THE UTILISATION AND FINANCING OF HEALTH SERVICES IN IRELAND

Brian Nolan

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GENERAL SUMMARY

Objectives of the Study

This study analyses the patterns of utilisation of health services in Ireland and the way in which these services are financed. Its primary objective is to assess the influence of different factors on utilisation, especially the economic incentives associated with the structure of financing and public entitlements. The role of health insurance and the distributional implications of the system of health finance and delivery are also examined in some depth. The findings of the study are intended to inform policy formation at a crucial period in the evolution of the Irish health services.

The Context of the Study

The Report of the Commission on Health Funding (1989) highlighted the inadequacy of the information and research base on which policy choices in the health care area must be made. Tussing's (1985) study represented a pioneering application of economic analysis to the Irish health care system, further developed here. Such analysis is all the more necessary given the significant structural changes in that system in recent years, the financial constraints on the public health services, and the likely implications of progress towards a Single Market in the European Community.

The Role of Economic Incentives

The financial incentives facing both patients and providers of health care in the Irish system are complex, depending on the Entitlement Category the patient falls into, whether he or she has health insurance, and the type of care involved. This study teases out the incentives involved as different groups seek care, and attempts to assess their significance for utilisation patterns. This emphasis does not arise from a conviction that such incentives are the only, or indeed the dominant, influence; rather, it rests on the belief that an understanding of their effects is essential for the design of an efficient and equitable health care system. The study focuses more on users than on providers of health care, primarily because of the nature of the data available.

The Data Used

The study relies heavily on data obtained in a large-scale national household survey carried out by the ESRI in 1987. This gathered detailed

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information on the characteristics of respondents, on their utilisation of different health services over the previous year, and some limited but extremely valuable information on health status. For the first time, this allows differentials across groups – for example social classes – in the extent of (self-reported) chronic illness for a large representative sample to be documented for Ireland. It also means that the impact of differences in health status on usage of health services can be taken into account in trying to distinguish the effects of economic incentives, which Tussing was not in a position to do because he did not have such data. The availability of detailed income data in the survey, together with information on utilisation and health status, also allows the role of health insurance and the distributional implications of the system of financing and delivery to be analysed in detail.

Public Entitlements and the VHI
    The study is based on the three-category structure of public entitlements to free or subsidised health care which operated up to June 1991, where those in Category I (with medical card cover) were entitled to free public hospital care and to GP care and prescription medicines, Category II was not entitled to free GP care and medicines and the top Category III had, in addition, to pay consultants' fees. The elderly were heavily concentrated in Category I, with very few in Category III. The 15 per cent of the population in Category III did not correspond particularly closely with the top 15 per cent of the income distribution, particularly if household size was taken into account in ranking households. This highlighted anomalies created by the way in which the earnings limit distinguishing Categories II and III operated. Since June 1991 these two categories have in effect been merged, Category II entitlements – most importantly covering consultant care for public hospital treatment – being extended to include those formerly in Category III. The data also showed that over 60 per cent of those taking out health insurance through the VHI were *not* in Category III: thus, substantial numbers with full entitlement to public hospital care none the less paid for health insurance, and one of the most interesting questions addressed in the study is why they do so.

Health Status
    The information obtained on health status covered the presence/absence of a major chronic physical illness or infirmity, as reported by respondents, and their psychological health status as measured by a variant of the widely-used General Health Questionnaire (GHQ). Coincidentally, about 17 per cent of adults reported chronic physical ill-

health, and the same proportion were above the GHQ threshold score indicating that they would be likely to be classified as having a clinically significant psychiatric disturbance. Sharp differentials across the social classes in the percentage reporting chronic illness were seen: as in other countries, those from semi-skilled and unskilled manual social classes were considerably more likely than others to report such illness. The gap was particularly pronounced in the middle age groups where over twice as many people in the unskilled manual class as in the professional and managerial ones reported such illness. Similar social class differentials in the prevalence of psychological distress as measured by GHQ scores were seen, the proportion above the critical threshold being about twice as high in the unskilled manual as in the professional/managerial classes, for reasons explored in the study by Whelan, *et al.* (1991) using the same data base.

Utilisation of Health Services: GPs and Prescription Medicines

   People in Entitlement Category I, who are entitled to free GP care, have a considerably higher incidence of physical and psychological ill-health than the remainder of the population, who have to pay out-of-pocket for such care. If measures of health status are not included in analysing GP visiting behaviour, what are in fact the effects of differences in the incidence of illness could be attributed to the economic incentives facing patients, and through them providers.

   Like Tussing's survey, the 1987 sample showed much higher GP visiting rates for those in Category I than the rest of the population; those with medical card cover had over twice as many visits in the year as the rest of the population, even within age groups. Regression analysis indicated that membership of Category I had a substantial positive effect on the probability of having had a GP visit, having controlled for other factors. It was found that including the additional explanatory variables available in this study but not to Tussing, especially the health status measures, did reduce the estimated effect of Category I membership. None the less, even including these variables, Category I membership clearly increased both the probability of having had a visit to the GP in the past year and, for those who had at least one visit, the number of visits. This could be partly because the measures of ill-health employed are crude and fail to fully reflect the greater incidence of illness in Category I. However, it appears that the net impact of the financial incentives facing patients and providers did play a part in the relatively high level of GP visiting by that group.

   The survey data did not allow the relative importance of incentives to patients versus doctors be assessed. This is a crucial issue in assessing the

likely impact of the recent change in the remuneration system for GPs treating Category I patients, from-fee-for-service to capitation. Information on visiting rates is no longer gathered administratively for reimbursement purposes, but the limited evidence available so far does not suggest that there has been a dramatic change in visiting patterns following the change in the way GPs are paid.

It was also found that people in Category I had more prescriptions per GP visit than the remainder of the population, taking other factors such as health status into account. This suggests once again that economic incentives arising from the fact that those in Category I are entitled to prescription medicines free of charge have a part to play in explaining their high level of prescriptions. Any impact of differences in incentives to patients may make itself felt at least partly through provider behaviour – doctors may tend to prescribe more readily knowing the patient will not have to pay. Current policy initiatives to control expenditure on prescription medicines for Category I patients are focused primarily on influencing doctors, through indicative drug budgets, rather than through imposing prescription charges on patients.

Utilisation of Hospital Services

Those in the sample with VHI cover, and those in Entitlement Category I, were more likely than others to have had a hospital in-patient stay, having controlled for other characteristics. Those with insurance who had hospital stays also appeared to have spent more time in hospital in the year than those without insurance. This could be because of a response by patients and/or providers to the fact that the individual has insurance. It could also be due to "adverse selection", whereby those who take out insurance are more likely than the rest of the population to be/become ill, but the evidence available did not appear to support that explanation. The relatively high probability of having had a hospital stay for those in Category I may be associated with their relatively high GP visiting rate, and/or differences in morbidity which are not reflected in the limited health status measures employed.

The Demand for Health Insurance

The factors associated with demand for insurance were also studied. Since substantial numbers outside Category III had insurance, limited entitlement to public hospital care was clearly not the only reason people subscribed to the VHI. Social class was seen to be a significant influence for those in Category II, the professional/managerial classes being more likely to have insurance than the intermediate non-manual or manual

classes. On the basis of the substantial increase in real premium levels in the 1980s, the Commission on Health Funding concluded that the price sensitivity of demand for health insurance is very low. This needs to be qualified because of the impact of tax relief and tax rates on the net cost of insurance. The context in which insurance operates, in particular perceptions of public hospital services, is likely to be a crucial influence on demand and its sensitivity to other factors. Motives for taking out health insurance were probed through a special supplement to the EC Consumer Survey of households carried out in 1990. Responses showed that the dominant reasons identified by those with insurance were security and speed of access. Much smaller but still considerable numbers identified factors related to quality of care, such as being able to choose one's own consultant.

This evidence is helpful in assessing the likely effects on the demand for insurance of recent or possible future changes in the environment in which health insurance operates in Ireland. The abolition of Entitlement Category III and extension of entitlement to public hospital care (including consultant's fees) to the entire population was recommended by the Commission on Health Funding and implemented from June 1991. Taken alone, this appears unlikely to have much impact on the demand for health care: many people with full entitlement none the less took out health insurance, and these had a similar socio-economic profile but (generally) lower incomes than those who were in Category III. The impact of the phasing out of income tax relief on VHI premia would probably be strongly influenced by perceptions of how easy it was to obtain access to public care.

A third recommendation of the Commission on Health Funding, the adoption of common waiting lists for public and private patients, could have a substantial impact on the demand for health insurance if ease of access is an important motive. This has not been adopted as policy, however; instead, the Programme for Economic and Social Progress stated that a new system will be phased in for public hospitals under which private patients will be accommodated only in private or semi-private beds, so that entirely separate waiting lists will operate for public and private patients. (At present some private patients are accommodated in public wards.) The impact of this on ease of access to public versus private care, and thus on the demand for insurance, will depend on how the stock of public/private beds evolve as the new arrangements are phased in. The likely effects of the movement towards a Single Market on the market for health insurance are not yet clear: the position with respect to the VHI's monopoly, income tax relief, and the operation of community rather than

experience rating depends on precisely how the EC regulations are framed and applied.

Distributional Issues

The study also focuses on distributional aspects of the system of health care financing and delivery. When State expenditure on the health care system is allocated among those using the different services, those towards the bottom of the income distribution were seen to receive more than those towards the top. This was not only because expenditure on the General Medical Service (providing GP care and prescription medicines for those with medical cards) mostly goes to lower income households, but also because such households were relatively heavy users of public hospital services.

Widening the coverage of the analysis to include both public and private expenditure on health care, general taxation dominates the sources of financing, more so than in many other developed countries. Overall, the financing system was found to be close to proportional, because out-of-pocket household expenditures were regressive but the other sources taxation, social insurance contributions and insurance premia – were mildly progressive. The results suggest that increased emphasis on charges for services is likely to be associated with greater regressivity.

Assessing equity in the delivery of health services – in terms of "equal treatment for equal needs" irrespective of income – depends crucially on being able to take differences in "needs" into account. The measure of physical health status included in the survey can serve as a very crude starting-point for such an assessment. Allocating total expenditure on different services among users, lower income groups were seen to "receive" a relatively high proportion of all health spending, but also had about the same high proportion of those reporting chronic physical ill-health. Properly assessing equity would require *inter alia* much more comprehensive measures of health status, and ideally of capacity to *benefit* from health care. Despite the difficulties this is an issue of central importance for further research, since equity appears widely accepted as a goal of particular importance to health care systems. Comprehensive survey-based information on health status, which could be related to the socio-economic status of the respondents and to their use of the health services, can be identified as one of the most important gaps in our knowledge.

Chapter 1

INTRODUCTION

1.1 *Introduction*

The health services and their financing have moved centre stage in Ireland over the past decade. The need to restrain overall public expenditure and borrowing has meant that hard choices have had to be faced in many areas, and the health sector has borne a considerable share of the burden of adjustment. Following on the rapid growth of the previous quarter century in public expenditure on health, this has been a painful process, giving rise to a great deal of reaction and controversy.

Despite this, the information and research base on which policy choices in the health care area must be made has been seriously inadequate, a point which was emphasised in the Report of the government-appointed Commission on Health Funding published in 1989. This is particularly true in the case of systematic economic analysis of the allocation and use of resources within the health services. Tussing's (1985) study represented a major step forward in the application of economic analysis to the Irish health care system. The present study, very much in the same spirit, uses an important new data source and addresses a range of issues which have recently come to the fore. Its primary objective is to increase our knowledge and understanding of health services utilisation patterns, of the role of health insurance, and of the distributional implications of the Irish system of health care financing and delivery.

Hopefully it is no longer necessary to argue at length, as Tussing had to, for the relevance of an economic analysis to the health sector. The importance of understanding the structure of incentives and the factors influencing the growth of expenditure on health has been brought home by the need to restrain expenditure while trying to maintain and improve services. Only by systematic evaluation of the impact of various policy options, taking into account changes in behaviour which they may bring about, can the efficient allocation of resources within the system be promoted. This is not to imply however that economics is concerned with efficiency narrowly defined, to the exclusion of the equity considerations which loom so large in the health area. In fact, as health economists have been at pains to point out (see, for example, Culyer 1989a,b), "efficiency" in conventional economic usage includes not only the production of a

given output at minimum cost, but much more broadly the socially optimal production and allocation of output to members of society.

The present study examines the utilisation and financing of health services in Ireland from such a perspective. It relies primarily on the extensive data on health service utilisation gathered in the ESRI Survey on Income Distribution, Poverty and Usage of State Services, carried out in 1987. This allows the analysis of utilisation patterns carried out by Tussing to be extended in a number of directions. In particular, measures of health status are employed for the first time in such a context. This allows us to control for the effects of (self-reported) morbidity, so that the influence of other factors on utilisation can be measured more satisfactorily – notably the differing financial incentives facing those with different public entitlements to health care, and with/without health insurance. This is of particular importance in examining the extent to which economic incentives contribute to the relatively high General Practitioner visiting rate of those with Medical Card cover, to which Tussing devoted a great deal of attention. The study also examines the system of health financing in some depth, covering recent trends and focusing in particular on the role of health insurance. The nature of the demand for health insurance and the likely impact of a range of policy options with respect to financing and eligibility, including those put forward by the Commission on Health Funding, are analysed. The availability of a substantial household survey database, with information on utilisation, income and other relevant characteristics, also allows the distributional implications of the current system of health care financing and delivery to be analysed and this is also a major focus of the present study. While of particular interest in the Irish setting, the study also aims to contribute to the international research literature on these aspects of the operation of health systems.

The remainder of this introductory chapter is devoted to a brief outline of the scope and content of the study, set against the background of previous research and recent developments in the Irish health services. The Irish system of health care and its recent evolution are reviewed in some detail in Chapter 2: here our concern is to present an overview of the present study and its context.

1.2 The Study and Its Context

Expenditure on health as a proportion of GNP approximately doubled in Ireland between 1960 and 1980.[1] The rate of growth experienced was

[1]The complexities of measuring expenditure on health and trends in expenditure are discussed in detail in Chapter 2, but do not affect this broad conclusion.

not exceptional by comparison with other OECD countries over the period, though it was slightly above average (OECD 1987).[2] During the 1980s, by contrast, health expenditure in Ireland as a proportion of GNP stabilised and then declined. This downward trend, already in evidence in the early-to-mid-1980s, accelerated sharply from 1987/1988, with Exchequer spending on health being held broadly constant in *nominal* terms from 1987 to 1989. Despite an increase in 1990, Exchequer spending on health as a proportion of GNP is now well below its mid-1980s level.

This radical change in financial environment has brought the health services and health spending to the forefront of economic policy. The resources available to the health services and the way in which these resources are utilised have become the focus of attention for policy-makers and the public alike. Various proposals have been put forward as to the appropriate response, including detailed recommendations from the government – appointed Commission on Health Funding. Such proposals cover both the method of financing the health services and the way in which services are organised and delivered. The debate on the appropriate financing system has been particularly intense, focusing on the role of public versus private sector and on equity as well as cost-effectiveness issues.

Despite the intensity of these debates and the importance of the subject matter, the empirical base for assessing the various options being put forward is exceptionally thin. With the major exception of Tussing's research, little is known on a systematic basis about the way in which resource utilisation in the Irish health service is determined, about the effectiveness or otherwise of health spending of different types, and about the distributional impact of the current pattern of health spending. Much of the discussion of policy options therefore takes place in something of a vacuum.

One of the major contributions made by Tussing's research was to highlight the importance of the structure of incentives incorporated in the Irish health care system. He pointed out that those who made resource-using decisions concerning medical care – patients and providers – frequently did not bear the economic costs of those decisions. This meant that very often there was no incentive to economise on resources, and in some instances there was a perverse incentive to use resources. This, he argued, contributed to inefficiency and mis-allocation of resources and to the explosion in health care costs and expenditure.

Among the problem areas examined by Tussing, general practitioner remuneration was the one to which most attention was devoted. On the

[2]See Chapter 2, Section 2.6.

basis of both experience elsewhere and his own analysis of the Irish situation, Tussing argued that the fee-for-service system of GP remuneration provided incentives for excess utilisation: "modification of the fee-for-service system is at the heart of any serious effort to control costs and bring economic rationality to the Irish medical care system" (1985, p. 273). The crucial role of GPs in influencing the extent of patient hospital use – the main resource user in the Irish medical care system – meant that GP behaviour and remuneration have effects throughout the system. One of his most important recommendations was therefore that a capitation system for GP remuneration be introduced, not only for those eligible for GP care paid for by the State (i.e. those covered by Medical Cards) but for the entire population. However, on the basis of empirical analysis of his own survey and other data, Tussing also pointed to the fact that those with Medical Cards had relatively high GP visiting rates. This finding appears to have been particularly influential, and the method of remuneration for GPs treating those with Medical Cards (under the General Medical Services scheme) has subsequently been changed to one largely based on capitation rather than fee for service.

Tussing's research also highlighted other areas where the incentive structure created particular problems. For many people, it was less costly to receive resource – intensive hospital out-patient or in-patient treatment than consult their GP. This again is an area where changes have subsequently been made, with charges being introduced for out-patient visits and in-patient stays (except for those covered by Medical Cards) in 1987. Tussing also saw subsidies to private care as a major problem, promoting the use of relatively high cost care as well as being inequitable in their effects. The method whereby hospital budgets were allocated was also identified as a key element in controlling costs, and this was highlighted as an area where further research was a priority[3].

This study concentrates on the areas of utilisation and financing. A major objective of the present study is to develop Tussing's research in order to enhance our understanding of the factors influencing utilisation. This is made possible by the range of data collected in the Institute's 1987 Survey of Income Distribution, Poverty and Usage of State Services. In addition to detailed information on health services utilisation and the characteristics of individuals and their households, this survey gathered information not available to Tussing on variables which may be particularly important in this context, namely morbidity and income. In this study,

[3]A programme of research on hospital budgeting is being carried out at the ESRI, and initial results have been published in Wiley and Fetter (1990).

then, a more complete analysis of influences on utilisation is possible, and the robustness of Tussing's results – both on the basis of a new and considerably larger sample and these important additional variables – can be assessed. Like Tussing, we focus particularly on the use of GP services, partly because this is the area of utilisation where household survey-based data can be most useful. Given the emphasis in previous research on the visiting rates of those with Medical Card cover, it is particularly important that the role of financial incentives versus other factors – especially morbidity – be teased out in that case. While the system of remunerating GPs treating such patients has been changed since our survey was carried out, our findings will serve as a benchmark against which the impact of the change in remuneration system can be assessed, as well as colouring attitudes to how great an impact might in fact be expected *a priori*. The results, particularly by illustrating the importance of controlling for morbidity in studying the impact of financial incentives, also contribute to the international literature on health services utilisation.

The availability of income data also opens up the possibility of studying the distributional pattern and effects of the current system of health care financing, which is the second major element of the present study. One of the main objectives of the survey was to gather detailed information on the income from different sources of each household member. This and other information are being used to study poverty, income distribution and a range of related topics (see for example Callan, Nolan and Whelan, Hannan, Creighton, 1989). It is thus a particularly suitable database for the analysis of distributional patterns and effects. Previous studies of the distributional effects of State health (as well as education etc.) spending such as Rottman and Reidy (1988), based on the CSO's Household Budget Surveys, did not have available detailed information on utilisation.[4] Further, an overall perspective on the way in which health services are utilised and paid for over the income distribution can be obtained here, covering privately-financed as well as public care. In addition, the availability of measures of health status, however limited, allows us to show the importance of taking differences in morbidity over the income distribution into account in assessing equity.

Finally, the database and the empirical findings of the study on utilisation and financing can be used to assess options for reform in a number of crucial areas. In particular, a range of possible reforms of the structure of eligibility for free or subsidised services from the State, and

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[4]The most recent Household Budget Survey, for 1987, gathered considerably more information on utilisation, and this will be used in the CSO's redistribution exercise based on that survey.

changes in the nature and role of health insurance, can be examined. These include the changes in the eligibility structure recommended by the Commission on Health Funding, implemented from June 1991, and the impact of removing income tax relief on VHI premia. The 1987 survey data contain information on VHI members covering demographic and socio-economic characteristics, including income. In addition, a further survey carried out in 1990 explored the reasons why people have health insurance. Based on these data, the factors influencing demand for insurance cover and the likely impact of possible changes are analysed.

1.3 *The Structure of the Study*

Having outlined the context and objectives of the study in this introductory chapter, Chapter 2 goes on to describe in some detail the current structure of the Irish health services, with particular emphasis on recent developments. The complex web of entitlements to free or subsidised services from the State and the coverage provided by health insurance, which mean that different groups face varying economic incentives when availing of different forms of care, are described. The financing and expenditure side of the picture, how health care is financed and how the level and composition of expenditure on health care has evolved in recent years, are also examined. Chapter 3 describes the database on which the study primarily relies, the ESRI Survey of Income Distribution, Poverty and Usage of State Services. The nature of the information gathered on health service utilisation and eligibility is outlined, and the reliability and representativeness of the sample in this context is examined. Chapter 4 then provides an overview of the sample, looking particularly at the characteristics of those in different health services entitlement categories and with/without health insurance. Chapter 5 describes the measures of health status included in the survey, and the way in which observed health status varies across individuals by such characteristics as age, sex, income, social class and entitlement category.

The next four chapters deal with the utilisation of health services. Chapter 6 outlines the theoretical perspective from which utilisation is analysed, dealing with the distinctive features of health care from the point of view of economic modelling. Chapters 7 and 8 focus on GP services. In Chapter 7 the way in which these services are structured and the pattern of visiting behaviour in the 1987 sample are described. Chapter 8 presents the results of a formal econometric analysis of GP visiting in the sample, which seeks to identify and quantify the key determinants of utilisation, with particular emphasis on the impact of entitlement to free GP care. Chapter

9 analyses utilisation of hospital-based care, looking at out-patient treatment, and hospital in-patient stays.

Chapters 10 and 11 look in detail at an aspect of the system which is particularly important in the context of proposed reforms, namely health insurance. The role of health insurance and the nature of the demand for insurance under the present system are analysed, using both the data on characteristics of the insured in the 1987 sample and other evidence. The results are of particular value in assessing the likely impact of possible changes in the environment in which health insurance operates, in particular changes in public eligibility and in the tax treatment of premia.

Chapters 12 and 13 contain the results of an analysis of the distributional pattern of health services utilisation and expenditure. In Chapter 12, the costs *to the State* of providing different types of health services are allocated among households in line with the observed pattern of utilisation. This allows the distributional impact of State health spending to be seen, developing the analyses presented by the CSO in the redistribution exercises based on the Household Budget Surveys. In Chapter 13 the focus is widened so that utilisation and expenditure on privately-financed as well as public care is included. An overall picture of the distributional pattern of health care financing and delivery is produced, and a tentative treatment of how we might go about assessing the equity of such a pattern is given.

Finally, Chapter 14 brings together the main findings of the study and looks at their implications for policy. This includes consideration of the changes in eligibility structure recommended by the Commission on Health Funding, implemented from mid-1991, and the change in the reimbursement system for GPs treating patients with Medical Card cover introduced in 1989.

Chapter 2

THE IRISH HEALTH CARE SYSTEM

2.1 *Introduction*

This chapter describes the Irish health care system and its financing, concentrating on those aspects of particular relevance to the present study. The way in which the Irish health services developed from the turn of the century to 1970 has been documented in the comprehensive study by Barrington (1987), and is also discussed in Hensey (1988). Hensey presents a detailed description of the current system, as does the recent Report of the Commission on Health Funding (1989).

Here, the structure of entitlement to publicly-funded services is described. The way in which the public health services are organised and structured is then outlined. The complex relationship between public and private sectors is discussed, followed by a description of the role of the Voluntary Health Insurance Board. Finally, the financing of the health services and the way in which expenditure has developed in recent years is described.

2.2 *The Eligibility Structure*

The structure of entitlement to free or subsidised medical care from the State is a central element in the Irish system. Significant changes in the structure, taking effect from June 1991, have recently been implemented. We first describe the system as it operated up to that date, and then the implications of these changes. As illustrated in Table 2.1, the population was divided into three eligibility categories, as follows:

Category I: persons "unable without undue hardship to arrange general practitioner, medical and surgical services for themselves and their dependants"[5], who are issued with Medical Cards. These have full eligibility for all health services free of charge, including general practitioners care, prescribed drugs, specialist out-patient services at public clinics, and maintenance and treatment in public wards of public hospitals.

Category II: persons (not in Category I) whose income is below a specified limit, together with their dependants. Up to 1987 these were entitled to free specialist out-patient services at public clinics, and free maintenance and treatment in public wards of public hospitals. From 1987

[5]Health Act 1970, Section 45(1).

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Table 2.1: *Health Service Eligibility Categories and their Entitlements (Up to June 1991)a*

Category I: entitled to the full range of public health services without charge, including

– general practitioner services;
– prescribed drugs;
– specialist services in out-patient clinics;
– maintenance and treatment in public wards of hospitals;
– dental, opthalmic and aural services;
– maternity and infant care services;

Category II: entitled to
– specialist services in out-patient clinics subject to a £10 charge for the first visit in respect of any specific condition (with certain exemptions and limits);
– maintenance and treatment in public wards of hospitals, subject to a per night charge (with an upper limit per year), with certain exclusions;
– maternity and infant care services;
– assistance towards the cost of prescribed medicines over a monthly limit;
– drugs for specified long-term illnesses.

Category III: entitled to
– specialist services in out-patient clinics subject to charge (as for category II) and liable for consultants' fees;
– maintenance in public wards of hospitals subject to charge (as for category II) and liable for consultant's fees;
– assistance towards the cost of prescribed medicines over a monthly limit; drugs for specified long-term illnesses.

[a]Category III was abolished from June 1991: those previously in that category now have the same entitlements as Category II.

charges for each day's maintenance in hospital and for the first out-patient visit for a specific condition were introduced.

Category III: persons whose income is above a specified limit, together with their dependants. These were entitled to maintenance in a public hospital ward and specialist out-patient services, subject (since 1987) to the same charges as Category II, but unlike Category II they were also liable for consultant's fees.

Entitlement to a Medical Card is assessed by the local Health Board, on the basis of a means test. Income guidelines for the means test are produced by the Health Boards each year, but are informal and have no statutory force. The guidelines take into account age, marital status, number of dependants, and expenditure on housing and travel to work. A Health Board Chief Executive Officer may also grant a Medical Card to a person who would not qualify on the basis of the means test but is nonetheless considered unable to pay for required care "without undue hardship", for example someone with a chronic illness.

The income limit determining whether an individual, and his/her

dependants, was in Category II or Category III took no account of dependants – entitlement was determined solely on the basis of the gross income of the individual in the previous tax year. Spouses with separate incomes were assessed separately: a wife without independent income was in the same category as her husband, while if she had an income her entitlement was assessed on the basis of that income.

Table 2.2 shows how the number of people with Category I entitlements – with Medical Card cover, as it is termed – evolved from the introduction of the General Medical Services (GMS) in 1972 to 1990. Over most of the period, about 36-38 per cent of the population have been in that category. A decline has been seen since 1987, from 38 per cent to below 35 per cent, but this may largely reflect changes in the way in which the figures are compiled, associated with the major changes in the payments system for GMS doctors implemented from April 1989 (to be described in detail below).[6] This suggests that the size of the Medical Card population in earlier years may have been overestimated.

Estimates of the percentage in Categories II and III have been published since 1979 (when Category III came into being), and show about 15 per cent of the population in Category III and 46-50 per cent in Category II. The apparent stability of Category III may reflect the fact that the Category II upper income limit has been revised annually with the *intention* that about 15 per cent be in that category, rather than precise estimates of the numbers in Category II versus III year by year[7]. Given the apparent overestimate of the percentage in Category I, it appears that in the late 1980s-1990 about 35-36 per cent of the population were in Category I, about 15 per cent were in Category II and about half the population were in Category III.[8]

The Programme for Economic and Social Progress announced in early 1991 that there was to be a major change in the eligibility structure: from June 1991, Entitlement Category III was abolished. All those without Medical Card cover now have the entitlements previously available to Category II. Thus, everyone is entitled to maintenance *and* consultant care in a public ward of a public hospital, those not in Category I being liable only for the per-night charges introduced in 1987. The data analysed in this study apply to the situation before this very recent structural change, so we

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[6]See chapter 7.
[7]See Report of the Commission on Health Funding p. 105.
[8]No official estimates of the size of the residual versus limited entitlement categories (which became Categories III and II respectively in 1979) were published for the 1970s. Rottman and Reidy (1988) note that the 1973 Household Budget Survey showed 42 per cent with limited eligibility and 26 per cent in the residual group (p. 72).

Table 2.2: *Medical Card Population (including Dependants), 1972-1990*

	Number in Category I	As a % of Total Population
1972	864,106	29.0
1973	1,010,090	33.9
1974	1,083,136	36.4
1975	1,162,386	37.2
1976	1,193,090	37.7
1977	1,233,150	38.6
1978	1,219,178	37.9
1979	1,224,351	36.4
1980	1,199,599	35.6
1981	1,226,568	35.6
1982	1,280,758	37.1
1983	1,343,618	38.3
1984	1,299,165	37.0
1985	1,303,273	36.8
1986	1,323,035	37.4
1987	1,342,233	37.9
1988	1,324,849	37.4
1989	1,256,818	35.8
1990	1,221,284	34.9

Source: GMS (Payments) Board Reports, 1972-1990
Note: Figures refer to end-year.

will for the most part be referring to the three-category structure: the implications of the change will be among the issues dealt with in the course of the study.

2.3 *The Structure of Public Health Services*

How then do people with these varying entitlements obtain health care? We now outline the way in which the health services are structured, before

dealing in more detail with the complex interaction between public and private sectors in the financing and delivery of services. The Department of Health has a planning, budgeting and coordination function, and is not involved in the direct provision of public health services, which is the responsibility of the eight Regional Health Boards. These each have programmes for community care services, general hospital services, and special hospital services (for the mentally ill and mentally handicapped).

Community care is in part delivered through medical officers, dentists, public health inspectors, community welfare officers, social workers etc., employed by the Health Boards. General practitioner services to those with Category I entitlement, although coming under this programme, are provided by independent professionals. These GPs are paid directly by the General Medical Services (Payments) Board, established jointly by the eight Health Boards, rather than by the individual Boards. The GMS (Payments) Board also pays pharmacists who dispense prescribed medicines to the Medical Card population. Up to 1989, GPs were paid under the GMS scheme on a fee-for-service basis. A major change in the scheme was introduced in that year, whereby most doctors receiving payments from the Board moved to a remuneration system largely based on capitation. This has major implications for the incentive structures within the system, and is discussed in detail below. The same GPs and pharmacists provide services to the remainder of the population (not in Category I), for which they are paid privately on a fee-for-service basis.

As far as general hospital services are concerned, there are three distinct types of hospitals in terms of ownership and funding:
(i)   Health Board hospitals, owned and funded by the Health Boards; these are funded through the Health Boards out of each Board's allocation of funds from the Department of Health;
(ii)   Voluntary public hospitals, almost all of whose income comes directly from the Department of Health (acting as agent for the health boards); some are owned and run by religious orders, others are incorporated by charter or statute and in many instances work under, boards appointed by the Minister for Health; and
(iii) Hospitals owned and managed privately and receiving no direct funding from the State.

Those wishing to avail of their entitlement to public hospital treatment receive in-patient care in public wards of public hospitals i.e., (i) and (ii). Junior doctors, nurses, physiotherapists and other hospital staff in such hospitals are employees of the hospital. As for consultant medical staff in public hospitals, their appointment is regulated by Comhairle na

nOspidéal, and they are employed by the hospital on the basis of the "common contract": many also maintain substantial private practices.

Public care for psychiatric, geriatric and mentally handicapped patients, are provided in "special" (as opposed to "general") hospitals, also owned and run by Health Boards. In addition some patients with public entitlements obtain care in privately-owned hospitals and nursing homes but at the expense of the area's Health Board.

2.4 The Public/Private Mix

This brings us to what Barrington (1987) has described as the extraordinary symbiosis of public and private medicine in the Irish healthcare system.[9] The immediate problem facing any discussion of the public/private relationship is one of definition: how are public and private elements to be defined and distinguished? Tussing (1985) was explicit in using "private sector" to refer to "that part in which fees or charges are imposed, and where patients may not avail of the service unless they pay for them" (p. 81).

However, since the introduction of charges for out-patient and in-patient hospital care in 1987 for those without Medical Card cover, some services which are publicly provided and financed from central taxation are none the less subject to charges.

Even prior to the introduction of these charges, categorisation on the basis of whether fees or charges were imposed was arguably not the most revealing. As the Report of the Commission on Health Funding emphasises, the distinction between public and private applies to both funding and delivery systems: public funding can be compatible with private delivery or vice versa. Rather than a simple dichotomy between public and private, a four-way categorisation into:

(i)   public financing and delivery;

(ii) public financing/private delivery;

(iii) private financing/public delivery;

(iv) private financing/private delivery;

is more helpful, though even this cannot reflect the full complexity of the relationship in the Irish case.

Hospital in-patient and out-patient care for Category I are fully publicly

[9]Barrington (1987) p. 285.

financed and delivered in public hospitals[10] – an example of (i). GP and pharmaceutical services for that category are publicly financed but delivered by independent private providers – (ii). GP and pharmaceutical services for those without Medical Card cover are privately financed and delivered, as is care in private hospitals – (iv). Full private financing of publicly- delivered services, (iii), is rarer, though the charges now levied for out-patient care in public hospitals (for people not in Category I) mean that type of publicly-delivered care is partly privately financed.

This mix of financing also applies, in a considerably more complex way, in the case of hospital in-patient care for those outside Category I. Here public and private elements were difficult to disentangle even before the introduction of charges in 1987, because of the role of "private" beds in public hospitals. The abolition of Category III will result in some simplification, though the precise implications are difficult to predict, as discussed in detail below. Table 2.3 sets out the different types of public/private interplay which could arise in public hospitals under the "old" structure depending on the person's entitlement category and the nature of the care.

The most straightforward case was a person in Category II obtaining treatment in a public ward of a public hospital and not choosing his or her own consultant. Prior to the introduction of charges, this was unambiguously public finance and public delivery: taking the per night charge into account introduces an element of private financing, but this is still the case closest to public financing plus delivery.

A person in Category II obtaining care in a public ward but exercising choice of consultant was liable for consultant fees, thus increasing the element of private financing. Since he/she would in that instance be a private patient of the consultant, the latter operating in effect as a private contractor outside the common contract, a private element in delivery was now also introduced. Since all those in Category III were liable for consultant fees, anyone in that category obtaining care in a public ward was in the same position.

In addition to public wards, though, public hospitals also have private accommodation (in private or semi-private rooms). All those obtaining care in such accommodation are private patients of consultants,liable for their consultants' fees – it is not possible for Category I or II patients to avail of their entitlement to public-funded consultant care while having

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[10]Since many of what are generally termed "public" hospitals are not in fact publicly owned, "public delivery" is not entirely accurate in such cases. However, voluntary hospitals rely almost entirely on public funding, and for the purpose of the present categorisation it may not be necessary to distinguish between the different types of "public" hospital.

Table 2.3: *Public/Private Financing and Delivery of Hospital In-Patient Care in Public Hospitals*

	Public Bed	*Public-Bed/ Private Consultant*	*Private Bed*
Category I	free; public financing and delivery	liable for consultant fees; mixed financing and delivery	liable for accommodation and consultant fees; mixed financing and delivery;
Category II	Subject to £10 charge; mixed financing, public delivery	Subject to £10 charge and liable for consultant fees; mixed financing and delivery	Subject *to* £10 charge and liable for accommodation and consultant fees; mixed financing and delivery;
Category III[a]	–	Subject to £10 charge and liable for consultant fees; mixed financing and delivery	as above

[a]This refers to the situation prior to the abolition of Category III in 1991: this group has now been combined with Category II.

such private accommodation. In addition to consultants' fees (and the per night charge for those not in Category I) these patients are liable for a daily maintenance charge (currently £96 per day in a private room in a Regional or Teaching Hospital). So here the balance has shifted further towards private financing. Delivery is still through the public system, again with the exception of consultant services which may be considered a "private" element.

With the abolition of Category III, all those without Medical Card cover are now entitled to consultant care in a public bed. It is also intended to move towards a situation where public and private patients in public hospitals are more clearly distinguished, with the latter to be exclusively in semi-private or private accommodation rather than – as at present – in some cases in public beds.

Other services such as geriatric or psychiatric long-stay care may be provided in publicly-financed and run hospitals, in privately-owned and run hospitals financed partly or wholly (for a particular patient) by the State, or in private hospitals/nursing homes etc. paid for privately.

Thus the relationship between public and private medicine in Ireland is not one between two separate parallel systems: rather the private and public elements are intertwined. The role of public and private care is one of the most contentious topics in on-going debates about reforms of the health service here and internationally, but in Ireland it is particularly important to take into account the complexity of the existing roles of the various elements. This is further complicated by the fact that much of the "private" financing which we have been considering is channelled through the Voluntary Health Insurance Board, set up by the State as a virtual monopoly provider of private health insurance. The role of the VHI is dealt with in the next section.

2.5 Health Insurance and the VHI

The VHI was set up in 1957, primarily to cater for the top 15 per cent of the population who were then outside the scope of public entitlement to hospital care. It is a non-profit-making body, operating at arms length from the Department of Health, but enjoys a virtual monopoly[11] as a result of its legislative position and has a board appointed by the Minister for Health.

Although its benefits do include some coverage of out-patient expenses, the main function of the VHI is to provide cover for hospital care. Its current insurance plans provide a range of coverage for semi-private or private accommodation in public hospitals, with associated specialist services, and care in private hospitals. Cover for professional fees is at levels specified by the VHI, which in some instances will be below the level actually charged, entailing out-of-pocket payment by the patient. Outpatient expenses, on GP or consultant fees for example, are covered only to a limited extent.

The premiums payable for health insurance vary with the level of cover obtained, and with the number of adults and children in the family to be covered, but *not* with the health status or age of those seeking cover. Income tax relief is available on the full amount paid, at the marginal tax rate of the claimant. This considerably reduces the net cost of obtaining insurance, with a larger effective subsidy to those on higher income tax rates.

At the time the VHI was set up, it was thought that the number joining the scheme could be considerably less than 500,000 – with about 457,000

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[11]Under the terms of the Voluntary Health Insurance Act of 1957, it is illegal to offer health insurance without a licence from the Minister for Health. There are fourteen licensed health insurance schemes, other than the VHI, in operation; most provide cover for a workplace or union membership. Total membership (including dependants) of these schemes is thought to be about 50,000, the majority of whom are members of the ESB scheme (see Report of the Commission on Health Funding, 1989, para. 8.12, p. 125).

persons then outside the scope of public entitlements.[12] However, membership passed 500,000 in 1975, reached 1 million in 1983, and by 1989 about 1,129,500 or 32 per cent of the population were covered by the main insurance plans.[13] This substantially exceeds the 15 per cent of the population in Eligibility Category III. Many of those paying for private insurance cover are therefore entitled to public hospital care in a public ward at the State's expense (apart from the per night charges), while the remainder would be liable only for consultants' fees (and these charges).

2.6 *Expenditure on Health*

We now focus on health spending, examining the level and composition of expenditure on health care in Ireland, the way in which it is financed, and recent developments.

Looking first at *public* expenditure, Table 2.4 presents data for selected years from 1960 to 1989 on current and capital public expenditure on health as measured by the Commission on Health Funding. This includes:

(i)   Non-capital expenditure on statutory health services by the Department of Health, net of charges for private accommodation in public hospitals and other income.

(ii) Expenditure by agencies other than the Department of Health of grants from the European Social Fund towards the training of disabled persons;

(iii) Expenditure from the National Lottery allocated to community health services and the Health Education Bureau;

(iv) Expenditure on medical benefits available under the Social Insurance Fund, administered by the Department of Social Welfare;

(v)   Capital expenditure by the Department of Health.

The table shows public expenditure on health defined in this way in both nominal terms and as a percentage of GDP and GNP. The trend in health expenditure as a percentage of national income shows rapid growth between 1960 and 1980, particularly between 1970 and 1980, with a significant reduction between 1980 and 1989.

This does not appear to be an entirely satisfactory measure of public expenditure on health, though, particularly if used for making comparisons across countries. Some expenditure by the Department of Health cannot be considered as health expenditure, notably the welfare programmes which, largely for historical reasons, are administered by that

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[12]Hensey (1988) p. 188.
[13]VHI Annual Report, 1990, p. 4. This figure refers to end-February 1989, and does not include membership of two schemes introduced in 1987 to cover the new charges in public wards and out-patient clinics.

Table 2.4: *Public Expenditure on Health, 1960-1989 (Commission on Health Funding Basis)*

Expenditure (£m.)	1960	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Dept. of Health	19.5	72.8	242.6	701.0	822.7	948.0	1033.0	1090.0	1169.3	1219.0	1221.5	1231.5	1318.0
net non-capital European Social Fund	–	–	0.6	8.2	11.8	16.6	20.7	18.3	18.9	18.6	18.3	15.7	15.9
National Lottery	–	–	–	–	–	–	–	–	–	–	3.5	4.5	4.9
Treatment Benefits	0.4	1.0	2.8	6.3	8.0	9.5	12.5	14.2	15.3	16.6	16.7	18.2	16.1
Total non-capital	19.9	73.8	246.0	715.5	842.5	974.1	1066.2	1122.5	1203.5	1254.2	1260.0	1269.9	1354.9
Capital	0.8	3.7	10.0	35.0	44.5	49.2	53.0	55.5	57.0	58.7	57.6	44.3	47.0
Total public	20.7	77.5	256.0	750.5	887.0	1023.3	1119.2	1178.0	1260.5	1312.9	1317.6	1314.2	1401.9
as % of GDP	3.3	4.8	6.8	8.0	7.8	7.6	7.6	7.1	7.1	7.0	6.6	6.1	5.9
as % of GNP	3.2	4.7	6.7	8.3	8.2	8.2	8.2	7.9	8.0	7.8	7.3	6.9	6.7

Source: Report of the Commission on Health Funding, Table 4.1, p.43; Health Statistics 1990, Table J6,

Department. The Report of the Commission on Health Funding acknowledged that there was a case for excluding this expenditure, but retained it because they regarded all expenditure by the Department of Health as falling within their terms of reference.

An alternative series on public health spending which excludes income support cash transfers to households is provided by the National Accounts. Table 2.5 shows the National Accounts series on public authorities expenditure on health, distinguishing current and capital spending, for the 1976-88 period. In aggregate, current and total public authorities health spending does not differ greatly from the Commission's series. This is because the exclusion of income support payments is offset by the fact that the National Accounts figures are *gross* expenditure, whereas the Department of Health series nets off income from charges etc. accruing. The level and rate of decline in total public authorities expenditure on health as a percentage of GDP between 1980 and 1988 on a National Accounts basis are thus very close to the Commission on Health Funding's series.

Since the National Accounts data on public health spending are

Table 2.5: *Public Expenditure on Health 1976-88 (National Accounts Basis)*

	Current £m	Capital £m	Total £m	As % of GDP £m
1976	276.1	15.2	291.3	6.3
1977	318.9	24.8	343.7	6.0
1978	398.0	30.3	428.2	6.3
1979	500.9	38.5	539.4	6.8
1980	695.6	52.1	747.9	8.0
1981	812.7	60.0	872.7	7.7
1982[a]	959.5	49.3	1,008.8	7.5
1983	1,047.7	53.3	1,101.1	7.4
1984	1,091.2	56.1	1,147.2	7.0
1985	1,192.5	57.5	1,249.9	7.1
1986	1,237.6	63.7	1,301.2	6.9
1987	1,249.5	61.4	1,310.9	6.5
1988	1,247.3	48.0	1,295.3	6.0

[a]The coverage of current transfers, an element of current expenditure, was widened in the 1987 National Income and Expenditure, but carried back only to the figures published for 1982; the effect was to increase current expenditure in 1982, compared with the "old" series, by £28m.
Source: National Income and Expenditure, Table A28, various years.

currently available only up to 1988, for recent developments it is necessary to use figures published by the Department of Health and in the annual Budget and Estimates of Receipts and Expenditures. Table 2.6 shows first (in part a) the evolution of non-capital expenditure by the Department of Health, together with capital spending on health – these being the series on which the Department itself tends to focus. From 1987 to 1990 total health spending based on these series declined from 6.4 per cent to 5.8 per cent of GDP. The second part of the table shows an alternative series, also available on an up-to-date basis, where current health spending is taken from the classification of Government expenditure on a "functional" basis by the Department of Finance. The principal difference between this and Department of Health spending is once again the exclusion of income support-type transfers. The same trend is now shown at slightly lower levels: current plus capital health expenditure now falls from 6.2 per cent of GDP in 1987 to 5.4 per cent in 1990. Budget estimates for 1991 show little change in total public spending on health as a percentage of GDP compared with 1990, with either series.

Table 2.6: *Recent Trends in Public Health Expenditure 1987-1991*

(a)	Non-Capital Expenditure by Dept. of Health[a]	Capital Expenditure	Total	As % of GDP
	£m	£m	£m	
1987	1221.5	57.6	1279.1	6.4
1988	1231.5	44.3	1275.8	5.9
1989	1318.0	44.0	1362.0	5.7
1990	1463.9	35.2	1499.1	5.8
1991[c]	1511.1	32.2	1543.4	5.8
(b)	Non-Capital Expenditure on Health[b]	Capital Expenditure	Total	As % of GDP
	£m	£m	£m	
1987	1177	58	1235	6.2
1988	1172	44	1216	5.7
1989	1230	44	1274	5.3
1990	1377	35	1412	5.4
1991[c]	1427	32	1459	5.5

[a]Non-capital expenditure by Department of Health, net of charges and other income.
[b]Non-capital supply services (functional classification) expenditure on health, gross of appropriations in aid but net of charges etc.
[c]Budget estimates
Sources: Health Statistics 1988, 1989, Tables J3 and J5;
Revised Estimates for the Public Services 1990, 1991 Table 3 and 6; (or Budget 1991 Table p. 111).

Public expenditure on health is financed for the most part directly by the Exchequer. The sources of funds for net non-capital expenditure by the Department of Health in 1989 were as follows:

Exchequer	86%
Health Contributions etc.	11%
Receipts under EC Regulations	3%

Public capital expenditure on health is also financed directly by the Exchequer. The relatively very small amounts coming from the European Social Fund (towards the training of disabled persons) and the National Lottery not included in this Departmental spending do not affect the overall balance of financing.

Private expenditure on health is more difficult to measure, and problems with the available data series emerged when they were examined in the course of the present study. A large part of such expenditure is channelled through the VHI, which publishes data on claims expenditure. The Commission on Health Funding produced in addition estimates of other expenditure on health services by households. In the light of the problems identified these have had to be revised substantially, however, and new estimates going back to 1980 have recently been published in Health Statistics 1990.[14] These, together with the figures for 1960, 1970 and 1975 published by the Commission, are shown in Table 2.7. Private health spending is shown to increase only slightly during the 1980s as a percentage of GDP, to 1.8 per cent by 1989, and accounts for 23 per cent of total health spending by that date. Total health spending, public and private, is then estimated at 7.7 per cent of GDP on the basis of the Commission's definitions.

It is worth noting that a somewhat different picture is shown by data produced by the OECD in recent cross-country studies of health expenditures (OECD 1985, 1990). Total health expenditure for Ireland in 1987 (the latest year published) is shown as only 7.4 per cent of GDP, compared with 8.5 per cent in the latest Departmental figures for that year, and the private element accounts for only 13 per cent of that total. The OECD series is based on a National Accounts framework, which could account for some of the difference, but the figures do not appear consistent with the CSO's estimates of personal expenditure on health, substantially

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[14]The revisions involve substantial increases in the estimates of household expenditure in the early 1980s, and reductions for 1987 and 1988, compared with the figures published in Health Statistics 1989 (which themselves involved some revisions to those published by the Commission on Health Funding).

Table 2.7: *Estimated Private Expenditure on Health, 1960-1989 (Commission on Health Funding Basis)*

Expenditure	1960	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
VHI	0.3	2.8	8.7	30.9	42.4	64.7	81.3	92.6	103.6	117.4	150.1	164.9	158.0
Other non-Household	0.1	0.3	1.0	2.9	3.4	4.0	4.3	4.6	4.9	5.0	5.0	5.1	5.5
Household	10.1	25.6	34.4	125.1	125.1	148.5	173.9	201.4	211.8	227.5	228.9	244.9	297.0
Total	10.5	28.7	44.1	158.9	170.9	217.2	259.5	298.6	320.3	349.9	384.0	414.9	421.1
As % of GDP	1.7	1.8	1.2	1.7	1.5	1.6	1.8	1.8	1.8	1.9	1.9	1.9	1.8
As % of GNP	1.6	1.7	1.2	1.8	1.6	1.7	1.9	2.0	2.0	2.1	2.1	2.2	2.0

Source: Report of the Commission on Health Funding (1989), Table 4.1, p. 43; Health Statistics 1990, Table J6.
Note: There is a break in the series on household expenditure, the estimates from 1980 having been revised (see text).

Table 2.8: *Total Health Expenditure as a Percentage of GDP, OECD Countries, 1960-1897*

Country	1960	1970	1980	1987
			%	
Australia	4.6	5.0	6.5	7.1
Austria	4.6	5.4	7.9	8.4
Belgium	3.4	4.0	6.6	7.2
Canada	5.5	7.2	7.4	8.6
Denmark	3.6	6.1	6.8	6.0
Finland	3.9	5.7	6.5	7.4
France	4.2	5.8	7.6	8.6
Germany	4.7	5.5	7.9	8.2
Greece	3.2	4.0	4.3	5.3
Iceland	3.5	5.2	6.4	7.8
Ireland	4.0	5.6	8.5	7.4
Italy	3.3	5.2	6.8	6.9
Japan	2.9	4.4	6.4	6.8
Luxembourg	-	4.1	6.8	7.5
Netherlands	3.9	5.3	8.2	8.5
New Zealand	4.4	5.1	7.2	6.9
Norway	3.3	5.0	6.6	7.5
Portugal	n.a.	n.a.	5.9	6.4
Spain	2.3	4.1	5.9	6.0
Sweden	4.7	7.2	9.5	9.0
Switzerland	3.3	5.2	7.3	7.7
United Kingdom	3.9	4.5	5.8	6.1
United States	5.2	7.4	9.2	11.2
Mean (all)	n.a.	n.a.	6.8	7.5
Mean (excluding Luxembourg and Portugal)	3.9	5.4	6.8	7.6

Source: OECD (1990), Table 1 p. 10 (for 1980 and 1987) and Compendium Tables 1 and 63, pp. 121 and 190 (for 1960 and 1970).

understating the private element.[15] (This is not separately distinguished in the published Irish National Accounts but is available in detailed national accounts volumes produced by Eurostat and the OECD.)

This means that the position of Ireland relative to other countries shown by the OECD studies, as presented in Table 2.8, must be revised somewhat.

[15]The OECD figures for public and total health expenditure in Ireland for 1987 imply that private expenditure was only £191m. (OECD 1990 Tables 1 and 2, p. 129-130). This is much lower than the estimates of personal expenditure on health included in the National Accounts. These estimates have recently been revised upwards by the CSO, but even before revision the National Accounts figure was about £300m (excluding expenditure on GMS drugs).

Rather than total expenditure as a percentage of GDP at the end of the period shown, 1987, being very close to the average for all the OECD countries, Ireland was above that average. On a National Accounts basis, total Irish expenditure on health in that year was over 8 per cent rather than 7.4 per cent as in the OECD studies. However, the trend in Irish spending compared with other countries shown in the OECD studies may be reasonably accurate. The most striking feature is the particularly rapid increase in health spending as a percentage of GDP in Ireland between 1970 and 1980, which was considerably greater than the rise in the overall average for OECD countries. While health spending in many other OECD countries continued to rise as a percentage of GDP between 1980 and 1987, though at a slower rate on average than in the 1970s, Irish health spending as a percentage of GDP fell substantially over that period.

2.7 Conclusions

This chapter has highlighted the complexity created by the interweaving of the system of entitlements to publicly provided free or subsidised health care, and the coverage of "private" health insurance. In combination, they produce a situation where financial incentives to avail of different forms of health care vary significantly across sub-groups in the population. Equally importantly, those providing health care can face different "signals" depending on the public/private entitlements of a particular patient. The importance of this structure of incentives and the way in which it operates is taken up and developed throughout on this study. The role of health insurance within the system, and its influence on incentives, is also one of the principal areas investigated, including the impact of public health expenditure trends on the environment in which insurance operates.

Chapter 3

THE DATABASE

3.1 *Introduction*

In this chapter the central data source to be employed in this study, the Survey of Income Distribution, Poverty and Usage of State Services carried out by the ESRI in 1987, is described. The nature of the sample, the range of information gathered on the characteristics of the individuals and households it contains, and the details obtained on health service utilisation are discussed. The representativeness and reliability of the sample data in the context of the analysis of health service financing and utilisation are then examined.

3.2 *The Sample*

The survey was designed to provide a national sample from the population resident in private households. The sampling frame was the Register of Electors, from which a sample of names and addresses was drawn. Sampling was implemented using the RANSAM programme developed at the Institute, which implements a multi-stage random sample incorporating both stratification and clustering, giving each individual on the Register an equal probability of being selected (see Whelan 1979, Keogh and Whelan 1986).

A target sample of 5,850 households was drawn, and interviewing was carried out between October 1986 and September 1987. Some of these households could not be contacted – mostly because they had moved or the person selected had died – or turned out to be institutions. Of the remaining 5,165 households, responses were successfully obtained from 3,294 or 64 per cent. Most of those who did not respond either refused to participate or were never available when the interviewer called.

In order to correct for possible biases introduced by the pattern of non-response, and by the fact that the initial sample was on the basis of persons rather than households, the sample for analysis was reweighted to correspond with information from external sources. This information, from detailed tabulations from the 1986 Labour Force Survey supplied by the CSO, covered the cross-tabulation of households by (i) urban versus rural location, (ii) number of adults in the household, (iii) socio-economic group of the household head, and (iv) age of the household head. Reweighting cases by the ratio of population to sample figures in each cell,

the reweighted sample then corresponds with the Labour Force Survey in terms of this cross-tabulation.

3.3 The Information Obtained

The survey gathered a wide range of information on household and personal characteristics, income and indicators of style of living, views and attitudes, and usage of health services and education. This was designed to allow research on a variety of subjects, including poverty and income distribution, the labour market, the use of State services, and the operation of the tax and social welfare systems. A more complete description of the Survey and its contents is given in Callan, Nolan, et al., (1989). Here we concentrate on the coverage of areas of direct concern to the present study.

The range of information obtained on personal characteristics for all household members included age, sex and marital status, and for adults their labour force status, education level attained, and the occupation and industry of current or last job. Detailed information on income from all sources was also sought. For each household, information on size and composition, location, tenure type, housing and other costs, and the nature of the accommodation was obtained. This variety of data allows influences on health services utilisation as well as the pattern of financing to be explored in depth.

With respect to health and health services, information was sought for each person (including children) on:

(a) whether the person is a medical card holder or dependant of a holder; and

(b) whether they have VHI cover.

Again for each person in the household, the following information on utilisation of health services in the previous 12 months was gathered:

(c) the number of GP visits they have made/received;

(d) the number of prescriptions filled;

(e) the number of visits for dental treatment, sight test or hearing examination, and whether these were free or privately paid;

(f) the number of nights spent in a public hospital, and whether these were in a private/semi-private/public ward, and the number of nights in a private hospital;

(g) the amount paid for these hospital stays by the household, and the amount refunded by the VHI if any;

(h) the number of visits to hospital for day surgery and for attendance at outpatients clinic (separately itemised).

All this information was obtained from one respondent, usually the

household head or spouse, on the questionnaire covering household information.

In addition, each adult (where possible) completed a personal questionnaire. This covered a wide range of information on labour force status, occupation, income, style of living, debts and assets, and attitudes. It also included some questions on health status, both physical and psychological. These are fully described in Chapter 5: while necessarily quite limited – given the constraints of the survey – they add an extra dimension to the data for present purposes.

Finally, for each household a question was asked on whether any member needed special care or attention. If so the nature of the care, and who within and outside the household provides it, was probed.

3.4 *Representativeness and Reliability of the Data*

The representativeness and reliability of the survey data can be evaluated by comparison with what is known from a variety of external sources. The overall representativeness of the sample was discussed in Callan, Nolan, *et al.,* (1989, Chapter 4). The sample has been reweighted, as described above, and therefore corresponds with the Labour Force Survey in terms of the four-way cross-tabulations by number of adults in the household, urban/rural location, socio-economic group and age of the household head. Having carried out the reweighting, Callan, Nolan, *et al.,* assessed the representativeness of the sample by reference to:

(i) data from the 1986 Labour Force Survey on the breakdown of households by number of members in paid work;

(ii) data from the 1986 Census of Population on the composition of the population by age and sex;

(iii) data from Social Welfare administrative records on the numbers in receipt of payments from different schemes.

These comparisons showed the sample to represent the population well in terms of these key variables.

Further comparisons between sample composition and external sources, focusing on employees, have been carried out in Nolan (1990). The breakdown of employees in the sample by age and sex, and by occupation and industry group, match quite well those shown in the larger-scale Labour Force Survey and in the Census of Population.

In the specific context of analysis of the health services, the representativeness of the sample has to be assessed from a number of different perspectives. The overall composition of the sample by age and sex is obviously crucial, and it is therefore worth reproducing the

comparison between the sample and the 1986 Census presented in Callan, Nolan, *et al.*, (1989). Table 3.1 shows that the sample represents the population well: it has a higher proportion under 14 and a lower proportion aged between 15-25, 35-44 and 75 and over, but the differences are not substantial. (In the case of the elderly, the sample would be expected to have a smaller proportion than the overall population because the former refers only to those in private households, while a relatively high proportion of the elderly are in institutions.)[16]

Table 3.1: *Persons in 1986 Census and ESRI Sample by Age and Sex*

Age Group	Males		Females	
	Census	ESRI	Census	ESRI
0-4	9.4	10.4	8.9	10.7
5-14	20.3	21.9	19.3	19.9
15-24	17.7	15.8	17.1	15.4
25-34	14.2	15.4	14.1	15.4
35-44	12.1	10.6	11.7	10.6
45-54	8.9	8.8	8.5	9.0
55-64	7.8	8.4	8.2	8.0
65-74	6.3	6.1	7.3	7.0
75 and over	3.2	2.7	4.9	3.9
	100.0	100.0	100.0	100.0
As percentage of all persons	50.0	50.1	50.0	49.9

Sources: 1986 Census, Summary Population Report, Tables 4B and 4C; ESRI Survey.

Other variables such as socio-economic background will also be of importance in analysing health service utilisation and financing, and again the comparisons mentioned above indicate that the sample represents the overall composition of the population well. A crucial factor in this context, though, is eligibility category. The percentages in the sample falling into

[16]About 3 per cent of the total population are not in private households (Census of Population 1986, Summary Report p. viii). Those aged 65 and over make up one-third of the institutional population compared with only 10 per cent of those in private households (p. vii and Table 13).

Categories I, II and III are compared with the official estimates for end-1986 and mid-1987 in Table 3.2. The sample figures are based on direct responses as to whether individuals are covered by medical cards, to determine the size of Category I, and application of the Category II income ceiling to reported incomes (on a tax unit basis) to see whether those without such cover are in Category II or III. (A direct question on whether respondents had a hospital services card was included in the pilot for the survey but proved ineffective.)

Table 3.2: *Population and ESRI Sample by Health Services Eligibility Category*

| Category | Population | | Sample |
	end 1986	June 1987	
		Per cent	
I	37	38	34
II	48	47	52
III	15	15	14

Sources: Report of the GMS (Payments) Board 1987, Table 5, p. 17; Health Statistics, 1987, Table K2, p. 91.

The sample has a slightly lower percentage in Category I, 34 per cent, compared with under 38 per cent in the population estimates. However, as mentioned in Chapter 2, it appears that official estimates may have overstated the numbers in Category I at the time, so that the actual percentage of the population in that category may have been closer to 35-36 per cent. The fact that the survey is confined to the population in private households is also relevant, since it is probable that a higher proportion of the institutional population than of those in private households are covered by medical cards. Thus the sample corresponds very closely to the percentage we would expect to find in Category I.

About 14 per cent of the sample appear to be in Category III. This is very close to the 15 per cent in the population in this category. As mentioned earlier, the latter is itself an estimate, based primarily on Revenue Commissioners data. The percentage in Category II is thus a residual, both in the sample and population figures. With lower figures for Categories I and III, the sample has a higher percentage in Category II, 52 per cent, compared with the 47-48 per cent shown in the official estimates for the population. Since the latter appear to underestimate the true number in Category II due to the overestimate of Category I, though, the sample is in fact very close to the figure we would expect. In terms of the key health

service entitlement categories, then, the sample can be taken as representing the population very well.

Another important element in this context is VHI membership. On the basis of responses to the question in the survey, 28 per cent of the individuals in the sample had VHI cover. This is very close to the 29 per cent of the population which had VHI cover at the time.[17] It is also possible using published data to compare the composition of those in the sample who have cover, in terms of age/sex group, with those in the population with VHI cover. This is given in Table 3.3, and shows a very close correspondence between the two. The male/female breakdown is identical in the sample and the population, and the detailed breakdown by age group and sex also shows little difference.

Table 3.3: *Population and ESRI Sample with VHI Coverage by Age and Sex*

Age group	Male		Female		All	
	Population	Sample	Population	Sample	Population	Sample
0-14	14.9	15.8	14.0	15.0	28.9	30.9
15-24	7.5	7.0	7.7	7.3	15.2	14.4
25-34	6.6	7.7	8.4	8.8	15.0	16.5
35-44	7.3	6.4	7.9	6.9	15.2	13.4
45-54	5.2	4.8	5.6	5.7	10.9	10.5
55-64	3.9	4.1	4.3	4.1	8.2	8.2
65-74	2.1	2.2	2.8	2.8	4.9	5.0
75 and over	0.7	0.6	1.1	0.8	1.8	1.3
Total	48.2	48.5	51.8	51.5	100	100

Source: Health Statistics 1987, Table K4 p. 92.

The overall representativeness of the sample for the purpose of analysis of health services utilisation and financing is therefore confirmed as satisfactory by these comparisons with external sources. The reliability of the responses also requires consideration, while recognizing that problems of unreliability and unrepresentativeness cannot always be distinguished. The reliability of key variables such as income have been discussed in detail elsewhere (see Callan, Nolan, *et al.,* 1989; Nolan, 1990; Callan, 1990). Here we concentrate on the sample information on health services utilisation, presenting where possible checks against external sources.

[17]At end-February 1987 VHI membership was 1,037,480 (VHI Annual Report 1987, p.9), which is 29.3 per cent of the 1987 population.

Information from external sources on GP visits and prescriptions is only available for those in Category I, on the basis of administrative statistics collected and published by the GMS (Payments) Board. Looking first at GP visits, the average number of GP consultations per person under the GMS in 1987 was 6.5.[18] In the sample, the average number of visits reported for persons covered by medical cards was 5.4. The sample therefore underrepresents somewhat the extent of visiting by Category I compared with the administrative records.

The areas where this underrepresentation is concentrated can be seen by a comparison of the GMS and the sample in terms of frequency of consultation. This is shown in Table 3.4, and reveals that the largest difference between the two is in the percentage reporting no consultation at all, which is 34 per cent in the sample compared with 20 per cent in the administrative records. There is also some underrepresentation for 1 visit and for 5-10 visits, with the sample percentages for the higher frequencies closer to the population figures. Understatement of GP visits in the sample could result from problems of representativeness, whereby those in the population with 1 visit or with 5-10 visits are not adequately picked up in the sample while those with no visits are overrepresented. It appears more likely, though, that the problem relates for the most part to *underreporting* of visits. Given the evidence already discussed on the representativeness of the sample by, for example, age, sex, socio-economic group and location, there seems little indication that the observed pattern is produced by biases in the sample.

Table 3.4: *Frequency of GP Consultation for Category I, GMS and ESRI Sample, 1987*

Number of consultations	GMS	ESRI Sample (Category I only)
0	19.5	33.6
1	13.2	10.4
2	9.6	10.0
3	7.4	7.0
4	5.9	5.0
5	4.9	2.7
6-10	16.0	10.6
11-24	20.1	17.8
25 and over	3.4	2.9
Total	100.0	100.0

Source: GMS (Payments) Board Annual Report, 1987. Table 12, p. 32.

[18]GMS (Payments) Board Annual Report 1987, p. 7.

Underreporting, on the other hand, does seem likely given that recall of visits over the previous year is required, particularly since the responses are often not being given by the actual person who had the visits but by another household member. This is supported by the fact that as discussed below – hospital in-patient stays, which by their nature are more likely to be remembered accurately, appear to be fully reflected in the reported experience of the sample. It is also likely that the survey respondents do not always report visits in the same way as the administrative records. If a mother and child go to the doctor and are both examined, for example, this will appear as two visits for administrative (reimbursement) purposes, but would probably be reported as only one visit by the mother as survey respondent. Overall, about 73 per cent of the expected number of visits suggested by the GMS records for Category I patients are reflected in the sample. No such comparison can be made for persons outside Category I, since no statistics on GP visits for the population as a whole are available.

Turning to pharmaceutical prescriptions, again a comparison with external sources is only possible for Category I, and unsurprisingly the pattern in the sample compared with the population is very similar to that for GP visits. In the GMS for 1987 the average number of prescriptions dispensed in pharmacies per person covered was 5.2, and a total of 73 per cent of the population covered actually had one or more prescriptions in the year.[19] In the sample, the average number of prescriptions for Category I was 4.5, and 60 per cent of that category had at least one prescription. So there appears to be some degree of understatement in the sample though again survey respondents might not always report prescriptions in the same way as the administrative records.

Exploring the pattern of underrepresentation, the breakdown of those in Category I by frequency of prescription for the GMS population and for the sample is shown in Table 3.5. The largest difference is in the percentage with no prescription, which is 40 per cent in the sample compared with 27 per cent in the administrative statistics, but the sample percentages for the various frequencies are generally below the population figures. It is also useful to focus on those seen by a GP, and those with at least one prescription. The average number of prescriptions per person seen by a GP in the GMS population was 6.4.[20] In the sample the corresponding figure for those in Category I with a GP visit during the year was 6.7. The average number of prescriptions for those with at least one prescription was 7.1 in the GMS population[21] compared with 7.4 in the sample.

[19]GMS (Payments) Board Annual Report 1987, Tables 5, 14 and 15.1.
[20]GMS (Payments) Board Annual Report 1987, Tables 12 and 14.
[21]GMS (Payments) Board Annual Report 1987, Table 15.1.

Thus the underrepresentation in the sample appears to be primarily attributable to the higher proportion reporting no prescription. Despite this, the sample reflects about 77 per cent of the total expected figure for prescriptions for Category I derived from administrative records.

Table 3.5: *Number of Prescriptions for Category I, GMS and ESRI Sample, 1987*

Number of prescriptions	GMS	ESRI Sample (Category I only)
0	27.3	40.0
1	15.1	10.3
2	10.0	8.9
3	7.1	6.0
4	5.3	3.8
5	4.1	2.8
6-10	13.5	9.5
11-15	11.0	14.5
16-20	4.0	1.5
over 20	2.6	2.7
Total	100.0	100.0

Source: GMS (Payments) Board Annual Report 1987, Table 15.1, p. 35.

We turn next to hospital in-patient stays. Comparisons between the sample and external sources now relate to the whole population rather than just those in Category I, and make use of data published by the Department of Health on hospital services utilisation.[22] The published information covers acute hospitals, geriatric hospitals/homes, and psychiatric hospitals. The question asked in the survey did not distinguish between hospitals in this manner, simply looking for the total number of nights spent in general, psychiatric and geriatric hospitals. However, given that a relatively high proportion of patients in geriatric and psychiatric hospitals are long-stay, only a small proportion of these would be expected to show up in a household survey. It is therefore most relevant to compare the sample figures with the population statistics for acute in-patient care.

For 1986, a total of 566,105 patients were discharged from acute public hospitals.[23] A small number of these were patients in long-stay District Hospitals, who again may be unlikely to be reflected in a household survey.

[22]Health Statistics 1987 and 1988.
[23]Health Statistics 1987, Table 1, p. 61.

Excluding these leave a total of 549,464 patients, with an average length of stay of 7.6 days.[24] This implies a total of 4.27 million days in hospital. The corresponding figure for 1987 is 507,236 patients, average stay of 7.5, and total hospital days of 3.8 million days.[25]

The sample data refer to the total number of nights spent in a public hospital by respondents in the previous 12 months. About 10 per cent of the sample reported having spent one or more nights in a public hospital during the previous 12 months. Grossed-up to the implied total for the population (in private households) this would represent 325,200 persons, and the average length of time spent in hospital per person was 12½ nights. These *cannot* be compared with the total number of patients discharged and average length of stay for the population shown by the administrative statistics, because they relate to the numbers experiencing *one or more* stays, and the total length of time spent in hospital per person aggregating separate stays. However, the total number of nights in hospital reported by the sample over the previous year can be compared with the population figure. Grossed-up to the implied total for the population, the sample reported 4.04 million nights in public hospitals. This is between the population figures for 1986 and 1987. Since interviewing for the survey took place for the most part between February and August 1987, the total which we would expect to be reflected in the sample would also be between the 1986 and 1987 figures, slightly closer to the former. Since the sample total is likely to contain a small proportion of nights spent in geriatric or psychiatric hospitals/homes, the expected total in the sample would therefore be perhaps over 4.3 million, and the actual sample figure is close to that. We may therefore conclude that the sample appears to represent public hospital nights very well.

Respondents were asked separately about the number of nights spent in a private hospital. For the population, figures for 1987 published by the Commission on Health Funding show that 53,192 patients were discharged

[24]Health Statistics 1987, Table 4, p. 62. shows the number discharged from acute District Hospitals was 10,862, while 5,779 were discharged from long-stay District Hospitals. Average duration of stay for acute public hospitals *excluding* District Hospitals was 7.4 days (Table 1, p. 61). Average duration of stay for acute District Hospitals was 18.4 days (Table 4, p. 62). Thus the overall average for all acute hospitals including District Hospitals was 7.6 days.
[25]Report of the Commission on Health Funding Table 12.1, p. 230. These figures include short-stay District hospitals. Health Statistics 1988 presents figures for 1987 which do not distinguish between short- and long-stay District Hospitals. The total number of patients discharged shown there, 512,004, includes all District Hospitals, and is therefore slightly higher than the figure used here, while the average duration of stay shown there, 7.3 days, excludes all District Hospitals and is therefore slightly lower than that used here (Health Statistics 1988, Table 1, p. 53.)

from private hospitals, with an average duration of stay of 7.6 days.[26] The total number of days spent in private hospitals was therefore about 400,000. In the sample, about 0.5 per cent of persons implying a population total of about 19,060 reported having spent time in a private hospital. The total number of nights, grossed-up to the implied figure for the population as a whole, was about 314,000. The degree of understatement which this reveals may result from an inability on the part of some respondents to distinguish private hospitals, so that some private hospital stays may be reported as public (in a private bed).

We now deal with attendance at hospital out-patient clinics and day surgery, on which separate questions were asked in the survey. Grossed-up to the implied population totals, the sample reported about 1.4 million visits to out-patient clinics and about 130,000 visits for day surgery over the previous 12 months. Data published by the Department of Health show that the total number of attendances at outpatient clinics (staffed by consultants) at acute hospitals was about 1.6 million in 1986 and 1.5 million in 1987.[27] The sample data for out-patient visits therefore appears satisfactory. No such data on day surgery for the population is available, but the reliability of the out-patient information in the sample suggests that the day surgery responses may also be satisfactory.

Finally, the sample data on visits for dental treatment, sight and hearing tests may be considered. The sample responses do not distinguish between visits of different types (i.e., dental versus sight versus hearing), but show whether they were free because covered by a Medical Card, fully covered by social insurance, part-covered by social insurance, or privately paid in full. Published data against which the reliability of the sample information may be assessed is limited and incomplete. The Department of Health publish data on Dental, Opthalmic and Aural Services provided under the Community Health Services programme. Those eligible for such treatment are persons in Category I and pre-school and national school children referred from child health examinations. For 1987, a total of about 700,000 examinations under the Community Dental, Opthalmic and Aural Services are shown by the published statistics.[28] These are incomplete in coverage,

[26]Report of the Commission on Health Funding (1989), Table 12.1, p. 230. Note however that one for-profit hospital is not included in these figures.
[27]Health Statistics 1987, Table G13, p. 79-80, and Health Statistics, 1988, Table G10, p. 91-92.
[28]Health Statistics, 1988, Table C7, p. 33 shows the number treated under the Community Dental Services in 1987 as 327,923 children and 42,206 adults. Table C8, p. 33 shows 50,537 children and 72,250 adults examined/treated under Community Opthalmic Services. Table C9, p. 34 shows 184,554 children and 16,704 adults examined under the Community Aural Services.

though (the opthalmic and aural figures exclude some cases seen in hospital, for example) so the actual total must be somewhat higher. In the sample, reported visits for dental, sight and hearing tests which were free because the person was covered by a Medical Card or a national school child gross up to an implied population figure of about 740,000. Such visits for this category thus appear to be well represented in the sample. The total number of claims under the PRSI scheme for such treatments in 1987 shown by official statistics was about 400,000.[29] The sample reported visits which were fully- or part-paid by PRSI benefits amounting to a grossed-up total for the population of about 470,000, so these also appear to be well-represented by the sample. There is no external information against which visits paid for privately may be assessed, but the results for the other categories provide some basis for confidence in their reliability.

3.5 Conclusion

In this chapter, the household survey on which the study is primarily based has been described in some detail. The sampling procedures, the content of the survey, and the reweighting methodology has been dealt with. Considerable attention has been given to the assessment of the representativeness and reliability of the survey data for the purposes of the present study. Comparison with external sources supported the conclusion that the sample represents the population well in terms of such characteristics as composition by age, sex, socio-economic group, number of persons in the household at work/unemployed. Focusing on key characteristics in the context of the health services, the sample represents the population very well in terms of the numbers in the three health services Eligibility Categories, and the number with VHI cover.

The level of utilisation of the various health services reported by the sample was also compared with external sources where possible. For GP visits and pharmaceutical prescriptions such a comparison could only be made for those in Category I, covered by a Medical Card. For these, the extent of GP visiting and of prescriptions obtained is underrepresented somewhat in the sample by comparison with what would be expected on the basis of administrative statistics from the GMS. Nonetheless, about 73 per cent of the expected level of GP visits and 77 per cent of expected prescriptions are reflected in the sample. Understatement may result from

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[29]Statistical Information on Social Welfare Services 1987, Table 80, p. 47 shows the number of claims for Treatment Benefit paid in 1987 as 308,500 for Dental Benefit, 1,288 for Hearing Aids and Contact Lenses, and 92,030 for Optical benefit, a total of 401,818 claims. Figures for hearing aids/contact lenses and aural claims *received* during the year are also given, and are slightly higher.

difficulties in recall of visits over the previous 12 months, particularly since the responses are being given by one household member on behalf of others. This is consistent with the fact that the level of hospital in-patient stays reported by the sample – which by their nature may not pose the same problems of recall – is close to that shown by external statistics. This is also true of hospital out-patient attendances, and – on the basis of limited external data – of visits for dental treatment, sight and hearing tests reported by the sample.

OVERVIEW OF THE SAMPLE

4.1 Introduction

Having described the ESRI sample and assessed its reliability for the purpose at hand, we examine in this and the next chapter relevant characteristics of the individuals and households it contains. The present chapter looks at the composition of the three health services entitlement categories and those with/without health insurance, in terms of age, sex, income, and social class/socio-economic group. Chapter 5 discusses the measurement of health status in the survey and the extent of reported illness for different groups. These serve as essential background to the remainder of the study, where patterns of health service utilisation, the role of health insurance, and the distributional impact of the system are analysed in turn.

4.2 Characteristics of Entitlement Categories

In Chapter 3, the composition of the sample by Entitlement Category was noted – with 34 per cent in Category I, 52 per cent in Category II and 14 per cent in Category III, this is similar to the population breakdown. The age composition of the sample was also described in Chapter 3 (Table 3.1), and it is of interest here to look first at the age breakdown of each category. Table 4.1 shows the percentage of the population falling into each category by age group, and the composition of each category by age.

Perhaps the most striking feature is the concentration of the elderly into Category I. Over 80 per cent of those aged 75 or over, and two-thirds of those aged between 65 and 75, are in Category I. As a result, over 20 per cent of persons in Category I are aged 65 or over, compared to only 5 per cent of those in Category II. Very few elderly are in Category III. For those aged between 55 and 64, there is also some concentration in Category I, though the breakdown for this group is closer to the population average.

Children aged under 5 and 5-15 are spread over the three Entitlement Categories in roughly the same proportions as the population as a whole, except that a relatively high percentage are in Category III, particularly for those aged 5-15. This means though that children account for about 30 per cent of those in Categories I and II, but 40 per cent of Category III. A relatively low proportion of those aged between 15-54, about 25 per cent, are to be found in Category I. Persons aged between 15 and 54 account for

Table 4.1: *Entitlement Category and Age Group*

Age Group	Percentage of Persons in Age Group in Category			Age Group as Percentage of Persons in Category			
	I	II	III	I	II	III	Total
			Per cent				
0-4	34.4	50.2	15.4	10.7	10.3	11.6	10.6
5-14	35.3	45.8	18.9	21.5	18.5	28.0	20.9
15-24	23.9	64.0	12.1	10.8	19.3	13.3	15.5
25-34	25.2	54.3	10.5	11.4	19.3	11.5	15.5
35-44	26.2	51.2	22.6	8.1	10.5	17.0	10.6
45-54	27.7	53.8	18.5	7.2	9.3	11.6	8.9
55-64	40.9	48.0	11.1	9.8	7.6	6.5	8.2
65-74	66.3	32.6	1.1	12.6	4.1	0.5	6.5
75 and over	82.0	17.8	0.2	7.9	1.1	0.0	3.3
All	34.3	51.6	14.1	100.0	100.0	100.0	100.0

only 38 per cent of Category I but for 58 per cent of Category II and 53 per cent of Category III. The percentage in Category III is highest for the 35-44 and 45-54 age groups. These differences in age composition have implications for the expected incidence of illness and demand for health care of the different categories.

In terms of composition by sex, Table 4.2 shows that there are some interesting differences among the categories which do not arise simply because of the differences in age profile. Overall, women are slightly more likely than men to be in Category I, with 36 per cent of women compared with 33 per cent of men in that category. This is partly because the elderly are concentrated in Category I, and there are more elderly women than men. However, it is clear that this is not the only factor at work. For children and for those aged between 15-54, there is little difference between males and females in the distribution across categories. For persons aged 55 or over, though, 61 per cent of women are in Category I compared with only 52 per cent of men. As a result, women make up 57 per cent of all persons in this age range in Category I. For Category III, by contrast, men make up 57 per cent of those aged 55 or over. So elderly females are even more concentrated in Category I than the elderly as a whole.

Table 4.2: *Entitlement Category, Age Group and Sex*

Age Group	Category I		Category II		Category III	
	Males	Females	Males	Females	Males	Females
			Per cent			
(a) Percentage of males/females falling into each category						
0-14	35.4	34.6	47.2	47.3	17.4	18.1
15-54	24.3	26.6	60.7	58.5	15.0	14.9
55 and over	52.6	61.2	40.8	33.3	6.6	4.5
All	32.8	35.8	52.9	50.3	14.3	13.9
(b) Males/females as percentage of persons in each category						
0-14	52.0	48.0	51.0	49.0	50.5	49.5
15-54	47.7	52.3	51.1	48.9	50.3	49.7
55 and over	43.2	56.8	52.3	47.7	57.1	42.8
All	48.0	52.0	51.4	48.6	50.9	49.1

We now examine the relationship between entitlement category and household income. Income may be an important influence on utilisation patterns, as explored in later chapters, but it is also the basis on which entitlement to publicly-subsidised health services is determined. Here we look first at the breakdown of the individuals in the different entitlement categories in terms of their household's position in the income distribution. This is done on the basis of disposable income, and ranks households by their decile position, that is, by the one-tenth of the distribution, ranked from bottom to top, into which they fall.

Table 4.3 shows that all the individuals in Entitlement Category III are in the top half of the distribution, and 92 per cent of them are in the top three deciles, the top 30 per cent of the distribution. It is interesting to note that for Category I, on the other hand, while about 70 per cent of persons are in the bottom half of the distribution, a small but not insignificant number are towards the top – about 15 per cent are in the top three deciles. Persons in Category II are primarily spread over deciles 5-10, though 18 per cent are in the bottom 4 deciles.

Table 4.3: *Entitlement Category and Household Disposable Income Decile*

Decile	Percentage of persons in Category Located in Decile			
	Category I	Category II	Category III	All
	Per cent			
Bottom	8.0	3.2	–	4.4
2	11.1	2.7	0.3	5.3
3	18.2	3.8	–	8.2
4	17.8	7.7	–	10.1
5	13.4	12.0	–	10.8
6	8.3	15.6	0.8	11.0
7	7.2	16.2	8.0	11.9
8	6.3	13.3	22.6	12.2
9	6.1	12.1	30.7	12.7
Top	3.5	13.4	37.6	13.4
All	100.0	100.0	100.0	100.0

Since the Entitlement Category into which one falls is determined by income tests, should a more direct and unambiguous relationship between income and category have been expected? For a number of reasons, the relationship is in fact quite a complex one. First, household income has been used to rank households, with no account taken of the size and composition of the different households. In the means test for a Medical Card, however, income is assessed against "needs" which are taken to be greater for larger families. Thus, a large family may be in the middle of the household income distribution but be entitled to Medical Card cover because of its size, or a single person may be towards the bottom of the distribution but above the means test limit. Further, for the Medical Card means test, the income unit used is closer to the narrower nuclear family of parent(s) with dependant children than the household. Thus an elderly person living with his/her adult offspring will be assessed on the basis of his/her own means and needs, not those of the entire household. Such a person living with his/her family is assumed to have a lower level of needs than one living alone, but the individual's own income is still taken to be their principal means of support.

In the case of the income ceiling for Category II, no account was taken of a person's number of dependants: the unit was in effect the earner. Where an individual was above the ceiling and his/her spouse was not working, both were in Category III, as were their dependant children (if any). The curious anomaly arose, though, that if one spouse was earning above the ceiling and the other was in work but earning less than the

ceiling, the former was in Category III but the latter in Category II – although their joint income was well above that of a couple with one earner above the ceiling. Children of such a dual-earner couple were in Category III if *either* parent exceeds the income threshold. Further, the ceiling related to earnings only: income from other sources, such as investment income, was not taken into account.[30]

For all these reasons, the three Entitlement Categories cannot simply be identified with positions in the household income distribution, and the more complex pattern shown in Table 4.3 is produced. It is also interesting to look at the position of those in the different categories when household income is adjusted to take into account the greater needs of larger households. This is conventionally done by applying a set of adult equivalence scales, and dividing a household's income by its equivalence scale to arrive at household equivalent income. If, for example, a single adult is taken to equal 1 adult equivalent unit, a couple may be attributed the value 1.6. The couple's equivalent income is then its actual income divided by 1.6 – well below the equivalent income of a single adult with the same actual income because the greater needs of the couple are taken into account. (Simply taking income *per capita*, on the other hand – i.e., dividing household income by the number of persons in the household – would make no allowance for the fact that there are economies of scale in consumption, two people may be able to live more cheaply in one household than separately.)

This procedure is described in detail in Callan, Nolan, *et al.* (1989, Ch. 5), and the actual equivalence scales used in Ireland and elsewhere are discussed. No consensus has emerged as to the appropriate methodology for deriving such scales, and a variety of approaches and scales have been applied (see for example the in-depth study based on Irish data by Conniffe and Keogh, 1988). Here we employ the set of scales implicit in the rates of support for different family types payable by the social welfare system (in particular, Unemployment Assistance) in 1987. Where the household head is 1, this takes each additional adult to be 0.66, and each child (under 14) to be 0.33. Thus a couple with two children constitute (1+0.66+0.33+0.33) = 2.32 adult equivalent units.

Ranking households now by equivalent disposable income, Table 4.4 shows the percentage of persons in each Entitlement Category located in each decile of the distribution. Comparing this with the ranking by unadjusted income (Table 4.3), those in Category I are now much more concentrated towards the bottom of the distribution. About 58 per cent of

[30]The anomalous way in which the Category II ceiling operated was remarked on by Tussing (1984, p. 269) and the Report of the Commission on Health Funding (1989, p. 105-108).

persons in Category I are now in the bottom three deciles, and only 7 per cent are in the top three deciles. This reflects the general pattern whereby a higher percentage of all *persons* are towards the bottom of the household equivalent income distribution than was the case for unadjusted income. This comes about because larger households now have lower incomes, adjusted for their needs, while smaller households move up the ranking. Thus Tables 4.3 and 4.4 show that, while 10 per cent of all persons were in the bottom two deciles by unadjusted income, 22 per cent are in the bottom two equivalent income deciles.

Table 4.4: *Entitlement Category and Household Equivalent Disposable Income Decile*

Decile	Percentage of Persons in Category Located in Decile			
	Category I	Category II	Category III	All
	Per cent			
Bottom	22.2	7.1	0.3	11.3
2	23.5	6.6	–	11.5
3	12.3	8.2	–	8.4
4	12.3	8.2	0.7	8.5
5	10.3	12.3	3.6	10.4
6	7.3	12.8	10.6	10.6
7	4.5	14.5	16.0	11.3
8	4.4	11.2	18.7	9.9
9	1.8	10.7	25.4	9.8
Top	1.3	8.3	24.7	8.2
All	100.0	100.0	100.0	100.0

It is also interesting that only 73 per cent of those in Category III are in the top three deciles by equivalent income compared to 92 per cent by unadjusted income. Only half are in the top 20 per cent. Thus, principally because the Category II ceiling does not take family size into account, some of those in Category III are not right at the top of the equivalent income distribution. It is certainly not the case that they represent the top 15 per cent of that distribution, as a casual examination of the structure of the Entitlement Categories might suggest. Persons in Category II are now more spread over the entire distribution, though still relatively heavily in deciles 5-9.

Going beyond current income, the composition of the Entitlement Categories in terms of social class and socio-economic group is of interest

since these may influence health services utilisation and indeed health status. Social class measures are designed to group together people who have similar "life chances", command over economic resources or, for some scales, similar levels of status or "prestige". Here we use the recently developed six-point social class scale adopted by the CSO in the 1986 Census and described in detail in O'Hare, Whelan and Commins (1991). This is based on the concept of groups whose members possess similar capacities for the generation of income through their occupations, not the status/prestige associated with particular occupations (see O'Hare, Whelan and Commins 1991), and comprises the following six groups:[31]

Social Class 1   :   higher professional/managerial

Social Class 2   :   lower professional/managerial

Social Class 3   :   other non-manual

Social Class 4   :   skilled manual

Social Class 5   :   semi-skilled manual

Social Class 6   :   unskilled manual

It is particularly relevant for present purposes, as we shall see, that farmers are not separately identified, but are distributed over the social classes on the basis of farm size (over 200 acres in Class 1, 100-199 acres Class 2, down to less than 30 acres, allocated to Class 5).

Table 4.5 shows the breakdown of persons in the sample by social class cross-classified with health services Entitlement Category. As would be expected, very few Category I members are in the professional/managerial classes and vice versa. It is worth noting, though, that less than half the professional/managerial classes are in Category III, a majority are in Category II. In the same vein, only about half Category III members are in these two social classes. So the correspondence between Category III and the highest social classes is far from exact. Category II draws its membership from among all classes, with the main deviations from the overall population class profile being that the proportion drawn from the unskilled manual class is below the population figure. Category I is disproportionately drawn from the semi-skilled and unskilled manual classes, though even so about 43 per cent of people in that category are *not* from these two classes.

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[31]See Census of Population 1986, Summary Population Report Second Series, p. 10 and Appendix 5.

Table 4.5: *Entitlement Category and Social Class*

Group	Category I	Category II	Category III	All
		Per cent		
(a) Persons in Social Class by Entitlement Category				
1. Higher professional/managerial	5.1	51.9	43.0	100.0
2. Lower professional/managerial	10.1	59.7	30.2	100.0
3. Other non-manual	22.1	64.1	13.8	100.0
4. Skilled manual	32.8	57.5	9.7	100.0
5. Semi-skilled manual	44.5	49.0	6.5	100.0
6. Unskilled manual	71.6	27.6	0.8	100.0
All	32.6	52.6	14.7	100.0
(b) Persons in Category by Social Class				
1. Higher professional/managerial	1.7	10.7	31.7	10.9
2. Lower professional/managerial	3.8	13.9	25.1	12.3
3. Other non-manual	12.6	22.6	17.4	18.6
4. Skilled manual	25.1	27.3	16.5	25.0
5. Semi-skilled manual	26.7	18.2	8.6	19.6
6. Unskilled manual	30.2	7.2	0.7	13.7
All	100.0	100.0	100.0	100.0

As already noted, farmers are not separately identified in the social class schema, being allocated among the classes on the basis of farm size. However, the health services utilisation patterns of farm households may be distinctive, and it may therefore be valuable for present purposes to be able to distinguish them. An alternative classification also employed by the CSO, by socio-economic group, is therefore also useful. A socio-economic group as used by the CSO is defined as containing occupations considered generally similar as regards the level of skill or educational attainment required. All farmers are grouped together in one SEG, therefore, and unlike social class, the objective is *not* to provide a clearcut ranking of groups.[32] Here we employ four broad groupings, based on aggregation of the CSO's 12 categories, as follows:

[32]The relationship between social class and socio-economic group is discussed in O'Hare, Whelan and Commins (1991). The CSO caution that "although somewhat similar titles are used for the social classes as are used for socio-economic groups, the respective allocation of occupations is quite different" (1986 Census Summary Report – Second Series, p. 10.

(i)   farmers, farm relatives and other agricultural workers,
(ii) professional and managerial,
(iii) other non-manual and skilled manual,
(iv) semi-skilled and unskilled manual.

All persons are classified on the basis of the SEG of the household head.[33]

Table 4.6 shows the breakdown of individuals in the sample by Entitlement Category and SEG. About 42 per cent of farmers, etc., are in Category I, 49 per cent are in Category II, and 9 per cent in Category III. Although the professional/managerial group are relatively heavily concentrated in Category III, over half that group are in fact in Category II, and over half the people in Category III do *not* come from that group. Similarly, although almost 60 per cent of the semi-/unskilled manual group are in Category I, they account for only 36 per cent of the people in that category. So the composition of the Entitlement Categories by SEG and/or social class is in fact quite mixed.

Table 4.6: *Entitlement Category and Socio-Economic Group*

Group	Category I	Category II	Category III	All
		Per cent		
(a) *Percentage of Persons in Each Socio-Economic Grouping in Category:*				
(i) Farmers, etc.	41.9	49.1	9.0	100.0
(ii) Professional/managerial	5.9	55.7	38.4	100.0
(iii) Other Non-manual/ skilled manual	30.4	57.7	11.9	100.0
(iv) Semi-/unskilled manual	58.6	37.2	4.2	100.0
All	34.3	51.6	14.1	100.0
(b) *Persons in Category by Socio-Economic Group:*				
(i) Farmers, etc.	20.0	15.5	10.4	16.3
(ii) Professional/managerial	2.8	17.5	44.2	16.3
(iii) Other non-manual/ skilled manual	41.2	51.8	39.1	46.4
(iv) Semi-/unskilled manual	36.0	15.2	6.3	21.1
All	100.0	100.0	100.0	100.0

[33]These aggregate the CSO's 12 SEGs as follows: (i) CSO group farmers, farmers' relatives and farm managers (group 0) plus other agricultural occupations and fishermen (group 1). (ii) Higher professional (group 2), lower professional (group 3), self-employed (having employees) and managers (group 4). (iii) Salaried employees (group 5), intermediate non-manual workers (group 6), other non-manual workers (group 7) and skilled manual workers (group 8). (iv) Semi-skilled manual workers (group 9), unskilled manual workers (Group X) and unknown (group Y).

4.3 *The VHI Population*

We now present a similar analysis of the characteristics of those with VHI cover – who account for 28 per cent of the sample, as discussed in Chapter 3, similar to the figure in the population as a whole. First the relationship between VHI membership and entitlement to public provision is examined in Table 4.7. Very few people in Category I have VHI cover – only about 3 per cent. Almost three-quarters of those in Category III have cover, while this is true of one-third of those in Category II. Given the relatively small proportion of the population in Category III, this means however that 64 per cent of VHI members are not in fact in that category. Thus almost two-thirds of VHI members are entitled to public provision of hospital care subject only to the charges introduced in 1987, which apply to most of these people, i.e., those in Category II rather than I. Since VHI cover is primarily for hospital care, this raises obvious questions about the factors producing a demand for VHI cover among such people, which will be pursued below.

Table 4.7: *VHI Membership and Entitlement Category*

Entitlement Category by VHI	Percentage of Category Covered by VHI	Persons Covered by VHI by Category
	Per cent	
I	2.8	3.4
II	32.6	59.8
III	74.1	37.1
All	28.2	100.0

Turning to the demographic composition of those with VHI cover, Table 4.8 shows the breakdown of VHI members (and their dependants) by age group, and the percentage of the population in each age group having cover. The age composition of those with VHI cover differs significantly from that of the population as a whole in one very important respect: a relatively small proportion of VHI members are elderly. While 6.3 per cent of VHI members are aged 65 or over, almost 10 per cent of the overall sample are in this age range, and the gap for those aged 75 and over is wider – these constitute 3.3 per cent of the sample but only 1.3 per cent of VHI membership. (This is consistent with published data on all those with VHI cover, as discussed in Chapter 3.) This reflects the higher VHI coverage of the middle aged: while only 11 per cent of persons aged 75 and over have VHI cover, about one-third of those aged between 35 and 54 have cover.

Table 4.8: *VHI Membership and Age*

Age Group	Percentage of all VHI Members in Group	Percentage of Group with VHI Cover	Percentage of all Persons in Group
	Per cent		
0-14	30.9	27.6	31.5
15-24	14.4	26.1	15.5
25-34	16.5	30.1	15.5
35-44	13.4	35.6	10.6
45-54	10.5	33.3	8.9
55-64	8.2	28.1	8.2
65-74	5.0	21.5	6.5
75 and over	1.3	11.3	3.3
All	100.0	28.2	100.0

A slightly higher proportion of females than males have VHI cover – 29 per cent compared with 27 per cent. As Table 4.9 shows, this occurs throughout the age range 15-74, though it is not the case for children. (Exactly the same pattern is revealed by the published data on the age/sex composition of all those with VHI cover when compared with the numbers in the population in each age/sex group.) The difference is most pronounced in the 25-54 range. As a result of this pattern about 52 per cent of those with VHI cover are female.

Table 4.9: *VHI Membership, Age and Sex*

Age Group	Percentage of Group with VHI Cover		Group as Percentage of Males/Females with VHI Cover	
	Males	Females	Males	Females
	Per cent			
0-14	27.4	27.7	32.5	29.3
15-24	25.1	27.1	14.5	14.3
25-34	27.9	32.2	15.8	17.1
35-44	34.1	37.2	13.3	13.5
45-54	30.8	35.6	9.9	11.1
55-64	27.1	29.3	8.4	8.0
65-74	20.7	22.3	4.6	5.4
75 and over	12.2	10.6	1.2	1.4
All	27.3	29.1	100.0	100.0

Looking at the position in the income distribution of VHI members, Table 4.10 shows the percentage of members in each household disposable income decile, and the percentage of persons in each decile with cover. About 87 per cent of those with VHI cover are in the top half of the income distribution and almost half are in the top 20 per cent. About 58 per cent of persons in the top decile have cover, while only 6 per cent of those in deciles 3 and 4 do so. A surprisingly high proportion of those at the very bottom of the distribution – in the first or second decile – have cover. Some of these may be experiencing unusually low incomes, for example farmers or self-employed people having a particularly bad year, or people who have recently lost their jobs. (About 56 per cent of those people in the bottom two deciles with VHI cover are in households headed by a farmer or self-employed person, while a further 20 per cent have an unemployed or retired head.)

Table 4.10: *VHI Membership and Household Disposable Income*

Decile	Percentage of all VHI Members in Decile	Percentage of Persons in Decile Having VHI Cover	Percentage of all Persons in Decile
		Per cent	
Bottom	2.1	13.4	4.4
2	2.0	10.6	5.3
3	1.8	6.2	8.2
4	2.3	6.5	10.1
5	4.6	12.0	10.8
6	7.8	20.1	11.0
7	12.6	29.7	11.9
8	17.1	39.4	12.2
9	22.3	49.5	12.7
Top	27.5	57.8	13.4
Total	100.0	28.2	100.0

Adjusting household incomes for differences in needs due to differing household size, Table 4.11 shows VHI coverage and the breakdown of VHI members by household equivalent income. This shows a considerably higher proportion of those towards the top of the distribution, and a lower population of those near the bottom, having cover compared with the

ranking by unadjusted income. Three-quarters of those in the top decile by equivalent income have VHI cover, and 59 per cent of those in the second decile, compared with only 7-8 per cent of those ranked towards the bottom of the distribution. Because fewer persons are now in the households towards the top, though, this does not substantially alter the concentration of the VHI membership: 88 per cent are still in the top half of the distribution, and 42 per cent in the top two deciles.

Table 4.11: *VHI Membership and Household Equivalent Disposable Income*

Decile	Percentage of all VHI Members in Decile	Percentage of Persons in Decile Having VHI Cover	Percentage of all Persons in Decile
	Per cent		
Bottom	2.7	6.7	11.3
2	2.8	7.0	11.5
3	2.3	7.7	8.4
4	3.8	12.5	8.5
5	6.0	16.2	10.4
6	9.8	26.0	10.6
7	14.7	36.7	11.3
8	15.8	44.8	9.9
9	20.3	58.8	9.8
Top	21.8	74.7	8.2
Total	100.0	28.2	100.0

Finally, VHI membership may be related to social class and socio-economic group. Categorisation by social class, in Table 4.12, shows that the percentage with VHI rises steadily as we move up the classes from the unskilled manual to the higher professional/managerial one. For the latter, coverage reaches 69 per cent, and 58 per cent of the lower professional/managerial class have cover. About one-third of persons in the "other non-manual" class have cover, and it is interesting that lower but still significant numbers of the skilled and semi-skilled manual classes have VHI. Only for the unskilled manual class is the VHI of little relevance. Despite their high coverage, the professional and managerial classes account for only about half of all VHI members – the other non-manual and skilled/semi-skilled manual classes are larger, and they contain about 48 per cent of VHI members.

Table 4.12: *VHI Membership and Social Class*

Social Class	Percentage of all VHI Members in Class	Percentage of Persons in Class with VHI	Percentage of all Persons in Class
Higher professional/managerial	26.2	69.2	10.9
Lower professional/managerial	24.8	58.3	12.3
Other non-manual	20.8	32.2	18.6
Skilled manual	16.6	19.1	25.0
Semi-skilled manual	10.1	14.9	19.6
Unskilled manual	1.5	3.2	13.7
All	100.0	28.2	100.0

When socio-economic group rather than social class is employed, Table 4.13 shows that farm households have a relatively low percentage with VHI. Only about 16 per cent have cover, higher than the figure for the semi- and unskilled manual grouping but considerably lower than the other non-manual/skilled manual group. While 70 per cent of the professional/ managerial group have cover, again they account for less than half of all VHI members.

Table 4.13: *VHI Membership and Socio-Economic Group*

Socio-Economic Grouping	Percentage of all VHI Members in Group	Percentage of Persons in Group with VHI	Percentage of all Persons in Group
		Per cent	
Farmers, etc.	9.0	15.5	16.3
Professional/managerial	40.3	70.0	16.3
Other non-manual/ skilled manual	42.3	25.8	46.4
Semi- /unskilled manual	8.4	11.2	21.1
Total	100.0	28.2	100.0

4.4 Conclusions

This chapter has examined the characteristics of individuals in the ESRI sample in the different health services Entitlement Categories and has also compared those with and without health insurance. In terms of implications for utilisation of health services, the different age profiles of the groups were of particular interest. The elderly were seen to be relatively

heavily concentrated in Category I, while Category III contains a high proportion in the 35-54 age range. Those with VHI were also disproportionately drawn from the 35-54 age range, with very few of the insured population aged 75 or over. It was also seen that membership of a particular Entitlement Category cannot simply be identified with positions in the household income distribution, or membership of particular social classes or socio-economic groups. Although there are clearly strong relationships among these characteristics, the composition of the Entitlement Categories is rather more mixed than may be appreciated, and the same is true of those with VHI cover.

Chapter 5

HEALTH STATUS

5.1 *Introduction*

We now turn to the information available about the health status of the respondents to the ESRI survey. Tussing's (1985) study was primarily based on survey data which did not include any information about health status. This he regarded as unfortunate, recognising that morbidity data would have been extremely useful in the analysis of utilisation.[34] In the ESRI Survey of Income Distribution, Poverty, and Usage of State Services some information was sought on physical and psychological health status. While very limited – unavoidably, given the broad objectives of the Survey – this enhances the potential of the data not only for the analysis of utilisation, but also in studying the demand for health insurance and equity aspects of the system.

We begin by describing the information on health status obtained in the survey. The way in which reported physical health status varies across age groups, social classes, Entitlement Categories, etc., is then examined, followed by a similar treatment of variations in psychological health status as measured in the survey.

5.2 *Information on Health Status in the Survey*

The survey could not attempt to properly measure the many different aspects of health status of respondents, for example, the extent to which functioning is limited by physical illness, the nature of the illness, its degree of severity, etc. As research elsewhere has shown, this would have required a battery of questions which could only be included in a survey focused centrally on health status, rather than one with much broader objectives.[35] Within the constraints of the survey, then, the objectives were very much more limited. With respect to physical health, the aim was to obtain some indication of the presence of illness and its severity; such a – necessarily crude – indicator would serve as a control variable in, for example, analysing influences on utilisation. In the case of psychological health, the objective was more ambitious, and the information obtained has allowed

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[34]Tussing (1985), pp. 21-22. Tussing's pilot survey in fact included questions on morbidity, but these were dropped from the survey because they "absorbed an enormous amount of interview time in order to obtain useful results" (p. 21).
[35]Blaxter (1989), p. 207.

influences on psychological health status itself – and in particular unemployment – to be studied by Whelan and Hannan, Creighton (1991).

On physical health status, the survey asked respondents
"Do you have any major illness, physical disability or infirmity that has troubled you for at least the past year or that is likely to go on troubling you in the future?"

Those who stated that they did were asked what the nature of the illness/disability was, and the responses were grouped (at coding stage) into 18 categories, for example diseases of the respiratory system (such as bronchitis or asthma), diseases of the circulatory system (such as heart disease, high blood pressure), or diseases of the digestive system.

These included categories for responses of the kind "bad nerves", "bad back", and "headaches, pains, etc." where no cause was specified. Interviewers also noted whether a respondent was bedfast, a wheelchair user, or had other mobility problems.

This type of question on chronic illness has been widely used in surveys elsewhere – for example, in the UK General Household Survey and in regular health surveys carried out in France and the Scandanavian countries. Blaxter (1989) categorises this type of question as fitting into what she terms the "medical model", since – although self-reported rather than clinically assessed – ill-health is being defined in terms of deviation from physiological norms rather than limitations to functioning or subjectively in terms of the individual's perceptions and experiences. While self-reporting might be thought likely to be problematic, where comparisons have been made the agreement with doctors' assessments or medical records has been high.[36] Substantially higher rates of self-reported chronic illness in the lower than in the higher social classes have been found in various countries, the gap generally being particularly pronounced in the middle age ranges.

To provide information about psychological health, the personal questionnaire also included a version of the widely used General Health Questionnaire (GHQ). This comprised a twelve-item set of questions, shown in Table 5.1, which are designed to give information about the respondent's current mental state. There are six positive and six negative items, and each consists of a question asking whether the respondent has experienced a partial symptom or behaviour pattern. The conceptual basis for the GHQ, the interpretation of the responses, and the particular variant employed in the ESRI survey are discussed at length in Whelan and Hannan, Creighton (1991). They make use of the sample data to analyse

[36]Blaxter (1989), pp. 209-210.

the impact of unemployment on psychological distress, and their detailed discussion can be taken as background to the use of the GHQ responses in the present study.

Table 5.1: *General Health Questionnaire Items in ESRI Survey*

Have you recently	

1.   been feeling unhappy and depressed?
2.   felt capable of making decisions about things?
3.   felt that you couldn't overcome your difficulties?
4.   been feeling reasonably happy, all things considered?
5.   been able to face up to your problems?
6.   been thinking of yourself as a worthwhile person?
7.   felt able to enjoy your day-to-day activities?
8.   lost much sleep over worry?
9.   felt that you are playing a useful part in things?
10.   felt constantly under strain?
11.   been able to concentrate on what you are doing?
12.   been losing confidence in yourself?

Note: Responses are "more than usual", "same as usual", "less than usual" or "much less than usual" for items 1-6, and "not at all", "no more than usual", "rather more than usual" of "much more than usual" for items 7-12.

These questions on physical and psychological health status were included in the detailed individual questionnaire completed by most adult respondents to the ESRI survey. Since children (defined for this purpose as under 15 or still in full-time education) did not complete an individual questionnaire, information on health status is available only for adults. Further, some adults – for a variety of reasons – were covered only by an abbreviated questionnaire which did not include the health questions.[37] Out of over 8,000 adults in the sample, full information, including responses to the questions on health status, was obtained for about 6,500.

5.3 *The Pattern of Reported Physical Illness*

We now briefly describe the overall pattern of responses on health status, dealing in this section with reported physical health and turning to

[37]This was the case, for example, for individuals who were never at home when the interviewers called, or were too ill to participate, but for whom another household member provided the basic information gathered on the abbreviated questionnaire. Some people also refused to complete a full personal questionnaire but were willing to respond to the abbreviated one. The fact that some individuals were covered only by an abbreviated questionnaire *because* they were ill, and thus were not covered by the health status questions on the full questionnaire, should not introduce a serious bias – illness or senility was given as the reason for failure to complete a full questionnaire for only 13 per cent of those covered by an abbreviated one.

psychological health status in Section 5.4. About 17 per cent of the adults for whom a response was obtained said that they did have a major illness/infirmity. The nature of these illnesses varied widely, but the most important types were heart disease/high blood pressure, bronchitis/ asthma, and arthritis. The pattern of response across Entitlement Categories is shown in Table 5.2. A substantially higher proportion of those in Category I than the remainder of the population reported having a major illness – 27 per cent compared to 12 per cent of those in Category II and 8 per cent of Category III. As a result, 58 per cent of those with an illness, compared to only 36 per cent of all the responding adults, are in Category I. By contrast, 36 per cent of those who reported illness are in Category II, which contains 52 per cent of those responding, and only 6 per cent are in Category III, which contains 12 per cent of those responding.

Table 5.2: *Physical Illness and Entitlement Category*

Entitlement Category	Percentage Reporting Major Illness, etc.	Percentage of all Those Reporting Major Illness	Percentage of All Responding
	Per cent		
I	27.1	57.9	36.0
II	11.7	36.2	52.3
III	8.5	5.9	11.7
Total	16.9	100.0	100.0

This is clearly related to the age composition of the different Entitlement Categories. Table 5.3 shows the pattern of reported illness by age group, for all responding and by Entitlement Category. The percentage reporting an illness rises steadily as age increases, from 5 per cent of those aged 15-25 to 37 per cent of those aged 75 or over. However it is also clear that the differential in the extent of reported illness between the categories is by no means entirely due to age composition. Within each age group, Category I consistently has a substantially higher proportion reporting illness than the other categories. There is also a consistent, though smaller, differential between Categories II and III. The much higher level of reported illness by age group in Category I, together with the relatively high proportion of elderly people in that category, have major implications for health service utilisation which will be explored below.

Table 5.3: *Physical Illness, Entitlement Category and Age*

Age Group	Percentage Reporting Major Illness			
	Category I	Category II	Category III	All
	Per cent			
15-24	8.9	4.0	–	5.2
25-34	11.1	7.0	5.0	7.8
35-44	20.4	8.3	6.0	11.0
45-54	28.3	15.3	11.2	18.4
55-64	41.4	24.0	19.1	30.9
65-74	35.6	26.3	14.8	32.5
75 and over	38.7	30.5	–	37.1
All	27.1	11.7	8.5	16.9

Some people, although above the income guidelines, are given Category I status at the discretion of the Chief Executive Officer of the area Health Board because of needs arising from serious illness, etc. This clearly could contribute to the relatively high reported physical ill-health of that Category. However, only about 1-2 per cent of those in Category I in the survey reported such an illness and were substantially above the relevant income levels.

At an aggregate level, there is no difference between men and women in the extent of reported illness. Looking at the age/sex breakdown, Table 5.4 shows that a slightly higher proportion of men report illness among those aged 55 or over, but the opposite is the case for the 25-54 age range. The higher proportion of elderly men reporting illness is offset by the fact that a slightly higher proportion of women are in those "high-risk" age groups, and the overall result is no difference between the sexes on average.

The pattern of reported illness by position in the income distribution is shown in Table 5.5. When individuals are ranked by their household's disposable income decile, those towards the bottom of the distribution are more likely to report illness. Over 30 per cent of those in households in the bottom decile, compared with only about 15 per cent of those in households in the top half of the distribution, report illness. This is closely related to the age composition of the deciles, though, with the elderly being relatively heavily concentrated towards the bottom of the disposable income distribution. When households are instead ranked by equivalent disposable income, the pattern – also shown in Table 5.5 – is rather different. Persons in households at the very bottom no longer have the highest percentage reporting illness. Instead, it is those in deciles 2-5 with the highest figures, particularly the 3rd decile, which is now where the

elderly tend to be concentrated. When a comparison across the deciles is made controlling for age group, there is no very marked pattern – within each age group there does not appear to be a much higher percentage towards the bottom of the distribution reporting illness.

Table 5.4: *Physical Illness, Age and Sex*

Age Group	Percentage Reporting Major Illness in Age Group		Percentage of Men/ Women in Age Group	
	Men	Women	Men	Women
		Per cent		
15-24	6.5	4.0	12.5	12.0
25-34	6.5	9.0	25.5	25.2
35-44	10.6	11.4	19.3	18.0
45-54	17.2	19.3	13.5	15.4
55-64	32.9	29.1	14.3	13.0
65-74	34.3	31.0	10.5	11.2
75 and over	38.3	36.3	4.3	5.3
All	16.8	16.9	100.0	100.0

Table 5.5: *Physical Illness and Household Income Decile*

Decile	Percentage Reporting Major Illness, etc.	
	Income Decile	Equivalent Income Decile
	Per cent	
Bottom	30.4	13.8
2	22.8	19.5
3	23.8	28.0
4	20.0	20.2
5	16.9	23.6
6	14.7	15.7
7	15.3	14.2
8	13.5	13.4
9	11.3	11.5
Top	11.2	12.0
All	16.9	16.9

The pattern of reported illness across social classes is also of interest. Table 5.6 shows that the two professional/managerial classes have fewer than average reporting illness, at about 10 per cent, and the percentage then rises steadily as we move down the social class ranking to reach 25 per cent for the unskilled manual class. Although this is partly attributable to the fact that there are relatively few elderly people in the professional/managerial group, the table also shows that the relationship between reported illness and social class generally persists within age ranges. It is least pronounced for the elderly, but for other age groups the unskilled manual class has about twice as many reporting serious illness as the professional/ managerial classes.

Table 5.6: *Physical Illness and Social Class by Age Range*

Percentage reporting major illness by Age Range	Social Class					
	Higher Profes- sional	Lower Profess- sional	Other Non-Manual	Skilled Manual	Semi- Skilled Manual	Unskilled Manual
	Per cent					
15-34	5.1	2.9	5.3	9.2	7.9	10.0
35-44	5.6	5.8	9.4	11.2	15.4	12.3
45-54	11.0	13.0	16.7	19.2	23.5	27.0
55-64	23.5	22.0	28.2	28.9	32.6	44.7
65 and over	21.8	33.6	30.8	37.6	36.3	33.4
All	10.5	10.5	13.9	17.0	19.0	24.6

When socio-economic group is used rather than social class, the results (not shown) are similar, but one interesting feature of the responses is that *within* age ranges the farmers, etc., grouping has quite a low percentage reporting serious illness – though not as low as the professional/managerial grouping. The farmers, etc., group contains a relatively high proportion of elderly people, though, so the overall percentage reporting illness is about average.

Any differences in the extent of reported illness between those with and without VHI cover are also of interest. Overall, those with VHI cover report significantly less illness: 12 per cent of those with cover, compared with 19 per cent of those without, said they had a serious illness etc. Interestingly, this is still true when we control for the age composition of the two groups. Table 5.7 shows that those without VHI cover have a consistently higher proportion reporting illness within age ranges, except for the 75 and over group which contains relatively few people with VHI cover. To properly

assess the relationship between reported illness and VHI cover, though, we would want to also control for characteristics other than age – including, for example, social class – as explored in depth in Chapter 11 below.

Table 5.7: *Physical Illness and VHI Cover*

Age Group	Percentage of Those with VHI Cover Reporting Illness	Percentage of Those Without Cover Reporting Illness
		Per cent
15-24	1.7	5.9
25-34	5.0	9.1
35-44	6.2	13.7
45-54	14.3	20.4
55-64	23.4	33.7
65-74	27.5	33.8
75 and over	38.7	36.9
All	11.6	18.9

5.4 *Psychological Health Status*

We now turn from the crude indicator of physical health status available for the sample to the information on psychological health obtained using the 12-item General Health Questionnaire. We make use of the procedure described in Whelan, *et al.* (1991) whereby the responses to each item are dichotomised. For example, for the item "have you recently lost much sleep over worry", those replying "not at all" or "no more than usual" are scored as zero, while those responding "rather more than usual" or "much more than usual" are scored 1. For each respondent, then, an aggregate GHQ score ranging from 0 to 12 for the 12-item set may be constructed.

Whelan, *et al.*, discuss in detail the interpretation of GHQ responses and scores, and in particular the rationale for adopting a threshold score. This represents the number of symptoms at which the probability exceeds 0.5 that an individual would be classed by independent psychiatric assessment as having a clinically significant psychiatric disturbance. In the case of the 12-item GHQ employed in the survey, evidence internationally supports the adoption of a threshold level of 2: someone scoring this level or above on the aggregate GHQ has a probability greater than 50 per cent of being diagnosed as a psychiatric case (see Whelan, *et al.*, Chapter 3).

The distribution of respondents in the sample in terms of GHQ scores is shown in Table 5.8. There is a heavy concentration at zero, and 17 per cent score above the threshold level, which is consistent with the results from studies elsewhere. The variation in scores in the ESRI sample by sex, marital status, social class and other variables is analysed in Whelan, *et al.* (see

especially Chapter 4). Here we briefly look at the pattern with respect to the variables of particular interest in the context of the present study – not only demographic and socio-economic factors but also Entitlement Category and whether the individual has VHI cover.

Table 5.8: *General Health Questionnaire Scores*

GHQ Score	Percentage of Respondents with Score
	Per cent
0	65.2
1	11.8
2	5.8
3	4.5
4	3.6
5	2.8
6	2.6
7	1.2
8	1.0
9	0.7
10	0.3
11	0.2
12	0.2
All	100.0

Scores 2 through 12 bracketed: 17.1

In so doing, we look first at the percentage with scores above the GHQ threshold by Entitlement Category. Table 5.9 shows a very substantial difference across categories: where 25 per cent of persons in Category I are above the threshold, this is the case for only 13 per cent of Category II and 8 per cent of Category III. As a result, over half the people over the threshold are in Category I, which only contains 36 per cent of all respondents.

Table 5.9: *GHQ Scores and Entitlement Category*

Entitlement Category	Percentage of Respondents in Category with Score Above Threshold	Percentage of all Those with Scores Above Threshold in that Category
	Per cent	
Category I	25.3	53.0
Category II	13.5	41.3
Category III	8.3	5.7
All	17.1	100.0

The percentage of women above the threshold exceeds that of men – 19 per cent compared with 15 per cent. This is a common finding internationally, and the factors which appear to be at work in producing this differential are discussed in Whelan, *et al.* (Chapter 4). Looking at the variation across age groups, there is no very striking pattern for either men or women. As Table 5.10 shows, the percentage above the threshold is highest for men in the 45-54 age range, at 20 per cent, but for women the percentage is high for the 25-34 group and for the entire range 45 and over.

Table 5.10: *GHQ Scores, Age and Sex*

Age Group	Percentage of Respondents with GHQ Scores Over Threshold		
	Men	Women	All
		Per cent	
15-24	16.6	12.9	14.7
25-34	15.4	20.6	18.2
35-44	13.8	14.7	14.2
45-54	19.9	22.4	21.3
55-64	13.7	21.3	17.6
65-74	11.2	21.2	16.7
75 and over	11.5	18.9	15.9
All	15.0	18.9	17.1

Thus, whereas the strong relationship between physical illness and age contributed to the overall differential across Entitlement Categories in reported physical illness, the differential between categories in the case of psychological distress largely reflects differences which obtain within age groups. For example, for the 45-54 age group only 10 per cent of those in Category III are over the threshold, but 17 per cent of persons in that age range in Category II and 36 per cent of those in Category I have GHQ scores above that level.

The higher incidence of measured psychological distress among females does contribute to the differential across Entitlement Categories, since Category I has a relatively high proportion of women. However, as Table 5.11 shows, the differentials across categories for both men and women remain very sizeable.

The way in which the percentage above the GHQ threshold varies with the position of the individual's household in the income distribution is shown in Table 5.12. Ranking by household disposable income, there is a clear tendency for those towards the bottom of the distribution to have

considerably higher percentages above the threshold. On the basis of rankings by equivalent household disposable income, this is even more pronounced. Over one-quarter of the adults in households in the bottom 30 per cent of the equivalent income distribution are above the GHQ threshold, compared to only about 10 per cent of those households in the top 30 per cent.

Table 5.11: *GHQ Scores by Entitlement Category and Sex*

Entitlement Category	Percentage of Respondents with GHQ Score Over Threshold		Composition of Category	
	Males	Females	Males	Females
	Per cent			
Category I	23.2	26.8	43.6	56.4
Category II	11.6	15.3	48.0	52.0
Category III	7.1	9.3	47.1	52.9
All	15.0	18.9	46.3	53.7

Table 5.12: *GHQ Scores and Household Income Decile*

Decile	Percentage of Respondents with GHQ Scores Over Threshold	
	Income Decile	Equivalent Income Decile
	Per cent	
Bottom	26.8	25.4
2	19.8	28.7
3	24.8	28.2
4	24.9	16.3
5	18.7	17.0
6	14.5	15.8
7	16.0	13.0
8	14.2	11.8
9	10.3	8.7
Top	10.8	10.1
All	17.1	17.1

The variation in scores across social class is also interesting. A significant increase in the proportions with GHQ scores over the threshold is seen as we move down the class ranking, from 8-11 per cent for the higher and lower professional/managerial classes respectively to 13 per cent for other non-manual, 19 per cent for skilled and for semi-skilled manual classes,

and 23 per cent for the unskilled manual. A detailed analysis of this class-related pattern and the factors which may produce it is given in Whelan, *et al.* (1990, Chapter 4). Categorisation by socio-economic group produces a rather similar pattern, but the farmers, etc., group is seen to have a slightly below average percentage above the threshold, at 14 per cent.

Finally, the extent of measured psychological distress may be examined for those with versus those without VHI cover. The percentage of respondents above the GHQ threshold is significantly below average for those with VHI cover, at 10 per cent, compared to 20 per cent for those without such cover. This differential holds across age groups: the highest percentage above the threshold is for the 45-54 age group, where 15 per cent of those with VHI cover and 25 per cent of those without cover are above the threshold.

5.5 *Conclusions*

This chapter has described the limited but none the less valuable information on physical and psychological health status obtained in the ESRI Survey. Respondents were asked had they any serious illness/disability, and a version of the General Health Questionnaire exploring mental health status was employed. The results showed, *inter alia,* consistently higher levels of reported illness in Entitlement Category I and in the manual social classes than in the remainder of the population. This has major implications for the analysis of influences on health services utilisation, and it is to this analysis that we now turn.

Chapter 6

THE ECONOMIC ANALYSIS OF HEALTH SERVICES UTILISATION

6.1 Introduction

Before proceeding to analyse the utilisation patterns in the ESRI sample, it is necessary to outline the theoretical structure on which this analysis is based. The present chapter therefore briefly sets out the main features of the approach adopted, which is derived from the perspective of health economics. In this respect the present study is to be seen as a development of Tussing's pioneering work in applying such a perspective to the Irish case.

We begin with a discussion of the nature of the demand for health care and the distinctive features of the health area from the point of view of economic analysis. The nature of the relationship between doctor and patient differs in some crucial respects from that between consumer and supplier in a standard microeconomic setting, and the implications for modelling utilisation are then teased out. Finally, previous research applying a health economics perspective to utilisation of health care in Ireland, by Tussing, is placed in this wider context.

6.2 Distinctive Features of the Economics of Health Care

Rather than attempting to cover exhaustively the particular features of health care and the economic models which have been applied to it, here we briefly delineate some key elements. We begin from the basic premise, long recognized in the health economics literature, that supply and demand do not interact in the health care sector in the conventional manner described by the micro-economic theory of the operation of markets. This is the case for a number of reasons, which are not always clearly distinguished.

First, demand for health care does not arise from the satisfaction given by "consuming" such care, in fact consumption of health care may involve disutility. Demand for health care is a derived demand, arising from the utility associated with health status and the impact of health care on that status. Thus

$$U = U(Xi, HS(HC)) \quad (1)$$

where U is the consumer's utility function defined over commodities Xi and health status HS, and HS is a function of (among other things) health care HC.[38]

[38]See Evans and Wolfson (1980), Evans (1984).

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The second element is *uncertainty:* the incidence of illness is not predictable. This is to be distinguished from *risk* (which is also present). Risk applies in a situation where there are various possible states of the world, all of which can be fully characterised, and to which it is possible to attach probabilities of occurrence. Health and the incidence of illness are however inherently unpredictable. (We may be able to judge whether particular lifestyles, etc., make illness more or less likely – though even this is subject to considerable imprecision – but individuals are still unable to reliably attach probabilities to various health outcomes.)

The third, and perhaps most crucial, feature relates to *lack of information:* the consumer lacks the necessary information about the relationship between health care and health outcomes to permit him/her to exercise informed choice over different consumption possibilities. In terms of equation (1) the consumer does not know the technical production function relationship dHS/dHC. As Arrow (1963) emphasised in his seminal article, this is not simply saying that the consumer does not know how "health care" is produced or works – which would be true of many other commodities, for example a car or a pocket calculator – but that the health care consumer is generally ignorant of what it will do for him/her.

This is where the key asymmetry in information which is pervasive in health care economics comes into play: the provider of health care is generally perceived by all concerned to have a substantially greater degree of knowledge about appropriate health care and its effects than the consumer/patient. The relationship between health care and health outcomes is not only a technical one requiring specialised knowledge, it is inherently uncertain. The supplier – the doctor – on the basis of specialised knowledge, training and experience, is better placed than the patient to judge the likely impact of health care on health status and utility. The supplier of health care thus takes on a central role in the ordering of the consumers' choices with respect to health care.

6.3 *The "Agency" Relationship and Suppliers' Influence on Demand*

The extent to which the consumer relies on the doctor to aid in decision making, or act as decision-maker, will vary depending on such factors as the specific health care commodity being examined, and perhaps the personalities of the doctor and patient involved. To a greater or lesser extent, though, the provider is in the position of not only acting as supplier but also markedly influencing directly the decisions of the consumer: the normal Marshallian separation of supply and demand is no longer maintained. To what extent does this alter the conventional economic model of the interaction of supply and demand? The answer depends

essentially on how providers of care are thought to act in these circumstances.

Traditionally, the doctor-patient relationship has often been analysed as an "agency" relationship. In such a relationship, both parties recognize the asymmetry of information which exists between them, and the patient acknowledges the likely utility gains from relying on the doctor's advice. In a pure or perfect agency relationship, the doctor then acts as the patient would, had the latter been able to make his/her own choices but with the doctor's knowledge about their likely effects. This would involve the doctor taking into account not only the likely effects on health status, but also the patient's relevant tastes, preferences, income, the costs of different treatment to the patient, etc. In a perfect agency relationship the doctor in effect acts as the consumer would – a degree of identification of doctor and patient which is unlikely to be fully realised in practise.

Since they are in a position to significantly influence or determine consumer behaviour, there is also however considerable scope for providers to seek to maximise their own utility. Most directly, this could manifest itself in providers in effect exploiting the willingness of consumers (or third parties) to pay for treatment in order to maximise the financial returns to providers themselves. This leads to consideration of the concept of "supplier-induced demand": the supplier, though acting as an agent for the consumer, brings about a level of consumption different from that which would obtain if a fully-informed consumer was able to choose freely.

This concept has generated a substantial theoretical and empirical research literature. In effect, the hypothesis involved is that providers aim to maximise income or reach a target income level, and influence demand accordingly. It derives at its simplest from the observation that the consumption of doctors' services tends to rise roughly in line with increases in the ratio of doctors to population. It is important to recognize the element of monopoly power which is being attributed to doctors collectively and individually in this hypothesis. The extent of competition among doctors is quite limited. Price competition is frequently not practised, nor is advertising common. Further, it is often difficult for consumers to assess the service being offered by doctors, even *ex ante*, because of the informational asymmetries identified earlier. As Arrow has pointed out, it is precisely because the control on quality normally exercised by informed buyers is so weak in the health area that ethical codes of conduct and physicians' internalised values are so important.

It is necessary to emphasise that those who posit a role for supplier-induced demand do *not* argue that professionals respond *simply* to financial incentives – indeed Evans (1984), a leading proponent of the importance

of supplier-induced demand, emphasises the diverse and complex motivations to which they respond, under equally diverse and complex constraints. As a result, he argues, they cannot sensibly be represented as competitive for-profit firms, nor is the simple theory of monopoly applicable to the behaviour of large numbers of more or less co-ordinated suppliers, partly co-operating and partly competing with each other. While often framed in terms of the use of GP services, the concept of supplier-induced demand has more general application – for example US studies have also looked at possible inducement of surgical operations.

Determining empirically the importance of supplier-induced demand is extremely difficult, as evidenced by the vigorous debate on the subject in the health economics literature, particularly following the influential study by Evans (1974). Participants in this debate have been classed as the Bs (for "broad economists") who believe that the physician's power to induce demand is important, and the Ns (for "narrow economists") who adopt a strictly neoclassical perspective in arguing that physicians cannot or do not induce demand in response to economic pressures on their own incomes. Empirical studies have tended to concentrate on the relationship between the supply of doctors and the demand for their services. Evans (1974) in his initial Canadian study, as well as Richardson (1981) for Australia, Fuchs (1978) for the US, Barer and Evans (1983) for Canada, found evidence of an increasing supply of doctors (per head of population) being associated with increases in per capita use of doctors' services, which were *not* simply a result of falling price levels for such services. This evidence and its interpretation has been contested by, e.g., Sloan and Feldman (1978) and more recently debated by Feldman and Sloan (1988, 1989) and Rice and Labelle (1989).

The central problems facing attempts to pin-point the impact of supplier-induced demand were discussed in Tussing (1985), and have been elucidated by Reinhardt (1985, 1989) and Pauly (1988). At its simplest, these arise because at an aggregate market level supplier-induced demand in operation may be indistinguishable from competitive equilibrium produced by the normal operation of supply and demand. Suppose the supply of doctors increases, fee levels fall and the utilisation of services is observed to increase. This may simply reflect the impact of the reduction in price in producing higher demand, or it may be produced by supplier inducement shifting the demand curve. Only if demand inducement is sufficiently strong to produce an increase in *both* price and volume of utilisation can its impact be clearly distinguished from a movement from one competitive equilibrium to another.

The fact that supplier-induced demand does not produce clear

predictions about the response of prices to increases in supply makes it difficult to test empirically. Further, it is extremely difficult at an aggregate level to isolate the effects of other factors which may be operating on demand, and even to properly measure the required variables such as output and fee levels. It is possible to try to distinguish patient-initiated and doctor-initiated visits at the micro-level, as Wilensky and Rossiter (1981) have done, but this may not reflect a clear distinction between induced and uninduced demand. As a result of these difficulties no consensus on the importance of supplier-induced demand appears to be emerging or perhaps even likely to emerge. As Reinhardt puts it "even highly sophisticated econometric methods ultimately cannot divine what proportion of observed utilisation was simply *accepted* by sick patients (or their anxious relatives) and what proportion the latter would have *demanded* of their own free will, had they been as well informed as their physicians" (1989, p. 339). A recent review concluded that, although there is some supporting evidence, given the problems involved it remains possible to dispute the existence of supplier induced demand.[39]

6.4 *The Demand for and Supply of Health Services*

So far we have concentrated on the provider/patient relationship and in particular how the standard micro-economic assumptions about the separation of supply and demand may not be adequate for the analysis of health care "markets". The way in which services are priced and providers remunerated will clearly be crucial in determining the economic incentives involved. The first stage in analysing economic influences on utilisation patterns is therefore to identify the incentive structures in operation, which differ widely across countries and often, within countries, across types of health care or across sub-groups in the population.

For example, in many countries GP services are provided to the entire population free of charge at point of use – the UK and Canada are examples. In this case, there is no direct financial incentive to consumers to minimise GP consultations (though there may be a cost if work has to be foregone, and there will also be a time cost). The incentive to the doctor under such a system will depend on the way in which remuneration is organised by the third party paying for the GP services provided, which may be the state, private insurers, or non-profit "sickness funds". Where GPs are remunerated on a salary basis, they have no financial incentive to increase the number of consultations. The same is true of a pure capitation system, where a GP is paid on the basis of the number of patients who have

[39]See McGuire, Henderson and Mooney (1988), p. 165.

registered on his/her list. Where payment is made to the doctor on a fee-for-service basis, there is however an incentive for doctors to increase the number of consultations, and also the provision of particular services which are paid for on a per-item basis. For this reason most attention has been paid to the role of supplier-induced demand in the context of fee-for-service systems.

Similar considerations apply to other types of health care, though the scope for complexity in the pricing/remuneration system may be even greater. In the case of hospital in-patient care, for example, insurance often plays a major role. The precise way in which such insurance operates will then affect both the incentives facing patients and those facing the hospital consultant and the hospital itself. Where hospitals are financed by the State, the way in which their budgets are set and how this relates to activity levels etc. will obviously be central.

Having identified the economic incentives in operation in a particular setting, then, the importance of these and other influences on utilisation can be explored, given suitable data. It is worth setting out at this stage the range of variables which might be expected to affect an individual's utilisation of health services, and what the literature indicates about their likely impact.

Clearly, where the patient is liable for the doctor's fee or hospital costs etc. we would expect this price to affect demand. Empirical studies of the impact of price on demand for health care are complicated by the fact that, most frequently, they have to take into account the existence of insurance (particularly since most studies of this type have been carried out in the US). This means that it is difficult to distinguish willingness to pay for health services and the demand for insurance. Studies such as Newhouse and Phelps (1974), Fuchs and Kramer (1972) and Colle and Grossman (1978) have attempted to estimate the price elasticity of demand for GP visits, using cross-section data and with the price of insurance or the co-insurance rate as the measure of price. These have found elasticities of the order of -0.1 to -0.2. Negative price effects on hospital stays have also been found in a variety of US studies. Many conceptual and empirical problems arise with such studies, ranging from the appropriateness of the insurance premium as a measure of price, to the distortions which insurance itself may introduce, to the role of the supplier and his/her reaction to price. The response of consumers to price in this context has to be set within the overall framework of how the health care system as a whole is organised and providers remunerated. None the less, the evidence does support the expectation of negative price elasticities.

The importance of time prices in the total cost of obtaining care is also

emphasised in some studies. Newhouse and Phelps (1974) and Coffey (1983) suggest this may often be as important as money prices in determining consumption of health care. This may influence choice of provider or mode of care as well as the extent to which care is sought – and of course patients may be willing to pay a higher money price to save time or obtain care at a more convenient time.

Income would also be expected to be an important influence on the demand for health care, though in a complex variety of ways. Income obviously affects ability to pay in systems where the patient is charged for GP visits etc., and would then be expected to be related positively to demand. However, health status is also often found to be related to income, with those on lower (permanent or long-term) income experiencing more illness. Further complications arise in that willingness and ability to seek care may be positively related to income, because of educational/cultural factors, while on the other hand the time price of obtaining care may be higher for high-income earners. Empirical studies of the effect of income on utilisation generally find income elasticities which are above zero but less than one – health care consumption is income inelastic (see for example Newhouse and Phelps (1974), Manning, *et al.* (1981)).

Occupation, socio-economic background, social class and education level are also often hypothesised to affect demand for health services. This is partly because they act as proxies for permanent or long-term income, and partly because they may be related to willingness/ability to seek care. For example, distinguishing farmers from persons on similar income levels may be valuable if attitudes, etc., to seeking care differ across these groups. Further, though, many studies have indicated that there is a relationship between socio-economic position/background and morbidity. Thus variables such as income, social class or education level may be correlated with health status, greatly complicating attempts to determine the role of different influences on utilisation.

Health status itself would, of course, be expected to be a major influence on demand for health care, and has been found to be so in empirical studies. A major difficulty with incorporating health status in empirical studies of utilisation is its measurement. Attempting to reflect the variety of health statuses which exist, in a manner which allows meaningful ranking in terms of their expected impact on health service utilisation, poses major conceptual and empirical problems. Various measures of health status have been suggested for different purposes, some based for example on the degree to which mobility is restricted or physical activity impaired. Different states of health may be ranked by experts, or through sample surveys by non-experts. These are however problematic, and may not in any

case be related closely to need for utilisation of health care of different kinds. In empirical studies of utilisation, then, generally only very crude measures of health status have been included. Often, no direct measure of individuals' health status is available and it is proxied by variables such as age and sex, on the basis that most types of health care utilisation are related to age, and that females are often found to have higher morbidity and utilisation than males.

Having outlined the main elements to be taken into account in analysing utilisation of health services, we now briefly review previous research on Irish utilisation patterns from an economic perspective.

6.5 *The Economic Analysis of Health Service Utilisation in Ireland*

Research on health service utilisation in Ireland from an economic perspective was initiated by Tussing. While his detailed findings for utilisation of different types of health services are discussed in later chapters, it is useful to outline the main thrust of his study at this stage. This involved focusing attention on the incentives facing patients and providers, and the implications of the pattern of incentives for resource allocation.

Tussing teased out the incentives facing different patients – depending on their public entitlements and whether they had VHI – in respect of different types of care. He also discussed the incentives facing different providers of care (though in his empirical analysis he concentrated for the most part on GPs). Tussing concluded that many aspects of the incentive structure operating at the time (the early to mid-1980s) contributed to over-utilisation and inefficiency. For example, the fact that persons in Category II paid for GP care but were entitled to hospital out-patient or in-patient services free of charge gave them an incentive to use the much more resource-intensive hospital-based services instead. Neither those with Category I or II entitlement nor those with VHI cover – which accounted for most of the population – bore any cost for a hospital stay, and doctors – making the main hospital utilisation decisions – also in general had no motive to economise on hospital resources. Where private patients with VHI cover were obtaining specialist care, again in general neither the doctor nor the patient had a motive to economise – the doctor, paid on a fee-per-service basis, had in fact the opposite incentive. He also concluded that the various explicit and implicit subsidies to private insurance and private care led to inefficiently high demand for costly (to provide) private care.

The area on which Tussing placed considerable emphasis, though – and certainly the one where his findings generated the most attention – was GP

care for Entitlement Category I. Here, patients did not have to pay for GP consultations, while doctors were reimbursed on a fee-for-service basis by the GMS. This remuneration system provides an incentive for GPs to increase resource use, and on the basis of his analysis of utilisation patterns Tussing concluded that some Irish GPs apparently did stimulate demand for their own services in order to increase their own incomes. Increased utilisation of GP services was likely to be correlated with other types of utilisation such as pharmaceutical medicines, laboratory tests and X-rays, especially since all these were also free to Category I patients. Tussing stated strikingly, then, that "No system in Europe or North America provides a greater incentive to resource use than that provided by the Irish system for Category I patients by the combination of services free to patients remunerated to providers on a fee-for service basis".[40]

We will discuss the basis on which Tussing reached these conclusions in the following chapters. Substantial changes in the system affecting incentives including the GMS remuneration system have since been implemented, influenced by his findings, and these will also be detailed below. The point to be made in the present context is that the central contribution of Tussing's research was *not* specific findings on supplier-induced demand in the GMS, but rather its emphasis on the importance of the structure of economic incentives, facing patients and providers, throughout the system. These incentives were not seen as all-important, the only factors influencing behaviour – which would be particularly inappropriate in the health care area. Rather, they were identified as the key channel whereby policy could act to improve efficiency and resource allocation, and this provides a framework for subsequent analysis and policy debate within which the present study operates.

6.6 *Conclusions*

In this chapter, the nature of economic analysis applied to health care utilisation has been discussed. Particular features of the health care area which have to be taken into account in applying standard economic analysis – notably the nature of the demand for health care and the importance of informational asymmetrices between patient and doctor – were identified. These lead to a much less clear-cut division between demand and supply sides of the "market" for health care than in many others, the role played by the provider becoming crucial. This does *not* necessarily imply that providers influence demand to maximise their own incomes or utility, though that is an important possibility. It does mean

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[40]Tussing (1985), p. 6.

though that the incentives facing patients and providers jointly have to be teased out particularly carefully before the way in which key resource-utilisation decisions are made can be understood. Tussing's research on utilisation patterns marked the first attempt to do so for the Irish health care system. Within that framework, we now proceed to the analysis of utilisation patterns using the data obtained in the ESRI Survey of Income Distribution, Poverty and Usage of State Services, beginning with GP services.

Chapter 7

UTILISATION OF GP SERVICES I

7.1 Introduction

In this and the next chapter, we analyse the patterns of utilisation of GP services in Ireland on the basis of the large-scale household survey carried out in 1987. In doing so we focus on issues which are particularly important from an economic perspective, notably the role of financial incentives facing patient and provider, and how the impact of these incentives is to be evaluated. It will become clear that distinguishing the effects of such incentives poses major difficulties, because of the variety of channels through which socio-economic characteristics may influence health and health service utilisation. None the less, the availability of additional information on some key characteristics, in particular health status, provides the potential for significant development in our understanding of the pattern of GP utilisation.

This chapter first describes the way in which GP services are financed and delivered in Ireland, in Section 7.2. Section 7.3 reviews the approach taken by Tussing and his main findings in this area. We then turn to the analysis of GP visiting in the large-scale household survey carried out in 1987. Section 7.4 presents an overview of the GP visiting behaviour in the sample, looking at the way in which this varies by such characteristics as age, sex, income, socio-economic group/social class, and health services Entitlement Category. In Chapter 8, the results of statistical analysis of this sample data, attempting to distinguish the effects of different variables on GP visiting, are then presented. The implications of the findings are then discussed, with particular reference to the structural change in the GMS reimbursement system for GPs in 1989.

7.2 General Practitioner Services in Ireland

As outlined in Chapter 2, persons in Entitlement Category I are entitled to free GP services, doctors being reimbursed by the State through the GMS (Payments) Board. The remainder of the population pays for GP care on a fee per visit basis, with most doctors treating both types of patient. Up to 1989, the basis on which GPs were remunerated for the Category I patients they treated was also fee for service. A basic fee was paid for a consultation in the surgery in normal working hours, with higher fees for

home visits, visits outside normal hours, those involving significant travel, etc.

This is the system which operated both when Tussing's research was done and when the survey data used in the present study was collected. In 1989 the GMS introduced a new reimbursement system based largely on capitation – the doctor is paid on the basis of the number of Category I patients on his/her list, taking into account their demographic and geographic composition. This major structural change was probably influenced by Tussing's findings, and will be discussed below.

Up to 1989, then, for GP services the principal difference between Category I patients and the rest of the population was that the former received GP care free, while the latter did not. From the doctor's point of view, the fact that payment was on a fee-for-service basis provided an economic incentive to increase the number of consultations. The fee levels paid out-of-pocket by those not in Category I were higher than those paid by the GMS for Category I patients,[41] but the latter faced no economic incentive to minimise the number of visits. For (most) "private" consultations, then, the patient and doctor faced conflicting financial incentives, but this was not the case for Category I. While the availability of free care would be expected *ceteris paribus* to lead to greater demand by Category I patients, it would also make them less resistant to any inducement of demand by doctors.

It is also relevant that for those in Entitlement Category II, up to 1987 hospital out-patient and consultant services – which could be an alternative to GP visits – were available free of charge. When Tussing was writing, then, and for most of the period covered by our 1987 survey, such people had some incentive to substitute these for GP care. In 1987 charges for out-patient consultations were introduced for Category II, which altered these incentives somewhat. It is also worth noting that those with private insurance would not in general be covered for GP visits by the VHI.[42]

Administrative data is available from the GMS on visiting rates and expenditure for Category I patients. These show, for example, that visiting rates per patient rose significantly from the inception of the GMS, from 5.3 visits in 1973 to 6.5 by 1987,[43] and that expenditure by the GMS in 1987 on doctors fees etc. amounted for £42 million, an average of almost £32 per

[41]Tussing (1985) found that in his household sample for 1980, reported GP fees charged to non-GMS patients were on average about 60 per cent higher than those payable under the GMS at the time; there was considerable regional variation around this average (p. 92).
[42]While some cover is provided for out-patient expenses, including on GP visits, only amounts over an annual ceiling are reimbursed by the VHI, and only a small minority of patients would be affected.
[43]Report of the Commission on Health Funding (1989) Table 11.4, p. 208.

patient.[44] For the remainder of the population, only survey-based information is available on visiting rates and expenditiure.

7.3 *Tussing's Research on GP Utilisation*

Tussing's (1985) study was primarily based on such a survey, specially designed for the analysis of health service utilisation and carried out in 1980.[45] The average annual GP visiting rate reported in his sample for persons in Category I was 6.1, compared with only 2.45 for the remainder of the population.[46] Trying to identify the factors producing this differential, and in particular the role of economic incentives facing patients and doctors, forms a main theme of Tussing's research.

Tussing's analysis of the utilisation of GP services by his sample took two distinct lines of approach. The difference in average visiting rates between Category I and the rest of the population clearly reflects many factors, including most obviously the higher proportion of elderly people in Category I. His first set of analyses therefore attempt to control for such differences by estimating regression equations relating GP visiting to a set of variables which might be expected to influence it and on which he had information. These included many of the variables mentioned in Chapter 6, such as the individual's age, sex, socio-economic background, distance from the GP's surgery, and their Entitlement Category. He also included the ratio of GPs to population in the area – GP "density" – and the proportion of the population with Medical Card cover in the area, which he suggested might influence utilisation in a number of ways.

Very briefly, Tussing found that even having controlled for other variables, being in Category I had a significant positive impact on the number of GP visits. For statistical reasons (discussed below) his procedure involved estimating

(i)   a logistic regression in which the dependent variable is whether the person had any GP consultation in the year; and

(ii)   for those who had at least one visit, a regression with the number of GP visits as dependent variable.

These regressions were estimated for the full sample and for various sub-samples, such as males/females, the elderly, children, and mothers only. While variables such as age and sex generally had substantial explanatory power, nonetheless being in Category I still had a significant additional impact on GP visiting in most of the estimated equations, both where the dependent variable was whether there was any GP visit, and – for those with

[44]Report of the Commission on Health Funding (1989), p. 207.
[45]For a description of the survey see Tussing (1985), pp. 20-22.
[46]Tussing (1985), Table 6.2, p. 144.

at least one visit – the number of visits.[47] Category I was also found to have an effect in some cases through its interaction with certain other independent variables.

This could reflect a variety of different factors and has to be interpreted extremely carefully. Even supposing for a moment that financial incentives were responsible for this "Category I effect", this *could* be entirely due to the response of patients – and of doctors in their agency role – to the fact that GP services were free: demand is simply higher because the price is lower. It does not in itself indicate that supplier-induced demand is operating – that doctors are taking advantage of the fact that Category I patients do not pay by "inducing" more visits – though that clearly *could* be contributing to the higher visiting rate for Category I patients.

Tussing therefore tests directly for the presence of induced demand using a different approach, on the basis of the incidence of *return* visits to the GP rather than all visits. His survey included a question about whether, on the most recent occasion a household member was seen by the GP, the doctor arranged for a return visit (or referred the patient to a specialist, hospital out-patient department, or for in-patient admission). The responses showed that on average Category I patients were much more likely to have had a return visit arranged than were other patients: 35 per cent of the most recent GP consultations resulted in a return visit for that Category, compared with 16½ per cent for the rest of the population. (This pattern was not repeated for referrals to specialists or out-patient departments, and was much less marked for referrals for hospital admissions.)

Tussing proceeded to carry out statistical tests for the influence of supplier-induced demand, where the dependant variable was the simple dichotomy: last GP visit did/did not lead to a return visit being arranged. The independent variables included the individual characteristics already mentioned (age, sex etc.) plus a measure of per capita income in the area, the percentage of Medical Card holders in the area, and the number of GPs in proportion to the population of the area – GP "density". The key hypothesis is that when the supply of GPs in an area is high, other things being equal, the income of individual doctors is depressed. They may therefore attempt to generate additional demand by generating return visits. If, having controlled for other factors, the probability of a return visit being arranged is higher where GP density is high, then this is taken to be

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[47]These results are reported in detail in Tussing (1985), Chapter 6 pp. 145-182, and a summary presentation of the variables found to be significant in the various equations is in Table 6.27, p. 182.

evidence of compensatory demand stimulation on the part of doctors. The empirical results presented in Tussing (1985) and also variants in Tussing (1983) and (1986) show significant positive effects of GP density on the likelihood of a return visit being arranged. He concluded that the results strongly supported the hypothesis of compensatory demand stimulation.[48]

Tussing recommended, on the basis of these findings, that fee-for-service be replaced by a capitation system providing free GP services not just for those in Category I but for the entire population. This would improve the pattern of incentives for both doctors and patients, he argued: doctors would no longer have an incentive to stimulate demand, while patients in Category II would no longer have an incentive to avail of resource – intensive out-patient and consultant services instead of GP care. This would be reinforced by the introduction of charges for out-patient/consultant services and in-patient care for Category II, further shifting incentives toward the utilisation of primary care for that group.

It is to be emphasised that Tussing's conclusions with respect to demand inducement apply to the whole population, not just Category I. Whereas his examination of *overall* GP visiting rates highlighted the relatively high visiting rates of Category I patients, his analysis of return visits focused on the relatively high probability of a return visit being arranged where GP density was high. Membership of Category I was found to increase the probability that a return visit was arranged, but this appeared less important in quantitative terms than being in an area with high GP density.[49] As Tussing points out, a higher rate of return visits for Category I in itself need not reflect supplier inducement – it could simply reflect greater (uninduced) demand by patients for whom such visits are free. The relationship between the findings on return visits/inducement and the relatively high *overall* visiting rate for Category I is not in fact elucidated by Tussing. Thus the importance of inducement versus straighforward price

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[48]Tussing (1985) pp. 204-220. The estimated effects of the per capita income and percentage with Medical Card cover in the area variables were also negative. This, Tussing suggests, is because areas with relatively high per capita income or a high percentage with Medical Card cover will have relatively high GP utilisation rates and therefore less need for demand stimulation by doctors, so these findings contribute to his conclusion that demand stimulation is in operation. Where interaction effects are included in the estimated model, the main effects are frequently "incorrectly" signed, but the net effect taking interaction terms into account is as hypothesised. The same is true of GP density itself – the variable itself is sometimes negative, but the net effect including interaction terms is positive. When interaction terms are omitted, GP density is positive and per capita income and the Medical Card ratio negative, all being significant (see Tussing 1983).

[49]See Tussing (1985), Table 6.44, p. 209. Being in Category I raises the probability that a return visit was arranged from 0.20 to 0.34, whereas being in a high GP density area could raise it as high as 0.53 (in the version containing only the statistically significant variables).

effects on demand versus other features of the Category I population not included in his models in producing its high visiting rate is not addressed.

In this study we concentrate on overall GP visiting behaviour rather than return visits, and do not focus directly on the issue of demand inducement by doctors. The discussion in Chapter 6 will have made clear the conceptual and empirical difficulties which arise in attempting to assess the importance of such inducement.[50] These have prevented any consensus emerging about the importance of the phenomenon in the research literature internationally, as can be seen from the recent review by Feldman and Sloan (1988) and critique by Rice and Labelle (1989)). Looking at the impact of a *change* in reimbursement system may shed more light on supplier inducement than further cross-section studies – and this will be possible in the Irish case given the recent change in the GMS. Here, then, the objective will be to relate visiting rates to characteristics of individuals in the sample, and attempt to isolate the possible role of economic incentives. This represents a direct development of Tussing's first, main line of approach. In particular, we assess the effects of including certain key variables not included in his analysis, notably income and health status. Turning to our 1987 sample data, then, an overview of GP visiting behaviour is presented in Section 7.4, leading on to regression-based analysis in Chapter 8.

7.4 *The Pattern of GP Utilisation in 1987*

We begin the analysis of the pattern of GP visiting behaviour in the 1987 sample by looking at the variation in visiting rates by age, sex, income, etc., and particularly across Entitlement Categories. Table 7.1 shows the overall responses of the sample to the question on GP visits in the previous twelve months. About 44 per cent stated they had no such visit, 37 per cent had between one and five, only 2 per cent had more than twenty visits. The overall average was 3.4 visits per person. As discussed in detail in Chapter 4, a comparison of the responses for the Category I population with the GMS records shows some under-representation in the sample. In particular, a higher proportion had (reported) no GP visit in the year in the sample than the GMS records show. The same may or may not be true of the non-Medical Card population, no independent data for this group being available, though if the problem is primarily one of recall it may be equally

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[50]Apart from the conceptual difficulties illuminated in Reinhardt's (1985) discussion, at an empirical level studies using physician density as a key independent variable face the particularly serious problem of multicolinearity between this and other relevant characteristics of the area, such as per capita income.

true of the rest of the population, leaving *relativities* between categories broadly unaffected.

Table 7.1: *Frequency of GP Visits in the Previous Year*

Visits	Percentage of Sample	Average Number of Visits
0	43.7	0
1-5	37.0	2.3
6-10	8.6	7.3
11-20	8.5	13.2
21-50	1.5	29.9
Over 50	0.7	59.4
Total	100.0	3.4

The variation in GP visiting rates across Entitlement Categories is very substantial indeed, as shown in Table 7.2. The average for all persons in Category I is 5.3 visits in the past year, compared with 2.5 for Category II and 1.8 for Category III. The greatest difference is seen to be the considerably higher proportion of Category II/III than Category I with no recorded visits during the year.

Table 7.2: *Frequency of GP Visits by Entitlement Category*

Visits	Percentage of Those in Entitlement Category:			Percentage of all Persons
	I	II	III	
0	33.6	49.4	48.0	43.7
1-5	35.2	36.8	42.3	37.0
6-10	10.6	7.8	6.6	8.6
11-20	16.8	4.6	2.9	8.5
21-50	2.6	1.2	0.2	1.5
Over 50	1.2	0.3	–	0.7
Total	100.0	100.0	100.0	100.0
Average number of visits	5.3	2.5	1.8	3.4

Table 7.3 shows the overall variation of GP visiting across age groups for the sample as a whole. As we would expect, the highest visiting rates are recorded by the elderly and, to a lesser extent, the very young. Only 15 per cent of the 75 and over age group, 25 per cent of the 65-74 group, and 30 per cent of those under 5 years had no visits. Those with the highest

probability of not visiting the GP at all were those aged between 5 and 24. Few of the very young had high frequencies, being concentrated instead in the 1-5 visits category, but many of the elderly had 6 or more visits. The variation in visiting rates by age will clearly contribute to the relatively high average for Entitlement Category I, given the high proportion of elderly in that Category. However, as Table 7.4 shows, while the differences between categories narrow when we disaggregated by age group, they remain substantial except for those aged under 5. For the other three age ranges shown, the average number of visits for Category I is at least twice as great as for Category II. Looking separately at the percentage of persons having a visit and the average number of visits for those who had at least one, the table shows that Category I has a considerably higher proportion having a visit than the other two categories, except for the under 5s. This is most pronounced for the over 65s, where 83 per cent of those in Category I had one or more visits, compared to 67 per cent of those in Category II and 51 per cent of Category III. For those who do have a visit, the average number is also highest for Category I, again with the exception of the under 5 age group.

Table 7.3: *Frequency of GP Visits by Age*

Age Range	Percentage of those in Age Range having						Average Number of Visits
	0	1-5	6-10	11-20	21-50	over 50	
			Visits				
Up to 1 year	29	55	12	3	1	—	3.0
2-4	32	51	11	5	2	—	3.0
5-14	55	36	6	3	1	—	1.9
15-24	61	31	5	2	1	—	1.6
25-34	41	41	11	6	1	1	3.1
35-44	41	41	8	7	2	1	3.4
45-54	44	35	7	11	3	1	4.1
55-64	33	32	11	18	4	2	6.3
65-74	25	30	12	28	3	1	6.4
75 and over	15	28	14	38	4	1	8.6
Total	44	37	9	8	1½	½	3.4

Table 7.4: *GP Visits by Age and Entitlement Category*

		Age				
		Under 5	*5-24*	*25-64*	*65 and over*	*All*
(a)	*Average number of visits:*					
	Category I	3.1	2.6	6.6	8.4	5.3
	II	3.1	1.3	3.2	4.1	2.5
	III	2.1	1.3	2.2	1.4	1.8
	All	3.0	1.7	4.0	7.1	3.4
(b)	*Percentage having a visit:*					
	Category I	68.9	51.5	69.5	82.8	66.4
	II	69.3	37.4	55.4	66.5	50.6
	III	65.3	40.1	59.2	51.0	52.0
	All	68.6	42.1	60.0	78.0	56.2
(c)	*Average for those with a visit:*					
	Category I	4.5	5.1	9.5	10.1	8.0
	II	4.5	3.4	5.8	6.1	5.0
	III	3.2	3.2	3.8	2.7	3.5
	All	4.3	4.0	6.7	9.1	6.0

The quite limited contribution which the difference in age composition makes to the differential between the categories in average GP visiting rates can be illustrated by simple "shift-share" type analysis. We can calculate what the average visiting rate for the categories would be if they each had the same age composition as the population, but retained the age-specific visiting rate for the category in question. In that case, the average visiting rates would be 5.0 for Category I, 2.6 for Category II, and 1.8 for Category III – compared to the actual averages of 5.3, 2.5 and 2.8 respectively. Thus the differentials between the categories would not be much narrower even if there was no difference in age composition.[51]

A substantial differential between males and females in GP visiting rates is also seen in the sample. As generally found elsewhere, female visiting rates are higher – with an average of 3.7 visits in the previous year, compared to 3.1 for males. This differential is at its highest not for the elderly but for those aged between 25-64, where women average 4.5 visits compared with 3.6 for men, with maternity presumably a contributory

[51]Alternatively, the age composition of the categories could be left unchanged but the average age-specific visiting rates for the population applied. This would produce visiting rates of 3.8, 3.2 and 2.9 for the three Categories, again showing that differentials would be much narrower if age composition was the only difference between the categories.

factor. For those aged 65 and over there is the slightly narrower gap between 7.4 visits for women and 6.8 for men. This reflects a higher proportion of women having at least one GP visit, rather than a greater number of visits for those who had at least one – 83 per cent of women aged over 65 and 66 per cent of women aged 25-64 had at least one visit in the year, compared with only 72 per cent and 54 per cent respectively for men.

It is also interesting to look briefly at the variation in visiting rates by the individual's position in the income distribution and social class/socio-economic background. Table 7.5 shows that the average number of visits per person falls steadily as the household's ranking in the income distribution rises. Persons in households situated in the top income decile have an average of only 2 visits, compared with 6 for those in the bottom decile. When household incomes are adjusted for differences in household size and composition, the differentials between the top and bottom of the income distribution narrow, and the relationship between visiting rates and location in the distribution is less direct. Those in the third and fourth deciles now have the highest frequency of visiting, this being where the elderly, with high visiting frequencies, are concentrated.

Table 7.5: *Average GP Visiting Rates by Income Decile and Equivalent Income Decile*

Decile/ Equivalent Decile	Average GP Visits by Decile	Average GP Visits by Equivalent Decile
1	6.2	3.1
2	5.3	4.1
3	5.0	4.3
4	4.1	4.8
5	3.3	3.9
6	3.4	3.3
7	3.0	2.8
8	2.8	2.8
9	2.4	2.3
10	2.0	2.4
All	3.4	3.4

The overall variation in visiting rates by social class, and the extent to which these persist within age groups, is shown in Table 7.6. The average number of GP visits increases steadily going from higher professional/ managerial to unskilled, from 2 to just under 5 visits.

Table 7.6: *Average GP Visiting Rates by Social Class and Age*

Age Range	Social Class						
	Higher Profess- ional	Lower Profess- ional	Other Non- Manual	Skilled Manual	Semi- Skilled Manual	Unskilled Manual	All
Under 5	2.8	2.7	3.1	3.4	2.6	3.1	3.0
5-24	1.3	1.0	1.8	1.7	1.9	2.0	1.7
25-64	2.3	2.3	3.1	4.1	4.7	6.6	3.9
65 and over	4.6	5.0	5.5	7.6	8.6	7.5	7.0
All	2.1	2.1	2.7	3.4	3.8	4.8	3.2

Differences in the age composition of the classes contribute to these sharp class differentials – social class 6 having a higher percentage of elderly people than average. However significant differentials persist within age ranges, the widest being for persons aged between 25-64, where unskilled manual has on average 2½ times the number of visits of the higher professional class. Classifying by broad socio-economic group, farmers, etc. have an average visiting rate similar to that of the other non-manual/skilled manual group, at about 3 per year, well below that of the unskilled manual group but higher than the professional/managerial one.

Looking at the relationship between GP visits and VHI membership, VHI members have fewer visits than non-members on average – 2½ visits compared with 3¾. Those with VHI cover differ in composition in many ways from those without cover, as we saw in Chapter 4. Controlling for age alone, for those aged 25 and over non-members still have significantly more visits, though this is not the case for younger groups. For example, those aged between 25-64 without VHI cover have 4.6 visits on average, compared to 2.8 for members. Non-members are much more likely to be in Category I, of course; if we focus on particular age ranges *within* Entitlement Categories, there is virtually no difference in visiting rates between those with and without VHI cover.

Finally, it is useful to look at the overall relationship between GP visiting rates and reported physical illness/psychological distress. Crude averages indicate a strong relationship, as might be expected: the average number of GP visits for those reporting a serious illness, etc., is 11, compared with 2.9 for those not reporting such an illness. (This relates only to those who were asked the question about illness, so children are not included.) This is for the most part a reflection of differentials within age ranges, with a slightly wider gap between the visiting rate of the ill/not ill for those aged under 65, and a narrower one for the over 65s. Those showing evidence of

psychological distress, with GHQ scores at or over the threshold level of 2, also have considerably higher visiting rates than the rest of the population. They average 7½ visits in the year, compared with 3½ visits for those not showing such distress – narrower than the gap between the physically ill/not ill, but still substantial. This gap – with those above the GHQ threshold having twice as many GP visits as those below it – persists across the age ranges, and is clearly a significant influence to be taken into account in analysing GP visiting patterns.

Clearly, the examination of such bivariate relationships has limited potential in terms of understanding the importance of the various influences on GP visiting. For example, the observed high visiting rate for Category I or for the lower social classes is clearly partly attributable to the higher incidence of reported illness and the higher proportion of elderly people (which are in turn interrelated) in these sub-groups. To explore the influence of particular characteristics while controlling for other variables, we proceed to the multivariate analysis of the sample data, in Chapter 8.

Chapter 8

UTILISATION OF GP SERVICES II

8.1 *Introduction*

In order to assess the importance of the various factors influencing GP utilisation in the 1987 sample, we now employ regression analysis. The range of information available on the characteristics of respondents is wider than in Tussing's study, and this allows his analysis to be developed significantly. Section 8.2 discusses the methodological approach adopted, which involves looking separately at the probability that an individual had any GP visit in the year and, for those who did, at the number of visits. Sections 8.3 and 8.4 then present the results for these two stages of the analysis. Section 8.5 looks at the overall magnitude of the estimated effects. The change in the reimbursement system for GMS doctors in 1989, the scanty evidence available on its impact so far on visiting rates, and the relationship between GP visits and prescriptions are discussed in Section 8.6. Finally, Section 8.7 brings together the main findings and discusses their implications.

8.2 *Analysing the Determinants of GP Utilisation*

In order to isolate the possible impact of economic incentives, it is crucial that other influences on utilisation be satisfactorily taken into account. In this respect, the data available for Tussing's sample had some important limitations. Most importantly, no information on health status or income was obtained. Variables included in Tussing's analysis may then be correlated with these omitted variables and reflect their effects on utilisation – as Tussing clearly recognised. This Entitlement Category, of central interest in the present context, will not just act as a price variable, but also as a proxy for income and health status in his estimated equations.[52] A major objective of our analysis is to see whether the inclusion of these potentially crucial variables significantly alters Tussing's findings with respect to visiting behaviour.

Since the health status variables are available only for those completing individual questionnaires in the survey, the results presented here concentrate on adults. We begin by estimating equations including only variables available to Tussing, and then examine the impact of introducing

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[52]See Tussing (1985), p. 147.

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ones not used by him. The most important of these new variables are physical and psychological health status and household income, but they include a more refined social class variable, and one identifying women who recently had a child.

The form in which the equations relating utilisation to individual characteristics are estimated requires discussion. Simply estimating the relationship between GP visits and the independent variables by OLS could be subject to bias, because there is a clustering of observations on zero – many people had no such visit. This would not be as severe for GP visits – where about 60 per cent of all persons had at least one visit in the last year – as for hospital stays, which were experienced by only about 10 per cent. However, it may none the less be preferable to model separately the determinants of whether an individual had any utilisation, i.e., in this case GP visits, and then, for those who did, the determinants of the number of visits. There may be distinctive elements in each – for example, due to tastes, some individuals may be disposed against having any visits at all, or on the other hand having one visit may make further visits more likely through return visits being arranged.

We therefore follow Tussing in analysing GP utilisation in two steps. For the first step, the dependent variable is a dichotomous one with the value 0 for those with no visits in the previous year and 1 for those with at least one visit. OLS would be inappropriate in this case, since there is no guarantee that the predicted value of the dependent variable would lie between zero and one. A logit regression is therefore employed, where the dependent variable is transformed to

$$\log \frac{p}{1-p}$$

where p is the probability of the event – in this case, of any utilisation.

For the second step, where the dependent variable is the number of GP visits for those who had any, OLS can be used but the problem of sample selection bias must be taken into account. This bias may arise from the exclusion of those without positive utilisation, since the remaining sample is no longer a random one. The relationship between the independent variables – for example, age – and utilisation estimated over this sub-sample may not then reflect the "true" relationship over all observations. The conventional treatment of this problem, following Heckman (1979), is to include in the OLS regression an additional right-hand side variable, the inverse Mills ratio from a probit model predicting the probability of, in this context, having any utilisation.

It is worth mentioning that in his 1985 study Tussing included some interaction terms in his estimated equations. Here we tested a variety of

such terms, for example age and/or sex with Category I membership. With a few exceptions which will be mentioned below, these were not consistently significant and did not affect the overall impact of the key variables of interest. This may reflect the availability of a wider range of explanatory variables in the present study, most importantly the chronic illness measure, which may pick up some of the effects underlying Tussing's interaction terms.[53]

It is also worth emphasising that some of the explanatory variables which will be included in the regression equations are known to be strongly related to one another – in particular, income, social class and Entitlement Category. The relationships are far from perfect however – we have already seen that membership of the different Categories does not correspond all that closely with position in the income distribution, and this is also the case for the social classes. None the less, caution must be exercised in interpreting the results, particularly in attempting to distinguish the effects of these variables. This is of course precisely why we wish to include not only Eligibility Category but also income and social class – because if only Eligibility Category is included it will be likely to reflect income and social class effects.

Including the health status variables together with Entitlement Category (and income) also raises the issue of endogeneity: Category may partly depend on health status. This comes about in two ways, one direct and the other indirect. First, someone who has a serious longstanding illness may be allowed medical card cover even if he or she does not qualify on income groups, at the discretion of the Chief Executive of the area Health Board. As already noted in Chapter 6, though, analysis of the survey suggests that the numbers involved are small. The indirect relationship arises simply because ill-health may influence income – most obviously if it means that someone is out of work – and therefore lead to Category I membership.

For these reasons, undue weight cannot be placed on the ability of the regression relationships to distinguish between the effects of explanatory variables which are themselves interrelated in various ways. Our primary

[53]Tussing also included only one member of each sample household in his analysis, because of concern about correlation between utilisation of members of a particular household, because of similar tastes or cross-infection for example. He then includes, in some variants, a variable measuring utilisation by other household members. However, as he notes, other members' utilisation will be influenced by many of the variables already included in the model. The problems created by the inclusion of this variable, and the loss of information in using only one member per household, appear to outweigh the advantages. The extent of correlation between members – particularly when only adults rather than children are considered, as here – is likely to be limited, and we follow the conventional approach of including all household members.

focus is on the influence of economic incentives as reflected in the Entitlement Category and insurance variables. By looking at the estimated effects of incentives both when including and excluding health status, income and social class measures, we can none the less assess the likelihood that their omission seriously biases the impact of Entitlement Category and insurance.

8.3 *Determinants of the Probability of Having Had a GP Visit*

We begin then with an equation where the dependent variable is whether the person had any GP visits, and the independent variables are only the basic ones employed by Tussing – the individual's age, sex, Entitlement Category, whether they are from a farm household, and whether they have VHI cover. Age and sex are expected here to act partly as proxies for health status, though they may also reflect income and perhaps differences in "tastes" for health care. Entitlement Category acts as a price variable, as a proxy for income and health status, and also reflects any tendency for doctors to induce demand from Category I patients *more* than from other patients (because Category I are less resistant since they do not have to pay). Tussing tested a variety of employment status/ occupation/education variables and found that only being in a farm household (i.e. one where the head was a farmer) was consistently significant. Here we tested both being in a farm household and living in a rural area: the latter was slightly more satisfactory in the estimated equations so the results presented contain a rural rather than farm household variable. He included VHI membership, partly because it could affect price – if expenditure on out-patient care went over the annual ceiling – but also because VHI members might also have greater "taste" for medical care. Tussing tested "GP density", and the percentage with Medical Card cover in the area, but these were for the most part not significant in his results and are not included here.[54] He also included distance from the GPs surgery which we tested and found insignificant and is not included in the results presented.

Table 8.1, col. (1), shows the results when the logit equation predicting the probability of having had a GP visit is estimated with these explanatory variables. The independent variables take the form of dummies, having the value 1 if the person is female, in one of six specified age ranges, in

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[54]GP density was significant in the restricted version of Tussing's logit model for all persons, but with a negative sign – opposite to that hypothesised. It was insignificant in the full model and also for those estimated for population sub-groups. Where return visiting was the dependent variable, in testing supplier-induced demand, GP density had a positive impact, as discussed earlier.

Category I, in Category III, covered by VHI, and in a farm household. The intercept then reflects the omitted attributes – i.e., where the person is male, in the age group under 25, in Entitlement Category II, and in a non-farm household. The results show that the age[55] and sex dummies, being in a rural area, in Category I or in the VHI are significant, while being in Category III is not. Women are more likely than men to have had a visit, and those in rural areas less likely than others, as Tussing found. Being in Entitlement Category I is seen to be a highly significant positive influence on the likelihood of having had a visit, again as in Tussing's results.

Table 8.1: *Results of Logit Model for Probability of Having Had a GP Visit, Adults Only*

Independent Variable	Estimated Coefficients (t statistics in Parentheses)			
	(1)	(2)	(3)	(4)
Intercept	-0.56 (6.99)	-0.40 (3.58)	-0.50 (4.34)	-0.47 (4.64)
Age 25-34	0.53 (5.78)	0.42 (4.39)	0.36 (3.73)	0.37 (3.84)
Age 35-44	0.50 (5.30)	0.42 (4.32)	0.32 (3.22)	0.33 (3.30)
Age 45-54	0.43 (4.61)	0.42 (4.35)	0.20 (1.98)	0.20 (2.03)
Age 55-64	0.77 (7.72)	0.76 (7.44)	0.43 (4.04)	0.43 (4.06)
Age 65-74	1.03 (8.96)	1.01 (8.52)	0.68 (5.52)	0.67 (5.50)
Age 75+	1.51 (8.08)	1.47 (7.79)	1.17 (5.99)	1.16 (5.94)
Female	0.37 (6.98)	0.32 (5.94)	0.35 (6.31)	0.35 (6.21)
Rural Area	-0.23 (4.19)	-0.25 (4.51)	-0.20 (3.49)	-0.19 (3.41)
Category I	0.75 (11.32)	0.69 (9.96)	0.56 (7.80)	0.56 (7.92)
Category III	0.10 (1.18)	0.21 (2.24)	0.28 (2.88)	0.26 (2.80)

Table 8.1 *(continued)*

[55]Tussing entered age and age squared as variables, rather than employing category dummies and found a positive coefficient on age and a negative one on age squared. This reflected the U-shaped relationship between age and utilisation found when children are included, because the very young have high visiting rates. A similar pattern is shown by the age dummies in our results when children are included.

Table 8.1 *(continued)*

| Independent Variable | Estimated Coefficients (t statistics in Parentheses) | | | |
	(1)	*(2)*	*(3)*	*(4)*
VHI	0.23	0.29	0.32	0.30
	(3.43)	(4.00)	(4.29)	(4.24)
Recent Mother	–	1.70	1.70	1.71
		(6.26)	(6.25)	(6.27)
Social Class:				
Higher Professional	–	-0.08	-0.05	–
		(0.74)	(0.48)	–
Lower Professional	–	-0.04	-0.01	–
		(0.37)	(0.08)	
Skilled Manual	–	0.14	0.12	–
		(1.69)	(1.47)	
Semi-skilled Manual	–	0.04	0.01	–
		(0.42)	(0.09)	
Unskilled Manual	–	0.02	-0.07	–
		(0.16)	(0.63)	
Income	–	-0.001	-0.001	-0.001
		(3.41)	(3.32)	(3.41)
Ill	–	–	1.88	1.88
			(16.94)	(16.93)
Stress	–	–	0.26	0.26
			(3.06)	(3.10)
Number of Observations	6332	6332	6332	6332
% of cases correctly predicted	63.4	63.2	64.8	64.6
Log likelihood	-4057.3	-4018.0	-3798.3	-3801.0
Chi-squared	439.1	517.8	957.2	951.8

We now add further explanatory variables to the equation. First, household disposable income and social class are entered, the latter as dummy variables. Since maternity is likely to be associated with extra utilisation, a dummy variable identifying women who had a child within the last year is also included. The results are shown in Col. (2). None of the social class variables proved significant but income did, with a negative impact, while "recent mother" had the expected positive effect. Category III membership is now also significant, and VHI membership remains significant. The coefficient on Category I has fallen from 0.75 to 0.69 with the inclusion of the additional variables, but remains highly significant.

We now add to the equation the measures of physical and psychological health status, in the form of a dummy variables taking the value 1 when the individual stated that he/she had a "major illness, physical disability or infirmity", or was above the GHQ threshold score. Column (3) shows the results. The health status variables are clearly highly significant, and the explanatory power of the equation is substantially increased. Their inclusion reduces the size of many of the other coefficients. We are particularly interested in the coefficient on the Category I variable, which now falls to 0.56. None the less, the impact of being in Category I is still substantial and highly significant. The positive estimated effect of being a VHI member or in Category III also remains. Col. (4) shows the results when the insignificant social class variables are dropped from the equation. The other variables remain largely unaffected, and the coefficient on Category 1 is still 0.56.

The overall effect of including the additional explanatory variables available in this study – social class, "recent mother", income and physical and psychological health status – on the estimated model may be summarised. The additional variables add considerably to the explanatory power of the model, and the measure of physical health status is clearly the most important. As far as the impact of being in Category I is concerned, there remains a highly significant positive effect on the probability of having had a GP visit in the year. The coefficient on this variable is reduced – from 0.75 to 0.56 – but it remains highly significant and the effect is substantial. Interestingly, VHI and Category III membership are also significant even when income and social class are included. (Tussing also found both VHI membership and Category III to be often significant in the corresponding equations.)

The size of these estimated effects is worth illustrating. The interpretation of the coefficients themselves is not straightforward, since in the logit model the dependent variable is log $(\%_{-p})$. The impact of each independent variable thus varies with the values taken by all the other explanatory variables. One approach often employed is to calculate the impact of the variable in which one is particularly interested setting all the other explanatory variables at specified values. For dichotomous variables this involves specifying whether the individual is male or female, the age group, etc. For continuous variables (such as income) the mean level in the sample is often used. Table 8.2 shows the estimated impact which being in Category I would have on the probability of having had a GP visit, for a range of individuals, calculated from the results shown in Col. (4) of Table 8.1. For example, for a man aged under 25, not in Category I or the top two social classes and without VHI cover, with average household income, and

not ill or above the GHQ threshold, the equation predicts that the probability of having had a GP visit in the previous twelve months is 0.35. For a similar case but with Medical Card cover, the predicted probability rises to 0.48. For a woman aged 60 but of the same social class and not ill etc., the probabilities are 0.54 if not in Category I or 0.67 if in that Category. Where the probability of having had a visit is already relatively high because of age and/or illness, though, the difference made by Category I membership is much less. For a woman aged 60 etc. but having physical illness, for example, the table shows that having a Medical Card increases the probability only from 0.88 to 0.93.[56]

Table 8.2: *Predicted Impact of Different Variables on the Probability of Having Had a GP Visit*

(1) baseline = man aged < 25, not in Category I, Social Class 3, not ill.
(2) baseline = woman aged 60, not in Category I, Social Class 3, not ill.
(3) baseline = woman aged 60, not in Category I, Social Class 3, ill.

	(1)	(2)	(3)
Baseline	0.35	0.54	0.88
Age 50	0.40	0.48	0.85
Age 70	0.51	0.60	0.90
Female	0.43	–	–
Male	–	0.45	0.84
Ill	0.78	0.88	–
Stress	0.41	0.60	0.90
Rural	0.31	0.49	0.86
Category I	0.48	0.67	0.93
VHI	0.40	0.61	0.91

[56]This pattern is produced by the nature of the logit model itself, though it also appears plausible in the present context. The effect of a unit change in independent variable X on the predicted probability P using the logit model may be approximated by

$$DP = b[P (1-P)]$$

where b is the estimated coefficient on X (see Pindyck and Rubinfeld (1976), p. 253). Thus the change in the probability is a function of the probability itself. Since $P(1-P)$ takes its maximum value where $P = 0.5$, the impact of a change in an independent variable will be greatest around that point. (This arises because the logit model is based on the cumulative logistic distribution, and the slope of that distribution is greatest at $P = 0.5$.) This property appears desirable in the current application, as the examples in Table 8.2 illustrate – for example, a woman aged 60 and having a serious illness is so likely to have had a GP visit that membership of Category I would not be expected to greatly increase that probability.

The magnitudes of the predicted effects of the other explanatory variables are also of interest, and are illustrated in Table 8.2. These show *inter alia* the very substantial impact which physical illness has on the probability of having had a visit. Being above the GHQ threshold in terms of psychological distress also has a substantial effect, though much less than physical illness. The probability is considerably higher for women than for men, the difference being substantial compared to, for example, the negative impact of living in a rural household. The effect of being in the VHI is much smaller than that of being in Category I, but none the less noticeable. Finally, for a woman, having had a child in the past twelve months very substantially increases the probability of having had a GP visit.

8.4 *Determinants of the Number of GP Visits*

We now proceed to the second stage of the analysis, focusing on the number of GP visits for those who had at least one visit. This involves an OLS regression, with the number of GP visits as dependent variable, and including correction for sample selection bias. This correction involves including as an additional independent variable the inverse Mills ratio from a probit equation predicting the probability of having had a visit (using the same variables in the probit as the OLS equation).

Results from the estimation of this equation for those adults who had at least one visit are shown in Table 8.3. Col. (1) shows the results when only the age, sex, Entitlement Category, rural household and VHI variables are included, i.e., the main ones employed by Tussing. The equation performs very poorly and few of the variables attain conventional significance levels – even age is not significant. That is what Tussing also found for this stage of the analysis, and he suggests multicolinearity may be a factor. Excluding some variables, he did find VHI and Category I membership to be significant, though these results were not particularly robust when the equation was estimated over sub-groups (such as women, the elderly, etc.).

When the income, social class and "recent mother" variables are included in this equation, most variables remain insignificant, as shown in Col.(2). (If the sex dummy variable – which is insignificant – is excluded, most of the other variables become significant with the expected sign, but the explanatory power of the equation remains very low, and the inclusion of the extra variables does not make a great deal of difference.) When the two health status variables are included in the analysis, though, the results are a good deal more satisfactory, as Col. (3) shows. Most variables are significant with expected signs, and the explanatory power of the equation is considerably higher. The female, VHI and Category III variables are

Table 8.3: *Regression of Annual Number of GP Visits on Selected Independent Variables, Adults with at least One Visit Only*

Independent Variable	Estimated Coefficients (t statistics)			
	(1)	(2)	(3)	(4)
Intercept	14.28 (8.05)	12.44 (1.63)	0.50 (0.17)	2.46 (1.65)
Age 25-34	-1.11 (1.80)	-0.73 (0.52)	0.60 (0.90)	0.32 (0.57)
Age 35-44	-0.23 (0.37)	0.07 (0.05)	1.30 (1.94)	0.96 (1.63)
Age 45-54	0.92 (1.52)	1.23 (0.85)	1.40 (2.27)	1.17 (2.03)
Age 55-64	0.46 (0.61)	0.87 (0.37)	1.86 (2.47)	1.52 (2.42)
Age 65-74	-0.88 (1.05)	-0.27 (0.09)	1.69 (1.84)	1.25 (1.76)
Age 75 and over	-0.71 (0.62)	-0.02 (0.01)	3.34 (2.74)	2.80 (3.04)
Female	-1.15 (3.21)	-1.04 (1.12)	0.41 (0.94)	–
Rural	-0.05 (0.16)	-0.12 (0.16)	-0.69 (2.09)	-0.60 (2.03)
Category I	0.19 (0.35)	0.001 (0.01)	1.94 (3.00)	1.62 (4.04)
Category III	-1.94 (4.13)	-1.62 (2.11)	-0.38 (0.70)	–
VHI	-1.89 (4.78)	-1.20 (1.29)	0.32 (0.66)	–
Recent Mother	–	0.13 (0.04)	5.27 (3.50)	4.58 (4.28)
Social Class				
1 Higher professional	–	-1.04 (1.72)	-1.09 (2.01)	-1.13 (2.15)
2 Lower professional	–	-0.61 (1.66)	-0.67 (1.38)	-0.73 (1.50)
4 Skilled manual	–	0.71 (1.25)	1.07 (2.57)	0.98 (2.44)
5 Semi-skilled manual	–	1.16 (2.47)	1.07 (2.47)	1.04 (2.42)
6 Unskilled manual	–	2.11 (4.11)	1.53 (3.19)	1.53 (3.21)

Table 8.3 *(Continued)*

| Independent | Estimated Coefficients (t statistics) | | | |
Variable	*(1)*	*(2)*	*(3)*	*(4)*
Income	–	0.001	-0.002	-0.001
		(0.28)	(1.42)	(1.70)
Ill	–	–	7.15	6.33
			(5.03)	(8.28)
Stress	–	–	2.56	2.44
			(6.13)	(6.64)
Inverse Mills Ratio	-9.82	-8.79	2.74	0.98
	(5.76)	(1.10)	(0.92)	(0.64)
Number of observations	3760	3760	3760	3760
$\overline{R}^2$	0.08	0.08	0.17	0.18
F	25.45	17.93	38.87	45.23

insignificant, and when these are dropped, the resulting preferred model is as shown in Col. (4).

It is worth emphasising how little success was possible with the variables available to Tussing in identifying determinants of the number of GP visits. This mirrored Tussing's own results, where even age generally failed to show up as a significant influence. Here, with the inclusion of the health status variables in particular, significant age, social class, and Category I variables are identified.

The age effects look reasonable, and the social class effects also show the expected pattern, with the professional, etc., classes having negative coefficients, and the three manual classes positive ones which increase from skilled to unskilled.

Despite these significant effects for the lower social classes, Category I membership is seen to be a significant positive influence on the number of GP visits, with a coefficient of 1.38 – that is, given two individuals in the sample who are identical in respect of other characteristics (included in the model) each of whom has had at least one GP visit, someone in Category I is predicted to have almost 1½ "extra" visits compared to someone outside that Category. Inclusion of an interaction term for chronic illness and Category I membership suggests that this effect is most pronounced for those reporting such illness. The independent social class effects could arise from a number of sources, the most obvious being greater morbidity in lower social classes over and above that reflected in

the crude measures of physical and psychological health status available here.

8.5 Overall Magnitude of Estimated Effects

It is difficult to summarise the magnitude of the estimated effects taking the two stages of the estimation procedure together, because the first stage involves a logit model, and the impact of one explanatory variable then depends on the values taken by all the others. For illustrative purposes, Table 8.4 presents the results of a straightforward OLS regression with the number of GP visits as dependent variable, estimated over all adults in the sample (whether they had a GP visit or not). A comparison of the results with various permutations derived from the 2-stage results suggests that they give a reasonably representative picture. Col. (1) again shows the results when only the variables available to Tussing are included. Category I is highly significant, with a coefficient of almost 3. Category III is also significant, with a negative sign, and the age, sex and rural dummies are significant with the expected signs.

Table 8.4: *Regression of Annual Number of GP Visits on Selected Independent Variables, All Adults*

	(1) Coefficient (t statistic)	(2) Coefficient (t statistic)
Intercept		
Intercept	1.57 (5.56)	0.88 (2.51)
Age 25-34	1.04 (3.20)	0.45 (1.48)
Age 35-44	1.35 (4.06)	0.75 (2.38)
Age 45-54	1.83 (5.46)	0.82 (2.58)
Age 55-64	2.85 (8.19)	1.27 (3.84)
Age 65-74	2.88 (7.47)	1.31 (3.56)
Age 75+	4.67 (8.65)	3.04 (5.98)
Female	0.61 (3.30)	0.49 (2.82)
Rural	-0.77 (4.10)	-0.48 (2.77)
Category I	2.91 (12.84)	1.60 (7.27)
Category III	-0.77 (2.48)	-0.10 (0.32)

Table 8.4 *(continued)*

Table 8.4: *(Continued)*

Intercept	(1) Coefficient (t statistic)	(2) Coefficient (t statistic)
VHI	-0.35 (1.42)	0.23 (0.99)
Recent Mother		4.83 (8.23)
Higher professional	–	-0.67 (1.95)
Lower professional	–	-0.33 (1.08)
Skilled manual	–	0.71 (2.76)
Semi-skilled manual	–	0.65 (2.39)
Unskilled manual	–	0.99 (3.16)
Income	–	-0.001 (1.75)
Ill	–	7.02 (28.96)
Stress	–	1.92 (7.94)
Number of observations	6332	6332
$\bar{R}^2$	0.08	0.22
Durbin-Watson	1.85	1.87

Col. (2) then shows the full model when the additional health status, income, social class and "recent mother" variables are included. Category I is still highly significant but its coefficient has fallen to 1.6. Category III and VHI membership are now insignificant, while most of the social class dummies are significant, as is (barely) income. Physical health status and psychological distress are of course highly significant, with substantial coefficients. The results then convey both the broad magnitude of the remaining effect of being in Category I – which is to increase the predicted number of GP visits in the year by 1.6, having controlled for all the other included influences – and the extent to which that effect is overstated when the additional variables are omitted. The size of the other estimated effects is also of interest. Being in a rural area, for example, reduces the predicted number of visits by 0.5, while being in the unskilled manual class increases it by 1. Being above the GHQ threshold score increases the predicted

number of GP visits by almost 2 – the implications of that relationship, particularly in the context of unemployment and its impact on psychological distress, are considered in Whelan, *et al.* (1991).

8.6 *The New GMS Reimbursement System for GPs and GMS Drug*

Finally, the limited information so far available on the impact of the change in the reimbursement for GPs treating Category I patients in 1989, and the related issue of drugs expenditure in the GMS, may be considered. From April 1989, GPs treating Category I patients have been reimbursed by the GMS primarily on the basis of capitation – the number of Category I patients on each doctor's list – rather than fee-for-service. The demographic and geographic composition of the list is taken into account, and there are also fees for special items of service. Since GPs are no longer remunerated for each visit, the incentive structure is quite different, and there is much less scope or incentive for supplier inducement. Over time, this change in the system should offer a more satisfactory basis for the assessment of the role of demand versus supply-side factors in influencing the GP visiting behaviour of Category I than the analysis of the fee-for-service system itself could provide. It is too early at this stage to carry out such an assessment even if the information required were available, since behaviour would be expected to adapt over a period rather than immediately, but it may none the less be valuable to look at what is known about visiting behaviour under the new system. In this context it is also worth touching on what has become a central concern in the GMS, namely expenditure on prescription medicines – which are available free to Category I patients.

Unfortunately, whereas detailed administrative data on visiting rates was collected under the fee-for-service system since it was required to calculate reimbursement, such data are no longer gathered under the new system. It is therefore necessary to attempt to infer what has happened to visiting rates from what is available from administrative records, and from survey-based information. The GMS continues to gather detailed information on prescriptions and drug expenditure, and this may be of value in assessing likely trends in visiting – as well as being of great interest in itself. Expenditure on drugs by the GMS rose from £92.7m. in 1988 to £107.4m. in 1989, an increase of 15.8 per cent. Detailed analysis of GMS drugs expenditure by Professor J. Sexton, in the context of the review of the new GMS scheme by the Department of Health and the Irish Medical Organisation, indicates that there was a *volume* increase in prescribing of about 11 per cent per annum in both 1988 and 1989, with some evidence of a lower rate of increase during 1990. Given the strong relationship

between prescriptions and GP visits – which will be discussed shortly – this does not suggest that the change in GP reimbursement system was associated with a significant decline in visiting rates, during 1989 at least.

Evidence from a household survey carried out in Spring 1990 would point in the same direction. A range of questions about health service utilisation and attitudes to the health services were included as a supplement in several waves of the regular Consumer Survey carried out for the EC, as part of a study carried out for the Department of Health. Full details on the surveys and the results are given in Murray (1991). Here, we may simply refer to the GP visiting behaviour reported by respondents in Entitlement Category I. The responses were very similar indeed to those from the 1987 survey analysed in detail in the present study. The average number of GP visits reported in the 1990 survey for those in Category I was 5.2, compared with an average of 5.4 in 1987 – a difference which would not be statistically significant in the light of sampling error etc. As Table 8.5 shows, the distribution by frequency of visit was remarkably similar in the two surveys, with almost identical percentages having 0, 1-5, 6-10 or more than 10 visits.

Table 8.5: *GP Visits for Category I, 1987 and 1990 Surveys*

	1987 Survey	1990 Survey
	Per cent	
0 visits	33	34
1-5 visits	35	35
6-10 visits	11	10
> 10 visits	21	21
	100	100
Average number of visits	5.4	5.2

Source: 1987 Survey, see Chapter 7; 1990 Survey, Murray (1991).

The evidence available so far does not indicate, then, that substantial changes in visiting patterns for Category I patients immediately followed the change in GP reimbursement system. This would hardly be surprising, since such changes would be likely to occur only over a considerable period of time. It should be possible in the future to analyse GP visiting under the new system to see if significant differences can be identified; since administrative data on visiting is no longer being collected, this would have to rely on survey data, and the 1987 survey analysed here could then serve as a benchmark for comparison.

This brings us to the issue of GMS drugs expenditure itself. This rose rapidly through the 1980s, considerably more than expenditure on fees for GPs, and now accounts for over two-thirds of total GMS spending. One of the main objectives of the change in the reimbursement system for GMS doctors was to control expenditure not so much on GPs, but through savings on drugs spending. It was envisaged that such savings would come about both through the impact of the new system on visiting rates and thus on the volume of prescriptions, and through co-operation from GPs in the control of prescribing and costs which formed part of the agreement between doctors and the Department of Health. A Review Body set up to examine the operation of the new payments system has recommended the introduction of a co-ordinated strategy including the introduction of "indicative drug budgets" for doctors to control drug costs. The control of drugs expenditure by providing incentives for doctors raises a variety of issues which will not be dealt with here. Using the data from our 1987 survey, though, we can explore the other main channel through which drugs expenditure was to be influenced, the relationship between GP visiting rates and prescriptions.

Tussing (1985) gathered data on the number of prescriptions in the previous year for his 1980 sample, and analysed the responses by estimating the two stage model applied to GP visiting with the number of GP visits now included as an explanatory variable. The number of visits proved to be a significant influence on both the probability of having had a prescription, and on the number of prescriptions among those who had at least one. Membership of Category I was also significant in the first stage, but not in predicting the number of prescriptions for those who had some. Once again, though, the absence of information on health status, and perhaps also on income, could have biased his results.

The two stage model was therefore estimated for prescriptions reported by our 1987 sample, using the same independent variables as in the analysis of GP visits together with the number of GP visits itself. The results confirmed Tussing's findings on the strength of the relationship between GP visits and prescriptions. Interestingly, Category I membership was now a significant influence both on the probability of having had a prescription and on the number of prescriptions, having controlled for number of GP visits and for health status etc. The broad magnitude of the overall effects may again usefully be illustrated by the OLS results for the whole sample, shown in Table 8.6. The relationship between number of GP visits and number of prescriptions is clearly very strong indeed, which is hardly surprising given that at the time of the survey repeat prescriptions were not available. Age, sex, location and health status are also seen to be significant,

whereas income and social class were not. Dropping the insignificant variables, col. (2) shows that for a *given* number of GP visits, a person in Category I is predicted to have almost 1 extra prescription in the year, controlling for age, health status, etc.

Table 8.6: *Regression of Number of Prescriptions on Selected Independent Variables*

Independent Variable	(1) Coefficient (t statistic)	(2) Coefficient (t statistic)
Intercept	0.21 (0.95)	0.26 (1.64)
Age 25-34	0.13 (0.79)	–
Age 35-44	0.16 (0.94)	–
Age 45-54	0.28 (1.69)	0.18 (1.48)
Age 55-64	0.69 (3.95)	0.57 (4.25)
Age 65-74	1.41 (7.25)	1.27 (8.17)
Age 75+	1.86 (6.92)	1.72 (7.13)
Female	0.37 (4.05)	0.35 (3.84)
Rural	-0.43 (2.98)	-0.40 (2.75)
Category I	0.76 (6.51)	0.84 (8.17)
Category III	0.16 (1.02)	–
VHI	-0.17 (1.34)	–
Recent Mother	-1.37 (4.40)	-1.34 (4.33)

Table 8.6: *(Continued)*

Independent Variable		(1) Coefficient (t statistic)	(2) Coefficient (t statistic)
Social Class	higher professional	-0.10 (0.54)	–
	lower professional	-0.002 (0.01)	–
	skilled manual	0.22 (1.60)	
	semi-skilled manual	-0.20 (1.41)	–
	unskilled manual	0.12 (0.73)	–
Income		-0.0001 (0.46)	–
Ill		1.36 (10.12)	1.38 (10.22)
Stress		0.06 (0.47)	–
Not near chemist		-0.25 (1.71)	-0.25 (1.72)
GP visits		0.55 (83.58)	0.56 (84.51)
Number of observations		6332	6332
$\bar{R}^2$		0.64	0.64
Durbin-Watson 1.91 1.91			

In our 1987 sample, adults in Category I had an average of 5.6 prescriptions in the last year, compared with less than 2 for the remainder of the population. The results clearly show that although this is related to the age and sex composition of Category I, it also arises because

(i) people in Category I had more GP visits, having controlled for age, sex, social class etc., than others, and

(ii) people in Category I had more prescriptions per GP visit than others, again having taken age, sex etc. into account.

This is the case when our measure of health status is included: while this measure is crude, it does suggest that unobserved differences in health do not provide the full explanation for Category I's relatively high prescribing rate.

The magnitude of the effects is again difficult to summarise given the non-linear nature of the probit model. The OLS regression for the entire sample suggests that *each* GP visit increases the predicted number of prescriptions by 0.6 while membership of Category I – for a given number of GP visits – further increases the predicted number of prescriptions by 0.8. This appears to reflect the overall magnitude of the effects in the more complex two-stage model quite well. In attempting to control GMS drugs expenditure, then, both visiting behaviour and prescribing behaviour appear to provide scope for intervention – which may of course seek to influence patients' as well as doctors' behaviour.

8.7 *Conclusions*

This chapter has presented a detailed analysis of the influences on the GP visiting behaviour of the individuals in the ESRI sample. The results are of particular interest in that it has been possible to develop Tussing's analysis in a number of directions. New information on potentially important socio-economic influences on behaviour, namely household income and more refined measures of social class, were employed. In addition, and crucially, measures of physical health status and psychological distress were now available.

The results showed that these new variables added very substantially to the explanatory power of the models fitted to explain individual visiting behaviour. This allowed the effects of key variables of interest, in particular membership of Entitlement Category I, to be identified with much greater confidence. The estimation procedure looked separately at the determinants of the probability of having at least one GP visit, and – for those who had at least one – the number of visits in the year. Membership of Category I was estimated to have a significant positive impact on the probability of having had a visit. This corresponded to Tussing's finding, though the size of the effect was reduced by the inclusion of the additional explanatory variables. The results presented here also showed Category I membership having a significant direct effect on the number of GP visits in the year for those who had any, and this effect was more robust than in Tussing's corresponding analyses.

The results thus serve to confirm and strengthen Tussing's finding that membership of Category I has a significant positive effect on GP visiting – although the size of that effect is smaller than his results suggested, because Category I was indeed partly reflecting income, social class and health status differences in his analysis (a possibility he clearly recognised). How then is this Category I effect to be interpreted? *Even if* it entirely reflected the fact that people in Category I obtain free GP care whereas others do

not, the effect could be produced by straightforward demand-side responses to price, by (greater) inducement of demand by suppliers, or by a combination of both. The Category I effect in our estimated equations clearly allows *scope* for supplier-induced demand, but in itself is not evidence that such a phenomenon is in operation. Arguably, analysis of household survey based data on utilisation can provide only a weak foundation for identification of such provider behaviour. Monitoring the way in which the new GMS capitation system evolves offers an alternative and probably more fruitful approach to analysis of provider behaviour. The analysis of the 1987 survey data has however allowed us to establish more firmly the extent to which Category I did actually have relatively high visiting rates before the change in the GP reimbursement system, controlling for a wide range of other factors. This is of considerable interest in itself, and can also serve as a benchmark against which utilisation patterns under the new GMS system can be assessed.

This is not to assert that the "Category I" effect identified in our analysis can necessarily be interpreted as entirely reflecting economic incentives. There may be differences between persons in Category I and the rest of the population *other than* the price they face for GP visits, which are not reflected by the variables in our model. In particular, given the relatively crude measures of health status available, differences in health (for example, variations in severity of illness among those reporting physical ill-health) may be contributing to the relatively high visiting rate for Category I. However, it does now seem rather unlikely that factors such as higher morbidity or income/social class effects *fully* explain the apparent impact of Category I membership.

The very limited evidence available so far does not suggest that the change in the GMS reimbursement system has produced a substantial change in GP visiting rates, but any such effect would probably take place over a period of years in any case. Analysis of the 1987 survey also showed the strength of the relationship between GP visits and prescriptions. The relatively high number of prescriptions for people in Category I was associated with their high visiting rate, but a higher than average number of prescriptions having controlled for GP visits was also found.

Chapter 9

UTILISATION OF HOSPITAL SERVICES

9.1 *Introduction*

Having looked at GP visiting patterns in some detail, we now turn to hospital-based health services. In the survey on which this study is primarily based, information was obtained on the utilisation by the sample of three distinct types of service provided by hospitals, viz.
- visits to out-patient clinics
- visits for day surgery (where a surgical procedure is carried out without an overnight stay in hospital), and
- in-patient hospital stays.

We look in detail at out-patient visits and then in-patient stays, which can be seen as the logical progression along the spectrum from GP visits to in-patient treatment. The numbers involved in the case of day surgery do not support such detailed analysis, but reference will be made to salient features of the pattern shown.

9.2 *Out-patient Visits*

Tussing (1985) analysed out-patient visits, and other forms of utilisation, using the two-stage procedure applied to GP visits. The main explanatory variables he used were the same as in explaining GP visits, but the number of GP visits itself, and the number of specialist visits, were now included as additional explanatory variables. These he saw as reflecting both the likelihood of being referred by the GP/specialist, and also indirectly health status itself.

In his results, the number of GP/specialist visits were key predictors of both the likelihood of having any out-patient visit and the number of out-patient visits for those who had one. The number of GP and of specialist visits were the main variables found to be significant in the logit regression explaining the likelihood of having had a visit. (A dummy variable for whether there was a large hospital within 10 miles was also significant.) In the OLS regression explaining the number of out-patient visits, it was the number of specialist visits which was consistently significant. Age and sex were *not* found to be significant explanatory variables in either the logit[57] or

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[57]Sex did form a component of the significant interaction term in the logit equation: being a woman in Category I and without VHI cover reduced the likelihood of having had an outpatient visit (Tussing 1985, p. 231).

OLS stages of the estimation procedure. Being in Entitlement Category I did appear to positively affect the number of out-patient visits for those who had any, though the results were not very robust.[58] Being in Category III or having VHI cover was not significant.[59]

We first look at the overall pattern of out-patient visiting behaviour in our 1987 sample, and then estimate regression models, as was done above for GP visiting. For the whole sample – i.e., including children – about 10 per cent of persons visited an out-patient clinic in the previous twelve months. For those who did so, the average number of visits was 4. About 35 per cent of those with a visit had only one, 32 per cent had 2 or 3, 27 per cent had between 4 and 10, and 7 per cent had more than 10 visits.

As Table 9.1 shows, the elderly were most likely to have had an out-patient visit. About 13 per cent of those aged 65 or over had a visit, compared with 11 per cent of those aged 25-64 and only 7 per cent of those aged 5-24. The very young – aged under 5 – were more likely to have had a visit than those between 5-24 years of age, 10 per cent having had one. For persons who did have at least one visit, there was some tendency for the average number of visits to increase with age. There was little difference between men and women within age ranges in either the percentage having a visit or the average number of visits.

Table 9.1: *Out-patient Visits by Age Group*

Age	% Having had A Visit	Average Number of Visits for These
Under 5	9.9	3.7
5-24	6.9	3.9
25-64	11.2	4.4
65 and over	12.9	4.5
All	9.7	4.2

Persons in Entitlement Category I had more out-patient visits than the remainder of the population. About 12 per cent of those in Category I had a visit, and the average number of visits for these individuals was 5. These compare with 9 per cent/3.6 for Category II and 7 per cent/3.7 for

[58]The Category I variable is significant in the OLS equation when all the other independent variables except other household members' utilisation are included. However it did not pass Tussing's more stringent test intended to take heteroscedasticity into account, and failed to reach significance when other household members' utilisation was included (see his Table 7.9, p. 234).

[59]The region's ratio of Medical Card holders was significant at conventional levels but did not pass Tussing's more stringent test adjusted for heteroscedasticity.

Category III. Table 9.2 shows the corresponding figures *within* age ranges. Marked differences between Category I and the rest of the population remain. Within each age range, a higher percentage of those in Category I had an out-patient visit, and their average number of visits was also relatively high. There was also some difference between Categories II and III, the latter being slightly less likely to have had a visit.

Table 9.2: *Out-patient Visits by Entitlement Category and Age*

	% Having Had a Visit			Average Number of Visits for These		
Age	Cat. I	II	III	Cat. I	II	III
Under 5	11.3	9.5	8.3	4.8	3.2	2.3
5-24	9.8	5.7	5.7	5.0	2.9	3.7
25-64	13.0	11.4	7.7	5.2	4.0	4.1
65 or over	14.2	9.8	8.1	4.8	3.5	3.0
All	12.0	9.0	6.9	5.0	3.6	3.7

Classifying persons on the basis of the income of their households, those towards the bottom of the income distribution were more likely to have had an out-patient visit than those towards the top. This remains the case when equivalent income is used, though the differences are much less marked. Categorising by socio-economic group/social class, there are two striking features. Those from a farming background were less likely to have had an out-patient visit than others, and those in professional/managerial groups had relatively few visits.

In order to explore the relationship underlying this pattern, regression models similar to Tussing's are now estimated on the basis of the 1987 sample data, using the additional information available in that sample and employing the two-stage estimation procedure as before. While the number of out-patient visits in the year was obtained for all household members, the physical and psychological health status measures were only sought for adults responding to individual questionnaires. We, therefore, again confine attention to the 6,332 adults for whom that information, plus utilisation and all the other variables to be included in the model, were obtained. Of these, 479 or 7½ per cent had at least one out-patient visit in the previous year.

We begin with the logit model, where the dependent variable is 0 if the individual had no outpatient visit and 1 if he/she had at least one. Table 9.3 shows estimation results with different sets of independent variables. Column (1) includes only the variables available to Tussing: age, sex, rural location, Entitlement Category/VHI membership, GP visits and whether

the household is near a hospital. (No data on number of specialist consultations was obtained in our survey, so although used by Tussing it is not included here.) The results for this set of explanatory variables indicate that a number of the age dummies, and being in a farm household, reach or approach significance. However it is the number of GP visits which is highly significant, as in Tussing's results.

Table 9.3: *Results of Logit Model for Probability of Having Had An Out-patients Visit, Adults Only*

| | Estimated Coefficients (t statistics) | | |
	(1)	(2)	(3)
Intercept	-2.98 (17.92)	-2.64 (12.44)	-2.48 (17.95)
Age 25-34	0.56 (3.44)	0.34 (2.07)	0.25 (2.34)
Age 35-44	0.29 (1.71)	0.15 (0.83)	– –
Age 45-54	0.32 (1.90)	0.11 (0.62)	– –
Age 55-64	0.39 (2.25)	0.08 (0.44)	– –
Age 65-74	0.53 (2.90)	0.18 (0.96)	– –
Age 75+	0.15 (0.59)	-0.18 (0.68)	–
Female	0.15 (1.77)	0.10 (1.19)	–
Rural	-0.35 (3.75)	-0.36 (3.77)	-0.38 (4.01)
Category I	0.10 (0.94)	0.02 (0.21)	0.01 (0.06)
Category III	-0.37 (2.34)	-0.32 (1.89)	-0.26 (1.62)
VHI	0.10 (0.88)	0.07 (0.62)	–
GP visits	0.06 (12.87)	0.04 (8.05)	0.04 (8.32)
Hospital nearby[a]	0.35 (3.14)	0.34 (3.05)	0.34 (3.05)
Recent mother	–	1.12 (5.33)	1.16 (5.70)

Table 9.3: *(Continued)*

| | Estimated Coefficients (t statistics) | | |
	(1)	*(2)*	*(3)*
Higher Professional	–	-0.01 (0.05)	–
Lower Professional	–	-0.01 (0.09)	–
Skilled Manual	–	-0.10 (0.82)	–
Semi-skilled Manual	–	-0.46 (3.23)	-0.42 (3.55)
Unskilled Manual	–	-0.22 (1.46)	-0.18 (1.40)
Income	–	-0.001 (2.01)	-0.001 (2.12)
Ill	–	1.02 (9.66)	1.05 (10.36)
Stress	–	0.18 (1.70)	–
Number of Observations	6,332	6,332	6,332
Percentage of cases correctly predicted	88.8	88.9	88.9
Log likelihood	-2,058.0	-1,988.5	-1,993.2
Chi-squared	261.7	400.7	391.3

[a]A dummy variable identifying households stating that there was a hospital within about 1 mile.

Col. (2) shows the results when our additional social class, income, "recent mother" and health status variables are included. Income and the bottom two social class categories are significant with negative signs, GP visits remain highly significant, and the rural and recent mother variables are also significant. Physical and psychological health status are significant. Dropping the insignificant age, VHI and social class variables produces the results in Col. (3). The number of GP visits in the past year, having had a baby in the last year, and reporting physical illness all have a significant positive impact on the likelihood of having had an out-patient visit. Being in the semi-skilled manual social class is seen to have a negative impact, while household income is also significant with a negative sign, as is rural

location. Neither Category I nor Category III membership is significant however.

The relatively high proportion of Category I members with a visit, and the smaller differential between Categories II and III which was described above, is therefore being attributed in the estimated model to explanatory variables other than Entitlement Category itself. In particular, the physical health status term is likely to be explaining a good deal of these differentials, given the higher incidence of illness in Category I. The relatively high GP visiting rate of Category I, having controlled for other factors, may also lead to more referrals, which would be reflected in the equation in the positive impact of GP visits on the likelihood of an out-patient attendance.

Out-patient visits were free for Categories I and II until April 1987, but after that date a £10 charge (for the first visit in respect of a particular ailment) applied to Category II (increased to £12 in 1991). Given the timing of the survey and the retrospective nature of the utilisation questions, any impact of these charges is not likely to have been reflected in the survey.

The results with respect to income and socio-economic background imply that those at higher income levels are less likely to have an out-patient visit, *ceteris paribus*. However, those from rural areas or the semi-skilled manual class also appear to have relatively low probabilities. Again, the fact that other influences such as illness and GP visiting are being controlled for must be emphasised. We saw earlier that those in the manual social classes are *more* rather than less likely than professional/managerial groups to have had an outpatient visit. The model results suggest that this is related to the higher incidence of illness, the lower income, and tendency to have more GP visits in the semi-/unskilled manual classes. To the extent that they can successfully disentangle the various influences, the estimates imply that having taken these effects into account, for a *given* health status/income/number of GP visits someone in those classes is actually less likely to have had an out-patient visit. Once again, though, the difficulties of identifying the effects of such interrelated variables as income, social class and Entitlement Category must not be under-estimated.

When the second stage, the OLS regression with number of out-patient visits (for those who had any) as dependent variable, was estimated, none of the independent variables approached conventional significance levels. This remained true when particular variables were excluded, such that even physical health status alone was not significant. Tussing, in estimating the corresponding equation, found only the number of specialist visits, on which we do not have data, to be significant. This inability to explain

differences in the number of outpatient visits *among* those who had such a visit may not be surprising, given that the nature of the illness/injury etc. would be the major determinant of whether repeated visits were required.

Only 1 per cent of the sample reported having a visit to hospital for day surgery during the previous twelve months. The elderly were more likely to have had such treatment than other age groups, and VHI members were also more likely to have had day surgery than others. This was supported by the results of estimating a logit model, where VHI membership was one of the few variables to be significant in predicting the likelihood of having had day surgery.

9.3 *In-patient Stays*

We now turn to hospital in-patient stays. Tussing, on the basis of his 1980 survey data, found that the only variables contributing significantly to predicting whether an individual had a hospital stay in the year were the number of GP visits and specialist consultations. This he took as pointing up yet again the importance of the GP's role in influencing utilisation. It could be the case though that at least some of those GP/specialist visits *followed* a hospital stay rather than lead to referral. In analysing the length of hospital stay for those who did have in-patient care, his results showed only Category I eligibility as a significant influence, and it had a very large positive effect. With a coefficient of 14.3, his results imply that, given an individual has a hospital stay, someone in Category I would on average spend two weeks *more* in hospital than someone in Category II or III. Tussing notes that this could reflect the influence of diagnosis and severity of illness, though the equation does attempt to control for age, sex and number of GP/specialist visits. None the less, the size of the apparent Category I effect certainly looked improbable, and Tussing does not place any emphasis on this finding in his conclusions and recommendations, presumably for that reason.

Looking at the pattern of hospital in-patient stays in our 1987 sample, only 10 per cent of persons spent one or more nights in hospital during the previous twelve months. The average number of nights spent in hospital by these people was 13. About 26 per cent of these spent 3 nights or less in hospital, 38 per cent had between 4 and 7 days, 25 per cent had between 8 and 21 days, and only 11 per cent spent more than 3 weeks in hospital. It must be emphasised that this refers to the *total* number of nights spent by the individual in hospital in the previous twelve months, *not* the length of a particular spell.[60]

[60]Tussing's survey collected data on number of spells/discharges from hospital and on "length of stay", which appears to also refer to the total period spent in hospital in the year. In our survey no information on number of spells was obtained.

We begin by examining the variation in hospital stays by age. Table 9.4 shows the percentage having spent time in hospital, and the average number of days for these people, by age range and sex. The elderly are much more likely to have had a hospital stay than those aged under 65. For males, leaving aside infants there is little variation between the ages of 2-44 in the percentage having a stay. About 6-8 per cent of this age group had a stay, rising to 10 per cent for those between 45-64. Over 13 per cent of men aged 65-74 and 17 per cent of those aged 75 or more had a stay however. For females, the pattern is different only in that a much higher percentage of those aged between 25-44 had a stay, this differential being related to childbirth. For other age groups there is little difference between men and women. Looking at average length of time spent in hospital for those involved, Table 9.4 also shows the elderly having relatively long stays. It is noticeable though that for those aged between 45-64 the average number of nights is also high, as long as or longer than the 65-74 group.

Table 9.4: *Hospital In-patient Stays by Age and Sex*

Age Group	% Having a Stay			Average Number of Nights (for those with any)		
	Male	Female	All	Male	Female	All
1 or less	19.2	15.4	17.2	9.0	11.9	10.3
2-4	7.1	6.7	6.9	7.4	6.3	6.8
5-14	7.8	6.1	7.0	5.9	14.4	9.4
15-24	8.5	5.0	6.7	5.9	8.8	7.7
25-34	6.3	20.4	13.3	11.6	8.7	9.4
35-44	6.2	14.6	10.3	7.9	10.2	9.5
45-54	9.9	10.6	10.3	17.3	12.4	14.7
55-64	9.5	10.1	9.8	18.2	18.9	18.5
65-74	13.5	11.6	12.5	15.4	15.6	15.5
75 or over	17.0	18.1	17.6	18.3	27.8	24.1
All	8.2	11.6	9.9	11.1	12.2	11.8

We now look at variation across Entitlement Categories. Table 9.5 shows the pattern by Category and age. In aggregate, there are very substantial differences between those in Category I and the rest of the sample. About 12 per cent of persons in Category I had a hospital stay, compared to under 9 per cent for the remainder of the sample. The average length of stay was also relatively long for Category I, at 14 days. There was no difference between Categories II and III in the percentage with a stay, though the

average length of stay for Category II – 10.4 – was slightly longer than the Category III average of 8.7.

Table 9.5: *Hospital In-patient Stays by Age and Entitlement Category*

Age Group	% Having a Stay			Average Number of Nights (for those with any)		
	Cat. I	II	III	Cat. I	II	III
0-4	12.7	9.5	8.8	7.8	10.0	8.2
5-24	10.0	5.2	6.5	10.5	8.2	4.9
25-64	12.0	11.0	10.9	14.0	11.0	10.9
65 or over	15.7	10.7	8.8	20.0	13.8	6.8
All	12.2	8.6	8.8	14.1	10.4	8.7

Clearly the differences between the Categories in age composition would be expected to have a major impact on such aggregates. However, the table shows that *within* age groups, Category I still consistently has a higher proportion having a hospital stay. The comparison for average length of time spent in hospital is less clear-cut, but Category I still has the highest average except for those aged under 5. For the elderly, for example, almost 16 per cent of those in Category I had a hospital stay and the average number of nights was 20, compared to about 11 per cent and 14 respectively for Category II. Comparing Categories II and III, for some age groups Category II had a slightly higher proportion with a hospital stay and longer average length of stay, but the differences are not nearly as pronounced as those between Category I and the rest of the population.

Further disaggregation between males and females shows a similar pattern operating for both across Entitlement Categories.

Table 9.6 shows the pattern of hospital in-patient utilisation for those with and without VHI cover, again by broad age group. Overall, there is little difference between those with/without VHI in either the percentage having had a stay or the average length of time spent in hospital. Looking within age groups, there is little difference between members/others in the percentage having a stay, while average number of nights is longer for those with cover aged 65 or over, and shorter for those aged 5-24. It is also interesting to look at *both* Entitlement Category and whether the individual has VHI cover. Table 9.7 shows the pattern within age groups *and* Entitlement Categories, for those with and without VHI. Category I is not particularly relevant since so few people in that Category have VHI. Similarly most people in Category III do have cover though it is worth

noting here that a relatively high proportion of those with cover in the 25-64 age group had a hospital stay.

Table 9.6: *Hospital In-patient Stays by Age and VHI Coverage*

Age	% Having a Stay		Average Number of Nights	
	Has VHI	No VHI	Has VHI	No VHI
Under 5	11.1	10.3	8.5	9.0
5-24	6.2	7.1	5.9	9.6
25-64	13.3	10.4	11.2	12.4
65 or over	14.5	14.2	28.8	20.8
All	10.7	9.6	11.5	12.6

Table 9.7: *Hospital In-Patient Stays by Age, Entitlement Category and VHI Membership*

	Under 5	5-24	Age Range 25-64	65 and over	All
(a) % having a hospital stay:					
Category I with VHI	15	7	11	19	13
Cat. I without VHI	13	11	12	16	12
Cat. II with VHI	12	6	14	15	12
Cat. II without VHI	9	5	10	7	7
Cat. III with VHI	8	6	12	10	10
Cat. III without VHI	10	6	6	7	7
(b) average nights for those with a stay:					
Cat. I with VHI	18	18	9	15	14
Cat. I without VHI	7	11	14	21	16
Cat. II with VHI	7	7	11	32	15
Cat. II without VHI	12	9	11	21	11
Cat. III with VHI	10	4	11	5	9
Cat. III without VHI	5	7	10	10	8

Within Category II, where the majority of VHI members are to be found, there does appear to be a pattern of higher utilisation of in-patient services by those with cover. In each age range the percentage with a stay is higher for members than non-members. The average number of nights is also longer for those with cover in the age ranges under 5 and 65 and over – though relatively few of the latter have VHI cover so this may not be

particularly robust. This pattern does not necessarily indicate that VHI members obtained more care *because* they had cover, of course – the link could also work in the opposite direction, whereby those who are more likely to need care are also more likely to become VHI members. Such adverse selection into VHI could operate despite limitations on coverage for pre-existing illnesses at the time when cover is first taken out and is considered below in looking at the demand for insurance.

· Reference may also be made to the pattern of utilisation by household income and socio-economic background, without presenting the detailed tabulations. The percentage having a hospital in-patient stay is slightly higher in the third and fourth income deciles than elsewhere in the distribution, largely because the elderly are relatively heavily concentrated there, though high proportions of elderly are also found in the bottom two deciles. The variation across deciles is not great however, and there is no strong relationship with average number of days spent in hospital. When equivalent income is used to rank households there is almost no variation across the deciles in the percentage having a stay. There is also little variation in overall levels of utilisation across socio-economic groups or social classes. This remains true when controlling for age – within age groups, a broadly similar pattern is still shown across classes/socio-economic groups.

We now proceed to the two-stage estimation procedure in order to identify the influence of individual variables on hospital in-patient utilisation. We begin, as before, by exploring the determinants of whether an individual has had a stay during the year. The logit model with this dependent variable is estimated for the adults in the sample, and the results are shown in Table 9.8. First, only the variables available to Tussing – age, sex, category, VHI and farm background, as well as number of GP consultations, are used. Col. (1) shows that while the number of GP visits is highly significant, as it was in Tussing's results, VHI membership is also found to be significant with a positive sign. Both the female and age 25-34 dummy variables are also significant, which – as we shall see – is largely attributable to childbirth.

We now add the other explanatory variables employed in this study – income, social class, whether a woman has a child under 1 year, and physical and psychological health status. Column (2) shows that the results now have some interesting features. All the age variables are insignificant, being a recent mother is highly significant, and the female dummy now has a much smaller coefficient which is on the borders of conventional significance levels. Both physical and psychological health measures are

Table 9.8: *Results of Logit Model for Inpatient Stays, Adults Only*

Independent Variable	(1) Coefficient (t statistic)	(2) Coefficient (t statistic)	(3) Coefficient (t statistic)	(4) Coefficient (t statistic)
Intercept	-3.19 (19.28)	-3.06 (13.83)	-3.08 (24.53)	-2.94 (23.94)
Age 25-34	0.34 (2.19)	0.01 (0.06)	–	–
Age 35-44	-0.11 (0.67)	-0.16 (0.84)	–	–
Age 45-54	-0.19 (1.12)	-0.09 (0.50)	–	–
Age 55-64	-0.33 (1.87)	-0.31 (1.59)	–	–
Age 65-74	0.03 (0.17)	0.02 (0.12)	–	–
Age 75+	0.16 (0.71)	0.20 (0.81)	0.28 (1.47)	0.33 (1.74)
Female	0.46 (5.23)	0.19 (2.01)	0.17 (1.88)	0.18 (2.03)
Rural	0.02 (0.20)	0.02 (0.15)	–	–
Category I	0.26 (2.34)	0.18 (1.51)	0.15 (1.33)	0.27 (2.44)
Category III	0.17 (1.24)	0.14 (4.71)	–	–
VHI	0.60 (5.40)	0.58 (4.71)	0.65 (5.79)	0.63 (5.65)
GP visits	0.07 (14.99)	0.05 (10.12)	0.05 (10.01)	–
Hospital nearby	0.15 (1.32)	0.14 (1.19)	–	–

Table 9.8 *(Continued)*

Independent Variable	*(1)* Coefficient *(t statistic)*	*(2)* Coefficient *(t statistic)*	*(3)* Coefficient *(t statistic)*	*(4)* Coefficient *(t statistic)*
Recent mother	–	3.43 (15.36)	–	–
Higher Professional	–	0.15 (0.86)	–	–
Lower Professional	–	-0.05 (0.31)	–	–
Skilled Manual	–	-0.11 (0.80)	–	–
Semi-skilled Manual	–	-0.05 (0.31)	–	–
Unskilled Manual	–	-0.21 (1.31)	–	–
Income	–	-0.001 (1.52)	-0.0004 (1.22)	-0.0005 (1.60)
Ill	–	0.80 (6.94)	0.76 (6.94)	1.16 (11.64)
Stress	–	0.26 (2.24)	0.25 (2.16)	0.39 (3.52)
Number of observations	6,332	6,332	6,332	6,332
Percentage of cases successfully predicted	89.1	90.4	90.3	90.5
Log likelihood	-1,972.7	-1,802.3	-1,808.2	-1,862.4
Chi-squared	360.6	701.5	689.6	581.3

significant, while GP visits remains so, as does having VHI cover. Membership of Category I is close to significance, but this is not the case for Category III, income, or any of the social class variables.

Col. (3) shows the results when insignificant age, social class and Category III variables are dropped from the equation. The equation is still dominated by the illness measures, VHI membership, and the number of GP visits in the year. The age 75+, income, Category I, and female variables all still fail to reach usual significance levels. However, it must again be

recalled that this equation is controlling for the number of GP visits which is itself related to Entitlement Category.

The rationale for including GP visits may be worth further consideration. There is clearly a high correlation between having had a hospital stay and GP visits, but simply including GP visits as an explanatory variable may mask as much as it reveals. If the relationship arose purely or primarily because those who attend the GP more often are more likely to be referred for hospital treatment, because illnesses are more likely to be detected etc., then a causal link between frequency of GP visiting and subsequent hospital stays would be reflected in the GP variable in the logit model predicting likelihood of a stay. However, the GP visits reported may instead have *followed* hospital stays. The number of GP visits may also act as a proxy for health status and diagnosis (as Tussing notes). While including GP visits improves the explanatory power of the equation, it makes it difficult to interpret the causal processes at work.

It is, therefore, also useful to look at the results when GP visits are excluded, shown in Col. (4) of Table 9.8. The physical and psychological health status measures are now even more important, with considerably larger coefficients and much higher t-ratios. Membership of Category I is now significant, age 75+ and female variables also reach significance, though income is still just below conventional levels. VHI membership remains highly significant.

In summary, then, the results represent a substantial advance on Tussing's in that, having controlled (however crudely) for health status, both members of Category I and VHI are seen to have higher probabilities than others of having had a hospital stay. The impact of VHI membership could arise because those with illnesses are more likely to have VHI membership ("adverse selection") and/or a response to the economic incentives facing members versus non-members ("moral hazard") – the sample evidence is examined later to explore whether adverse selection can be seen to operate. As far as the apparent Category I effect is concerned, it has already been emphasised that up to April 1987 there was no difference in the position of Category I and Category II (without VHI) as regards entitlement to free public hospital care. The estimated positive impact of being in Category I (rather than II) on the likelihood of having a hospital stay could reflect health status differentials not adequately reflected in our measures. (Inclusion of interaction terms suggests that the impact of being in Category I is greatest for the elderly, and failure of the crude measures to fully reflect such differentials might arise particularly there.) It could also arise from the differences in GP visiting behaviour, if the higher propensity of Category I to visit the GP results in some cases in

"additional" hospital referrals, along the lines discussed above. While there were differences in the "price" facing Categories I and II after the imposition of the £10 charge for the latter, given the retrospective nature of the survey questions it is unlikely that the reported utilisation of even those interviewed after April 1987 was much affected by these charges.

We now turn to the analysis of the length of time spent in hospital in the past year for those who had a hospital stay. As before, an OLS regression with correction for sample selection bias is employed, the dependent variable being the number of nights spent in hospital and the cases included being all those in the sample who had at least one night. The results are shown in Table 9.9. Col. (1) shows the estimated equation when all the explanatory variables are included. Most are insignificant, the exceptions being age 75 or over, household income, and the psychological stress variable. Col. (2) shows the effect of omitting the insignificant age, sex and social class variables. VHI membership and physical health status are now significant. Entitlement Category I has been left in the equation at this stage to see if Tussing's estimated positive effect on length of time in hospital is found. However, the variable clearly remains insignificant. When it (and the "recent mother" variable) are dropped, Col. (3) shows that age 75 or over, VHI membership, income and health status remain significant. Of the variables reflecting the "price" faced by consumers, then, only VHI membership is significant. Various other formulations were tested, including a log transformation of the dependent variable, but no improvement resulted. Unlike Tussing's results, then, those presented here do suggest that VHI members are both more likely to have had a hospital stay in the previous 12 months and are likely to have spent longer in hospital, given such a stay. Given the particularly poor explanatory power of the equation explaining length of time spent in hospital, however, the results with respect to the likelihood of having had a stay appear a good deal more reliable than those explaining number of nights.

9.4 Conclusions

Primarily because of the availability of information on health status, the study was more successful than Tussing's in identifying influences on the utilisation of hospital services. Those in Entitlement Category I were seen to have more out-patient visits than the remainder of the population. Regression analysis suggested that this was associated with the greater incidence of (reported) ill-health and higher number of GP visits for that Category. Living in a rural area had a negative impact on the probability of

Table 9.9: *Results of OLS Regression for Number of Hospital Nights, Adults with At Least One*

Independent Variable	(1) Coefficient (t statistic)	(2) Coefficient (t statistic)	(3) Coefficient (t statistic)
Intercept	-16.41 (0.46)	-21.99 (1.11)	7.22 (3.06)
Age 25-34	-1.16 (0.46)	–	–
Age 35-44	-1.63 (0.61)	–	–
Age 45-54	2.88 (1.10)	–	–
Age 55-64	3.17 (0.99)	–	–
Age 65-74	-2.48 (0.84)	–	–
Age 75+	8.12 (1.91)	8.44 (2.66)	6.15 (2.20)
Female	0.80 (0.41)	–	–
Rural	-0.48 (0.33)	–	–
Category I	1.22 (0.48)	1.47 (0.76)	–
Category III	0.48 (0.20)	–	–
VHI	4.96 (1.14)	6.32 (2.18)	2.85 (1.90)
Hospital nearby	1.14 (0.53)	–	–
Recent mother	18.38 (0.75)	21.63 (1.49)	–

Table 9.9 *(Continued)*

Independent Variable	*(1)* Coefficient *(t statistic)*	*(2)* Coefficient *(t statistic)*	*(3)* Coefficient *(t statistic)*
Higher Professional	3.40 (1.32)	–	–
Lower Professional	-3.02 (1.26)	–	–
Skilled Manual	-1.00 (0.49)	–	–
Semi-skilled Manual	-1.58 (0.74)	–	–
Unskilled Manual	1.70 (0.67)	–	–
Income	-0.01 (1.93)	-0.01 (2.07)	-0.01 (1.65)
Ill	12.71 (1.48)	14.71 (2.99)	7.74 (5.30)
Stress	7.55 (2.49)	7.85 (3.48)	5.51 (3.46)
Lambda	12.65 (1.59)	15.51 (0.83)	1.02
Number of cases	677	677	677
$\bar{R}^2$	0.09	0.08	0.08
F	4.03	8.82	11.35

having had such a visit in the previous year. Hospital in-patient stays were also found to be positively related to VHI membership, as well as to the number of GP visits in the year. The Category I population were more likely than the remainder of the population to have had an in-patient stay, having controlled for demographic and socio-economic differences, which could be related to their greater propensity to have GP visits.

Chapter 10

THE ROLE OF HEALTH INSURANCE

10.1 *Introduction*

In this and the next chapter, we focus on the role of health insurance in the Irish health care system. As the discussion in earlier chapters has made clear, insurance plays a major part in the health care structure, and it also features as one of the most contentious aspects of the various reforms which have been proposed. Its nature and role in the future are now particularly uncertain, not only as regards policy at the national level, but also because of changes necessitated by moves towards the Single European Market from 1992. While it is far from clear precisely what implications this will have for the operation of health insurance in Ireland, it appears extremely unlikely that the market for health insurance will continue in its present form for very much longer. The Commission on Health Funding also made a number of recommendations which could have a major impact on the environment in which health insurance operates in Ireland, including one which has been implemented from June 1991, namely the abolition of Entitlement Category III.

It is therefore necessary to look in some detail at the role of and demand for health insurance. In Section 10.2, the nature of health insurance in Ireland and its place within the health care system is described. The composition of the insured population and the nature of the demand for health insurance are discussed in Section 10.3. Section 10.4 looks at the factors influencing demand for insurance in more detail, on the basis of analysis of the ESRI household sample for 1987. In Chapter 11 we go on to make use of both time-series data and the results of a direct enquiry into motives for taking out health insurance. The policy issues which arise with respect to health insurance are taken up in the final chapter, taking into account these findings.

10.2 *Health Insurance in the Irish System of Health Care*

In outlining the structure of the Irish health care system in Chapter 2, the role played by health insurance was briefly described. A number of features are central to an understanding of its place in the system. The system of health care entitlements operated by the State created or left space for demand for health insurance, in that those towards the top of the income distribution, in Entitlement Category III, did not have full

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entitlement to publicly financed hospital care. For many years this section of the population was liable for the full cost of hospital care: from 1979, with the incorporation of Entitlement Category III, they were entitled to accommodation in public wards of public hospitals, but remained liable for consultants' fees. The Voluntary Health Insurance (VHI) was established specifically to cater for this group, to provide cover for hospital charges for those liable to pay them. In doing so, the VHI has a virtual monopoly of health insurance provision: it is illegal to offer insurance without a licence from the Minister for Health, and the only other schemes to be granted licences are "in-house" ones for groups of employees or union members, such as that operated by the ESB. The VHI operates at arms-length from the Department of Health as a non-profit-making body, but its board is appointed by the Minister for Health.

The VHI is thus quite different from a commercial profit-maximising insurer operating in a competitive market. It has some similarities with the Blue Cross/Blue Shield organisations set up in the USA in the 1930s effectively as co-operatives to provide health insurance on a non-profit-making basis. As Blue Cross/Blue Shield did for many years, the VHI operates community rating: premia are set without taking account of risk factors such as age, so the amount paid by a particular subscriber will vary only with his/her number of dependants and the level of cover chosen.

The schemes offered by the VHI are primarily designed to insure for the costs of hospital care. The options currently available to subscribers range from simply covering consultants' fees in a public ward of a public hospital to full cover for high-cost private hospitals.[61] As well as hospital charges, cover is also provided for associated consultant fees, on the basis of "fee units" chosen by the subscriber. The fee actually charged may exceed the maximum covered by insurance, involving the patient in out-of-pocket expenditure. The main schemes also provide some cover for out-patient expenses such as GP and specialist fees, but only the amount over a specified annual figure is reimbursed. Cover for out-patient drugs and medicines was recently discontinued, in response to substantial underwriting deficits experienced by the VHI in 1987 and 1988.

Again reflecting the role which insurance was intended to play within the system in filling the gaps left by public entitlements, premia are fully allowable against income tax at the subscriber's marginal tax rate. So, far from being a competitive market in which commercial insurers operate, health insurance in Ireland is provided by a monopoly insurer set up by the

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[61]A scheme to just cover the charges for public ward maintenance and outpatient visits introduced in 1987 is also now operated.

State, operating via community rating, and with premia in effect subsidised by the State through income tax relief. Nor does the insurance simply finance private hospital care, separate from the public system: much of insurance expenditure is on services delivered in public hospitals. Thus, as the Report of the Commission on Health Funding emphasised, private insurance is an integral part of the health care system with a close, complementary relationship with the public sector. The complexity of the public/private mix in financing and delivery has been described in some detail in Chapter 2 (Section 2.4), and the role of insurance is central to this relationship.

10.3 *The Insured Population*

The numbers covered by VHI grew from about 100,000 in the early 1960s to ½ million in the mid-1970s, exceeding one million by 1983. Currently, about 1¼ million people, or 34 per cent of the population, are covered under the VHI's schemes. About 140,000 of these are insured simply for charges in public wards and out-patient clinics, but the remainder – about 30 per cent of the population – are insured under the main schemes for hospital accommodation and consultant care. Since only about 15 per cent of the population was in Entitlement Category III, the demand for insurance clearly extended considerably beyond those with limited public entitlement to hospital care. In fact, the VHI offers a scheme which would have enabled those in Category III to cover simply the consultant fees to which they are liable, obtaining care in public wards of public hospitals, but few subscribers opted for this scheme. Clearly, then, health insurance played a much wider role than simply filling in the gap in public entitlements to hospital care.

To understand the nature of this role and of the demand for insurance, we first look at the composition of the insured population. Little information is published about the characteristics of VHI subscribers and their dependants, or about their distribution among the various insurance plans. The distribution of the insured population by age and sex is published, though, and is compared with the population as a whole in Table 10.1. The insured are disproportionately drawn from those aged 25-64, and particularly between 35-54, of whom about 42 per cent are insured. The striking feature is the relatively low proportion of the elderly who have insurance – only 25 per cent of those between 65-74 and 15 per cent of those aged 75 or over. Since age is highly correlated with health status and demand for health care, the age profile of the insured means that the insured should on average be healthier and demand less health care, *ceteris paribus* than the rest of the population. As the VHI's Annual Reports have

noted, however, the average age of its membership has been rising over time. In 1988/89 that average was 31.01 years, up 0.32 compared with the previous year and 1.34 compared with 1985/86. Persons aged 65 or over accounted for 6.8 per cent of the insured population in February 1988, compared with 5 per cent in February 1981. This undramatic but steady increase in average age of the insured population implies rising costs over time for the insurer, and would be expected to become more pronounced if overall membership does not continue to grow (since new subscribers and their dependants are likely to be younger than the average of all existing members). One other interesting feature of the age/sex profile is the higher proportion of females than males with insurance cover, reflecting the significantly higher coverage of women in the 25-54 age range,

This is the only information about the composition of the VHI's membership available from aggregate data. For other characteristics we turn to the data provided by the 1987 ESRI household survey. As detailed in Chapter 3, the sample has about the same percentage with VHI cover as the population, and the age/sex composition of those in the sample with insurance corresponded very closely with that of the insured population.[62] The sample thus appears likely to be a reliable basis on which to draw conclusions about other characteristics of the insured population.

The composition of the insured in the sample, in terms of Entitlement Category, income and social class as well as age and sex, has already been described in Chapter 4.[63] This showed that while those from professional/ managerial backgrounds were indeed much more likely to have insurance than were other groups, none the less a substantial proportion of the insured population did not come from such backgrounds. About half those with insurance were from the top two, professional/managerial, social classes, but almost 50 per cent were either from the "other non-manual" or the skilled/semi-skilled manual classes. Whether by household disposable or equivalent disposable income, those with insurance were relatively heavily concentrated towards the top of the distribution, but by no means all the insured were in high-income households.

It is of particular relevance here, though, to explore in more detail the relationship between Entitlement Category and insurance. In the sample, 74 per cent of those in Category III, 33 per cent of those in Category II and 3 per cent of those in Category I had VHI cover. Given that Category II accounts for almost half the population whereas only 15 per cent are in

[62]See Chapter 3, Table 3.4.
[63]See Section 4.3.

Table 10.1: *Persons Insured by VHI and Total Population by Age and Sex, 1987/88*

Age Group	Insured by VHI[a]			Total Population[b]			Percentage of Population Insured		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
					Per cent				
0-14	30.1	26.5	28.2	29.4	27.8	28.9	33.8	33.7	33.7
15-24	15.8	15.2	15.5	17.7	17.0	17.4	29.5	31.6	30.5
25-34	13.8	16.2	15.0	14.2	14.1	14.1	32.1	40.5	36.3
35-44	14.9	15.2	15.1	12.4	12.0	11.9	39.7	44.4	42.0
45-54	11.0	11.0	11.0	9.0	8.6	8.7	40.2	44.8	42.5
55-64	8.3	8.4	8.4	7.7	8.1	8.0	35.5	36.9	36.2
65-74	4.6	5.3	5.0	6.3	7.3	6.8	24.2	25.5	24.9
75 and over	1.5	2.2	1.8	3.3	5.1	4.1	15.0	15.2	15.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	33.0	35.3	34.1

[a] At 28 February 1988. This includes those with cover only for public ward and outpatient charges.
[b] 1987

Sources: Health Statistics 1988 Table K4, p. 106,
Report on Vital Statistics 1987, Table 2, p. 49.

Category III, this meant that persons in Category III with insurance accounted for only 37 per cent of the total insured, whereas 60 per cent of the insured were in Category II.

It may be thought surprising that "only" three-quarters of Category III has insurance, given their limited public hospital care entitlements. This could partly reflect misclassification of households between Categories II and III, but the profile of those in Category III without insurance does not look implausible.[64] Those in Category III without insurance are more likely to be from farming or manual backgrounds, and less likely to be from a professional/managerial one, than those with insurance. Over 53 per cent of those in Category III without insurance are from skilled/semi-skilled manual backgrounds, 17 per cent are from farming and only 19 per cent are from professional/managerial groups, whereas the corresponding figures for those with insurance are 34 per cent, 8 per cent and 53 per cent, respectively. Those in Category III without insurance also have incomes which are significantly lower on average than those with insurance.

Turning to Category II, there are also differences between those choosing to take out insurance and the two-thirds of this group who do not. Those with insurance have higher incomes on average – their average household income is 28 per cent above that for Category II households without insurance. There is also a clear difference in socio-economic background/social class composition. Table 10.2 shows that those with insurance are much more likely to be drawn from the professional/managerial classes, much less from manual ones. About 43 per cent of those in Category II with insurance are from higher or lower professional/managerial classes, compared with only 15 per cent of those in that Category without insurance. Nevertheless, one third of Category II members with insurance are from skilled/semi-skilled manual backgrounds. Distinguishing farmers, etc., as a distinct category using socio-economic groups, we see that they are underrepresented among those in Category II with insurance, accounting for only 9 per cent, compared with 19 per cent of Category II members without insurance. Women are more likely to have insurance than men. A high proportion of the elderly in Category II have insurance: about 54 per cent of those aged 65 or over have insurance, compared with only 35 per cent of those aged

[64]As discussed in Chapter 4, membership of Category III rather than II was determined on the basis of reported incomes, since a question in the pilot survey indicated respondents did not themselves generally know which they were in. The overall percentage of the sample in Category III and with health insurance are each close to the population figures, and there is no obvious reason to expect misclassification to bias the numbers in Category III without insurance.

between 25-64. There is no obvious relationship (within age groups) between either marital status or the presence/number of children in the family and having insurance cover.

Table 10.2: *Social Class Composition of Category II Population With/Without VHI*

Social Class	With Insurance	Without Insurance
	Per cent	
Higher professional/managerial	19.5	6.5
Lower professional/managerial	23.6	9.2
Other non-manual	23.0	22.4
Skilled manual	19.7	31.0
Semi-skilled manual	12.3	21.1
Unskilled manual	2.0	9.7
All	100.0	100.0

Turning to Entitlement Category I, only a very small percentage of persons in that Category, under 3 per cent, have insurance. Those who do are disproportionately drawn from non-manual backgrounds, 38 per cent being from professional/managerial classes and only 20 per cent from semi-skilled or unskilled manual classes, compared with 5 per cent and 58 per cent respectively for those without insurance. They also have average income substantially above that for Category I as a whole. Indeed, a substantial minority of those with insurance appear to have incomes above the Category I income guidelines. Some could have been granted Medical Cards due to "exceptional needs", though the survey question on health status does not indicate chronic illness in most of these cases. Response errors or misunderstandings may be contributory factors, but it does appear that a – very small – number of households with Medical Card and insurance cover have higher incomes than would be expected. There is however another distinct – though also small – group with incomes clearly below the Medical Card guidelines, who are paying for health insurance despite their low incomes and full public entitlements to care.

10.4 *The Demand for Health Insurance: Evidence from the ESRI Survey*

Having looked at the characteristics of the insured population, we now proceed to explore the demand for health insurance using more formal statistical methods. This involves fitting a regression model where the dependent variable is the simple dichotomy has/has not VHI cover, and the various characteristics such as age, sex, income, social class and

Entitlement Category, are independent variables. In effect the extent to which these variables serve as useful predictors of VHI membership is being measured. Since the dependent variable is dichotomous, the logit model – already applied in Chapters 7 and 8 in analysing whether individuals had a GP visit/hospital spell etc. in the previous year – is applied.

Since insurance is almost always taken out on a family rather than individual or household basis, the analysis is based on that unit – defined as a single adult or couple, together with dependent children, if any.[65] The total number of family units on which complete data were available for the present analysis was 5,318. The dependent variable is whether the family head has/has not insurance cover (which almost always means that the entire family is/is not covered), and the independent variables are characteristics of the family or family head. Thus Entitlement Category, income, urban/rural location and number of children are family characteristics, while age, sex and marital status of the family head are also used. Social class/socio-economic group are based on the family head's occupation, etc., generally taken to apply to the family as a whole.

Results of estimating the logit model on these data are shown in Table 10.3. The omitted dummy variables, reflected in the intercept, are family head's age under 35 and sex = male, location = urban, social class = intermediate non-manual, and Entitlement Category = II. The results in Col. (1) show that, from this starting-point, the family head being in an older age group or female, in a higher social class and in Entitlement Category III are all associated with a higher probability of having VHI cover. Being in skilled, semi-skilled or unskilled manual social classes, in a rural location, and of course being in Category I reduce the probability of having cover from this baseline. In addition, being a farm household further reduces the probability of having insurance (even with rural location already included), and family size (i.e., the number of children if any) also, interestingly, has a negative impact. Finally, there is a strong positive relationship between family income and the probability of having insurance.

All these variables were found to be significant in the estimated equation and, where we would have a strong expectation about the expected direction of the effect, all the signs are as expected. The negative family size effect may or may not accord with expectations – on the one hand

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[65]It is quite common for some members of a household to have insurance and others not – for example, an elderly person living with a son/daughter may have cover and the son/daughter and family may not, or vice versa.

Table 10.3: *Estimates of Logit Model for VHI Membership: All Families*

Independent Variable	(1) Coefficient (t-statistic)	(2) Coefficient (t-statistic)
Intercept[a]	-1.43 (11.31)	-1.52 (9.84)
Age 35-54	0.26 (2.48)	0.24 (2.26)
Age 55-64	0.44 (3.47)	0.45 (3.48)
Age 65-74	0.84 (5.51)	0.83 (5.40)
Age 75 or over	0.95 (4.24)	0.96 (4.24)
Female	0.31 (3.04)	0.37 (3.52)
Rural	-0.30 (3.26)	-0.30 (3.20)
Farm	-0.59 (4.82)	-0.51 (4.16)
Family size	-0.10 (2.77)	-0.35 (4.62)
Social Class: 1 higher professional	0.89 (6.25)	0.94 (6.52)
2 lower professional	0.59 (5.00)	0.59 (4.92)
4 skilled manual	-0.54 (4.59)	-0.52 (4.38)
5 semi-skilled manual	-0.61 (5.12)	-0.57 (4.75)
6 unskilled manual	-1.44 (7.22)	-1.36 (4.75)
Entitlement Category I	-2.38 (14.08)	-2.30 (13.41)
Entitlement Category III	0.65 (4.64)	0.51 (3.59)
Income	0.006 (10.71)	0.007 (9.77)

Table 10.3 *(continued)*

Table 10.3 *(Continued)*

Independent Variable	(1) Coefficient (t-statistic)	(2) Coefficient (t-statistic)
D1[b]	–	-0.003
		(1.91)
D2[c]	–	-0.004
		(7.13)
Income x family size	–	0.001
		(3.57)
Number of observations	5318	5318
Percentage of cases correctly predicted	82.4%	82.9%
Log likelihood	-2088.3	-2057.4
Degrees of freedom	16	19
Chi-squared	1876.9	1938.6

[a]Intercept includes: Age under 35
                          Sex male
                          Location urban
                          Class intermediate non-manual
                          Entitlement Category II
[b]Lower income slope dummy – income < £100 per week
[c]Upper income slope dummy – income > £400 per week

having children or having a larger family effectively increases the cost of insurance, but on the other, insurance cover for children might be seen as particularly desirable. Other variables were tested in the equation, including marital status, but proved insignificant. However, some elaboration of the way in which income appears in the equation did prove fruitful. An interaction term between income and family size proved significant, and Col. (2) in Table 10.3 shows that when this term is included it has a positive sign, with the family size variable itself still negative with a higher coefficient. Further, it was found that variations in income at either relatively low or high levels of income had much less impact on the probability of having insurance than over the middle ranges. This is captured in Col. (2) by including two slope dummy variables, D1 where income is less than £100 per week and D2 where it is more than £400. Each is significant and negative, so the net predicted effect of an increase in income is less below/above these income thresholds than between £100-£400.[66]

[66]Alternative thresholds produced not very different results; various non-linear functions of income were also tried but failed to improve on the straightforward slope dummy method of capturing the non-linearity in income effects.

It is of considerable interest to illustrate what these estimates imply about the effects of the various independent variables on the likelihood of having insurance. Since the underlying model is non-linear, the impact of any variable will depend on the values taken by all the other variables – it cannot be simply deduced from the coefficients themselves. As before, we take a "reference" or "baseline" case, and show how changes in particular variables influence the probability of having insurance from that base. The baseline is a family in Entitlement Category II, with a male head aged under 35 with no children, located in an urban area, in the intermediate non-manual class, and on mean income. Such a family would be predicted by the estimated model to have a probability of having health insurance of 0.34. Holding all characteristics except one identical to the reference case, Table 10.4 shows the estimated effects. Having a female rather than a male head would increase the probability of having insurance to 0.41. Having an older head – aged between 55-64 – would increase it to 0.43. A farm family would have a considerably lower probability, of 0.18. Being in Entitlement Category III rather than II would in itself increase the probability of having insurance to 0.45, whereas being in Category I reduces the probability dramatically, to only 0.05.

Table 10.4: *Predicted Effects of Family Characteristics on Probability of Having Health Insurance*

Reference case: *Family with male head aged under 35, urban, intermediate non-manual class, Entitlement Category II, mean income*

Family type:	Probability of having insurance
Reference case same as	0.33
reference case except female head	0.41
Head aged 55-64	0.43
Rural area, head farmer	0.18
Higher professional	0.55
Category I	0.05
Category III	0.45
Category I, unskilled manual	0.01
Category III, higher professional	0.67
Category III, higher professional, age 55-64, three times mean income	0.94

We can also look at the effects of altering combinations of characteristics. For example, the Table shows that being in Category I and the unskilled manual social class would reduce the probability even further, to 0.01. For someone in Category III and the higher professional/managerial class, the probability of having insurance is as high as 0.67. Taking a group of variables, being in Category III, the higher professional class, on an income three times the mean and with a head aged 55-64, the probability rises to 0.94. In this manner, the predicted effects of varying the different characteristics, singly or in combination, can be derived and their magnitudes compared.

Some caution must, however, be exercised in focusing on particular variables, given the interrelationships which exist between different characteristics. Most obviously, Entitlement Category and income are strongly related. One does not serve as an unambiguous predictor of the other – if that was the case, it would be impossible to identify their separate effects and pointless to include both in the model. Although a family's Entitlement Category is based on income tests, family income alone does not determine Category. The income variable in the model is family disposable income. The Category I/II means test however is based on income guidelines which vary with family size, and also take into account – for a single person – whether he/she is living in a wider household or alone. The Category II/III income limit was based on gross individual earnings. Thus the income and Entitlement Category variables used in the model are far from perfectly correlated. None the less – as is the case with income and social class, for example – they cannot sensibly be treated as entirely distinct in predicting probabilities, nor can we be confident that the estimates successfully distinguish separate effects. We can of course alter them in combination when predicting probabilities – for example, compare a family in Category III on twice mean income with one in Category II on mean income – which provides useful comparisons between families with different characteristics.

Keeping these caveats in mind, it is worth focusing on a variable of particular interest, namely membership of Entitlement Category III. This is particularly important because that category has been abolished from June 1991 with the extension of entitlement to public hospital care, including consultants' fees (subject to the charges introduced in 1987), to those in Category III. What impact is this likely to have on the demand for health insurance? While reserving detailed discussion of this issue for the concluding chapter, it is worth looking here at what the cross-section results indicate about the influence of Category III membership on the probability of demanding insurance.

Table 10.4 shows that, compared with a reference household in Category II at mean income in social class III and with a head aged under 35, membership of Category III substantially increases the probability of having VHI – from 0.33 to 0.45. However, this will not be a satisfactory indicator of the overall effect of Category III on demand, precisely because, as we have seen, most households in Category III are not like that reference case. They have higher incomes, many are in a higher social class, and most have an older head, all factors which would themselves increase the probability of having insurance. Thus, if we use the results in Table 10.4 to predict the probability of having insurance using the actual age, social class composition, mean income, etc., of households in Category III, but setting the Category III dummy to zero, the predicted probability is 0.89. Membership of Category III then increases the probability only to 0.93 – since so many of those in Category III are likely to have health insurance anyway on the basis of their other characteristics, Category III itself does not have a major additional impact. This is clearly somewhat artificial – given the relationship between Category III and income, cross-section analysis is here subject to the limitations already discussed – but is none the less of interest. The implications for the effect of abolishing Category III are developed below, after other sources of evidence which are also helpful on this issue have been discussed.

We are also particularly interested in knowing what distinguishes the minority of families in Category II who take out insurance from the substantial majority who do not, and what distinguishes the minority of families in Category III who do not take out insurance from the substantial majority who do. To explore this, the logit model predicting likelihood of having insurance was estimated separately for the two categories, and the results are shown in Table 10.5. For Category II, the estimated relationship is in fact very similar to that for the whole sample with all the same independent variables significant (except of course Entitlement Category is now omitted). For Category III, though, very few of the variables are significant. Only age 65-74, farm household and skilled/semi-skilled manual social classes are significant, and all are negative, confirming that the main distinguishing characteristic of those in Category III without insurance is their socio-economic background. Interestingly, neither family size nor income plays a significant independent role.

Table 10.5: *Estimates of Logit Model for VHI Membership: Categories II and III*

Independent Variable [a]	Category II Coefficient (t statistic)	Category III Coefficient (t statistic)
Intercept	-1.72 (11.84)	1.01 (2.85)
Age 35-54	0.27 (2.26)	0.47 (1.70)
Age 55-64	0.41 (2.88)	0.89 (2.40)
Age 65-74	0.94 (5.44)	0.47 (0.81)
Age 75 or over	1.19 (4.23)	-11.01 (0.10)
Female	0.41 (3.63)	-0.05 (0.12)
Rural	-0.26 (2.47)	-0.28 (1.04)
Farm	-0.56 (4.06)	-0.86 (2.50)
Family size	-0.14 (3.28)	-0.40 (2.20)
Social class:		
1 Higher professional	0.97 (5.78)	0.31 (0.89)
2 Lower professional	0.61 (4.54)	0.27 (0.80)
4 Skilled manual	-0.48 (3.67)	-1.02 (2.80)
5 Semi-skilled	-0.56 (4.34)	-0.74 (1.64)
6 Unskilled manual	-1.39 (6.20)	-0.04 (0.04)
Income:	0.008 (11.33)	-0.00 (0.04)

Table 10.5 *(continued)*

Table 10.5 *(Continued)*

Independent Variable	Category II Coefficient	Category III Coefficient
Income x family size	–	0.001 (2.36)
Number of observations	3186	505
Proportion of cases correctly predicted	76.1%	76.2%
Log-likelihood	-1612.0	-258.9
Chi-squared	649.3	66.5

[a] Intercept includes: age under 35
sex = male
location = urban
class = intermediate non-manual

Another important aspect of the demand for health insurance is its sensitivity to price. This is particularly relevant at present because of two factors already mentioned, namely the possibility that tax relief on premia might be removed, and the effect which opening up of the market for health insurance post-1992 may have on price. Little is known about the responsiveness of demand for health insurance in Ireland to price. By its nature cross-section data is of limited value in this context, since there is generally no price variation. In this specific case, though, different families in the sample do, in fact, face different prices for health insurance, because of the operation of tax relief. Those at the higher marginal tax rate face lower net of tax prices than standard rate payers; at the time of the survey the latter, in effect, received 35 per cent of the gross price back in tax relief, whereas those at the higher rates had 48 per cent or 58 per cent of the premium deducted from their tax bill. Such substantial price differences could clearly affect the demand for insurance, and it is worth exploring what can be learned from the sample in this respect.

It is instructive to examine the distribution of families/tax units with health insurance, and within Entitlement Categories II and III, by the marginal tax rate faced. On the basis of the sample evidence, about one-third of those with insurance were paying tax at the standard rate, 22 per cent were at the 48 per cent rate, 36 per cent were at the top 58 per cent rate, and about 9 per cent were not within the tax net because their

incomes in the year in question were below the exemption limits.[67] Because of the relationship between the tax bands and the Category II earnings limit at the time, almost all those in Category III, whether single or married, were paying at the higher marginal rates. Of those in Category III with VHI, about two-thirds were at the top, 58 per cent, rate, almost all the rest being at the 48 per cent rate. In Category II, though, taxpayers could be at any of the rates depending on income and marital status – a single person could be well below the upper earnings limit and yet paying tax at 48 per cent or 58 per cent. Of those in the sample in Category II with VHI cover, about half were paying at the standard rate, and about a quarter paying at each of the higher rates.

   Given the impact of tax relief on the net cost of insurance, we would expect, *ceteris paribus*, that within a particular category, the probability of having insurance would be higher for those facing higher tax rates. Simple cross-tabulations confirm that this is indeed the observed pattern. Within Category II, the percentage having insurance rises from 27 per cent of those paying at the standard rate to 38 per cent of those at the middle tax rate to 63 per cent of those facing the top rate. Within Category III, 67 per cent of those at the 48 per cent tax rate but 81 per cent of those at the top rate have insurance. However, this fails to take into account the many other ways in which those at the different tax rates differ, which could also explain their differing propensities to take out insurance.

   To try to distinguish the impact on demand of the price variations produced by income tax relief, the obvious procedure is to introduce additional variables into the model predicting demand for insurance. This could be done in a number of different ways. One would be to simply calculate the net price of insurance facing each family (based on a particular level of cover). This would depend both on the size and composition of the family and the tax rate faced. When such a variable was tested in the model, it was not possible to distinguish "price" effects from those of family size itself.[68] An alternative would be to use the net of tax price for a particular family type – for example, a couple with no children – for all families, which abstracts from family composition and varies only with the tax rate faced. While this was significant (and negative, as hypothesised) in an equation for the whole sample, the results were not

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[67]This last group were almost all either young persons (aged under 25) who were probably having their premia paid by parents, or elderly people, or farm families.

[68]When the net "family price" variable was added to the equation shown in Table 10.3, Col. (2), it was insignificant. When the family size variable was dropped, though, it became highly significant with a negative sign.

robust when the model was estimated for different sub-samples (such as Category II/III separately or different family types).[69]

Since the only variation in price in such a cross-section is a product of differences in the tax rate faced by families, which are themselves closely related to income and family type, it is hardly surprising that distinguishing the effects of price, income and family type is very difficult. Data on how demand changes over time as price changes is clearly likely to be more helpful on the responsiveness of demand to price, – though, of course, different problems must then be faced, since it is not only price which varies. Time-series evidence, and responses when people are surveyed directly about their motives for having health insurance, are discussed in the next chapter.

[69]This "net price" variable was entered as an index which was 100 for a family paying no tax, and 65, 52 or 42 for those paying at the 35%, 48% or 58% rate, respectively. While significant in an equation estimated over the whole sample, it was insignificant for Category II and significant but with an implausibly large effect for Category III.

Chapter 11

FURTHER EVIDENCE ON THE DEMAND FOR HEALTH INSURANCE

11.1 *Introduction*

In the previous chapter, the role of health insurance in the Irish system was outlined, and the detailed information on the characteristics of those in the 1987 household sample who did/did not have insurance was analysed. This data source allowed an in-depth analysis of the composition of the insured population and the factors influencing the likelihood of having insurance. Such a cross-section does have limitations, however, particularly in the context of measuring the responsiveness of demand to price. In this chapter we go on to make use of two other sources of data which throw light on the nature of the demand for insurance. First, the way in which the number insured has evolved over time, and the context in which this has taken place, is analysed (in Section 11.2). Then, some survey evidence is described which directly asked respondents about the reasons why they have health insurance.

11.2 *Demand for Health Insurance Over Time*

The way in which the number of persons with VHI cover, and the percentage of the population covered, has evolved over time is shown in Table 11.1. Growth in membership has taken place throughout the period since the VHI was set up in 1957. During the 1980s, after a substantial rise in 1980-82, membership as a percentage of the population was static until 1987, but there was significant growth once more in 1988 and 1989.[70] It is not possible to carry out a formal statistical analysis of the role of various explanatory factors on the trend in numbers insured, because key data – in particular a satisfactory price variable[71] – are not available for the 1960s and 1970s. However, we can look at how the demand for insurance evolved in the context of developments in income, public hospital services, and price, particularly during the 1980s.

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[70]This was the case of the main VHI plans; there was also some uptake of the new plans introduced in 1987 to cover the hospital in-patient and out-patient charges introduced in that year.

[71]The problem with constructing a price variable is not simply the fact that information on price is available only on a fragmentary basis, but that the level of cover being provided also varies over time. Further, average price net of tax relief will depend on the percentage facing different marginal tax rates, on which data were not available for most years.

Table 11.1: *VHI Membership and Percentage of Population Covered, 1958-1989*

	Membership (end-February)	Percentage of Population
1958	23,238	0.8
1960	78,778	2.8
1967	288,496	10.0
1968	321,777	11.0
1969	357,051	12.2
1970	386,723	13.1
1971	436,144	14.6
1972	478,382	15.8
1973	506,162	16.5
1974	511,679	16.4
1975	524,525	16.5
1976	557,295	17.3
1977	594,751	18.2
1978	645,165	19.5
1979	697,346	20.7
1980	843,309	24.8
1981	935,804	27.2
1982	995,284	28.6
1983	1,013,745	28.9
1984	1,028,194	29.1
1985	1,033,261	29.2
1986	1,032,709	29.2
1987	1,037,480	29.3
1988	1,078,423/1,209,882 [a]	30.5/34.2 [a]
1989	1,107,954/1,245,663 [a]	31.5/35.4 [a]

[a]Excluding/including those in Plans P and T.
Source: VHI Annual Reports, various years. Report on Vital Statistics.

During the 1960s and 1970s the growth in demand for insurance accompanied rising real incomes. Table 11.2 shows that total personal disposable income (i.e., the National Accounts aggregate) increased by 50 per cent in real terms over the 1970s. During most of the 1980s, on the other hand, there was little growth in incomes: between 1980 and 1988, real personal disposable income grew by only 7¾ per cent, with most of this occurring in 1987. This was attributable to both slower growth in personal incomes and an increase in the proportion going in direct taxes. In terms of real personal disposable income per head, the contrast between the two periods is as marked, as Table 11.2 also shows – there was an increase of 30

per cent between 1970 and 1980, but only 3½ per cent between 1980 and 1988.

Table 11.2: *Personal Disposable Income, 1970-1989*

Year	Personal Income	Personal Disposable Income	PDI in Constant (1985) Prices[a]	PDI in Constant Prices per Capita[a]
1970	1,424	1,281	8,310	2,817
1971	1,632	1,433	8,520	2,861
1972	1,981	1,751	9,504	3,143
1973	2,447	2,156	10,479	3,410
1974	2,868	2,532	10,628	3,402
1975	3,721	3,237	11,073	3,485
1976	4,434	3,773	10,752	3,331
1977	5,343	4,541	11,337	3,465
1978	6,275	5,369	12,417	3,747
1979	7,398	6,294	12,696	3,770
1980	8,821	7,334	12,450	3,661
1981	10,828	8,999	12,771	3,709
1982	12,310	10,037	12,355	3,550
1983	13,522	10,857	12,236	3,492
1984	14,859	11,736	12,287	3,482
1985	15,957	12,625	12,625	3,567
1986	16,903	13,278	12,769	3,606
1987	18,320	14,322	13,417	3,787
1988	19,127	14,682	13,419	3,793
1989	20,090	15,805	13,890	3,952

[a]deflated by personal expenditure deflator
Source: National Income and Expenditure, various years. ESRI *Quarterly Economic Commentary.*

Since demand for health insurance would be expected to rise as incomes increase, the substantial growth in VHI membership during the 1970s followed by stability through much of the 1980s is consistent with the evolution of real personal incomes over that period. The substantial growth in VHI membership in 1979-80 took place as real incomes stagnated. However this was associated with the major institutional changes from April 1979, when Entitlement Category III was set up and the VHI responded by introducing a new structure of benefit packages, including for the first time full indemnity for hospital bills and cover for maternity care. What may be surprising, given the virtual absence of real income growth during much of the 1980s, is that membership did not decline.

The sustained demand for health insurance during the 1980s may partly reflect developments in the public system, particularly public hospital care. If access to public hospital care becomes more difficult – or is perceived to become more difficult – to obtain, this is likely to reinforce the demand for insurance as a means of ensuring access to hospital care. The contrast between the late 1970s and the 1980s in terms of public expenditure on the health services, and specifically on hospital services, is illustrated in Table 11.3. Gross expenditure by the Department of Health, and expenditure on the General Hospitals programme, are given both in nominal terms and deflated to constant (1985) prices. In the absence of information on the evolution of prices within the health sector, the National Accounts deflator for public authorities' expenditure on current goods and services has to be used. In nominal terms, there was an extremely substantial expansion in public health spending in the late 1970s, with total expenditure by the Department of Health more than doubling between 1977 and 1980. Spending on hospital services grew even more. Prices were increasing rapidly at the time, but this still represented in real terms a 35 per cent increase in total spending and a 50 per cent rise in spending on hospital services. During the period from 1980 to 1986, though, total spending was almost unchanged in real terms while spending on hospitals declined by about 6½ per cent in real terms. In 1987 and 1988 both fell in real terms, stabilising in 1989, so that by 1989 total health spending was over 6 per cent lower and hospital spending was 15 per cent below the levels they had seen at the beginning of the decade.

Table 11.3: *Public Expenditure on Health Services and on General Hospital Programme, 1977-1989*

Year	Gross non-Capital Health Expenditure	General Hospitals Programme	In 1985 Prices[a]	
			Total	Hospitals
1977	341.7	165.8	910.3	441.7
1978	394.0	195.1	953.4	472.1
1979	535.0	281.9	1093.3	576.1
1980	732.0	393.8	1,232.6	663.1
1981	858.0	458.4	1,193.0	637.4
1982	998.7	507.7	1,236.6	628.6
1983	1,090.5	558.1	1,245.9	637.6
1984	1,155.5	592.6	1,221.6	626.5
1985	1,245.0	637.2	1,245.0	637.2
1986	1,298.7	647.9	1,240.6	618.9
1987	1,320.0	655.8	1,188.0	590.2
1988	1,338.5	662.6	1,148.2	568.4
1989	1,425.0	697.5	1,151.4	563.6

[a]Deflator for public authorities' expenditure on current goods and services

Because price increases in the hospital sector probably exceed those in many of the other areas reflected in the overall public authorities' expenditure deflator, these figures are likely to understate the decline in the real value of public hospital spending during the 1980s. This is consistent, then, with the view that the demand for health insurance was reinforced during that period by reaction to cutbacks in publicly-provided health services. Clearly falling expenditure (in real terms) is not *necessarily* associated with a deteriorating level or quality of service, since it may be associated with increased efficiency/more rapid "throughput". Table 11.4 shows that, in the period from 1980 to 1988 (the latest year for which data have been published), the number of beds in acute public hospitals did fall more rapidly than the number of patients treated, as average duration of stay was reduced. However, the numbers discharged were relatively static during the 1980-1986 period, having risen rapidly in the 1970s, and declined significantly in 1987 and 1988. No proper assessment of the evolution of provision compared with "needs" is possible on the basis of such crude aggregate data. Further, such aggregates for public hospitals do not distinguish between public and private patients within public hospitals, which we would need to do in order to see how public provision and demand for private care developed. Data on length of waiting lists for public care, with all their problems, would also be helpful as indicators of ease of access if available over time on a reasonably comparable basis. The aggregate data on activity are however clearly consistent with constrained public provision playing a major role in the demand for private care and therefore health insurance.

Table 11.4: *Activity in Public Acute Hospitals, 1980-1988*

| | Acute Hospitals: Health Board and Voluntary Public Hospitals | | |
	Beds	Patients Discharged	Average Length of Stay
1980	17,665	543,698	9.7[a]
1981	17,582	562,633	9.4[a]
1982	17,582	570,843	9.0[a]
1983	17,633	565,658	8.6[a]
1984	17,335	560,969	8.6[a]/7.5[b]
1985	17,223	570,628	7.5[b]
1986	16,876	566,105	7.4[b]
1987	15,225	512,004	7.3[b]
1988	13,632	491,474	7.0[b]

[a]Including district hospitals.
[b]Excluding district hospitals.
Source: Health Statistics, various issues, (1989, Table G1,p. 72).

The other main factor which would be expected to have influenced demand for insurance over time is of course price. Table 11.5 shows the way in which VHI premia have increased over the 1980s, as presented by the Report of the Commission on Health Funding, both in nominal terms and adjusted for the increase in the general price level. The average increases in subscription have been well ahead of those in consumer prices over the 1980-1988 period, with a real increase of about 46 per cent in premium levels. Much of this dates back to 1982, when premia were raised by 41½ per cent in nominal terms, but even over the 1983-1988 period premia rose by over 25 per cent in real terms.

Table 11.5: *VHI Premium Increases, 1981-1988*

Year	Average premium Increases on 1 March	Real Increase, Adjusted for Consumer Price Inflation
	Per cent	
1981	23.0	2.2
1982	41.5	20.8
1983	11.5	0.9
1984	13.5	4.5
1985	7.5	2.0
1986	8.0	4.0
1987	–	–
1988	8.0 [a]	5.8
	176.2	46.1

[a]With effect from 1 December 1987.

Source: Report of the Commission on Health Funding (1989), Table 8.3, p. 138.

Note: As premium increases took effect from next renewal date after 1 March, and these are spread throughout the year, the CSO estimate for the annual rate of increase in the Consumer Price Index in each year has been used to derive an approximate estimate of the real rate of increase.

The Commission Report points out that the VHI membership rose significantly over the 1980s, in spite of these increases in price, and suggests that this indicates that the price sensitivity of demand for health insurance is very low.[72] This conclusion must be qualified on a number of grounds, however. First, although the numbers with VHI cover did rise, this was partly attributable to an increase in population – the percentage of the population with insurance rose only marginally between 1982 and 1987 (see Table 11.1). Second, for many subscribers, the actual increase in net cost after tax relief during the 1980s would have been less than indicated by

[72]Report of the Commission on Health Funding (1989).

the rise in gross price, as more and more taxpayers became liable at the higher rates of tax. The proportion of income tax payers who were liable for tax at the higher rather than the standard rate rose from 14 per cent in 1980/81 to over 43 per cent in 1986/87.[73] Given an increase in gross premium of 25 per cent, a taxpayer who moved from the 35 per cent to the 48 per cent rate of income tax and obtained relief at the marginal rate would actually experience *no* increase in the net cost of insurance. There was a slight reduction in the top marginal tax rate, from 60 per cent to 58 per cent, over the 1980-1989 period, which would have marginally reduced the value of tax relief for those at the top rate throughout. However, for very many taxpayers an increase in the tax rate faced would have offset a substantial proportion of the increase in the gross price of insurance.

Finally, and crucially, the actual evolution of premia and numbers insured over time must be seen in the context of other changes which were taking place and which would be expected to affect demand. It may indeed be the case that, in the circumstances which prevailed in the 1980s and particularly in the light of what were perceived as substantial reductions in the level of public provision, the demand for health insurance was relatively insensitive to price. However, this highlights the need, in predicting the impact on demand of, for example, reducing or eliminating tax relief, to set insurance and private provision firmly in its place in the system as a whole. The effects of altering tax relief would depend critically on what is happening to the level of public provision, and it could be quite misleading to talk of demand simply being price-sensitive or insensitive, abstracting from the context in which price increases operate.

We return to this topic in the final chapter, when considering various policy issues for the health care system. Here, continuing to focus on the demand for health insurance, we now present some survey-based data directly addressing the motives which underlie demand for insurance.

11.3 Survey Evidence on Reasons for Taking Out Health Insurance

In order to explore the factors influencing demand for health insurance, a question on this topic was added to the Consumer Survey carried out each month for the EC Commission by the ESRI and Teagasc. The survey is intended to provide a national representative sample, and interviews about 1,200 households in each round. The question on health insurance was included in the urban element of the survey (administered by the ESRI) in April 1990, and in both urban and rural areas (the latter being carried out by Teagasc) in May and June 1990 rounds. The results presented here have

[73]Budget Statement 1987.

been reweighted to eliminate the over-representation of urban households this entailed.

Respondents were first asked whether they had health insurance, and those who did were then probed. They were presented with seven reasons for taking out insurance, or could specify another reason themselves, and were asked to state what they thought were the most important, second most important, and least important reasons for having cover. The suggested reasons focused on:

(i)   being able to have private/semi-private accommodation;

(ii)   freedom of choice of consultant;

(iii) speed and certainty of access to hospital;

(iv)   being sure of getting "good treatment" in hospital;

(v)   being able to get care in private hospitals;

(vi)   being sure of getting consultant care; and

(vii) being able to arrange hospital treatment for a convenient time.

The first three are those noted by the Commission on Health Funding as the main reasons why people take out insurance.[74] The others relate to the possibility that perceived differences in the quality of public and private care may influence demand (iv, v, vi) and the convenience of being able to influence the timing of private hospital stays.

Taking the three rounds of the survey, a total of 3,000 households were administered the question on health insurance. Of these, 33 per cent currently had VHI cover. Table 11.6 shows the percentage of those insured respondents giving each of the suggested reasons as the most important. Access to hospital care is overwhelmingly the dominant reason given, with over 60 per cent of the insured saying that "being sure of getting into hospital quickly when you need treatment" was the most important reason for having health insurance. Each of the other suggested reasons was selected as the most important by fewer than 10 per cent of respondents. Of these, being able to choose your own consultant and being "sure of getting good treatment" were chosen by the highest number, about 9 per cent of respondents in each case. It is notable that only 5 per cent stated that having private/semi-private accommodation was the most important reason, and only 2½ per cent saw being able to obtain care in private hospitals as the most important.

[74]Report of the Commission on Health Funding (1989).

Table 11.6: *Reasons for Having VHI Cover*

| | Percentage Stating | | |
	"most important"	"next most important"	"least important"
Being able to have a private or semi-private room in hospital	5.1	8.8	34.0
Being able to choose your own consultant	8.3	17.2	6.6
Being sure of getting into hospital quickly when you need treatment	62.4	13.9	1.1
Being sure of getting good treatment in hospital	9.6	26.2	6.3
Being able to get into private hospitals	2.1	4.4	26.7
Being sure of getting consultant care	4.7	19.0	5.7
Being able to arrange hospital treatment for when it suits you	7.8	10.5	15.5
Total	100.0	100.0	95.9

Table 11.6 also shows the breakdown of responses to the further question about which of the suggested responses was the "next most important". About one-quarter of respondents now chose being sure of getting good treatment in hospital, while being able to choose one's own consultant and being sure of getting consultant care were also important. Altogether, over three-quarters of respondents stated that being sure of getting into hospital quickly was either the most important or the next most important reason for having health insurance. About one third gave "getting good treatment" as most or next most important, and about one quarter gave freedom of choice of consultant and being sure of getting consultant care. This pattern of motivation is also reflected in the responses as to which reasons were *least* important. As the table also shows, having private accommodation, getting into private hospitals, and being able to arrange treatment for a convenient time were the ones selected by a significant number of respondents as least important.

Respondents were also asked if, apart from the reasons suggested, they had any other reasons for having VHI cover. Almost half the insured respondents did volunteer another reason. About two-thirds of these gave the need for security; small numbers said that health insurance was a "necessity", they wanted quality treatment or gave some general response such as that they feared sickness. About 8 per cent of those volunteering a reason – 4 per cent of all the insured – gave the fact that State provision or entitlements were insufficient.

There was little difference between respondents in urban versus rural areas, or across age ranges, in the pattern of responses. Variation by household income and socio-economic group was also examined. Household income (by range) was only available for about 63 per cent of the insured respondents, but for these there was no striking relationship between the factors identified as important and household income level. When categorised by socio-economic group (based on the occupation of the household head), the only notable variation in responses was that a relatively low percentage of those from farm backgrounds – 46 per cent – gave "being sure of getting into hospital quickly" as the most important reason. Being able to have a private room, get into private hospitals, and being sure of getting good treatment were relatively important for this group – though the numbers involved are small.

It is clear, then, that the motives which people identify for having health insurance are predominantly "security" and certainty of access to hospital care, followed by quality of "private" care – as reflected in being sure of having a consultant, being able to choose the consultant, and being sure of "getting good treatment" in general. Factors associated with the standard of accommodation, privacy, or convenience were much less important. Even if there is some reluctance about admitting that the standard of accommodation or privacy are important, this seems likely to affect the overall pattern only marginally.

Particular care has to be exercised in assessing the implications of these results for the relationship between public entitlements and the demand for health insurance, because many people may not have a clear picture of their entitlements to public care. Respondents were not asked whether they were in Category II or III because the pilot element of the 1987 survey showed that they often did not know. For the same reason, respondents were not given the limited entitlements of Category III as one of the suggested reasons for taking out insurance. They could volunteer it when asked about other reasons, and 4 per cent did identify insufficient State provision or entitlements as important. A significant number of those volunteering the need for security or saying that insurance was a necessity

could have been influenced by limited State entitlements, or by ignorance about those entitlements: however, households which were probably in Category III (on the basis of reported incomes) were no more likely to refer to such factors, and just as likely to give ensuring access as the most important reason. While the evidence is less satisfactory than it might be, the pattern of responses and the priority given to ensuring access to hospital care appears to be similar for those in and outside Category III.

11.4 *Conclusions*

This chapter and the previous one have presented an analysis of the role of health insurance in the Irish health care system, the factors influencing the demand for insurance, and the composition of the insured population. The role of health insurance is partly to "fill in the gaps" in public provision, for the most part in eligibility for hospital in-patient care, but insurance now plays a considerably more substantial part in the system. A significant number of people with full eligibility to publicly-provided hospital care purchase insurance, and they make up a majority of the insured population. Analysis of the large-scale household survey data obtained by the ESRI in 1987 revealed some of the key characteristics associated with demand for insurance, in particular age, income and social class. While it was difficult to disentangle the effects of the limited State entitlements of those in Category III from their age, income and social class, many appeared likely to demand insurance even before their limited entitlements were taken into account.

This data base could not however provide robust estimates of the influence of price or the related impact of the income tax relief available for health insurance premia. Time-series evidence was examined and suggested that sensitivity of demand for insurance to price is limited, though the conclusion of the Commission on Health Funding that it is "very low" needs to be qualified. Evidence from directly surveying households about their reasons for having health insurance made it clear that speed and certainty of access to hospital care was the dominant motive, with some concern about the quality of public versus private care.

Given the apparent importance of "security" and access in the demand for insurance and private care, it is clear that insurance can only be analysed meaningfully when set firmly in its context in the system as a whole. Thus the impact of suggested policy options, such as the reduction or elimination of tax relief on insurance premia, have to be assessed in the light of developments in public provision, in particular ease of access to and perceived quality of public hospital care. These considerations form part of the background to the discussion, in the final chapter, of a range of policy issues in the area of health services financing and utilisation.

THE DISTRIBUTION OF STATE HEALTH CARE SPENDING AMONG HOUSEHOLDS

12.1 *Introduction*

So far in this study, the structure of the Irish health services and the utilisation patterns for different groups and different forms of health care have been analysed. We now turn, in this chapter and the following one, to distributional issues: what are the distributional implications of the way in which health services in Ireland are structured and utilised? In this chapter, we concentrate on health care expenditure by the State, and look at the way in which those expenditures benefit different groups, whether categorised by age, sex, entitlement category, social class or income. This has much in common with the health component of the redistributional exercises carried out by the CSO using the 1973 and 1980 Household Budget Surveys (CSO 1980, 1983). Chapter 13 goes on to look more broadly at the distributional pattern of both financing and delivery of health services in Ireland, whether State-financed or not.

In focusing first on the allocation among households of State expenditure on health services, the conventional approach is followed whereby the benefit which households receive through free/subsidised services is taken to be equal to the cost of providing those services. This is the approach adopted in the CSO's redistribution exercises and in many other studies of this type (including the annual one by the UK CSO). As a measure of the value to recipients this has clear limitations – what the free service is "worth" to the recipient may not be identical to the cost of provision. In general, the value to the recipient will be less than a cash transfer corresponding to the cost of provision, since the latter could be spent on anything, whereas providing the service constrains the recipients' choice. Some methodologies for estimating the value to the recipient of in-kind transfers have been developed in the US (see Smeeding 1982, Bureau of the Census 1987), but none appears particularly satisfactory. Here, in any case, our objective is to identify the beneficiaries of State health care expenditure and trace the flow of resources involved, rather than estimate in any precise way the value placed on the service by recipients. We therefore allocate State expenditure on the provision of health care among the households who utilised the services.

Previous studies carrying out such allocation exercises for Ireland, such

as the CSO's redistribution exercises and the study for the NESC by Rottman and Reidy (1988) also based on the 1980 HBS, have not had direct information on the utilisation of health services by different households. They therefore used external information on average utilisation rates for each age/sex group, and allocated the benefit of State health care expenditure to households in the HBS on the basis of their composition and these average utilisation rates. With the data in the ESRI survey, though, the reported utilisation of different types of health care service by household members is available, This means that the different types of State health service expenditure can be allocated directly to the households which actually used those services, and in proportion to the frequency of use. (This will also be the case in the redistribution exercise being carried out by the CSO based on the 1987 HBS.)

The chapter is structured as follows. Section 12.2 describes the areas covered by the allocation exercise, the way in which expenditure and utilisation levels are used to calculate the cost per unit of providing the various services, and the way in which these unit costs are applied to allocate expenditure among households in the sample. Section 12.3 analyses the pattern of distribution of State health care expenditure produced by this allocation exercise, and Section 12.4 summarises the main findings.

12.2 *Cost of Provision and the Allocation of State Expenditure on Health Services*

Not all State expenditure on health care is allocated among households in the allocation exercise, for reasons to be explained. The major expenditure categories included in the analysis are:
- GMS spending on GPs and prescriptions;
- the subsidy for drug purchase by non-Medical Card holders and drugs refunds for long-term illnesses;
- dental, opthalmic and aural services under the Community Health Services Programme;
- General Hospital Programme spending on regional, public voluntary and health board county hospitals;
- and contributions to patients in private hospitals.

These account for about 56 per cent of all current expenditure by the Department of Health – all capital expenditure is excluded.

Other expenditure programmes are not allocated in this exercise, or in those carried out by the CSO, for a variety of reasons. The Community Protection Programme is not included, since its benefits cannot be attributed to particular households – only a relatively small amount is involved. Expenditure under the Community Welfare Programme is a form

of social protection rather than an element of the health services *per se*. Expenditure on central and local administration is not allocated – a number of possible procedures could be followed, such as allocation over the entire population, evenly over all beneficiaries, or in proportion to frequency of utilisation of services. Expenditure on long-stay hospitals and homes is excluded because the beneficiaries are not in the population living in households and these institutions mostly provide what is in effect accommodation rather than health care. Expenditure on homes for the handicapped and on psychiatric hospitals is also excluded because it cannot be allocated among households. Expenditure on day care for the handicapped and psychiatric treatment is also excluded, though it should ideally be allocated to households in such an exercise. It is also important to note that "tax expenditures", notably tax relief for VHI premia, are not included in this analysis.

We now look in detail at the cost of providing services under the major categories and how they may be allocated among households, starting with the GMS.

GMS Expenditure

Expenditure by the GMS Payments Board in 1987 amounted to £40 million in payments to doctors and £83.6 million for medicines. The average payment to doctors per visit was £4.65, while the average payment per prescription form was £11.67.

As discussed in Chapter 3 above, GP visits by people covered by Medical Cards are somewhat under-represented in the sample. This is because (a) the Category I population is slightly under-represented; and (b) GP visits reported by the Category I population in the sample were lower than the GMS records show – both because the proportion in the sample stating they had no visit is higher, and because those with visits had a smaller number of visits on average. The same applies, though to a lesser extent, to prescriptions for Category I. This means that applying the average fee per GP visit and prescriptions to the survey responses would not fully allocate the amount spent by the GMS – it would account for about three-quarters of that total.

In allocating the total expenditure on GP services of £40 million, the procedure adopted was:

(i)   each visit was first costed at £4.65, the actual average GMS cost;
(ii)   it was assumed that some of those not reporting any visit actually did have one or two. The total expenditure going to such persons is estimated, again on the basis of the actual average of £4.65 per visit. Since we do not know which households to apply this to, instead it is

evenly divided over all those saying they had no visit – the amount involved is not large.

(iii) the remaining GP expenditure is allocated evenly over all those who did report a visit, i.e., under-reporting is assumed to be about the same for them all rather than proportional to the frequency of visit.

In allocating GMS expenditure on drugs, a similar procedure is followed, though the degree of under-representation is less so the "residual" amount requiring special assumptions is less.

Non-GMS Drug Refunds

We now look at expenditure on drug refunds outside the GMS, under the Drugs Refund Scheme and the Long-Term Illness Scheme. In 1987 a total of £19 million was spent under these two schemes. We do not have information for our sample on which persons were covered by the Long-Term Illness Scheme, and in allocating expenditure under the two schemes arbitrary assumptions have to be made.

The expenditure is therefore allocated to those who had high frequencies of prescriptions in the previous year, and the average cost per prescription is assumed to be about £14. (This is somewhat higher than the average cost of prescriptions under the GMS, which was £12, because the retail margin is included.) The cut-off chosen which allocated the £19 million expenditure at this average cost was 12 prescriptions or more, for all those not in Category I. For those individuals, £14 for each of their prescriptions was attributed. This will overestimate somewhat the amounts actually received by those receiving drug refunds, which apply only over a ceiling, but not those in the Long-Term Illness Scheme who are covered for all prescriptions.

Dental, Opthalmic and Aural Services

Total expenditure under the Community Health Service programme on Dental, Opthalmic and Aural Services in 1987 was £18 million. We allocate this to persons in the sample who had a visit for dental treatment, sight or hearing examination and stated that this was free because they were covered by a Medical Card or the Scheme for National School Children. Dividing the expenditure figure by the total number of such visits in the sample, grossed-up to the implied population total, gave an average cost per visit of £23. This was then attributed to each visit.

Hospital Expenditure

The dominant expenditure category to be allocated, in terms of size, is the General Hospital Programme. The elements included here are

expenditure on regional, public voluntary and health board county hospitals, and a proportion of that on district hospitals. As discussed above, long-stay patients would not appear in a private household sample, so we exclude all spending on health board long-stay hospitals and a part of that on district hospitals. About £26 million in total was spent on district hospitals in 1987, and we include £10 million of this in our allocation. The Department of Health's (current) expenditure in 1987 amounted to £151 million on regional hospitals, £260 million on public voluntary hospitals, and £125 million on health board county hospitals. Together with the proportion of district hospital spending, this leads to a total of about £550 million in gross expenditure. However, our objective is to allocate *net* State spending, having taken into account charges for services levied on households. We therefore deduct charges in respect of private/semi-private accommodation, which in 1987 came to £38 million, which leaves net State expenditure on public hospitals of about £510 million to be allocated. (The £10 charges introduced in April 1987 would not have affected much of the utilisation reported in the sample and are not included in the exercise, though it would be relatively straightforward to do so in future.)

This expenditure on public hospitals covers both in-patient and out-patient care, and we wish to allocate each according to the utilisation by sample members. However, published information relates only to aggregate expenditure, and the separate costing of out-patient versus in-patient care is obviously a difficult task in any case. Here we make the assumption, for the purpose of the allocation exercise, that each consultation in an out-patient clinic cost £30 to provide, and each day surgery treatment £100. While these are rather speculative, varying the amounts was found not to affect the overall pattern of results.

In allocating the expenditure on public hospitals, persons in different Entitlement Categories and those obtaining in-patient care in private or semi-private versus public wards will be treated differently. As far as out-patient treatment is concerned, those in Categories I and II are allocated the full cost of provision since (up to the introduction of the £10 charge for the latter) the service was available free of charge. For Category III, on the other hand, since out-patient services had to be paid for, it is assumed for the purpose of the exercise that this covered the cost of provision and no net expenditure is attributed. In the case of day surgery, this would be available free of charge to those in Categories I or II, but those in Category III *or* with VHI cover would have paid privately and therefore are allocated no net expenditure.

For in-patient treatment, accounting for the most of the expenditure, the situation is more complex. Those obtaining care in private/semi-

private accommodation will generally have paid for that accommodation, and most of these will also have paid for consultant care privately.[75] If the daily charge covers the full cost of the services provided by the State, then no net expenditure should be attributed. If on the other hand the full cost is not covered – there is an element of implicit subsidy to private patients – some should be attributed. The daily charge for private/semi-private accommodation rose dramatically through the 1980s, and by 1987 the charge for a private bed in Health Board regional or voluntary teaching hospitals had reached £93, compared with only £12 in 1980. Thus the extent of subsidy had certainly been reduced a great deal by 1987, and whether any remained by that date is difficult to assess. For the purpose of this exercise, we begin by using as benchmark the assumption that no subsidy remained by 1987: thus no State expenditure on public hospitals is allocated to those receiving private care in such hospitals. Dividing total expenditure less the estimated amount going on out-patients and day-surgery among public in-patients, the average cost of provision per night works out at about £135. To explore the implications of alternative assumptions, we also examine the pattern produced by assuming that private patients are charged 30 per cent less than the "true" average cost of provision, implying a subsidy to them of about £30 per night. Dividing the remaining expenditure among public patients, the average expenditure on the latter would then be about £125 per night. This allows the sensitivity or otherwise of the results to the assumptions about private patients to be assessed.

So total State net current expenditure on public hospitals is allocated among households in the sample in the following way:
(i)   £30 per out-patient visit by persons in Category I or II;
(ii)   £100 per day surgery treatment for persons in Category I or II (without VHI cover);
(iii) £135 per night for in-patient hospital stays in public beds; or
(iv)   £125 per night for in-patient stays in public beds, and £30 per night for stays in private/semi-private wards in public hospitals.

This allocates the total of £512 million expenditure by the State on public hospitals (net of charges for maintenance in private accommodation), with about £50 million going to those using out-patient/day surgery services and the remainder to those with in-patient stays.

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[75]It does apparently happen on occasion that public patients are placed by the hospital in semi-private rooms, in which case they would not pay for that accommodation. Sometimes private patients – paying for their consultant care – are accommodated in public wards: as discussed in Chapter 14, this is to be addressed by new arrangements arising from the Programme for Economic and Social Progress.

Where the alternative assumption (iv) about private care in public hospitals is used, about £34 million is allocated to those receiving such care and the remaining £440 million to those obtaining public care – with (iii) the latter receive all the allocated expenditure.

Finally, the State also spent in 1987 £15 million in contributions to patients in private hospitals. This is allocated among persons in the sample who reported stays in private hospitals. On that basis, the average subsidy per night is about £48. It will be recalled that the sample appears to underrepresent nights spent in private hospitals, and this results in an overestimate of this average subsidy. This should not seriously affect the allocation exercise, though, since the analysis is concerned with the part of the income distribution or the age range where the expenditure/benefit is attributed, rather than the particular household.

12.3 *The Distributional Pattern of State Health Care Expenditure*

We now look at the pattern produced by the allocation of State health care expenditures among individuals and households in the manner described. We begin with the distribution among persons classified by their Entitlement Category, shown in Table 12.1, distinguishing between the principal types of service involved. All GMS expenditure goes to Category I, while that on the drugs refund, etc. scheme goes mostly to Category II. Over half of the expenditure on Community Dental, Aural and Optical services goes to those with Medical Card cover, the remainder representing for the most part services to National School children not in Category I. About 60 per cent of State spending on hospitals goes to Category I. The percentage of public hospitals in-patient spending going to that group is slightly higher than 60 per cent, while they are allocated a slightly lower percentage of out-patient spending. Most of the State contribution to private hospitals is allocated to Category II and III. Total expenditure is dominated by spending on public hospitals and the GMS, which together account for 93 per cent of allocated expenditure. Since Category I is allocated all GMS spending and over 60 per cent of expenditure on public hospitals, overall about two-thirds of all allocated expenditure goes to that category, which contains 34 per cent of the persons in the sample. Most of the remainder goes to Category II, with Category III receiving only 4 per cent of allocated expenditure.

Apart from Entitlement Category, the other main influence on the amount allocated to particular households is age, through its relationship with utilisation. Table 12.2 shows the distribution of State health care expenditure by the age of the individual. Overall about 8 per cent goes on persons under the age of 5, 21 per cent to those aged between 5-24, 45 per

cent on those aged between 25-64, and 26 per cent on persons aged 65 or over. The elderly are certainly relatively intensive users – accounting for only 10 per cent of the population, they receive over a quarter of expenditure. However, it is *not* the case that most of the allocated health spending goes on the elderly. (It will be recalled though that long-stay care is not included.) It is also interesting that a higher proportion of GMS than of public hospital in-patient expenditure goes on the elderly – 33 per cent compared with 26 per cent.

Turning to the pattern of State health spending over the income distribution, Table 12.3 shows the percentage of spending of each type going to the different deciles of the income distribution, classifying recipients by the rank of their household in terms of disposable income. The two main determinants of the amount going to a particular decile group are the entitlement of the individuals in that decile to publicly-provided care, and the actual utilisation patterns – the latter being strongly influenced by their age composition. We can see that the third to the sixth deciles have relatively substantial proportions of all allocated expenditure – between them they receive 52 per cent of the total. This is once again dominated by expenditure on public hospitals and the GMS, with the latter being more heavily concentrated towards the bottom of the distribution. The top 40 per cent of households receive only 23 per cent of GMS spending and 30 per cent of all allocated expenditure.

The distribution of expenditure over the household income distribution is of considerable interest, and has been the focus of attention in, for example, analyses of the CSO's redistributive exercises based on the Household Budget Surveys. However, it must be noted that it is households rather than persons which are being ranked by decile, and households in different deciles vary in size. Thus each decile has 10 per cent of households but *not* 10 per cent of persons – as Table 12.3 shows, the percentage of persons ranges from under 5 per cent to over 13 per cent, with the bottom two deciles containing relatively few persons. This means that the share of expenditure going to each decile must be assessed in the light of the proportion of persons falling into that decile. The distribution of expenditure by household income decile shown in Table 12.3 is in fact considerably more skewed towards the bottom on a per capita basis. Whereas the bottom two deciles receive 19 per cent of spending on health, they contain only 10 per cent of all persons. Likewise, the top 20 per cent of households contain 25 per cent of all persons but receive only 12 per cent of public health spending.

As discussed in detail in earlier chapters, household disposable income takes no account of the greater needs of larger households. It is therefore

Table 12.1: *Distribution of State Health Expenditure by Entitlement Category*

| Entitlement Category | GMS | | | Drugs Refund | Dental, etc. | Hospital | | | | Total Expenditure | Percentage of Persons |
	GP	Prescriptions	Total			Out-Patient	In-Patient	Private Hospital	Total		
						Per cent					
I	100.0	100.0	100.0	0.0	53.8	57.1	61.5	11.4	60.0	65.8	34.2
II	0.0	0.0	0.0	88.6	34.4	42.9	34.8	45.8	35.8	30.4	51.7
III	0.0	0.0	0.0	11.4	11.8	0.0	3.7	42.8	4.2	3.8	14.2
All	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Percentage of all allocated expenditure	6.2	13.1	19.3	3.0	2.6	7.1	66.3	1.7	75.1	100.0	100.0

Table 12.2: *Distribution of State Health Expenditure by Age Range*

| Age Category | GMS | | | Drugs Refund | Dental, etc. | Hospital | | | | Total Expenditure | Percentage of Persons |
	GP	Prescriptions	Total			Out-Patient	In-Patient	Private Hospital	Total		
						Per cent					
Under 5	7.6	6.3	6.7	13.0	4.3	8.8	8.0	8.7	8.1	7.9	10.6
5-24	19.2	16.3	17.3	12.6	76.4	21.9	21.0	2.6	20.7	21.2	36.4
25-64	43.2	43.0	43.1	60.8	11.6	50.9	45.3	76.1	46.5	45.4	43.2
65 or over	30.0	34.4	32.9	13.6	7.7	18.4	25.6	12.5	24.7	25.5	9.8
All	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

also useful to rank household by disposable *equivalent* income, where household disposable income is divided by the equivalence scale for the household in question, given it size and composition. Table 12.4 shows the percentage of spending going to households ranked by decile in this way. Since average household size is now much greater for households towards the bottom than was the case simply with disposable income, it is not surprising that expenditure is also now more concentrated at the bottom of the distribution. Over 42 per cent of expenditure goes to the bottom three deciles, only 7½ per cent to the top two deciles. This general pattern holds for both public hospital spending and, in a more pronounced fashion, the GMS – over half of all GMS spending, and over 40 per cent of spending on public hospitals, goes to the bottom 30 per cent of households. It was noted in Chapter 4 above that about one-fifth of those with Medical Card cover were in the top half of the equivalent income distribution, and about the same proportion of GMS expenditure goes to that part of the distribution.

This form of presentation – looking at the distribution of health expenditures by household equivalent disposable income – was the one adopted by Rottman and Reidy (1988) in their in-depth study of social expenditures, including health, based on analysis of the results of the CSO's redistributive exercise for 1980. As already noted, there was an important difference in methodology, in that we used reported utilisation patterns of sample households whereas the CSO had to rely on average utilisation of age/sex groups. Their results showed 25 per cent of all allocated health expenditure going to the bottom 20 per cent of households and 12.9 per cent going to the top 20 per cent, classified by equivalent disposable income. Our results in Table 12.4 show 30 per cent of allocated expenditure going to the bottom quintile by equivalent income, and 7½ per cent going to the top quintile. There are differences in coverage (and some other minor differences in methodology) between the two studies, as well as the difference in the year to which they apply, so the impact of the use of actual utilisation patterns cannot itself be distinguished in this comparison. However, given the relatively heavy utilisation of manual social classes/lower income groups (controlling for age) noted earlier in this study, it is plausible that using reported utilisation for individual households rather than averages for all age/sex groups would lead to a greater concentration of expenditure towards the bottom of the distribution.

Finally, although there is much less variation across deciles in average household size using equivalent rather than unadjusted household income, it remains the case that persons are slightly unevenly spread across deciles based on *household* rankings. Thus the bottom decile of households in

Table 12.3: *Distribution of State Health Expenditure by Household Disposable Income Decile*

Decile	GMS			Drugs Refund	Dental, etc.	Hospital				Total Expenditure	Percentage of Persons
	GP	Prescriptions	Total			Out-Patient	In-Patient	Private Hospital	Total		
						Per cent					
Bottom	12.0	13.4	13.0	4.0	5.3	8.8	9.5	6.4	9.4	9.8	4.4
2	12.8	12.3	12.4	2.6	6.6	12.9	7.2	2.2	7.6	8.4	5.3
3	18.2	19.1	18.8	4.8	10.3	10.6	14.2	6.6	13.7	14.4	8.2
4	15.9	15.5	15.6	12.4	10.5	15.3	12.7	3.3	12.7	13.2	10.1
5	10.7	10.1	10.3	10.0	14.6	13.7	11.2	2.5	11.2	11.1	10.6
6	7.8	6.9	7.2	19.4	14.5	11.0	14.8	5.8	14.2	13.0	11.0
7	7.3	7.8	7.6	14.0	12.6	7.8	9.5	9.9	9.4	9.2	12.0
8	7.0	7.4	7.2	12.0	10.9	6.6	9.0	8.0	8.8	8.6	12.3
9	5.4	4.8	5.0	9.6	6.7	8.3	6.9	10.0	7.1	6.7	12.7
Top	2.9	2.8	2.8	11.1	7.9	4.9	5.0	45.2	5.9	5.5	13.4
All	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 12.4: *Distribution of State Health Expenditure by Household Equivalent Disposable Income Decile*

Decile	GMS			Drugs Refund	Dental, etc.	Hospital				Total Expenditure	Percen- tage of Persons
	GP	*Pres- criptions*	*Total*			*Out- Patient*	*In- Patient*	*Private Hospital*	*Total*		
					Per cent						
Bottom	16.7	15.8	16.1	6.2	19.5	12.9	14.1	8.1	13.8	14.2	11.2
2	21.5	18.6	19.5	6.6	15.9	17.6	15.2	10.1	15.3	15.8	11.5
3	13.9	16.2	15.5	8.3	11.1	13.0	11.9	1.8	11.8	12.4	8.4
4	15.1	16.2	15.9	9.4	10.5	15.0	9.4	4.4	9.8	11.0	8.5
5	12.1	12.4	12.3	10.2	10.7	10.2	14.9	3.9	14.2	13.6	10.4
6	8.5	9.0	8.8	13.3	10.9	7.5	9.8	2.4	9.4	9.5	10.6
7	4.9	4.5	4.6	12.8	8.9	6.8	7.3	7.7	7.3	7.0	11.3
8	4.6	4.3	4.4	13.2	4.6	7.6	10.6	8.5	10.2	9.1	10.0
9	1.5	1.5	1.5	11.6	5.2	4.8	4.4	6.7	4.4	4.1	9.8
Top	1.3	1.4	1.4	8.3	2.7	4.6	2.5	46.4	3.7	3.4	8.2
All	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 9.4 contains 11 per cent of persons, and the third decile contains only 8 per cent. Results in this form are comparable with previous studies (for Ireland and elsewhere), but it may also be helpful to present them slightly differently. Instead of ranking *households*, we can look at the distribution among *individuals*. That is, we attribute to each person the equivalent income of the household to which he or she belongs, and rank *persons* by decile. Table 12.5 shows the spread of public health expenditure over the decile distribution among persons, derived in this way. We can now see that the bottom two deciles – which by construction now contain 20 per cent of all persons – receive 27 per cent of all allocated expenditure. The top 20 per cent by contrast, receive only 9 per cent of all expenditure. This may be a more transparent representation of the extent to which State expenditure on health care is directed towards persons at the middle and bottom rather than towards the top of the income distribution. We now see for example, that almost 80 per cent of GMS expenditure goes to the bottom 50 per cent of persons, while the corresponding figure for spending on in-patient care in public hospitals is 65 per cent.

The pattern of public hospital in-patient expenditure which we have discussed has been on the assumption that private patients in such hospitals pay the full cost of their treatment, receiving no net benefit from public expenditure. As outlined in Section 12.2, an alternative assumption involving some implicit State subsidy to these patients can also be employed. This was found to make little difference to the results, however. For example, where 61 per cent of public hospital in-patient spending went to Category I under the benchmark assumption of no subsidy, the figure assuming some subsidy is 59 per cent. Similarly, where Table 9.5 shows the bottom 50 per cent of persons receiving 65 per cent of spending on public hospital in-patient care, the alternative assumption produces a figure of 63 per cent. Thus the overall results are not particularly sensitive to the assumptions made about the benefit accruing to private patients in public hospitals.

12.4 *Conclusions*

This chapter has examined the distribution among households of State spending on the health services. Those services provided in a free or subsidised manner by the State which can readily be attributed to particular households were analysed – the GMS, acute hospital services, drugs refunds/subsidy, and the Dental, Opthalmic and Aural Services provided under the Community Health Services Programme. Expenditure by the State on these services was allocated among individuals and households on the basis of reported utilisation in the sample. This does not provide a

Table 12.5: *Distribution of State Health Expenditure by Equivalent Disposable Income, Deciles of Persons*

Decile	GMS			Drugs Refund	Dental, etc.	Hospital				Total Expenditure	Percentage of Persons
	GP	Pres-criptions	Total			Out-Patient	In-Patient	Private Hospital	Total		
						Per cent					
Bottom	14.1	13.8	13.9	6.3	16.8	12.3	13.4	8.1	13.2	13.2	10.0
2	20.1	16.8	17.8	6.3	14.7	16.1	13.2	7.4	13.4	14.1	10.0
3	16.6	18.8	18.1	8.6	13.7	13.8	14.0	3.4	13.7	14.4	10.0
4	16.8	18.1	17.7	9.5	12.1	17.0	10.5	5.6	11.0	12.3	10.0
5	11.4	11.6	11.5	10.1	10.4	9.5	14.3	3.9	13.6	13.0	10.0
6	8.2	8.8	8.6	13.0	10.3	7.4	9.4	2.4	9.0	9.1	10.0
7	4.4	4.0	4.2	12.4	8.8	6.0	6.3	7.7	6.3	6.1	10.0
8	5.0	4.6	4.7	9.3	4.8	7.6	10.7	8.5	10.4	9.1	10.0
9	1.8	1.9	1.8	14.8	5.1	5.0	5.0	5.4	5.0	4.7	10.0
Top	1.5	1.6	1.6	9.8	3.3	5.3	3.2	47.4	4.5	4.0	10.0
All	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

measure of the value to the recipients of the services provided, but rather of the flow of resources involved in providing them.

The results showed that State expenditure on public hospitals, and particularly the GMS, was concentrated towards the middle and bottom of the income distribution. Ranking individuals by the equivalent disposable income of their households, the bottom 20 per cent of persons received 32 per cent of GMS expenditure and 27 per cent of all allocated expenditure, whereas the top 20 per cent received only 3 per cent and 9 per cent respectively. Even with the GMS, though, those who benefited were clearly not exclusively at or near the bottom of the distribution. Unlike previous studies based on the CSO's redistributive exercises using the Household Budget Surveys, the allocation of health expenditures here has been on the basis of reported household utilisation of the different services rather than averages for age/sex groups. It appears that this serves to produce a pattern of expenditure which is somewhat more concentrated towards the bottom of the income distribution.

Chapter 13

EQUITY IN THE FINANCING AND DELIVERY OF HEALTH CARE IN IRELAND

13.1 *Introduction*

In the previous chapter, we focused on the way in which State expenditure on the health services can be allocated to those at different points in the income distribution. We now take a broader view of the financing and delivery of the health services, encompassing the distributional pattern of both financing and services delivered, and including both public and private expenditure/services. The objective is now not simply to identify to what extent different segments of the income distribution benefit from *State* expenditure. Rather, it is to allow the distributional implications of the overall structure of financing and delivery of health services in Ireland to be assessed.

In order to analyse the way in which health care is financed, we make use of information gathered in the CSO's Household Budget Survey for 1987. This enables us to see the distributional pattern of direct household expenditures on health care, and also the contribution made by different households, though direct and indirect taxation, to the financing of Exchequer expenditure on health care. The analysis of the distributional aspects of health care delivery is based on the ESRI Survey, as was the more limited examination of utilisation of *State-financed* services in the previous chapter. Now, *all* utilisation is included, whether publicly or privately financed. This allows the extent to which different segments of the income distribution contribute to the financing of health care, and the extent to which they benefit from such care, to be compared. Thus an overall impression of the equity implications of the health care system can be obtained. In addition, a preliminary attempt is made to analyse the relationship between utilisation/benefit from the health services and needs. That is, the pattern of expenditure over the income distribution is compared with what is known about the pattern of illness/health care needs. While this is done in a necessarily crude manner, it is seen that taking needs into account – and the precise way in which this is done – can significantly affect assessments of the equity of the delivery side of the health care system.

Section 13.2 deals with the distributional pattern of health service financing. Section 13.3 focuses on the distributional pattern on the delivery

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side. Section 10.4 deals with the complex issue of controlling for differences in health status and needs. Section 10.5 brings together the main findings.

13.2 *Equity in the Financing of Health Care*

The analysis of the financing of health care is based on the 1987 Household Budget Survey. This provides detailed information on direct household expenditures on health care (including health insurance), and on the income tax and social security contributions paid, by each household in the sample. However, in order to examine the way in which Exchequer spending on health care is financed, we need in addition to estimate the contribution made by each household through indirect taxes paid. This is not directly available from the HBS, but the CSO, as part of the redistributive exercises which it carries out based on the HBS, does estimate the indirect taxes which households would pay. This is done on the basis of their reported expenditure patterns, and the conventional assumption in such exercises that indirect taxes are borne fully by the consumer. The redistributive exercise based on the 1987 HBS is currently being completed by the CSO and the results should be available shortly. For the present, we must rely on the distribution of indirect taxes shown by the previous exercise which used 1980 data (CSO 1983).

First, the sources of health service financing must be outlined. State health spending is financed largely through general taxation, with a small proportion provided by social insurance contributions. In 1987, the year on which our analysis is based, the Exchequer – i.e., general taxation, etc. – accounted for almost 90 per cent of net non-capital expenditure by the Department of Health, most of the remainder coming from the Health Contribution element of PRSI contributions.[76] While public expenditure on health services is not identical to Departmental expenditure, as discussed in detail in Chapter 2, this financing structure may be taken to apply to current public expenditure on health which amounts to about £1150m in 1987.[77]

Turning to expenditure by households, the health insurance expenditure – almost all by the VHI – amounted to £155m in 1987.[78] Household expenditure on health care, *net* of insurance premia and

[76]Health Statistics 1988, Table J2, p. 101.
[77]Net non-capital expenditure by the Department of Health was £1,211m in 1987. Subtracting cash support payments under the Community Welfare Programme suggests a figure of about £1,150m for health spending, which is also what is given in the functional classification of government spending in the Budget and Estimates of Receipts and Expenditure for that year.
[78]Health Statistics 1990, Table J6.

refunds, amounted to about £225m in 1987.[79] Thus aggregate expenditure on health care was about £1,525m and was financed as follows:

(i)	general taxation	67.5%
(ii)	social insurance	7.5%
(iii)	health insurance	10.0%
(iv)	other household expenditure	15.0%.

This can be compared with the financing structure for health care in a number of other countries as presented in Maxwell (1981), shown in Table 13.1. The Irish financing structure has a relatively high share coming from general taxation. Social insurance is much less important than in France, Germany, Italy and The Netherlands, private insurance is quite important and out-of-pocket expenditure is about the middle of the range of the countries shown.

Table 13.1: *Sources of Finance for Health Care Expenditures, Various Countries*

	Share of Health Expenditure Financed from			
Country[a]	General Taxation	Social Insurance	Private Insurance	Direct Payments
Australia	62.7	1.7	21.1	13.8
Canada	66.3	9.1	19.5	2.5
France	7.0	69.0	19.6	3.0
W. Germany	14.6	62.5	12.5	5.3
Italy	23.8	67.5	8.7	
Netherlands	15.1	56.0	27.3	
Sweden	78.5	13.1	8.7	0.0
Switzerland	41.7	24.8	33.5	
UK	87.3	5.0	5.8	1.2
USA	31.0	11.7	27.1	25.6
Ireland	67.5	7.5	10.0	15.0

[a] Data for all countries except Ireland refer to 1975,
Irish data to 1987.
Source: Maxwell (1981), Table 4.1, except Ireland.

We now turn to the distributional pattern associated with each financing source, based on households in the 1987 HBS. Before adjusting for differences in household size and composition, it is useful to look at the pattern when households are simply classified by gross income decile. (Gross rather than disposable income is used because the contribution through income tax operates on gross income, so this appears the most

[79]Health Statistics 1990, Table J6.

relevant starting point.) Table 13.2 shows the distribution of health care payments from each source among households classified by gross income decile, together with the share of total gross income going to each decile. For general taxation, income tax and indirect taxes are shown separately, and the distribution of total taxation is a weighted average of the two in accordance with their relative importance in total tax revenue in 1987, which means that indirect taxes are weighted at 0.58 and income tax at 0.42. Taken together they account for about 85 per cent of all tax revenue.[80] (Property and Corporation taxes are much less important in Ireland than in many other countries, and are not included in the CSO's redistributive exercises: no attempt is made in this exercise to allocate them among households.)

The figures for all the revenue sources except indirect taxes are calculated directly from published HBS data:[81] as noted earlier, the distributional pattern of indirect taxes in 1987 is currently being estimated by the CSO, and here 1980 estimates have to be used.[82] Given the importance of indirect taxes – accounting for over half of tax revenue which in turn accounts for two-thirds of health care financing – the incorporation of up-to-date information on the distribution of indirect taxes is a priority, and the overall pattern shown here must be treated as preliminary.

Table 13.2 shows that, as is generally the case, income tax falls relatively heavily on high-income groups, who pay a share greater than the percentage of income they receive, whereas lower income groups pay a proportion of indirect tax greater than their share in income. The table shows the Gini coefficient for gross income and the "concentration coefficient" for the various revenue sources, and the Kakwani progressivity index (which may be calculated as the difference between the concentration coefficient for the source in question, and the Gini coefficient for income). These indicate that income tax is progressive (the Kakwani index is positive) and indirect tax is regressive, producing a situation where total tax is slightly progressive, with shares paid in tax by the various deciles close to their shares in income. Social security contributions are progressive, though less so than income tax, and the

[80]It is worth noting that they account for a significantly smaller share of total government expenditure because of the size of the Exchequer current budget deficit in that year, as through much of the 1980s, in Ireland.
[81]Household Budget Survey 1987, Vol. 1, Table 2.
[82]The distribution of indirect taxes, by *original* (i.e., pre-transfer) household income decile in 1980, from the CSO's redistributive exercise, is given in Murphy (1984). UK data suggest the distribution by gross or disposable income is slightly more even over the deciles, and on this basis the distribution of indirect tax by gross income decile has been imputed here.

Table 13.2: *Distribution of Health Care Payments Among Households Classified by Gross Income*

| Gross Income Decile | Gross Income | General Taxation | | | Social Security | Insurance Premia | Household Expenditure | Total Payments |
		Income Tax	Indirect Tax	Total Tax				
				Per cent				
Bottom	1.9	0.0	3.7	2.2	0.0	1.8	2.0	2.0
2	3.1	0.1	4.2	2.5	0.2	1.3	3.6	2.4
3	4.2	0.3	5.5	3.3	0.4	1.4	4.1	3.0
4	5.4	1.2	7.4	4.8	2.1	3.0	7.9	4.9
5	7.0	3.3	9.1	6.7	5.8	4.2	7.7	6.5
6	8.8	6.2	10.0	8.4	10.0	6.8	10.1	8.6
7	10.9	9.4	11.1	10.4	12.9	11.5	11.1	10.8
8	13.6	14.3	13.1	13.6	16.1	15.3	15.4	14.2
9	17.6	22.5	15.9	18.7	21.9	22.0	16.0	18.9
Top	27.5	42.7	20.0	29.5	30.6	32.6	22.1	28.7
All	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Gini/ concentration index	0.40	0.64	0.29	0.43	0.54	0.52	0.34	0.43
Kakwani progressivity index	–	0.24	-0.12	0.03	0.14	0.12	-0.06	0.03

Source: 1987 Household Budget Survey; estimates for indirect tax (see text).

same is true of insurance premia. Household direct expenditure is slightly regressive. Total health care payments, then, have a distribution which is close to that of total taxes and gross income, being mildly progressive. (It is worth noting that the payment concentration curve does not lie outside the Lorenz curve for gross income throughout: the curves in fact intersect at the very bottom, with the bottom decile paying a slightly higher percentage of health care payments than it receives in income.)

It is interesting to compare these results with those for the US presented in Gottschalk, *et al.* (1986) and for the UK and The Netherlands in Wagstaff, Van Doorslaer and Paci (1989). The Irish pattern is in fact similar to the UK, despite the significant differences in health financing structures: both the Gini coefficient and the concentration coefficient for total payments are slightly higher in Ireland, resulting in an identical Kakwani index value for payments. Thus the Irish financing structure, on the basis of gross income, appears mildly progressive like the UK, rather than regressive like the US and The Netherlands.

In assessing equity, though, it is important to take into account differences in household size and composition, which affect "need" and "ability to pay". This is conventionally done by converting income to an equivalent basis using adult equivalence scales, as we have done elsewhere in this study. Classifying households in the HBS on the basis of *equivalent* gross income decile, Table 13.3 shows the distributional pattern of the various health-financing sources and of gross equivalent income.[83] As before, indirect taxes are not yet available and the pattern shown represents a "best guess". (Since the information available on an equivalent income basis even for earlier years is incomplete, these must be treated as particularly tentative.) Compared with the pattern by gross income shown in Table 13.2, this reveals a very similar picture. As is generally the case, the distribution of equivalent income is more equal than that of unadjusted income, the Gini coefficient being reduced from 0.40 to 0.36. The concentration ratios for the various financing sources also fall slightly, but income tax, social security contributions, and health insurance premia remain progressive, and indirect taxes and household direct expenditure on health care remain regressive. There is little change in the Kakwani progressivity index values, and total health care payments remain slightly progressive. The move to equivalent rather than unadjusted income thus makes little difference to the measured progressivity of health care financing sources.

[83]These figures are derived from special tabulations from the 1987 Household Budget Survey facilitated by the CSO.

Table 13.3: *Distribution of Health Care Payments Among Households Classified by Gross Equivalent Income*

Equivalent Gross Income Decile	Equivalent Gross Income	General Taxation			Social Security	Insurance Premia	Household Expenditure	Total Payments
		Income Tax	Indirect Tax	Total Tax				
				Per cent				
Bottom	2.9	0.1	5.1	3.0	0.3	2.4	4.1	2.9
2	4.2	0.2	4.9	3.0	0.9	1.1	3.5	2.7
3	4.9	0.5	5.1	3.2	1.4	1.2	3.1	2.9
4	5.7	1.5	6.7	4.5	3.4	2.5	6.2	4.5
5	6.8	3.6	9.1	6.8	7.0	4.5	8.5	6.8
6	8.4	7.1	11.1	9.4	11.0	8.8	12.1	9.9
7	10.3	10.8	12.4	11.7	13.8	13.7	14.3	12.4
8	12.8	14.8	13.1	13.8	16.6	16.7	14.0	14.3
9	16.6	21.8	15.4	18.1	20.2	22.5	17.4	18.6
Top	27.3	39.5	17.1	26.5	25.4	26.5	16.8	25.0
All	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Gini/ concentration	0.36	0.61	0.24	0.39	0.47	0.48	0.29	0.39
Kakwani index	–	0.25	-0.12	0.03	0.11	0.12	-0.07	0.03

13.3 *Equity in the Delivery of Health Care in Ireland*

We now turn to the delivery of health care, with the ESRI survey as database. The individual rather than the household is now used as the unit of analysis, since this facilitates our analysis which attempts to control for individual's health status. Health care expenditure to be attributed to each person is estimated on the basis of his or her reported utilisation of care of different types, multiplied by the estimated unit cost of each type of care. The types of care covered and their estimated unit costs are:

(i)   GP visits – £5 per visit;

(ii)   prescriptions – £10 per prescription;

(iii) outpatient consultations – £30 per visit;

(iv)   day surgery visits – £80 per visit;

(v)   hospital inpatient stays (including consultant treatment) – £140 per night;

(vi)   dental, hearing or sight test visits – £35 per visit.

These unit costs are calculated on the basis of total expenditure on the service in question (by both the State and households/VHI) and levels of utilisation, in a manner analogous to that employed in Chapter 12, except that both public and private expenditure/utilisation is now included.[84] Given that much of the information which would be required to derive them accurately is not available, these unit costs are to be taken primarily as indicating broad relativities between the different types of care for the purpose of the exercises.

It is worth noting that a significant proportion of the health expenditures included in the earlier analysis of financing is not now being allocated to individuals. In the case of public expenditure, the omitted areas include, most importantly, psychiatric care, care of the handicapped, community care (e.g., community nurses), and long-term hospital care for the elderly, etc., as well as administration costs. Since much of this expenditure is on the long-term institutional population, it is difficult to see how it could usefully be allocated among households. Less importantly, some household expenditure – on non-prescription drugs and therapeutic equipment – is also omitted. Overall, under 60 per cent of the health care spending included in the analysis of financing is now being allocated among households.

It may again be useful to look briefly at the distribution by gross

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[84] The average cost of a hospital night for example, is calculated using total expenditure on general hospital services by the Department of Health, less an element for long-term and out-patient care, plus estimated household expenditure on obtaining hospital care based on Household Budget Survey and VHI data, divided by the estimated total number of nights spent in acute hospitals

unadjusted income, before concentrating on equivalent income. Table 13.4 shows the distribution of health care expenditure among individuals classified by quintiles of gross household income (i.e., each individual is attributed the gross income of his or her household and persons – rather than households – are then ranked by quintile). The bottom two quintiles receive a higher share of expenditure than their share of the population, particularly the bottom 20 per cent who receive 29 per cent of expenditure.

Table 13.4: *Distribution of Health Care Expenditure and Chronic Illness by Gross Income Quintile*

Gross Income Quintile	% of Expenditure	% of all Chronically Ill
Bottom	28.7	38.0
2	22.2	19.5
3	19.1	16.1
4	14.6	13.6
Top	15.4	12.8
All	100.0	100.0
Concentration Index	-0.137	-0.225
HI	0.088	

While the distribution of expenditure over the income distribution is of considerable interest in itself, ideally we would like to relate expenditure not just to position in the income distribution but also to "need" for health care. This would allow us to assess whether people at different income levels but with the same health "needs" benefit from similar levels of expenditure, or whether expenditure *relative* to needs is unevenly distributed over the income distribution. One crude indicator of the distribution of "need", which allows us to begin to analyse such issues, is provided by the measure of chronic physical illness obtained in the ESRI survey. This self-reported indicator was described in detail in Chapter 5 above, and Table 13.4 also shows the distribution of persons reporting such illness over the quintiles.[85] The chronically ill are considerably more concentrated towards the bottom of the distribution than is health care expenditure – 38 per cent are in the bottom quintile. The concentration indices for expenditure and illness are both negative, with lower quintiles

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[85]As discussed in Chapter 5, this measure is available only for adults; children are here assumed not to have such an illness.

having greater proportions of both expenditure and of the ill than their share in the population, but that for illness is greater.

Wagstaff, van Doorslaer and Paci (1989) suggest that these concentration indices can be used to derive an overall summary measure of equity,

$$HI = C^{exp} - C^{ill},$$

where C^{exp} is the concentration coefficient (or index) for expenditure, and C^{ill} is the concentration coefficient for illness. If health care expenditures are allocated across income groups in proportion to their share of those reporting illness, then $C^{exp} = C^{ill}$ and $HI = 0$. The HI index is positive if there is inequity favouring the rich, and negative if there is inequity favouring the poor. The results for Ireland in Table 13.4 show a positive value for the HI index, indicating inequity favouring the rich.

Compared with similar results for England and Wales presented in Hurst (1985), the distribution of expenditure in Ireland is less concentrated at the bottom, and the chronically ill are rather more concentrated in the bottom quintile. The result is that the HI index is positive in both cases but considerably higher in Ireland. The Irish figure is also well above that for Italy presented in Wagstaff, Van Doorslaer and Paci (1989), while their results for The Netherlands show a negative HI index – inequity favouring the poor.

We now adjust incomes for differences in household size and composition, and rank individuals in quintiles by *equivalent* gross income. Table 13.5 shows the overall pattern of expenditure and illness distributed over equivalent income quintiles. Compared with the pattern by unadjusted income in Table 13.4, the bottom quintile now receives slightly less expenditure, but the major difference is in the location of those

Table 13.5: *Distribution of Health Care Expenditure and Chronic Illness by Gross Equivalent Income Quintile*

Gross Equivalent Income Quintile	% of Expenditure	% of Chronically Ill
Bottom	23.4	18.0
2	25.4	33.4
3	18.8	18.4
4	16.5	15.3
Top	15.8	15.0
All	100.0	100.0
Concentration Index	-0.0957	-0.0962
HI	0.0005	

Table 13.6: *Distribution of Health Care Expenditure, Chronic Illness and Expenditure Per Person Ill*

Quintile	Number in Quintile	Cumulative % of Pop.	Sickness Rate (per 1000)	Numbers Chronically Ill	% of Chronically Ill	Cumulative % of Ill	Expend. per Person	Expend. per Person Ill	Total Expend.	% of Expend.	Cumulative % of Expend.
							£ ('000)	£ ('000)	£ ('000)		
Bottom	2623	20	79	208	18.1	18.1	224.7	2834	589.4	23.5	23.5
2	2623	40	146	382	33.2	51.3	243.0	1668	637.4	25.4	48.9
3	2623	60	80	211	18.4	69.7	180.5	2244	473.4	18.8	67.7
4	2623	80	67	176	15.3	85.0	158.2	2623	414.9	16.5	84.2
Top	2623	100	66	172	15.0	100	151.7	2313	397.9	15.8	100.0
	13115		88	1149	100.0		191.6	2187	2513.0	100.0	

reporting chronic illness. Rather than being heavily concentrated in the bottom quintile, one-third of these individuals are now in the second quintile from the bottom – largely reflecting the fact that when household size is taken into account the elderly tend to move up the income ranking.

Comparing the distribution of expenditure with that of reported ill-health, the bottom quintile has a higher percentage of spending than of the ill, whereas for the second quintile the opposite is the case. The top three quintiles have about the same percentage of spending as their percentage of the ill. The concentration indices for both illness and expenditure are very close in value, so the HI index is close to zero.

This pattern is analysed in greater detail in Table 13.6, showing total expenditure and average expenditure per person, the number of people reporting illness, and average expenditure per person ill, for each quintile. Expenditure per capita is considerably higher in the bottom two quintiles than in the rest of the distribution. However, since the ill are so heavily concentrated in the second quintile, that quintile has the lowest expenditure per person ill. The bottom quintile has the highest expenditure per person ill, and the fourth quintile also has a relatively high figure.

The analysis so far has shown that using equivalent rather than unadjusted income, and using expenditure per person ill rather than per person, can make a considerable difference to the distribution pattern. However, is health care per person *ill* a satisfactory indicator of equity in the distribution? This has been the approach adopted in studies such as Le Grand (1978) for the UK, and has been influential. However, it is subject to a number of problems. First, a recent exchange between Le Grand (1991), Wagstaff, Van Doorslaer and Paci (1991) and O'Donnell and Propper (1991) has shown that averaging expenditure over those reporting illness only involves strong (and heretofore implicit) assumptions about expenditure on those not reporting such illness. In effect, persons not reporting illness are assumed to have *no* need for health care: if expenditure on such persons is actually responding to needs, then the

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[86]This may be illustrated by a simple example. Suppose the bottom half of the income distribution contains three-quarters of all ill people and receives two-thirds of all health care expenditure. Averaging all expenditure over the ill, expenditure per person ill is lower in the bottom than the top half of the distribution. Some expenditure in fact goes on the healthy, though less on average than that going to the ill. It could then be the case that the bottom half actually receives higher expenditure per ill person *and* per healthy person, but when averaging over the ill only this is obscured because of the much higher proportion of healthy people in the top half. Le Grand argues, however, that this is irrelevant: self-reported illness is the measure of need, and expenditure on the healthy is regarded as not meeting need. Even if that were accepted, though, it does not appear satisfactory to in effect attribute this expenditure to the ill by averaging all expenditure over the ill only.

procedure may build in biases because of the higher proportion of ill people in the lower income groups.[86] Wagstaff, *et al.*, propose a more elaborate procedure involving the examination of expenditure on the healthy and the ill within age/sex groups, which we have also applied to the Irish sample data. The results, reported in Nolan (1992), show, on average, a somewhat higher degree of concentration of expenditure towards the bottom of the income distribution than the more straightforward analysis of expenditure per person ill.

More generally, though, the indicator of health "needs" being employed is clearly a very crude one. If there are substantial differences between income groups in the *severity* of illness among those reporting illness, then any differences in expenditure on the ill may be reflecting genuine differences in need. Similarly, there may be differences across income groups in the morbidity of those in the sample who do *not* report chronic illness, reflected in health care expenditures. Possible biases in the *reporting* of illnesses must also be kept in mind. If firm conclusions about equity in the distribution of health care expenditures are to be possible, it will be necessary to measure actual differences in health care "needs" much more comprehensively. This would, for example, reflect more fully the higher levels of ill-health known to be experienced by lower socio-economic groups. More fundamentally, perhaps, variations in ill-health may not correspond exactly with those in *ability to benefit* from health care, and it is the delivery of care relative to "need" in the latter sense which may be our underlying equity concern. Analysis of the type presented here, like Le Grand's for the UK, can however open up this area of enquiry and highlight the issues and complexities involved.

A final point about the results presented here relates to the assumptions made in calculating and allocating health expenditure. It will be recalled that, for the purpose of this exercise, unit costs for different services were calculated and attributed to all those availing of the service in question. No distinction was made between public and private patients, either for GP/prescriptions or hospital in-patient stays – the same average "benefit" was attributed to all users of the service. Whether this is a reasonable procedure depends in the first place on the object of the exercise. If the objective is to reflect the "benefit" in terms of health care received, then it may be reasonable to treat a visit to a GP by someone in Category I in the same way as a visit paid privately by someone in Category II or III: using the average cost of a GP visit for all may not be misleading.

However, for hospital in-patient treatment this may not be satisfactory, even given that objective. A night spent in a public ward does not cost the same to provide as one in a private bed, and the latter is clearly in some

sense "worth" more to the recipient. This *could* simply reflect "hotel" aspects of the hospital stay rather than the quality or type of health care received. If the objective is to measure equity in the delivery of health care *per se,* it may not then be appropriate to value a private bed more highly because of features unrelated to health care. If a wider aim is in view, valuing the service provided to recipients in terms of their own evaluations would entail taking "hotel" aspects into account. Further, there may in fact be differences in health care provided itself, though measuring and valuing such differences would clearly pose major difficulties. The results presented here may be taken as a benchmark, and a priority will be to assess their sensitivity to the way in which private versus public care is treated.

13.4 *Conclusions*

This chapter has examined the distribution of health care financing and expenditure in Ireland. The analysis of financing was based on the 1987 Household Budget Survey. Health care financing in Ireland is dominated by State expenditure financed from general taxation, which accounts for over two-thirds of all health care expenditure. Social insurance contributions finance only about 7 per cent, health insurance accounts for 10 per cent, and household direct expenditure for 15 per cent. Overall, the distributional pattern of financing among households classified by equivalent gross income appears to be mildly progressive. This reflects the balance between indirect tax and household expenditures, which are regressive, and income tax, social security contributions, and health insurance premia which are progressive. The figures used for indirect tax had to be estimated on the basis of 1980 data, and should be replaced by 1987 results when available.

The analysis of health care delivery was based on the ESRI's Survey of Income Distribution, Poverty and Usage of State Services, also carried out in 1987. Unit costs per GP visit, prescription, hospital out-patient consultation, day surgery, in-patient day, and dental visit were estimated using data in the survey and available national aggregates for expenditure and utilisation. Health care expenditure was attributed to each individual in the sample on the basis of reported utilisation in the previous 12 months, using these unit costs. The distribution of expenditure among individuals ranked by the gross income and gross equivalent income of their household was examined. The measure of chronic illness in the survey allowed the distribution of expenditure and illness to be compared.

The results showed a relatively high share of expenditure going to the lower income quintiles but this was less than the percentage of all those

reporting serious illness falling into those quintiles. When equivalent income was used, the pattern revealed was somewhat different. The bottom two quintiles still received a relatively high share of expenditure, but those reporting serious illness were concentrated more in the second than the bottom quintile. The bottom quintile thus had relatively high expenditure per person ill but the second quintile had lower expenditure per person ill than any of the other quintiles.

Simply looking at health expenditure going to an income group – or social class – averaged over all those reporting serious illness, although used by some influential studies internationally, has clear limitations. In particular, the measure of "need" provided by the self-reported illness information available for the sample is very crude: much more information about variations in health status and "needs" would be required before firm conclusions could be drawn about whether expenditure was distributed equitably in relation to needs. The valuation of the health care utilised by individuals – in particular comparing publicly and privately provided care – also poses major problems. The results presented here represent a first step in the exploration of equity in the Irish health care system from this perspective.

Chapter 14

CONCLUSIONS AND IMPLICATIONS

Introduction

In this final chapter, we bring together the main findings of the study and assess their implications, both for policy and for future research priorities.

The Financing and Delivery of Health Care in Ireland

The way in which the health care system in Ireland is structured and financed was examined in some detail in the early parts of the study. This served to highlight some key features and issues for analysis. The complex financial incentives facing both patients and providers of health care, as a result of the interaction of public and private elements in the system, were teased out. The incentives differed across individuals/ households depending on their Entitlement Category and whether they had VHI cover, and also varied with the type of care being considered. Those providing care also face different "price signals", depending on the entitlements, etc., of a particular patient. These signals refer to the financial implications of different courses of action for both the patient – which the provider may take into account – and for the provider. A central objective of the study was to explore the role of such financial incentives, building on the pioneering research by Tussing on their impact in the Irish context. This emphasis does not arise from a conviction that such incentives are the only, or indeed the dominant, influence on health care utilisation patterns. Rather, it rests on the belief that an assessment of their effects is essential for the design of an efficient and equitable health care system.

The Irish health care system, like those of most other developed countries, has in the 1980s faced major challenges in restraining expenditure growth. Compared with other OECD countries, Irish health expenditure as a percentage of GDP rose relatively rapidly during the 1970s, and by 1980 was significantly above the OECD average. During the period from 1980 to 1987, though, the share of Irish national income devoted to health care fell, so that by 1987 it was close to the OECD average. Given the intensification of expenditure restraint in 1988 and 1989, it may be seen that considerable success has been achieved in terms of the objective of controlling aggregate expenditure, in particular public expenditure, on health.

What is much less clear is the impact which this has had on the health care system. In particular, to what extent has expenditure restraint been associated with improvements in efficiency and in the design and operation of economic incentives, and what have been the effects in terms of equity in the financing and delivery of health care? While the present study cannot provide a comprehensive answer to such broad-ranging questions, it can provide some pointers. These should be of particular value in considering options for reform now facing policy makers, notably those put forward by the Commission on Health Funding.

The Data

The study relies primarily on the data provided by the large scale household survey carried out by the ESRI in 1987. As well as obtaining detailed information on the characteristics of the respondents – in terms of, for example, age, sex, marital status, occupation, income, location, etc. – the survey also examined the utilisation of different health services and the public and insurance-based entitlements of respondents. In addition, limited but valuable information on health status was obtained. This data allows Tussing's research on the determinants of utilisation and the role of incentives to be developed in a number of significant respects. It also allows the redistributive impact of the health care system and equity in the financing and delivery of care to be analysed in ways which have not been possible heretofore. Comparison with external sources showed that the sample represents the population well in terms of composition by such key characteristics as age, sex, socio-economic group, health services Entitlement Category, and VHI cover. The reported levels of health service utilisation also appear reasonably satisfactory on the basis of the limited external information available, though GP visits by Category I were underrepresented somewhat.

The survey was carried out before the change in the GMS payments system for doctors, from a fee-for-service to a capitation remuneration system, implemented in 1989. Most of the data also pre-date the introduction of the charges for out-patient visits and in-patient stays for those without Medical Card cover in 1987. While a direct assessment of the impact of these policy initiatives is not therefore possible based on this data, none the less the analysis can shed some light on their likely effects.

Public Entitlements

Analysis of the survey data reveals some particularly interesting features of the composition of those in the three health service Entitlement Categories, which have implications for service utilisation patterns by

category. The most striking feature is the concentration of the elderly in Category I. Two-thirds of those aged between 65 and 74, and over 80 per cent of those aged 75 or over, are in Category I. By contrast, very few elderly are in Category III, which has a relatively high proportion of children and of adults aged between 35-54. Category II has an age composition similar to that of the population as a whole and contains about half the total. These differences in age composition have clear implications for the expected incidence of illness and demand for health care across categories.

When household income is analysed, it is noteworthy that not all those with Medical Card cover are towards the bottom of the income distribution. Even when household size is taken into account – as it is in the means test for a Medical Card – a small number of those in Category I are in the top half of the income distribution. This could come about for a variety of reasons, including the fact that the means test applies more to the narrower family unit. The analysis also revealed that when household size is taken into account, Category III by no means corresponded exactly with the top 15 per cent of the income distribution. In fact, about 30 per cent of those in Category III were outside the top 30 per cent of the distribution. This highlights the anomalies created by the way in which the Category II upper income – or rather earnings – limit operated. No account was taken of family size, and the limit applied to the earnings of the individual rather than the income of the family or household. Tussing (1985) and Rottman and Reidy (1988), and the Commission on Health Funding (1989) all drew attention to the scope for such anomalies inherent in the design of the cut-off. The abolition of Category III from mid-1991 means that this threshold no longer operates.

Analysis by social class shows that while professional/ managerial classes are relatively heavily concentrated in Category III, such persons still constitute only about half of that category. The remainder are predominantly from intermediate non-manual and skilled manual classes. Category I has very few members of the professional/ managerial classes, but about 40 per cent of that category are from intermediate non-manual or skilled manual classes. This illustrates that prevailing perceptions of the composition of the Entitlement Categories may not reflect the reality – which could in turn influence attitudes to policy.

The VHI

Analysis of those in the sample with VHI cover shows that only about 37 per cent were in Entitlement Category III. Thus, about 63 per cent of persons with VHI cover had entitlement to hospital care provided by the State, including consultants' fees, but despite this were willing to pay for

insurance cover. A relatively small proportion of those with VHI cover are elderly, while coverage is highest for those in the age range 25-54. Thus the VHI currently covers disproportionately groups whose health would be relatively good. The trend over recent years for the average age of the insured population to rise slowly has implications for their demand for health care, to which the VHI has repeatedly drawn attention. Such a trend could be exacerbated if external factors lead to a more rapid "ageing" of the VHI's membership, which could come about for a variety of reasons.

By no means all VHI members are towards the top of the income distribution. Adjusting income for the size and composition of the household, about two-thirds of those with VHI cover are in the top 30 per cent of the income distribution. The coverage of the VHI is at its highest for the professional/managerial classes, but significant numbers in intermediate non-manual, skilled and semi-skilled manual classes also have cover. It is only for the unskilled manual class that VHI is of little relevance. Again, then, popular perceptions of the nature of the population covered may not reflect the reality.

Health Status

Some limited information on the physical and psychological health status of adult respondents was obtained in the ESRI survey. About 17 per cent reported a major chronic physical illness/infirmity. While the percentage reporting such an illness rose steadily with age, there was a consistent differential between the Entitlement Categories within age ranges. Within each age group, Category I had a substantially higher proportion reporting illness than the remainder of the population. There was also a consistent, though considerably smaller, differential between Categories II and III. Such differentials are also seen between socio-economic groups/social classes, again controlling for age composition, with both those from professional/managerial and farming backgrounds reporting less illness than others. Such differentials were particularly pronounced for the non-elderly. In the age range 45-54, for example, only about 12 per cent of adults in the professional/managerial classes compared with about 25 per cent of those from the semi-skilled and unskilled classes reported such an illness.

For psychological health status, the survey contained a variant of the widely used General Health Questionnaire. The way in which this is employed and interpreted in this context is detailed in Whelan, *et al.* (1991), which focuses on the impact of unemployment on psychological distress using the sample data. Here we concentrated on the dichotomy between those at or over the GHQ "threshold" score of 2, and the

remainder of the population – someone at or over that threshold would have a probability greater than 0.5 of being classified as a psychiatric case. About 17 per cent of adults in the sample were above that threshold, with more men than women above that figure but no marked differential by age. Persons in Category I were much more likely to be above the threshold than the remainder of the population, and this remained true both for men and women separately and within age ranges. The prevalence of psychological distress also varied substantially across social classes/socio-economic groups, with only about 10 per cent of persons in the professional/ managerial classes above the threshold compared with 20-23 per cent of the semi-skilled/unskilled manual classes.

Utilisation of Health Services: General Practitioners

The clear differentials across Entitlement Categories and social classes in the extent of (reported) physical illness and psychological distress have important implications for the analysis of health services utilisation patterns. If they are not taken into account, the impact of the different economic incentives facing those in different Entitlement Categories and with/without VHI cover could be confounded with variations in the extent of illness. In his influential and path-breaking research on utilisation patterns in Ireland, Tussing in fact had no such information on health status – which he acknowledged could be a serious problem. He also did not have data on income, which could also influence utilisation. One objective of the present study was therefore to assess the implications for Tussing's results of the inclusion of these important extra variables. Most attention was paid to utilisation of GP services, the area to which Tussing's central findings apply.

The theoretical underpinnings to the economic analysis of the patient/GP relationship and utilisation of GP services were discussed in some detail in the study. Due to the information and knowledge available to the doctor and not to the patient, the provider of health care takes on a central role in influencing the patient's choices, i.e., his demand for health care. The doctor may then act purely as an "agent" of the patient, attempting to act as the patient would if he had the doctor's information, etc., but also taking into account the patient's preferences, economic incentives, etc. There may also be scope, however, for the provider to influence the financial returns to him/herself by "inducing" demand above the level which would obtain if a fully-informed consumer was able to choose freely. Much of the debate generated by Tussing's research focused on his conclusion that the fee-for-service remuneration system for

GMS doctors then in operation, together with the fact that such patients do not have to pay for GP services, lead to such induced demand by GPs.

This conclusion was based primarily on the analysis of data on the extent to which doctors ordered return visits by patients. Where the proportion of GPs in an area was relatively high, return visits were found to be more likely, controlling for other factors. Tussing concluded that this strongly supported the hypothesis of demand inducement to compensate for the negative impact which the high GP/population ratio would have on the earnings of individual doctors. Tussing recommended that the fee-for-service system be replaced by a capitation system, not just for GMS doctors but for the whole population, all of whom would be entitled to free GP care. This, he argued, would significantly improve the pattern of incentives facing both doctors and patients. Subsequently, from 1989, the remuneration system for (most) GMS doctors was changed to a capitation basis.

In the 1987 sample analysed in the present study, return visits were not distinguished, and it was therefore not possible to replicate Tussing's direct test of supplier-induced demand with the important additional variables, particularly health status. However, arguably the emphasis on supplier-induced demand – more in the reaction to Tussing than in the study itself – was misplaced. Measuring the degree to which the phenomenon operates is notoriously difficult, in particular separating the influence of the incentives facing providers from those facing "consumers" of services. Most of Tussing's analysis focused not on the identification of provider responses *per se*, but on overall utilisation patterns, particularly across Entitlement Categories. It may be much easier to pinpoint the extent to which the Category I population use GP services more heavily than the rest of the population, controlling for differences in age composition, etc., than it is to say the extent to which this is a result of provider rather than patient behaviour. Here the present study has been able to develop Tussing's analysis substantially, most importantly by allowing the impact of differences in health status across Entitlement Categories to be directly taken into account.

The variation in the sample in GP visiting rates across Entitlement Categories was very substantial indeed. The average number of GP visits reported for the previous year was over 5 for Category I, compared with 2½ for Category II, and under 2 for Category III. This is partly due to the higher proportion of elderly people in Category I, but within age ranges very substantial differentials remain. For example, for persons aged 65 or over, the average number of GP visits in the year was over 8 for Category I compared with 4 for Category II. Differentials over the income distribution

and between socio-economic groups/social classes were also documented. However, those reporting a major physical illness or above the GHQ threshold had relatively high numbers of visits, and were also more likely to be found in Category I/ lower social classes, etc., than elsewhere. A key objective of the study's statistical analysis was to try to identify what influence, if any, being in Category I had having controlled for differences in composition between the categories, including those in the incidence of illness and psychological distress.

First, the study repeated Tussing's analysis of the determinants of GP utilisation behaviour, using only the variables available to him, but with the 1987 sample data. This produced very similar results to Tussing's, which had been based on his 1980 survey. The first stage of the analysis showed that the significant determinants of the probability that an individual had a GP visit over the previous year were age group, sex, Category I membership and being from a farm household. That probability rose with age, was higher for women than men, and was lower for those from farm households than others. Being in Category I had a significant positive effect. Additional variables were then included in the equation and tested for significance. Both physical and psychological health status were highly significant, with a positive effect on the likelihood of having had a GP visit, and for women, having given birth during the previous year was also highly significant. Income and membership of the professional/managerial social classes were also significant, with negative effects, while VHI membership had a positive impact. The inclusion of these additional variables reduced the size of the estimated effect of Category I membership, by about 30 per cent, but a substantial and highly significant positive effect remained. Taking a woman aged 60 without serious illness as illustration, having controlled for all other influences, then membership of Category I increased the probability of having had a GP visit from 0.54 to 0.67.

The second stage of the analysis focused on those individuals who did have at least one GP visit, and the influences on the number of visits they had in the year. With the variables available to Tussing, the equation performed very poorly, corresponding to his findings. With the additional variables available in the 1987 survey, in particular the physical and psychological health status measures, the results are a great deal more satisfactory. Plausible age, social class, and health status effects are identified. Controlling for all other influences, a significant positive impact of Category I membership on the predicted number of GP visits is found.

Overall, then, the inclusion of the additional explanatory variables confirms the existence of a striking relationship between Category I membership and GP visiting behaviour. This need not necessarily primarily

reflect supplier-induced demand, it should be emphasised, indeed it does not *necessarily* imply any such influence. Rather, what can be said is that even having taken into account all other hypothesised influences on which information is available, including the relatively high incidence of ill-health in Category I, there is a statistically significant relationship between membership of Category I and GP visiting. This could arise partly because the measures of ill-health employed are crude, and may fail to fully reflect the extent of morbidity in Category I relative to the rest of the population. However, the results do suggest that the net impact of the financial incentives facing providers and "consumers" plays a part in the relatively high level of GP visiting by that category. This therefore reinforces the concern expressed by Tussing about the effects of these incentives.

The change in the remuneration system for GMS doctors in 1989 can be seen as a partial response to such concerns – though Tussing's recommendations were more radical, affecting both GMS and non-GMS populations. It is all the more important to assess the impact of the GMS changes in the light of the results of this study. Such an analysis could use the utilisation patterns shown in the present study as a "pre-change" benchmark, against which the situation after the change in the remuneration system could be set. The data required for such an exercise would have to come from survey sources, since the administrative records in the new GMS capitation system no longer cover the number of GP visits. The very limited evidence available on the operation of the GMS under the new reimbursement system does not suggest a dramatic change in visiting patterns.

In addition to the effects of economic incentives, though, the estimates of the importance of other influences on GP utilisation patterns are themselves of great interest. In particular, the differentials across social classes and income groups, even after controlling for differences in health status, are worth further exploration, to see if the factors producing such differentials can be identified. More fundamentally, of course, the factors producing the observed differences in health status across socio-economic groups are poorly understood.

Utilisation of Hospital Services

Because of the availability of information on health status, the study was able to make more progress than Tussing's in explaining the influences on utilisation of hospital services. For out-patient services, socio-economic status (i.e., income and social class) appeared to affect the likelihood of having had a visit to an out-patient clinic, etc., in the previous year. The number of GP visits in the year appeared to be *positively* correlated with the

likelihood of having had an outpatient visit, which could arise because of referral by the GP. The relatively high level of out-patient visits by those in Category I may thus be associated with the high GP visiting rate of this group. No strong conclusions were possible about the extent to which persons in Category II – for whom out-patient visits were free up to April 1987 but who, unlike Category I, did not have free GP services – tended to avail of out-patient rather than GP services. Given the timing of the survey, it was not possible to evaluate the impact of the £10 charge for out-patient visits for those not covered by a Medical Card, introduced in 1987.

VHI members were found to be more likely than others to have had a hospital in-patient stay in the previous year, and to have spent longer in hospital. This could arise because of a response by patients/providers to the fact that the individual has insurance cover. Such a pattern could also be produced if there is "adverse selection" into VHI, i.e., if those who take out insurance are more likely than the rest of the population to be/become ill. The inclusion of the health status measure in the utilisation equation attempts to control for major differences in health status between the insured and the rest of the population, though. Further, the survey evidence on characteristics of those with insurance did not suggest that current chronic illness was a significant predictor of the probability of having health insurance. The Category I population was relatively likely to have had a hospital stay, and one – but only one – channel through which this could be produced is their propensity to have more GP visits. It would be unwise though to conclude that any reduction in GP visiting by Category I would automatically lead to fewer hospital stays. Indeed, in many situations early detection of a problem at GP stage may reduce utilisation of hospital services, so the relationship between usage of GP and hospital services is a complex one.

The Distribution of State Health Care Expenditure Among Households

As well as patterns of service utilisation, the study also looked in some detail at the distribution of health services expenditure among households, and at equity in the financing and delivery of the health services. First, the way in which *State* expenditure on health care affects those at different points in the income distribution was examined. This involved allocating expenditure on, principally, the GMS and acute hospital services among households in the 1987 sample. This exercise has much in common with the health component of the CSO's analyses of the redistributive effects of State expenditure and taxation, based on the Household Budget Survey. Whereas the CSO exercises have so far had to rely on average utilisation rates by age/sex groups in allocating expenditure to households, though,

here we were able to make use of actual utilisation as reported by the individual households. Thus, expenditure on the GMS was attributed to those in Category I who reported GP visits/prescriptions, and expenditure on public hospitals was allocated to those who reported stays in such hospitals – in proportion to the number of visits/prescriptions and length of time in hospital respectively. In the case of hospital stays, full "benefit" was only attributed to those who were treated free of charge. For those who obtained private care in public hospitals, a variety of assumptions about the net State resources involved, with a benchmark of no net "benefit", were employed.

The results showed that allocated State health expenditure went more to those towards the bottom than the top of the income distribution, having adjusted incomes for differences in household size and composition. The bottom 50 per cent of persons ranked by equivalent household income "received" two-thirds of all expenditure. The bottom 20 per cent were allocated 27 per cent of expenditure. Expenditure on the GMS was even more concentrated towards the bottom, with about 80 per cent of expenditure going to the bottom half of the distribution. The corresponding figure for State spending on hospitals was 65 per cent. Compared with previous results produced by Rottman and Reidy (1988), based on the 1980 Household Budget Survey, this shows a somewhat greater degree of concentration towards the bottom of the distribution. While the studies apply to different years and there are some minor differences in coverage, etc., it is likely that the use of reported utilisation for household rather than averages for age/sex groups has contributed to this result.

Equity and the Financing of Health Care

Turning from State to total expenditure on health care, the study looked at the distributional patterns in the way in which this expenditure was financed and where the beneficiaries were in the distribution. Health care expenditure was seen to be predominantly financed by the State – 68 per cent coming from general taxation and 7 per cent from social insurance contributions. However, 10 per cent was financed through health insurance and 15 per cent through direct household expenditures. Compared with other EC countries, this represented a relatively high share coming from general taxation, while social insurance is much less important than in France, Germany, Italy or The Netherlands.

The distributional patterns associated with each financing source was analysed, using the 1987 Household Budget Survey. Taxation was seen to be a slightly progressive form of financing – indirect taxes being regressive

but income tax quite progressive. Social insurance contributions and private insurance premia were also progressive, while out-of-pocket household expenditures were regressive.

The implications for policy of this distributional profile are of considerable significance, particularly in the light of current debates about the role of tax financing compared with national health insurance or a system which relied more on private insurance and/or out-of-pocket payments. Financing out of general taxation has an appeal in terms of equity, in that it is mildly progressive – though not as progressive as some might have expected, because of the importance of indirect taxes in the Irish tax system. Social security contributions as they are presently structured are also progressive, despite the existence of an earnings ceiling in assessing these contributions. Indeed, they appear more progressive than income tax plus indirect tax, taken together. It could be argued, then, that a system which relied more on social insurance than general taxation – i.e., closer to the national health insurance model – could be more equitable.

However, if the alternatives are framed in a different way, that conclusion may also be altered. If the choice were between reliance on *income* taxes or social security contributions, then the latter no longer look as attractive. Income tax is more progressive, having a much smaller share of revenue being raised from the bottom half of the distribution and a much higher share from the top 10 per cent. A shift towards social insurance which was accompanied by a reduction in income tax rates could therefore produce a less rather than more equitable financing structure.

Health insurance premia, as they presently operate in the Irish structure, are progressive. Historically, this is associated with the eligibility structure whereby those towards the top of the income distribution had little or no public entitlements for many years and were encouraged to take out insurance. The availability of tax relief at the taxpayer's marginal rate also acts as a greater incentive to those on the higher rates. It is important to stress that the results presented in this study refer to *gross* premia. Since the State is in effect refunding a higher proportion of that premium to those at the top rather than the standard rate, the distribution of premia net of tax relief must be less progressive.

The distributional implications of any move towards increased reliance on insurance as a source of financing would depend on precisely how that was to be achieved. Given that currently insurance coverage is concentrated towards the top of the distribution, an extension would be likely to be associated with a reduction in its present degree of progressivity. The insurance element might still be progressive overall, but could be drawing

revenue disproportionately from middle income groups. Suppose the top 60 per cent of the income distribution were encouraged to, or had to, take out health insurance. The insurance element in the financing structure would probably be progressive overall – depending on the premia paid by different income groups – but those in the middle of the distribution could easily be paying more as a proportion of their incomes than the top of the distribution. It would therefore be necessary to spell out precisely how such a system would operate, and "simulate" its effects on the distribution, in order to assess the equity implications of the financing structure implied. Such a shift towards greater reliance on insurance could also have implications for equity in access to, and utilisation of, health services, of course. The arguments for and against greater reliance on insurance-based financing are evaluated in Nolan (1989) and will not be addressed here.

One other feature of the financing profile may be noted, namely the regressive nature of out-of-pocket expenditure on health. This is the pattern normally found for such expenditure elsewhere, but it is particularly interesting that it remains the case even when, as in the Irish structure, those on low incomes do not have to pay for GP services or prescription medicines. This suggests that increased emphasis on charges for services – such as out-patient or in-patient stays – is likely to be associated with greater regressivity in financing, even where those in Entitlement Category I are exempt.

Equity in Expenditure

Assessing equity in the way in which total health care expenditure is directed is a rather more complex task. It is relatively straightforward – at least conceptually – to see the extent to which resources are being devoted to households towards the bottom rather than the top of the income distribution. Using the ESRI 1987 sample, total expenditure on GP's, prescriptions, and hospital services was allocated to households on the basis of their reported utilisation and the estimated unit cost for each type of service. Ranking individuals by the equivalent income of the household in which they live, it was seen that the bottom 40 per cent "receive" a relatively high proportion of all health spending – about 49 per cent – whereas the top 20 per cent receive only 16 per cent of expenditure.

To assess whether this is equitable, though, we must take into account the health needs of those at different parts of the income distribution. This can be done in an admittedly crude way by looking at the distribution of persons reporting serious physical illness in the survey. It was seen that 51 per cent of those reporting such illness were in the bottom 40 per cent of

the distribution, very close to the share of spending going to that part of the distribution.

It would be unwise to draw strong conclusions, for policy or otherwise, from this aspect of the study since its main objective was to open up this line of enquiry. What it did illustrate was the need to clarify what "equity" in the delivery of health care would actually mean. "Equal treatment for equal need" is one formulation of an equity objective which might receive widespread support. Assessing the extent to which this is found in a particular health care system would require a satisfactory measure of both "treatment" and "need". "Treatment" in this context may not be adequately reflected in expenditure – and certainly not in average unit costs for particular types of service. More crucially, though, the measure of "need" required may not be a measure of health status *per se*, but rather of the extent to which an individual could *benefit* from health care. That is, the underlying objective might be to allocate health care expenditure so as to equalise *benefits*, rather than, for example, spend a great deal on someone who is extremely ill but for whom available treatments can do little. While measuring health status is a complex exercise and only very crude measures have been employed here (or in other such studies), attempting to measure the extent to which people benefit or could benefit from care is an even more formidable challenge. Thus the analysis presented here may be seen as a starting point in the assessment of equity in the allocation of health care, serving to provoke consideration of the appropriate equity objectives for the system, how they might be achieved, and how success in meeting these objectives might be measured.

Health Insurance

The study explored at some length the role of health insurance in the Irish health care system. The extent to which the demand for health insurance has extended beyond those in Entitlement Category III, who have limited public entitlements to hospital care, was emphasised. The composition of the insured population and the characteristics of those with and without insurance were analysed using the 1987 household survey. This showed that over 60 per cent of those with insurance had full public entitlement to hospital care. Of those in Category III, farm households and those from the skilled manual social class were particularly likely *not* to have insurance. For Category II, social class background was also an important determinant of whether the family had insurance: those from professional/managerial classes were more likely, and those from the manual classes or farming less likely, to have insurance, having controlled for the effects of age, sex and income.

The 1987 sample was also analysed to see if any effect of price on demand for insurance could be distinguished, price variation arising from the fact that those at different marginal tax rates faced different *net* prices for insurance due to the operation of tax relief. The results were not particularly satisfactory, however, partly because it was difficult to distinguish the effects of price differences produced by the marginal tax rate faced and those due to differences in family size.

The responsiveness of demand to price was also assessed on the basis of the trend in VHI membership over the 1980s. The Commission on Health Funding pointed out that the numbers insured rose between 1981-1988 despite the very substantial rise in premium levels over that period. They conclude on this basis that the price sensitivity of demand for health insurance is "very low". In this study, a number of factors were noted which would suggest that this conclusion needs to be qualified. First, the impact of income tax relief for premia on the evolution of *net* price over the period needs to be taken into account. A very substantial increase in the number of taxpayers liable at the higher rather than the standard rate was seen, which means that for many the increase in gross price was at least partially offset by increased tax relief. Secondly, it was emphasised that the *context* in which VHI membership rose during the 1980s was central to assessing the sensitivity to price. In a situation where expenditure on public hospital services was being curtailed, the demand for private insurance was fuelled over the period in question by developments in the public element of the system. Any apparent lack of sensitivity to price increases in those circumstances would have to be interpreted very carefully as a basis on which to predict responsiveness to, for example, the impact of phasing out tax relief.

In order to directly address motives for taking out health insurance, a question was included in a number of rounds of the nationwide EC Consumer Survey in 1990. The responses showed that the dominant reason identified by those with insurance was speed and certainty of access to hospital. About 62 per cent of respondents with insurance said this was the most important reason. Much smaller but still significant numbers identified factors related to quality of care – being able to choose the consultant and being sure of getting "good treatment". Access to hospital care was, however, by far the most important motive given for taking out insurance.

The implications of these findings for restructuring of the Eligibility Categories and other changes recommended by the Commission on Health Funding may be addressed. The Commission recommended that:

(i)   Entitlement Category III should be abolished, so that all those without

Medical Card cover would have the same entitlement to public care. This would include eligibility for public hospital care (subject to limited charges) including consultant costs, and would therefore represent a significant increase in entitlements for those now in Category III.

(ii)   Tax relief on health insurance premia should be phased out. This would result in substantial increases in the after-tax cost of insurance, particularly for higher rate taxpayers.

(iii) Admission to public hospitals should be on the basis of common waiting lists for public and private patients, from which patients would be taken in order of medically established priority rather than the type of accommodation sought. The advantage currently conferred by health insurance, whereby those with insurance obtain treatment faster than public patients, would thus be removed.

(iv)   The Commission also noted that post-1992, it is unlikely that the requirement for premia to be established on the basis of community rating will be preserved. This would tend to make health insurance more costly for the elderly and those with long-term or chronic disorders.

The Commission considered the combined impact which factors (ii), (iii) and (iv) would have on the demand for public health services, on the basis that the numbers insured might fall by one-third. This figure was derived from an assessment carried out by consultants for the VHI, and no information is presented as to how it was arrived at, or the relative importance attributed to the various factors. The Commission does not, in considering this issue, impute any further effect on demand to its own recommendation (i), that Category III be abolished.

It may be useful to consider the likely separate impact of each of the factors mentioned, before dealing with their joint effect, in the light of the findings of the present study. First, the abolition of Category III: this appears unlikely to have much impact on the demand for health insurance. While most of Category III were insured, the abolition of that Category puts them in a similar position to those in Category II, many of whom also pay for insurance. Looking at those in Category III with insurance, their socio-economic profile, etc., is similar to those in Category II with insurance – except, of course, they have higher incomes and are therefore better able to afford insurance.

The second factor is the abolition of tax relief on health insurance premia. Some question marks have been placed here over the basis for the Commission's conclusion that the responsiveness of demand for insurance to price is "very low". However, in the context of continued tight constraints

on public expenditure, it does seem reasonable to conclude that the degree of responsiveness would be low. This is suggested both by the – admittedly unsatisfactory – analysis of the 1987 household sample, but also by the emphasis on *access* to hospital care as the main reason for having insurance among the respondents to the 1990 survey. If access is the dominant motive for having insurance, and *if* access to public care is seen to be difficult to obtain, then it is likely that demand for insurance will remain high even if price is increased. Since the abolition of tax relief would have most impact – in terms of net price increase – on those at the higher incomes, its effects are likely to be more muted than those of a general increase in price.

This brings us to the third factor, common waiting lists. There are some questions about how such an admissions system would actually operate in practice, and the Commission's Report does not go into any detail. However, to the extent that common waiting lists did in fact eliminate the more rapid access of private patients to hospital care, it is likely that the impact on the demand for insurance would be very substantial indeed. If access is an important reason for having insurance, common waiting lists would simply remove this motive. While other reasons would still operate, these are clearly secondary for many of the currently insured. Access to private hospitals would still be available to those with insurance, and the demand for such hospitals might increase. However, the costs involved would require higher premia and a substantial fall in demand for insurance would appear inevitable.

Finally, the effects of "1992" may be considered. Here it is difficult to say anything with certainty about the implications for the way in which insurance will operate, and thus about the likely impact on demand. It is unclear whether competition between insurers will necessarily result – the Commission notes that some interpretations argue that the VHI's monopoly might remain, but concluded that "it would be unwise to base its recommendations" on the assumption that the monopoly will be permitted to continue indefinitely. Given competition, it is likewise unclear whether community rating could continue to operate. The Commission suggests that in a market which also offers experience-rated premia, community rating cannot survive. There are in fact some examples of community rating operating together with experience-rating, filling a "niche" in the market, but it would be unlikely to remain dominant. The Commission suggests that the government should pursue with the European Community the issue of continuation – in effect imposition – of community rating, and states that "every effort should be made to ensure its retention".

If community rating is abandoned, then insurance will become more costly for the elderly and those with long-term or chronic disorders, and

cheaper for the young and healthy. The Commission states that given that a large proportion of those insured under VHI at present fall into the former categories, their demand for health insurance would be diminished. However, while the middle-aged are overrepresented in the insured population, the elderly are in fact underrepresented. The evidence presented in this study, on the basis of limited measures of self-reported illness, did not suggest that those with insurance were more likely to be chronically ill, controlling for age, but this is an extremely crude comparison. It is likely, in any event, that many of those currently insured would face higher prices with experience rating. Of course, as the Commission points out, cheaper insurance for other groups might make insurance attractive for a wider range of people. Overall, it would be difficult to assess the likely net effect of competitive insurance and/or experience rating on the total numbers insured. What *is* clear is that particular groups currently insured could face large price increases and these would be the people with a relatively high need for health care. Some increase in the burden on the public sector would therefore be likely because of the change in the composition of the insured population, even if there was no change in the total numbers insured.

Finally, what about the effects of these various changes in combination? It appears likely that the net effect of abolishing Category III and introducing common waiting lists would be to remove the primary incentive for taking out insurance for many of those now insured. Particularly if combined with the abolition of tax relief, the effect could be to very substantially reduce the numbers insured. It must be emphasised that the demand for insurance appears to be primarily a product of ease of access to, and perceived quality of, care in public hospitals. If private insurance offers more rapid access, then even at a higher price and even if Category III has full *entitlement* to public care, the demand is likely to be sustained at relatively high levels. If insurance offers little or no such advantage, and Category III has full entitlement, then it is difficult to see why many of the currently insured would be willing to pay current rates, much less higher net premia. In considering the likely impact of (i)-(iii) combined, then the Commission's benchmark of a ⅓ fall in numbers insured (which applied to (ii)-(iv)) appears likely to be, if anything, an understatement. The further impact of the consequences of 1992 is difficult to predict, but in such circumstances it is difficult to see that demand would be substantially higher even if competition and experience rating produced lower premia for certain groups.

The demand for health insurance can only be assessed in the context of the overall structure in which it is to operate. More radical changes

involving limitations in public entitlements and provision would clearly have quite different implications for the role of insurance. Operating within a structure where the main attraction of insurance is access to care in *private hospitals*, though – which would be the situation if the recommendations of the Commission were implemented – the situation would be similar in many respects to the current position in the UK. There, only about 10 per cent of the population have private health insurance, compared with over 30 per cent in Ireland.

Since the Commission's Report was published, as part of the Programme for Economic and Social Progress the abolition of Entitlement Category III has in fact been announced, to take effect from 1 June 1991. Those currently in Category III will then have the same entitlements as Category II. The recommendation that common waiting lists for public and private patients be adopted for public hospitals has not been adopted,. though. Instead, the Programme announced that a new system is to be phased in for public hospitals, under which private patients will eventually be accommodated only in private or semi-private beds. Thus entirely separate waiting lists for public versus private patients would operate, whereas at present some private patients obtain accommodation in public wards. The impact of these changes on ease of access to public versus private care will depend crucially on the supply of public versus private beds in public hospitals. It is not at this stage clear how the stock of beds will be affected, since the designation of beds as private or public is to be completed over a period of three years as the new admission arrangements are phased in.

Priorities

The current study has covered a wide range of research and policy issues, and some priorities for the future may be drawn out. First, an assessment of the impact of the change in the remuneration system for GMS doctors, using the utilisation patterns in 1987 as revealed by this study as benchmark, is an obvious area of interest. Secondly, the study has shown the importance of taking health status into account, both in the analysis of utilisation patterns and in assessing the distribution of resources and equity implications of the health care system. In-depth research on the measurement of health status and on the relationship between ill-health and socio-economic status is a priority if progress is to be made on these issues. Finally, in considering the likely impact of changes in the eligibility and financing structure, the present study has spelt out some approaches whereby the effects on various socio-economic groups might be examined. To capture the full impact of policy initiatives, though – for example, the imposition of charges – it would be desirable to look at both the financing

and delivery sides of the system in tandem, taking into account behavioural responses in utilisation patterns. In that way, an overall perspective on the efficiency and equity effects of the change could be derived.

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