^2). Smoking is a strong negative influence on health and the risk to health increases with regular smoking, thus here we measure smoking using a five-category variable: current regular smoker, current occasional smoker, past regular smoker, past occasional smoker and never smoked. The BMI index is a useful indicator of general diet and level of exercise, and being overweight and particularly being obese correlate with a range of health problems such as diabetes, heart disease and stroke. Our BMI measure is divided into underweight (BMI<20 for men and 18.7 for women), normal weight (BMI 20–25 for men and 18.7–23.8 for women), overweight (BMI 25–30 for men and 23.8–28.6 for women) and obese (BMI 30+ for men and >28.6 for women).

3.2.2 Housing problems

We use a six-item scale to measure housing problems. The scale refers to the quality of housing that the person lives in and whether there are problems with this housing such as insufficient space, inadequate heating, a leaking roof or damp and rot. Research has shown that damp housing is related to frequent respiratory tract infections (Martin *et al.* 1987; Platt *et al.* 1989); poorly built and/or insulated housing has been implicated in acute morbidity and mortality from heart disease (West and Lowe 1976; Crombie *et al.* 1989).

3.2.3 Social support

Research suggests that social support and social relations make an important contribution to health. Social isolation and exclusion are associated with increased rates of premature death and poorer chances of survival after a heart attack (Kaplan *et al.* 1988). Lower social and emotional supports are also associated with a host of negative outcomes such as higher levels of disability from chronic disease and depression (Berkman and Syme 1979). To measure social support we use three variables relating to patterns of association. Although a person's pattern of association is not a direct measure of available social support, we would argue that it is an indirect measure with higher levels of association correlated with higher levels of social support. The first item asks whether the person is a member of a club or organisation, the second the frequency with which they talk to neighbours and the third how often they meet others, outside of their household, face to face.

3.2.4 Present material conditions

Our measure of current material living standards combines a number of variables chosen to measure both the current resources available to the individual (as part of a household) and the extent of lifestyle deprivation. To measure current resources we use current weekly disposable household income. Choosing household income assumes that individuals within households are pooling their resources and that individuals share a given standard of living and evidence suggests that, in general, this is the case (Nolan and Cantilon 1998). Since a given household income may support a different number of individuals with differing levels of need, we equivalise the income measure using the value 1 for the first adult and 0.66 for each additional adult and 0.33 for each additional child under 14 years.

We measure current lifestyle deprivation using a basic deprivation index based on whether a household has a particular item or service, and if not, whether this is because they could not afford it. The basic deprivation index is an eight-item scale which measures enforced lack of items including 'a substantial meal', 'adequate heating' or a 'warm, waterproof overcoat'.[5] The index measures enforced deprivation, where the influence of preference and choice have been removed, and was designed to be used as a measure of underlying 'generalised lifestyle deprivation' (see Callan *et al.* 1993; Nolan and Whelan 1996; Layte *et al.* 2001a; Whelan *et al.* 2001).

5 This eight-item deprivation index has recently been replaced by an eleven-item scale (see glossary under consistent poverty).

3.2.5 Labour market status

Labour market status is divided into four groups: those who are currently employed for one or more hours a week, those who are self-employed, those who are unemployed and those who are economically inactive. Unemployment and inactivity are self-defined.

3.2.6 Highest educational qualification

We use a four-category measure for education representing those with primary education alone, lower secondary education, upper secondary education and third level education. The same four-category classification is used to measure parents' education, although we select a single measure for parental education using that of the parent with the highest educational qualification.

3.2.7 Social class

Our measure of class is a six-category version of the Erikson/Goldthorpe (EG or EGP) social class schema. The EG schema we use is that used in the CASMIN social mobility project (Erikson and Goldthorpe 1992) which usually produces eleven social class positions. In our analysis, we collapse these eleven classes into the following six-class scheme:

- Professional and managerial (classes I and II)
- Clerical (IIIa)
- Self-employed (IVa and IVb)
- Farmers (IVc)
- Skilled manual, technical and supervisory employees (V and VI)
- Unskilled manual workers (IIIb, VIIa and VIIb).

The same class measure is used for both the respondent and that of the 'breadwinner in the home' when the respondent was roughly aged 14.

3.3 Measures of health

In Chapter 2 we examined three different measures of health – the subjective (How is your health in general?), the medical (Do you have any long-standing illnesses?) and the functional (Has emotional or physical ill health limited your activities in the last two weeks?). We showed that these measures are all related to different measures of disadvantage, with the more disadvantaged more likely to have poorer health.

The standard assumption when using these measures is that, within categories, they reflect the same health status across different groups, e.g. those with 'bad' health in the lowest income category are not more or less sick than those with 'bad' health in the highest income category. But this assumption may not be warranted. In the absence of some 'gold standard' against which subjective assessments can be judged (such as clinical appraisal of an individual's health status), it is difficult to validate responses to social survey questions fully. Table 3.2 gives the distribution of the general health question according to whether the person has a chronic illness and their income quintile. This shows that the relationship between the general health question and chronic illness changes across income groups.

Using a three-category variable representing self-assessed health we can see that for both those with and without a chronic illness, those in the lowest income quintile have a lower self-assessed health than other categories, but that the differential is particularly large for those with a chronic illness. Whereas 48% of those in the highest income category with a chronic illness report 'good' health, this is true of 27% of those in the lowest income category. Similarly, the lower income categories are more likely to report 'bad' health with a chronic illness, with bad health displaying a pronounced gradient across the income groups.

Table 3.2: Distribution of self-assessed health by chronic illness and disposable household income quintile (LIIS 2001)

INCOME QUINTILE	SELF-ASSESSED HEALTH	NO CHRONIC ILLNESS (%)	CHRONIC ILLNESS (%)
1 (lowest)	Good	85.8	27.4
	Fair	13.4	55.7
	Bad	0.8	16.9
	Total	100	100
2	Good	94.6	41.9
	Fair	5.4	42.4
	Bad	0.0	15.7
	Total	100	100
3	Good	96.0	43.5
	Fair	3.8	45.4
	Bad	0.2	11.1
	Total	100	100
4	Good	95.0	43.4
	Fair	4.9	42.9
	Bad	0.1	13.7
	Total	100	100
5 (highest)	Good	93.8	48.2
	Fair	6.2	42.0
	Bad	0.0	9.8
	Total	100	100

These results suggest that, for the measure of chronic illness at least, those in lower income groups seem to be 'sicker' in what is ostensibly the same category. If so, this would suggest that we should be careful when using a single measure. Using a range of measures may mitigate the inadequacies of only one and provide a better measure of health status. However, it may be that each of our observed health variables is, in fact, a flawed measure of an underlying, latent dimension of ill health. If so, simply using two or more measures of health simultaneously will be a poorer measure of this latent health state than combining the different measures of health status into a single indicator that summarises health and distils from the three indicators their common component. Adda *et al.* (2003) have suggested a method through which different health

indicators can be combined based upon factor analysis and this is the procedure we adopt here (a technical presentation of this procedure can be found in Appendix 3). This produces an 'ill health index' (IHI) and all further analyses here and in Chapter 6 use this index.

3.4 Describing the pathways to adult health

In this section we want to get a descriptive picture of the relationship between individuals' current socio-economic circumstances, those of their family of origin and their current health status. Once we have accomplished this we will be in a better position to assess whether family background measures continue to have an impact on health status in adulthood even when we have controlled for current circumstances.

If family background remains a significant predictor of current health, even after controlling for current circumstances, then we will have evidence that the lifecourse perspective on the determinants of health inequalities does indeed have some value in the Irish context, although we must wait until we estimate the direct and indirect effects of family background before we can assess the hypotheses set out in section 3.1.

In measuring the patterning of the IHI we control for the impact of age and gender so as to get a clearer picture of the impact of the measure of disadvantage. Figure 3.4 gives an estimate of the IHI by groups defined by their current household equivalised income, controlling for age and gender. As found in Chapter 2, higher levels of income are associated with lower levels of ill health and Figure 3.4 confirms the existence of a graduated relationship between income and health, even controlling for age and gender. Analysis shows that each of the other income groups is significantly different from the lowest.

Do we see a similar relationship between social class and the IHI? Figure 3.5 shows that we do, although as we would expect, the social class pattern is not as graduated as that found for income. Whilst the professional and managerial class has the lowest measured ill health, the clerical social class actually has a higher level of ill health than the self-employed and farmers. However, if we leave the clerical class aside for a moment, we can see a fairly graduated relationship between household social class and levels of ill health. All the classes in Figure 3.5 are significantly different from the professional and managerial class, even controlling for age and gender.

Figure 3.4: Estimated IHI by household equivalised income quintile, controlling for age and gender (LIIS 2001)

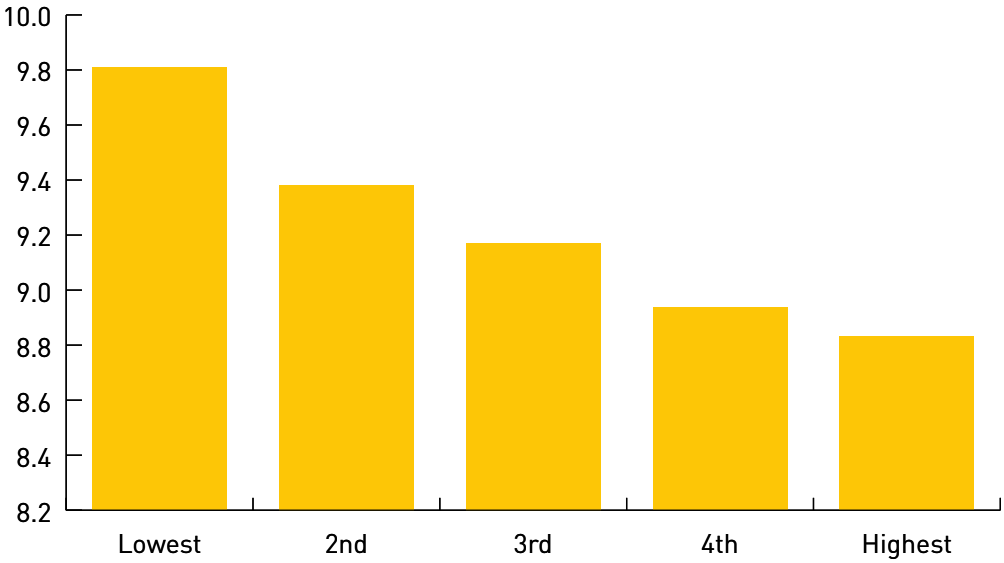


Figure 3.5: Estimated IHI by household social class, controlling for age and gender (LIIS 2001)

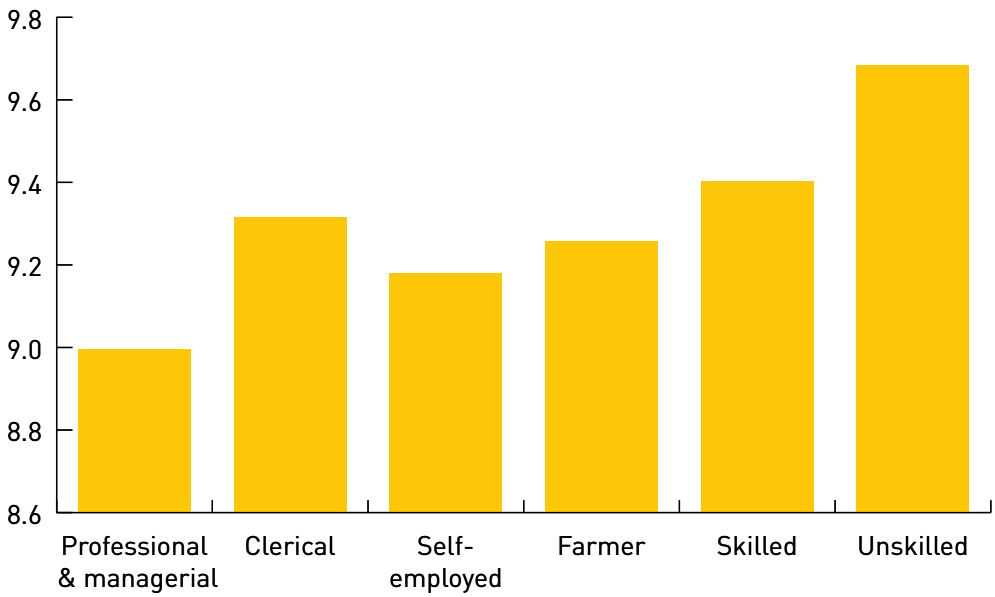
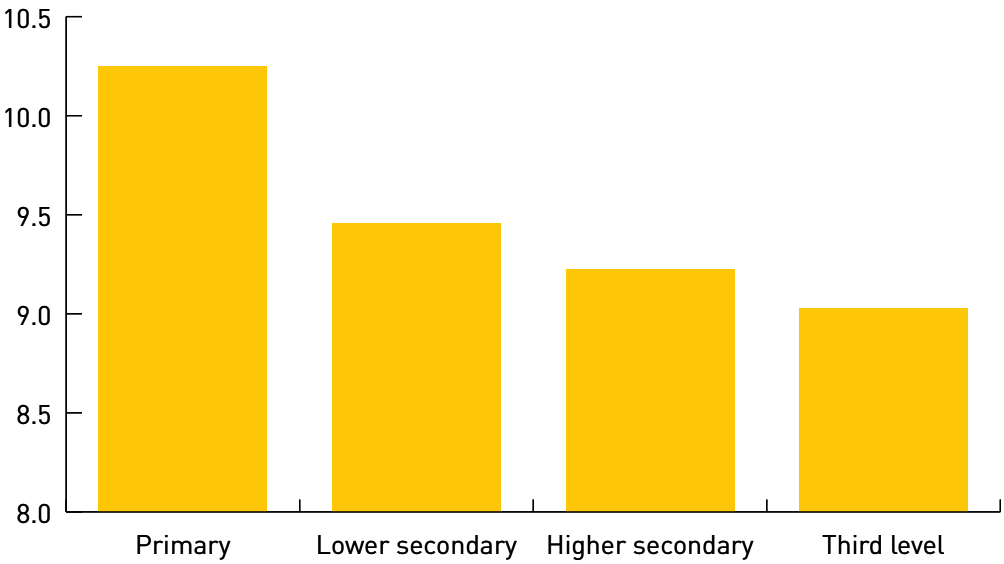


Figure 3.6 completes this overview of current measures of disadvantage by showing that social groups defined by their highest level of education also differ markedly in terms of the IHI. Even controlling for current age and gender, it is clear that those with primary education alone have significantly worse health than other groups.

Figure 3.6: Estimated IHI by own highest level of education, controlling for age and gender (LIIS 2001)



The IHI presents a pronounced picture of inequalities in health across our three main measures of disadvantage. However, our main interest is in the relationship between family background, current circumstances and health status. Do we see a similar graduated relationship between the IHI and measures of family background?

Figure 3.7: Estimated IHI by parents' social class, controlling for age and gender (LIIS 2001)

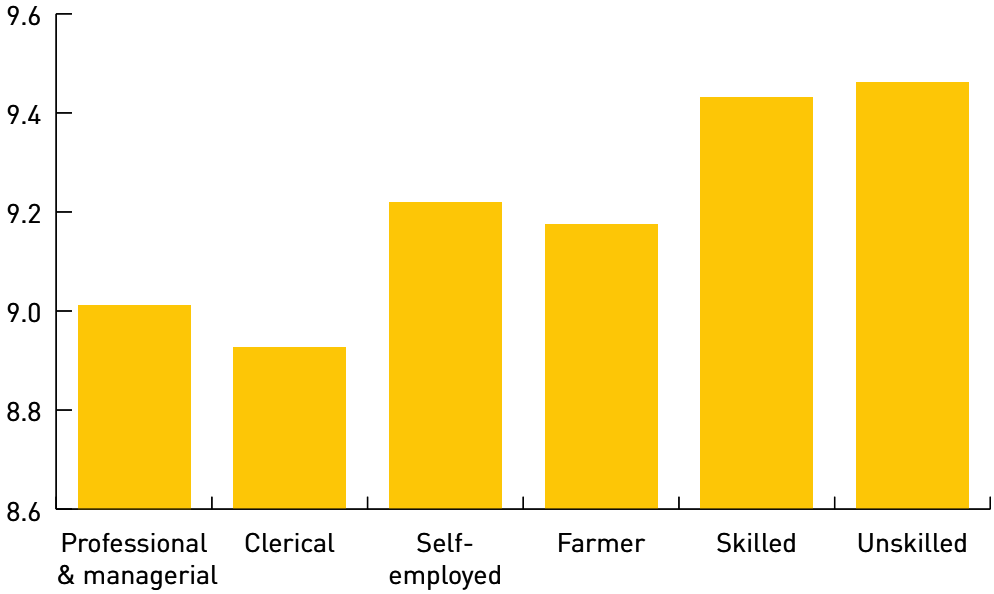


Figure 3.7 shows the relationship between the IHI and the individual's parents' social class position. This reveals a similar pattern to that observed for the individual's current household class position, although there are some differences. Here, those with clerical origins actually have a lower IHI than those from a professional and managerial background. Those from self-employed backgrounds also have a higher index score than farmers. As underlined before, we will not necessarily see a graduated relationship left to right, nonetheless, we should see the manual social classes who are more disadvantaged having worse health than the white-collar groups and this is indeed the case, even though we are looking at parental social class rather than the person's own social class. It should be said immediately, however, that the patterns in Figure 3.7 largely reflect the strong correlation that exists between the class positions of parents and their children.

Do we see the same patterning for a measure of the educational level of an individual's parents? Figure 3.8 shows that we do, with a pattern very close to that found when looking at the individual's own educational attainment. For example, as in the analysis of own education, there is a pronounced downward gradient in ill health as we move from the lowest to the highest level of educational qualification. The gap between those whose parents had primary education alone and all others is largest. It is important to note again here that the measure of education used is that of the respondent's parents, not the respondent's own educational level.

Figure 3.8: Estimated IHI by parents' highest level of education, controlling for age and gender (LIIS 2001)

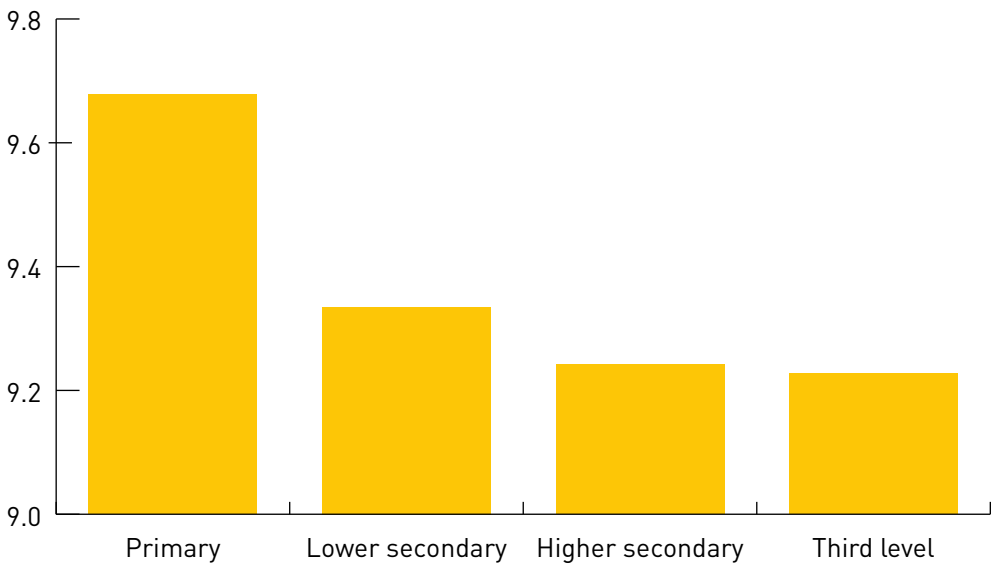


Figure 3.9 gives the individual's current IHI by family of origin's difficulty in making ends meet during the individual's childhood. This shows a pronounced relationship, with difficulty associated with a higher level of ill health, even controlling for the age of the individual. This is important as older respondents may have experienced a higher level of deprivation during childhood on average than younger respondents who grew up in later decades. As with all the charts so far in this section, however, we are not yet controlling for the individual's current circumstances and thus it may be that the association between family background and current health status is completely

explained by the strong association between people's current social class/education and income and that of their parents.

Figure 3.9: Estimated IHI by extent of 'difficulty in making ends meet' during childhood in family of origin, controlling for age and gender (LIIS 2001)

We can gain some insight into the association between people's current class/education/circumstances and that of their family of origin by looking at correlation coefficients. The degree of difficulty that an individual's family had in making ends meet when the person was growing up explains 23% of the variance in the individual's own difficulty in making ends meet. Parents' social class position when the person was growing up explains 32% of the variability of current class position. Parents' educational level explains 42% of variance in the person's highest educational level. These associations are very substantial by general social science standards and attest the strong relationship between own socio-economic position and that of family of origin.

We can get a crude idea of the relationship between family of origin, current social class and income and health by getting the mean health status for groups defined by these variables. If parental social class does influence current health status, net of own social class, we would expect to see differences in health by parental class within current social class groups. Displayed graphically, with the most advantaged current class on the left and least advantaged on the right, we would expect the lines to curve upward from left to right if there is a relationship. A graph showing the cross-tabulation of all groups is rather hard to interpret since there are quite small numbers of individuals in some groups (farmers and self-employed groups in particular), therefore Figure 3.10 gives the patterns for those whose family background was either professional and managerial or unskilled manual.

Figure 3.10 shows a distinct relationship between class of origin and health, even controlling for current social class, in exactly the manner suggested. The effect of class of origin is particularly pronounced for those who are currently in the unskilled manual social class, for whom we see higher ill health irrespective of parental background. Whereas those whose parents were professional or managerial have a mean IHI of 9.7, the mean for those with unskilled manual parents is 10.6.

As we move from right to left in Figure 3.10 the lines representing class background move steadily closer together and mean health differences are smallest among those who are currently professional or managerial themselves. This pattern suggests a clear relationship between current and past circumstances, with position in an advantaged current class making up for past circumstances to some extent, whilst disadvantaged current class has the opposite effect, widening differentials between origin classes.

It certainly seems from Figure 3.10 that differentials by current class are smaller if the respondent comes from a professional and managerial class background. Other explanations are possible however. If older respondents from unskilled manual backgrounds are more likely to become unskilled manual employees themselves then it may be that the increase in ill health shown is actually accounted for by the older average age of the unskilled manual class. Only by controlling for age in the next section whilst examining the impact of current class and family background will we be able to discount this explanation.

Figure 3.10: Current IHI by parental and own household social class (LIIS 2001)

We can do the same descriptive exercise to examine the impact of highest educational qualification relative to current social class position. Figure 3.11 does this and shows that the main differentiation is between those with no qualifications and all others, although there is some differentiation between the different qualifications with lower qualifications associated with worse health. As we have already seen that health varies across social classes, we would expect that the lines for each level of qualification would slope upward from left to right signifying worse health in manual social class positions. Among those with no qualifications this does indeed seem to be true, although the line drops somewhat for the self-employed.

Figure 3.11: IHI by highest level of education and current household social class (LIIS 2001)

As we have seen before, the relationship between class and health is not straightforward, but we do see a basic division between manual and non-manual groups with the unskilled having the worst health. Those respondents with no qualifications who are currently in the professional and managerial class have a higher reported health than those now in the unskilled manual class. This gradient across current class positions is true for all the other educational levels also, but the difference is far less pronounced.

Overall, we do find patterns which suggest that past circumstances, in the form of parental social class and own educational qualifications, have a bearing on current health status controlling for current level of advantage. These tests are not definitive, however, as we do not control for a host of other factors. This is the task of the next section.

3.5 Pathways of disadvantage: Modelling the relationships

In this section we will examine whether the social class of family of origin and the level of parental education influence the adult health status of individuals and if they do, whether this effect is direct, indirect or both. The paths that we wish to examine are set out schematically in Figure 3.12.

Figure 3.12: Direct and indirect relationships between parental background and current health status

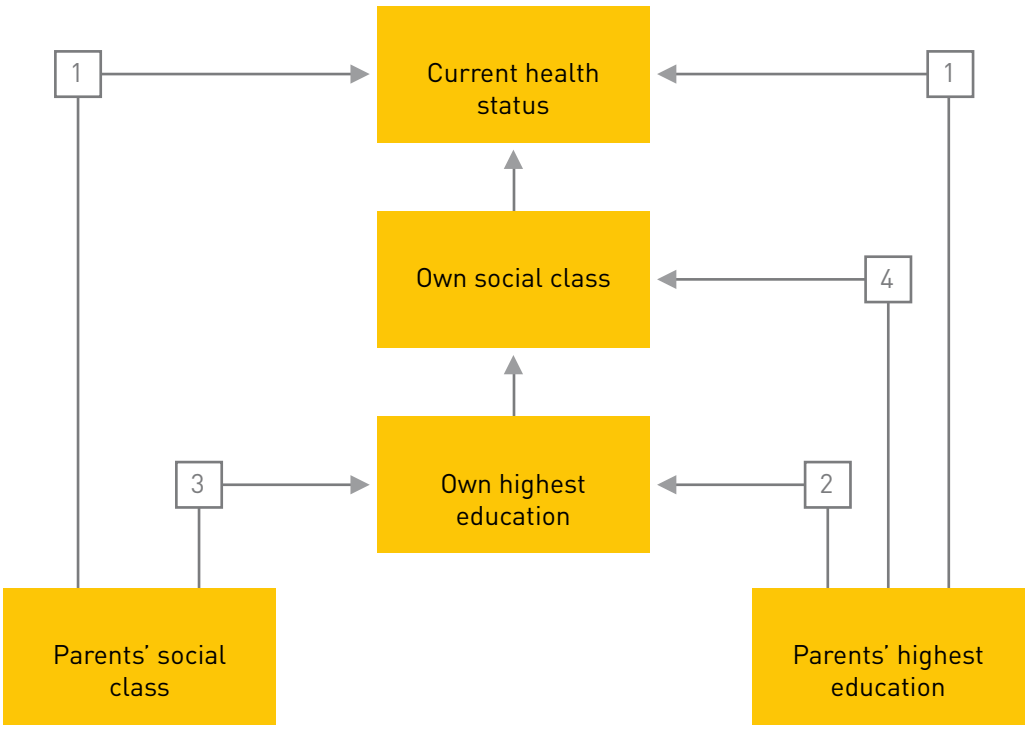


Figure 3.12 shows direct pathways between parental social class and education and adult health status (path 1) as stipulated by hypotheses one and two in section 3.1. To reiterate, these hypotheses suggested that exposure to poorer socio-economic position in infancy or childhood leads *directly* to adult illness.

On the other hand, Figure 3.12 shows an indirect pathway between parental background and adult health operating through the individual's own education level and social class attainment (paths 2 to 4). As described by Lundberg (1993) this suggests that the parental background is *indirectly* related to adult inequalities in health via other factors.

To examine these hypotheses we use a statistical technique called path analysis, in which we estimate statistical models that quantify the effect of variables on different 'paths' that lead from antecedent conditions to later outcomes. Using path analysis we can literally specify the paths between variables in much the same way as presented in Figure 3.12. This means that we estimate the impact of:

- Parental social class on the respondent's educational attainment.
- Parental education on the respondent's educational attainment.
- Parental education on the respondent's social class.

We thus explicitly model paths 2, 3 and 4 in Figure 3.12, i.e. the indirect links between parental background and health, whilst simultaneously modelling the direct effects of current circumstances *and* parental background (path 1 in Figure 3.12). All direct effects are thus independent of any indirect effects.

3.5.1 Impact of parental education and class on the respondent's educational attainment

One of the valuable dimensions of path analysis is that it allows us to quantify the impact of variables on earlier steps in the causal path, although 'causal' should be used advisedly here as we are using cross-sectional data, albeit cross-sectional data with retrospective recall. For example, Table 3.3 gives the effects of parents' education and social class on whether the individual attained primary education alone, controlling for all other variables in the model (as shown in Appendix 2).

Table 3.3: Logistic regression results for the effect of parental education and social class on attaining primary education only (LIIS 2001) (controlling for all variables – see Appendix 2)

PARENTS' EDUCATION/SOCIAL CLASS	MEN		WOMEN	
	ODDS	SIG.	ODDS	SIG.
Primary education only	2.98	***	3.44	***
Lower secondary education	1.41	ns	1.58	ns
Upper secondary education	0.96	ns	1.34	ns
Third level education	1.00	Ref.	1.00	Ref.
Professional and managerial	1.00	Ref.	1.00	Ref.
Clerical	0.63	ns	0.99	ns
Self-employed	1.18	ns	1.20	ns
Farmer	1.69	***	1.48	*
Skilled	1.42	*	1.92	***
Unskilled	1.82	***	2.45	***

Significance: ns=not significant, *=P<0.05, **=P<0.01, ***=P<0.001
Ref.=the status to which other categories are compared

Estimates were also obtained for all other educational levels but here we want only to give an example of how social disadvantage is passed on directly between parents and children. This shows that having parents with primary education alone is a significant predictor of attaining this level of education oneself compared to having parents with third level education. Parents having primary level education alone increase the chances of the person having this level of education by almost 300% for men and 344% for women when compared to individuals whose parents had third level education. We see this effect even when controlling for a large number of other characteristics. Similarly, coming from an unskilled manual social class increases the chance of a man attaining only primary education by 182% and of a woman by 245%.

These results show that both parental education and social class have a significant and direct impact on the person's educational attainment, even controlling for a large number of other factors. What though of the direct impact of parental background on own health status and the hypotheses outlined earlier? The next section examines

hypotheses one and two on the direct impact of parental education and class as well as a number of other factors in more detail.

3.5.2 Direct effects of parental background

In this section we examine the direct effects of variables on health status including those representing the family background of the individual. To reiterate, if we find direct effects of family background on current health this would support hypotheses one and two.

The full models for men and women, including the parameters for the effects of the different variables, can be found in Appendix 2. Before we examine the direct effect of parental background, we first examine the other variables in the model (those outlined in section 3.2) as these reveal some interesting effects:

- Age is important: as age increases so does the level of ill health.
- Among both men and women, smoking daily, currently or in the past, is a significant predictor of worse health (compared to having never smoked) even controlling for age and other factors.
- Having a lower BMI than 'normal' significantly worsens health among men, as does being obese.
- Among women, those who are defined as overweight or obese have a significantly higher level of ill health (compared to women who are of the 'normal' BMI range).
- Employment status has a significant impact among both men and women, with those who are unemployed or inactive significantly less healthy than the employed.
- Among men, those who are self-employed also have a significantly higher ill health index.
- Marital status is also important, although in different ways for men and women. Among men, being divorced or widowed are associated with a significant increase in ill health. Among women, never having married, being separated or widowed are worse for health than being married.

- Problems with housing emerge as a significant predictor of worse health for men and women in the model. Here, higher numbers of problems significantly increase the level of ill health.

- Among men, higher income is significantly associated with better health, whereas basic deprivation is insignificant.

- Among women, deprivation is significant, whereas income is not.

Finally we come to the impact of social class and education – those of the respondent and of the respondent's parents. Among both men and women the respondent's own social class has no significant effect apart from a positive effect for male farmers. This lack of effect seems contradictory given the importance of class in earlier analyses, but it should be remembered that we are controlling for a large number of other factors here through which class would have its effect such as income, deprivation and housing. Confirmation of this is given by the fact that if we estimate a basic model with age, gender, education and social class, class is a very significant predictor of health status.

Own education on the other hand proves to be a very significant predictor of current ill health, with having primary education alone a predictor of worse health status.

Turning to the social class and education of the respondent's parents, Appendix 2 shows no significant direct effects for parents' level of education. Parental class is also insignificant for women and largely insignificant for men apart from the effect of coming from a self-employed background which is associated with having worse current health.

3.5.3 Indirect effects of parental background

The last section showed that no significant direct effects from parental background to own health were detected in the LIIS data. This suggests that hypotheses one and two described at the beginning of this chapter are not supported by the evidence so far. Is the same true for hypothesis three and the social programming position of Lundberg (1993)? Because each education variable has four levels and each class variable six levels, there are fifty possible indirect effects that could be reported (one level for parents' education and social class are used for comparison purposes). However, the majority of these effects are statistically insignificant and we choose not to report them here.

Table 3.4: Indirect effects of parents' social class and education on current IHI (indirect effects via own level of education being primary only) (LIIS 2001)

PARENTS' EDUCATION/SOCIAL CLASS	MEN		WOMEN	
	B	SIG.	B	SIG.
Primary education only	0.02	**	0.01	*
Lower secondary education	0.005	ns	0.004	ns
Upper secondary education	-0.001	ns	0.003	ns
Third level education	Ref.		Ref.	
Professional and managerial	Ref.		Ref.	
Clerical	-0.007	ns	0	ns
Self-employed	0.002	ns	0.002	ns
Farmer	0.008	**	0.003	ns
Skilled	0.005	ns	0.006	*
Unskilled	0.009	**	0.008	*

Significance: ns=not significant, *=P<0.05, **=P<0.01, ***=P<0.001
Ref.=the status to which other categories are compared

Results for parental education show that the statistically significant effects all occurred through the lowest level of education. It is thus the indirect effects associated with this level of education that are displayed in Table 3.4. This shows that having parents with primary level education has significant and positive indirect effects on the respondent's own health where the individual also has primary level education alone. The size of the effect implies that the full impact of having primary education alone on poorer health can be explained via the indirect effect of having a parent who themselves had no second level qualifications. However, the effect operates via the influence of parents' education on the educational attainment of their child rather than being a direct influence which, as we have already seen, is insignificant.

Table 3.4 also shows that coming from a parental household which is defined as either skilled or unskilled manual social class also has an indirect effect through the individual's own educational attainment, where that is primary education only. These effects are smaller than those found for parents' educational level, but significant nonetheless.

It should be emphasised that these effects are significant even when controlling for the complete set of variables outlined in section 3.2. This is important as it suggests that these effects are very robust. These findings show that hypothesis three on the indirect impact of childhood conditions and parental background receives considerable support from the LIIS data.

3.6 Summary and conclusions

This chapter has examined the lifecourse determinants of social class inequalities in health. The results from the chapter strongly support the hypothesis that family background influences adult health indirectly via the person's own educational and occupational attainment. The path analysis models found significant indirect effects for parental social class and education that worked through the effect of the respondent having low levels of education. The effect for parents' own education largely accounted for the effects of low education among respondents.

On the other hand, analyses found no significant direct effects for parental social class and education, which suggests that family background has its effect entirely through its impact on the person's educational and occupational attainment. These are very robust results and strongly support hypothesis three as opposed to hypotheses one, two or four. These results lend support to results elsewhere such as those of Lundberg (1993), who found that adverse conditions in early life were largely mediated by later circumstances leading him to advocate indirect causation over the hypothesis of direct effects through biological susceptibility. Such results do not support the findings of Barker and colleagues (1989, 1992, 1994) that pre-natal conditions are important. Their work uses data on infant death rates but does not examine the mediating impact of circumstances in the lifecourse. Moreover, a similar exercise carried out using Irish data (Pringle 1998) was ambiguous at best about the role of pre-natal conditions.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4 The Utilisation of GP Services

4.1 Introduction

As in many other countries, primary care is a central focus of Irish health policy, particularly in the context of reducing dependence on costly secondary care services. GP services are at the heart of primary care services in Ireland, and the extent to which GP services are equally accessible by all sections of society has been the focus of much recent discussion. There is some concern that the mix of private and public provision in Irish primary care may mean that GP services are not available to all socio-economic groups on an equal basis and that this may also influence the availability and utilisation of secondary and hospital services (Crowley 2005b). In this chapter we examine the patterns of primary care use across different population groups and focus in detail on the accessibility and affordability of GP services.

This chapter unfolds as follows. In section 4.2 we discuss in more detail the current system with regard to eligibility for free primary health care in Ireland, and the incentives this system creates on the part of both patients and providers with regard to the utilisation of primary health care services. In section 4.3 we use nationally representative micro-data to examine patterns of GP visiting by selected individual and household socio-economic characteristics. We relate visiting by the individual to their age, gender and health status as well as factors such as their education level, social class and household location. We also examine the financial incentives facing both the individual and the doctor, i.e. eligibility for free care and household income.

While variations in visiting rates due to age and health status are to be expected, examining the variation, if any, in visiting rates due to factors such as income and education is useful for highlighting possible inequities in visiting rates across different population groups. However, many of these characteristics are highly correlated with each other. For example, medical card eligibility is highly correlated with health status. This necessitates the use of multivariate regression techniques in order to untangle the independent effects of each of the different variables on the utilisation of primary care services. This is the task of sections 4.4 and 4.5.

Section 4.6 examines evidence on the affordability of GP services and in particular whether respondents to social surveys report not using GP services because of the costs of treatment. This is followed in section 4.7 by an analysis of the supply of GP services and whether this varies between areas defined as deprived or not. In section 4.8 we draw together the findings of the chapter and offer some tentative conclusions.

4.2 The role of financial incentives

4.2.1 Current system of eligibility for free primary care services

The most distinctive feature of the Irish health service, in comparison with most other European countries, is the pricing structure, with GP services only free of charge for the approximately 30% of the population who qualify for a medical card under different eligibility criteria. Around 26% of the population qualify either through an income means test, through particular health needs or because of their participation in an approved government training and employment scheme. From 1 July 2001, all individuals aged 70 years and over have been entitled to a medical card, regardless of income, and a further 3% of the population qualify on this basis. A medical card

scheme giving free access to GP services alone (and not covering prescription charges) was instituted in October 2005 and added just over 1% of the population to the total eligible under the Primary Care Reimbursement Service (PRCS) scheme.

The income thresholds for a medical card are set nationally and updated annually by the Health Service Executive. Currently (as at December 2006), the (gross) weekly income thresholds are €184.00 for a single person living alone, €266.50 for a married couple and €342.50 for a married couple with two children. The thresholds are higher for individuals aged between 66 and 69 years, and there are additional allowances available for rent/mortgage, child care and commuting costs (see www.medicalcard.ie/guide.htm/).[6]

To put the thresholds in context, the average gross weekly industrial wage in Ireland in 2006 was about €600 (CSO 2006b). A GP consultation fee of €40 to €55 (without adding any associated prescription costs), which would not be unusual (although there are no national figures on visiting costs at present), would constitute between 20% and 28% of the weekly disposable income of a single individual earning €200 per week (i.e. just above the €184 threshold for a medical card). Since 2005, individuals whose means are above the standard medical card threshold can avail of a doctor-only medical card which gives free access to GPs, but does not cover prescriptions. The means test for this card is 50% higher than for the standard medical card.

The remaining 70% of the population (or private patients) are entitled to free public hospital services and prescription medicines over a monthly limit, but must pay in full for GP services. Providers are free to set the level of charges levied on private patients. Private patients are also entitled to tax relief on certain medical expenses at their marginal rate of tax (they must however pay the first €125 per annum). In addition, the three main private insurers (VHI, Quinn Healthcare and VIVAS) have recently introduced plans that provide limited cover for primary care expenses. However, the majority of private patients pay the full cost of their GP services (as they do not visit frequently enough to avail of tax relief and/or partial reimbursement under private health insurance). Table 4.1 sets out the current entitlements to free GP services for medical card and private patients in Ireland.

6 Disregards are now allowed in respect of rent, mortgage, travel to work and child care expenses and assessment is carried out on an applicant's means after the deduction of tax and PRSI.

Table 4.1: Eligibility for free GP services in Ireland

PATIENT	GP SERVICES
Medical card	Free
Private	Full cost, but may also be eligible for: 1. Tax relief on medical expenses over €125 per annum 2. Partial reimbursement if privately insured and GP fees exceed a large annual deductible* 3. Partial reimbursement if privately insured under a dedicated primary care health insurance plan

*For example, under the Essential Quinn Healthcare insurance plan, GP expenses in excess of €250 per annum are reimbursed at €20 per subsequent visit; under the Health Manager Quinn Healthcare insurance plan, half the cost of GP expenses is reimbursed, up to a maximum of €7,650 per annum

While the income thresholds for a medical card increase annually in line with inflation, rising employment and average incomes in recent years have meant that the proportion of the population eligible for a medical card fell steadily, from 35.8% of the population in 1993 to 29.1% in 2003 (General Medical Services (Payments) Board, Annual Report, various issues). EU-SILC data show that 31% (241,000) of the total population experiencing income poverty did not have access to a medical card in 2004. This figure was 19% (52,000) for those experiencing consistent poverty. These figures declined in 2005 to 30% (229,000) and 16% (47,000) respectively.

It is in this context that recent discussion has focused on the affordability of GP services, and in particular on the situation of those just above the income threshold for a medical card. In response to such concerns, a GP visit card was introduced in October 2005, with income guidelines initially 25% higher, and now 50% higher, than for the standard medical card, but which only covers the cost of a GP visit, and not the associated prescription costs. Currently, the income thresholds for a GP visit card are €276.00 per week for a single individual, €400.00 for a married couple with no dependents and €514.00 for a married couple with two children under 16 years. Again, the thresholds are higher for those aged 66 to 69 years, and the same allowances as for the standard medical card are available. By end-2006, about 50,000 GP visit cards had been issued (compared to the figure of 200,000 mentioned when the scheme was introduced). Unlike those covered by the standard medical card, those who hold a GP visit card have to pay not only charges for hospital care, but at primary level also have to pay the cost of prescribed medicines (up to a monthly ceiling of €85).

The Irish primary health care system is therefore a mixture of a universal public health service alongside a fee-based private system. While this complex mixture has obvious implications for patients' behaviour with regard to the utilisation of primary health care services, the fact that providers are reimbursed in different ways for medical card and private patients could also distort providers' incentives with regard to the provision of such services (i.e. it distorts the incentives they face, not their behaviour necessarily). Sections 4.2.2 and 4.2.3 deal with each of these issues in turn. In these two sections it is important to bear in mind that we are discussing the *incentives* facing different actors in Irish primary care, not their *actual* behaviour which may not, indeed often does not, follow the structure of incentives. Understanding the structure of incentive is important however as it gives us a theoretical framework with which to understand the behaviours of patients and providers. We then go on to examine whether the data support our theoretical understanding.

4.2.2 Medical card eligibility and patient incentives

The financial incentives facing patients with regard to the utilisation of primary care services are clear: medical card patients face only time and transport costs in accessing primary care services plus foregone earnings, while private patients must in general pay the full economic cost. As the service provided to medical card and private patients is essentially the same (under the terms of the contract for the provision of services to medical card patients, primary care practitioners cannot discriminate between medical card and private patients in terms of surgery hours, treatment etc.), the current system encourages medical card patients to use primary care services whenever the perceived benefit of the consultation exceeds the time and transport costs, while private patients are in addition constrained by the monetary cost.

In terms of GP services, there is plenty of empirical evidence which does indeed show that medical card patients have significantly more GP visits than private patients, even accounting for the fact that medical card patients are, on average, older, on lower incomes and in poorer health than private patients (see Tussing 1983, 1985; Nolan 1991, 1993a; Madden *et al.* 2005; Nolan and Nolan 2005; Nolan 2007). A related study by Layte and Nolan (2004) confirmed that the distribution of GP services across the income distribution is pro-poor, with those on lower incomes utilising more GP services than would be suggested by their 'need'. On the other hand, the same study found that the distribution of other primary care services such as dentist and optician services is pro-rich, with those in the higher income deciles consuming more dentist and optician services than would be suggested by their 'need'.

The key issue is whether the incentives embodied in the medical card invoke the behaviour policy-makers desire on the part of medical card (and private) patients. There is plenty of empirical evidence from other countries which suggests that charges reduce utilisation, although they are a blunt instrument for encouraging a more efficient use of health care resources as they tend to reduce both 'necessary' as well as 'unnecessary' consultations (see, for example, Keeler 1992). In Ireland, as in other countries, the intention behind providing free public health services to lower income individuals is that the decision to seek medical care should not be dependent on economic resources/ability to pay. This principle is harder to accept where medical card eligibility is decided on the basis of a single income threshold, with no gradual withdrawal of benefits as incomes increase. Where there are just two categories of eligibility for free health care, the position of those just above the income threshold for a medical card is particularly vulnerable. However, the introduction of the new GP visit card deals in part with these concerns.

As more up-to-date data become available, it will be possible to compare the health service utilisation patterns of the three groups (standard medical card patients, GP visit card patients and private patients) in order to examine the importance of financial incentives in influencing individuals' choices with regard to the utilisation of health care services. Given findings in other countries on the influence of pricing, the difference in relative prices facing medical card and private patients with regard to different types of health care may encourage either 'under' or 'over' use of services, although there is no direct evidence of this. Private patients must pay in full for GP services, but are entitled to free or heavily subsidised public hospital services. Although charges for consultations in hospital accident and emergency departments (that are not referred on the basis of a GP consultation) are currently comparable with those for a GP consultation, the current system nonetheless encourages private patients to favour costly acute hospital services over GP care.

4.2.3 Medical card eligibility and provider incentives

The financial incentives facing GPs and other providers of primary care services are similarly clear cut, as they depend on the type of patient (medical card or private). Once again it is important to remember that we are discussing the theoretical economic incentives facing providers, not their actual behaviours. Providers may not follow the structure of incentives in practice, but it is important to understand them before we set about the empirical analysis.

GPs and other providers of primary care services are reimbursed by the state for services provided to medical card patients. GPs receive a capitation payment (a payment weighted for the age, gender and distance from the doctor's surgery of the patient). Private patients pay a fee-for-service for primary care services, and providers are free to set the level of this charge.

The difference in reimbursement method, particularly for GP services, may create differential incentives on the part of providers with regard to the provision of services to medical card and private patients. The fact that GPs receive a capitation payment for their medical card patients may give them an incentive to maximise the size of their patient list, yet to minimise the time spent with these patients. It may also introduce an incentive to minimise the services provided to these patients except for certain 'special items of service' such as suturing and vaccinations that receive a separate fee-for-service payment. Theoretically, the capitation system also discourages repeat consultations and acts as a possible incentive to refer PRCS patients to secondary care as soon as possible. It should be said that in practice many GPs may not know whether a patient is private or PRCS since this will be dealt with by a receptionist.

When dealing with private patients on the other hand, the economic incentive is to maximise the amount of services provided and to encourage repeat consultations, as GP income depends directly on the volume of services provided. In theory, GPs cannot refuse to accept an eligible patient onto their medical card list, and as such there should be no 'cream-skimming' behaviour by GPs in Ireland. It should be said that there is no evidence in the Irish context that GPs do indeed attempt to limit the time that they spend with PRCS patients or minimise the services provided.

A further complication was introduced with the extension of medical card cover to all over 70s in July 2001, regardless of income. Instead of applying the previous capitation rate to the 'new' over 70 medical card patients, GPs receive a capitation payment for 'new' over 70s that is between 2.6 and 4.6 times higher than that received for 'old' over 70s. In comparison with the treatment of 'new' over 70 medical card patients, this substantial difference in reimbursement method creates a possible incentive for GPs to minimise time spent with 'old' over 70 medical card patients (except for those 'special items of service' that receive a separate fee-for-service payment), to discourage repeat consultations and to refer such patients to secondary care as soon as possible. As the 'old' over 70s are on lower incomes (and by extension are likely to be in poorer health) than the 'new' over 70s, the current system therefore creates an incentive for GPs to minimise services provided to a very vulnerable section of society. Once again it is important to underline that providers' behaviour may be completely at

odds with the incentives that they face. There is no statistical evidence at present on the impact of this structuring of incentives, but it is clearly worth investigation.

Empirical evidence on the influence of financial incentives on the behaviour of providers is more limited than that for patients, not least because of the difficulty in obtaining observational data on provider, rather than patient, behaviour. However, evidence from the UK, which examined the response of GPs to the introduction, and abolition, of the fund-holding scheme, found that GPs responded in a manner consistent with the underlying financial incentives (Croxson *et al.* 2001; Dusheiko *et al.* 2003). Evidence for Ireland is more mixed. In the early 1980s, a series of studies examined the utilisation of GP services in Ireland and found that, even after controlling for all other possible influences on GP visiting, the probability of a return visit was significantly higher for medical card patients (Tussing 1983, 1985). At that time, GPs received a fee-for-service payment for both categories of patient (with the state paying for medical card patients and private patients paying out of pocket), so the incentive on the part of GPs was to encourage repeat or return consultations for medical card patients (who would be less likely to resist such consultations).

Partly in response to these findings, the system of reimbursement to GPs for medical card patients was changed to capitation in 1989. Madden *et al.* (2005) examined whether the change in reimbursement led to any significant change in the difference in GP visiting rates between medical card and private patients (if GPs were encouraging their medical card patients to return more frequently than necessary prior to 1989, the difference in GP visiting rates between medical card and private patients should have fallen after 1989). However, the authors found no significant change in the difference in GP visiting between medical and private patients after 1989.

4.3 The utilisation of GP services

Having examined the structure of incentives facing patients and providers we now move on to examine the actual patterns of utilisation in the population. In this section we examine the utilisation of GP services by describing how GP visiting patterns vary according to various individual and household socio-economic characteristics, and by estimating multivariate models which attempt to isolate the independent effect of the different influences on GP visiting (e.g. the independent effect of age on GP visiting once health status has been taken into account).

4.3.1 GP visiting patterns in the 1995 and 2001 LIIS

Starting with data from the LIIS, Tables 4.2 to 4.16 present information on GP visiting patterns for adults for 1995 and 2001, relating to visits on the person's own behalf (rather than with children). We first look at the way visiting varies by a set of factors that we might expect to reflect differences in the 'need' for health care – age, gender and various indicators of health status available in the survey. We then look at the variation in visiting by some other factors that we would not expect to give rise to or reflect differences in needs, at least once age, gender and health status have been taken into account. These include level of education, employment status, marital status, social class, household location, household income and medical card eligibility. As we will see, in a simple cross-tabulation there is substantial variation in visiting across these 'non-need-related' characteristics, but at this stage this could be because the groups in question also differ in terms of age or health status. One of the issues we are interested in addressing is whether differences across, for example, education or social class groups persist when we have taken differences in age composition or health status into account via formal statistical modelling. In presenting these visiting rates, all data are weighted to ensure that statistics are representative of the national population.

Table 4.2: Aggregate GP visiting patterns (LIIS 1995 and 2001)

VISITING PATTERN	1995	2001
Average number of GP visits	3.5	3.3
Proportion with at least one GP visit in the previous twelve months (%)	70.4	73.8
Average number of GP visits for those with at least one GP visit	5.0	4.7

From Table 4.2 we can see that the average number of GP visits per annum was 3.5 in 1995 and 3.3 in 2001. In 1995, just over 70% of the adult population had at least one GP visit in the previous year, and this proportion had risen to nearly 74% in 2001. Of those visiting at least once, the average number of GP visits was 5.0 in 1995 and 4.7 in 2001, representing a slight decline over the period. Of course, aggregate statistics such as these disguise substantial variation in visiting patterns across different

socio-economic groups and Tables 4.3 to 4.16 present information on GP visiting patterns for various sub-groups of the population.

Table 4.3: GP visiting patterns by age (LIIS 1995 and 2001)

AGE	AVERAGE NUMBER OF GP VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
16–24	2.1	2.2	58.7	62.9
25–34	3.0	2.7	68.1	71.0
35–44	3.1	2.5	67.3	67.9
45–54	3.2	3.3	69.4	73.3
55–64	4.5	3.8	76.8	79.9
65–74	5.7	5.6	86.1	92.4
75+	7.6	7.0	94.7	95.4
All	**3.5**	**3.3**	**70.4**	**73.8**

Table 4.3 shows that GP visits are an increasing function of age, with the proportion of those visiting their GP at least once a year increasing from approximately 60% of the 16–24 age group to approximately 95% of the 75+ age group in both years. In terms of the number of GP visits per annum, those aged 75 years and over make over three times as many GP visits as those aged 16 to 24 years.

Table 4.4 shows that females visit their GP in greater proportions than males, and have approximately 1.5 times more GP visits per annum.

Looking at GP visiting patterns by age and gender, Table 4.5 shows that the age gradient is steeper for men than for women. For example, men aged 75 years and over have approximately four times as many GP visits as men aged 16 to 24 years; while the corresponding figure for women is approximately three times as many GP visits. GP visits for pregnancy and childbirth for younger women undoubtedly contribute towards this pattern.

Table 4.4: GP visiting patterns by gender (LIIS 1995 and 2001)

GENDER	AVERAGE NUMBER OF GP VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
Male	2.8	2.6	63.1	66.5
Female	4.3	4.0	77.6	80.9
All	**3.5**	**3.3**	**70.4**	**73.8**

Table 4.5: GP visiting patterns by age and gender (LIIS 1995 and 2001)

GENDER/AGE	AVERAGE NUMBER OF GP VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
Male				
16–24	1.6	1.4	51.0	52.5
25–34	1.7	2.1	59.4	60.0
35–44	2.4	1.7	60.1	61.5
45–54	2.8	2.5	61.7	66.9
55–64	4.2	3.5	72.6	77.3
65–74	5.0	5.1	82.1	92.1
75+	6.6	6.3	93.8	94.2
Female				
16–24	2.8	3.0	67.4	73.4
25–34	4.2	3.4	76.4	82.6
35–44	3.7	3.3	74.5	74.0
45–54	3.7	4.1	77.5	79.8
55–64	4.9	4.1	80.9	82.5
65–74	6.3	6.0	89.5	92.7
75+	8.3	7.4	95.2	96.2
All	**3.5**	**3.3**	**70.4**	**73.8**

Tables 4.6 to 4.9 move on to detail GP visiting patterns by various measures of health status, namely the individual's self-assessed health status, whether the individual has a chronic condition, the individual's perception of the severity of this condition and levels of psychological distress.

There is clearly a relationship between self-assessed health status and the proportion of the population with at least one GP visit per annum, with all but a small minority of those reporting very bad health visiting their GP at least once a year, in comparison with approximately 60% of those reporting very good health. The differential in terms of the average number of GP visits is just as striking, with those in very bad health reporting 6.8 times more GP visits than those in very good health in 1995; by 2001, this differential had increased to 8.9 times more visits (see Table 4.6).

Table 4.6: GP visiting patterns by self-assessed health status (LIIS 1995 and 2001)

SELF-ASSESSED HEALTH STATUS	AVERAGE NUMBER OF GP VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
Very good	1.8	1.7	58.8	63.5
Good	3.1	3.0	73.2	76.0
Fair	7.5	7.6	92.6	95.8
Bad	12.7	10.5	93.5	99.8
Very bad	12.3	15.2	97.8	98.7
All	**3.5**	**3.5**	**70.4**	**73.8**

Similarly, as illustrated in Table 4.7, those who report that they suffer from 'a chronic physical or mental health problem, illness or disability' visit their GP in greater proportions and have a higher total number of GP visits per annum than those without such conditions in both years.

Table 4.7: GP visiting patterns by chronic illness (LIIS 1995 and 2001)

CHRONIC ILLNESS	AVERAGE NUMBER OF GP VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
No chronic illness	2.2	2.2	65.1	67.8
Chronic illness	8.8	7.4	92.3	95.6
All	**3.5**	**3.5**	**70.4**	**73.8**

Focusing on those who report a chronic condition, Table 4.8 presents GP visiting patterns by the individual's self-assessment of the severity of their condition. While there is a slight increase in the proportions visiting their GP at least once a year as the severity of conditions increases, those who report that they are severely limited in their daily activities have approximately twice as many GP visits per annum as those who are not hampered in their daily activities.

Table 4.8: GP visiting patterns by self-assessed severity of illness for those reporting a chronic illness (LIIS 1995 and 2001)

SEVERITY OF CHRONIC ILLNESS	AVERAGE NUMBER OF GP VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
Not hampered	5.9	5.0	85.9	92.3
Slightly hampered	8.5	7.0	94.0	96.1
Severely hampered	11.6	11.2	92.3	98.0
All	**8.8**	**7.4**	**92.2**	**95.5**

Turning to psychological health status, we find that those who are deemed to be in psychological distress[7] have over twice as many GP visits as those who are not regarded as psychologically distressed; and nearly 90% of those in distress visit their GP at least once a year, in comparison with approximately 70% of individuals who are not classified as psychologically distressed (see Table 4.9).

Table 4.9: GP visiting patterns by psychological health status (LIIS 1995 and 2001)

PSYCHOLOGICAL HEALTH	AVERAGE NUMBER OF GP VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
No psychological distress	2.9	2.9	69.3	72.3
Psychological distress	6.9	6.7	84.8	87.2
All	**3.6**	**3.4**	**72.0**	**74.5**

*The measure of psychological health status is not available for questionnaires completed by proxy (which account for 13.9% of observations in 1995 and 14.5% of observations in 2001)

We now move on to detail GP visiting patterns by factors other than age, gender and health status. While differences in GP visiting rates due to factors such as age and health status are to be expected, examining the variation, if any, in GP visiting rates due to 'non-need' factors such as household location, income or medical card eligibility may highlight possible inequities in GP visiting across different population groups.

7 Scores from the General Health Questionnaire (GHQ) are used to construct a variable indicating psychological health status. The GHQ contains twelve questions relating to psychological health status. For the six positive statements, a person scores one if they answer 'less than usual' or 'much less than usual'. For the six negative statements, a person scores one if they answer 'more than usual' or 'much more than usual'. An example of a positive statement is 'Have you recently been able to concentrate on whatever you're doing?'. An example of a negative statement is 'Have you recently lost much sleep over worry?'. These scores are added up and constitute an ordinal variable indicating the degree of psychological distress; anyone scoring above the conventional threshold of two is considered to be in psychological distress (see also Nolan 1993a).

Table 4.10 shows that while the average number of GP visits per annum declines as the level of education increases, the proportions visiting their GP at least once are highest for those with only a primary education, followed by those with a third level education, and lowest for those with lower or upper secondary levels of education. Table 4.10 suggests that while those with a third level qualification may be just as likely to go to their GP at least once as those with lower levels of qualifications, they tend to have a lower frequency of visiting overall.

Table 4.10: GP visiting patterns by highest level of education (LIIS 1995 and 2001)

HIGHEST LEVEL OF EDUCATION	AVERAGE NUMBER OF GP VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
Primary	5.3	5.4	78.0	83.5
Lower secondary	2.6	3.0	64.3	70.3
Upper secondary	2.7	2.5	66.5	69.6
Third level	2.2	2.3	69.2	71.6
All	**3.5**	**3.3**	**70.4**	**73.8**

Despite the fact that the number of GP visits refers to personal visits only (i.e. visits accompanying children are not included), GP visiting also shows distinct patterns by marital status, with unmarried individuals having the lowest proportion visiting their GP at least once and the lowest average number of GP visits per annum, while widowed persons have the highest – both could of course be related to the age profile of the group in question (see Table 4.11).

Table 4.11: GP visiting patterns by marital status (LIIS 1995 and 2001)

MARITAL STATUS	AVERAGE NUMBER OF GP VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
Never married	2.7	2.7	62.8	68.6
Married	3.5	3.4	72.0	75.1
Separated/divorced	3.6	4.1	80.9	78.2
Widowed	7.7	6.0	92.4	91.5
All	**3.5**	**3.3**	**70.4**	**73.8**

Table 4.12 shows that those who are employed visit their GPs in smaller proportions, and have a smaller average number of GP visits, than the unemployed or economically inactive. This could be because visiting the GP during working hours is more difficult for the employed, but there may be other differences between these groups. Section 4.4 will investigate the independent effect of employment status via multivariate modelling.

Table 4.12: GP visiting patterns by labour force status (LIIS 1995 and 2001)

LABOUR FORCE STATUS	AVERAGE NUMBER OF GP VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
Employed	2.1	2.1	63.5	67.4
Unemployed	2.8	4.1	63.1	72.7
Inactive	5.1	4.9	78.9	82.8
All	**3.5**	**3.3**	**70.4**	**73.8**

Moving on to social class (using the Erikson, Goldthorpe and Portocarero [1979] twelve-category classification), for those individuals for which we have information we find that the proportion visiting at least once, and the average number of GP visits per annum, are in general higher in the non-manual and lower in the manual social class groups in 1995. The pattern becomes less pronounced in 2001 (see Table 4.13).

However, these patterns are substantially driven by the higher level of women in non-manual groups and men in manual groups. This is another example of the need to control for different factors in a multivariate model.

Table 4.13: GP visiting patterns by social class (LIIS 1995 and 2001)

SOCIAL CLASS	AVERAGE NUMBER OF GP VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
Service – higher	1.9	1.4	66.8	61.4
Service – lower	2.2	2.4	66.4	74.6
Routine non-manual – higher	2.7	2.7	69.9	69.1
Routine non-manual – lower	2.8	3.1	72.0	76.3
Self-employed – with employees	1.8	1.9	56.8	64.5
Self-employed – without employees	1.9	1.9	59.2	68.8
Technical supervisory	2.1	1.9	63.2	57.0
Skilled manual	3.0	2.0	64.5	63.9
Semi-skilled manual	2.6	3.1	54.4	71.8
Unskilled manual	1.5	3.3	50.2	46.7
Agricultural	3.9	3.7	73.2	85.4
Farmers	1.7	3.0	54.8	63.7
Unknown	2.2	2.4	59.6	68.9
All	**3.5**	**3.3**	**70.4**	**73.8**

Examining GP visiting patterns by household location, Table 4.14 reveals that while urban residents visit their GPs in greater proportions than rural residents, when we look in more detail at household location, there is no clear pattern of GP visiting across different areas of the country.

Table 4.14: GP visiting patterns by household location (LIIS 1995 and 2001)

HOUSEHOLD LOCATION	AVERAGE NUMBER OF GP VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
Rural	3.5	3.6	67.6	70.2
Urban	3.5	3.2	72.3	76.3
Open country	3.4	3.4	66.8	68.5
Village (200–1,499)	4.0	4.6	71.3	78.7
Town (1,500–2,999)	4.4	4.6	69.6	82.8
Town (3,000–4,999)	4.6	4.2	78.6	72.5
Town (5,000–9,999)	3.7	4.8	67.4	78.4
Town (10,000 or more)	3.9	3.5	75.8	74.3
Waterford city	2.5	4.3	59.0	80.4
Galway city	2.2	1.4	63.8	64.6
Limerick city	4.2	3.8	77.6	72.2
Cork city	3.8	3.7	76.4	75.3
Dublin city	3.1	2.8	70.5	79.2
Dublin county	3.6	2.3	73.4	71.8
All	**3.5**	**3.3**	**70.4**	**73.8**

We now move on to examine GP visiting patterns by household income and medical card eligibility. Table 4.15 shows that the number of GP visits per annum is highest for those towards but not at the bottom of the income distribution[8] – the third decile in 1995 and second decile in 2001. GP visiting rates fall sharply thereafter as income increases, although there are not pronounced falls in the proportion visiting at least once in the last year. The difference in results for these two measures could suggest that higher income groups use their GP as a gateway to other services, whereas lower income groups receive the bulk of their treatment from their GP.

8 Household income is equivalised, i.e. adjusted for the size and composition of the household.

Table 4.15: GP visiting patterns by household income (LIIS 1995 and 2001)

INCOME DECILE	AVERAGE NUMBER OF GP VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
1 (lowest)	3.9	5.6	71.1	80.2
2	4.7	5.8	74.5	84.1
3	5.2	3.7	76.1	76.6
4	4.2	3.2	68.4	67.9
5	3.5	3.1	67.1	71.8
6	3.2	2.6	70.6	71.4
7	2.9	2.0	65.8	67.7
8	2.8	2.7	69.3	68.4
9	2.7	2.2	71.4	76.1
10 (highest)	2.3	2.3	70.1	73.9
All	**3.5**	**3.3**	**70.4**	**73.8**

Since household income is the main criterion by which eligibility for a medical card is assessed, much of the variation in visiting frequency shown in Table 4.15 could simply reflect the proportion with medical card cover. Table 4.16 confirms that GP visiting patterns differ markedly by medical card status, with those covered by a medical card visiting their GPs in greater proportions, and having approximately 2.5 times more GP visits per annum than those without a medical card. However, medical card status is highly correlated with other characteristics such as health status (for example, while 40.7% of medical card patients report a chronic illness, only 11.5% of non-medical card patients do). This necessitates the use of multivariate regression techniques in order to untangle the independent effects of each of the variables, which we undertake in section 4.5.

Table 4.16: GP visiting patterns by medical card eligibility (LIIS 1995 and 2001)

MEDICAL CARD STATUS	AVERAGE NUMBER OF GP VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
No medical card	2.3	2.3	65.1	67.7
Medical card	5.7	6.0	80.1	86.9
All	**3.5**	**3.3**	**70.4**	**73.8**

4.3.2 GP visiting patterns in the 2001 QNHS

As discussed earlier, the data on health and health services utilisation collected in the QNHS are not directly comparable with those in the LIIS, and the range of socio-economic variables is more limited. Table 4.17 shows that 19.1% of the adult (18 years and older) population had at least one GP visit in the previous two weeks. Unfortunately, the data do not record the actual number of visits in the previous two weeks. As found in the LIIS, GP visiting is an increasing function of age, with nearly three times as many of those aged 65 years and over having at least one GP visit in the previous two weeks compared to those in the 18–24 age group.

Table 4.17: GP visiting patterns by age and gender (QNHS 2001)

AGE	PROPORTION VISITING A GP IN THE LAST TWO WEEKS (%)		
	MALE	FEMALE	ALL
18–24	8.0	16.2	12.1
25–34	8.4	22.4	15.4
35–44	11.5	21.3	16.5
45–54	14.8	19.4	17.1
55–64	20.7	24.2	22.4
65+	32.0	36.8	34.7
All	**14.6**	**23.4**	**19.1**

Once again, levels of use were higher for women, with 23.4% of females having visited their GP in the previous two weeks, in comparison with only 14.6% of males. In all age groups, females visit a GP in greater proportions than males, but the differential is larger for the younger age groups.

Moving on to health status, while the categories are different to those in the LIIS, Table 4.18 illustrates that GP visiting is, once again, an increasing function of deteriorating self-assessed health status, with just under 9% of those reporting excellent self-assessed health having at least one GP visit in the previous two weeks, in comparison with nearly 63% of those with poor self-assessed health.

Table 4.18: GP visiting patterns by self-assessed health status (QNHS 2001)

SELF-ASSESSED HEALTH STATUS	PROPORTION VISITING A GP IN THE LAST TWO WEEKS (%)
Excellent	8.9
Very good	13.9
Good	24.0
Fair	47.9
Poor	62.6
All	**19.1**

For those who report that they suffer, or have suffered, from one or more of the eighteen specified health conditions (e.g. angina, heart attack), 37.3% had at least one GP visit in the previous two weeks, while only 11.1% of those without any of the conditions had visited their GP (see Table 4.19).

Table 4.19: GP visiting patterns by chronic illness (QNHS 2001)

CHRONIC ILLNESS	PROPORTION VISITING A GP IN THE LAST TWO WEEKS (%)
No health conditions	11.1
One or more health conditions	37.3
All	**19.1**

Turning now to other factors, the QNHS has no information on the highest level of education completed, social class or household income. The patterns of GP visiting by employment status found in the QNHS are similar to those reported for the LIIS; while nearly 30% of inactive individuals visited their GP in the last two weeks, the corresponding figure for employed individuals is only 12.6% (see Table 4.20).

Table 4.20: GP visiting patterns by employment status (QNHS 2001)

EMPLOYMENT STATUS	PROPORTION VISITING A GP IN THE LAST TWO WEEKS (%)
Employed	12.6
Unemployed	17.1
Inactive	29.9
All	**19.1**

While the recall period is different, the patterns by marital status are also similar to those for the LIIS, where widowed and separated/divorced individuals have more contact with their GPs than married individuals or, in particular, single individuals (see Table 4.21).

Table 4.21: GP visiting patterns by marital status (QNHS 2001)

MARITAL STATUS	PROPORTION VISITING A GP IN THE LAST TWO WEEKS (%)
Single	14.7
Married	19.6
Separated/divorced	25.3
Widowed	34.2
All	**19.1**

Again the household location categories are different and therefore the data are not directly comparable with the LIIS, but Table 4.22 indicates that there is little variation in GP visiting rates across the country, ranging from a low of 17.9% of the population with at least one GP visit in the previous two weeks in Dublin to 21.7% of the population in the mid-west.

Table 4.22: GP visiting patterns by household location (QNHS 2001)

LOCATION	PROPORTION VISITING A GP IN THE LAST TWO WEEKS (%)
Border	19.5
Midlands	19.8
West	18.5
Dublin	17.9
Mid-east	19.1
Mid-west	21.7
South-east	18.9
South-west	19.8
All	**19.1**

The substantial difference in GP visiting behaviour between medical card patients and private patients is evident in Table 4.23, which shows that only 13.2% of those without a medical card had visited their GP in the previous two weeks, in comparison with over 34% of those with a medical card.

Table 4.23: GP visiting patterns by medical card eligibility (QNHS 2001)

MEDICAL CARD STATUS	PROPORTION VISITING A GP IN THE LAST TWO WEEKS (%)
No medical card	13.2
Medical card	34.1
All	**19.1**

4.3.3 GP visiting patterns in the 2004 EU-SILC

The data from the EU-SILC on GP visiting are much more limited than those available from either the LIIS or QNHS, as the number of GP visits is only asked of those with medical card eligibility. In addition, the reference period is different again, referring to the last four weeks. The absence of comparable information on private patients, as well as the different reference period for GP visits, means that we are unable to make any inferences regarding changing GP visiting patterns over time. Nonetheless, Table 4.24 shows that the average number of *free* GP visits in the previous four weeks was 0.82, with this figure generally increasing with age. Male medical card patients tend to have fewer GP visits than female medical card patients, and the differential between the youngest and oldest age groups is again wider for males than for females.

Table 4.24: GP visiting patterns by age and gender (EU-SILC 2004)

AGE	AVERAGE NUMBER OF *FREE* GP VISITS IN LAST FOUR WEEKS FOR MEDICAL CARD PATIENTS ONLY		
	MALE	FEMALE	ALL
18–24	0.43	0.54	0.50
25–34	0.67	0.92	0.82
35–44	0.70	0.90	0.82
45–54	0.85	0.73	0.78
55–64	0.77	0.90	0.84
65–74	0.75	0.90	0.83
75+	1.01	1.03	1.02
All	**0.76**	**0.86**	**0.82**

As with previous patterns, GP visiting shows a clear relationship with health status (see Tables 4.25, 4.26 and 4.27), with those in very bad health having over four times as many GP visits in the last month as those with very good self-assessed health status.

Table 4.25: GP visiting patterns by chronic illness (EU-SILC 2004)

CHRONIC ILLNESS	AVERAGE NUMBER OF GP VISITS IN LAST FOUR WEEKS
No chronic illness	1.14
Chronic illness	0.56
All	**0.82**

Table 4.26: GP visiting patterns by self-assessed health status (EU-SILC 2004)

SELF-ASSESSED HEALTH STATUS	AVERAGE NUMBER OF GP VISITS IN LAST FOUR WEEKS
Very good	0.45
Good	0.62
Fair	1.11
Bad	1.49
Very bad	2.20
All	**0.82**

Table 4.27: GP visiting patterns by severity of limiting activity (EU-SILC 2004)

SEVERITY OF LIMITATION	AVERAGE NUMBER OF GP VISITS IN LAST FOUR WEEKS
Severe limitation	1.52
Some limitation	0.96
No limitation	0.55
All	**0.82**

Examining utilisation by household location, Table 4.28 reveals that urban areas in general tend to have a higher average number of free GP visits than rural areas. (A detailed analysis of the influence of household location on GP visiting patterns is presented in section 4.7.)

Table 4.28: GP visiting patterns by household location (EU-SILC 2004)

LOCATION	AVERAGE NUMBER OF GP VISITS IN LAST FOUR WEEKS
Carlow	0.48
Cavan	0.90
Clare	0.76
Cork	0.96
Donegal	0.55
Galway	0.96
Kerry	0.78
Kildare	0.92
Kilkenny	0.62
Laois	0.93
Leitrim	0.66
Limerick	1.15
Longford	1.20
Louth	0.89
Mayo	0.68
Meath	0.77
Monaghan	0.72
Offaly	1.07
Roscommon	0.63
Sligo	0.80
Tipperary NR	1.02
Tipperary SR	1.18
Waterford	0.65
Westmeath	0.76
Wexford	0.61

LOCATION	AVERAGE NUMBER OF GP VISITS IN LAST FOUR WEEKS
Wicklow	0.81
Cork borough	0.86
Dublin borough	0.74
Dublin – Belgard	0.85
Dublin – Dun Laoghaire Rathdown	0.88
Dublin – Fingal	0.92
Galway borough	0.93
Limerick borough	1.00
Waterford borough	0.61
Urban	0.87
Rural	0.76
All	**0.82**

4.4 Multivariate analysis of GP visiting patterns

While the cross-tabulations presented above show clearly that GP visiting patterns differ substantially by various individual and household socio-economic characteristics, many of these characteristics that influence GP visiting are highly correlated with each other. For example, while there is a clear relationship between medical card eligibility and GP visiting, much of the variation in GP visiting across the two groups could simply be due to the fact that medical card patients are, on average, older, on lower incomes and in poorer health than those without medical cards. Therefore, we need to construct multivariate models that will indicate whether such differences remain when we have controlled for all other possible influences on GP visiting. Since these are by their nature rather technical, we present the details of the methods and results in Appendix 4 and focus here on the key findings (the estimation results themselves are given for reference in Table A4.1).

When we use LIIS data to estimate a statistical model explaining or predicting the number of GP visits an individual has in the year, health status emerges as the strongest predictor in both 1995 and 2001. The size of the effect suggests, for example, that in comparison with those in very good health, those who report their own health as bad or very bad had nearly five extra GP visits per annum in 2001. Those with a chronic illness and in psychological distress also had a significantly higher number of GP visits per annum. Age has only a modest effect (having taken health status into account), but women still visit significantly more often than men.

Turning to the remainder of the socio-economic characteristics, the results indicate that the number of GP visits per annum falls as the level of education increases. Being married, separated, divorced or widowed increases significantly the average number of GP visits per annum compared to those who are single. Those living in rural areas had significantly fewer GP visits than those in urban areas in 1995, but the effect is insignificant in 2001.

As expected given our theoretical model, medical card patients are estimated to have a significantly higher number of GP visits per annum than private patients, even when income and health status have been taken into account. While we have tried to control as comprehensively as possible for differences in health status between those with and without medical cards, some differences in need may not be fully captured by our need variables, and may indeed be correlated with medical card status or other factors that we are labelling 'non-need'. For example, if medical card patients differ from private patients in aspects of health status not captured by our range of health status variables, then medical card eligibility may to some extent reflect a difference in the need for a GP visit. However, the relatively large size of the effect (approximately 1.1 extra GP visits per annum) and its significance suggest that the effect would not entirely disappear, even with enhanced measures of health status (see section 4.5 for further analysis of this issue). Having taken medical card status into account, being in the top half of the income distribution is estimated to have a positive impact in 1995 but not in 2001. The finding in 1995 that having a higher income was associated with a higher number of GP visits, once we control for having a medical card, would match our theoretical expectations. It is difficult, however, to explain the lack of an income effect in 2001.

We also estimated what is known as a two-step model, which looks separately at the contact decision (i.e. the probability that the person visited a GP at least once in the previous year) and the number of visits for those who made at least one (see Appendix 4, Table A4.1). The broad pattern of effects is consistent with the model that just looks at the number of visits in one step, with the medical card again having a substantial

positive effect on both the probability of having a visit and the expected number of visits for those who have a card.

A similar multivariate analysis was carried out with data from the 2001 QNHS. While the reference period is different (it asks for the number of GP consultations in the last two weeks) and the QNHS does not collect information on income, the results are generally similar to those for the LIIS. Older age, being female, worse health and having a medical card are associated with more visits.

4.5 Further analysis of the medical card effect

The results presented so far in this chapter show that GP visiting is strongly related to medical card eligibility, suggesting that medical card patients have on average between 1.1 and 1.2 extra GP visits per annum after controlling for all other available influences on visiting. This confirms earlier findings on the effect of medical card eligibility on GP visiting in Ireland using a variety of different micro-data sources (e.g. Tussing 1983, 1985; Nolan 1991, 1993a). This finding clearly reflects in part the difference in relative prices faced by the two groups, with medical card patients facing only time and transport costs in accessing GP services while others have to pay a substantial fee of the order of €40 to €55, although no national figures are available on actual visiting costs. However, the estimated impact of having medical card cover may also be picking up differences in health status between the two groups that we have been unable to capture in the health status measures used so far. In essence, some of the estimated impact of medical card cover may reflect unmeasured differences in health status between the two groups, so the actual effect is overstated.

To test this proposition, we investigate the effect of broadening the range of health status measures included in the analysis, with the aim of establishing whether some of the estimated impact of medical card cover in fact reflects a greater need for care. From 1998 onwards, the LIIS included information on height, weight and smoking behaviour. For 2001, we therefore include two additional indicators of health status: whether the individual is a daily smoker and the individual's body mass index (with individuals grouped into four categories indicating underweight, normal weight, overweight or obese). We also broaden the measure of chronic illness by replacing it with a thirteen-category variable reflecting the nature of the type of condition that the individual suffers from.

The results (detailed in Appendix 4, Table A4.2) indicate that the extended measures of health status add significantly to the explanatory power of the model, with the effects in the directions expected. However, the estimated size of the impact of medical card cover declines only slightly, indicating that either there is a strong effect of medical card eligibility on GP visiting independent of health, or that there still remain subtle differences in health status between medical card patients and private patients that are not captured by the more extensive range of health indicators now being used. These results confirm research undertaken in other countries on the effect of differential prices for health care on the utilisation of health care services, which found that financial incentives do matter and contribute significantly to differences in the utilisation of health services across the population (see Madden *et al.* 2005 for further discussion of studies primarily analysing the effect of private health insurance on the utilisation of various health services).

Up to now, we have analysed GP visiting from a cross-sectional perspective, in other words focusing on patterns of GP visiting at a fixed point in time. However, the LIIS is a longitudinal survey following the same individuals through time. This allows us to improve on our earlier estimates by controlling for unmeasured differences in characteristics across the population that are constant over time (e.g. ability, genetic factors, attitudes) and that could account for some of the differences between different population groups in GP visiting patterns. We have used 1995–2001 LIIS data to estimate the effect of changing medical card status[9] on GP visiting, while also controlling for other changes in characteristics over time (most notably, health and employment status) and unmeasured characteristics that are constant over time.

The results (see Appendix 4, Table A4.3) indicate that those who lost access to a medical card do not differ significantly in their number of GP visits per annum in comparison with those who remain without a medical card from one year to the next. On the other hand, those who retain their medical cards have 0.97 extra visits per annum and those who gain a medical card have 0.81 extra visits per annum. As we also controlled for other possible changes in characteristics that could affect GP visiting over time, we can conclude that higher visiting among those who gain a medical card is due mainly to the incentives embodied in gaining a medical card. (See Nolan 2006 for further details.)

9 We replace the medical card dummy with a variable with four categories: 'medical card retain' for those who retained their medical card from one year to the next, 'no medical card' for those who remain with no medical card from one year to the next (the reference category), 'medical card lose' for those who lose a medical card from one year to the next and 'medical card gain' for those who gain a medical card from one year to the next.

A further extension was undertaken using the same data by following similar individuals through time, and examining the behaviour of individuals who gain a medical card (compared to those who remained private patients) and individuals who lose a medical card (compared to those who remained medical card patients). Most importantly, the groups involved in the comparison are individuals who are similar in terms of characteristics such as age, gender or health status, and who differ only in their experience of changing medical card status. The results (in Appendix 4, Table A4.4, and discussed further in Nolan 2006) indicate that those who gain a medical card have on average 1.3 extra GP visits per annum (in comparison with those who remain private patients), while those who lose a medical card have on average 1.6 fewer GP visits per annum (in comparison with those who remain medical card patients). These findings are in the directions expected, and again confirm that the incentives embodied in the medical card significantly influence patient behaviour.

4.6 Affordability of GP services

An important question is whether the significant gap in GP visiting between those with and without medical cards is more pronounced for those just above the income threshold for a medical card (as we saw, the fee for a GP visit would amount to about one-fifth of the weekly income of an individual earning just above the income threshold for a medical card). O'Reilly *et al.* (2006) investigated this question within a survey of patients randomly chosen from twenty GP practices in the Republic of Ireland and twenty in Northern Ireland, with practices chosen purposefully to provide a sample of varying characteristics. Their results showed that 19% of patients in the Republic had needed to consult a doctor in the previous year but had not done so because of concerns over consultation costs. This figure rose to 26% among patients without a medical card. Perhaps most importantly for our purposes, O'Reilly *et al.* found that the effects of consultation charges were higher in the middle of the income distribution, where patients were four times more likely than those in the most affluent group to be deterred from seeking treatment. This strongly suggests that those just above the medical card threshold experienced affordability problems most acutely.

To test whether proximity to the income threshold makes any difference to GP visiting rates for those without medical cards in the LIIS, we estimated our statistical model from section 4.4 for the sample of private patients only, controlling for the same set of independent variables. Income enters as a categorical variable with ten categories representing income decile. Taking the bottom 20% of private patients in income terms as the point of comparison, the results show little significant difference in GP visiting rates across the income distribution among those without medical card cover (see Appendix 4, Table A4.5).

While increasing the income guidelines for medical card eligibility is a frequently articulated component of government policy, and has recently been implemented (Department of Health and Children, undated, 2003), our results suggest that the major difference in utilisation is between medical card patients and private patients, rather than among private patients of differing income levels. In other words, if private patients are prevented from accessing GP care due to cost, this is an issue for those in the top half of the income distribution as well as for those just over the medical card threshold.

This is consistent with the results of comparative analysis of GP utilisation in Northern Ireland (where GP visits are free for all) and the Republic of Ireland, which we have carried out with co-authors and reported elsewhere (see McGregor *et al.* 2006). This analysis found that levels of utilisation were significantly lower in the Republic, not only around the medical card threshold but throughout the part of the income distribution not covered by medical cards – though this gap was narrower at the top of the income distribution. The available evidence for Ireland therefore confirms the findings from numerous international studies that incentives do matter and that charging for health services reduces utilisation.

A crucial issue is then the extent to which such charges deter necessary as well as unnecessary consultations. It is very difficult to make this distinction without precise information on the costs and benefits involved. Some new information gathered in the 2004 EU-SILC does try to capture the extent to which individuals forego medical consultations (unfortunately not differentiated between GP visits and visits to medical specialists), and their reasons for doing so, including cost. Approximately 2.5% of adults in 2004 responded yes when asked if they *'...at any time during the last twelve months...in your opinion...needed a medical examination or treatment for a health problem but did not receive it'*.

Table 4.29 presents summary statistics on the proportion of the population who did not visit their doctor in the last year even though they felt they should have. The proportions are higher in the middle age groups, and for women. The patterns for health status are consistent; a higher proportion of those with a chronic illness did not visit their doctor, and the proportion not visiting their doctor increases as the level of self-assessed health decreases. The pattern by household equivalised income is clearly decreasing, with those in the lower income deciles having a higher proportion of individuals who reported not receiving treatment. There is no difference between medical card patients and private patients.

Table 4.29: Proportion who *'during the last twelve months...needed a medical examination or treatment but did not receive it'*, by various individual characteristics (EU-SILC 2004)

CHARACTERISTIC	% OF TOTAL POPULATION
Age 18–24	1.8
Age 25–34	3.4
Age 35–44	2.7
Age 45–54	2.6
Age 55–64	2.5
Age 65+	1.8
Male	2.2
Female	2.7
No chronic illness	1.6
Chronic illness	4.9
Very good self-assessed health status	1.2
Good	2.4
Fair	4.3
Bad	7.8
Very bad	10.8
Income 1 (lowest)	2.8
Income 2	3.4
Income 3	3.3
Income 4	3.3
Income 5	2.7
Income 6	2.8
Income 7	1.7
Income 8	1.8
Income 9	1.7
Income 10 (highest)	1.2

CHARACTERISTIC	% OF TOTAL POPULATION
Medical card	2.5
No medical card	2.5
All	**2.5**

Table 4.30 looks in more detail at these individuals and their reasons for not seeking medical advice. Over half of individuals who went without a medical consultation even though they felt they needed to, cited cost as their reason, with waiting list and wanting to see if the problem improved on its own the next most popular reasons. This translates into 1.2% of the adult population in 2004 deferring a medical consultation due to cost in the previous year (roughly 35,800 people). This figure contrasts sharply with that found in a cross-border study of GP patients in Ireland undertaken in 2003, where 18.9% of patients in the Republic had a medical problem during the year but did not consult their GP due to cost (O'Reilly *et al.* 2006). However, the latter study concentrated primarily on GP services, and the question asked was different, not least in its focus on cost.

Differentiating the population on the basis of medical card status shows that, not surprisingly, a higher proportion of private patients cited cost as their primary reason for not seeking medical care (two-thirds of private patients in comparison with one-fifth of medical card patients), a pattern also found in O'Reilly *et al.* (2006). It is interesting that over 20% of medical card holders gave the reason that they could not afford to visit a doctor – given that these visits would be free, this suggests that other expenses such as travel or child care costs or foregone earnings may be an issue.

Table 4.30: Reasons for not visiting a doctor as a proportion of those who did not visit a doctor in the last year, even though they felt they needed to (EU-SILC 2004)

REASON	ALL (%)	MEDICAL CARD (%)	PRIVATE (%)
Could not afford to (too expensive)	50.7	20.4	66.7
Waiting list	23.0	39.8	14.2
Could not take time off (work, caring etc.)	5.5	4.5	6.1
Too far to travel/no means of transport	1.7	5.1	0
Fear of doctor/hospital/examination/ treatment	1.9	4.3	0.6
Wanted to wait to see if problem improved on its own	9.2	12.6	7.4
Didn't know any good doctor/specialist	0.4	1.2	0
Other reason	7.5	12.1	5.0
N	**255**	**88**	**167**

Not surprisingly then, Table 4.31 indicates that among private patients foregoing a medical consultation in the previous year, the proportion citing cost as a reason declines as income increases (although the numbers in each category are small). However, the figures from the EU-SILC are in sharp contrast to those from O'Reilly *et al.*'s 2006 study and may suggest that the framing of the question in the EU-SILC merits some re-examination.

Table 4.31: Proportion answering *'could not afford to (too expensive)'* by equivalised household income decile for private patients (EU-SILC 2004)

INCOME DECILE	% OF ALL PRIVATE PATIENTS WHO DID NOT VISIT A DOCTOR IN THE LAST YEAR, EVEN THOUGH THEY FELT THEY NEEDED TO
1 (lowest)	84.6
2	55.3
3	71.5
4	92.0
5	80.7
6	68.5
7	31.0
8	18.6
9	48.8
10 (highest)	47.2
All	**66.7**

4.7 Supply of GP services

Up to now we have primarily concentrated on the role of financial incentives on the part of patients in determining differences in GP visiting rates across the population. In this section we turn our attention to the available supply of GP services and in particular how this may vary across different geographical areas.

Ideally, in analysing the effect of location on access to GP services, we would be able to compare the supply of GPs at a detailed regional level with an index of regional 'need'. However, in the absence of data on the supply of GPs at a regional level, we instead focus on whether differences in GP visiting by location persist when controlling for all other possible influences on visiting, such as age, gender, income and medical card eligibility.

We first use the LIIS data for 1995 and 2001, which includes a detailed indicator of location distinguishing the major cities, towns by size, villages or open country. The results of statistical analysis shows that, in comparison with residents of Dublin city, some other areas do have significantly higher numbers of GP visits per annum (see Table A4.6). This could reflect limited GP availability in some areas (or indeed the availability of alternatives such as accident and emergency departments and pharmacies) or the population composition, though we have controlled as comprehensively as possible for other individual and household characteristics.

Focusing on the effect of household location on GP visiting rates, we return to the issue of GP availability and the contention that the supply of GPs in deprived areas may be lower. While none of our data sources include any information on area deprivation, let alone GP supply, we proxy area deprivation or disadvantage using responses to a question in the LIIS, which asks households '*How common would you say that each of the things listed on this card is in your neighbourhood? For each item listed, please say whether or not you think it is very common, fairly common, not very common or not at all common*' for six items: graffiti on walls or buildings, teenagers hanging around on the streets, rubbish and litter lying about, homes and gardens in bad condition, vandalism and deliberate damage to property, people being drunk in public. Households who answer 'very common' or 'fairly common' on each item are given the value one and these values are added up to form the index (minimum value is zero and maximum is six). Households who score two or more on this index are regarded as living in a disadvantaged area. We then combine this dichotomous indicator of disadvantage with the size of location variable to come up with a 22-category variable indicating area of residence and whether disadvantaged or not. In 1995, 15.7% of individuals lived in households which scored two or more on the 'disadvantage' index (ranging from 3.7% of households in rural areas to 40.8% of households in Dublin county); this proportion had dropped slightly to 14.6% of the population by 2001.

Table 4.32: Descriptive patterns on GP visiting by household location and disadvantage (LIIS 1995 and 2001)

SIZE OF LOCATION* DISADVANTAGED AREA	AVERAGE NUMBER OF GP VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
Country* not disadvantaged	3.4	3.5	66.7	70.3
Country* disadvantaged	4.1	4.6	78.8	74.2
Town 1* not disadvantaged	4.1	3.9	64.9	78.0
Town 1* disadvantaged	4.2	3.4	66.7	73.7
Town 2* not disadvantaged	4.7	5.5	75.6	77.9
Town 2* disadvantaged	3.0	4.7	90.3	80.0
Town 3* not disadvantaged	4.0	3.6	67.2	73.8
Town 3* disadvantaged	2.6	5.0	65.4	81.4
Town 4* not disadvantaged	3.2	3.1	69.3	71.9
Town 4* disadvantaged	5.7	3.8	82.2	75.0
Waterford* not disadvantaged	1.7	4.3	66.0	69.0
Waterford* disadvantaged	3.4	6.0	70.0	100.0
Limerick* not disadvantaged	2.3	1.8	65.4	70.8
Limerick* disadvantaged	2.9	2.1	70.6	66.7
Galway* not disadvantaged	5.1	2.4	62.3	75.4
Galway* disadvantaged	3.3	4.2	75.4	69.4
Cork* not disadvantaged	3.9	4.9	75.4	76.0
Cork* disadvantaged	4.6	4.0	79.8	74.4

SIZE OF LOCATION* DISADVANTAGED AREA	AVERAGE NUMBER OF GP VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
Dublin city* not disadvantaged	2.6	2.9	67.5	80.9
Dublin city* disadvantaged	2.9	3.2	66.7	72.4
Dublin county* not disadvantaged	2.9	2.2	73.8	68.2
Dublin county* disadvantaged	3.8	3.9	66.5	80.3
All	**3.4**	**3.4**	**68.5**	**73.0**

Table 4.32 presents aggregate GP visiting patterns by household location and disadvantage. In general, disadvantaged areas have both a higher number of GP visits per annum, and a higher proportion of the sample visiting their GP at least once, in both years. Of course, these figures largely represent the underlying socio-economic characteristics of the samples in these areas, and a multivariate analysis is necessary in order to ascertain whether there is any independent effect of location once we control for other possible influences on GP visiting such as age, health status, household income and medical card eligibility.

The results of estimating formal statistical models show that most areas distinguished have a significantly higher number of GP visits per annum than disadvantaged areas of Dublin city, with the gap generally widest for the 'not disadvantaged' areas (see Appendix 4, Table A4.7). Again, it is difficult to say whether this reflects a GP availability effect, the availability of substitute services or a more subtle difference in the underlying population characteristics of the area which we have not been able to identify using our data. However, recent commentary has highlighted the inadequate supply of GPs in deprived urban areas (Irish College of General Practitioners 2006; FÁS 2005) and, while our indicator of disadvantage is necessarily crude, these results do suggest that areas outside disadvantaged parts of Dublin city have significantly higher numbers of GP consultations.

Table 4.33: Average number of *free* GP visits by household location (EU-SILC 2004)

LOCATION	AVERAGE NUMBER OF *FREE* GP VISITS
Carlow	0.5
Cavan	0.9
Clare	0.8
Cork	1.0
Donegal	0.5
Galway	1.0
Kerry	0.8
Kildare	0.9
Kilkenny	0.6
Laois	0.9
Leitrim	0.7
Limerick	1.1
Longford	1.2
Louth	0.9
Mayo	0.7
Meath	0.8
Monaghan	0.7
Offaly	1.1
Roscommon	0.6
Sligo	0.8
Tipperary NR	1.0
Tipperary SR	1.2
Waterford	0.7
Westmeath	0.8
Wexford	0.6

LOCATION	AVERAGE NUMBER OF *FREE* GP VISITS
Wicklow	0.8
Cork city	0.9
Dublin city	0.7
Dublin – Belgard	0.8
Dublin – Dun Laoghaire Rathdown	0.9
Dublin – Fingal	0.9
Galway city	0.9
Limerick city	1.0
Waterford city	0.6
All	**0.8**

Finally, Table 4.33 presents aggregate GP visiting patterns by county/city, using data from the 2004 EU-SILC. While it must be remembered that these data refer only to those in receipt of *free* GP visits, much of the commentary surrounding the availability of GPs has focused on deprived areas where the medical card proportion of the population is higher than average. While it is difficult to discern any systematic pattern from the aggregate figures, multivariate regression (see Appendix 4, Table A4.8) does suggest once again that, in comparison with Dublin city, most areas have a higher number of GP visits per annum. The usual caveats apply: this could be a GP availability effect, an availability of alternatives effect, or an effect of more subtle underlying differences in individual and household characteristics.

4.8 Summary and conclusions

On the provider side, the fact that GPs are reimbursed in different ways for medical card and private patients may create an incentive for providers to treat the two groups of patients differently. The key issue, therefore, is whether the current system of eligibility for free care in Ireland results in differences in the utilisation of primary care services that are not predicted by 'need' for such services.

Sections 4.3 and 4.4 of this chapter analysed the utilisation of GP services in Ireland, describing how patterns of GP visiting vary across different sections of the population and examining how strong the various influences remain when we estimate multivariate models of utilisation. We found that while the aggregate statistics suggest that GP visiting is strongly related to a variety of individual and socio-economic characteristics, multivariate analysis confirms that health status and medical card eligibility are the strongest predictors of differences in GP visiting across the population. These results replicate those found in other Irish research (Madden *et al.* 2005; Nolan 2006), but comparison with research on other OECD countries (OECD 2003a) shows that the effect of income on the frequency of GP visiting in Ireland is very unusual. In no other country do we find the steep fall in the number of visits to the GP outside the lowest income groups that is witnessed in Ireland.

This chapter also focused in greater detail on the role of income and medical card status in facilitating access to GP services. Our analysis of GP visiting behaviour among private patients on different incomes indicates little significant difference in GP visiting rates as we move up the income distribution in 2001 (although a significant income effect was found for 1995), suggesting that the most substantial difference is between those with and without medical cards, rather than among private patients on different incomes.

Even when differences in age, health status and other characteristics between medical card patients and private patients are taken into account, medical card patients still have significantly more GP visits per annum than private patients, as well as a significantly higher probability of visiting their GP. The difference in financial incentives between medical card patients, who face a zero monetary price, and private patients, who pay the full cost out of pocket, clearly contributes to this result. The fact that we have a more comprehensive set of health status indicators than those available in earlier studies using Irish data means that the possibility that the medical card effect is picking up unmeasured 'need' is substantially reduced. In addition, the use of longitudinal data to control for unmeasured differences across individuals confirmed the significance of the medical card effect, and the significant effects of transitions in medical card status.

Analyses of outpatient utilisation in Ireland (Layte and Nolan 2004; OECD 2003a) show that higher income individuals are more intensive users of hospital specialists than lower income groups and this could suggest that higher income groups are simply using their GP as a gatekeeper to secondary services. If so, this would mean that the total physician utilisation of higher income groups may be closer or equal to that of lower income groups. Further evidence of this may be the fact that, as income

increases, the probability of having one or more GP visits in the last year does not fall to anything like the same extent as the frequency of visiting does. It should be said, however, that we have no other direct evidence of this 'displacement' of utilisation among higher income groups.

Information on the extent to which private patients are deferring visits (which they perceive to be necessary) due to cost is available from the 2004 EU-SILC and confirms that while only 1.2% of the population went without a medical consultation due to cost in the previous year, these individuals were predominately private patients and, within the sample of private patients, predominately in the lower income ranges. However, the small number of individuals reporting unmet need for medical care in the EU-SILC contrasts with the results of a study by O'Reilly *et al.* (2006) which found that nearly one-fifth of individuals in the Republic reported unmet need for GP care due to cost.

Given the nature of the data available to us, the report has necessarily focused on the demand side, with little discussion of the influence of supply-side factors such as the availability of GPs. A number of recent reports have highlighted the difficulty in recruiting GPs to practise in rural or urban deprived areas (FÁS 2005; Irish College of General Practitioners 2006) and our analysis, while relying on a crude categorisation of area disadvantage, provides some support for the view that the utilisation of GP services is significantly higher outside the disadvantaged areas of Dublin city. However, the extent to which this pattern reflects a population composition effect, the availability of alternative health services or a 'true' GP availability effect is open to question.

The nature of the data available has also meant that our analysis focused of necessity on a very crude measure of the GP service provided. The number of visits an individual makes to the GP may be a poor indicator of the quality of care provided – most obviously since some patients spend much longer with the GP than others. It is worth highlighting in conclusion how valuable it would be to have information which related to quality, even crude indicators such as how long the consultation took, which would allow investigation of variation across different types of patient – comparing for example those covered by a medical card versus others of similar age and gender, and those aged over 70 categorised by the type of medical card cover.

5 The Utilisation of Dentist and Optician Services

5.1 Introduction

In this chapter we move on to examine the utilisation of primary care services other than those provided by the GP. Ideally this would encompass the range of health care services provided in a primary care setting by, for example, nurses, physiotherapists, occupational therapists, speech and language therapists, community pharmacists, dieticians and psychologists. However, the data available at individual/household micro-level cover only two other aspects of primary care, namely dentist and optician services.

As with GP care, 30% of the population receive free dental and optical treatment under the medical card scheme and the remaining 70% (private patients) must pay in full for dentist and optician services, although they are eligible for free or subsidised routine services (e.g. routine dental check, eye examination, glasses) under the Treatment Benefit Scheme administered by the Department of Social and Family Affairs (provided they have the necessary PRSI [social insurance] contributions). Private patients are also entitled to tax relief on certain medical expenses at their marginal rate of tax (they must however pay the first €125 per annum) and, in addition, the three main private health insurers (VHI, Quinn Healthcare and VIVAS) have recently introduced new plans that provide limited cover for primary care expenses.

We first describe how dentist and optician visiting patterns vary according to various individual and household socio-economic characteristics, and then try to isolate the independent effects of the different variables on patterns of dentist and optician visiting. We use data from the LIIS and EU-SILC only, as the QNHS does not collect any data on the utilisation of these services. It is also worth stressing that, in seeking to understand patterns of utilisation, the indicators of 'need' available to us relate to age, gender and general health status, rather than need for dental or optical care per se. Irish research suggests that dental health is strongly related to general health status (Centre for Health Promotion Studies 2003; O'Mullane 1999) and this means that using a general health measure may approximate dental and optical health needs.

Medical card holders receive free dentist and optician services as part of the General Medical Services Scheme. In the case of dental treatment, data on patterns of utilisation are available from data derived from the Dental Treatment Services Scheme (DTSS). Analyses of these data by the Oral Health Services Research Centre (2004) show that 24% of those eligible for dental treatment under the DTSS underwent treatment in 2003. Utilisation of dental services among medical card holders is highest among younger age groups and women, with the proportion receiving treatment falling with age. Since 1994, the dental health action plan has put forward a set of measures to improve oral health in Ireland, particularly among vulnerable groups and those of lower socio-economic status (Department of Health 1994).

5.2 Patterns of dentist visiting in the 1995 and 2001 LIIS

Starting with data from the LIIS, Tables 5.1 to 5.15 present dentist visiting patterns from the 1995 and 2001 surveys by age, gender and various indicators of health status, and then by level of education, marital status, employment status, social class, household location, household income and medical card eligibility. All data are weighted to ensure that statistics are representative of the national population.

From Table 5.1 we can see that the average number of dentist visits per annum was 0.7 in 1995 and 0.8 in 2001. In 1995, nearly 35% of the adult population had at least one visit to the dentist in the previous year, and this proportion had risen to 43.5% in 2001. Of those visiting at least once, the average number of visits was 2.1 in 1995 and 1.8 in 2001, although the proportion of the population with two or more visits to the dentist per annum was only 17.1% in 1995 and 17.8% in 2001.

Table 5.1: Aggregate dentist visiting patterns (LIIS 1995 and 2001)

VISITING PATTERN	1995	2001
Average number of dentist visits	0.7	0.8
Proportion with at least one dentist visit in the previous twelve months (%)	34.8	43.5
Average number of visits for those with at least one dentist visit	2.1	1.8

In direct contrast to the patterns of GP visiting by age, Table 5.2 shows that the average number of dentist visits per annum is a decreasing function of age, while the proportion visiting at least once is a non-linear function of age, with the highest proportions visiting at least once recorded among the 25–44 age groups in both years.

Table 5.2: Dentist visiting patterns by age (LIIS 1995 and 2001)

AGE	AVERAGE NUMBER OF DENTIST VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
16–24	0.9	0.9	39.0	45.8
25–34	0.9	0.9	44.1	51.9
35–44	0.9	1.0	41.8	55.1
45–54	0.8	0.8	36.6	47.8
55–64	0.5	0.5	23.3	31.1
65–74	0.3	0.4	15.8	25.8
75+	0.3	0.2	11.4	13.5
All	**0.7**	**0.8**	**34.8**	**43.5**

Table 5.3 shows that women are more likely to visit their dentist than men and also have slightly more dentist visits per annum.

Table 5.3: Dentist visiting patterns by gender (LIIS 1995 and 2001)

GENDER	AVERAGE NUMBER OF DENTIST VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
Male	0.7	0.7	33.5	39.6
Female	0.8	0.9	36.2	47.3
All	**0.7**	**0.8**	**34.9**	**43.5**

Looking at visiting patterns by age and gender, Table 5.4 reveals that the age gradient is generally steeper for women than for men, primarily because higher visiting among women only holds for the younger and middle age groups.

Table 5.4: Dentist visiting patterns by age and gender (LIIS 1995 and 2001)

GENDER/AGE	AVERAGE NUMBER OF DENTIST VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
Male				
16–24	0.9	0.8	35.7	36.8
25–34	0.8	0.8	42.1	45.2
35–44	0.8	0.9	38.0	49.9
45–54	0.8	0.8	35.3	46.2
55–64	0.5	0.4	25.6	23.7
65–74	0.3	0.5	14.7	29.0
75+	0.2	0.4	13.4	21.9
Female				
16–24	1.0	1.1	42.7	54.9
25–34	0.9	1.1	46.1	58.9
35–44	0.9	1.1	45.4	60.0
45–54	0.8	0.9	38.0	49.4
55–64	0.4	0.7	21.0	38.2
65–74	0.4	0.4	16.8	23.1
75+	0.4	0.2	10.0	7.9
All	**0.7**	**0.8**	**34.8**	**43.5**

In contrast to the analysis of GP visiting patterns, it is not immediately clear why dentist visiting patterns should vary by the measures of health status that we have available here. Tables 5.5 to 5.8 present dentist visiting patterns by various measures of physical and psychological health status, namely, individuals' self-assessments of their own health status, whether they have a chronic condition, the severity of these chronic conditions and levels of psychological distress.

There is a U-shaped relationship between the annual number of dentist visits and self-assessed health status, with those in very good or good health having very similar levels of visiting to those in very bad health. The pattern for the proportion visiting at least once is clearer, with those in very good or good health visiting their dentist in higher proportions than those with poorer levels of self-assessed health.

Table 5.5: Dentist visiting patterns by self-assessed health status (LIIS 1995 and 2001)

SELF-ASSESSED HEALTH STATUS	AVERAGE NUMBER OF DENTIST VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
Very good	0.8	0.9	40.1	46.9
Good	0.8	0.8	35.3	45.5
Fair	0.5	0.6	23.5	30.9
Bad	0.4	0.5	17.3	30.9
Very bad	0.6	0.9	14.2	35.6
All	**0.7**	**0.8**	**34.9**	**43.5**

Table 5.6: Dentist visiting patterns by chronic illness (LIIS 1995 and 2001)

CHRONIC ILLNESS	AVERAGE NUMBER OF DENTIST VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
No chronic illness	0.6	0.7	37.2	45.7
Chronic illness	0.8	0.8	25.2	35.3
All	**0.8**	**0.8**	**34.9**	**43.6**

Table 5.7: Dentist visiting patterns by self-assessed severity of illness for those reporting a chronic illness (LIIS 1995 and 2001)

SEVERITY OF CHRONIC ILLNESS	AVERAGE NUMBER OF DENTIST VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
Not hampered	0.7	0.9	34.7	41.6
Slightly hampered	0.6	0.7	24.7	35.5
Severely hampered	0.6	0.5	20.3	27.7
All	**0.6**	**0.7**	**25.4**	**35.4**

Table 5.8: Dentist visiting patterns by psychological health status* (LIIS 1995 and 2001)

PSYCHOLOGICAL HEALTH	AVERAGE NUMBER OF DENTIST VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
No psychological distress	0.8	0.8	36.3	43.7
Psychological distress	0.8	0.9	32.4	42.4
All	**0.8**	**0.8**	**35.6**	**43.5**

*The measure of psychological health status is not available for questionnaires completed by proxy (which account for approximately 14% of observations)

These patterns are mirrored by those for chronic illness and psychological health status, with those in better health often visiting their dentist in higher proportions and having a higher number of dentist visits per annum.

We now move on to detail dentist visiting patterns by other factors. In direct contrast to the GP visiting case, Table 5.9 shows that the average number of dentist visits per annum increases as the level of education increases, with those with a third level education making approximately three times more dentist visits than those with a primary level education or less. The proportions visiting their dentist at least once are again highest for those with a third level education.

Table 5.9: Dentist visiting patterns by highest level of education (LIIS 1995 and 2001)

HIGHEST LEVEL OF EDUCATION	AVERAGE NUMBER OF DENTIST VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
Primary	0.4	0.4	16.9	23.0
Lower secondary	0.8	0.8	36.2	41.9
Upper secondary	0.9	0.9	44.9	51.6
Third level	1.2	1.1	59.7	61.0
All	**0.7**	**0.8**	**34.9**	**43.5**

Table 5.10 looks at dentist visiting patterns by marital status. Mirroring to some extent the patterns by age, the number of dentist visits and the proportions visiting their dentist at least once per annum are substantially lower for widowed individuals.

Table 5.10: Dentist visiting patterns by marital status (LIIS 1995 and 2001)

MARITAL STATUS	AVERAGE NUMBER OF DENTIST VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
Never married	0.9	0.8	38.1	42.8
Married	0.7	0.8	35.3	46.7
Separated/divorced	0.7	1.0	32.5	50.0
Widowed	0.4	0.4	16.9	21.2
All	**0.7**	**0.8**	**34.9**	**43.6**

Again in contrast to GP visiting patterns, Table 5.11 shows that the employed visit their dentist in greater proportions, and also visit more frequently, than those who are either unemployed or economically inactive.

Table 5.11: Dentist visiting patterns by employment status (LIIS 1995 and 2001)

EMPLOYMENT STATUS	AVERAGE NUMBER OF DENTIST VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
Employed	0.9	0.9	43.7	49.5
Unemployed	0.6	0.8	23.2	32.7
Inactive	0.6	0.7	27.4	35.7
All	**0.7**	**0.8**	**34.9**	**43.5**

Using the EG (Erikson and Goldthorpe 1992) classification to capture social class, Table 5.12 confirms a clear social class gradient in dentist visits, with those in the higher social classes having a higher average number of visits per annum and also visiting their dentist in greater proportions.

Table 5.12: Dentist visiting patterns by social class (LIIS 1995 and 2001)

SOCIAL CLASS	AVERAGE NUMBER OF DENTIST VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
Service – higher	1.3	1.1	65.4	55.2
Service – lower	1.2	1.2	53.8	62.2
Routine non-manual – higher	0.9	1.2	53.6	59.6
Routine non-manual – lower	0.9	1.0	45.0	54.0
Self-employed – with employees	0.7	0.7	33.4	38.5
Self-employed – without employees	0.8	0.9	37.4	53.6
Technical supervisory	0.9	0.6	42.6	36.2
Skilled manual	0.9	0.9	33.6	46.9
Semi-skilled manual	0.6	0.5	29.2	29.8
Unskilled manual	0.5	0.3	27.7	22.4
Agricultural	0.4	0.7	16.9	36.9
Farmers	0.4	0.3	14.7	17.9
Unknown	0.4	0.5	28.4	31.4
All	**0.7**	**0.8**	**34.9**	**43.6**

Examining dentist visiting patterns by household location in Table 5.13 reveals a clear urban–rural divide, particularly in 2001, with 50% of urban residents visiting at least once in that year compared to just over 34% of rural residents. Using the LIIS size of household location variable confirms this pattern.

Table 5.13: Dentist visiting patterns by household location (LIIS 1995 and 2001)

HOUSEHOLD LOCATION	AVERAGE NUMBER OF DENTIST VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
Rural	0.7	0.7	30.4	34.3
Urban	0.8	0.9	37.8	50.0
Open country	0.7	0.7	30.2	35.1
Village (200–1,499)	0.6	0.6	31.4	30.6
Town (1,500–2,999)	0.5	0.5	27.1	36.5
Town (3,000–4,999)	0.8	0.9	41.2	48.9
Town (5,000–9,999)	0.7	0.9	39.7	47.2
Town (10,000 or more)	1.0	1.0	43.4	50.0
Waterford city	0.5	0.6	28.3	43.3
Galway city	1.1	1.3	73.0	67.9
Limerick city	0.6	0.8	29.5	46.3
Cork city	0.8	1.0	38.2	49.6
Dublin city	0.9	0.7	41.0	49.1
Dublin county	0.5	1.2	23.7	56.9
All	**0.8**	**0.8**	**34.9**	**43.5**

Table 5.14 shows that both the average number of dentist visits and the proportions visiting at least once increase substantially as we move up the income distribution, although there is some evidence to suggest that the differential between the top and bottom of the income distribution narrowed between 1995 and 2001.

Table 5.14: Dentist visiting patterns by household income (LIIS 1995 and 2001)

INCOME DECILE	AVERAGE NUMBER OF DENTIST VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
1 (lowest)	0.5	0.7	21.9	32.9
2	0.6	0.6	21.8	27.3
3	0.4	0.5	21.3	30.2
4	0.4	0.7	23.4	39.7
5	0.5	0.6	26.1	42.3
6	0.9	0.9	38.1	49.4
7	0.8	0.8	35.3	42.6
8	0.8	1.0	43.7	51.4
9	1.1	1.0	57.4	56.9
10 (highest)	1.3	1.1	59.3	62.8
All	**0.7**	**0.8**	**34.9**	**43.6**

Table 5.15 shows that dentist visiting patterns differ considerably by medical card eligibility status, but in the opposite direction to that found for GP visits.

Table 5.15: Dentist visiting patterns by medical card eligibility (LIIS 1995 and 2001)

MEDICAL CARD STATUS	AVERAGE NUMBER OF DENTIST VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
No medical card	0.9	0.9	42.8	49.6
Medical card	0.5	0.6	20.5	30.6
All	**0.7**	**0.8**	**34.9**	**43.6**

Those with a medical card have fewer dentist visits per annum and visit their dentist in smaller proportions than those without medical cards, although once again, the differential does seem to narrow between 1995 and 2001. However, characteristics such as medical card eligibility are highly correlated with other socio-economic characteristics, particularly income, and so multivariate regression techniques are necessary in order to untangle the independent effects of each of the variables (see section 5.5).

5.3 Patterns of optician visiting in the 1995 and 2001 LIIS

Table 5.16 presents aggregate statistics on visits to opticians in 1995 and 2001. In both years, the average number of optician visits per annum was 0.3, although the proportion visiting an optician at least once a year increased from 21.6% in 1995 to 29.0% in 2001. However, the average number of optician visits for those visiting at least once remained at 1.2 and the proportion of the population visiting an optician two or more times per annum is tiny, at only 3.3% of the population in 1995 and 3.0% in 2001.

Table 5.16: Aggregate optician visiting patterns (LIIS 1995 and 2001)

VISITING PATTERN	1995	2001
Average number of optician visits	0.3	0.3
Proportion with at least one optician visit in the previous twelve months (%)	21.6	29.0
Average number of visits for those with at least one optician visit	1.2	1.2

Table 5.17: Optician visiting patterns by age (LIIS 1995 and 2001)

AGE	AVERAGE NUMBER OF OPTICIAN VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
16–24	0.2	0.3	16.1	23.0
25–34	0.2	0.2	15.2	20.5
35–44	0.2	0.3	16.6	23.1
45–54	0.4	0.4	29.3	39.0
55–64	0.4	0.4	29.6	35.4
65–74	0.3	0.5	27.4	40.7
75+	0.4	0.5	31.8	37.4
All	**0.3**	**0.3**	**21.6**	**29.0**

As shown in Table 5.17, optician visits are an increasing function of age, with those aged 75 years and over having nearly twice as many visits per annum as those in the 16–24 age group. Females visit opticians more frequently and in greater proportions than males (see Table 5.18). The age gradient in optician visiting is steeper for women than for men in 1995, but the opposite is true for 2001 (see Table 5.19).

Table 5.18: Optician visiting patterns by gender (LIIS 1995 and 2001)

GENDER	AVERAGE NUMBER OF OPTICIAN VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
Male	0.2	0.3	19.4	24.9
Female	0.3	0.4	23.6	33.0
All	**0.3**	**0.3**	**21.6**	**29.0**

Table 5.19: Optician visiting patterns by age and gender (LIIS 1995 and 2001)

GENDER/AGE	AVERAGE NUMBER OF OPTICIAN VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
Male				
16–24	0.2	0.2	15.0	15.9
25–34	0.2	0.2	13.4	18.9
35–44	0.2	0.2	16.3	20.9
45–54	0.3	0.4	26.9	32.4
55–64	0.4	0.4	29.1	32.7
65–74	0.2	0.5	19.9	38.3
75+	0.4	0.4	27.1	31.6
Female				
16–24	0.2	0.4	17.4	30.1
25–34	0.2	0.3	16.8	22.2
35–44	0.2	0.3	16.9	25.1
45–54	0.4	0.5	31.9	45.7
55–64	0.4	0.4	30.0	38.1
65–74	0.4	0.5	33.7	42.7
75+	0.5	0.6	35.0	41.3
All	**0.3**	**0.3**	**21.6**	**29.0**

Once again, we do not have any indicators of optical health status, so we must rely on the aggregate indicators of self-assessed health status, chronic illness, severity of chronic condition and psychological health status. The patterns in Tables 5.20 to 5.23 suggest that levels of visiting and the proportions visiting at least once are higher for those in poorer health (although there is little difference among those with a chronic illness according to the degree of severity of their condition).

Table 5.20: Optician visiting patterns by self-assessed health status (LIIS 1995 and 2001)

SELF-ASSESSED HEALTH STATUS	AVERAGE NUMBER OF OPTICIAN VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
Very good	0.2	0.3	18.4	26.9
Good	0.3	0.4	22.2	29.4
Fair	0.3	0.4	27.5	34.3
Bad	0.5	0.4	29.6	27.3
Very bad	0.4	0.6	24.4	46.4
All	**0.3**	**0.3**	**21.5**	**29.0**

Table 5.21: Optician visiting patterns by chronic illness (LIIS 1995 and 2001)

CHRONIC ILLNESS	AVERAGE NUMBER OF OPTICIAN VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
No chronic illness	0.2	0.3	19.8	27.0
Chronic illness	0.4	0.5	29.2	36.2
All	**0.3**	**0.3**	**21.6**	**29.0**

Table 5.22: Optician visiting patterns by self-assessed severity of illness for those reporting a chronic illness (LIIS 1995 and 2001)

SEVERITY OF CHRONIC ILLNESS	AVERAGE NUMBER OF OPTICIAN VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
Not hampered	0.4	0.5	30.1	36.8
Slightly hampered	0.4	0.5	28.4	37.1
Severely hampered	0.5	0.4	31.0	36.8
All	**0.4**	**0.4**	**29.3**	**36.1**

Table 5.23: Optician visiting patterns by psychological health status (LIIS 1995 and 2001)

PSYCHOLOGICAL HEALTH	AVERAGE NUMBER OF OPTICIAN VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
No psychological distress	0.3	0.3	21.5	29.6
Psychological distress	0.3	0.5	25.3	37.7
All	**0.3**	**0.4**	**22.2**	**30.8**

Turning to the remainder of the socio-economic characteristics, Table 5.24 indicates that the average number of optician visits is fairly constant across education categories, although the proportions visiting at least once are higher among those with third level education.

Table 5.24: Optician visiting patterns by highest level of education (LIIS 1995 and 2001)

HIGHEST LEVEL OF EDUCATION	AVERAGE NUMBER OF OPTICIAN VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
Primary	0.3	0.4	20.7	29.8
Lower secondary	0.2	0.3	19.0	23.0
Upper secondary	0.3	0.3	21.5	28.4
Third level	0.3	0.4	27.5	36.4
All	**0.3**	**0.3**	**21.5**	**29.0**

Looking at marital status, widowed individuals have both the highest average number of optician visits per annum and the highest proportion visiting at least once (see Table 5.25), although it must be remembered that this pattern is likely to be largely driven by the correlation between marital status and age.

Table 5.25: Optician visiting patterns by marital status (LIIS 1995 and 2001)

MARITAL STATUS	AVERAGE NUMBER OF OPTICIAN VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
Never married	0.2	0.3	16.9	23.3
Married	0.3	0.4	23.7	31.7
Separated/divorced	0.3	0.4	17.1	33.8
Widowed	0.4	0.5	29.7	39.4
All	**0.3**	**0.3**	**21.6**	**29.0**

There is little difference between those who are employed and economically inactive in optician visiting (see Table 5.26), but those who are unemployed have fewer visits and also a smaller proportion visiting at least once.

Table 5.26: Optician visiting patterns by employment status (LIIS 1995 and 2001)

EMPLOYMENT STATUS	AVERAGE NUMBER OF OPTICIAN VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
Employed	0.2	0.3	20.3	27.9
Unemployed	0.2	0.2	13.5	12.7
Inactive	0.3	0.4	24.2	32.1
All	**0.3**	**0.3**	**21.5**	**29.1**

The patterns by social class are largely similar to those for dentist visits, with those in the higher social classes having both a higher number of optician visits per annum and a higher proportion visiting at least once (see Table 5.27).

Table 5.27: Optician visiting patterns by social class (LIIS 1995 and 2001)

SOCIAL CLASS	AVERAGE NUMBER OF OPTICIAN VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
Service – higher	0.3	0.4	31.9	33.8
Service – lower	0.4	0.4	26.9	35.3
Routine non-manual – higher	0.3	0.4	27.4	33.8
Routine non-manual – lower	0.3	0.3	19.6	29.7
Self-employed – with employees	0.2	0.3	22.5	27.1
Self-employed – without employees	0.2	0.3	24.7	26.2
Technical supervisory	0.3	0.2	14.8	13.5
Skilled manual	0.2	0.2	16.2	18.1
Semi-skilled manual	0.1	0.4	13.0	28.2
Unskilled manual	0.1	0.1	11.1	9.8
Agricultural	0.1	0.2	8.9	14.4
Farmers	0.1	0.2	5.5	13.7
Unknown	0.2	0.2	16.9	19.3
All	**0.3**	**0.3**	**21.6**	**29.0**

Urban residents have a slightly higher number of visits per annum and a higher proportion visiting at least once compared to rural residents (see Table 5.28).

Table 5.28: Optician visiting patterns by household location (LIIS 1995 and 2001)

HOUSEHOLD LOCATION	AVERAGE NUMBER OF OPTICIAN VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
Rural	0.2	0.3	19.0	22.1
Urban	0.3	0.4	23.2	33.8
Open country	0.2	0.3	18.9	22.8
Village (200–1,499)	0.2	0.2	19.7	19.0
Town (1,500–2,999)	0.3	0.3	16.9	24.9
Town (3,000–4,999)	0.3	0.5	20.2	39.0
Town (5,000–9,999)	0.3	0.4	21.4	33.8
Town (10,000 or more)	0.4	0.4	23.6	30.7
Waterford city	0.3	0.3	29.1	25.2
Galway city	0.4	0.3	29.1	29.8
Limerick city	0.2	0.4	16.0	38.8
Cork city	0.3	0.4	27.3	28.6
Dublin city	0.3	0.4	25.2	36.5
Dublin county	0.2	0.4	16.8	33.8
All	**0.3**	**0.3**	**21.6**	**29.0**

The pattern by household income suggests that the number of optician visits per annum is increasing with increasing income (more so in 1995 than in 2001). However, the proportion visiting at least once is more strongly associated with income, but once again, the differential between the top and bottom income deciles is narrower in 2001 than in 1995 (see Table 5.29).

Table 5.29: Optician visiting patterns by household income (LIIS 1995 and 2001)

INCOME DECILE	AVERAGE NUMBER OF OPTICIAN VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
1 (lowest)	0.2	0.3	15.3	27.4
2	0.3	0.3	17.9	26.9
3	0.3	0.3	21.1	21.1
4	0.2	0.3	20.2	23.5
5	0.3	0.3	21.5	29.5
6	0.3	0.3	19.4	26.8
7	0.2	0.4	20.8	30.7
8	0.3	0.3	22.9	31.4
9	0.3	0.4	29.0	36.8
10 (highest)	0.4	0.4	27.6	36.0
All	**0.3**	**0.3**	**21.6**	**29.0**

There is little systematic difference in optician visiting patterns by medical card eligibility (see Table 5.30).

Table 5.30: Optician visiting patterns by medical card eligibility (LIIS 1995 and 2001)

MEDICAL CARD STATUS	AVERAGE NUMBER OF OPTICIAN VISITS		PROPORTION VISITING AT LEAST ONCE (%)	
	1995	2001	1995	2001
No medical card	0.3	0.3	22.6	28.4
Medical card	0.3	0.4	19.7	30.4
All	**0.3**	**0.3**	**21.6**	**29.0**

5.4 Patterns of dentist, optician and aural visiting in the 2004 EU-SILC

The EU-SILC data on the use of primary care services are much more limited than those available in the LIIS. Respondents are asked about dental, ophthalmic and aural visits without distinguishing between them, and the question is only asked of those who received free or subsidised treatment in the previous twelve months (the latter under the Treatment Benefit Scheme administered by the Department of Social and Family Affairs).

In Tables 5.31 to 5.37 we present these limited statistics on the receipt of free dental, ophthalmic and aural services by age, gender, health status, household location and medical card eligibility. In 2004 just over 12% of the population received free dental, ophthalmic or aural treatments, with the proportion of females receiving such treatments slightly higher than males at all age groups. The proportion receiving free treatment generally increases with age, with the differential between the youngest and oldest age groups wider for men (see Table 5.31).

Table 5.31: Proportion receiving free dental, ophthalmic or aural treatments in last twelve months by age and gender (EU-SILC 2004)

AGE	MALE (%)	FEMALE (%)	ALL (%)
16–24	6.5	10.0	8.2
25–34	10.7	14.0	12.4
35–44	9.8	15.8	13.0
45–54	11.4	12.6	12.0
55–64	11.1	13.8	12.4
65–74	12.8	16.7	14.8
75+	15.8	18.1	17.2
All	**10.2**	**13.8**	**12.1**

Again, without any indicators of health status that are more directly relevant to the services examined here, we must rely on measures of self-assessed health and chronic illness. However, the patterns in Tables 5.32, 5.33 and 5.34 reveal that a higher proportion of those in poorer health receive free dental, ophthalmic or aural treatments.

Table 5.32: Proportion receiving free dental, ophthalmic or aural treatments in last twelve months by chronic illness (EU-SILC 2004)

CHRONIC ILLNESS	%
No chronic illness	10.2
Chronic illness	18.5
All	**12.1**

Table 5.33: Proportion receiving free dental, ophthalmic or aural treatments in last twelve months by self-assessed health status (EU-SILC 2004)

SELF-ASSESSED HEALTH STATUS	%
Very good	9.6
Good	12.4
Fair	17.8
Bad	21.2
Very bad	13.1
All	**12.1**

Table 5.34: Proportion receiving free dental, ophthalmic or aural treatments in last twelve months by limiting activity (EU-SILC 2004)

SEVERITY OF LIMITATION	%
No limitation	10.6
Yes, somewhat	16.4
Yes, strongly	21.2
All	**12.1**

In Table 5.35, we can see that a higher proportion of urban residents receive free or subsidised dental, ophthalmic or aural treatments, and this aggregate pattern is confirmed by the county patterns, where, in general, urban areas are among the highest proportions receiving such treatments.

Table 5.35: Proportion receiving free dental, ophthalmic or aural treatments in last twelve months by household location (EU-SILC 2004)

LOCATION	%
Carlow	9.5
Cavan	9.0
Clare	9.4
Cork	9.8
Donegal	11.3
Galway	15.6
Kerry	10.7
Kildare	15.6
Kilkenny	9.7
Laois	8.9
Leitrim	2.9
Limerick	9.7

LOCATION	%
Longford	7.7
Louth	22.9
Mayo	16.2
Meath	9.7
Monaghan	15.8
Offaly	16.7
Roscommon	11.1
Sligo	3.5
Tipperary NR	7.1
Tipperary SR	17.4
Waterford	8.3
Westmeath	9.6
Wexford	5.0
Wicklow	7.9
Cork borough	12.8
Dublin borough	14.9
Dublin – Belgard	15.3
Dublin – Dun Laoghaire Rathdown	10.2
Dublin – Fingal	11.2
Galway borough	18.3
Limerick borough	13.7
Waterford borough	1.7
Urban	13.4
Rural	10.0
All	**12.1**

The proportion receiving free or subsidised dental, ophthalmic or aural treatments tends to decrease with increasing income (see Table 5.36), consistent with the pattern in Table 5.37 where a much higher proportion of medical card patients received such free or subsidised treatments.

Table 5.36: Proportion receiving free dental, ophthalmic or aural treatments in last twelve months by household income (EU-SILC 2004)

INCOME DECILE	%
1 (lowest)	15.6
2	13.8
3	13.5
4	12.3
5	12.9
6	10.3
7	12.6
8	9.2
9	11.2
10 (highest)	9.5
All	**12.0**

Table 5.37: Proportion receiving free dental, ophthalmic or aural treatments in last twelve months by medical card eligibility (EU-SILC 2004)

MEDICAL CARD STATUS	%
No medical card	8.5
Medical card	20.1
All	**12.1**

5.5 Multivariate analysis of dentist and optician visiting patterns

Descriptive patterns such as those presented above can only serve as a general indication of the way in which visiting patterns differ by various individual and household socio-economic characteristics. As many of these characteristics are highly correlated with each other, a multivariate analysis is necessary in order to ascertain the independent effects of the various factors. We therefore carried out multivariate analyses of dentist and optician visiting using LIIS data. The detailed results of the estimated statistical models are in Appendix 5, with the key findings discussed here.

The results for dentist visiting (see Table A5.1) show that the number of dentist visits decreases with age, with those aged 75 years and over having nearly 0.5 fewer dentist visits per annum than those in the 16–24 age group. Females visit their dentist significantly more frequently than males. In terms of broad indicators of health status, those that are in psychological distress visit significantly more often, and while there is some evidence in 1995 that those in poor health visit more frequently, there is no significant pattern in 2001. As expected, the number of dentist visits per annum is significantly associated with levels of education, although marital status and employment status are largely insignificant. Rural residents have significantly fewer dentist visits in 2001, but the relationship is insignificant in 1995. Once we control for income, medical card status becomes largely insignificant. Along with age and education, income remains one of the most significant predictors of differences in dentist visiting rates across the population in both years, with significantly higher visiting rates for those higher up the income distribution.

The results for optician visiting (see Table A5.2) show an increase with age. Once again, females visit their optician more frequently than males and there is some evidence to suggest that those in poorer health use significantly more optician services than those in good health. Those with third level education have significantly more optician visits than those with lower levels of education and rural residents have significantly fewer optician visits than urban residents. As with dentist visits, medical card status is insignificant once we control for income. Income itself is a highly significant positive influence and, along with age, is the most important predictor of differences in optician visiting rates across the population.

5.6 Summary and conclusions

This chapter has examined the utilisation of dentist and optician services in Ireland across a range of different factors. This examination revealed a number of important patterns, but our key concern is with the impact of socio-economic factors such as education, income and receipt of the medical card. The key issue is whether the current system of eligibility for free care in Ireland results in differences in the utilisation of primary care services that are not predicted by 'need' for such services.

Although we lack measures of need for dental and optical health care, our analysis of patterns of utilisation of dentist and optician services in Ireland indicate that income and age are the strongest predictors of differences in visiting. We find that those with lower levels of income are significantly less likely to visit the dentist and optician than those in higher income groups. For dentist visits, we find increasing numbers of visits until the 35–54 age groups and decreasing numbers of visits thereafter. For optician visits on the other hand, we see increasing frequencies of visiting with age, albeit with a peak for women in the 45–54 age group. These results are consistent with earlier work examining the equity of health spending across the income distribution (see Layte and Nolan 2004).

The fact that income is such an important influence is of concern, both from an equity perspective and in terms of the promotion of population health. Visits to the dentist and optician can be regarded as a dimension of good health practice and regular visiting can prevent the development of more serious problems over time. It may be that this preventative approach to dental and optical care is more established among higher income/better educated groups, which leads to the pattern of utilisation by income that we observe. It could be then that lower income groups attend the dentist or optician when they have to because of acute dental or optical problems.

6 Equity in Use of Primary Care Services

6.1 Introduction

Chapter 4 of this report examined the pattern of utilisation of GP services in Ireland. This showed that a person's gender, age, health status and access to a medical card are the main predictors of frequency of GP use. Analysis of the impact of household income showed that GP utilisation was strongly related to income with those with a low income (i.e. medical card holders) by far the most frequent users of GP services. There was some evidence that higher income groups were more likely to choose to visit their GP than middle income groups in 1995, but this effect was not found for 2001. Research elsewhere (O'Reilly *et al.* 2006) has shown distinct income effects for those without a medical card and this would suggest that the result for 1995 may be closer to the current situation. This interpretation is strengthened by the finding that higher income groups were more likely to visit their GP one or more times in the last year in both 1995 and 2001.

These results suggest that primary health care in Ireland is not available to all on the basis of need alone. There are concerns that any inequities in primary care utilisation may well impact on health inequalities more generally. This chapter will analyse the extent of equity in primary care delivery across the income distribution in Ireland – i.e. the extent to which there is equal treatment for equal need irrespective of income (what is referred to as 'horizontal equity'). Although this initially sounds quite a simple problem, there has been a substantial debate in the health economics literature as to how 'equity' should be defined and the implications this has for the methodology adopted. In the Irish context there has been surprisingly little work on either a conceptual or empirical level, the main contributions being Tussing (1985), Nolan (1991) and Wagstaff *et al.* (1992), all of which used data from the 1980s, and, more recently, Layte and Nolan (2004).[10]

One of the reasons for the paucity of analyses is a lack of information available to assess the question. The primary requirement is for information on the utilisation of a wide range of health care services and individual or household level data on income. From these data we can assess whether the extent of usage is roughly similar at different levels of income. However, in doing this we must also take account of differential 'need' for health care across the population, and the fact that this may well be correlated with income.

Chapter 4 showed clearly that age is a crucial determinant of GP utilisation, but income is also strongly related to age and this could confound our analysis unless appropriate measures are used. The crucial question is whether people at different levels of income, but with the same need for health care, utilise services to a similar extent or whether utilisation relative to needs is unevenly distributed across the income distribution. Ideally we would undertake this analysis on the most up-to-date information available, i.e. the 2004 Survey of Income and Living Conditions carried out by the CSO. Unfortunately these data only contain information on use of primary care financed by a medical card and do not include private (fee-for-service) consultations/ treatments. Given this, we make use of the Living in Ireland Survey (LIIS) which has information on utilisation across the population.

The chapter unfolds as follows: in section 6.2 we discuss the concept of equity in more detail and review the debate between those advocating access and utilisation approaches to the analysis of equity. 'Equity' is a commonly cited term in both academic and policy documents but is rarely clearly defined. In section 6.3 we turn to

10 More recent, but as yet unpublished, work has been carried out by the OECD using ECHP data which is a subset of the data used in this research (van Doorslaer 2004).

an examination of the frequency of use of three primary care services: GPs, dentists and opticians. We first analyse utilisation across the population and then examine utilisation patterns across three different measures of disadvantage: income quintiles, social class and highest level of education. Section 6.4 is an analysis of the equity of utilisation of all three primary care services, based on a methodology developed by Wagstaff *et al.* (1991) which utilises 'concentration indices' to provide an 'inequity index'. This provides a quantifiable measure of the extent to which health care is used more by those on higher or lower incomes at the same level of health status. To put it another way, the methodology measures whether those on higher incomes use more health care for a given level of health. In section 6.5 we attempt to derive some conclusions from these analyses.

6.2 Defining equity

In health and health care, as in many other areas of policy, 'equity' is often stated as an overarching concern that guides policy and practice.[11] In the health economics literature however there has been a long-running debate about what aspect of equity in health care is important and how this should be measured. Some researchers (Le Grand 1982; Mooney 1983; Mooney *et al.* 1991, 1992) maintain that equity should be defined in terms of equal *access* to treatment, whereas others (Culyer *et al.* 1992; O'Donnell and Propper 1991) hold that health economists should be analysing equity in terms of the actual *utilisation* of health care.

Mooney (1983) and Le Grand (1982) maintain that equity in most policy statements refers to equity of access to health care services in the sense that those with an equal need for treatment have equal opportunity to get it, i.e. they face an equal cost of utilisation. The main argument put forward by the advocates of the access approach is that an individual's level of health care utilisation is determined by a range of factors that often have little to do with health care services per se and more to do with factors that shape the individual's demand for health care. One of these may be the 'need' for treatment, but even individuals with equal need may end up consuming different amounts of care if preferences differ (perhaps in their perceptions of the benefits of treatment) and if their marginal utilities of income differ. From this perspective, to attempt to measure the equity of utilisation is to focus on the wrong subject (hence the subtitle of Mooney *et al.*'s 1991 paper: 'weighing heat?').

11 For instance, the Irish health strategy – *Quality and Fairness: A Health System for You* (Department of Health and Children 2001) states that 'equity and fairness' is one of the four guiding principles by which the health care system will be shaped.

Culyer *et al.* (1992), on the other hand, argue that although it is self-evident that persons in equal need may end up consuming different levels of health care because of a number of factors, we still need to know why the curves differ and whether the disparity may in fact be due to differences in income. They use the example of differences in education between the rich and poor (Culyer *et al.* 1992). If those living in poverty have the same opportunities to receive care as the rich, but have a lower take-up rate because they are not as well informed, surely this would be a concern to policy-makers and analysts alike. If so, simply examining the extent of and costs of access for the rich and poor would not be the optimal research strategy. Using a measure of utilisation, on the other hand, we would also be able to analyse the factors that explain the lack of take-up of care among those living in poverty. Given this, we would do well to study equity in the utilisation of health care, as well as the costs and problems of accessing health care, to discover the true source of the inequalities between groups.

In this chapter we largely adopt the utilisation approach, although in the next section we will be discussing the issue of access and cost. Our overall question is whether the utilisation of health care is horizontally equitable in the sense that those in equal need receive the same level of treatment irrespective of their income. To put the question another way: do those with a higher level of income consume greater levels of health care for the same level of health need?

6.3 Use of primary care services across socio-economic groups

Before we move on to a direct examination of the equity of health care utilisation, it is useful to get a descriptive picture of the utilisation of different types of health care across the population. In the first instance we simply examine the distribution of use across the total population. Once we have established this, we then examine the patterning of use across three different socio-economic measures: income quintiles, social class and education. As well as allowing us to provide a more complete picture of the patterning of utilisation, this approach will also allow us to assess whether utilisation patterns across income groups are similar in structure to those that we observe on other measures of disadvantage. This is important as in section 6.4 we will be assessing equity of utilisation across income groups alone, but we would like to be able to generalise the conclusions from this section to other variables such as social class and education.

Table 6.1 gives the distribution of visits to three different primary care services in the last year across the population aged 17 and over. The table also gives the proportion attending at least once in the last year. The results show that almost 72% saw a doctor at least once in the year, with 53% attending between one and five times and a substantial 9% attending more than ten times in the last 12 months. The mean number of doctor visits across the whole sample is 3.4, with the mean for those attending at least once being almost 4.8. The mean number of visits is skewed upward by a small proportion of cases that have a high number of visits (9% have eleven or more visits in the last year). The median number of visits (i.e. the number of visits for the person who is halfway up the ranked distribution of visits) allows us a different view of the data which is not influenced by the higher frequency cases and this figure is 3 visits.

When we look at visits to dentists and opticians we see substantially lower figures with a large 59% not taking their dentist's advice and staying away for the year and more than 70% not seeing an optician.

Table 6.1: Use of specific health care services in the 12 months previous to interview in 2000 (LIIS 2001)

SERVICE	% VISITING N TIMES							% ATTENDING AT LEAST ONCE
	0	1–5	6–10	11–20	21–50	50+	MEAN*	
Doctor visits	28.4	53.4	9.2	7.3	1.3	0.4	4.76	71.6
Dentist visits	58.9	39.2	1.3	0.3	0.3	0	1.98	41.1
Optician visits	72.7	27.1	0.1	0	0.1	0	1.23	27.3

* of those attending at least once in the last year

Our main interest here is the degree to which utilisation varies across different measures of advantage and levels of income in particular. We can get a view of this by examining the average level of utilisation across groups. Figure 6.1 gives the mean number of visits for the three primary care services across different equivalised income categories. It uses the mean number of visits across the whole sample rather than the mean of those who have visited at least once and this clearly impacts on the results. Although the mean number of GP visits across all classes is greater than one, for the other three care services the average is less than one in most instances. It would be possible to use median statistics to describe the distribution of services in Figure 6.1, but analyses show that the overall pattern remains substantively unchanged either way.

Figure 6.1: Mean visits in the last year to different medical services by equivalised income quintile (LIIS 2001)

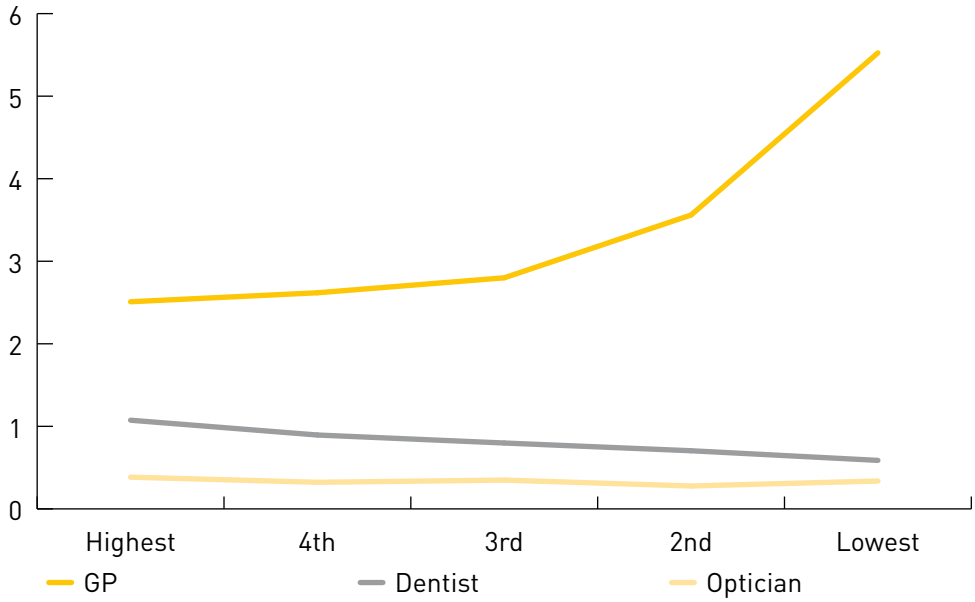


Figure 6.1 shows very different patterns of utilisation across income groups for the different services. GP visiting is highest among those in the lowest income quintile, with the number falling quickly until the third income quintile at which point the rate of decrease moderates considerably. Visits to the dentist have the opposite slope with those in the highest income group reporting the highest number of visits. The increase across income groups is, however, nothing like as steep as it is for GP visits. Visits to the optician also tend to be highest among those in the highest income group, but the pattern across the income groups is complex.

Figure 6.2 shows the pattern of utilisation across social class groups. Here the pattern of GP visiting is very similar to that found using income, with the lowest rate among the professional and managerial class (who have a higher income on average) and the highest rate among the unskilled manual class (lower income), although the pattern is a little more complex with a pronounced decrease among the self-employed. This is to be expected as social classes do not sit on a single dimension that moves from most to least advantaged, although we would expect differentials between manual and non-manual groups.

For dental services we see the non-manual classes having the highest level of utilisation, but the lowest use is actually among farmers, although the unskilled manual class are second lowest. Optician services follow a similar pattern, although here the self-employed have the lowest level of utilisation.

Figure 6.2: Mean visits in the last year to different medical services by social class (LIIS 2001)

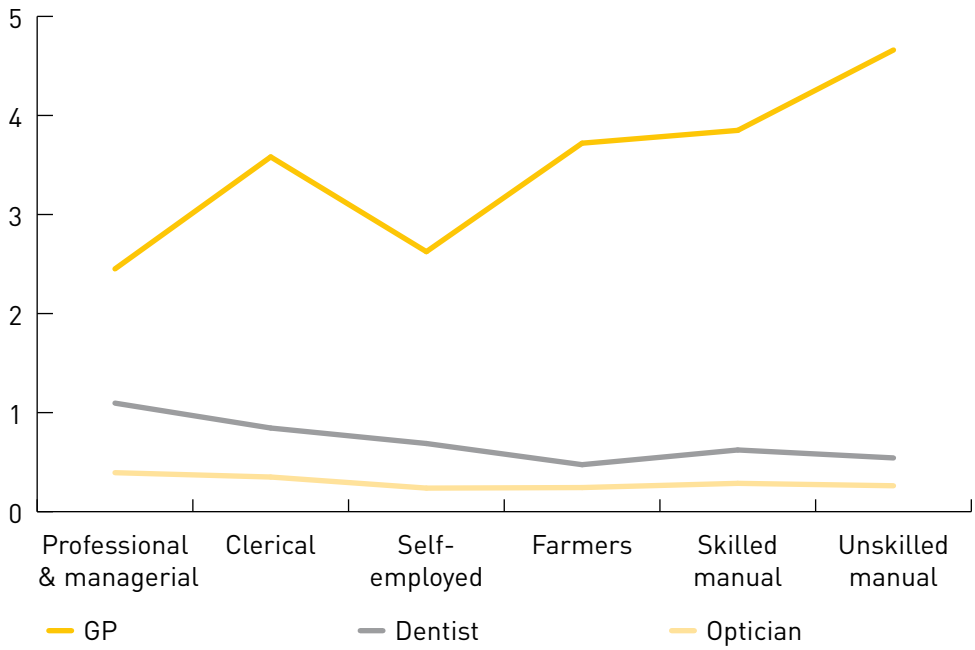
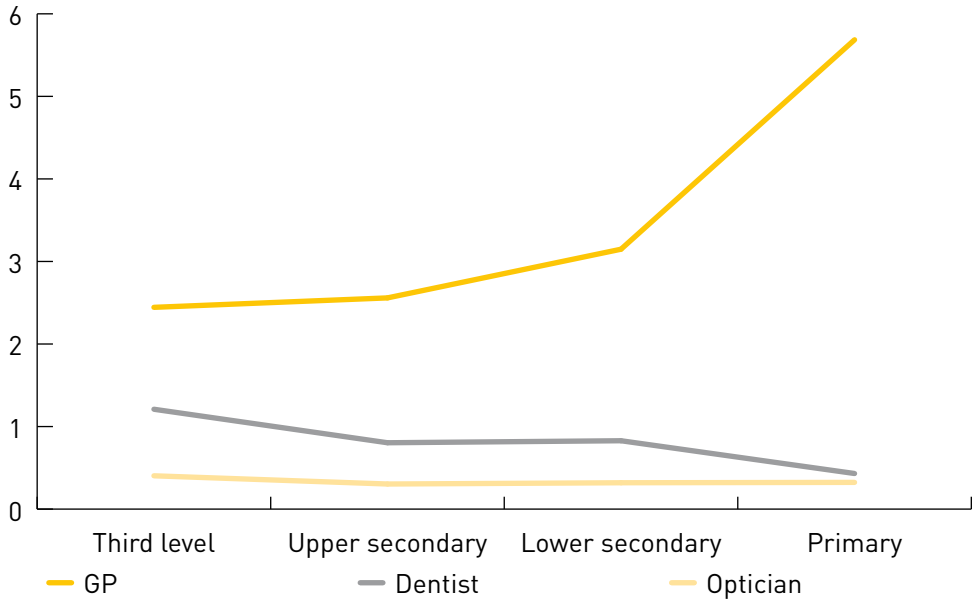


Figure 6.3 gives the distribution of utilisation across groups divided according to highest level of education. It shows that the pattern of utilisation across education groups is very similar to that found using income. For GP visits, those with primary education alone have the highest number of visits and those with third level the lowest, with the number falling steeply between those with primary and those with lower secondary level education before falling less quickly thereafter. Conversely, visits to the dentist increase with higher levels of education. Visits to the optician vary little across the education groups, but there is some increase among those with third level qualifications.

Figure 6.3: Mean visits in the last year to different medical services by highest level of education (LIIS 2001)



Figures 6.1 to 6.3 show very different patterns of utilisation across the different services by income, class and education groups. For GP visiting it is clear that the least advantaged groups have the highest level of utilisation, whereas for dental and optician services the advantaged are more intensive users. The results show that there are definite 'inequalities' in the use of primary health care across different socio-economic groups. It is not yet possible to describe these differences as 'inequities', since inequity implies that they stem from differences in levels of resources or wealth – i.e. greater utilisation for the same level of health. However, it is perfectly possible that the inequalities just described are due to greater numbers of older people being found in lower income, education and social class groups. Given the worse health status among older age groups, this could lead to more health care utilisation. To control for age and gender and to account for health status differences we will need to examine equity in a multivariate analysis. Doing so, however, requires a measure of 'equity'.

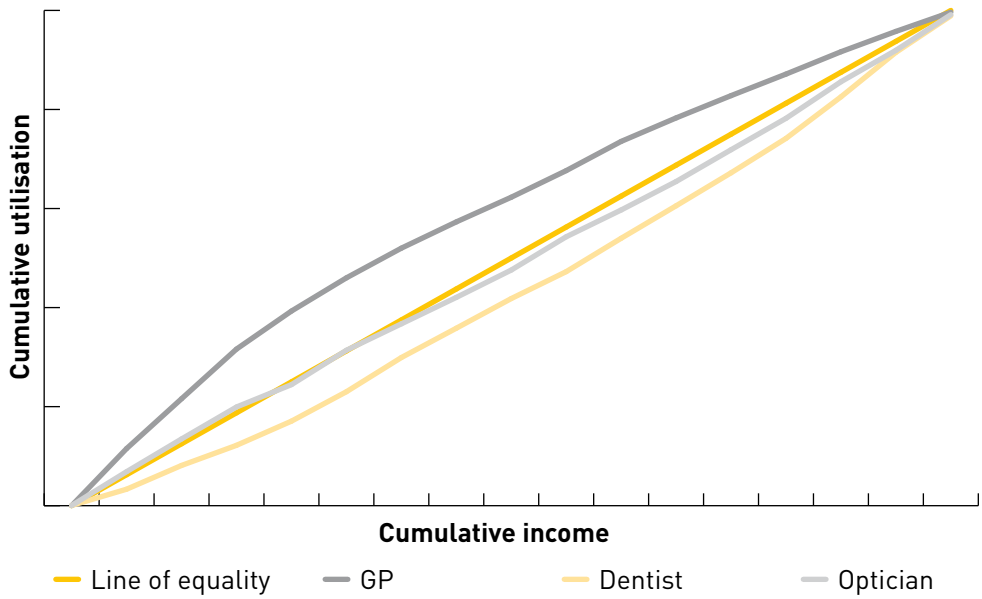
One way of capturing equity has been put forward by Wagstaff *et al.* (1991) in the form of the 'concentration curve'. This can be applied to any continuous measure of advantage/disadvantage, most usually income. The concentration curve requires continuous measures of disadvantage because it is based on an assessment of the proportion of a given area (i.e. GP utilisation) that those on different points of the scale

occupy. This means that the groups themselves need to be of equal size, which rules out the analysis of grouped variables such as social class or education where groups differ in size.

The concentration curve is produced by charting the cumulative proportions of the population (from lowest to highest income) against the cumulative proportions of service use. If use is equally distributed across income groups, then the curve will coincide exactly with the diagonal, or 'line of equality'. On the other hand, if service use is concentrated in lower income groups the line will lie above the diagonal, and below the diagonal for higher income groups.

Figure 6.4 shows the concentration curves for the different types of service utilisation. It illustrates that GP care is concentrated among lower income groups, shown by the fact that the lines appear above the line of equality. On the other hand, both dentist and optician visit curves lie below the diagonal, showing that they are concentrated more among higher income groups.

Figure 6.4: Health care utilisation concentration curve (LIIS 2001)



Wagstaff *et al.* (1991) have put forward the concentration index (CI) as a useful summary measure of the distribution of service utilisation across the income range.[12] Table 6.2 gives CI estimates and standard errors (SE)[13] for equivalised income.

Table 6.2: Concentration indices for different utilisation types (LIIS 2001)

CONCENTRATION INDEX/ STANDARD ERROR	DOCTOR	DENTIST	OPTICIAN
CI for visits	-0.158	0.154	0.076
SE	0.016	0.019	0.021
CI for any visit last year	-0.022	0.141	0.081
SE	0.006	0.013	0.018

Table 6.2 gives the concentration indices for both the number of visits to the three services in the last year and the probability of having visited one or more times over that period. It is useful to differentiate between these measures as the latter is usually taken as dependent on the individual's decision to attend the service, whilst the former may also be influenced by the service provider, i.e. GP, dentist or optician. Table 6.2 shows CI coefficients which are consistent with the patterns found in Figure 6.4: the distribution of doctor visits are the most negative, showing a strong pro-poor distribution; dentist visits are strongly positive, showing a pro-rich distribution; optician visits are marginally positive and pro-rich. Those having visited at least once in the last year are distributed in a less pro-poor fashion for GP services, but give approximately the same result for dentist and optician visits. The result for GP services is interesting as it suggests that there is less of a gradient across income in the probability of any visit in the last year than there is in the frequency of these visits (this result confirms the findings in Chapter 4).

The evidence presented so far suggests that primary care utilisation across the income distribution varies substantially across the different types of service, with GP utilisation in particular being much more common among lower income groups. The

12 This is calculated as minus twice the area between the concentration curve and the diagonal and ranges from -1 (all service use is among the most disadvantaged) to +1 (all use is among the most advantaged).

13 All CI standard errors in this paper are calculated using the methodology outlined by Kakwani *et al.* (1997).

main question addressed by this chapter is whether this distribution is 'inequitable' in the sense that someone with higher levels of income utilises services more than a person with a lower income but with the same level of health. To examine this question we need to control for those factors that may confound the relationship between income and utilisation, i.e. gender and class, and more importantly, control for the person's health status. This is the task of section 6.4.

6.4 Establishing the equity of utilisation across income groups

To test for the equity of primary health care utilisation we need three basic measures: an individual's income, health care utilisation and health status. The first two of these are relatively unproblematic, but, as we saw in Chapter 2, there are a number of different social survey measures of health status. Each has different properties and can be understood as a partial measure of an underlying, but immeasurable, concept that we can call 'general health status'. However, it is possible, as we saw in Chapter 3, to combine these health measures into a single index of ill health (IHI) which is an approximation of the underlying concept and a more powerful measure for analysis. Here we employ the IHI used earlier to control for the health status of individuals when assessing their health care utilisation.

Our measure of equity here is technically the product of an 'unstandardised' concentration index minus the standardised concentration index (see Layte and Nolan 2004). If this coefficient is positive, it will be evidence that the utilisation of these different primary care services is skewed toward the better off, controlling for health status. If the coefficient is negative, utilisation is skewed toward the less advantaged.

Table 6.3: Health inequity index controlling for age, gender and health status (LIIS 2001)

SERVICE	HEALTH INEQUITY INDEX (HII) AND STANDARD ERROR (SE)			
	1+ VISITS IN THE LAST YEAR		NUMBER OF VISITS IN THE LAST YEAR	
	HII	SE	HII	SE
GP	0.012*	0.006	-0.035*	(0.013)
Dentist	0.109***	0.012	0.125***	(0.019)
Optician	0.125***	0.018	0.133***	(0.021)

Significance: *=P<0.05, **=P<0.01,***=P<0.001

Table 6.3 gives the resulting figures from this standardisation and shows that we get very different results for GP utilisation depending upon whether we use the measure based on the probability of any visit in the last year or the frequency of visiting. After standardisation, the equity of the probability of any visit in the last year is significantly pro-rich, i.e. higher income groups are more likely to visit their GP than lower income groups for a given health status. However, the distribution of standardised GP visits remains pro-poor in the sense that those with lower levels of income are more likely to visit a GP. This is an interesting result which we will return to in a moment.

The last two figures show that dentist and optician services are clearly more heavily used by more advantaged groups with the most positive coefficient being for optician services. The extent of the pro-rich result for dentist and optician services increases for a measure based on the number of visits. It could be argued that our measure of general health is not a good indicator of dental or optical health and thus not a reliable factor by which to standardise. A better indicator would be that which relates directly to dental or optical health such as questions on teeth lost, sight difficulties (unaided) or the results of an examination by a dentist or optician. Unfortunately such measures are very rare alongside measures of income and utilisation. While our health indicator is more likely to be a better measure of general physical health, it will still be related to oral and optical health to a substantial degree. These results show that Irish primary care services vary considerably in their extent of equity once we control for the level of health 'need'.

The OECD (2003a, 2003b) published figures for GP utilisation across a number of OECD countries that were estimated in a similar, though not identical, fashion to those calculated here. After adjusting for the level of health 'need' across the income distribution, the OECD findings show a negative health inequality index (i.e. GP utilisation is higher among poorer groups than richer groups at the same level of health) as found in Table 6.3, though the coefficient reported is more pro-poor because a single health indicator is used for adjustment rather than the combined measure used here. Out of seventeen countries examined, eleven had significantly pro-poor distributions of GP care after standardising for health need including Ireland. Ireland had the most pro-poor distribution of GP visits, albeit with a higher standard error suggesting more variation than in other countries.

It is interesting that an analysis of the decision to see a GP at all in the last year showed a pro-rich distribution across income in Ireland. The standard assumption in this type of analysis is that the decision to attend the GP is made by the individual, but that the number of visits recorded would be a combination of the decisions of the GP and patient. The pro-rich result for the probability of ever visiting and pro-poor result for the number of visits suggest that GPs in Ireland do not dissuade low-income (or medical card) patients from visiting more often, even though there is an economic incentive for them to do so given the capitation payment system. In fact, the opposite would appear to be the case.

Analysis of outpatient visits to a medical specialist in Ireland shows that they are distributed in a significantly pro-rich pattern, i.e. those on higher incomes are more likely to use specialists for any given health status. This is a common finding across countries (see OECD 2003a, 2003b), but given the pro-poor distribution of GP visits could suggest that lower income groups are more likely to see their GP for care rather than being passed on for more specialist treatment when compared to higher income groups. We have no direct evidence of this and so it is not possible to be certain of the result, but the results for different measures of GP use and specialist care would suggest such a differential.

6.5 Summary and conclusions

This chapter set out to analyse the equity of primary care utilisation in Ireland. Equity is an often used, but rarely defined, concept and we took considerable care in this chapter to define exactly what we meant by the term and whether it applied to access to health care or more general utilisation. Following discussions we chose to define equity as 'horizontal equity', that is, as 'the equal utilisation of primary care services for equal health need'. Measuring equity is not, however, easy. Although there may be pronounced inequalities in utilisation across groups, these may emerge as a natural consequence of the health status of those in the group, i.e. they simply express the 'need' of that group for health care. Given this, it is necessary to factor in health status when assessing whether a given distribution of health utilisation is equitable.

The chapter described the distribution of three different types of primary care services across income quintiles, social classes and educational groups. The analyses showed very different patterns across the different services, but relatively similar patterns across the measures of disadvantage. Across all of the latter, GP visiting was more frequent among the least advantaged groups and less frequent among the most advantaged. As Chapter 4 showed, this pattern is largely due to the impact of both health need at the lower end of the socio-economic scale and the influence of the medical card.

In the opposite fashion, visits to the dentist are far more common among those in advantaged positions than among the disadvantaged.

Measures of optician visits are more complex. Optician services tend to be used almost equally across the socio-economic spectrum, but there is marginally higher usage among the most advantaged groups.

We sought to determine whether these patterns of utilisation represent inequity once we control for health need. In order to test this we turned to statistical methods put forward in the international literature which have already been applied in the Irish context. Results showed that even if we control for the higher level of health need in lower income groups, we still find that the level of GP visits for these groups is higher than an equitable distribution would suggest. For dentist and optician visits on the other hand the opposite is true. Here, the distribution of visits across the income distribution clearly favoured those in higher income groups. However, the picture for GP visits was complicated by the fact that higher income groups are actually more likely to have visited their GP at least once in the last year once we control for health status. This result, plus the pro-rich distribution of visits to specialists, could suggest

that lower income groups are less likely to be passed on for secondary care than higher income groups. We have no direct evidence of this differential in referral, but given the waiting lists for specialist care in the public system, it does seem possible that lower income groups end up having a higher number of visits to their GP as they wait for secondary care whilst higher income groups move straight onto secondary care using access provided by private medical insurance.

7 Conclusions and Policy Implications

7.1 Introduction

This report aims to contribute to the second strategic objective of the Combat Poverty Agency, to 'develop and promote policy proposals for people in poverty to have access to quality health and education services'. Barrington (1987, p. 285) once characterised the Irish health care system as an 'extraordinary symbiosis of public and private medicine'. The importance of private care and the extent of fee-paying in Irish primary health care has led to concerns that health care is not available to all on the basis of need alone, but instead that personal circumstances may well determine the availability, and often the nature, of treatment.

There are two core objectives of this report. The first is to understand the manner in which an individual's socio-economic position and health status are related and the pathways through which advantage and disadvantage impact on health. The second is to understand the relationship between the health needs of groups defined by level of income, education and social class and the differentials in their take-up of primary medical care.

There were a number of related elements in the report:

- Analysis of household survey data to shed new light on the social determinants of health in Ireland.
- Examination of what household survey data reveal about the level of utilisation of GP services (and to a more limited extent other primary care services) by people at different levels of income.
- Analysis of the factors which seem to affect these utilisation patterns, including age, gender, health status, location and entitlement to free primary care via the medical card.
- Consideration of the role of the structure of financial incentives facing GPs in influencing equity of access, and the role of location informed by the experience of GP practices in disadvantaged areas.
- On the basis of this analysis, an assessment of the extent to which there is equitable access to some primary care services for those on low income.
- Discussion of the implications of the research findings for policy and for further research to be undertaken by Combat Poverty.

7.2 Poverty, disadvantage and health

Chapter 2 examined the relationship between poverty, socio-economic status and current health status in the Irish population using data from the 2004 EU-SILC for a representative sample of the Irish population. This showed that poverty, social class, income and level of education are all strongly related to health status among both men and women, with those in more disadvantaged positions having an increased likelihood of experiencing illness and poor health.

Analysis of the relationship between poverty and health showed that individuals who are defined as income poor are 190% more likely to report having a chronic illness. When we measured the relationship using the consistent poverty measure the differential was even larger, with those living in consistent poverty 214% more likely to have a chronic illness than the non-poor.

Inequalities in health status were not confined to measures of poverty. Those who are defined as income poor or consistently poor are far more likely to come from disadvantaged income, social class and education groups and we found gradients in health status across all these variables. The consistent finding of inequalities in health across different socio-economic measures confirms the structured nature of health inequalities across groups in Ireland. For example, controlling for the gender and age of the person, we found that those in semi-skilled and unskilled manual occupations are over 300% more likely to report having less than good health than those in the higher professional and managerial class. Similarly, those in semi-skilled and unskilled manual occupations are over 200% more likely to report having a chronic illness than those in higher professional and managerial positions.

To what extent are these social class differentials in health caused by differences in the experience of poverty across social classes? Chapter 2 showed that current poverty is a major factor explaining social class differentials, but it is by no means the complete explanation since, even when we controlled for levels of income poverty, there remained large social class differentials in reported health. This result has important implications as it shows that socio-economic inequalities in health do not have a simple explanation or remedy. Some indication of the complexity of the factors contributing to inequalities in health was given in Chapter 3, which investigated the structuring of health inequalities across the lifecourse.

7.3 Pathways to health inequalities: The lifecourse approach

The research literature on health inequalities has developed hugely over the last quarter of a century and suggests that some important differences for later outcomes begin almost as soon as life itself begins in the womb. The 'lifecourse' approach as it has been termed also shows that early and later socio-economic disadvantage may interact in complex ways to produce the distribution of health that we see in cross-sectional social surveys.

Chapter 3 examined just how complex and multi-layered these links may be by outlining four hypotheses on how earlier and later disadvantage may be linked. The first and second of these hypotheses held that early life disadvantage directly impacted on later health outcomes either through 'programming' in the womb or through poor health in childhood. The third hypothesis held that early disadvantage is linked to later disadvantage and poor health via 'social programming', where the linkage occurs indirectly through social selection and causation. The fourth hypothesis held that health inequalities are related to later life disadvantage alone.

These hypotheses have important policy implications. Significant and pronounced direct effects of early life disadvantage (hypotheses one and two) would suggest the need for interventions which change the living conditions and circumstances of women of child-bearing age, pregnant mothers and children. Indirect effects on the other hand (hypothesis three) suggest the need for much more diverse policy interventions such as educational initiatives, skills training and minimum income/social welfare policies plus specific interventions for particular influences on ill health.

Our analyses highlighted a number of contributing factors to social class inequalities in health, including poor housing and health behaviours such as smoking, diet and exercise. We could only examine a small number of the possible contributors to poor health and health inequalities in general. The future availability of data from longitudinal surveys on cohorts of children and older Irish people as well as surveys such as SLÁN will allow more detailed analysis of the factors associated with health inequalities. However, the data we have available show that the factors that best explain the differentials between social classes in terms of current health are level of income and level of deprivation. This is unsurprising since differences in resources are translated into other factors which have a more immediate relationship to health outcomes such as poor housing, increased levels of psychological stress and health behaviours such as poor nutrition, alcohol consumption and smoking.

However, differences in levels of resources have their roots in previous circumstances, behaviours and processes. Chapter 3 tested the four hypotheses about the processes occurring across the lifecourse using path analysis models. The results showed that there were no direct effects from parents' social class and education to current health inequalities, but there were pronounced and significant indirect effects. This supports hypothesis three and suggests that early life disadvantage influences current health status by influencing the person's own educational and occupational attainment and thus their risk of unemployment, low income, deprivation and poverty. The findings do not support the hypothesis that social class inequalities are directly related to childhood circumstances and health. We have not, however, tested theories of 'biological programming' (Barker 1992, 1994) which have been put forward, since these apply to specific physiological channels and disease risks.

7.4 Reducing health inequalities: Policy implications

It is beyond the scope of this report to list the large number of policy implications that stem from the results in Chapters 2 and 3. This would require a report itself along the lines of the *Independent Inquiry into Inequalities in Health*, published by the UK government in 1998 (Acheson *et al.* 1998), under the chairmanship of Sir Donald Acheson.

It is clear from Chapter 2 that the pattern of health in the population closely follows the pattern of social inequalities in terms of income, education, social class and poverty. This means that policies to reduce health inequalities will, by necessity, not be confined to the Department of Health and Children since health services can only intervene after health inequalities have formed elsewhere in society. Rather, policies to reduce inequalities will need to be formulated and implemented on a cross-departmental basis, preferably with strong inter-departmental coordination.

To a certain extent such policies are already being implemented under the *National Action Plan for Social Inclusion* led by the Social Inclusion Unit in the Department of the Taoiseach. The social inclusion process has been very successful at identifying policy areas and setting targets with three headline targets in the area of health inequalities. However, the data and statistical infrastructure to measure success in reaching these targets are not yet in place. The policies necessary to reach these targets are also poorly understood.

7.4.1 Improving the measurement and understanding of health inequalities

Unless policy-makers have information on the extent and causes of inequalities in health and mortality they will not be able to develop effective interventions and policies and to monitor progress. As stated above, Ireland has a very limited data infrastructure which means that even basic issues such as death rates across different social classes cannot be examined on a consistent basis over time. Some of the data infrastructure required to monitor the Irish government's current health targets is being put in place (research on Travellers for instance), but administrative data still routinely lack even basic socio-economic variables which can be used for analysis, and data from different sources cannot be linked because of the absence of a personal identifier. The development of socio-economic measures in databases and individual identifiers should be a priority.

7.4.2 Addressing underlying structural inequalities

The close association of health and socio-economic status shows that health inequalities stem largely from differences in the life circumstance of different sections of the Irish population. This was confirmed by Chapter 3, which used multivariate models to measure the influence of a range of factors on ill health. The level of income available to individuals and families both currently and in the past is the strongest determinant of differences in health. Although health behaviours in regard to, for example, smoking, nutrition and exercise do influence outcomes, their impact is small compared to the influence of basic differences in living standards. This is primarily because differential levels of income and resources structure a whole host of other risk factors from housing and environment to education and occupation.

Income and resources also structure health behaviours themselves. For example, poor nutrition is largely the result of the food choices which individuals and families have available to them because of the limits of their budgets and the structure of food markets and transport systems. Research carried out for Combat Poverty by the Centre for Health Promotion shows that low-income families cannot afford to purchase a healthy diet on social welfare incomes because of the shops which are available to poor households and the stock they routinely hold (Friel *et al.* 2004).

7.4.3 Focusing on income supports

The structuring of health by socio-economic status suggests that policies which focus on supporting and increasing the incomes of the disadvantaged should be a priority, although the efficacy of such policies should be evaluated more directly than is possible here. Low earners should be taken out of the tax net and resources should be allocated to establish a system of in-work benefits which are simple and transparent and which will be taken up to ensure a reasonable level of basic income, particularly for families with children. This approach should be accompanied by efforts to redistribute resources through the tax system to those who, for reasons of age, disability or circumstances, are unable to work. The overall idea should be to try to keep basic income levels reasonably close to average living standards.

Tax policy can also help low-income families by moving away from indirect taxation, such as value added tax on purchases, to direct taxation on earned income. VAT is indiscriminate toward the purchaser and studies show that in the Irish economy it is regressive in the sense that poorer households pay a far larger share of VAT than richer households. Direct income tax provides a far more progressive system for gathering government income (Barrett and Wall 2006).

7.4.4 Pathways to adult health

An increase in the living standards of disadvantaged groups can be achieved in ways other than income supplementation. It has been made clear throughout this report that current health status is the result of a cascade of causes which begin very early in life. Individuals who are born into disadvantaged households are far less likely to get higher levels of education and well-paid jobs than their peers from higher income families. This inequality of opportunity not only wastes the valuable talents of those who happen to have been born into poor households, but also has the indirect effect of leading to worse health throughout life and contributing to their earlier death.

Although processes early in life have an impact on later health outcomes, our findings suggest that this effect occurs by influencing later processes rather than by 'programming' later disease. Our analyses show that childhood background influences later outcomes indirectly, via their impact on the person's own educational attainment and occupational attainment. This means that interventions that weaken or break the link between family background and own attainment and which improve own outcomes could be very effective at lessening health inequalities. Such interventions could include measures to increase the skills and education of young people from

disadvantaged backgrounds, principally through investment in educational resources, and to increase the parenting skills of disadvantaged parents.

This is not to underplay the value of measures which seek to reduce differentials in the living standards of social class groups or which focus on particular processes leading to poor health. However, it may be better to think of intervening 'upstream'[14] in the causal process to negate or reduce inequalities in capabilities before they become established. The most important area in which to intervene in order to create the desired 'downstream' effects is education and skills.

Education affects inequalities in health via a number of different routes. First of all, educational qualifications are an important determinant of an individual's occupational and labour market success and this influences their level of income, risk of unemployment, housing and wider material circumstances. Research shows that material circumstances are the primary determinant of health outcomes. Given this chain of causation, education must be seen as the primary route out of disadvantage and poorer health. Indeed, it is suggested that educational and occupational success can make up for earlier disadvantage and we saw some evidence of this in Chapter 3.

Second, education has an important role in providing the social, emotional and practical skills necessary to live a full and healthy life. The academic curriculum provides specific skills that are essential for life, such as numeracy and literacy, but it can also teach young people valuable information on the wider determinants of health, maintaining good relationships (including sexual health and wellbeing) and practical skills such as budgeting, cooking and child care.

Education also plays a wider role in propagating health inequalities. Higher levels of education promote more complex and abstract thinking and this helps individuals to weigh up the risks involved in the decisions they make and their future consequences.

Educational attainment is clearly crucial and the deficits experienced by disadvantaged children begin from a young age. Resources should be directed at providing disadvantaged children with pre-school experiences that seek to improve their readiness for school and education. Similarly, later in their school career, disadvantaged children need access to higher levels of resources so that deficits can be corrected. This means smaller class sizes, more classroom assistants and special

14 If we think of poor health as the result of a sequence of events beginning at birth, then upstream interventions are those that occur closer to birth or earlier in the causal process. Increasing levels of skills early in life, for instance, would avoid the downstream possibility of more unemployment.

needs teachers plus access to higher levels of resources such as books and IT within the classroom.

Persuading disadvantaged young people to remain in education beyond minimum leaving age must be seen as a priority. More resources need to be directed into schemes that help young people from disadvantaged communities make the decision to stay in education. This may require some innovative thinking. In the UK, for example, qualifying young people can get access to a social 'wage' whilst in education to make it a more attractive option.

The funding mechanism for schools also needs to take into account the large level of additional resources required by disadvantaged schools. The formula used to calculate state funding to schools should be more strongly weighted to reflect the higher level of need in more deprived socio-economic areas.

The role of education and skills development outside the context of schools and universities also needs to be taken seriously. Ireland spends a comparatively large proportion of national resources on active labour market policy and this undoubtedly has a positive influence on outcomes for the unemployed and the low skilled. Yet often access to these resources is restricted to those who are unemployed or out of the labour market rather than being open to all those requiring skills training. It has also been found that existing training for the unemployed tends to focus on those with higher levels of skills rather than those who are in need of more intensive skills training. This is clearly rational if these individuals are not in a position to benefit from this training, but what should be provided is a graduated ladder of development and training based on the needs of the person to provide the skills necessary to enter the labour market on a sustainable basis.

7.5 Income, medical card status and health care

Chapters 4 and 5 of this report examined patterns of utilisation in primary health care services in Ireland, with particular emphasis on variations in utilisation across different income, social class and education groups. Ireland has developed a complex mix of public and private provision in primary care, with around 30% of the population who are eligible for a medical card receiving free care and the remaining 70% paying the full cost out of pocket, albeit with some assistance for routine dental and optical treatments, a subsidisation of consistently high prescription costs and tax relief

available for large medical expenses. Primary care practitioners are reasonably free to charge the fee that they see as appropriate for members of the 70% of the population without a medical card.

The concern is that these funding arrangements create incentives on the part of both patients and providers of care that may not result in the most efficient use of the resources available or in an equitable distribution of those resources. The fact that patients without medical card cover have to pay a substantial fee out of pocket for services may lead them to under-utilise primary care services, possibly leading to worse outcomes if minor conditions deteriorate, without treatment, into more serious problems. This is consistent with the finding from a comparison with Northern Ireland – where GP care is free irrespective of income – that levels of GP utilisation for those without medical card cover in the Republic are a good deal lower than for those in the corresponding parts of the income distribution in the North (McGregor *et al.* 2006).

Those with medical card cover use GP services much more heavily, though the reasons for this are unclear. Our results showed that even adjusting for a range of other factors, including age and available self-reported measures of health, those with medical card cover are heavier users of GP services. Levels of GP utilisation among medical card holders are also higher than for those in the corresponding part of the income distribution in Northern Ireland.

Interpreting the higher number of visits among lower income (medical card) users is complicated by the fact that analyses of the overall probability of seeing a GP over the course of a year shows higher income groups are actually more likely to do so. The higher number of visits may thus reflect the unavailability or difficulty of accessing other services among lower income groups, so that people fall back on the GP as the only one they can access.

Chapter 4 also shed more light on the relationship between income, medical card status and utilisation by using longitudinal data to show that where individuals gained a medical card their use of GP services increased, and conversely decreased when access to the medical card was lost. Similarly, more detailed analysis of the role of income showed that for those without medical card cover utilisation did vary as income increased, suggesting that although consultation fees are an issue across the income distribution, they are more of an issue for those marginally above the medical card threshold.

The analyses of the utilisation of dentist and optician services in Chapter 5 were more problematic since no direct measures of need for such care were available. The results

showed a quite different pattern to that seen for GP visits: higher income groups and older age groups are more likely to use both these types of service, and medical card cover has much less bearing. This pattern could reflect the greater ability of higher income households to purchase these types of care, limited availability of these types of treatment in certain areas or to those on lower incomes, and perhaps differences in knowledge about and attitudes to the benefits of these services.

Chapter 6 attempted to discern the impact that these patterns have on the overall equity of utilisation of primary care services. Once again, the crucial factor is whether the patterns of utilisation reflect the need for care across groups or whether income and non-need factors play a role. As noted earlier, the higher usage among medical card holders at the bottom of the income range suggests that use here may not be in line with need and indeed analyses do show that GP services are distributed in a significantly pro-poor manner, i.e. are concentrated at the lower end of the income scale even controlling for health need. On the other hand, dentist and optician services have a strongly pro-rich distribution.

The discussion above has focused on the demand for health care and the way in which this is structured by income and medical card status. Yet the Irish primary care system also leads to a particular incentive structure for GPs that could alter their behaviours. GPs were paid on a per visit basis until the late 1980s, but since then have been reimbursed on a system of capitation based on the size of their register. Since 2001 this system has become more complex with the introduction of medical cards for the over 70s with varying rates of reimbursement depending on whether the individual was already a GMSB/PRCS patient or not. The fact that GPs receive a capitation payment for their medical card patients gives them an incentive to maximise the size of their patient list, yet minimise the time spent with and the services provided to these patients (except for certain 'special items of service' such as suturing and vaccinations that receive a separate fee-for-service payment).[15] We do not have direct evidence about the duration of consultations for medical card patients, but our analyses do show that whereas higher income groups are just as likely to see their GP as lower income groups, the latter have a higher number of visits on average. This suggests that GPs do not try to deter their lower income or medical card patients.

For private patients, on the other hand, the incentive for providers is to maximise the amount of services provided and to encourage repeat consultations, as GP income depends directly on the volume of services provided. In theory, GPs cannot refuse to

15 This is not to argue however that this reimbursement system is not appropriate. The system of fee-per-service payments in place before 1989 also provided an incentive for GPs to minimise their time with patients if they were to maximise the number of visits.

accept an eligible patient onto their medical card list, and as such there should be no 'cream-skimming' behaviour by GPs in Ireland. However, it is possible that GPs may choose to locate in areas with more favourable health and social profiles and there is some evidence for this based on claims that medical card lists are increasingly difficult to allocate in rural and certain deprived urban areas (FÁS 2005). In addition it has been argued that the extension of medical card eligibility to all over 70s in July 2001 created a perverse incentive for the concentration of GPs in wealthy areas rather than those of greatest need (Irish College of General Practitioners 2006). Moreover, our results suggested that residents in deprived areas of Dublin city have significantly fewer GP visits per annum, even controlling for obvious differences in characteristics such as age, health status, income and medical card eligibility.

7.6 Equity in primary health care: Policy implications

The results from Chapters 4 and 5 suggest that the mix of private and public payments in the Irish primary health care system may produce distortions in both the supply and demand for care, which give rise to inefficiency in primary care and may be detrimental to individual health outcomes. The structure of primary care also contributes to problems of overcrowding in the hospital sector. Although those attending accident and emergency departments are theoretically charged a substantial fee, it is often not levied in practice. Going straight to A&E may also be seen as ensuring prompt medical attention at the highest level and cutting out the risk of multiple visits to the GP. Most GPs operate alone or in small groups and few work in concert with nursing, physiotherapy and other professionals. This means that the range of services available in GP surgeries is low, which encourages patients to seek care in the hospital sector. The primary health care strategy lays out a plan to increase the number of integrated primary care teams in Ireland, but as yet the development of this policy has been slow.

In terms of policy responses, much of the debate in Irish health policy has focused on increasing the thresholds for medical card eligibility, partly in response to the widespread perception that the burden of GP charges is very heavy for those just above the cut-off point for a medical card. However, the results presented here suggest that the key difference in terms of GP visiting rates in Ireland is simply between those with and without medical card cover, although there does seem to be an effect for higher income among those without a medical card. An increase in the thresholds and the recent introduction of the 'GP only card' may help those on average incomes, but

our findings suggest that fees present a deterrent to consultation across the income distribution. Given this, a more thoroughgoing reform of the pricing of primary care would seem to be required.

The pattern of utilisation for dental and optical services presents specific issues. The analyses in this report show that age and income are the major determinants of utilisation, but unlike GP care we found that those in the lowest income groups have lower levels of utilisation, even though analyses here and in other Irish research suggest that the need for dental and optical services is higher in lower socio-economic groups. The lack of an effect for medical card recipients suggests that this inverse relationship between need and use may not stem directly from lack of resources, but may instead reflect differences in knowledge about the benefits of care and value placed on good oral and optical health, although we have no evidence for this. It could be, for instance, that higher income groups put a greater value on preventative care, whereas lower income groups only attend the dentist/optician when necessary because of a limiting problem. If so, this may require a concerted policy of health promotion among lower income and socio-economic groups.

The government has a stated commitment that '[A]ccess to healthcare should be fair. The system must respond to people's needs rather than have access dependent on geographic access or ability to pay' (Department of Health and Children 2001b, p. 18). There are strong arguments for GP care being universally available, not only from an equity perspective but also to promote an efficient health care system within which primary care plays a full role. 'Universally available' in this sense need not mean free to all, but it certainly would not involve charges on anything like the current Irish scale. (While GPs are in effect free to users in some EU countries, others[16] have a modest charge – of say €10 per visit – which may be waived for those on low incomes.) Alternative models for organising and funding such a structure could be considered, but it is beyond the scope of this study to embark on that exercise. See, for example, the recent study by Thomas *et al.* (2006) which presents costings for extending primary care services within a different overall funding mechanism based on a social health insurance scheme.

Such an intervention would represent a profound and costly (at least in the short term) change in the way primary care is structured, which should be framed in the context of broader structural reforms in the health care system as a whole (see Thomas *et al.* 2006 and Tussing and Wren 2006 for discussions). In the meantime, progress could be made incrementally in that direction via a number of alternative routes that could

16 Charging fees, or cost sharing as it is known, became more common in Western European countries after 1980 with fees currently levied in most states.

benefit particularly vulnerable groups in the shorter term. One alternative would be to increase substantially the numbers qualifying for medical card cover by a major increase in the income thresholds determining eligibility.[17] Another would be to extend eligibility to certain vulnerable population groups irrespective of income, for example all children (as suggested by the Chief Medical Officer in 2001) or large families. Given the impact which withdrawal of the medical card was shown to have in this study, consideration should also be given to extending the tapered withdrawal that happens at present.

As well as considering broad-ranging structural reforms of this nature, policy-makers also need to address the needs of specific groups. While the medical card system is designed to cover those in greatest need, it appears that certain groups – the homeless, members of the Travelling community, refugees and asylum seekers – often have difficulty finding a GP who will take them on their medical card list. In addition, the problems concerning the supply of GPs in certain disadvantaged urban areas and some isolated rural ones need to be tackled – not least by changing the incentive structure to reward providers working in deprived areas, as is the case in many other countries.

We would reiterate in conclusion that primary health care and the hospital sector are intimately connected, and that many of the problems in the hospital sector are exacerbated by the current structure of primary care services. Reforming primary care is a prerequisite to making more efficient use of the present infrastructure in hospitals, and the reforms necessary in primary care to have this impact go well beyond the payment mechanism for patients and providers. Full reform will entail carrying through in full the government's primary health care strategy, with primary care teams occupying a central role, and taking primary care seriously as the appropriate site for a wide range of diagnostic and care services.

7.7 Further research

It is clear from the current study that there are limited data available in the Irish context to examine questions around the determinants of health status and the structuring of primary care utilisation. In terms of the former, obtaining longitudinal data on the living conditions and health of women of child-bearing age and the health and circumstances of their children into adulthood is crucial. The Growing Up in

17 The IMO, for example, recommend that full medical card cover be extended to 40% of the population (Irish Medical Organisation 2005).

Ireland Study (see www.growingup.ie) will be an invaluable resource in this regard, although it is important to realise that this does not contain prospective information on the pre-natal environment as it is sampled from the birth register. Gaining a sample that does have this information would be extremely valuable.

Another crucial area requiring attention is the behaviour of GPs and the impact of financial incentives. At the moment there is almost no information available on the duration of consultations with GPs across individuals of different characteristics and how these impact on prescribing behaviour and referral to secondary services. This is an important area that needs development. It was clear for example that lower income groups, and medical card holders in particular, have more GP visits per year than higher income groups. However, higher income groups are more likely to use specialist care and this may suggest that these groups have better access to secondary care than lower income groups. It could be, for instance, that longer waiting times for specialist care among public patients means that they end up having more visits to their GP to deal with chronic problems. Private patients with lower waiting times meanwhile may simply see their GP once to get a referral to the specialist and so have fewer visits. Such scenarios are plausible, but we have no evidence for them and, as such, more research should be carried out.

The inverse relationship between dentist/optician care and income also requires more detailed examination. Regular dental and optical care are crucial for the prevention of more serious and more expensive problems and there is substantial evidence that lower income groups have worse health on these dimensions. Detailed qualitative and quantitative research should attempt to evaluate the reasons for lower use in lower income groups.

The analysis of the equity of primary care utilisation carried out in this report is not possible at present using EU-SILC data. This represents a problem given that there are no other regularly collected large surveys which contain the data required for such analysis. Consideration should be given to including questions on GP visits among all population groups and not just those with medical cards.

Finally, this study was not able to examine the impact that being a Traveller, a refugee, a recent migrant or a homeless person would have on the issues in this report. This is a major omission and suggests that research should be carried out on these groups. Doing so may require innovative methodologies since these groups are difficult to locate and interview on a systematic basis, but the results would be invaluable for the development of policy and services.

Appendix 1

Data Used in the Report

Three micro-data sources are used extensively in this report: the Living in Ireland Survey, the Quarterly National Household Survey (Health Module) and the EU Survey on Income and Living Conditions. All are nationally representative and contain a wide variety of information on individual socio-economic and health characteristics, as well as information on health services utilisation. While they are comprehensive surveys of individuals resident in private households, small sections of society such as the homeless or those in institutions are not covered and therefore are necessarily absent from our analysis.

A1.1 Living in Ireland Survey (LIIS)

Although the Living in Ireland Survey was last carried out in 2001, it still remains the only data source in Ireland which combines information on health status, income and other socio-economic predictors, and class and education of family of origin. It would be ideal to have more up-to-date data, however the processes examined using the LIIS data are unlikely to have changed substantially in the last six years.

The LIIS constituted the Irish component of the European Community Household Panel (ECHP) survey, which began in 1994 and ended in 2001. It involved an annual survey of a representative sample of private households and individuals aged 16 years and over, based on a standardised questionnaire. Where possible, the same households were followed through time. Each adult completed a personal questionnaire, which collected a wide range of information on individual characteristics, including various aspects of health status (both physical and psychological) and health services utilisation.

For the purposes of this study, we use data from the 1995 and 2001 surveys (GP, dentist and optician visits are not separately identified in 1994). While the rate of sample attrition in the LIIS is quite high with only 37.5% of those interviewed in 1995 still participating in the survey in 2001, the 2000 survey added a substantial new random sample which comprised about half the households interviewed. To further reduce bias due to selective attrition, the sample for analysis was re-weighted to ensure representativeness in terms of a variety of demographic and socio-economic characteristics (see Russell *et al.* 2004 for further details). In 1995, the sample size was approximately 8,500; this had fallen to just over 5,000 by 2001.

A1.2 Quarterly National Household Survey (QNHS)

The QNHS is carried out each quarter with the primary purpose of gathering information on employment and unemployment, but each survey also contains an add-on survey relating to special social topics of interest. In the third quarter of 2001 (June–August), over 40,000 individuals provided information not just on their labour force characteristics but also on various aspects of their health status and usage of health services. While the sample of individuals is much larger than the LIIS, the range of socio-economic characteristics collected in the QNHS is much smaller. Much of the information is often not directly comparable with that from the LIIS, for example, whereas GP utilisation is collected in terms of the number of visits in the previous year in the LIIS, it is collected in terms of whether or not the individual had at least one visit in the last two weeks in the QNHS. Information on the utilisation of other primary care services is not available.

A1.3 EU Survey on Income and Living Conditions (EU-SILC)

The EU-SILC is the successor to the ECHP, and the first such survey in Ireland was carried out by the Central Statistics Office in the second half of 2003, making Ireland only one of six member states to participate in the pilot survey. The second round of the EU-SILC in 2004 included thirteen of the old EU-15 and most of the new member states, as well as Iceland. In 2005, the EU-SILC reached its full scale with the involvement of all EU member states plus Iceland and Norway.

Like the LIIS, the EU-SILC collects a wide range of information on the socio-economic characteristics of both individuals and households, with the health information following closely that collected in the LIIS. However, questions on the utilisation of services other than GPs are aggregated into one category (dentist, ophthalmic and aural services) and the survey only asks about the number of free consultations in the last four weeks. On the other hand, the EU-SILC does contain limited information on foregone visits to doctors and dentists, and the reasons (including cost) underlying this decision.

We use the first complete wave of data (i.e. for 2004), which contains approximately 10,500 individual observations. The EU-SILC data for 2005 was not available when the analyses for this report were carried out.

A1.4 Limitations of the national survey approach

It is important to underline that the methodological approach that we adopt in this report has particular limitations in terms of population coverage. The data sets which are used are a sample of private residential households selected using either the electoral register (LIIS) or the An Post GEO directory (QNHS, EU-SILC). Although providing a good sampling frame of most population groups, these surveys will be under-representative of population groups who are not in private housing or who are not covered by the sampling frame. All three surveys will not include, for instance, those individuals who are in residential homes or who are homeless (i.e. not living at private residential addresses). This means that members of Irish society who now require institutional support or are homeless will not be included and this will alter the health profile of the population overall.

Travellers and refugees are also less likely to be included in these samples if they are not living at a fixed residential address. Refugees in particular are unlikely to be included in the LIIS since it draws from the electoral register from which refugees are excluded. The absence of these groups from the sample means that we will not be able to examine their situation in detail. This suggests that other studies using a different methodology should be employed to examine issues around health and access to health care for these groups.

Appendix 2

Path Analysis Models

Table A2.1: Path analysis of (log) IHI by gender – direct effects

	MEN		WOMEN	
	B	SIG.	B	SIG.
Own class professional and managerial	Ref.		Ref.	
Own class clerical	0.01	ns	0.00	ns
Own class self-employed	0.00	ns	-0.01	ns
Own class farmer	-0.01	*	0.00	ns
Own class skilled	0.00	ns	0.01	ns
Own class unskilled	0.00	ns	0.00	ns
Parents' class professional and managerial	Ref.		Ref.	
Parents' clerical	0.02	ns	0.01	ns
Parents' self-employed	0.03	*	0.00	ns
Parents' farmer	0.01	ns	-0.01	ns
Parents' skilled	0.02	ns	0.02	ns
Parents' unskilled	0.01	ns	0.01	ns

	MEN		WOMEN	
	B	SIG.	B	SIG.
Age 17–24	Ref.		Ref.	
Age 25–34	0.03	*	0.02	ns
Age 35–44	0.03	*	0.05	***
Age 45–54	0.05	***	0.05	***
Age 55–64	0.08	***	0.08	***
Age 65+	0.07	***	0.12	***
Own education primary only	0.02	***	0.01	*
Own education lower secondary	-0.01	ns	0.00	ns
Own education upper secondary	-0.01	*	0.00	ns
Own education third level	Ref.		Ref.	
Parents' education primary only	-0.02	ns	0.00	ns
Parents' education lower secondary	-0.01	ns	0.00	ns
Parents' education upper secondary	-0.01	ns	0.01	ns
Parents' education third level	Ref.		Ref.	
Log of net equivalent income	-0.01	***	-0.01	ns
Never smoke	Ref.		Ref.	
Smoke daily	0.03	***	0.02	***
Smoke occasionally	-0.01	ns	0.02	ns
Smoked daily in the past	0.03	***	0.02	**
Smoked occasionally in the past	0.00	ns	0.01	ns
Underweight by BMI	0.03	*	0.00	ns
Normal by BMI	Ref.		Ref.	
Overweight by BMI	0.00	ns	0.01	*
Obese by BMI	0.02	**	0.03	***
Not member of a club or organisation	Ref.		Ref.	
Member of a club or organisation	-0.01	ns	0.00	ns

	MEN		WOMEN	
	B	**SIG.**	**B**	**SIG.**
Talk to neighbours more than weekly	Ref.		Ref.	
Talk to neighbours weekly	0.01	ns	0.01	ns
Talk to neighbours monthly	0.01	ns	0.03	**
Talk to neighbours less than monthly	0.03	ns	0.00	ns
Never talk to neighbours	0.01	ns	0.01	ns
Meet family and friends more than weekly	Ref.		Ref.	
Meet family and friends weekly	0.01	ns	0.01	ns
Meet family and friends monthly	0.03	ns	0.00	ns
Meet family and friends less than monthly	-0.04	ns	-0.02	ns
Never meet family and friends	-0.02	ns	-0.04	ns
Employed	Ref.		Ref.	
Self-employed	0.02	*	0.00	ns
Unemployed	0.03	***	0.03	**
Inactive	0.08	***	0.04	***
Married or cohabiting	Ref.		Ref.	
Single	0.01	ns	0.02	**
Separated	0.00	ns	0.04	**
Divorced	0.07	*	-0.03	ns
Widowed	0.03	*	0.02	**
Housing problems	0.01	**	0.01	*
Basic deprivation	0.01	ns	0.02	***
X^2	**4035.706**		**4268.876**	
N	**3186**		**3370**	

Significance: ns=not significant, *=P<0.05, **=P<0.01, ***=P<0.001

Appendix 3

Ill Health Index

Using Principal Components Analysis, we seek to establish the hypothetical factors which are common to our three health variables, that is:

$$Z_j = a_{j1}F_1 + a_{j2}F_2 + a_{j3}F_3 + d_jU_j \qquad (1)$$

Where Z_j is variable j in standardised form, F_1 are the hypothetical factors, a_{j1} the standardised regression coefficients of variable j on factor i and U_j the unique factor for variable j (d_j is the regression coefficient for this unique factor). After deriving $a_{j1,}$ examination of the common factors showed a single dimension that we could label 'ill health'. We then weight each of the variables by a_jF[ill health] to create a single 'ill health index' (IHI).

Table A3.1 gives the mean and standard deviations for this index, cross-tabulated for different income quintiles and presence of chronic illness. Not surprisingly, those with a chronic illness have a higher score.

Table A3.1: IHI by income quintile and chronic illness

INCOME QUINTILE	NO CHRONIC ILLNESS		CHRONIC ILLNESS	
	MEAN	STANDARD	MEAN	STANDARD
1 (lowest)	9.25	0.67	14.00	1.34
2	9.10	0.53	13.77	1.55
3	9.10	0.54	13.35	1.69
4	9.01	0.40	13.02	1.87
5 (highest)	9.04	0.47	12.88	1.71

As a more refined measure of health status, the IHI should perform better than single or multiple items when standardising for health need in the measurement of equity in utilisation.

Appendix 4

Econometric Methodologies for Chapter 4

A4.1 1995 and 2001 Living in Ireland Surveys

We begin by specifying a very simple one-step model of GP visiting which relates the number of GP visits in the previous year to various individual and household socio-economic characteristics as follows:

$$y_i = \beta_0 + X_i' \beta_1 + \varepsilon_i \qquad (1)$$

Where y_i is the dependent variable (number of GP visits in the previous year), X_i is the vector of independent variables (e.g. age, gender, education level), β are the estimated coefficients and ε_i is the error term. In this case, the dependent variable (the number of visits to a GP in the previous twelve months) is a variable that can only take on non-negative integer values. The distribution of GP visits is also highly skewed with a large proportion of observations clustered at zero and only a small proportion of individuals recording frequent visits. Count data models, which assume a skewed, discrete distribution and restrict predicted values to non-negative values, are necessary. For the one-step model (1), we therefore use a negative binomial methodology (further details are available in Madden *et al.* 2005).

We also estimate a two-step model of GP visiting, which first estimates the probability that the individual had at least one GP visit in the previous year, and then models

the frequency of GP visits for those with at least one GP visit in the previous year, as follows:

$$Pr\,(y_i > 0) = \beta_0 + X_i' \beta_1 + \varepsilon_i \qquad (2)$$

and

$$y_i = \beta_0 + X_i' \beta_1 + \varepsilon_i, \text{ for } y_i > 0 \qquad (3)$$

Many argue that such an approach is more appropriate to describing the nature of the decision-making process underlying the decision to visit a GP, whereby the patient initiates the visit to a GP but the GP decides on the frequency of treatment. Such a model can accommodate the fact that different variables may affect the decision to visit a GP (contact decision) and the decision about the number of visits (frequency decision), as well as the fact that the same variables may affect the two decisions in different ways. For the first part of the two-step model (2), we use a binary probit methodology and for the second part (3), we use a truncated (i.e. including only positive observations) negative binomial methodology. Again, further details on these techniques are presented in Madden *et al.* 2005.

A4.2 2001 Quarterly National Household Survey

For the analysis using QNHS data, the dependent variable is a binary variable indicating whether or not the individual visited a GP in the previous two weeks, and so we use the binary probit methodology to estimate a model similar to that specified in (2) above.

A4.3 Statistical modelling of GP visits in Chapter 4

The results of estimating the one-step statistical model of GP visiting using LIIS data for 1995 and 2001, discussed in section 4.4, are shown in Table A4.1. A full description of the data and variables, together with results for a two-step model and results using QNHS data, are available in a background paper from the authors (see Nolan and Nolan, 2003).

Table A4.1: Marginal effects from negative binomial model of GP visiting (one-step) (LIIS 1995 and 2001)

	1995	2001
Age 17–24	Ref.	Ref.
Age 25–34	0.19	0.28*
Age 35–44	-0.09	-0.29*
Age 45–54	-0.54***	-0.14
Age 55–64	-0.35**	-0.10
Age 65–74	-0.15	0.20
Age 75+	0.38*	0.21
Male	Ref.	Ref.
Female	0.82***	1.00***
Self-reported health is excellent	Ref.	Ref.
Self-reported health is good	1.02***	0.98***
Self-reported health fair	2.85***	2.79***
Self-reported health bad or very bad	4.49***	4.95***
No chronic illness	Ref.	Ref.
Chronic illness	2.23***	1.81***
Not experiencing psychological distress	Ref.	Ref.
Experiencing psychological distress	0.82***	0.67***
Primary education	Ref.	Ref.
Lower secondary education	-0.24**	-0.21*
Upper secondary education	-0.28***	-0.30**
Third level education	-0.09	-0.25*
Single	Ref.	Ref.
Married	0.51***	0.52***
Separated/divorced	0.69**	0.67**
Widowed	0.60***	0.49**

	1995	2001
Inactive	Ref.	Ref.
Employed	-0.30***	-0.30***
Unemployed	-0.43***	-0.42*
Urban	Ref.	Ref.
Rural	-0.12*	-0.02
Income decile 1 or 2	Ref.	Ref.
Income decile 3	0.30**	-0.18
Income decile 4	-0.00	-0.25*
Income decile 5	0.14	0.59***
Income decile 6	0.56***	-0.06
Income decile 7	0.39**	-0.36**
Income decile 8	0.50***	0.15
Income decile 9	0.62***	-0.16
Income decile 10 (highest)	0.71***	0.22
No medical card	Ref.	Ref.
Has medical card	1.20***	1.06***
N	7,218	5,309
Log-Likelihood	-15,337.3	-11,512.8

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

Table A4.2: Marginal effects for model with additional health status measures (LIIS 2001)

	NEGATIVE BINOMIAL
Age 17–24	Ref.
Age 25–34	0.27
Age 35–44	-0.34*
Age 45–54	-0.19
Age 55–64	-0.15
Age 65–74	0.17
Age 75+	0.20
Male	Ref.
Female	1.03***
Self-assessed health excellent	Ref.
Self-assessed health good	1.00***
Self-assessed health fair	2.80***
Self-assessed health bad or very bad	5.08***
No condition	Ref.
Disease	3.22***
System	2.94***
Mental	2.74***
Nervous	1.47***
Circulatory	2.07***
Respiratory	1.82***
Digestive	0.85*
Headache	1.70
Musculo-skeletal	1.42***
Accident	2.25***
Other health condition	1.00**
Stress	0.70***

	NEGATIVE BINOMIAL
Non-smoker	Ref.
Smoker	-0.07
Normal weight	Ref.
Underweight	0.21
Overweight	0.27***
Obese	0.36**
Primary education	Ref.
Lower secondary education	-0.17
Upper secondary education	-0.29**
Third level education	-0.22
Single	Ref.
Married	0.51***
Separated/divorced	0.70**
Widowed	0.50**
Inactive	Ref.
Employed	-0.30***
Unemployed	-0.39*
Urban	Ref.
Rural	-0.02
Income decile 1 or 2	Ref.
Income decile 3	-0.14
Income decile 4	-0.22*
Income decile 5	0.61***
Income decile 6	-0.07
Income decile 7	-0.32**
Income decile 8	0.15
Income decile 9	-0.16
Income decile 10 (highest)	0.21

	NEGATIVE BINOMIAL
No medical card	Ref.
Medical card	1.04***
'Old' medical card effect	1.06***
N	5,309
Log-Likelihood	-11,497.7

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

Table A4.3: Marginal effects for medical card transitions (1995–2001 LIIS)

	MARGINAL EFFECTS
Medical card retain	0.97 (0.08)***
Medical card lose	0.31 (0.08)
Medical card gain	0.81 (0.09)***
NT	26,432
Log-Likelihood	-58,097

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

Notes: The reference category is an individual who remains a private patient. Marginal effects for other variables (year dummies, age, gender, health, education, marital status, employment status, household location) not presented here. See Nolan (2006) for further details.

Table A4.4: Propensity score estimates of medical card changes (1995–2001 LIIS)

	EXTRA GP VISITS PER ANNUM
Gaining a medical card (vs. remaining a private patient)	1.3*
Losing a medical card (vs. remaining a medical card patient)	-1.6**

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

Notes: Individuals are matched with individuals who are similar in terms of pre-medical card change characteristics, but who differ only in their experience of medical card status change. See Nolan (2006) for further details.

Table A4.5: Income effects for private patients (LIIS 2001)

DECILE	NEGATIVE BINOMIAL	PROBIT	TRUNCATED NB
Income 1 and 2	Ref.		
Income 3	-0.17	0.02	-0.33*
Income 4	0.51***	0.06*	0.52**
Income 5	-0.20	0.00	-0.28
Income 6	-0.23	0.03	-0.47**
Income 7	0.00	0.05*	-0.20
Income 8	0.24	0.07**	0.05
Income 9	0.03	0.08**	-0.29
Income 10 (highest)	0.26	0.09***	0.00
N	3,648	3,648	2,475
Log-Likelihood	-6,917.8	-2,091.2	-4,780.0

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

Note: Marginal effects for other variables (age, gender, health, education, marital status, employment status, household location) are not presented here.

Table A4.6: Marginal effects of household location on GP visiting (LIIS 1995 and 2001)

	1995	2001
Dublin city	Ref.	
Country	0.34***	0.26**
Town (1,500–2,999)	1.17***	0.43
Town (3,000–4,999)	0.86***	0.95***
Town (5,000–9,999)	0.73***	0.63***
Town (10,000 or more)	0.59***	0.21
Waterford city	-0.13	0.76
Galway city	0.27	-0.35
Limerick city	0.92***	0.14
Cork city	0.58***	1.53***
Dublin county	0.76***	0.08
N	7,218	5,398
Log-Likelihood	-15,316.3	-11,669.8

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

Notes: Marginal effects for other independent variables (age, gender, health status, income, medical card eligibility etc. are not presented here).

Table A4.7: Marginal effects from negative binomial model of GP visiting (LIIS 1995 and 2001)

	1995	2001
County* not disadvantaged	0.3	0.3
Country* disadvantaged	1.0***	0.9**
Town 1* not disadvantaged	1.2***	0.6
Town 1* disadvantaged	0.8	0.0
Town 2* not disadvantaged	1.0***	1.1**
Town 2* disadvantaged	-0.0	1.8**
Town 3* not disadvantaged	0.7***	0.9**
Town 3* disadvantaged	0.6	1.0**
Town 4* not disadvantaged	0.3	0.4
Town 4* disadvantaged	1.3***	0.3
Waterford* not disadvantaged	-0.7	1.2
Waterford* disadvantaged	0.5	-0.7
Galway* not disadvantaged	0.2	-0.4
Galway* disadvantaged	0.4	1.0
Limerick* not disadvantaged	1.3**	-0.1
Limerick* disadvantaged	0.2	0.2
Cork* not disadvantaged	0.7**	1.8***
Cork* disadvantaged	0.3	1.0*
Dublin city* not disadvantaged	-0.1	0.2
Dublin city* disadvantaged	Ref.	Ref.
Dublin county* not disadvantaged	0.5**	0.0
Dublin county* disadvantaged	0.9***	0.9**

	1995	2001
N	7,104	5,154
Log-Likelihood	-15,060.2	-11,148.9

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

Note: Marginal effects for other variables (year dummies, age, gender, health, education, marital status, employment status, household income, medical card status) are not presented here.

Table A4.8: Estimated marginal effects on free GP visits by county (EU-SILC 2004)

	MARGINAL EFFECTS
Carlow	-0.2***
Cavan	0.7**
Clare	0.3***
Cork	0.2
Donegal	0.0
Galway	0.2
Kerry	0.1
Kildare	0.3**
Kilkenny	-0.0
Laois	0.2*
Leitrim	0.1
Limerick	0.5***
Longford	0.7***
Louth	0.3**
Mayo	-0.0
Meath	0.1
Monaghan	-0.1
Offaly	0.2*
Roscommon	-0.0
Sligo	0.3**
Tipperary NR	0.2*
Tipperary SR	0.5***
Waterford	-0.1
Westmeath	0.1
Wexford	-0.1

	MARGINAL EFFECTS
Wicklow	0.1
Cork city	0.2*
Dublin city	Ref.
Dublin – Belgard	0.2**
Dublin – Fingal	0.2*
Dublin – Dun Laoghaire Rathdown	0.2**
Galway city	0.2
Limerick city	0.2
Waterford city	-0.1

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

Note: Marginal effects are obtained from a one-step model of GP visiting (also including controls for age, gender, health status, employment status, marital status, education level and household income). They are interpreted with reference to the omitted category, i.e. Dublin city.

Appendix 5

Results of Multivariate Analysis for Chapter 5

Table A5.1: Marginal effects from negative binomial model of dentist visiting (LIIS 1995 and 2001)

	1995	2001
Age 16–24	Ref.	Ref.
Age 25–34	-0.08*	-0.06
Age 35–44	-0.10*	-0.05
Age 45–54	-0.14**	-0.10
Age 55–64	-0.23***	-0.27***
Age 65–74	-0.38***	-0.37***
Age 75+	-0.43***	-0.47***
Male	Ref.	Ref.
Female	0.07**	0.09***
Very good or excellent health	Ref.	Ref.
Good health	0.02	0.04

	1995	2001
Fair health	-0.14***	0.03
Bad or very bad health	-0.02	-0.15
No chronic illness	Ref.	Ref.
Chronic illness	0. 19***	0.01
No psychological distress	Ref.	Ref.
Psychological distress	0.13***	0.13***
Primary education	Ref.	Ref.
Lower secondary	0.29***	0.33***
Upper secondary	0.34***	0.36***
Third level	0.59***	0.51***
Single	Ref.	Ref.
Married	0.03	0.09*
Separated/divorced	0.08	0.14
Widowed	-0.01	-0.03
Inactive	Ref.	Ref.
Employed	-0.07**	-0.04
Unemployed	-0.04	-0.09
Urban	Ref.	Ref.
Rural	-0.03	-0.11***
Income decile 1 and 2	Ref.	Ref.
Income 3	-0.02	-0.07
Income 4	-0.10*	-0.05
Income 5	-0.03	-0.09
Income 6	0.24***	0.17**
Income 7	0.24***	0.16**
Income 8	0.18***	0.21***
Income 9	0.35***	0.20***
Income 10 (highest)	0.43***	0.26***

	1995	2001
No medical card	Ref.	Ref.
Medical card	-0.07*	0.02
N	7,215	5,399
Log-Likelihood	-7,932.8	-6,150.5

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

Table A5.2: Marginal effects from negative binomial model of optician visiting (LIIS 1995 and 2001)

	1995	2001
Age 16–24	Ref.	Ref.
Age 25–34	-0.10***	-0.11***
Age 35–44	-0.10***	-0.07**
Age 45–54	0.05	0.08**
Age 55–64	0.05	0.10**
Age 65–74	0.04	0.19***
Age 75+	0.13***	0.23***
Male	Ref.	Ref.
Female	0.03**	0.08***
Very good or excellent health	Ref.	Ref.
Good health	0.02	0.02
Fair health	0.01	0.02
Bad or very bad health	0.06	0.10**
No chronic illness	Ref.	Ref.
Chronic illness	0.08***	0.05**
No psychological distress	Ref.	Ref.
Psychological distress	0.04**	0.07***

	1995	2001
Primary education	Ref.	Ref.
Lower secondary	0.05***	-0.02
Upper secondary	0.10***	0.04*
Third level	0.13***	0.08***
Single	Ref.	Ref.
Married	0.04*	0.01
Separated/divorced	0.02	0.02
Widowed	0.05	-0.01
Inactive	Ref.	Ref.
Employed	-0.01	0.01
Unemployed	-0.05*	-0.09*
Urban	Ref.	Ref.
Rural	-0.07***	-0.08***
Income decile 1 and 2	Ref.	Ref.
Income 3	0.00	0.02
Income 4	-0.03	0.03
Income 5	-0.02	0.04
Income 6	0.03	0.06*
Income 7	0.00	0.10***
Income 8	0.03	0.09**
Income 9	0.09***	0.10***
Income 10 (highest)	0.11***	0.14***
No medical card	Ref.	Ref.
Medical card	-0.01	0.00
N	7,206	5,399
Log-Likelihood	-4,540.8	-3,946.0

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

Appendix 6

Variable Definitions for Chapters 4 and 5

Table A6.1: Variable definitions in data sources for this report

	LIIS	QNHS	EU-SILC
GP visits	Number of GP visits in the previous twelve months	=1 if visited a GP at least once in the previous two weeks, =0 otherwise	Number of *free* GP visits in the previous four weeks
Dentist visits	Number of dentist visits in the previous twelve months		Number of *free or subsidised* dental, ophthalmic or aural treatments in the previous twelve months
Optician visits	Number of optician visits in the previous twelve months		

	LIIS	QNHS	EU-SILC
Age	Seven categories (16–24, 25–34, 35–44, 45–54, 55–64, 65–74 and 75+ years)	Six categories (18–24, 25–34, 35–44, 45–54, 55–64 and 65+ years)	Six categories (18–24, 25–34, 35–44, 45–54, 55–64 and 65+ years)
Gender*	=1 if female, =0 otherwise		
Chronic illness	=1 if suffers from any physical or mental health problem, illness or disability, =0 otherwise	=1 if suffers, or has suffered, from one or more of eighteen specified health conditions (e.g. angina, asthma), =0 otherwise	=1 if suffers from any chronic (long-standing) illness or condition (health problem), =0 otherwise
Self-assessed health	Five categories (very good, good, fair, bad and very bad)	Five categories (excellent, very good, good, fair and poor)	Five categories (very good, good, fair, bad and very bad)
Stress	=1 if in psychological distress (i.e. scoring 3 or more on General Health Questionnaire), =0 otherwise		
Smoker	=1 if the individual is a daily smoker, =0 otherwise (2001 only)		
Body mass index	Four categories (obese, overweight, normal weight and underweight) (2001 only)		

	LIIS	QNHS	EU-SILC
Marital status*	Four categories (never married, married, separated/divorced and widowed)		
Employment status*	Three categories (employed, unemployed and economically inactive)		
Highest education level*	Four categories (primary, upper secondary, lower secondary, third level)		
Household income	Ten categories representing decile of equivalised weekly household income		Ten categories representing decile of equivalised annual household income
Medical card*	=1 if has a medical card, =0 otherwise		
Household location	Eleven categories: open country or village (200–1,499 inhabitants), town (1,500–2,999 inhabitants), town (3,000–4,999 inhabitants), town (5,000–9,999 inhabitants), town (10,000 or more inhabitants), Waterford, Galway, Limerick and Cork cities, Dublin city and Dublin county)	Eight categories (border, midlands, west, Dublin, mid-east, mid-west, south-east and south-west)	Thirty-four categories (twenty-six counties plus Cork, Waterford, Galway and Limerick cities, Dublin city, Dublin Fingal, Dublin south and Dublin Dun Laoghaire-Rathdown)
Disadvantage	=1 if score 2 or more on index of disadvantage, =0 otherwise		

*indicates variables with the same definition across all three data sources

Appendix 7

Discussion of the Form of the Model Used in Chapter 3

Ordinary Least Squares (OLS) regression makes the assumption that the underlying variable is normally distributed and continuous. Unfortunately this is not true for the IHI which is entirely positive and has a long right tail and a large grouping of cases at the bottom of the scale (denoting very good health and no chronic or limiting illness). This type of distribution is better dealt with using a 'tobit' estimator which can deal with censored distributions, but doing so would make the analysis of the direct and indirect effects of family of origin problematic. Tests show that the results for the tobit model are almost identical to those found using the OLS estimator so here we choose to use the latter.

Glossary

Aetiology	The study of the causes of diseases
Artefactual explanation	The argument made that the method used to measure health inequalities may be misleading
Bivariate analysis	The analysis of two variables simultaneously, for the purpose of determining the relationship between them
Body mass index	A measure of body size computed by dividing weight in kilograms by height in metres
Concentration indices	A statistical measure of the distribution of use of health care across the income distribution

Consistent poverty

A measure of poverty which combines being income poor (see below) with being deprived (lacking an item because of income constraints) of any one of eight (in the old definition and eleven in the new) items or activities. The eight-item definition is used in this report and this asks about the enforced deprivation of:

1. Two pairs of strong shoes
2. A meal with meat, chicken or fish every second day
3. A warm, waterproof overcoat
4. A roast or equivalent once a week
5. New, not second-hand, clothes
6. A substantial meal at any time in the last two weeks
7. Gone without heating in the last year
8. Gone into debt in the last year to meet living expenses

In the new eleven-item definition, items 2 and 8 are dropped from this list and the following added:

1. Able to keep the house adequately warm
2. New, not second-hand, furniture
3. Able to have family or friends for a drink or meal once a month
4. Able to afford an afternoon or evening out
5. Able to buy presents for friends or family once a year

Equity of access

The equal availability of health care to individuals, taking into account their need for health care

ESRI

Economic and Social Research Institute

EU-SILC

European Union Survey of Income and Living Conditions

Functional measures	Survey questions which ask respondents about the extent of limitation they experience from a health problem
Horizontal equity of utilisation	Utilisation, or use of services, is said to be horizontally equitable when those with an equal need for treatment use services to the same extent irrespective of income
Horizontal inequity of utilisation	The situation where groups with different incomes, education etc. use different levels of health care even though they have an equal need for health care
IHI	The ill health index is a measure of illness which combines individual responses on medical, functional and subjective measures of health
Income decile	The distribution of incomes across households, ranked in order of size, divided into ten equal-sized groupings
Income poverty	Poverty defined as being under a specific income amount, often 60% of median income
Independent effect	The influence which one variable (e.g. age) has on a dependent variable (e.g. income) after removing the influence of a third (e.g. gender)
Inequity index	A statistical method for measuring the degree of inequity in health care utilisation which takes into account the differential need for health care across income groups
Lifecourse model	A perspective on the determinants of health which takes into account influences over the whole of the person's life from conception to the present
LIIS	Living in Ireland Survey

Medical card effect	The impact which receipt of a medical card has on other behaviours such as frequency of visits to the GP
Medical measures	Survey questions which ask respondents about the presence of a chronic illness or specific health problem
Morbidity	A person's health status; a group's level of health relative to another
Mortality	Meaning death; usually used to express differences in the rates of death, controlling for age, across different social groups
Multivariate model	A statistical technique for establishing the impact of one variable (e.g. age) controlling for another (e.g. gender)
NAPS	National Anti-Poverty Strategy
PRCS	Primary Care Reimbursement Service. Formerly the General Medical Services (Payments) Board
QNHS	Quarterly National Household Survey
SLÁN	National Survey on Lifestyle, Attitudes and Nutrition
Subjective measures	Survey questions which ask respondents to give a general opinion, e.g. to assess their health status
TCD	Trinity College, Dublin

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Health inequalities and difficulties with access to good quality health care services are among the most pressing issues facing policy-makers in Ireland today. Those living in poverty and social exclusion are more likely to have worse health and to die earlier. The reasons for these inequalities are diverse and complex and reflect underlying inequalities in the income and living standards of different groups in society.

Poor Prescriptions: Poverty and Access to Community Health Services **enhances our understanding of the link between poverty and ill health. The study uses household survey data from the Living in Ireland Survey (1995 and 2001), the Quarterly National Household Survey (2001) and the EU Survey on Income and Living Conditions (2004) to examine health inequalities among the Irish population.**

The study also investigates the level of utilisation of GP services and other primary care services by people at different levels of income and analyses different factors which seem to affect these utilisation patterns.

The findings of this study will contribute to the debate around the most appropriate way to tackle health inequalities in Ireland. They will also inform health service providers on how equity of access to effective primary health care services can be addressed. This study is of relevance to policy-makers, health service providers, organisations working with low-income groups and researchers concerned with health issues.

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