Income-Tested Health Entitlements: Microsimulation Modelling Using SILC

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Abstract: The application of microsimulation techniques to tax and welfare policies is well established in many countries, including Ireland. The richness of the data contained in SILC, the CSO's Survey on Income and Living Conditions, means that similar methods can also be applied to the analysis of policy in some other key areas. Income-tested health entitlements, which include most medical cards and many GP visit cards, are a major feature of the Irish health system. We examine how the income tests for such schemes can be modelled using the detailed income and demographic information in the CSO Survey on Income and Living Conditions. The ESRI's SWITCH model is extended to apply the rules for income-related cards to each family in this nationally representative sample. A key issue which emerges is the apparently low level of take up among those entitled to GP visit cards. This has implications for the costing of policy changes, such as a shift to Universal Health Insurance (UHI) or widening of the age bands qualifying for non-income tested GP visit cards.

Keywords: microsimulation, health entitlements, non take-up, medical cards, GP visit cards, non-cash benefit
JELs: I18, I38, H51

1. INTRODUCTION

The Irish healthcare system includes a complex mix of entitlements and financing mechanisms. For example, most medical cards are provided on an income-tested basis, and provide free access to in-patient and out-patient care in public hospitals, to GP care, and to prescription drugs. Other elements of the system are provided on a universal basis, e.g., a universal entitlement to publicly subsidised care in public hospitals and a universal entitlement to a subsidy which caps monthly prescription drug costs. There is also tax relief on private health insurance premia[2], which finances access to private hospitals and to consultants in private practice. Unreimbursed medical expenses are also eligible for tax relief at the standard tax rate of 20 per cent. Many potential reforms of the healthcare system involve changes to the mix of entitlements and their financing. Exploration of the likely implications of different policy options is essential if policy choices are to be guided by evidence on the likely consequences. This is true both for major structural reforms, such as the proposals for a Universal Health Insurance (UHI), and for marginal reforms, such as changes to income limits for the Medical Card scheme, and extensions of the medical card scheme to provide free care to particular age groups.

In this report, we concentrate on the major income-related entitlements in the current system i.e., the Medical Card and the GP Visit Card. We examine how the income test for such schemes can be modelled using the detailed income and demographic information in the Survey on Income and Living Conditions[3]. The approach taken applies the rules for income-related cards to each family in this nationally representative sample, using the information they provide on incomes and family composition. This is essential groundwork for later studies which will examine how the pattern of entitlements might change under different rules. A key feature of this microsimulation approach is that the likely impact of policies can be examined in advance, so that selection of

[2] For policies renewed or entered into on or after 1 May 2015 the tax relief per person covered by a policy will be limited to either: the full adult maximum amount of €1,000, or the relevant premium where this is lower. This applies for all individuals aged 21 and over, regardless of whether they are availing of a child premium (Revenue, 2015).

[3] Currently SWITCH is based on SILC data for 2010, with adjustments to incomes and the weighting scheme to ensure that results are representative of the 2015 population. Work on the inclusion of the latest available SILC data, for 2013, is currently under way. (See CSO, 2015 for the most recent results on measures of income poverty, deprivation and consistent poverty)

policy options can be guided by evidence as to the likely impact on a nationally representative sample. The work builds on SWITCH, the ESRI tax benefit model, and extends that model to deal with these income-related health service entitlements in a similar way to the means-tested benefits in the social welfare system. Future development of the SWITCH model will allow for the analysis of the structure of subsidies for the UHI premium; and for the impact of rules governing entitlement to medical and GP-visit cards on work incentives.

Almost 2 million people, or 43 per cent of the population, were covered by a Medical Card or GP Visit Card in 2013. Expenditure on the General Medical Services (GMS) scheme stood at €1,900m in 2013. These schemes are therefore of major significance for close to half of the total population, and eligibility for the schemes is predominantly based on a means-test, even with the recent extension of non-means-tested eligibility for those aged under 6 and over 70. Previous research has pointed to the importance of the medical card scheme with regard to the security it provides to card-holders (Russell and Corcoran, 2000), particularly in light of the unpredictable nature of usage of health services.

An individual moving from unemployment to employment may find that their employment income raises them above the income threshold for a medical card, so that a gain in cash income may be reduced or offset by a reduction in the non-cash benefit afforded by the card. Thus, the means-tested nature of the medical card may affect the financial incentive to work faced by such individuals. As eligibility for a medical card is determined essentially at family or tax unit level, unemployed individuals with families are more likely to experience such disincentives as the health service entitlements of both the individual and their children are affected. Some analysis of this issue using the SWITCH model was contained in Callan et al. (2006).

Some steps have been taken to address the possible impact of medical cards on the financial incentive to work. The introduction of the GP Visit Card in 2005, with a higher income limit than the medical card, meant that some individuals would lose some, but not all, of the benefit of a medical card as their income increased. Furthermore, long term unemployed medical cardholders can retain their medical card for up to three years after entering employment.

The aim of this current report is to model the existing healthcare entitlements of all families in the nationally representative sample provided by SILC, based on their reported incomes, demographic characteristics and housing costs. This is essential before analysis of policy issues, such as reforms to the health service entitlements, or the structure of work incentives including healthcare entitlements, can be undertaken. Section 2 summarises key aspects of the means test governing eligibility for medical cards and GP visit cards. Section 3 presents background information on SWITCH, the ESRI tax-benefit model and describes the technical groundwork involved in the modelling process for medical cards and GP-visit cards. The issues involved go beyond the technical, and have important implications for how the results should be interpreted in a policy context. Section 4 examines first how the incidence of medical cards varies across income levels. We then examine how modelled entitlements to medical and GP visit cards compare with the data gathered in SILC as to whether respondents report themselves as holding a card. There are several reasons why modelled entitlements may not coincide with reported holding of a card; we discuss these reasons, and their differing implications. The total number of recipients modelled in SWITCH is also compared with administrative statistics from the HSE numbers. The main conclusions are drawn together in Section 5.

2. HEALTHCARE ENTITLEMENTS AND THE MEDICAL AND GP VISIT CARD SCHEMES

Irish residents without Medical Card coverage are entitled to heavily subsidised public hospital care[4], with a cap on charges in place. Non medical card holders are liable for a €100 fee to attend Accident and Emergency and are charged €75 per night for a hospital stay, capped at €750 per year. Entitlement to free primary care, such as GP services, is not available to all residents however. Medical cards allow holders to access GP services, community health services, dental services, ophthalmic and aural services, hospital care and a range of other services[5] free of charge. Prescription medication is also provided free of charge excluding a €2.50 prescription charge, capped at €25 per person/family per month. A GP Visit Card covers the cost of attending a GP only. The GP Visit Card Scheme was introduced in 2005. The scheme sought to address two main issues – a concern that those over the medical card income limits but not on 'high' incomes may face financial difficulty in attending a GP and also that the sharp benefit withdrawal inherent in the medical card system may create an employment disincentive as well as cause financial hardship.

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[4] Access to care can differ for those holding private health insurance however.
[5] Additional benefits include free school transport for children, exemption from state examination fees and a financial contribution towards school books.

Eligibility for the Medical and GP Visit card schemes is primarily income-based. Between 2001 and 2008 those over 70 automatically received a medical card. The over-70s are now also means tested for a medical card, albeit with a higher income limit than younger age groups; in addition, since August 2015, over-70s are entitled to a GP Visit card irrespective of income. The income thresholds are based on age and family status as shown below in Table 1. The income limit for the over 70s is based on gross income[6]. For those under 70, allowances exist for children and rent/mortgage payments, childcare costs and travel to work costs. Eligibility assessment is based on the combined income of the applicant and their spouse after income tax, PRSI and USC have been deducted. In addition, where income is derived solely from Social Welfare sources or HSE allowances and the applicant is over the relevant income limit a medical card will be awarded. Medical expenses are not explicitly allowed against income but applicants and their dependants whose assessable income is in excess of the relevant income limit but for whom the HSE determines refusal of a medical card would cause 'undue hardship' are also awarded a medical card. Often known as 'discretionary cards' the HSE estimates that in 2010 5 per cent of Medical Cards were 'discretionary' as were 15 per cent of GP Visit cards. For 2013 these figures stood at 3 per cent and 21 per cent respectively (HSE, 2011 and HSE, 2014a).

Table 1: Medical Card and GP Visit Card Income limits (as of Spring 2015)

Over 70	**Medical Card Weekly Rate (Gross)**	**GP Visit Card Weekly Rate (Gross)**
Single Person Aged 70 and Over	€500	€700*
Married/Co-habiting Couple Aged 70 and Over	€900	€1,400*
Under 70	**Medical Card Weekly Rate**	**GP Visit Card Weekly Rate**
Single Person Living Alone		
Aged up to 65 years	€184.00	€276.00
Aged 66 years and over	€201.50	€302.00
Single Person Living with Family		
Aged up to 65 years	€164.00	€246.00
Aged 66 and over	€173.50	€260.00
Married Couple / Single Parent Families with Dependent Children		
Aged up to 65 years	€266.50	€400.00
Aged 66 and over	€298.00	€447.00
Allowances		
Allowance for first 2 children under 16 financially dependant on applicant	€38.00	€57.00
For 3rd and subsequent children under 16 financially dependant on applicant	€41.00	€61.50
Allowance for first 2 children over 16 years financially dependant on applicant	€39.00	€58.50
For 3rd and subsequent children over 16 yrs financially dependant on applicant	€42.50	€64.00
For a dependant over 16 years who is in full time third level education and not grant aided	€78.00	€117.00

Source: HSE (2014b)
Notes: Where income is solely derived from Social Welfare sources or HSE allowances and the applicant is above the relevant income limit a medical card is still be awarded. * Since 5 August 2015, those over 70 qualify for a GP Visit card irrespective of income; the income limits in the table applied earlier in 2015.

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[6] SWITCH currently uses the same income definition for the over 70s as the under 70s when means testing i.e. net income after all allowances. Modelling using the gross income definition for over 70s may result in the numbers of over 70s modelled as eligible for medical cards changing slightly but these changes are not expected to be substantial as those over 70 tend not to have housing costs, childcare costs and tend not to have large, if any, USC/Tax/PRSI liabilities.

3. MODELLING OF MEDICAL AND GP VISIT CARDS

Background to the SWITCH Model

Policy changes are often considered in terms of their effects on a number of "hypothetical families". This approach has severe limitations. For example, in Ireland less than one family in 20 falls into the category of "one-earner couple with 2 children" which attracts so much attention. Furthermore families within this category differ in terms of income, housing tenure, and other characteristics that affect their tax-benefit position. More fundamentally, analysis of hypothetical families - no matter how well chosen - simply cannot give an overall picture of the impact of a policy change on incomes and work incentives. Tax-benefit models are based on large-scale nationally representative samples of households. This ensures that the models represent as fully as possible the great diversity of household circumstances relevant to tax and social welfare. *SWITCH* (**S**imulating **W**elfare and **I**ncome **T**ax **CH**anges), the ESRI tax-benefit model currently is based on data drawn from the CSO's Survey on Income and Living Conditions (SILC) for 2010.

The survey gathered detailed information on the incomes and labour market participation of more than 4,600 households. The SWITCH database is adjusted from year to year to allow for key changes in incomes and population structure as forecast for the next budgetary year. Changes in social welfare rates, income tax rates, bands and allowances, and the structure of employee PRSI are taken into account in the model. The main advantage of the model is that analysis of policy options can be carried out *before* changes reported occur. The model allows for distributional analysis by income (for example the percentage change in income in each income decile following a policy change) and also allows for the analysis of the distributional impact across different family types. In addition to distributional analysis the model allows for the analysis of poverty rates and work incentive measures such as replacement rates and marginal effective tax rates.

Data Requirements and the Modelling Process

In order to model entitlement to medical and GP Visit cards within the SWITCH model we must first calculate the 'assessable income' of potential applicants. In the model we first calculate income from all relevant sources (i.e. employment, self employment etc) for the applicant and their spouse (if present) and deduct income tax, PRSI and USC. We also allow for other applicable allowances such as housing costs, childcare costs and allowances for children as specified in Table 1. Travel-to-work costs are not available in the underlying SILC dataset and are not included at present.[7] We focus on the aggregate assessable income for a family unit as defined by medical card regulations. Once assessable income has been calculated we then compare this income to the relevant income limit depending on the respondent's age, family status (with/without children) and living situation (living alone or with family). If the family's income is below the relevant Medical Card income limit they, and their dependants[8] are modelled as having a Medical Card. If their income is above the Medical Card income limit but below the GP Visit card limit they, and their dependants, are modelled as having a GP Visit Card. If the person's income is above the GP Visit card income limit they are modelled as having no card. As the process for evaluating if someone over the relevant income limit would receive a card based on 'undue hardship' grounds is not tightly governed by precise, quantitative rules we cannot model entitlement to cards on this basis. This would require fuller information on medical conditions and medical expenses than is available in the survey.

4. RESULTS

SWITCH calculates entitlement to a medical or GP Visit card as described above. Effectively the model assigns individuals and their dependants to one of three categories – 'medical card', 'GP Visit card' or 'no card'. In what follows we will refer to these medical and GP Visit cards as 'modelled' cards. The data which forms the SWITCH database is the CSO's SILC 2010 survey. In the survey, respondents are asked directly if they hold a medical card, a GP Visit card or no card. We refer to these as 'reported cards'. Figure 1 shows how the incidence of both modelled and reported cards varies across the income distribution. The 'modelled' card status can be seen as an indicator of *entitlement* to a card or not, based on assessable income. The 'reported' card status is just that – whether a person reports holding a medical card, a GP Visit card or none at all. Due to the fact that SWITCH is currently based on 2010 data the results presented in this paper are for the year 2010 and are based on the relevant income cut-offs for that year.

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[7] One avenue for further work would be to allow for average travel to work costs.

[8] Dependants are all children (under the age of 16) and any 16-25 year olds who are financially dependent upon an applicant. A 16-25 year old is determined to be financially dependent upon the parental tax unit if their income is below the current Medical Card Income Guideline for a single person, living with family (HSE, 2014b).

There exists a variety of reasons that may explain why modelled and reported card status may differ.

- Firstly medical card and GP Visit card entitlements are modelled based on the *current* financial situation of the individual at date of interview. Respondents with cards will have been assessed at some earlier date, and their financial situation may have changed such that if reassessed at the date of interview, they would no longer qualify[9] .

- Secondly, those holding 'discretionary' cards awarded on the basis of undue hardship as explained previously will, by definition, not satisfy the income-related criteria which are being modelled. The modelling is telling us that the individual does not qualify on income grounds; the data are telling us that the individual has a card for other reasons, possibly as a result of the discretionary card process.

- Thirdly, there may be an issue of the non take-up of cards. People may be entitled to a medical or GP Visit card based on their income levels but for a variety of reasons[10] do not hold a card.

- Fourthly, there may be possible misreporting of income or medical card status in SILC or possible misreporting to the HSE when applying for a card.

- Fifthly, a means test for those over 70 was introduced in 2009. As we are assessing eligibility in 2010 we have applied this means test to those over 70. In reality, however, it may have taken time to withdraw cards from those over 70 and who are over the income limit.

- Finally, travel to work costs, allowable against income in the medical/GP Visit card means test, are not captured in SILC[11].

Even though we are dealing with a sample of the population in SWITCH/SILC we can apply a weight to the data to arrive at a representative view of the population and to allow us to compare our numbers with HSE statistics. The CSO provides weights with the SILC data which ensure the data is representative on the basis of a number of geographical and demographic grounds (for example region, age, gender and household composition). The SWITCH team build on the weights provided by the CSO to ensure that SWITCH is representative with regard to the CSO controls but also representative of the income distribution and social welfare population. (Keane et al., 2012).

We begin by examining the distribution of medical cards over the income distribution as modelled by SWITCH. Keilthy (2009) examined the percentage of individuals with a medical card in each income decile. She finds a pattern in which individuals with low incomes are most likely to have medical cards, and those in the top half of the income distribution are much less likely to have medical cards. Keilthy's analysis is limited by the fact that it operates using household equivalised[12] annual income deciles whereas medical card entitlements are in fact determined at family unit or "tax unit" level[13] and current rather than annual income. The SWITCH model allows us to examine this issue more closely, using the correct tax unit level of analysis, and a measure of current rather than annual income, on which Keilthy's results are based. Figure 1 below shows the distribution of Medical and GP Visit cards across the income distribution. The population is divided into 10 equally sized groups based on income ranked from poorest to richest. These income groups (income deciles) are defined based on the current, equivalised disposable income. In this case we look at the distribution of income over tax units, which are close to the family unit used by the medical card scheme.

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[9] Medical cards are usually issued for 3 years. An individual's medical card status may be subject to random review, however in general the onus is placed on the cardholder to informed the HSE of any change in their circumstances (http://hse.ie/eng/services/list/1/schemes/mc/about/reviewsandappeals/)

[10] Non take-up may be 'primary' (i.e. for reasons such as ignorance of the scheme, reluctance to fill in the application form or a fear of stigmatisation) or 'secondary' (i.e. incorrectly being refused a card). For a full analysis of the issue of non-take-up of benefits see Van Oorschot (1995).

[11] Including an estimate of an average travel to work cost of €20 per week does not, however, alter hugely the results shown here.

[12] Equivalising income is the standard approach taken by the CSO to create income deciles. It takes account of household size and is arrived at by dividing total household income by a factor of 1 for the first adults, .66 for subsequent adults and .33 for children.

[13] A household may consist of a number of separate tax units which are taxed independently from one another. This is particularly the case in shared rented accommodation or when a working adult resides with their parents. In 2010 SWITCH identifies an average of 1.5 tax units per household.

Figure 1: Percentage of Tax Units with a Medical Card by Income Decile
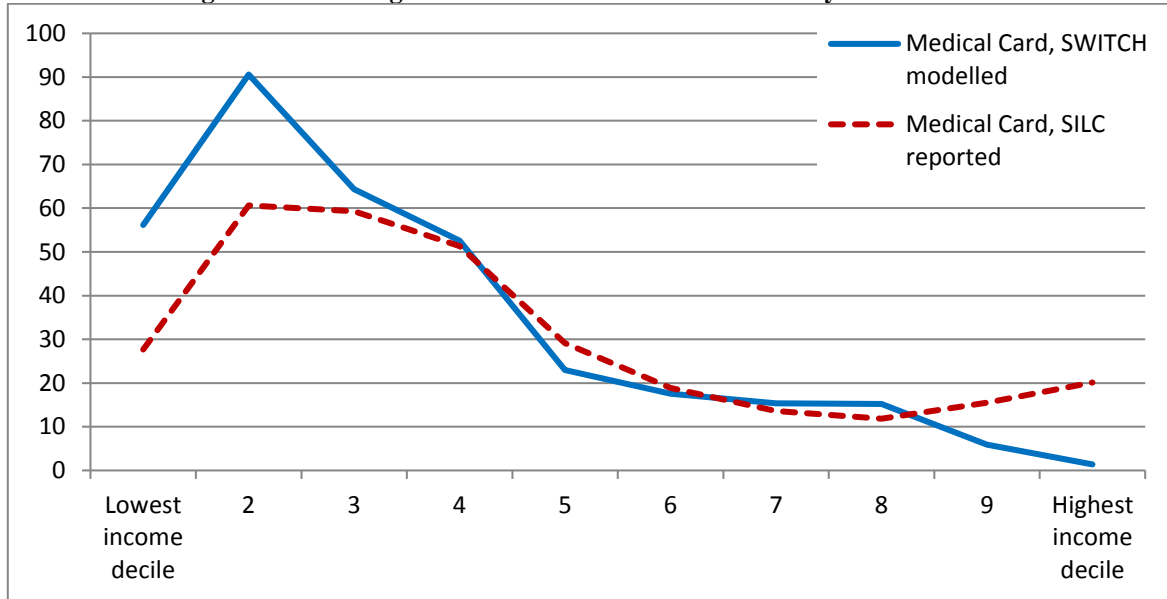
Source: SILC 2010 and authors' analysis using SWITCH, the ESRI tax-benefit model

As expected, due to the fact that medical cards are based on a means test, a high proportion of those with the lowest incomes (the 30 per cent of tax units with the lowest incomes, termed the bottom three deciles) are modelled by SWITCH as being eligible for a medical card. It may seem surprising that close to half of those in the bottom income decile (the lowest 10 per cent of tax unit incomes) are modelled as being *in*eligible. However, almost all (99 per cent) of those ineligible are aged 16-25 and are deemed dependent upon a parental tax unit whose income is above the relevant income limit. A higher proportion of deciles 2 and 3 are also modelled as being entitled to a card. The proportion entitled to a medical card then falls as income rises. Some tax units higher up the distribution of disposable income are modelled as eligible to receive medical cards (15-18 per cent of deciles 6-8, 6 per cent of decile 9 and 1 per cent of decile 10). This is due to the fact that the disposable income measure used to rank households is based on net income (i.e. after tax, USC and PRSI) but the medical card means test includes allowances for costs such as housing and childcare costs.

The distribution of medical cards reported by SILC recipients differs from the modelled entitlements in two main respects.

- First, for the two lowest income groups (the bottom two deciles), the proportions reporting having a medical card are substantially lower than the proportion entitled. Of the poorest income decile only 27 per cent report having a medical card, whereas the proportion modelled as entitled is close to double this figure. In the second income decile there is also a gap of 30 percentage points between those reporting entitlement (60 per cent) and those modelled as entitled (close to 90 per cent).

- Second, for the two highest income deciles, the proportions reporting having a medical card are above the proportions modelled as being eligible. One in 5 of those in the highest income decile (the top 10 per cent of the population by income) reports having a medical card, while very few of this group are modelled as having an entitlement to a medical card.

The former result suggests that closer investigation of this apparent non-take-up of medical cards among the lowest income decile would be of interest. Such a study would be a substantial undertaking in its own right. While a full investigation of this issue is not within the scope of the present paper, we do provide a preliminary examination later in this section.

Table 2 shows a cross-classification of tax units in SILC, depending on whether or not they report having a medical card, and on whether or not they are modelled as entitled to a medical card on income grounds. 'Without medical card' indicates that a tax unit reports that it holds a GP Visit card or no card at all. The numbers on the diagonal indicate the proportions where the SWITCH prediction on entitlement agrees with the respondent's answer, i.e., of the total number of tax units, 20 per cent hold a medical card and are eligible based on their income as calculated in SWITCH. 57 per cent of the population are deemed by SWITCH as ineligible for a medical card and do not report having one in SILC. This indicates that in 77 per cent of cases SWITCH and SILC 'agree'. The remaining 23 per cent consist of 9 per cent of cases assessed by SWITCH as ineligible for a medical card on income grounds, but reporting that they do hold a card; and 14 per cent of cases who report that they do not have a medical card, but who are modelled as being eligible for a medical card based on their current income.

**Table 2: Medical Cards: Modelled Entitlements and Respondents' Answers**

		SWITCH (modelled)	
		Medical Card	Without Medical Card
Reported by SILC respondents	Medical Card	20%	9%
	Without Medical Card	14%	57%

Source: SILC 2010 and authors' analysis using SWITCH, the ESRI tax-benefit model

A similar analysis indicates greater divergences between the numbers reporting GP visit cards and the numbers modelled as being entitled to such a card. Figure 2 shows that most of those with incomes in the bottom two deciles are eligible for a full medical card – as a result, they do not receive a GP Visit Card. At somewhat higher incomes (deciles 3, 4 and 5) the proportion modelled as eligible for a GP Visit card is higher, between 18 and 29 per cent, as some of those who do not meet the medical card means test do qualify under the higher income limits for the GP Visit Card scheme. Eligibility for GP Visit Cards is very low for deciles 6 and 7, but rises again for deciles 8 and 9. One key factor contributing to this pattern is that those aged over 70 face a much higher income limit than that for those aged under 70. Thus, high income cases qualifying for a GP Visit Card may often reflect this aspect of the system.

The distribution of modelled GP Visit cards in SWITCH is in contrast with the reported holding of a GP Visit card as reported in SILC. Coverage is low across the income distribution with only a small peak in coverage for those on low to middle incomes as would be expected. In fact, the second highest rate of reported GP Visit card coverage is in decile 6 with just over 4 per cent of this decile reporting having a GP Visit card. If we look at the total numbers of people modelled as being eligible for a card, SWITCH estimates that close to 622,000 individuals are eligible for a card based on the means test but just under 134,000 people report holding a GP Visit card. These numbers tie in with previous research by Callan and Keane (2008) which, using a number of approaches, suggested that take-up of GP Visit cards ranged from 17-43 per cent using SILC 2005. A crude estimate for 2010 comparing the SILC and SWITCH numbers suggests that take-up of the GP Visit card is 22 per cent but this area warrants further investigation, particularly a profile of the types of individuals who do not seem to be taking up the GP Visit card despite being eligible.

Figure 2: Percentage of Tax Units with a GP Visit Card by Income Decile
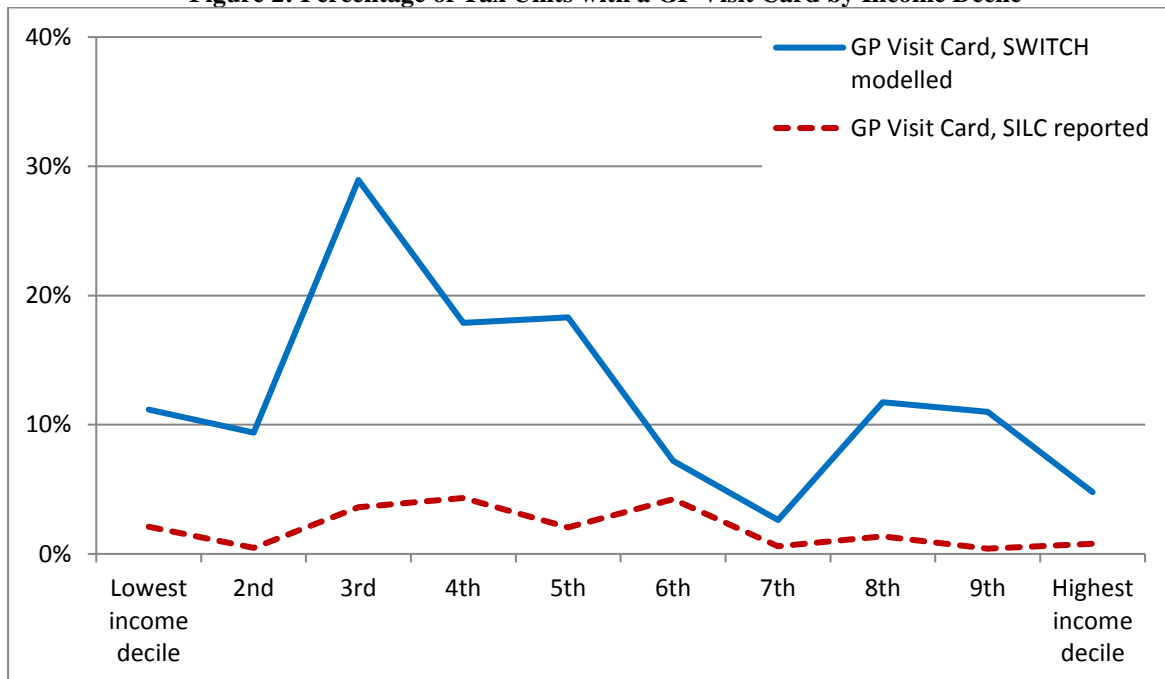
Source: SILC 2010 and authors' analysis using SWITCH, the ESRI tax-benefit model

Table 3 shows a breakdown in the percentage of tax units holding a GP visit card, or not, in SWITCH and SILC. 'Without GP Visit card' indicates that a tax unit holds a medical card or no card at all. Again, the numbers on the diagonal indicate the proportion correctly 'predicted' by SWITCH. Just 1 per cent of tax units are deemed eligible by SWITCH for a GP Visit Card and report having one in SILC. About 85 per cent of the population are deemed ineligible for a GP Visit Card (qualifying either for a Medical Card or no card at all) and report not having one. Therefore, as regards GP Visit Cards, in 86 per cent of cases SWITCH and SILC agree. Some 2 per cent of the population are modelled as ineligible for a GP Visit Card and report having one while 13 per cent are deemed eligible for a GP Visit Card based on current income but do not report holding one. This provides another perspective on the apparent non-take-up of entitlements to the GP Visit Card, which seems to be substantial.

Table 3: GP Visit Cards: Modelled Entitlements and Self-Reported Status

		SWITCH (modelled)	
		GP Visit Card	Without GP Visit Card
Reported by SILC respondents	GP Visit Card	1%	2%
	Without GP Visit Card	13%	85%

Source: SILC 2010 and authors' analysis using SWITCH, the ESRI tax-benefit model

Finally, we can examine the crossover between SWITCH (modelled cards) and SILC (reported cards) with respect to holding any card, Medical or GP Visit. 27 per cent of the population are eligible for either card and report having one, while 47 per cent are ineligible on income grounds and do not hold either card. In total, therefore, SWITCH and SILC 'agree' in 74 per cent of cases. 6 per cent are deemed ineligible for either card but report holding one. This group will include some cards awarded under the 'undue hardship' rule. 21 per cent are modelled as being eligible for one of the cards but do not hold any. This group will contain those who are eligible but, for some reason, have not taken up the card.

Table 4: Proportion Correctly Predicted: All Cards

		SWITCH (modelled)	
		Any card (Medical or GP)	No card
	Any card (Medical or GP)	27%	6%
SILC (reported)	No card	21%	47%

Source: SILC 2010 and authors' analysis using SWITCH, the ESRI tax-benefit model

As mentioned above there exists a range of reasons why modelled card status and reported card status may differ. We can briefly examine some of the possible reasons for differences here. The pattern of Medical and GP cards across the income distribution and the differences between SWITCH and SILC certainly seem to point to a take-up issue, particularly for GP cards and medical cards at the lower end of the income distribution. This issue warrants future research to examine the traits of tax units who do not appear to take up the benefit, even when entitled on income grounds.

Another possible explanation for differences between modelled and reported card status is the fact that SWITCH can only model cards based on income grounds and not cards that are awarded under the 'undue hardship' grounds due to the fact that SILC does not contain information on expenditure on medical expenses and the fact that the strict quantitative rules do not apply in the case of undue hardship.

SILC does contain information on self-assessed health status and whether a respondent reports having a long standing chronic illness or health condition. Individuals over the age of 15 are asked to rate their health on a 5 point scale (very bad, bad, fair, good, very good). Table 5 summarises the results. Some 15 per cent of all adults report having fair, bad or very bad health, but this proportion rises to more than 30 per cent for those who report having a medical card (this is true for those modelled as being entitled to a medical card, but also for those modelled as not eligible for a card on income grounds). Those who are modelled as eligible for a medical card, but reporting that they do not have one, have a much lower rate of ill health – only 7 per cent report fair, bad or very bad health.

The incidence of chronic illness follows a similar pattern. The rate for reported medical card holders is about 50 per cent, or double the incidence in the total population. By contrast, the group modelled as being eligible, but apparently not taking up the medical card, has a lower rate of chronic illness of 16 per cent.

It should be noted that the final column, column (iv), includes some of those who have been awarded discretionary cards, i.e., they are modelled as ineligible based on their current income but report holding a card. This group reports a poorer health status than average with 31 per cent reporting fair/bad/very bad health and half reporting a chronic illness. Their health status and illness profile is almost identical to those who hold a medical card and are eligible based on income grounds (column (ii)).

Table 5 : Health and Chronic Illness Status

	(i)	(ii)	(iii)	(iv)
	Total over 15 population	Modelled as eligible and has reported medical card	Modelled as eligible but reports not having a Medical Card	Has a reported Medical Card but not modelled (Possible discretionary card)
Health Status:				
Very Good/Good	**85**	**67**	**93**	**69**
Fair, Bad/Very Bad	**15**	**33**	**7**	**31**
Chronic Illness:				
Has a chronic illness	25	50	16	49

Source: SILC 2010 and authors' analysis using SWITCH, the ESRI tax-benefit model

Table 6 examines non take-up of medical cards (i.e., cases where a modelled entitlement exists, but respondents report that they do not have a card) within the bottom decile on the basis of health status, age and employment status. Approximately 96 per cent of all non take-up cases have a self-reported health status of good to very good while only 4 per cent report being in fair health. This finding of good health is partially explained by age; those aged 16-34 make up 63 per cent of all non take-up cases within the bottom decile. Furthermore, table 6 shows non take-up is most prevalent among the employed and those who are in education. The incidence of non take-up among the employed and the healthy suggests that non take-up may reflect a lack of need or a misconception among some employees as to their eligibility for a medical card.

Table 6: Non Take-up of Medical Cards in Lowest Income Decile by Health Status, Age and Employment Status (%)

Health Status				
Very Good	Good	Fair	Bad/Very Bad	Total
65	31	4	0	100

Age Band						
16-24	25-34	35-44	45-54	55-64	65-69	70 and older
32	31	12	12	12	0	0

Employment Status					
Employed	Unemployed	Home Duties	In Education	Others	Total
36	9	16	36	4	100

Source: Authors' analysis using SWITCH, the ESRI tax-benefit model

Comparison to HSE Statistics

Finally, we compare the total numbers modelled as having a medical or GP Visit card in SWITCH with numbers reported by the HSE for 2010 in Table 7 below. The HSE reported 1.62 million medical card holders for 2010 or 1.54 million excluding discretionary medical cards. SWITCH models 1.57 million individuals as being eligible for a medical card in 2010 so that overall the ratio of SWITCH medical card-holders to the HSE (non-discretionary) number is 102 per cent. The HSE report 120,000 individuals receiving a GP Visit card in 2010, or 100,000 excluding discretionary GP Visit cards. SWITCH models over 600,000 individuals as eligible for a GP Visit card. These results are consistent with our findings of GP Visit card coverage across the income distribution (Figure 2) and suggest a substantial degree of non-take-up for GP Visit cards.

Table 7: Medical & GP Visit card Recipients– SWITCH and HSE, 2010

	'000s
	2010
N on medical card, HSE	1,616
N on medical card, HSE excl discretionary	1,535
N on medical card, SWITCH	1,567
N on GP card, HSE	117
N on GP card, HSE excl discretionary	100
N on GP card, SWITCH	622
N on medical/GP card, HSE	1,733
N on medical/GP card, HSE excl discretionary	1,635
N on medical/GP card, SWITCH	2,189

Source: HSE Annual Reports & SWITCH

Table 8 compares the age distribution of those modelled as being entitled to a medical card to the distribution reported in the annual Primary Care Reimbursement Service (PCRS) report produced by the HSE. For the majority of age bands the ratio of modelled medical card recipients to HSE figures ranges from 90-112 per cent.

One age band with a high ratio is the 25-34 years olds. SWITCH models approximately 249,000 25-34 year olds as being eligible while the PCRS reports that there are only 175,000 medical card holders in this age band. As previously discussed, non take-up may be due to good health or a lack of awareness of eligibility. The higher proportion being modelled as eligible in this age band has consequences for the modelled eligibility of any subsequent dependants explaining the difference between SWITCH and HSE numbers for the under 5s.

Another age band with a sizeable difference between HSE and SWITCH numbers are the 75s and older. The HSE reports approximately 219,000 medical card holders while SWITCH models only 153,000 as being eligible. This difference may be due to the possibility that the over 75s are more likely to be in receipt of a discretionary card or it may reflect that some of this age cohort received their medical card prior to the introduction of the means test for the over 70s in 2008 and had not returned their medical card in 2010.

Table 8: Medical card Recipients by Age Band – SWITCH and HSE, 2010

Age Band	HSE excl discretionary	SWITCH	SWITCH:HSE (excl disc) ratio
	000s	000s	%
Under 5	110	144	131
5-11	161	166	103
12-15	80	80	99
16-24	142	136	96
25-34	175	249	143
35-44	175	195	112
45-54	143	141	99
55-64	143	131	92
65-69	78	60	76
70-74	109	113	103
75 and older	219	153	70
Total	1535	1,562	102

Source: HSE Annual Reports and authors' analysis using SWITCH, the ESRI tax-benefit model
Note: The number of cards reported by the HSE for each age band has been reduced by 5% in order to account for discretionary cards, as the SWITCH estimates model income-related eligibility only and not discretionary cards.

5. POLICY IMPLICATIONS: UHI AND EXTENSIONS OF FREE GP CARE

The modelling of current healthcare entitlements is a necessary first step in the analysis of any potential change to the healthcare system. The examination of the potential cost of moving to Universal Health Insurance (UHI) provides a good example of the importance of modelling current healthcare entitlements.

The White Paper on Universal Health Insurance set forth that:

> *The State will pay insurance premia for people on low incomes and subsidise premia for people on middle incomes. (Department of Health, 2014)*

While this broad indication is compatible with a wide variety of subsidy designs, Wren et al (2015) reasonably assumed that UHI would be structured as follows:

- All medical cardholders would receive a subsidy of 100 per cent of their UHI premium;

- All GP Visit cardholders would receive a subsidy of 50 per cent of their UHI premium;

- Persons on low/middle incomes who did not qualify for medical cards would receive a subsidy of 25 per cent of their UHI premium. (Wren et al, 2015)

A variety of different baskets of cover are considered by Wren et al (2015). Under the most basic package the average premium was estimated as €1,761 (Wren et al, 2015). The adult premium for this basket of services was significantly higher while the child and student premia were significantly lower (KPMG, 2015). Under this scenario GP Visit cardholders would receive an average subsidy of €880.50 per annum; the exact size of the subsidy would vary by family composition depending on the number of adults, students and children.

HSE (2011) reports that there were 117,000 GP Visit cardholders in 2010, this would suggest that the cost to the exchequer of providing a 50 per cent subsidy to GP Visit cardholders would be in the region of €103m (117,000*€880.50). The analysis performed in section 4 indicates that there is a significant non-take-up issue with respect to GP Visit cards. Individuals or families may not take up an entitlement to a GP visit card because it has a low expected value (e.g., the cost of one or two doctor visits per year). However, under a UHI system, they may be faced with a substantial new premium which would significantly increase the value of a GP Visit card and as such take-up could be expected to increase dramatically. Assuming full take-up, our modelled number of GP Visit cards suggests the cost to the exchequer of a 50 per cent subsidy to all GP Visit cardholders would be approximately €548m (622,000*€880.50).

This illustration highlights the importance of accurately modelling current healthcare entitlements. Using current take-up to estimate the impact of a change to the healthcare system leads to an estimate which could be as much as five times lower than the potential cost. For more expensive healthcare baskets the ratio between estimates using administrative data and those based on modelled take-up remains unchanged; however the aggregate difference increases substantially.

What if policy moves instead towards extending the coverage of the GP visit card? Here, a key issue is that the cost of this approach depends on the extent of the additional workload which would arise for GPs. In estimating this, one cannot assume that usage of GP services by newly eligible card holders will be the same as that for those currently using the GP visit card scheme. Our analysis shows that there is a selectivity bias with respect to medical cards, which may well also arise for GP visit cards. Those who are eligible but not taking up medical cards tend to have better health than those who have medical cards. Further work is needed on this topic.

6. CONCLUSION

This paper is focused firmly on modelling entitlements to medical cards and to GP visit cards, based on data from SILC on incomes, housing costs and family composition. This is an essential building block for future work exploring the introduction of Universal Health Insurance, and examining the impact of medical card entitlements (and their withdrawal) on financial incentives to work. Our analysis has demonstrated that the SWITCH model has been successfully developed to use SILC data to model income-related entitlements to medical cards and GP visit cards. The total numbers modelled as eligible for medical cards are close to official numbers of recipients. However, we also find *prima facie* evidence of substantial non-take-up of medical cards and, even more so, of GP visit cards. Further and more detailed investigation of these findings is needed, as such results have implications both for the assessment of the existing system, and for the assessment of possible changes.

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DISCUSSION

Patrick Foley: To what extent are the SILC sample weights re-calibrated for SWITCH modelling purposes and more specifically for this research? Income measurement errors within the SILC dataset are greatly reduced by not alone having access to and using DSP administrative data sources but also revenue data. To meet Eurostat timeliness requirement and to be more harmonised with other European member states SILC is exploring moving away from current income measures and the rolling 12-month income reference period to compiling and reporting annual income based on the previous (T-1) income reference period. In addition to the core health questions contained in the SILC questionnaire Eurostat are proposing to include a specific health module that will be repeated every 3 years. The benefit of the frequency of the health module in the SILC questionnaire is that, as well as having additional cross-sectional health data there will also be the added value of a longitudinal component in the data.

Martin O'Brien: Have the authors considered the issue of non-take-up of medical or GP visit cards given household characteristics? The identification of non-take-up at the tax unit level may not best capture the incidence of particularly vulnerable individuals not accessing their entitlements, particularly where household characteristics could either compound or mitigate factors that would determine take-up. Similarly it would be interesting to match up with other datasets concerning the actual use of medical or GP card services to determine the fundamental value of these benefits.

Richard McMahon: Firstly, congratulations to Tim, Claire and the authors of the paper. The discussant raised the question of how to address the issue of travel costs in the future. In addition to the Household Budget Survey, the Census of Population and National Travel survey provides valuable information on commuting and travel patterns of persons which could be used to impute travel costs. The linking at a micro-data level of administrative health, DSP and Revenue Commissioners datasets to the statistical surveys offered great future potential to investigate further the issues surfaced in the paper, such as reasons for low uptake of medical/GP visit cards. The evolution of the National Data Infrastructure with an increased use of personal (PPSN) and address (Eircode) identifiers would facilitate this matching in the future.