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Failure to take-up public healthcare entitlements: Evidence from the Medical Card system in Ireland

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ABSTRACT

While population health and welfare can be improved through the provision of non-cash benefits, such as free healthcare, many welfare improving schemes have low rates of take up amongst those eligible for such a benefit. One interesting example of this is the Medical Card scheme in Ireland. Medical Cards are a non-cash benefit that provide free primary, community, and hospital care, as well as heavily subsidised prescriptions drugs, for those below specific income means-test threshold. However, despite the significant benefits afforded by a Medical Card, many people forego entitlement. While this has been of concern to policymakers, the prevalence of, and reason for, non-take up, have to date not been examined in-depth. Using detailed household demographic, healthcare, income and expenditure data, this paper estimates the Medical Card take-up rate, examines the reasons for non-take, and estimates the additional healthcare cost burden to individuals due to non-take-up. The paper estimates that 31% of eligible individuals do not take up a Medical Card. Private health insurance coverage, receipt of social welfare, employment status and health status are all strongly correlated with take up. Results suggest that of a lack of information about eligibility status and social stigma are key factors driving non take up. The paper estimates that families who forego their entitled Medical Card typically spend an additional €202 annually on healthcare. Furthermore, as a consequence of higher purchase rates of, perhaps unnecessary, private health insurance, families not taking up their entitlement spend an additional €489 per annum on PHI premia. Welfare losses are likely to be even higher if forgoing medical care due to cost results in future negative health outcomes.

1. Introduction

Universal healthcare (UHC) is a key feature of most European health systems. While UHC features differ across countries, provision of care according to need, rather than ability to pay, and provision of healthcare free at the point of use are central components of UHC systems. In the United Kingdom (UK) for example, all citizens are entitled to free primary and secondary care through the NHS, though co-payments may exist for prescription items. In countries without UHC, such as the United States (US), Turkey and Ireland, publicly funded programs exist that aim to expand access to healthcare for lower income groups, or groups with high levels of healthcare need. These programs offer eligible populations free, or lower cost, healthcare. However, despite the substantial pecuniary benefits afforded by these programs, many people who are entitled to publicly funded programs fail to take them up.

There is a substantial literature on public health insurance take up (e.g. Medicaid, Children's Health Insurance Program (CHIP)) in the US (Baicker et al., 2012; Card et al., 2004; Currie and Gruber, 1996). However, evidence from other countries is sparser. This study expands upon the existing literature to examine public healthcare entitlements in Ireland. Unique in a European context, the majority of the Irish population pay co-payments for primary care, community care, and secondary healthcare services (Kringos et al., 2013; Wren and Connolly, 2019). Approximately one-third of the population have a Medical Card, which are means-tested cards that entitle cardholders to free primary and public secondary healthcare and reduced co-payments for prescription items.

Using detailed household income and expenditure data, this study examines three important issues. Firstly it estimate the Medical Card take-up rate and examines potential reasons for non-take-up. Secondly, it examines the link between Medical Card and PHI coverage. Thirdly, it attempts to quantify the monetary consequences of non-take up by comparing the levels of out-of-pocket healthcare expenditure and expenditure on private health insurance (PHI) in families who take-up

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their entitlement compared to those who do not. These analyses will extend the understanding of non-take-up of public healthcare entitlements in a European context, and provide more information to Irish policymakers in the context of the new proposed system of UHC; *Sláintecare* (Houses of the Oireachtas Committee on the Future of Healthcare, 2017). *Sláintecare* ('Sláinte' is health in Irish) is a high-level roadmap with cross-political party support, to deliver a single tier universal healthcare system over a ten-year period (Burke et al., 2018). A key component of this plan is to expand free healthcare to the whole population and reduce the reliance on PHI to pay for, and access care.

Section 2 provides some background information on the Medical Card scheme along with relevant literature on public healthcare schemes elsewhere and take-up barriers. Section 3 discusses the data and methodology used. Section 4 presents the results while Section 5 concludes and discusses policy implications.

2. Background

2.1. Medical card scheme

Medical cardholders and their immediate family are entitled to free primary, community and public hospital care, and lower prescription co-payments. Eligibility for a Medical Card is primarily based on a means test, with those in the lowest income groups entitled to a card. Eligibility is established at a family (rather than household) level with couples and dependent children under 25 assessed together. Those aged 16–25 living with their parents but earning over a certain limit are deemed to be financially independent and assessed on their own. Enrolment is not automatic and the means thresholds are somewhat convoluted and differ by family status, age and number/age of dependent children in the family. For families containing an adult over 70 the means test is simpler as it is based purely on gross income with no deductions for taxes or other expenses such as housing costs. The means test for those over 70 is more generous, with significantly higher income limits than for those under 70. For those families where the oldest adult is under 70 means are calculated by adding up current gross income (e.g. from (self) employment; rental income; investments) and deducting income tax and social insurance liabilities. Income from investments/savings below €36,000 per adult is not included. Families can also claim for allowable expenses of housing, childcare and travel to work costs, life assurance, home and mortgage protection insurance as well as maintenance payments. See Table A1 for the precise income limits. Families with incomes above the levels listed but for whom all income is from social welfare sources also qualify for a Medical Card. Applications for a Medical Card can be made online or through a GP or local health office. Applications are processed within 15 days but may take longer if insufficient information is received. Those deemed ineligible for a Medical Card will automatically be assessed for a GP Visit Card. Those with incomes 50% above the Medical Card income threshold, along with all children under six and adults over 70, are eligible for a GP Visit Card, which provides free GP visits only.

Those without a Medical Card must pay the market price for primary (unless they have a GP Visit Card) and community care as well as co-payments for public hospital care and medications. In addition to the pecuniary benefits, Medical Cards may also improve access to care. Those without a Medical Card may not be entitled to public community services such as physiotherapy, social worker services, or public health nursing (Citizens Information, 2015; Houses of the Oireachtas Committee on the Future of Healthcare, 2017), which are allocated to Medical Card holders first. Thereby those without a Medical Card often rely on private provision of such services. Other benefits of the Medical Card for families include free dental, (bi-annual) ophthalmic, and audiology examinations, a reduced rate of one tax on income (the Universal Social Charge), exemption from school transport charges and exam fees in publicly funded second-level schools (Citizens Information, 2015). There is evidence from Ireland that having a Medical Card increases engagement with the health system for preventive care services (e.g. cancer screening) despite these services being free to the extended population (Burns et al., 2012; Connolly and Whyte, 2019; Walsh et al., 2012). Therefore, while falling short of UHC, the Medical Card system does offer extensive benefits to lower income groups and many of those with the highest healthcare need and forms the basis of many of the eligibility proposals within Sláintecare.

Healthcare costs for those without a Medical Card are high (see Table A2). The average cost of a GP visit is over €50 (Connolly et al., 2018), each public hospital emergency department (ED) attendance (without a referral) and outpatient visit costs €100, and patients without a Medical Card are liable for up to €800 for inpatient care per annum and €80 per day patient visit. In addition, even with the partly subsidised Drug Payments Scheme (DPS), families without a Medical Card may pay up to €114 per month for prescription medication.

The majority of those without a Medical Card are covered by PHI, with approximately 46% of the total population having PHI (Health Insurance Authority, 2017). PHI rarely covers the entirety of healthcare costs. Overall, out-of-pocket (OOP) payments constitute 12% of healthcare expenditure (Central Statistics Office, 2019). In this context, it is clear that the monetary and access benefits of Medical Cards are significant for entitled low income families.

2.2. Benefits of public healthcare entitlements

In countries without UHC systems, take-up of public healthcare entitlement or public insurance, amongst the eligible population is seldom universal (Baicker et al., 2012). This is despite these schemes reducing healthcare costs and improving access to care. Gaining Medicaid in the US has been shown to increase use of primary care, ED, and outpatient care (Baicker et al., 2013; Cooper et al., 2015; Taubman et al., 2014; Wright et al., 2016). Similarly in Ireland, studies using propensity score matching of structural changes in the eligibility criteria show that gaining a Medical or GP Visit Card increases GP visits (Nolan, 2011; Nolan and Layte, 2017b; O'Callaghan et al., 2018). However, it is questionable whether gaining a Medical Card (Ma and Nolan, 2016) or GP Visit Card (Walsh et al., 2019) impacts use of hospital services. In the US, Medicaid has also been shown to reduce OOP spending by 30% (Sommers et al., 2016), as well as nearly eliminating 'catastrophic expenditure', whereby OOP expenses exceed 30% of income (Taubman et al., 2014). At the individual level, the Medicaid enrolled population spend on average $216 OOP annually, while the uninsured incur OOP costs over three times higher at $752. These results on the intrinsic value of public healthcare entitlements are reinforced by evidence from Ireland on lone parent families placing a high value on a Medical Card due to the OOP healthcare costs potentially faced in its absence (Russell and Corcoran, 2000).

2.3. Eligibility and take-up barriers

A number of psycho-social, administrative, and institutional barriers to non-take-up of health and social welfare benefits have been illustrated in the literature. In the simplest instance, eligible individuals may be unaware of a benefit or incorrectly feel that they are ineligible. The Earned Income Tax Credit (EITC) in the US, a refundable tax credit targeted at lower income individuals, has seen issues with enrolment due to confusion surrounding entitlement and informational complexity. In a field experiment potentially eligible households who did not claim the EITC were contacted by mail (Bhargava and Manoli, 2015). The letter aimed to heighten knowledge of the benefit by providing simplified information on estimated entitlement and a simplified claiming process. Receipt of such a letter increased the rate of EITC take-up amongst eligible individuals.

Individuals may be aware of benefit schemes but are reluctant to fill in the application form due to 'transaction costs' such as the time or administrative burden that may be involved. This was apparent in

(Bhargava and Manoli, 2015) whereby the simplified application helped increase EITC take-up. Factors such as lack of knowledge and complex eligibility rules and forms have been shown to reduce enrolment in Medicaid in the U.S. also.

Potential recipients may feel stigma in applying for a benefit entitlement, particularly if it is aimed at those on lower incomes. Evidence from the UK found that 34 per cent of social welfare benefit recipients report either personal stigma or stigmatisation (perceived stigma by others) for at least one benefit, and over one-quarter say a stigma-related reason would make them less likely to claim.

Research (see, for example, Bargain et al., 2012) has found that the take-up of cash benefits is higher the larger the benefit entitlement amount. The same concept may apply to the take-up of benefits that do not involve a direct cash transfer to the individual such as Medical Cards – those who do not place much value on the card (for example those who are in good health and rarely or never need to consult a GP, attend hospital or take medication) may be less likely to take up the card. In France, take up of financial support for disabled elderly people with long-term care needs varied regionally, but enrolment was higher in regions with more lucrative schemes (Baumberg, 2016).

In addition individuals who apply for a benefit may incorrectly be refused it even though they are entitled due, for example, to administrative errors.

Recent estimates show over 3 million uninsured people in US states that expanded Medicaid did not enrol in Medicaid despite becoming eligible (Arrighi et al., 2015). Research from Turkey shows only 44% of individuals eligible for the means-tested public health insurance, General Health Insurance ('Green Card') scheme, avail of their entitlement (Garfield et al., 2016). Some have argued that the low rates of public insurance in the US, where enrolment is essentially free, is difficult to explain using the traditional economic model (Erus et al., 2015). Others have suggested that auto-enrolment could greatly increase coverage and allow for better continuity of coverage over time (Baicker et al., 2012).

These issues are borne out, at least partially, for Medical Cards. In a government commissioned review of the U.S. schemes, the complexity of the application form, volume of evidence on income required, and lack of clarity in instructions were identified as key difficulties in the process (Drake and Anderson, 2019).

Finally, unique to the health sector, take up of public benefits may reduce if a seemingly viable alternative is available, e.g. PHI. In health systems such as Ireland and the US, where PHI is common, even those eligible for public healthcare programs may forego the public option in favour of PHI. While in the past, two-thirds of Medicaid-eligible individuals in the US have been found to have PHI (PricewaterhouseCoopers, 2012), there has been a dramatic reduction in recent years. However, more recent research has found that 35% of Medicaid-eligible individuals had PHI (Currie and Gruber, 1996). Controlling for other factors, the authors also estimated that having income equal to the Medicaid income threshold reduced PHI coverage by 10–16 percentage points (De La Mata, 2012).

Similar results may be expected for Ireland. However, there is still a rationale in availing of a Medical Card by eligible families even if they prefer to hold PHI. Having PHI does not disqualify people from a Medical Card. A Medical Card covers items not usually covered by PHI (for example prescription costs, no co-payments for GP visits). Contrastingly, PHI offers access to private hospitals, allowing individuals bypass long public hospital waiting lists (De La Mata, 2012; Harmon and Nolan, 2001; Kapur, 2019). Therefore, the two schemes are imperfect substitutes and are, in part, complements to each other.

Without a direct survey intended to capture all possible elements of the non-take-up of medical and GP Visit cards, this paper will attempt to examine as many of these factors as possible by examining the correlation between non-take-up and family characteristics.

3. Data and methodology

3.1. Data sources

This study uses data from two datasets. The main dataset used is the 2015 wave of the Survey of Income and Living Conditions (SILC), a nationally representative survey and the official source of data on household and individual income and key national poverty indicators. In 2015, the survey consisted of 5,452 households and 13,793 individuals with a 60% response rate. In addition to individual level employment and social welfare income information, the SILC gathers a range of other household and individual demographic information such as age and sex of household members as well as their relationships to each other. This household relationship information allows us to group individuals into the relevant 'Medical Card unit' for assessment purposes. We refer to these units as "families" for the remainder of the text for simplicity. The SILC also contains information on most allowable costs in the Medical Card assessment such as housing and childcare costs. Respondents are also asked if they currently hold a Medical Card, GP Visit Card or PHI. The SILC data is used to estimate take-up rates and examine characteristics correlated with non-take-up. We incorporate the SILC data into the SWITCH (**S**imulating **W**elfare and **I**ncome **T**ax **C**hild and **H**ealthcare benefits) model. This is a tax-benefit micro-simulation model which has been developed to simulate Irish households' tax liabilities and social welfare entitlement and is used in a number of Irish government departments. Callan, Colgan, Keane and Walsh (2015) contains more information on the working of the SWITCH model specifically in relation to estimating medical card entitlement. The means test for Medical Cards is based on current income after taxes and social insurance. While the SILC data contains information on tax/social insurance liabilities, it is based on income received and taxes/social insurance paid in the last year. If a person suffered a change in income (for example a recent job loss or wage increase) using their income in the last year would be inaccurate in determining their current medical card eligibility. The SWITCH model uses a person's current reported income and calculates their current tax and social insurance liabilities based on this and the relevant tax and social insurance parameters, such as tax rates, bands and credit. Therefore, it provides a more accurate representation of families' current means to be eligible for a Medical Card.

We replicate the means test as precisely as possible as described in Section 2.1. There are a number of things we cannot capture. We do not know the values of the asset for those with rental/investment income. Incomes from the first €36,000 (per adult) worth of assets/investments/savings are not assessed. We therefore include all rental/investment income. This may overestimate means for a small number of families categorising them as ineligible, we believe a cautious approach to establishing eligibility is advisable to ensure we do not overestimate non-take-up. Secondly, income received from savings is not captured in the data so cannot be included. Data from the Household Finance and Consumption Survey in Ireland tells us that financial assets, including savings, are relatively small in lower income groups so, as the scheme is a means tested one, these two issues are likely to have a small impact on our modelling precision. The final component we cannot include are travel to work costs as they are not in the data. We do, however, perform a robustness check relating to this, explained in Section 3.2.

The SILC does not contain any information on household expenditure. Therefore, the 2015 Household Budget Survey (HBS) is used to examine OOP expenditures by households. The HBS is carried out on a five-yearly basis and in 2015 had a sample size of 6,839 households with a 40% response rate. As 2015 is the most recent wave of the HBS available we use SILC 2015 for comparability. Households participating in the HBS are tracked over a two-week period and complete detailed expenditure diaries and retain receipts from purchases. This offers detailed information on household expenditure habits but over a narrow time horizon. For the purpose of this analysis, the expenditure data are presented at an annual level (i.e. simply multiplying by 26). There may

be seasonality in healthcare expenditures during the year (for example more spending in winter when people are sicker) so these totals are not true OOP expenditure over the entire year and may vary by interview date. We are, however, interested more so in the **differences** in OOP expenditure between take-up and non-take-up groups and there is no reason to suspect that the interview date patterns between these two groups differ. The HBS provides information on employment income, social welfare transfers, other income sources, childcare costs etc. that allows us to replicate the Medical Card means test and define if a family is eligible or not. The issues just discussed relating to the recreation of means in SILC apply here also (i.e. no information on incomes from savings, inclusion of all investment income) but motor-fuel and public transport costs are available in HBS which we count as travel to work costs. The HBS also contains information on Medical and GP-Visit Card status which allows us to identify whether eligible families take up the card or not.

A clear benefit of the SILC and HBS data is the information on detailed household income and expenditures. Using survey-based data on limited income sources makes it difficult to accurately estimate take-up rates in programs that have complex eligibility criteria (MillwardBrown, 2016).

3.2. Medical card take-up

In order to estimate a Medical Card take-up rate we replicate the means test described in Section 2.1 using the SILC information on current incomes and allowable expenses and the simulated (current) taxes/social insurance using the SWITCH model. We first establish our eligible population by examining each family's assessable means. Families who have means below the relevant Medical Card income threshold are defined as eligible for a Medical Card. Families whose income is above the relevant means threshold but for whom all income comes from social welfare sources are also defined as eligible as is the case in practice (in our sample this equated to just over 50,000 families, just under 4% of all eligible families). We examine Medical Card take up above and below the Medical Card income limit to ensure that our calculation of means for Medical Card eligibility is accurate. Eligibility status is then compared to each families' response to the question on whether they hold a Medical Card. Those eligible and who report holding a Medical Card are in the 'take-up' category, while those eligible but report not holding a Medical Card are in the 'non-take-up' category. The take-up rate is then simply the proportion of the eligible population who report holding a Medical Card. This can be calculated at an individual or family level – the results should be similar but will differ as the number of individuals in households differ. Representative sample weights are used throughout. Given we do not have the allowable expense of travel to work costs in SILC we perform a robustness check and calculate a second estimated take-up rate including an average travel to work cost of €27 per week per employee/self-employed person. This is based on the average distance travelled to work for drivers taken from Census 2016 (driving being the most common commuting method in Ireland) and the 18c per kilometre allowed under the Medical Card means test.

We use a probit model to examine the factors associated with Medical Card enrolment. As Medical Card eligibility is based on family-level income, enrolment is defined at the family unit level, and the analysis of the characteristics influencing take-up is undertaken at the family unit level also. However, due to the data available we also control for a vector of individual and family-level information from SILC. As it is difficult to capture the complexity of those who make up a family (i.e. age, education, etc.), we use the characteristics of the Chief Economic Supporter (CES – head of household) in each family unit to capture across family variation in key socio-economic variables. We define the CES as the individual with the highest disposable income (net employment and social welfare income) and include many of their individual characteristics such as their education level, labour force status, marital status and age in the analysis. For ease of interpretation, results are presented as average marginal effects (AMEs). We estimate bootstrapped standard errors from 200 random samples with replacement from our data.

Following De la Mata (2012), we also use the threshold to test for the impact of Medical Card eligibility on demand for PHI.

3.3. Medical expenditures

We estimate families' medical expenditures using the HBS. The HBS includes information on Medical Card, GP Visit Card, and PHI coverage at the household level, similar to SILC. Incomes and expenditures are reported at a household level, it is therefore not possible to accurately calculate means for Medical Cards for household types that consist of multiple family units or to assign expenditure at a sub-household level. We therefore retain only those households where all members would be jointly assessed in the Medical Card means test i.e. each household is an individual family. This unfortunately drops 31% of households in the HBS, leaving us with 4,717 families to analyse. However, it allows for comparability with SILC by having the family as the relevant unit of analysis, and for increased accuracy in recreating the means test to model entitlement to a Medical Card. We have examined the characteristics of the overall HBS sample and the sub-sample used in this analysis. The sub-sample excluding multi-family households tends to be slightly older, slightly more likely to be married and have slightly lower average income but differences are not large. These results may be driven by younger, lower income people being more likely to live in multi-family households (e.g. with their parents or in shared accommodation).

Within the HBS, we again calculate eligibility for a Medical Card by simulating the means test for our remaining families. Unfortunately current income is not available in the HBS as it is in SILC, rather income is as received in the calendar year so eligibility in the HBS may be more unreliable than SILC. We did compare the proportion of families eligible in HBS and SILC (restricted to single family households for comparison) and find that 30% of families in both are eligible for the Medical Card which is reassuring. Comparing eligibility to reported card status we define our 'take-up' and 'non-take-up' families as before. Next, we examine healthcare expenditures between these two groups. We partition healthcare expenditure across the three principal areas covered by the Medical Card scheme: prescription medicines, GP visits, and acute hospital care. In addition, we compare spending on PHI premia across the take-up/non-take-up groups. The HBS does not differentiate between public and private hospital expenditure, nor day case, outpatient or inpatient care. Most hospital care in Ireland is undertaken in public hospitals (Remler and Glied, 2003) while private hospitals cater mainly to those with PHI, where OOP payments will be low even for those with PHI. In this context, the acute hospital expenditure in HBS is likely to mainly relate to public hospital services.

4. Results

4.1. Medical card take-up

The Medical Card income threshold is used to test the accuracy of our means calculations by comparing Medical Card coverage above and below this threshold in Fig. 1. There is a clear discontinuity in enrolment around the maximum Medical Card limit cut-off (maximum assessable income level for a given family type), underpinning the appropriateness of the threshold to identify the eligible population. Below the threshold there is a slight negative slope in the probability of holding a Medical Card as income rises. However, above the cut-off, there is a very sharp reduction in those holding a Medical Card as income rises. An additional €200 above the limit reduces the probability of holding a card by 40 percentage points.

Individuals above the Medical Card income limit may report holding a Medical Card for a number of reasons. Some individuals above the

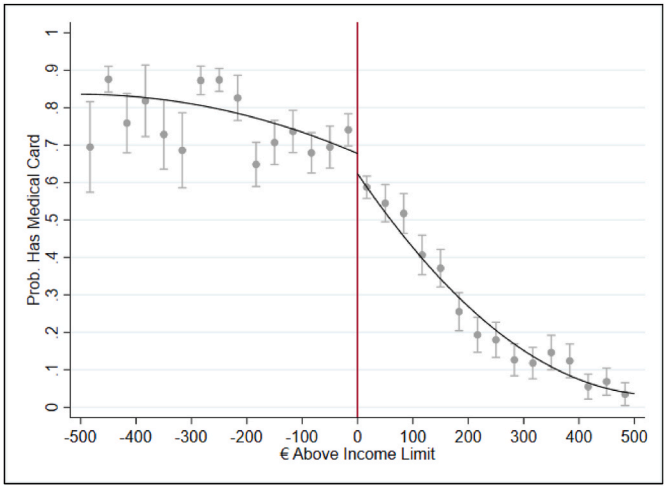

Fig. 1. Medical Card Income Threshold and Means Test Accuracy, Notes: €0 on the X Axis represents the Medical Card income threshold for each type of family. Those to the left of the threshold are assumed eligible for a Medical Card based on their family composition and income. Those to the right of the threshold are assumed not eligible for a Medical Card based on their family composition and income. There are 15 bins either side of the cut-off. The Y axis shows the portion of individuals (0–1) who report holding a Medical Card. The dots are bin average holdings of Medical Cards and a second-order polynomial is fitted either side of the cut-off. Cross-sectional survey sample weights are applied. 95% Confidence Intervals are shown.
Source: 2015 SILC

Medical Card income limit are still granted a 'discretionary' Medical Card if they can show that without the card they would face 'undue hardship' due to medical expense. A small portion of Medical Cards (3.7% of all Medical Cards in 2014 were discretionary cards (Health Service Executive, 2014)), typically for individuals with serious or chronic illnesses. In addition, cards are granted on a three-year basis with the onus on the cardholder to report any changes in financial circumstances, which may not always happen. Long-term recipients of certain benefits can also retain a Medical Card for up to 3 years upon their return to work. In this context, there will be a small number who based on their current income appear ineligible but hold a card in reality. Callan, Colgan, Keane and Walsh (2015) provide more detail on why modelled estimates of Medical Cards based on microsimulation methods may reasonably differ from administrative sources. Given our focus is on the non-take-up and take-up groups (i.e. only those eligible for a Medical Card) these issues do not affect our analysis.

Overall, we estimate that 1.283 million individuals were eligible for a Medical Card in 2015. Of those eligible, just over 885,000 report actually holding one. This equates to a take-up rate of 69% - so approximately 400,000 (31%) eligible individuals do not take up their entitlement. At a family level 436,040 families are eligible for a Medical Card with 313,950 of them reporting actually holding one i.e. just over 122,000 eligible families so not take up their entitlement, giving a family level non-take-up rate of 28%. Given that we do not have travel to work costs in the SILC data we perform a robustness check and include the estimated 'average' travel to work cost for those in employment/self-employment as discussed in Section 3.2. Inclusion of these results in a small fall in individual non-take-up from 31% to 29%.

4.2. Determinants of medical card take-up

Table 1 presents results on the characteristics related with Medical Card coverage for those families identified as eligible. Results are AMEs following probit regressions and can be interpreted in terms of percentage point changes. We estimate a number of regressions beginning with a parsimonious model in Column 1, and gradually adding other pertinent socio-demographic covariates through Columns 2 to 4. While not establishing a causal link, these results do help provide some guidance on potential reasons for non-take up.

Table 1
Determinants of medical card take-up in eligible families.

	Average Marginal Effects			
	(I)	(II)	(III)	(IV)
Family Level Factors				
Logged Family Income	0.011	0.001	−0.015*	−0.011
Private Health Insurance Coverage	−0.203***	−0.162***	−0.192***	−0.175***
Lone Parent	0.076***	0.040*	0.053***	0.063***
Number of Children#	−0.0241	0.014*	0.039***	0.034***
Number of Adults in Poor Health#	0.041**	0.022	0.001	0.003
Number of Adults with a chronic condition#	0.137***	0.100***	0.078***	0.073***
Unmet health need due to financial reasons	−0.336***	−0.303***	−0.268***	−0.261***
Social Welfare Income				
Receives no social welfare		Base	Base	Base
Social welfare, <50% of income		0.206***	0.137***	0.116***
Social welfare, ≥50% of income		0.381***	0.226***	0.180***
Head of Family Variables (CES)				
Age of CES				
16-34			−0.074***	−0.050**
35-64			Base	Base
65+			0.118***	0.102***
CES Employment Status				
Unemployed			Base	Base
Employed			−0.024	−0.029
Self-employed			−0.166***	−0.188***
Retired			0.027	0.016
In Education/Training			0.04	0.033
Inactive			0.075***	0.065***
CES Educational Attainment				
Less than secondary completed				0.057***
Secondary completed				Base
Short-cycle tertiary				0.007
Bachelor's degree or higher				−0.063***
CES Marital Status				
Widowed/Divorced				Base
Single				0.013
Married				0.017
Area Under ROC Curve	0.78	0.83	0.86	0.86
Baseline Probability	0.8	0.8	0.8	0.8
Observations	3,040	3,040	3,040	3,040
Pseudo R-Squared	0.17	0.26	0.32	0.33

Notes: Standard errors are based upon bootstrapping methods.
Asterisks denote statistical significance at conventional levels: ***p < 0.01, **p < 0.05, *p < 0.1.
The dependent variable takes a value of 0 if the family does not take up their Medical Card entitlement, 1 if they do.
- count of instance within a family unit.
The CES is the Chief Economic Supporter and is defined as the individual in the assessment unit with the highest income.
Source: Author's analysis using SILC 2015

For brevity, we discuss the results from Column 4, as this is our fully specified model. Interestingly, income is not significantly associated with take up. There is a striking negative association between Medical Card take-up and PHI, even after controlling for other pertinent factors. Eligible individuals with PHI are 19 percentage points less likely to take up a Medical Card.

Those families who may place a strong value on, or who would make greater use of, a Medical Card appear more likely to take up one. Being a lone parent is associated with a 6 percentage point increase in take up. This ties in with previous qualitative research of lone parents that found

the Medical Card provided a sense of security and protection from unanticipated healthcare costs (Russell and Corcoran, 2000). Each additional child is associated with a 3 percentage point increase in take up. Families with members who have chronic health conditions have a positive association with take up; there was a 7 percentage point increase for every person in the family with such a condition.

Families where an individual reported not availing of healthcare due to financial reasons were less likely, by 26 percentage points, to enrol in the scheme. Having an unmet health need may, of course, be a result of non-take-up of a Medical Card. Alternatively, this may suggest of a lack of awareness of the scheme – either of is existence or confusion surrounding eligibility – for those who may most benefit from a Medical Card. Receipt of social welfare payments is significantly associated with take up. Families receiving some social welfare income (<50% of total income) had higher take up rates (by 12 percentage points) compared to a family in receipt of no social welfare. The effect is even stronger for families for whom social welfare income is the main source of income (≥50% of total income). This may be a combination of those being in receipt of cash benefits having more awareness of their Medical Card entitlement along with potentially reduced stigma for those already in receipt of cash benefits.

There is a noticeable age gradient in take-up. Families where the CES is 65 years of age or more have higher take up (10 percentage points) than families where the CES is aged 35 to 64. This may be a combination of increased awareness of the scheme as those over 65 reach pension age (and traditionally become entitled to the State Pension) along with a recognition that healthcare needs increase with age. Families with a CES under 34 are least likely to take up the card.

There were also large variations in take-up across employment status. Having a self-employed CES was associated with a 19 percentage point reduction in take up compared with families with an unemployed CES. The self-employed are traditionally eligible for fewer cash benefits, therefore this may reflect a lack of knowledge or a belief that the scheme is not open to them. They may also face a higher administrative burden – employees simply need to provide a payslip from the last 3 months when applying while the self-employed are required to submit more detailed information on their income over the last year. Interestingly, there was little difference observed between households with an employed or unemployed CES, though having a CES who was inactive was associated with a higher take-up likelihood. Families with a more highly educated CES had a lower take-up likelihood. Having a CES with a bachelor's degree or higher was associated with a 6 percentage point reduction in take-up compared to families whose CES did not complete secondary education. These findings may suggest potential heightened stigma amongst those with higher education levels. They may also reflect a higher opportunity cost of time spent in the application process.

Take-up rates by subgroups are reported in Table A4 in the appendix and reflect the results found in Table 1 – for example families headed by someone over 65 have a take-up rate of 83% compared to 60% amongst those headed by someone under 35, families who hold PHI have a take-up rate of 46% compared to 81% for families without PHI.

Results indicate that having PHI is associated with lower take up of Medical Cards for eligible families. In Fig. 2, we examine PHI coverage in families above and below the Medical Card income threshold. We find a clear discontinuity at the Medical Card threshold for PHI coverage, and the relationship between income and PHI differs across the threshold. Below the threshold, there is a slight downward slope in the relationship between income and PHI. This is an important finding and suggests that the negative association between Medical Card take up and PHI in Table 1 cannot be explained by a simple income effect. For those above the threshold, and who are not eligible for a Medical Card based on their income, there is a positive relationship between income and PHI. We find that families with a weekly income €200 above the Medical Card threshold have PHI coverage rates 15 percentage points higher than those at the threshold. This aligns with previous evidence (Wren et al., 2017).

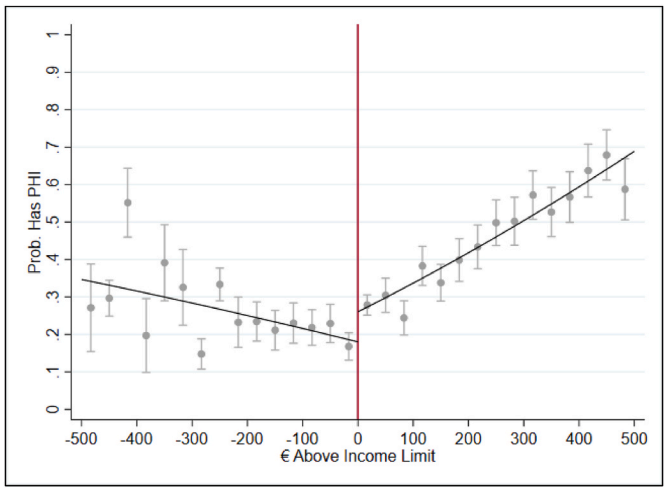

Fig. 2. Medical Card Income Threshold and Private Health Insurance Coverage, Notes: €0 on the X Axis represents the Medical Card income threshold for each type of family. Those to the left of the threshold are assumed eligible for a Medical Card based on their family composition and income. Those to the right of the threshold are assumed not eligible for a Medical Card based on their family composition and income. There are 15 bins either side of the cut-off. The Y axis shows the portion of individuals (0–1) who report holding private health insurance. The dots are bin average holdings of PHI and a second-order polynomial is fitted either side of the cut-off. 95% Confidence Intervals are shown. Source: 2015 SILC

This discontinuity at the threshold, indicates that there is substitutability between the Medical Card and PHI, and that the Medical Card may have a distortionary effect on the demand for PHI. For the non-Medical Card eligible population, there is a clear income effect for PHI coverage. However, for the Medical Card eligible population, there is no such income effect. Therefore, the decision to purchase PHI for these groups appears to be driven by non-income factors.

4.3. Healthcare expenditures

Table 2 compares disposable income, OOP healthcare payments, and PHI premia payments for families eligible for a Medical Card partitioned by take-up status using the HBS data. Overall, those in the non-take-up group have slightly higher disposable income, following the pattern

Table 2
Healthcare expenditure by take-up status.

	All Medical Card Eligible Families		Difference T-statistic
	Take-up	Non-take up	
Budget Share (%)			
Prescriptions	0.59	0.62	1.02
GPs	0.07	0.71	5.41***
Hospital Services	0.04	0.25	1.86*
Total HC Expenditure	**0.7**	**1.58**	**3.64*** **
PHI Premia	1.11	3.33	3.46***
Total HC + PHI Premia	**1.81**	**4.91**	**3.78*** **
Annual Expenditure (€)			
Prescriptions	106	128	1.97**
GPs	13	147	6.70***
Hospital Services	6	52	3.77***
Total HC Expenditure	**126**	**328**	**6.09*** **
PHI Premia	200	689	10.72***
Total HC + PHI Premia	**326**	**1017**	**11.64*** **
Mean disposable Income	€18,050	€20,694	4.97***

Notes: Disposable income relates to employment income after tax reductions and includes any social welfare payments.
Asterisks denote statistical significance at conventional levels: ***p < 0.01, **p < 0.05, *p < 0.1.
Source: HBS 2015

observed in assessable income in Fig. 1.

There are clear differences in terms of OOP healthcare expenditures across groups. The share of disposable income spent on healthcare is twice as high in those who did not take up a Medical Card. This equates to a difference of €202 per annum. The majority of the difference between groups is for GP care and hospital care. Families who did not take up a Medical Card spent €134 more on GP care and €46 more on hospital care on average per annum compared with families with a Medical Card. Table A3 in the Appendix shows that for a sizeable minority of non-take-up families, a large portion of their income is spent on healthcare costs - 14% of non-take-up families spent more than 5% of their disposable income on healthcare items compared to just 4% of the take-up group.

41% of non-take up families hold PHI compared to 11% of families with a Medical Card. As discussed earlier this may be driven by a preference for PHI amongst families who choose not to take up a Medical Card but it may also be an indicator of a lack of awareness of the scheme. PHI premia account for a large OOP cost in both groups, however the non-take up families spend €689 on average on PHI premia, compared to €200 for families who take up the card. Appendix Figure A1 shows that this difference is driven by PHI coverage differing across the two groups, as the average cost and cost distribution of PHI premia is similar across both groups.

Overall, while those not taking up the Medical Card have more disposable income (€2,644), the difference in cost of healthcare and PHI premia negates 26% of this difference.

5. Conclusions

Eligibility for social welfare or public health entitlements seldom equates with universal take up of benefits. There has been extensive research showing this to be the case for the public health insurance scheme, Medicaid, in the United States. This study shows a similar lack of take up of Medical Cards in Ireland which results in considerable, and unnecessary, healthcare expenditures for many families. We estimate for the first time, that almost one third of individuals eligible for a Medical Card in Ireland in 2015 failed to take up this entitlement.

This study clearly shows that the Medical Card has significant intrinsic value to a family in Ireland. We find that for families for whom the Medical Card may be perceived as more valuable in terms of accessing healthcare and reducing costs, enrolment is much higher. Families with children along with families containing members suffering a chronic health condition or poor health, were more likely to take up the Medical Card. Lone parents are also more likely to take up a Medical Card. Recent Irish research points to lone parents having higher poverty rates than other family types (De La Mata, 2012). For lone parents the Medical Card may particularly safeguard income in the event of a sickness by buffering against OOP expenditures if a child gets sick and mitigating losses from inability to work and medical expenses in the event the parent falls ill.

Contrastingly, factors such as self-employment, lack of cash social welfare payments, and PHI coverage are all negatively associated with Medical Card enrolment. The lower enrolment in these groups may be indicative of issues found across other health systems including lack of knowledge, lack of value placed on a Medical Card, and social stigma (Watson et al., 2018). While we do not focus on GP Visit Card take-up in this study, when GP Visit Cards became eligible to all in specific groups (those aged under 6 and over 70), take-up rates for these sub-groups was close to 100%. A simpler application process for these two groups, along with much clearer eligibility criteria, may explain the high rate of take up. In addition, given that these schemes are based on age and not income, a lack of social stigma in applying for one of these age-based cards is also a likely factor. The finding that receipt of cash social welfare payments increases enrolment may reflect lower stigma associated with applying for a Medical Card by those already in receipt of cash benefits and may also reflect increased awareness to entitlements. The results show that those with less interaction with the social welfare system in general, including those who are self-employed, may be less aware of their entitlement to non-cash benefits such as Medical Cards. In Ireland, the self-employed are not entitled to the main in-work benefit scheme, the Working Family Payment, and until 2019 were not eligible for unemployment benefits. Given this narrow cash remit of social welfare assistance for the self-employed, it is unsurprising that there is lower take-up among the self-employed of a non-cash benefit like Medical Cards. The administrative burden for the self-employed may also be large as proof of income may be more complicated to obtain.

Previous research has shown take up of a Medical Card significantly increases healthcare use (Nolan, 2011; Nolan and Layte, 2017b; Stuber and Schlesinger, 2006). In this study, we show that take up of a Medical Card is linked to significantly lower healthcare expenditures. While, we are unable to explicitly examine healthcare use using the data from this study, there is little reason to suggest that the lower healthcare expenditures did not occur in tandem with greater healthcare use. We estimate that total healthcare expenditure per annum is 2.6 times higher for eligible families who do not take up Medical Cards as compared to take-up families. This difference is largely explained by higher GP and hospital costs. This difference equates to €202 per annum, approximately 1% of these families' disposable income. While on average this may seem low we saw that for a sizeable minority of the non-take-up group a significant proportion of their disposable income is spent on healthcare items. In addition, we have examined the differences in expenditure in the three main areas of healthcare covered by a Medical Card – the Medical Card provides a number of additional benefits such as reduced income tax, free school transport and access to public community services which means that non-take-up will have a negative effect well beyond the differences in OOP healthcare expenditures we have captured here.

An important finding is the large negative association between PHI coverage and Medical Card take up. Similar to work from Medicaid in the US (De La Mata, 2012; O'Callaghan et al., 2018) we find a large number of Medical Card eligible families not taking up their entitlement have PHI (41%). While we do not have the data to examine the factors underpinning this, some people may see Medical Cards and PHIs as being substitutable. This is despite previous findings showing that many of the benefits of PHI (for example, earlier access to private healthcare) differ from the benefits of Medical Cards (for example, lower co-payment for public care). PHI coverage has been shown to be motivated by timelier access to elective care in private hospitals, or consultant consultations in public hospitals and in order to skip the long waiting times for elective care in public hospitals (Currie and Gruber, 1996; Harmon and Nolan, 2001; Kapur, 2019). Some insurance policies provide partial reimbursement for GP visits (MillwardBrown, 2016) but many fail to cover the full cost. There are large differences in coverage across PHI plans. Many cheaper plans offer limited benefits, those with these plans may still face significant OOP costs to access private care (Nolan and Layte, 2017a). Therefore, for many lower income families, including those eligible for a Medical Card, many of lower cost PHI plans purchased are likely to be of low coverage.

We show that the Medical Card income threshold acts as a discontinuity for PHI coverage. This result mirrors De la Mata (2012) that showed a clear jump in PHI coverage at the Medicaid income threshold in the United States. Interestingly, while De la Mata (2012) found a positive relationship between income and PHI above and below the Medicaid income threshold, our results show no relationship between income and PHI coverage below the Medical Card income threshold, but a strong relationship above the threshold. Therefore, PHI coverage for Medical Card eligible families cannot be explained by income but is rather driven by non-income factors. This is supported by the lack of a link between income and Medical Card take-up probability.

Those who do not take up a Medical Card spent an additional €489 more on average per annum on PHI than take-up families. While non-enrolled families have slightly more disposable income, the additional amount spent on PHI premia, in addition to other OOP costs, reduces the

difference in disposable income considerably. These findings tie in with previous analysis of Irish healthcare expenditure that detailed the large effect of PHI on healthcare expenditures for poorer families (Johnston et al., 2019). The introduction of universal healthcare through Sláintecare is thereby likely to reduce PHI coverage among lower income families, reduce the cost of care and PHI premia.

5.1. Policy implications

The results of this study have important implications for the current, as well as the proposed health system based on Sláintecare. In the short term at least, attempts to increase take up for eligible families is required. A deeper, qualitative examination of the reasons for non-take-up would be useful. Our findings highlight some likely effects that Sláintecare would have on Irish families. First, while some may argue that the Medical Card already affords free public healthcare to the poorest, and those with the most demand for healthcare, our results undermine some of that argument. As the Medical Card system itself is opt-in, this means that many of those eligible, despite having low incomes and being vulnerable to financial shocks, do not receive the benefits intended. As we show, this results in unnecessary OOP costs, while others have shown it reduces use of healthcare services (Keegan, 2020; Nolan, 2011; Nolan and Layte, 2017b). The finding that households reporting an unmet need for healthcare due to financial reasons are less likely to take up a Medical Card suggests that there may be longer term negative consequences for those forgoing medical care due to cost. Previous work has estimated that providing free GP care to all would increase the costs to the State by between €262 million and €500 million per annum (O'Callaghan et al., 2018). However, large savings would be made by poorer families (Connolly et al., 2018). In addition, were free healthcare expanded, many lower income families may forego PHI, and make substantial savings annually. In addition, unlike an opt-in system, UHC would ensure the self-employed, younger families and families who may attach a stigma to social welfare more generally, would see large benefits. This hypothesis is borne out from international evidence (Johnston et al., 2019; Ku et al., 2019). In conclusion, the benefits of enacting Sláintecare are reduced OOP for poorer families, greater engagement with healthcare services, and potentially lower demand for, and expenditure on, PHI.

Credit statement

Claire Keane: Conceptualization, Funding acquisition, Methodology, Resources, Writing – original draft, writing reviewing and editing. Mark Regan: Conceptualization, Methodology, Resources, Writing – original draft, Formal analysis. Visualisation. Brendan Walsh: Conceptualization, Methodology, Writing – original draft, writing reviewing and editing.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.socscimed.2021.114069.

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