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### *The Impact of Free GP Care on the Utilisation of GP Services in Ireland: An Evaluation of Different Approaches*

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*Abstract:* The successful implementation of free GP care for all private patients in Ireland requires an estimate of the likely change in the number of GP visits occasioned by this policy so as: (i) to set the capitation fee; and (ii) to ensure adequate supply of GPs is in place. The paper examines two methodologies to derive such estimates: retrospective patient self-reporting or recall (e.g. Growing Up in Ireland, The Irish Longitudinal Study on Ageing); and, GP practice records. Estimates based on six GP practices by Behan (2013, 2014) substantial overestimate of the likely impact of free GP care. McGovern's (2015) more recent estimates for the HSE, based on patient recall, used in forecasting future demand for GPs to 2025 also appear to be biased upward. The underlying studies, assumptions and papers are not, however, cited. This should be corrected. A proper debate and discussion can then take place concerning the optimal phasing in of free GP care.

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## INTRODUCTION

The Government has indicated its intention to provide, on a phased basis, free GP care for all, irrespective of income.<sup>1</sup> The first group eligible for free GP care, from 1 July 2015, are those aged under 6 years of age, the second, from 5 August 2015, those over 70 years of age, and the third, from 2016, those between 6 and 11 years of age.<sup>2</sup> In 2016 General Election, while the Labour Party (2016, p. 66) promised to roll out free GP care for all by 2021, other political parties envisage a more gradual extension of free GP care.<sup>3</sup> It was the latter approach that was incorporated into the subsequent Programme for Partnership Government: “[E]xtending in phases, and subject to negotiation with GPs, we are committed to the introduction of free GP care to under 18s” (Government of Ireland, 2016, p. 55).

Prior to the gradual introduction of free GP care starting in July 2015, eligibility for free GP care was restricted to those qualifying for a means tested Medical Card or a GP Visit Card.<sup>4</sup> In May 2015, 41.0 per cent of the population were in receipt of free means tested GP care.<sup>5</sup>

Private patients (i.e., those without a means tested Medical or GP Visit Card) were charged, based on data for 2010-2015, an estimated €50 per GP visit, although there appears to be some variation.<sup>6,7</sup> The

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<sup>1</sup> Initially free GP care was to be extended to those on the long term illness scheme (Government of Ireland, 2012, p. 25) or with a prescribed long term illness (Government of Ireland, 2013, p. 28). However, this approach to phasing in free GP care for all was changed to the current approach of rolling out free GP care by age, starting with the under 6s (Government of Ireland, 2014a, p. 36), followed by over 70s (Government of Ireland, 2015, p. 16). The change in approach was “because of legislative difficulties” (Nolan *et al*, 2014a, p. 15).

<sup>2</sup> Department of Health (2015a) and HSE (2015c, p. 6, 51, 54). Free GP care for those 6 to 11 is subject to negotiation between the Department of Health/HSE and the Irish Medical Organisation (IMO), a GP representative body.

<sup>3</sup> Fianna Fail (2016, p. 58) state that they will undertake a review of the impact of the extension of free GP care to the under 6s and “[N]egotiate a new GP contract following which we will then bring forward plans for the expansion of GP care.” Fine Gael (2016, p. 58) undertake to provide free GP care for all those under 18 years of age by 2019, subject to negotiation with GPs. Sinn Fein (2016, p. 44) intend to “[B]egin move to fully free healthcare” by providing “free GP care at a rate of almost a quarter of a million people each year,” starting with those on lower incomes (*ibid*, p. 12).

<sup>4</sup> The GP Visit Card, introduced in November 2005, entitles the holder to free GP visits, while the Medical Card, introduced in 1972, entitles the holder to a greater range of health benefits (e.g. free prescriptions subject to a small co-payment charge up a maximum per month). Further details may be found of the Health Service Executive website ([www.hse.ie](http://www.hse.ie)).

<sup>5</sup> HSE (2015a, p. 8), for the number of persons on a Medical Card (1,733,639) or a GP Visit Card (167,087) in May 2015; CSO (2015b) for the population for the year ending in May 2015 (4,635,400).

<sup>6</sup> The NCA (2010, pp. 9–12) conducted a survey in March 2010 of the cost of a routine GP consultation/examination and found that this was €51 per visit. Doctors' fees, as measured by the CSO, remained essentially unchanged between March 2010 and May 2015. (Between March 2010 and December 2011, Doctors' fees declined by 0.6 per cent with 2006=100 (CSO, 2011b, Table 6, p. 8); between December 2011 and May 2015, Doctors' fees increased by 0.4 per cent with December 2011=100 (CSO, 2015a, Table 9)). Although the average GP visit was €51, the NCA found considerable variance around this figure, from €35 to €70. This is consistent with an earlier survey conducted by the Competition Authority (2010, p. 10) for October 2008 which reported a range of €45–60. See also Brick *et al* (2010, Vol. II, p. 486).

<sup>7</sup> In some instances private patients with private health insurance may only pay a co-payment of the GP fee.

abolition of this fee for private patients under 11 or over 70 is thus likely to lead to an increase in demand for GP services.

Accurate estimation of the increase has important implications for: the setting of capitation fees by the State, which are likely to reflect anticipated demand for GP services by former private patients under 11 or over 70 in receipt of free GP care;<sup>8</sup> and the quality of GP care, which is liable to be inversely related to the ratio of demand to available resources. In other words, the greater the increase in demand for GP services due to the provision of free GP care, other things equal, the lower the capacity to deliver the same level of care.<sup>9</sup>

Two main issues are examined in this paper. First, a comparison of alternative methodologies for estimating GP visit rates and their determinants for public and private patients in the absence of national registration and associated administrative data. Second, to examine the increase in demand for GP services as a result of the extension of free GP care. Particular regard is paid to: (i) Behan *et al* (2013, 2014), which has gained widespread attention and currency; McGovern's (2015) forecasting of demand for GPs to 2025, based in part in the likely impact of free GP care for all; and, a series of papers by authors at the Economic and Social Research Institute (ESRI) and University College Dublin (UCD).

Section II describes the different methodologies and data sources: three national representative patient retrospective self-reporting surveys and six GP practice administrative records. Section III presents GP visit rates by various public and private patient categories across the different data sources. Section IV considers the determinants of variations on the demand for GP visits by public and private patient categories drawing on patient retrospective self-reporting surveys. Finally, Section V considers the impact of providing free GP care, using as its starting point the estimates of Behan *et al* (2013, 2014) and subsequently McGovern (2105).

## II RETROSPECTIVE PATIENT SELF-REPORTING SURVEYS & SIX GP PRACTICE ADMINISTRATIVE RECORDS

### 2.1 Introduction

Two different methodologies have been employed in Ireland to measure GP visits:

- Retrospective self-reporting of GP visits by patients has been employed in three large-scale recent surveys in Ireland.<sup>10,11</sup> Two of these national surveys are concerned with particular age

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<sup>8</sup> For a discussion of capitation fees see Brick *et al* (2010, Vol. 1, pp. 184-190). Under the General Medical Scheme or GMS, of which the Medical Card is part, approximately 50 per cent of a GPs remuneration is from capitation payments, the rest is from out-of-hours service, allowances, and other fees.

<sup>9</sup> The Irish College of General Practitioners (ICGP, 2015, p. 1), which is the body responsible for education, training and standard in general practice, stated in response to the publication of the GP contract for the provision of free GP care for the under 6s, that "general practitioners are stretched to capacity at present and any increase [in demand], however small, will have an impact on access to general practitioners for everyone."

<sup>10</sup> The Living in Ireland Surveys (LIIS) that ran between 1994 and 2001 recorded GP visits over the previous 12 months. The European Union Survey on Income and Living Conditions (EU-SILC) was the successor to LIIS. However, EU-SILC confines its attention to the retrospective self-reported GP visits over the previous four months and only collects this information for those on a Medical Card. For details see Nolan and Nolan (2007, pp. 36-37; 59-60).

groups: Growing up in Ireland (GUI), infants and younger persons; and, The Irish Longitudinal Study on Ageing (TILDA), those aged 50 years and older. The third national survey, the Central Statistics Office's (CSO) Quarterly National Household Survey (QNHS), covers a much wider age group – those over 15 years of age, although it only reports GP visit rates for those 18 years of age and over.<sup>12,13</sup> In each case the recording of GP visits is part of a wider data collection exercise that enables insights to be obtained into the determinants of GP visits and the impact of free GP care. GUI is particularly relevant to the under 6s; TILDA to the over 70s.

- The administrative records of six GP practice in two papers by Behan *et al* (2013, 2014).

The methodology of each source is described, including the definition of a GP visit, with a comparison between the two methodologies completing the discussion.

## 2.2 *Growing Up In Ireland (GUI)*

Growing Up in Ireland,

... is a national study of children. It is the most significant of its kind ever to take place in this country and will help us to improve our understanding of all aspects of children and their development.

The study is following the development of two groups of children first visited in 2007/2008. The first wave of the project collected data on 11,000 children aged nine months and their parents (the Infant Cohort) and 8,500 children aged nine years (the Child Cohort), their parents, teachers and carers. We have carried out three rounds of research with the Infant Cohort (at 9 months, 3 years and 5 years) and two rounds of research with the Child Cohort (at 9 years and 13 years).

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<sup>11</sup> The Irish Health Survey (IHS), a new household survey covering 5,000 persons over 16 years of age, was conducted by the CSO between October 2014 and December 2015. The IHS contains a question on when the respondent last visited a GP and how many times did the respondent consult a GP in the last four weeks. The IHS is part of a wider European Health Interview Survey. For details see <http://www.cso.ie/en/surveysandmethodology/health/irishhealthsurveyihs/>. Accessed 26 April 2016.

<sup>12</sup> There have been a number of special modules of the QNHS addressing the issue of GP visits. The paper draws on the most recent special module in Quarter 3, 2010, 'Health Status and Health Service Utilisation.' The earlier special module related to 2001 and recorded only whether or not the person surveyed had visited a GP in the previous two weeks. For details see Nolan and Nolan (2007, p.36, 59-60).

<sup>13</sup> For those aged 15 and over, Ipsos MRBI (2015) undertook the *Healthy Ireland Survey 2015* for the Department of Health. Part of the summary of the survey results included some limited reporting on GP visit rates. The survey was conducted between November 2014 and August 2015, with between 6,100 and 7,500 respondents depending on the module. Respondents were interviewed face to face. For details of the methodology see *ibid*, pp. 10-13. The definition of a GP visit included a home visit and a phone consultation, but excluded nurse-only consultations. Respondents were asked the last time they visited the GP: less than 12 months; greater than twelve months; and, never (Q5a). If the respondent had visited the GP in the last 12 months, then they were asked the frequency over the past four weeks (Q5b). For details see the survey questionnaire: <http://www.healthyiireland.ie/wp-content/uploads/2015/11/14-050310-Healthy-Ireland-Questionnaire-LIVE-VERSION-Final.pdf>. Accessed 26 April 2016. Ipsos MRBI (2015, pp. 18-19) presents annual GP visit rates: the four weekly GP visit rates were multiplied by 13 to generate the annual GP visit rates (Department of Health, personal communication 26 April 2016).

The main aim of the study is to paint a full picture of children in Ireland and how they are developing in the current social, economic and cultural environment. This information will be used to assist in policy formation and in the provision of services which will ensure all children will have the best possible start in life.<sup>14</sup>

GUI fieldwork is part of the Irish National Statistical System and is covered by the Statistics Act (1993). It is undertaken by the ESRI and Trinity College Dublin (TCD). The oversight governance involves international and national experts, the Central Statistics Office and senior representatives of the relevant government departments (Children and Youth Affairs, Social Protection and Education).<sup>15</sup>

The question that GUI asks the primary caregiver in the Infant Cohort at three years of age in order to ascertain the number of GP visits was:

**C8. In the past 12 months, how many times have you seen or talked on the telephone with any of the following about <child's> physical or emotional health? [INT: IF NONE THEN ENTER 0 – DO NOT LEAVE BLANK]**

- a) A general practitioner (GP)..... \_\_\_\_\_ N
- b) A paediatrician / consultant / hospital doctor..... \_\_\_\_\_ N
- c) A public health nurse..... \_\_\_\_\_ N
- d) A practice nurse (i.e. a nurse in a GP's surgery/clinic). \_\_\_\_\_ N
- e) A psychiatrist/psychologist ..... \_\_\_\_\_ N
- f) Accident and Emergency ..... \_\_\_\_\_ N
- g) A social worker ..... \_\_\_\_\_ N<sup>16</sup>

where INT refers to interviewer. The same question was asked for the Infant Cohort at nine months, except the retrospective period was since the baby was born, which would have been about nine months, rather than twelve months. A GP visit is defined as either physical meeting with the GP or contact via the phone about the child's physical or mental health. Since the place of the physical meeting is not specified it could be either in the infant's residence or in the GP's surgery.

In the presentation of results attention is focused on the Infant Cohort at nine months, three and five years. The Infant Cohort at aged nine months was surveyed between September 2008 and April 2009; at three years between December 2010 and June 2011; and, at five years between March and August 2013. At nine months there were 11,100 cases; at three years; slightly below 10,000 cases; and, at five years 8,700 cases. The Infant Cohort at nine months was adjusted so that it was representative of the population, while the Infant Cohort at three years was "based on the combination of the ... [Infant

<sup>14</sup> <http://www.growingup.ie/index.php?id=9>. Accessed 26 April 2016.

<sup>15</sup> The panel of 45 experts is drawn from academic and research institutions in Ireland, Britain and Sweden. See <http://www.growingup.ie/index.php?id=10>. Accessed 26 April 2016.

<sup>16</sup> Taken from the Primary Caregiver Questionnaire for the Infant Cohort at three years, which may be found at: <http://www.growingup.ie/index.php?id=236>. Accessed 26 April 2016.

Cohort at nine months] and the adjustments to account for socially determined inter-wave [i.e. between the Infant Cohort at nine months and three years] attrition and migration outside the country.”<sup>17</sup>

### 2.3 *The Irish Longitudinal Study on Ageing (TILDA)*

The Irish Longitudinal Study on Ageing or TILDA is funded by the Department of Health, The Atlantic Philanthropies and Irish Life. It is

... a large-scale, nationally representative, longitudinal study on ageing in Ireland, the overarching aim of which is to make Ireland the best place in the world to grow old.

TILDA collects information on all aspects of health, economic and social circumstances from people aged 50 and over in a series of data collection waves once every two years. TILDA is unique amongst longitudinal studies in the breadth of physical, mental health and cognitive measures collected. This data, together with the extensive social and economic data, makes TILDA one of the most comprehensive research studies of its kind both in Europe and internationally.<sup>18</sup>

TILDA’s sample size was 8,504 respondents, of whom 8,173 were over 50 years of age. There have been two waves of the survey, which involves administering questionnaires and conducting health assessments: October 2009-February 2011; and April 2012-January 2013.<sup>19</sup> The third wave commenced in 2014, while wave 4 is due to take place in 2016. Longitudinal studies on ageing are also being conducted in, Australia, Brazil, Canada, China, England, India, Japan, Korea, Mexico and the US.<sup>20</sup>

The question that TILDA (2010, p. 86) asks to ascertain the frequency with which the patient visits the GP is:

HU005: In the last 12 months, about how often did you visit your GP?

**IWER: IF RESPONDENT HAS NOT VISITED GP IN THE LAST 12 MONTHS CODE 0**

where IWER refers to the interviewer. A GP visit is defined as a visit by the patient to the GP’s surgery. This question involves a somewhat narrower definition than that used in GUI, which includes telephone conversations and visits by the GP to the patient’s home. Like GUI the self-reported retrospective reporting period is a year.

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<sup>17</sup> Williams *et al* (2013, p. 21).

<sup>18</sup> <http://tilda.tcd.ie/>. Accessed 26 April 2016.

<sup>19</sup> Hudson and Nolan (2015, p. 28).

<sup>20</sup> <http://tilda.tcd.ie/>. Accessed 26 April 2016.

In the presentation of results attention is focused on the first wave of TILDA, given the similarity of the results across the first waves.<sup>21</sup> The weighted frequencies are presented.<sup>22</sup> When cell size is less than 30 observations the results are not presented.

#### 2.4 *The Quarterly National Household Survey (QNHS)*

The Quarterly National Household Survey (QNHS) is,

... is a large-scale, nationwide survey of households in Ireland. It is designed to produce quarterly labour force estimates that include the official measure of employment and unemployment in the state (ILO basis). The survey began in September 1997, replacing the annual April Labour Force Survey (LFS). The QNHS also conducts special modules on different social topics each quarter.

A fieldforce comprising 10 field co-ordinators and 100 field interviewers interview 26,000 households each quarter. Information is collected on laptop computers using computer-assisted personal interview (CAPI) software. The survey meets the requirements of Council Regulation (EC) No. 577/98 ... adopted in March 1998, which requires the introduction of quarterly labour force surveys in EU member states.<sup>23</sup>

One of the special modules was in Quarter 3, 2010, 'Health Status and Health Service Utilisation.'<sup>24</sup>

The question that CSO asked to ascertain the frequency with which the patient visits the GP is:<sup>25</sup>

"During the past 12 months, how many times have you consulted with a GP (General Practitioner)?"

*Note: Consultation with a GP should be on a respondent's own behalf only, and may take place in GP surgery, at patient's home or by telephone (in cases where the phone call leads to the decision to attend the actual GP surgery, then only one visit should be counted). Respondent should count all consultations even if they are repeat visits for the same condition. One exclusion exists whereby phone calls for test results should not be counted as a consultation."*

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<sup>21</sup> See Nolan *et al* (2014b). This is not to deny that changes have taken place, but rather the variables of interest for the purposes of this paper have not undergone dramatic changes.

<sup>22</sup> The weights are discussed in Dooley (2014, pp. 193-194).

<sup>23</sup> <http://www.cso.ie/en/qnhs/abouttheqnhs/whatistheqnhs/>. Accessed 26 April 2016.

<sup>24</sup> CSO (2011a).

<sup>25</sup> CSO, personal communication, 13 November 2014. Emphasis in original.

As with GUI and TILDA the retrospective self-reporting is for a period of 12 months, with QNHS appearing to have the same definition of a GP visit as GUI and a somewhat wider definition than that implied in TILDA. The terminology is different from that in the GUI and TILDA surveys. Instead of GP visit it is a consultation, but defined in a manner consistent with GUI in that includes consultations with the GP in the patients home and telephone contact. Households participate in the QNHS for five consecutive quarters before being replaced, so that so that every quarter 80 per cent of the sample overlaps with the previous QHNS survey and 20 per cent are new.<sup>26</sup> The QNHS reports GP visit rates for those 18 years of age and over.

## 2.5 *Six GP Practice Administrative Records*

The use of administrative GP records to measure the frequency of patient GP visits (or consultations) has not been used extensively in Ireland apart from in two papers by Behan *et al* (2013, 2014), based on administrative data from six GP practices. The study population is 27,080, of whom 20,706 were aged 18 years or older and 1,931 children were aged less than six years. The sample used was comparable of the national population in terms of age and Medical Card status.<sup>27</sup> The GP practices vary in size from 2.25 to 4 GPs, with 0.5 to 4 nurses and 1.25 to 4.5 administrators. Data concerning GP consultations are extracted from the administrative records of the GP practices, although in the case of out of hours consultations and telephone conversations, only one practice maintained records; in the analysis these were extrapolated to the other five practices.

Behan *et al* (2013, p. 297) set out their definition of GP consultation as follows:

We adopted the same definition of consultation as that used by the 'QRESEARCH' audit of clinical consultations in the UK and the CSO QNHS, i.e. 'direct contact between a clinician and patient either in the surgery, in the patients' house or on the telephone'. Telephone contacts involving discussion of results, request for notes or a prescription were not considered as consultations. Clinic contacts at all six participating practices registered for inclusion as a consultation when a patient appointment coincided with a consultation note in the same patient's record on the same day. Estimates of out of hours contacts and telephone consultations were based on records maintained at one practice and this figure was extrapolated to all six practices.

The definition of a GP consultation is, as the authors' note, the same as that used in the QNHS. It is also the same as that used by GUI for a GP visit and somewhat broader than that used in TILDA (which does not explicitly include telephone and home visit GP/patient interactions). Again GP consultations are measured over 12 months (23 October 2012 to 22 October 2013, for those over 18 years of age; and, 1 January 2013 to 31 December 2013 for those under 6 years of age).

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<sup>26</sup> CSO (2015c, p. 8).

<sup>27</sup> However, there were some differences. For example, in Behan *et al.* (2013)'s sample 8.2 per cent were aged over 69, while for the population as a whole the percentage was 10.1. If attention is paid to those under the age of 18 years, then the corresponding percentages are 23.5 and 25.5, respectively.

## 2.6 A Comparison of Two Methodologies

### 2.6.1 Introduction

There are a number of criteria that can be used to compare the three retrospective self-reporting surveys with the six GP practice records as the basis for deriving GP visit rates. In some instances, such as the definition of a GP visit, there is little difference across the four data sources, while in other instances there are important differences. We concentrate on the latter.

### 2.6.2 Sample Selection and Size

GUI, TILDA and QNHS all have carefully designed and methodologically valid sample selection procedures, reviewed by international experts and, in the case of the QNHS, to the standards set by Eurostat. In contrast, the administrative records of six GP practices were not validated or reviewed independently by third parties. In some instances (i.e., telephone/domiciliary consultations) information was derived from just one of the six GP practices. The six GP practices were non-randomly selected and represent a small proportion of all GP practices – six out of 2,093 or less than half a percentage point.<sup>28</sup>

### 2.6.3 Faulty Memory?

Retrospective self-reporting surveys such as GUI, QNHS and TILDA require the respondent to be able to accurately recall the frequency with which they visited or consulted a GP over a defined period of time. In the analysis reported in this paper a year has been used. However, shorter periods have been used by the QNHS (two weeks in 2001)<sup>29</sup> and currently by the Irish Health Survey and Healthy Ireland (four weeks).<sup>30</sup>

Not surprisingly there has been some questioning as to the reliability of estimates of GP visit rates based on patient recall. Memories can be faulty and imperfect. Recall may result in backward (“respondents may recall an event but report that it happened earlier than it actually did”) and forward (“report that it happened more recently”) telescoping.<sup>31</sup> Bias may be related to factors such as age, education and so on.

Ideally to resolve the issue of whether or not retrospective self-reporting or the use of administrative records yields similar answers requires a study that uses both methodologies on the same population. In other words, a random sample of the population is selected and asked about the frequency of GP visits over the past year using one of the GUI, TILDA or QNHS questions set out above. The researcher would then use the records of GP practices or insurance providers in the catchment areas in which the patients are located, checking, of course, the accuracy and reliability of these administrative records. The results of the two approaches would then be compared to determine the bias, if any, of retrospective self-reported GP visit rates.

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<sup>28</sup> The number of GP practices is based on HSE, personnel communication, 19 March 2014.

<sup>29</sup> See footnote 12 for details.

<sup>30</sup> See footnote 11 and 13, respectively, for details.

<sup>31</sup> Gaskell *et al* (2000, p. 77).

There have been a small number of studies, mostly US, which have undertaken such an exercise. In relying on these studies for guidance with respect to any possible bias in GUI, TILDA and QNHS attention needs to be paid to: the data collection methodology (e.g. face to face interview, self completed questionnaire); the definition of a GP (or physician) visit; the recall period; the reliability of the administrative data source; and the sample selection procedure. However, not all of the published studies provide such information.

Cleary and Jette (1984) compared administrative physician records with self-reported physician visiting for a population of 1,026 persons over the age of 18 from an area of approximately 1,300 square miles in a mid west region of the US. The recall period was a year. Face to face interviews were used to gather data. Cleary and Jette (1984, pp. 801-802) concluded that:

Contrary to many other studies, the average error in the self-report of physician utilization behavior in this adult population was very small. The average difference between reported and actual physician utilization was only 0.05 visits. This small magnitude of error is even more surprising since the recall period was the entire previous year. This suggests that it is possible to generate accurate aggregate, self-report utilization data provided certain precautions are taken. Interviewers must make every effort to reduce error by using detailed probes and providing memory aids.

However, Cleary and Jette (1984, p. 799) report that persons with a high number of physician visits, having a number of chronic conditions and/or being older tend to underreport usage as compared with administrative records.

Roberts *et al* (1996) compared ambulatory physician visits using an extensive self completed questionnaire with community medical records for 500 men aged 40 to 79 that participated in the Olmsted County Study of Urinary Symptoms and Health Status among Men in Minnesota. The recall periods were two weeks and a year. Roberts *et al* (1996, pp. 991-92) concluded that:

This study shows that self-reported health care utilization was most accurate and reliable for ... ambulatory physician visits in the 2 weeks preceding the study, but less accurate and reliable for ambulatory physician visits over a 1-year duration. The difference between self-reported and medical record number of visits increased with increased utilization, with a bias towards underreporting of ambulatory physician visits as the number of visits increased.

The average difference between self-reported and community records for a one year recall period was -0.9 visits (*ibid*, p. 991). The definition of a physician visit appears to be wider than that used in GUI, TILDA, QNHS and the six GP practices, since it appears to include “emergency room visits” (*ibid*, p. 993). The authors speculate that a possible reason for the underreporting of physician visits by patients is that they did not consider these as physician visits.

Ritter *et al* (2001) compared physician visits based on a self completed questionnaire with computerized utilization records for 216 non-randomly selected persons who had “at least one symptomatic disease

(either heart disease, lung disease, arthritis or stroke), were 40 years of age or older, and had volunteered to take a 7-week chronic disease self-management course” (*ibid*, p. 137). The recall period was six months, not a year. Patients self-reported 4.27 physician visits, while computerized records from the patients’ Northern Californian Health Maintenance Organization recorded 5.32 visits per patient, a difference of 1.06 visits (*ibid*, Table 2, p. 139). Underreporting increased with the number of physician visits. The authors comment that although “there is a tendency toward underreporting of physician visits, that tendency does not appear to vary by baseline demographics, health status or exposure to questionnaires” (*ibid*, p. 140).

Ritter *et al* (2001, p. 141) appear to use a much wider definition of a physician than that used in GUI, TILDA, QNHS or the six GP practices: “internist, general practitioner, family doctor, cardiologist, pulmonologist, neurologist, surgeon, rheumatologist, allergist, ophthalmologist, urologist, gynecologist, dermatologist, etc; other than psychiatrist.” The authors also selected the largest discrepancies in the number of physician visits as between self-reported and computerized records for closer examination. In “over half of the cases we found that the self-report was more accurate than the computerized utilization record, while the other cases remained ambiguous. One patient who reported having no physician visits was listed in the computerized utilization record as having had 19. It was found that she had weekly allergy shots, which were administered by a nurse practitioner but were coded as MD visits in the computerized utilization record” (*ibid*, p.140).

Dalzeil *et al* (2015) compare patient self-reported patient for doctor visits over two week, three month and 12 month periods with routine Australian Medicare administrative data. The sample size was over 5,000 patients enrolled in a large Australian study who were pseudo-randomised by the authors “according to day of birth to report visits to a doctor within 2 week, 3 month and 12 month periods. When comparing patient recall to Medicare data accuracy was greatest for 12 month recall (47.8% correlation), compared to 3 month (37.2% correlation) and 2 week (24.5% correlation).”<sup>32</sup>

Hippisley-Cox & Vinogradova (2009) compare self-reported GP visits based on face to face interviews conducted between April 2004 and March 2005 as part of the General Household Survey (GHS) covering Great Britain, with the GP consultation rate based on the records of 496 GP practices covering 4.3 million registered patients 2008/9 in England (*ibid*, p. 4). Hence unlike the other studies cited above a common set of individuals was not used for the self-reporting and administrative GP visit rates.

Hippisley-Cox & Vinogradova (2009) compare age-sex specific GP visits from these two sources for six age groups. In contrast to the studies cited above the authors’ find that typically self-reported GP visit rates *exceed* those from the GP practice records (*ibid*, Figure 7, p. 20). Furthermore, also in contrast to some of the studies cited above, Hippisley-Cox & Vinogradova (2009, Figure 7, p. 20) find that for those aged 15 and over, the difference between self-reported GP visit rates and those based on GP practice records *narrows* with age so that for those 75 and over there is little difference, particularly for females. Hippisley-Cox & Vinogradova (2009) only report their findings without commenting as to the reasons for the difference.

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<sup>32</sup> Only the abstract of the paper is available.

It should be noted that while both the GHS and the GP practice data refer to a year, in the case of the GHS annual GP consultation rates are approximated based on respondent recall over a two week period i.e. total GP visits for a particular group for a two week recall period were multiplied by 26 and divided by the number of persons in the group to obtain the annual GP visit rate. This is not the same as asking patients to recall GP visits over the previous 12 months, given the findings above concerning possible differences in the accuracy of recall of GP visits and the length of the recall period.

The evidence suggests that self-reported GP visits tend to underreport actual GP visit rates derived from administrative data. There are certain sub populations where the bias might be particularly pronounced such as patients that visit the GP with a high frequency. However, only one study undertook any analysis of those instances where large differences in GP visit rates occurred as between the two approaches. It concluded that self-reported GP visit rates were more reliable in those cases.

There are, however, a number of reasons to argue that the respondents to GUI, QNHS and TILDA are less subject to these recall problems. First, all three surveys, like Cleary & Jette (1984), are conducted on a face to face basis as compared to a telephone or postal survey. This should provide ample opportunity not only for clarification of any questions but also facilitate and encourage the respondent to access any documents that might provide the relevant information. Furthermore, like Cleary & Jette (1984), GUI, TILDA and QNHS the sample was selected on a random basis. Cleary & Jette (1984) also report, on average, quite a low level of underreporting by self-reported GP visits.

Second, participants in GUI and TILDA are involved in the survey on an ongoing basis and hence likely to become familiar with the survey and the issues raised, although this applies much less, if at all, to QNHS where the health model is only included every few years.

Third, in the case of GUI and TILDA there is ongoing contact between participants and the survey, strengthening bonds between GUI/TILDA and participants who, as a result, are more likely to take the exercise seriously, thus noting down some information might be expected to be collected by GUI/TILDA.<sup>33</sup>

#### 2.6.4 Which Source?

Administrative records and retrospective patient self-reporting are two methods of estimating the number GP visits for patients. In terms of the methodology, sample selection and size the retrospective patient self-reporting of QNHS, GUI and TILDA is to be preferred to the small non-random sample of six GP practices used to extract administrative records by Behan *et al* (2013, 2014). On the other hand, the records of six GP practice do not suffer from patient recall issues relating to retrospective self-reporting surveys, although they are not, as far as we are aware, audited. Nevertheless, for reasons set out above, we would expect that this tendency is unlikely to be large with respect to QHNS, GUI and TILDA.

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<sup>33</sup> On GUI see <http://www.growingup.ie/index.php?id=64>; on TILDA see <http://tilda.tcd.ie/participants/> Accessed 26 April 2016.

### III QUANTIFYING GP VISITS

#### 3.1 Introduction

The purpose of this section is to quantify the frequency of GP visits by different categories of GP cover using the four sources set out in the previous section. Given the focus of the paper a distinction is made between public and private patients. The former can be divided into those with a Medical Card or a GP Visit Card,<sup>34</sup> the latter into those enrolled private health insurance (PHI), with and without GP cover, and those with No Cover. It is also possible that patients may have both public and private cover. However, the various data sources rarely present GP visit rates for the full range of public and private patient categories by GP cover. In several instances categories are combined to capture the most significant public or private GP cover set of patients.

#### 3.2 GUI: Infant Cohort at Nine Months, Three and Five Years

The eligibility of patients for coverage of GP fees may be broken down into five mutually exclusive eligibility categories using GUI: Medical Card holders; GP Visit Card holders; PHI with GP cover; PHI w/o GP cover; and No Cover (i.e. those w/o either a Medical/GP Visit Card or PHI). Medical/GP Visit Card includes those with and w/o PHI; in contrast, the two PHI categories include persons with only PHI cover and neither a Medical or GP Visit Card. In the Infant Cohort at nine months 3.6 per cent of GUI patients had a Medical/GP Visit Card and PHI; at three years, 5.4 per cent; at five years 5.7 per cent. Public patients are Medical/GP Visit Card holders, private patients are the other three categories.

Table 1

Eligibility for GP Care, Public & Private Cover, Infant Cohort at Nine Months & Three Years, 2008/9, 2010/11 & 2013, Ireland

Eligibility <sup>a</sup>	Infant Cohort at Nine Months (%)	Infant Cohort at Three Years (%)	Infant Cohort at Five Years (%)
Medical Card	26.4	34.6	39.9
GP Visit Card	2.8	4.5	3.9
PHI with GP Cover	29.2	25.1	19.8
PHI w/o GP Cover	23.4	19.9	20.3
No Cover	18.5	16.0	16.1
Total	100	100	100

a. See text for definition of these five mutually exclusive eligibility categories.

Source: GUI

<sup>34</sup> The criteria for awarding a Medical and a GP Visit Card are set out in HSE (2015b). The Medical Card has a lower income threshold than a GP Visit Card. The income threshold, which also takes into account certain assets, varies by age and family circumstance (e.g. married, single). Furthermore even when a patient is above the income thresholds, if medical expenses impose undue hardship discretionary Medical/GP Visit Cards can be issued by the HSE. In May 2015 5 per cent of Medical Cards were discretionary; in contrast, 24.1 per cent of GP Visit Cards were discretionary (HSE, 2015a, p. 70).

The largest category of GP cover is PHI (with or w/o GP cover), followed by Medical Card holders and No Cover (Table 1).<sup>35</sup> These three groups accounted for 97.2 per cent of the Infant Cohort at nine months, 95.5 per cent at three years and 96.1 per cent at five years. If the PHI group is broken down into those with and w/o GP cover, then the number of those with GP cover was larger than those w/o such cover by between 5 to 6 percentage points at nine months and three years, but by five years the difference had narrowed to less than a percentage point. Perhaps, not surprisingly, given that GUI surveyed the Infant Cohort at nine months in 2008/2009, just as the financial crisis was unfolding, and the Infant Cohort at three years in 2010/2011 and five years in 2013, the importance of Medical (and GP Visit) Card holders has increased (29.2 per cent to 43.8 per cent) while PHI has declined from 52.6 per cent to 40.1 per cent.

The number of GP visits, as presented in Table 2, varies inversely with whether or not the GP visit is paid for in whole by the State (Medical/GP Visit Card) or in part by a third party (PHI with GP cover) or by the patient in full (PHI w/o GP Cover or No Cover). Those on a Medical Card, for example, in the Infant Cohort at aged nine months visit the GP, on average, 3.52 times, at three years 3.32 times, at five years 2.30 times; in contrast, the corresponding GP visiting rates for those with No Cover was 2.26, 1.86, and 1.38, respectively. Hence the upper bound estimate of the increase in GP visits associated with free GP care for private patients, based on Table 2, for the Infant Cohort at nine months would be 56 per cent based on a Medical Card/No Cover comparison and 19 per cent based on a GP Visit Card/No Cover comparison; for the Infant Cohort at three (five) years the corresponding percentages are 78 (67) per cent and 41 (67) per cent, respectively. However, for those moving from PHI to a Medical or GP Visit card the increase is somewhat less.

Table 2

GP Visits, Public & Private Cover, Infant Cohort at Nine Months & Three Years, 2008/09, 2010/11, and 2013 Ireland

Eligibility	Infant Cohort at Nine Months (Average No. of GP Visits)	Infant Cohort at Three Years (Average No. of GP Visits)	Infant Cohort at Five Years (Average No. of GP Visits)
Medical Card	3.52	3.32	2.30
GP Visit Card	2.69	2.62	2.31
PHI with GP Cover	2.55	2.43	1.65
PHI w/o GP Cover	2.37	2.22	1.50
No Cover	2.26	1.86	1.38
Total	2.72	2.61	1.86

Notes: The recall period for the number of GP visits for the Infant Cohort at nine months was nine months; at three and five years, 12 months. See text for definition of the five mutually exclusive eligibility categories.

Source: GUI

Although the emphasis in this paper is on the Infant Cohort, Williams *et al* (2009, Figure 5.2, p. 67) reports GP visits for the Child Cohort at nine years, based on a sample of 8,500 children surveyed

<sup>35</sup> However, the difference between the first two categories narrowed considerable between 2008/9 and 2013, from 26.2 percentage points to 0.2 percentage points.

between Sept. 2007 and June 2008. Williams *et al* (2009) report that the GP visits rate for nine year olds with a Medical Card was 1.5 (1.4 for boys, 1.5 for girls), a GP Visit Card, 1.1 (1.0, 1.1) and neither 0.8 (0.7, 0.8).

### 3.3 TILDA: Fifty Years of Age and Older

The eligibility of patients fifty years of age over for coverage of GP fees can be broken down into four mutually exclusive eligibility categories using TILDA; Medical/GP Visit Card w/o PHI;<sup>36</sup> Medical/GP Visit Card w PHI;<sup>37</sup> PHI only;<sup>38</sup> and No Cover (i.e. those w/o either a Medical/GP Visit Card and PHI). Public patients are Medical/GP Visit Card holders w and w/o PHI, private patients are PHI and No Cover. This definition of public/private patient is consistent with the approach adopted above with respect to GUI.

The two important GP cover categories in the TILDA over 50 population were PHI and Medical/GP Visit Card w/o PHI each of which accounted for 36-37 per cent, while Medical/GP Visit Card w/o PHI added another 16.2 per cent, with only 10.9 per cent with No Cover. However, there was substantial variation in the importance of these different categories by age (Table 3). For the population over 70 years of age virtually all had a Medical/GP Visit Card, not surprising since the Medical Card was not means tested for those over 70 between 2001 and 2008, but was from January 2009. However, the income thresholds are much higher for those over 70 compared to younger age groups.<sup>39</sup>

Table 3

Eligibility for GP Care, Public & Private Cover, Persons 50 Years of Age and Over, Ireland, 2009/2011<sup>a</sup>

Eligibility <sup>a</sup>	50+	50-59	60-64	65-69	70-79	80+
Medical/GP Visit Card w/o PHI	36.1	25.1	30.6	32.8	52.7	68.0
Medical/GP Visit Card w PHI	16.2	5.2	9.0	16.5	38.3	29.0
<i>All Medical/GP Visit Cards</i>	<i>52.3</i>	<i>30.3</i>	<i>39.3</i>	<i>49.3</i>	<i>91.0</i>	<i>97.0</i>
PHI	36.8	51.0	50.1	40.6	7.8	...
No Cover	10.9	18.6	10.4	10.0	...	...
Total	100	100	100	100	100	100

a. See text for definition of these four mutually exclusive eligibility categories.

... Less than 30 observations.

Source: TILDA.

The results from the first wave of TILDA found that the average number of GP visits for those over 50 years of age is higher for those with a Medical/GP Visit Card (w or w/o PHI) as compared to those with

<sup>36</sup> GP Visit Card holders are not distinguished from Medical Card holders in view of the small number of persons on a GP Visit Cards. Even the combined group of Medical/GP Visit Card holders results in cell sizes for certain age groups that are too small to report (e.g. see Table 4).

<sup>37</sup> Sometimes referred to as Dual Cover. It is possible to break down this category separately into Medical Card and GP Visit Card holders but this would require further detailed coding of the PHI information recorded in TILDA.

<sup>38</sup> It is possible to break down the PHI category into those with and w/o GP cover, but this would require an examination of individual patient PHI policies, the resources for which are not readily available.

<sup>39</sup> Callan *et al* (2015, Table 1, p. 5). In the spring of 2015 for a single person aged 70 and over the gross weekly income threshold for a Medical Card was €500 per week, aged between 66 and 70, €173.50-201.50, and aged up to 65, €164-184.

No Cover – 5.6 per year as compared to 2.3 per year (Table 4). The frequency of GP visits increases with age, from 3.4 per year for those 50-59, rising to 6.0 per year for those over 80. In terms of the detail it appears that the those persons on PHI became reclassified as Medical/GP Visit Card w PHI when they became 70 and this might explain the decline/stabilization in the number of GP visits for the latter category.

Table 4

GP Visits, Public & Private GP Cover, Persons 50 Years of Age and Over, Ireland, 2009/2011<sup>a</sup>

Eligibility <sup>a</sup>	Average Number of GP Visits Per Year					
	50+	50-59	60-64	65-69	70-79	80+
Medical/GP Visit Card w/o PHI	5.8	5.7	5.2	6.2	5.6	6.5
Medical/GP Visit Card w PHI	5.1	6.2	6.5	4.5	4.6	5.1
<i>All Medical/GP Visit Cards</i>	5.6	5.8	5.5	5.6	5.2	6.1
PHI	2.6	2.4	2.5	3.2	3.6	...
No Cover	2.3	2.2	2.3	3.3	...	...
Total	4.1	3.4	3.6	4.4	5.0	6.0

a. See text for definition of these four mutually exclusive eligibility categories. All Medical/GP Visit Cards is a weighted average of Medical/GP Visit Card w and w/o PHI, where the weights were the shares in Table 3.

... Less than 30 observations.

Source: TILDA.

### 3.4 QNHS: Eighteen Years of Age and Over

The eligibility of patients 18 years and over for GP care is broken down into a four categories in the QNHS: Medical/GP Visit Card w and w/o PHI; PHI w and w/o a Medical/GP Visit Card; PHI only (i.e. without a Medical/GP Visit Card); and No Cover (i.e. neither Medical/GP Visit Card nor PHI).<sup>40</sup> There is an overlap between the first two categories: persons with a Medical/GP Visit Card and PHI. However, only 6 per cent of patients have both a Medical/GP Visit Card and PHI. Nevertheless, there is some variation by age: between 2 and 5 per cent for age groups between 18 and 64, but with a pronounced increase for older persons, peaking at 33 per cent for those over 70.<sup>41</sup> Public patients are Medical/GP Visit Card, private patients PHI only and No Cover (which sums to a 100 in Table 5). This public/private split is consistent with the corresponding GUI and TILDA definitions.

<sup>40</sup> For details see CSO (2011a, p. 24). For the purposes of one table only the importance of those with a Medical/GP Visit Card only (i.e. excluding those with a Medical/GP Visit Card and PHI) is presented (*ibid*, Table 1, p. 10).

<sup>41</sup> CSO (2011a, Table 1, p. 10).

Table 5

GP Visits & Health Indicators, Public & Private GP Cover, Persons 18 Years of Age and Over, Ireland, Q3 2010<sup>a</sup>

Eligibility <sup>a</sup>	Distribution of Patients (%)	Average Annual Number of GP Consultations	Perception of Own Health: % Very Good <sup>b</sup>	One or More In-patient Hospital Admission <sup>c</sup> (%)
Medical/GP Visit Card	36	5.2	29	15
PHI	47	2.6	51	10
PHI Only	41	2.2	55	8
No Cover	23	1.9	51	6
State	-	3.2	45	10

a. See text for definition of these not necessarily four mutually exclusive eligibility categories.

b. Other categories: Good, Fair and Very Bad.

c. In the previous 12 months.

Source: CSO (2011a, Table 1, p. 10, Table 2, p. 11, Table 4b, p. 15 and Table 5b, p. 17).

The most important category of GP cover in 2010 was, as set out in Table 5, PHI (47 per cent) followed by Medical/GP Visit Card (36 per cent) and No Cover (23 per cent). The QHNS contains comparable percentages for 2001 and 2007. This shows that the importance of PHI and Medical/GP Visit Card have remained roughly constant (48 per cent and 28 per cent, respectively in 2001), while the No Cover has declined somewhat from 26 per cent in 2001.<sup>42</sup> Nevertheless there has been a small decline in PHI between 2007 and 2010 – 49 to 47 per cent – perhaps reflecting the impact of the financial crisis.

The annual number of GP consultations is, as anticipated and shown in Table 5, highest for those with a Medical/GP Visit Card (5.2 per annum) and lowest for those with No Cover (1.9 per annum). The corresponding consultation rates for PHI and PHI Only are somewhat above No Cover – 2.6 and 2.2, respectively, but well below Medical/GP Visit Card. If those on No Cover or either of the PHI categories were to replicate the consultation rates of those on Medical/GP Visit Card if they were given a GP Visit Card, then consultation rates for these groups would more than double. However, this is very much an upper limit in view of the greater likely demand for GP consultation amongst those with a Medical/GP Visit Card.

### 3.5 Six GP Practice Records: All Age Groups

The eligibility of patients for GP cover is broken down by Behan *et al* (2103, 2014), based on six GP practice administrative records, into three mutually exclusive categories: Medical Card holders irrespective of whether or not they had PHI; GP Visit Card holders, irrespective of whether or not they had PHI; and Private, those without a Medical Card or a GP Visit Card. Private includes what would be referred to as PHI Only and No Cover in the QNHS categorization. Public patients are Medical/GP Visit Card holders. This public/private split is consistent with the corresponding GUI, TILDA and QNHS definitions.

<sup>42</sup> CSO (2011a, Table 1, p. 10).

Table 6

GP Visits, Public and Private GP Cover, Various Age Groups, Six GP Practices, Ireland, 2012/13<sup>a</sup>

Eligibility	Average Number of GP Visits <sup>b</sup>
<i>Medical Card</i> <sup>c</sup>	
18 to 70 years of age	7.01
Over 70 years of age	9.69
Over 18 years of age	7.72
Under 6 years of age	5.71
<i>GP Visit Card</i>	
Over 18 years of age	5.06
Under 6 years of age	5.07
<i>Private</i> <sup>d</sup>	
Over 18 years of age	3.35
Under 6 years of age	2.72
<i>All Patients</i>	
18 to 70 years of age	4.54
Over 70 years of age	8.56
Over 18 years of age	5.17
Under 6 years of age	3.71

- All estimates refer to 23 October 2012 to 22 October 2013 except for those 'Under 6 years of age' where the period is 1 January 2013 to 31 December 2013.
- GP visits are defined as per the text and include telephone and out-of-hours consultations
- Patients on a discretionary Medical Card visited with a frequency of 8.11.
- Private is non-Medical Card/GP Visit Card holders.

Source: Behan *et al.* (2013, Table 2, p. 298; 2014, pp. 121-122).

Behan *et al.* (2013, Table 1) find across the six GP practices that 42 per cent of patients over 18 in 2012/13 were classified as GMS (i.e. in receipt of a Medical or GP Visit Card) with the remaining 58 per cent classified as private patients. For 2010 the QNHS the corresponding percentages were that 36 and 64 per cent. The difference could be explained by the financial crisis leading to a greater proportion of the population becoming eligible for Medical/GP Visit Cards.

Behan *et al.* (2013) present findings for those 18 years of age and over, while Behan *et al.* (2014) for those aged less than 6 years of age (Table 6). In both instances those with a Medical/GP Visit Card recorded more GP visits than private patients. For example, those persons over 18 on a Medical Card have, on average, 7.72 GP consultations per year, whereas those over 18 who do not have a Medical Card experience on average 3.35 GP consultations per year. The corresponding GP visiting rates for those under 6 was 5.71 and 2.72.

Behan *et al.* (2013) also find that the number of GP consultations increases with age, comparing those under and over 70 year. For example, across all adults, irrespective of whether they are on a Medical Card or not, those under 70 years of age have 4.54 GP consultations a year, while those over 70 years of

age experience 8.56 GP consultations per year. The consultations by age are consistent with the results reported above for TILDA (Table 4) and detailed age breakdown for QNHS for persons over 18.<sup>43</sup>

### 3.6 *Similarities and Differences*

#### 3.6.1 *Introduction*

There are certain common findings concerning GP visits across the retrospective self-reporting by patients (Sections 3.2 to 3.4) and the six GP practice administrative records (Section 3.5). The discussion here concentrates on comparisons using the Medical Card (sometimes combined with a GP Visit Card) across the various sources since it was not always possible to get a separate breakdown for the GP Visit Card and even if it were possible the cell sizes might have been too small to report.

The common findings include that GP visits increase with age and that GP visits are higher for Medical Card holders as compared to those without a Medical Card, both overall and controlling for age. GP visits by Medical/GP Visit Card holders routinely exceed those of patients w/o such cards. For the population over 18 a Medical/GP Visit Card holder visits the GP 5.2 times per year compared to 2.6 for those on PHI and 1.9 for those with No Cover. This is consistent with findings for younger (GUI) and older (TILDA) persons. In other words, public patients visit the GP with greater frequency than private patients.

Furthermore, the *relative* magnitude of these differences is similar in those instances where direct comparisons can be made (Table 7). The ratio of GP visits for those 18 to 70 with a Medical Card to all those 18 to 70 is 1.5 for Behan *et al* ('Six GP Practices' in Table 7) and 1.6 for QNHS; for patients with a Medical Card over 18 to all patients over 18, the corresponding ratios are 1.5 and 1.6, respectively. Equally the ratio of GP visits for those over 18 with a Medical Card to private patients over 18 was 2.3 for Behan *et al* and 2.5 for QNHS. The ratio of GP visits for those over 70 with a Medical Card to all those over 70 are 1.1, 1.0 and 1.0 for Behan *et al*, QNHS and TILDA, respectively. Finally, the ratio of GP visits for those under 6 with a Medical Card to all those under 6 is 1.5 and 1.3 for Behan *et al* and GUI, respectively.

Notwithstanding these important common findings the two approaches to measuring GP visits differ in at least one important respect: the *absolute* magnitude of the number of GP consultations. In general the number of GP visits is higher for Behan *et al* as compared to the retrospective self-reporting by patients in QNHS, TILDA and GUI. The ratio of GP visits from Behan *et al* to the retrospective self-reporting sources, for comparable groups, varies between 1.5 and 1.7 for QNHS, 1.6 to 1.8 for TILDA and 1.2 to 1.7 for GUI (Table 7). In other words, for comparable groups, the administrative approach to measuring GP visits results more visits being recorded per annum, with an average of 1.6 across the twelve instances where comparisons can be made in Table 7.

This naturally raises the issue of why such differences might exist in measuring GP visits as between retrospective self-reporting and GP practice records. This is important because given that the impact of

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<sup>43</sup> CSO (2011a, Table 1.3, p. 4).

providing free GP care might be expected to be different depending on the source used. A number of points can be made to resolve this issue.

Table 7

GP Visits, Public and Private GP Cover, Various Age Groups & Sources, Ireland, 2008-2013

Eligibility	Average Annual Number of GP Visits			
	Six GP Practices <sup>c</sup>	QNHS <sup>d</sup>	TILDA <sup>e</sup>	GUI <sup>f</sup>
<i>Medical Card</i> <sup>a</sup>				
18 to 70 years of age	7.01	4.7	-	-
Over 70 years of age	9.69	5.6	5.4	-
Over 18 years of age	7.72	5.2	-	-
Under 6 years of age	5.71	-	-	3.47
<i>Private</i> <sup>b</sup>				
Over 18 years of age	3.35	2.1	-	-
Under 6 years of age	2.72	-	-	2.34
<i>All Patients</i>				
18 to 70 years of age	4.54	2.9	-	-
Over 70 years of age	8.56	5.4	5.3	-
Over 18 years of age	5.17	3.2	-	-
Under 6 years of age	3.71	-	-	2.73

- a. Medical Card, including GP Visit Card, holders irrespective of whether or not they had PHI. For 'Six GP Practices' and GUI Medical Card does not include GP Visit Card. If Medical Card is re-estimated to include GP Visit Card holders then instead of 3.47 the visiting rate is 3.71.
- b. Private is non-Medical Card/GP Visit Card holders.
- c. These data are taken from Table 10 above. The data refer to 2012-2013.
- d. QNHS are based on CSO (2011a, Table 1.3, p. 4, Table 4b, p. 15) and Behan *et al* (2013, Table 2, p. 298). QNHS refers to 2010.
- e. Tables 3 and 4 were used to estimate the weighted mean of GP visits for Medical/GP Visit Card holders (i.e. Medical/GP Visit Card w and w/o PHI) for 70-79 and 80 plus. The weights to estimate average GP visits for those over 70 were obtained from the underlying TILDA data. TILDA refers to 2009-2011.
- f. GUI refers to the mean values of the Infant Cohort surveyed in 2008/09 (9 months), 2010/11 (three years), and 2013 (five years). For 9 months GP visits are expressed an annual equivalent (i.e. multiplied by 1.33). Private defined as PHI with GP cover; PHI w/o GP cover; and, No Cover, with the weights used derived from Table 1 above. The weighted average of GP visit rates for the Infant Cohort at 9 months, 3 years and 5 years used 0.3468, 0.3422 and 0.3110, respectively, from the 2011 Census.

Source: Behan *et al*. (2013, Table 2, p. 298; 2014, pp. 121-22); CSO (2011a, Table 1.3, Table 4b; 2012, Table 2, pp. 36-37); Tables 1 to 4 above.

### 3.6.2 Definition of GP Visit

The differences in GP visiting rates by GP cover categories between the GUI, QNHS, and TILDA, on the one hand, and the six GP practices, on the other hand, are not due, as noted above, to any differences in

the definitions of a GP visit or consultation. However, there may be a difference in the interpretation/application of the definition. When patients visit a GP surgery they may not always see the GP but instead another health professional such as a nurse. If these visits are counted as a GP visit by Behan *et al* but not by patients when participating in GUI, TILDA and QNHS than this difference may account, in part, for the higher incidence of GP visits by Behan *et al*. In other words, Behan *et al* record visits to a GP surgery whereas GUI, TILDA and QNHS record a visit to the GP.

There is some evidence, albeit somewhat tangential, to support this view. Behan *et al* (2013, Table 2) present the GP visit rate not only for the six GP practices, but also based on a large number GP practices in England (Hippisley-Cox & Vinogradova, 2009). The latter source is credited with a GP visit rate of 5.5 for all patients, compared to 5.17 from Behan *et al* (2013). However, the 5.5 GP visit rate refers to visits to *all* clinicians, not just GPs i.e. GPs, nurses and other clinicians. When the latter two categories are excluded, the GP visit rate based on Hippisley-Cox & Vinogradova (2009, p. 17) is 3.4, quite similar to the QNHS estimate in Table 7 of 3.3.<sup>44</sup>

### 3.6.3 Missing Visits

A Medical (and GP Visit) Card patient is likely to remain with the same GP since the patient is registered with a particular GP who receives a capitation payment for that patient from the State. In contrast, a private patient under a fee for service regime may visit different GPs in the course of a year.<sup>45</sup> Retrospective self-reporting of the number of GP visits by GUI, TILDA and QNHS will not be affected by this distinction, because the patient is asked how many GP visits, irrespective of the location and identity of the GP or the GP practice. Hence, for private patients, other things being equal, GP visits will be higher (not lower) for retrospective self-reporting surveys than for administrative records of GP practices.

### 3.6.4 Counting Private Patients

The six GP practices record the number of visits per patient over a year. However, if a private patient does not visit then the GP practice has no way of knowing the reason for that – relocation, death, switching to another GP in the same area or in good health thus not requiring the GP's services. If a correction is not made for private patients that do not visit the GP, administrative GP records will overestimate GP visiting rates for private patients.

Behan *et al* (2013, p. 298) are aware of this problem and using the following approach to correct for unrecorded private patients:

We estimated the number of 'private' patients in each practice from the number of unique private patient attendances during the 12 month study period and dividing by

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<sup>44</sup> It appears that there are differences in the population covered. Behan *et al* (2013, Table 2) and QNHS refer to all persons 18 and over, Hippisley-Cox & Vinogradova (2009) to all persons. However, these differences are unlikely to invalidate the point made in the text.

<sup>45</sup> In terms of the categories of GP cover used in the discussion above a private patient is one with PHI or No Cover.

0.7 (derived from 2010 CSO NQHS data which estimated that 70% of non-GMS patients attended their GP in the previous 12 months).

Across the six GP practices use by Behan *et al* (2013), the average number of GP consultations for those private patients over 18 that visited these practices in 2012-2013 was 4.8.<sup>46,47</sup> However, the corrected rate, taking into account the fact that some private patients would not have visited the GP practice in the year in question was the 3.35 presented in Behan *et al* (2013, Table 2) and reproduced in Tables 6 and 7 of this paper.<sup>48</sup>

Administrative GP practice records, for comparable groups, report, on average 60 per cent more GP visits than retrospective self-reporting by patients (Table 7). This suggests that the 0.7 proportion used by Behan *et al* (2013) is likely, other things being equal, to be a substantial underestimate of the proportion of private patients that visited one of the six GP practices, had Behan *et al* (2013) been able to use administrative GP practice records to generate this proportion.<sup>49</sup> If 0.7 were to be increased by between 60 per cent then it suggests, given that the proportion is bounded by 1, that all private patients visited the six GP practices. In other words, the average number of GP visits using Behan *et al* (2013) for private patients over 18 in 2012-13 should be closer to 4.8 than 3.35.<sup>50</sup>

### 3.6.5 Conclusion

Three explanations for differences in GP visit rates as between retrospective self-reporting by patients and administrative records of six GP practices. The interpretation of the definition of a GP visit provides an explanation for why the GP visit rates derived from administrative records of six GP practices may be greater than those derived from retrospective self-reporting by patients. The next two explanations provide reasons for differences in GP visits by private patients as between the two data sources for measuring GP visit rates: 'Missing Visits' suggests that GP visits based on retrospective self-reporting by patients should be greater than those derived from the administrative records of six GP practices, while

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<sup>46</sup> Behan *et al* (2013, Table 2) estimate the average number of GP visits per private patient over 18 as 3.35. Given an 0.70 correction factor implies that the average number of GP visits for those private patient that visited one of the six GP practices was 4.8.  $(3.35=TP_v/(PP_v \times (1/0.70))= TP_v/(PP_v \times 1.43)$ . If both sides of the equation are multiplied by 1.43 this reduces to  $4.8= TP_v/PP_v \times$ , where  $PP_v$  is the total number of GP consultations across the six GP practices in 2012/13 by private patients over 18 and  $PP_v$  is the total number of private patients over 18 that consulted with the six GP practices in 2012/13.

<sup>47</sup> Arguably when GP visit rates are presented by age group age specific correction factors should be used given the variance across age groups of the proportion of those that visit a GP at least once in a year. For example, for those in the age group 18-24, 60 per cent visit the GP at least once a year, while for those aged over 70 the proportion rises to 91 per cent (CSO, 2011a, Table 1.3, p. 4). For further discussion see Annex 1.

<sup>48</sup>  $3.35=4.8/1.43$

<sup>49</sup> This would have been the case if all private patients were required to register with a GP.

<sup>50</sup> This reduces the difference between the GP visiting rate of public and private patients in Behan *et al*. If private patients were to assume the visiting patterns of those with a Medical Card on receiving free GP care, then the increase would no longer be an additional 4.37 GP visits or an increase of 130 per cent but rather an extra 2.9 GP visits or a 61 per cent increase. Indeed, for those over 18 the administrative and retrospective patient self-reporting methods both suggest the absolute difference in GP visiting rates between Medical Card and private patients is similar: 2.9 compared to 3.1 (from the QHNS, Table 7). The percentage increase is different, however, due to the smaller number of private GP visits recorded by the two sources.

‘Counting Private Patients’ suggests the reverse. However, the only explanation for which there is any evidence is ‘Counting Private Patients.’ In sum, it is not at all clear why administrative records of six GP practices results in higher GP visit rates than retrospective self-reporting by patients.

#### IV EXPLAINING PUBLIC/PRIVATE PATIENT DIFFERENCES IN GP VISIT RATES

##### 4.1 Introduction

The burden of Section III is that public patients visit the GP with greater frequency than private patients, irrespective of the data source used. The issue thus arises as to what will happen to GP visit rates of private patients as they receive free GP care and thus become public patients.

An upper bound of the demand by private patients for GPs services under free GP care is to assume – as have Behan *et al* (2013, 2014), LHM Casey McGrath (2015) and the National Association of General Practitioners (NAGP)<sup>51</sup> - that former private patients eligible for free GP care visit GPs with the same frequency as means tested Medical/GP Visit Card patients of the same age and gender. The upper bound estimate is making the implicit assumption that the demand for GP visits for means tested Medical/GP Visit Card and private patients is the same, but for the fact that private patients pay for their GP visits. This, in turn, implies that Medical/GP Visit Card and private patients, of the same age and gender, share the same characteristics.

A lower bound of the demand by private patients for GP services under free GP care is to assume that such patients do not change the frequency with which they visit the GP when they become eligible for free GP care.<sup>52</sup> The lower bound estimate is making the implicit assumption that the demand for GP services by private patients is not constrained by the price of a GP visit and hence making free GP care will have little impact on GP visiting rates. This may reflect a sufficiently high income or that the patient has PHI with GP cover. However, for patients just above the Medical/GP Visit Card income thresholds, who are much less likely to be covered by PHI, the possession of a Medical/GP Visit Card is more likely to lead to an increase in demand for GP visits.<sup>53</sup>

There are several different approaches to categorizing the factors likely to account for the demand for GP visits. We use the threefold classification of Nolan and Nolan (2007), since it is particularly suited to the assessing the impact of providing free GP care for former private patients. First, is patient ‘need’ for GP visits as “proxied by their age, gender and health status” (*ibid*, p. 35). The latter may be either self-

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<sup>51</sup> The NAGP, a GP representative body, argued in an unsuccessful 2015 High Court action against the HSE concerning the introduction of the under 6 GP contract, that patients under 6 not in receipt of a Medical/GP Visit Card would assume the same visiting rates as those with such Card. Based on Williams (2015, para. 46). The NAGP commissioned LHM Casey McGrath (2015), which adopts a similar approach to Behan *et al* (2013, 2014) to estimating the impact of extending free GP care to all, irrespective of income.

<sup>52</sup> Recall private patients are above the income threshold for the means tested Medical/GP Visit Card and hence the €50 per GP visit is less likely to be a barrier to accessing GP services. Furthermore the private patient may have PHI, which may partly mitigate the cost of a GP visit.

<sup>53</sup> Of course, as noted above, GP visit fees do vary. Part of the variance might be explained by the GP charging private patients just above the Medical/GP Visit Card income thresholds a lower GP fee. If this were the case, then, of course, it would mitigate any increase in demand for GP services occasioned by providing free GP care.

assessed or measured by the severity of a chronic illness or whether or not the patient suffers from psychological stress. Need is in some sense on an objective measure of demand independent of income.

Second, are socio-economic determinants some of which are patient (e.g. the highest level of educational attainment, employment status, marital status, social class) while others are household (e.g. household location, household size). Third, are the financial incentives that face both the GP (e.g. whether or not the GP is reimbursed by a fee for service or capitation payment) and the patient (e.g. whether or not GP care is provided free, the patient has PHI, patient income).

It should be noted that these three sets of factors are unlikely to be independent, but correlated. For example, a patient with a low income might also tend to be unemployed and in poor health and therefore more likely to visit a GP than a patient with high income who is more likely to be employed and in good health. In order to disentangle the importance of the various factors that are likely to influence the demand for GP visits multivariate analysis is required. It is only when all the factors determining the number of GP visits are taken into account that the influence a patient moving from being a private to a public patient can be evaluated.

In order to investigate the influence of these factors we first consider patient characteristics by GP cover category before turning to multivariate analysis to estimate the impact of free GP care. Such analysis can only be conducted using GUI, TILDA and QNHS. Behan *et al* (2013, 2014) do not present patient characteristics by GP cover, apart from age, and do not report any multivariate analysis. In large part this is because GP administrative records do not contain extensive data on, for example, patient income and education, and, in part, because although GP administrative records no doubt contain various aspects of health status, it might require considerable resources to code such information, which may not always be stored in a comparable and consistent way across the six GP practices.

## 4.2 *Patient Characteristics by GP Cover*

### 4.2.1 GUI: Infant Cohort at Nine Months, Three and Five Years

In considering the characteristics of patients by GP cover for the Infant Cohort at aged nine months, three and five years we select one or two variables from the threefold classification of Nolan and Nolan (2007): chronic disease of the child and mother; mother's education; and household income. The results are presented in Table 8.

Table 8

Health Status, Educational Attainment, & Household Income, Public & Private GP Cover, Infant Cohort at Nine Months, Three & Five Years, 2008/09, 2010/11 & 2013, Ireland

Eligibility <sup>a</sup>	Proportion of Children (Mother) With Chronic Illness <sup>b</sup>	Proportion of Mothers With Third Level Education <sup>c</sup>	Mean Household Equivalised Annual Net Income (€) <sup>d</sup>
Medical Card			
Infant Cohort at Nine Months	0.252 (0.170)	0.194	12,480
Infant Cohort at Three Years	0.189 (0.191)	0.220	13,252
Infant Cohort at Five Years	0.217 (0.196)	0.123	-
GP Visit Card			
Infant Cohort at Nine Months	0.302 (0.113)	0.323	17,161
Infant Cohort at Three Years	0.109 (0.146)	0.280	16,699
Infant Cohort at Five Years	0.182 (0.127)	0.176	-
PHI with GP Cover			
Infant Cohort at Nine Months	0.249 (0.104)	0.707	27,845
Infant Cohort at Three Years	0.154 (0.124)	0.729	29,873
Infant Cohort at Five Years	0.166 (0.112)	0.563	-
PHI w/o GP Cover			
Infant Cohort at Nine Months	0.252 (0.100)	0.664	26,939
Infant Cohort at Three Years	0.145 (0.118)	0.671	27,204
Infant Cohort at Five Years	0.160 (0.127)	0.486	-
No Cover			
Infant Cohort at Nine Months	0.201 (0.110)	0.375	17,993
Infant Cohort at Three Years	0.120 (0.128)	0.409	19,501
Infant Cohort at Five Years	0.129 (0.127)	0.278	-
Total			
Infant Cohort at Nine Months	0.243 (0.122)	0.490	21,487
Infant Cohort at Three Years	0.157 (0.148)	0.471	21,373
Infant Cohort at Five Years	0.180 (0.151)	0.311	-

a. See text for definition of these five mutually exclusive eligibility categories.

b. Children (and mothers) were classified as to whether or not they had a chronic physical or mental illness.

c. Third level is defined as non-degree education, degree education and postgraduate education. Non-third level education is defined as no/primary education, lower secondary education and upper secondary education.

d. Net income refers to income after deductions for tax and pay-related social insurance (PRSI). The equivalence scale used assigns a value of 1 for the first adult, 0.66 to all others aged over 14 years and over, and 0.33 to all the children 13 years and younger.

Source: GUI

One measure of the child's health is whether or not the child has "any longstanding illness, condition or disability," for the mother whether or not they have an "on-going chronic physical or mental health

problem, illness or disability.”<sup>54</sup> It is reported by the primary caregiver, usually the mother. The evidence suggests that the level of chronic illness is highest amongst mothers with a Medical Card (and to a lesser extent among GP Visit Card holders) than the other categories of GP cover.<sup>55</sup> For children, there is much less variance across the categories of GP care. However, children of Medical Card (and to a lesser extent GP Visit Card) holders in the Infant Cohort at five years have higher levels of chronic illness than all other categories.<sup>56</sup>

There is a striking difference in the education of mothers with PHI as compared to those with a Medical Card: in the former case 50 to 70 per cent of mothers attained a third level education, whereas only 10 to 20 per cent of the latter possess such a qualification. Those with No Cover were in a somewhat intermediate position, with 30 to 40 per cent with a third level education. In general those in receipt of State benefits were less educated than either those with PHI or with No Cover.

Not surprisingly, given their means tested nature, net household income is lowest for those on Medical Card followed by those on a GP Visit Card.<sup>57</sup> PHI households have the highest net income, while those on No Cover were only somewhat above the average income of GP Visit Card holders. These patterns hold for both the Infant Cohort at nine months and three years. For example, net household income for the Infant Cohort at three years for Medical Card holders was €13,252, for PHI with GP cover, €29,873, for No Cover, €19,501.

In sum, there are differences in the health status, education and income by GP cover. The corollary of this observation is that cognisance should be taken of these differences in assessing the importance of providing free GP care for private patients.

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<sup>54</sup> See question C2 for the Child and question D2 for the parent in the Primary Caregiver Questionnaire for the Infant Cohort at three years, which may be found at: <http://www.growingup.ie/index.php?id=236>. Accessed 26 April 2016.

<sup>55</sup> According to Marmot, “[T]he mother’s education is a much stronger predictor of infant mortality than is household income and wealth,” as cited in a book review of Marmot (2015) by Baggini (2015).

<sup>56</sup> At nine months GUI Primary Caregiver Questionnaire asked at H22, “Has a medical professional ever told you that <baby> has any of the following conditions?” However at three and five years the question changed somewhat: “C2. Does <child> have any longstanding illness, condition or disability? By longstanding I mean anything that has troubled him/her over a period of time or that is likely to affect him/her over a period of time? If the answer is yes then the respondent is asked to tick one of a series of longstanding illness. The respondent is then asked: “C4 Has this illness, condition or disability been diagnosed by a medical professional?” The Primary Caregiver Questionnaires can be found at: <http://www.growingup.ie/index.php?id=236>.

<sup>57</sup> See footnote 34 above.

#### 4.2.2 TILDA: 50 Years of Age and Older

In terms of the indicators of need as measured by health status, it is quite clear that Medical/GP Visit Card holders w/o PHI typically have higher levels of need based on self-rated health, smoking habits, exercise but not problematic drinking, compared to those on PHI and No Cover (Table 9). This applies for all age groups. For example, while only 8.5 per cent of those aged 50-59 on a Medical/GP Visit Card w/o PHI rated their health as excellent, the corresponding percentage for those on PHI was 24.4 per cent, for those with No Cover, 16.6 per cent. In contrast, problematic drinking was of a similar magnitude for a given age group across all the four categories of GP cover. Notwithstanding this result, the health status of those with Medical/GP Visit Cards w/o PHI was markedly inferior to those with PHI and to a lesser extent those with No Cover.

Similar results were found when the health status of Medical/GP Visit Card holders w PHI are compared to those with PHI. However, those with No Cover recorded, on balance, a better health status than Medical/GP Visit Card holders w PHI. For example, for Medical/GP Visit Card holders w PHI, 13.4 per cent of those aged 60-64 smoked, whereas the corresponding percentage for those with No Cover was 21 per cent.

In terms of education Medical/GP Visit Card holders w/o PHI do not reach third/higher levels to the same extent as those with PHI, with No Cover falling in a somewhat intermediate position. For example, for those aged 60 to 64 on a Medical/GP Visit Card w/o PHI 5.8 per cent reach third/higher, compared to 29.8 per cent on PHI and 12.0 per cent with No Cover. Similar results are recorded for Medical/GP Visit Card holders w PHI.

Finally, in terms of gross annual household income, not surprisingly given the means-tested nature of the Medical/GP Visit Card holders w and w/o PHI, these groups had lower levels of income than all other groups.<sup>58</sup> For those aged 65-69, for example, average household income for those on a Medical/GP Visit Card w/o PHI was €17,396, while for those of the same age on PHI household income was more than twice at €41,232, with once again those with No Cover being in an intermediate position between these two groups with an average income of €23,398.

In general, income fell with age for all GP cover categories, but for PHI and Medical/GP Visit Card w and w/o PHI, where income increased for those 70 – 79.<sup>59</sup> This may reflect lower income persons with PHI receiving the Medical/GP Visit Card at 70 and switching either to Medical/GP Visit Card w PHI or dropping their PHI and switching to Medical/GP Visit Card.

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<sup>58</sup> The only exception was the comparison between Medical/GP Visit Card holders w PHI and No Cover for those aged 65-69.

<sup>59</sup> This result held even if the median income rather than the average was used.

Table 9

Health Status, Education & Income, Public & Private GP Cover, Persons 50 Years of Age & Over, Ireland, 2009-2011

Eligibility <sup>a</sup>	50-59	60-64	65-69	70-79	80+
Medical/GP Visit Card w/o PHI					
Proportion Excellent Self Rated Health <sup>b</sup>	0.085	0.082	0.072	0.065	0.070
Proportion Current Smoking <sup>c</sup>	0.392	0.333	0.244	0.189	0.121
Proportion Problematic Drinking <sup>d</sup>	0.158	0.136	0.088	0.048	0.024
Proportion Low Exercise <sup>e</sup>	0.304	0.357	0.375	0.457	0.614
Proportion Third/Higher Level Education <sup>f</sup>	0.094	0.058	0.056	0.029	0.022
Average Gross Household Income <sup>g</sup> (€)	22,065	18,432	17,396	17,411	16,319
Medical/GP Visit Card w PHI					
Proportion Excellent Self Rated Health	0.113	0.091	0.109	0.112	0.125
Proportion Current Smoking	0.224	0.134	0.164	0.087	0.027
Proportion Problematic Drinking	0.147	0.094	0.101	0.067	0.019
Proportion Low Exercise	0.359	0.319	0.259	0.375	0.490
Proportion Third/Higher Level Education	0.195	0.175	0.088	0.197	0.168
Average Gross Household Income (€)	29,621	24,230	23,767	27,982	20,806
PHI					
Proportion Excellent Self Rated Health	0.244	0.182	0.186	0.228	...
Proportion Current Smoking	0.164	0.090	0.108	0.106	...
Proportion Problematic Drinking	0.181	0.126	0.108	0.095	...
Proportion Low Exercise	0.248	0.245	0.249	0.317	...
Proportion Third/Higher Level Education	0.353	0.298	0.271	0.422	...
Average Gross Household Income (€)	61,027	48,573	41,232	53,153	...
No Cover					
Proportion Excellent Self Rated Health	0.166	0.129	0.133	...	...
Proportion Current Smoking	0.302	0.210	0.227	...	...
Proportion Problematic Drinking	0.183	0.112	0.120	...	...
Proportion Low Exercise	0.251	0.291	0.290	...	...
Proportion Third/Higher Level Education	0.168	0.120	0.071	...	...
Average Gross Household Income (€)	33,283	27,189	23,398	...	...

a. See text for definition of the four mutually exclusive eligibility categories.

b. Other categories were Very Good, Good, Fair, and Poor.

c. Other categories were Never Smoked and Smoked in Past.

d. Other category was No Alcohol Problem.

e. Other categories were Moderate and High.

f. Other categories no/primary education and lower or upper secondary.

g. Income Measured as Gross Annual Income.

... Less than 30 observations

Source: TILDA

Finally, Medical/GP Visit Card holders w/o PHI had markedly lower incomes than Medical/GP Visit Card holders w PHI. For example, for persons aged 65-69, average gross household incomes were €17,396 and €23,767, respectively. Part of this difference may be explained if those with a Medical/GP Visit Card and PHI had been granted such cover on a discretionary basis and/or they had a GP Visit Card rather than a Medical Card, given the higher income thresholds for gaining a GP Visit Card.

#### 4.2.3 QNHS: Eighteen Years of Age and Over

There is limited presentation of patient characteristics by GP cover in the Q3 2010 QHNS. Medical/GP Visit Card patients have a markedly lower perception of their health compared to other categories of GP cover. Only 29 per cent of those with a Medical/GP Visit Card considered that they were in Very Good Health, compared to 51 per cent for those with PHI or No Cover (Table 5). Equally, those with a Medical/GP Visit Card were much more likely to have been admitted to hospital in the previous 12 months.

These results are consistent with Nolan and Nolan (2007) using the earlier 2001 special QNHS health module which recorded only whether or not a patient visited a GP, with no information as to frequency, Nolan and Nolan (2007). Medical Card holders were more likely to visit a GP over the previous two weeks (34.1 per cent) compared to non-Medical Card holders (13.2 per cent) (*ibid*, Table 3.22, p. 50). The worst a person's self assessed health the more likely they were to visits a GP (*ibid*, Table 3.17, p. 49), equally a patient with one or more heath conditions was more likely to visit a GP than a patient with no such conditions (*ibid*, Table 3.18, p. 49).

### 4.3 Multivariate Analysis

#### 4.3.1 Introduction

There is limited multivariate analysis of the impact of the determinants of GP visits by GP cover category. Indeed, such analysis is confined to the Infant Cohort at nine months and three years and TILDA, based on Hudson and Nolan (2015), Ma and Nolan (2016) and Nolan and Layte (2016).<sup>60</sup>

#### 4.3.2 GUI: Infant Cohort at Nine Months and Three Years

In order to estimate the impact of free GP care for those in the Infant Cohort at nine months and three years account needs to be taken of three sets of characteristics identified by Nolan and Nolan (2007) as determining the number of GP visits: need; socio-economic; and financial incentives. In terms of the impact of the three sets of characteristics it is readily apparent that indicators of need, which are based on measures of the health status of the patient, whether self-assessed or measured more objectively, are likely to be directly related to the number of GP visits. In other words, the lower or worst the patient's health status, the more lightly it is that the patient will visit a GP and thus require ongoing GP monitoring and medical supervision.

Patient socio-economic characteristics are also likely to influence GP visiting rates. The more educated patient the more likely it is that they are aware of and adopt life patterns that promote a healthy lifestyle. GP visiting rates might thus be lower. Hence there is likely to be a link between socio economic variables and patient need, although it may not always be easy to disentangle the channels through which these work.

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<sup>60</sup> Cirillo and Denny (2015) looked at the likely effects of underreporting on the coefficients in multivariate analysis and found that you would need a lot of underreporting to generate different estimated effects.

Financial incentives affect both the provider of GP services and the patient. The GP, as noted above, operates fee for service pricing for those on PHI and No Cover and, under the agreement with the State, capitation for the Medical/GP Visit Card. This is likely to create an incentive for more rather than less GP visits for PHI and No Cover patients, but the reverse for those on a Medical/GP Visit Card.<sup>61</sup> Equally the GP may, under fee for service, price discriminate by charging poorer patients a lower fee, thus mitigating the impact of low patient income.

Patient or household income is also likely to influence demand for GP visits. For those on a low income the cost of visiting a GP is a deterrent, although this might be offset by GP price discrimination. In contrast, for those on a high income, the price of a GP visit is likely to have little influence on visiting rates. Indeed, for such patients the opportunity cost of time is likely to keep such visits down to the minimum.

Nolan and Layte (2016) use a one-step negative binomial model with numerous variables designed to capture the three sets of factors identified by Nolan and Nolan (2007). Separate cross section estimates were made for the Infant Cohort at nine months and three years.<sup>62</sup> The five GP cover categories used in Table 8 and earlier discussions of GUI GP cover categories were used to capture the GP cover of a patient.

Nolan and Layte's (2016, Table 2.2, pp. 26-28) multivariate analysis largely accord with expectations: the lower a patient's health status – measured using a number of indicators - the greater the frequency of GPs visits. Education of the mother had no statistically significant impact on GP visiting by the child. Poorer households visited GPs with greater frequency than those in the top income quintile. The results were usually consistent across both the Infant Cohort at nine months and three years, although not in all cases (e.g. the impact of income only applied for the Infant Cohort at nine months, there was no statistically significant effect at three years).

Even after taking into the impact health status, socio economic and income, whether or not a person is in receipt of a Medical or GP Visit Card still exerts a positive influence on GP visiting. The coefficients from the one-step negative binomial model are presented in Table 10 when only the five GP cover states are included (GP Cover Only) and when all the explanatory variables are also included (Full Set of Variables). The analysis for GP Cover Only confirms that GP visiting rates are higher for those with a Medical or GP Visit Card as compared to other categories of GP cover,<sup>63</sup> while even after taking into account the determinants of GP visits (Full Set of Variables), having a Medical or GP Visit Card still results in increased GP visits. Nevertheless, for the Full Set of Variables the difference between the value of the coefficients for Medical and GP Visit Card, on the one hand, and each of the remaining three GP cover categories has narrowed, suggesting that a patient moving from private to public GP cover does not

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<sup>61</sup> For a discussion of incentives under these two pricing systems see Brick *et al* (2010, Vol. 1, pp. 51-57) and Brick *et al* (2012).

<sup>62</sup> Nolan and Layte (2016, p. 28) report that “[A]nalyzing the decision to visit a GP using a two-step process, i.e., separating the decision to contact the GP from the decision of how frequently to visit, suggests that there is little difference in the effect of public healthcare eligibility across the two decisions.” One exception is noted, however.

<sup>63</sup> The differences between Tables 2 and 4 (GP Cover Only) in the text are due to differences in the sample size and the use of non-linear modeling techniques.

increase the number of GP visits to the extent indicated by a simple comparison of GP visits per annum.<sup>64</sup>

Table 10

Multivariate Analysis,<sup>a</sup> Impact of Public & Private GP Cover, Infant Cohort at Nine Months and Three Years, 2008/09 & 2010/11, Ireland.

Eligibility <sup>b</sup>	Nine Months <sup>c</sup>		Three Years <sup>c</sup>	
	GP Cover Only	Full Set of Variables	GP Cover Only	Full Set of Variables
Medical Card	1.033	0.887	1.308	1.082
GP Visit Card	0.573	0.566	0.799	0.799
PHI with GP Cover	0.392	0.418	0.668	0.782
PHI w/o GP Cover	0.204	0.274	0.387	0.569
No Cover	Reference	Reference	Reference	Reference

a. One-step negative binominal model

b. See text for definition of these five mutually exclusive eligibility categories.

c. Marginal effects from the estimated model. All were statistically significant at the 1 per cent level except for 0.204 where the level of significance was 5 per cent.

Source: Nolan and Layte (2016, Table 2.2, pp. 26-28) based on GUI

Of course, not all the need, socio economic and financial incentive characteristics may be captured by the set of the variables used in the multivariate analysis. There may be unobserved patient characteristics and financial incentives that might explain the different visiting rates by GP cover. For example, GP price discrimination is not captured. Proxies for the child's health using the mother's characteristics may not always be appropriate. As a result the estimates in Table 10 should be viewed as an upper bound on the impact of free GP care for those in the Infant Cohort.

The Infant Cohort has observations for the same child at two points in time (i.e. at nine months and three years).<sup>65</sup> Hence an alternative approach to measuring the impact of free GP care is to use this longitudinal aspect of GUI. Techniques can be employed which permit inferences to be made with respect to causation and, at the same time, control for unobserved individual level characteristics.

Nolan and Layte (2016) use Propensity Score Matching (PSM). This technique permits the matching of individuals that have the same characteristics but for the fact some individuals have either gained or lost a Medical Card between the two waves of the Infant Cohort – between 2008/09, the cohort at nine months, and 2010/11, the cohort at three years. There are two 'treatments' examined: gaining a Medical/GP Visit Card (where the control group are those children that remain as private patients at nine months and three years); and, losing a Medical/GP Visit Card (where the control group are those children that remain as public patients at nine months and three years).<sup>66</sup> The Control Group forms the counterfactual – what would have happened to those private patients who gained/lost a Medical Card. The experience of the Control and Treatment Groups are then compared to estimate the impact of

<sup>64</sup> These results for the Infant Cohort at three years of age are consistent with Denny (2015).

<sup>65</sup> Analysis has, as yet, to be undertaken using the Infant Cohort at five years.

<sup>66</sup> The number of transitions between the other categories of GP cover were too small to generate meaningful results (Nolan and Layte, 2016, fn. 40, p. 57).

gaining/losing a Medical Card. The use of this difference in difference approach, argue Nolan and Layte (2016, p.57) is that it “removes any variation in time-invariant unobserved characteristics between the treatment and control observations.”

The application of the PSM technique suggests that those who gain a Medical Card have between 0.6 and 0.7 extra GP visits per annum, while those who lose a Medical Card have between 0.1 and 0.2 fewer GP visits per annum (although the latter effect is statistically insignificant). The average number of GP visits prior to the change in eligibility for those gaining a Medical Card was 2.4. This means that the effect of gaining a Medical Card is to increase the average number of GP visits for this group by between 21 and 25 per cent. The research did not analyse the impact of gaining a GP Visit Card alone (compared to a Medical Card) so these estimates must be taken as upper bounds on any potential effect of gaining a GP Visit Card (assuming there is no 'pent-up' demand among those who become eligible for the GP Visit Card).

#### 4.3.3 TILDA: Fifty Years of Age and Older

The multivariate analysis conducted with respect to persons over 50 years of age follows that discussed earlier for the GUI Infant Cohort.<sup>67</sup> The negative binominal regression found as expected that those in poorer health visited the GP with greater frequency than those in better health, using self assessed health status, the extent of chronic illness (none, one, two or three), depression and whether obese. However, somewhat surprisingly a current smoker visited the GP less frequently than somebody who never smoked (but was only significant at the 10 per cent), while whether or not a person had problematic drinking did not affect GP visit frequency. Some socio economic variables had an impact such as marital status (other states than married went more frequently to see the GP), while education had no impact. Finally, income, as expected, had a negative effect, although it was only significant at 10%. It may be that the GP Cover categories are, to some extent, proxies for income, given the means tested nature of access to Medical/GP Visit Cards.

Taking into account the health status, socio economic factors, and income considerably reduces the impact of giving a private patient a Medical/GP Visit Card (Table 11). In the case of moving from No Cover, for example, to a Medical/GP Visit Card w/o PHI, the increase in the number of GP visits declines from 4.05 additional GP visits to only 1.46 additional GP visits. However, for a patient that moves from PHI to Medical/GP Visit Card w PHI the increase is smaller – an increase of 1.12 GP visits. As noted above this is a maximum since there may be determinants that are omitted from the Full Set of Variables equations that would account for some the remaining unexplained variance.

Ma and Nolan (2016) observe the same set of individuals, using TILDA, in 2009/11 and 2012/13. Hence they are able to apply propensity score matching (PSM), which was discussed in Section 4.3.2 above, to assess the impact of gaining (and losing) a Medical/GP Visit Card. For persons 50 years and over, application of PSM suggests that if a patient gains a Medical/GP Visit Card then, on average, this is associated with an extra 1.3 GP visits per year or an increase of 43 per cent. If attention is confined to

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<sup>67</sup> This draws on Hudson and Nolan (2015, Table 4, pp. 33-34).

those 70 years of over, the increase in GP visits is somewhat lower, 1.1/1.2. These PSM results are consistent with the cross section results.

Table 11

Multivariate Analysis,<sup>a</sup> Impact of Public & Private GP Cover, Over 50s, 2009/11, Ireland.

Eligibility <sup>b</sup>	2009/11 <sup>c</sup>	
	GP Cover Only <sup>d</sup>	Full Set of Variables <sup>e</sup>
Medical/GP Visit Card w/o PHI	4.050	1.456
Medical/GP Visit Card w PHI	3.741	1.633
PHI	0.441	0.508
No Cover	Reference	Reference

- a. One-step negative binomial model
- b. See text for definition of the four mutually exclusive eligibility categories.
- c. Coefficients from the estimated model. All were statistically significant at the 1 per cent level.
- d. The equation contained only the four GP cover categories.
- e. The equation contained the four GP categories plus the full set of explanatory variables.

Source: Hudson and Nolan (2015, Table 4, pp. 33-34) based on TILDA

#### 4.4 Conclusion

The results from retrospective patient self-reporting surveys of GP visits/consultations in GUI, TILDA and QNHS<sup>68</sup> suggest that

- Persons on a Medical/GP Visit Card have a lower health status, lower levels of education and lower levels of income. In other words, they have a higher demand for GP services than those with PHI or No Cover. Factors such as health status explain a considerable proportion of the variance in GP visiting rates.
- Taking into account these determinants of GP visits (i.e. patient ‘need,’ socio economic characteristics and financial incentives), results in a reduction in the difference between the GP visit rates of public and private patients. For example, for the over 50s, the difference in annual GP visits for a private patient with no private health insurance as compared to a public patient (Medical/GP Visit Card) falls from 4.1 to 1.5.
- These cross section results are reinforced by comparing children that lose or gain a Medical Card between nine months and three years, with similar individuals that did not experience a change in their GP cover status over the same period. The results suggest that a person gaining a Medical Card will increase the number of GP visits per year between 0.6 and 0.7 or a 25 per cent increase.
- Taken together this means that it is inappropriate to argue that if all those on No Cover or PHI were to receive a Medical/GP Visit Card that they would replicate the same GP visiting rates as

<sup>68</sup> These inferences are also consistent results based in LIIS and EU-SILC. See Nolan and Nolan (2007) for details.

those on a Medical/GP Visit Card. Indeed, the latter is very much an upper bound of the likely impact of rolling out free GP care across the population.

## V CONCLUSION: FREE GP CARE - HOW MANY EXTRA GP VISITS?

### 5.1 Introduction

Behan *et al* (2013, 2014) have argued that if private patients were to replicate the GP visiting rates of GP Visit Card holders then, for the population as a whole, there would be an extra 4.4 million or 23 per cent extra GP visits per year; for those under 6 there will be an increase of 0.59 million GP visits per year.<sup>69</sup> In other words, private patients will record 5.06 GP visits per year on receiving a free GP Visit Card, rather than 3.35 visits. These estimates have been used by GP representative bodies in their engagement with the HSE over setting remuneration for free GP care. The NAGP, for example, cited Behan *et al* (2014) in bringing an unsuccessful High Court action against the HSE concerning the under 6 free GP contract,<sup>70</sup> while the IMO (2014) cited the same source in stating that GP's surgeries would be "overwhelmed" with the extension of free GP care to those under 6.

In this section, drawing together the threads of the argument developed in this paper, we consider Behan *et al* (2013, 2014) estimates under three headings: GP visit rates of means tested as compared to free GP Visit Card holders; counting healthy private patients; and, differences in health status/demand for GP visits between those in receipt of public GP cover as compared to those in receipt of private GP cover. The first two headings are concerned with a critical examination of Behan *et al* (2013, 2014), while the third suggests alternative better grounded estimates of the likely increase in the number of GP visits due to the roll out in free GP care drawing on Section IV.

We conclude with a postscript on a paper prepared for the HSE, McGovern (2015), on the likely increase in demand for GPs based on projections for the impact of free GP care for all.

### 5.2 Means Tested vs. Free GP Visit Card GP Visiting Rates

Implicit in the approach of Behan *et al* is that the GP visiting rates of patients with a means tested GP Visit Card are representative of private patients that will have a free GP Visit Card once the State has rolled out free GP care. In other words, given that the population of persons eligible for means tested GP Visit Cards and the population of private patients share the same characteristics that determine the demand for GP services – an assumption we will relax in Section 5.4 – then Behan *et al* assume that persons in receipt of means tested GP Visit Cards are representative of those that will have a free GP Visit Card.

Qualification for a means tested GP Visit Card requires, the completion of a 12 page form seeking information on, *inter alia*, the applicant's income, wealth (e.g. investments, property), expenses (e.g.

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<sup>69</sup> For the under 6s, Behan *et al* (2014) actually cite a figure of 0.75 million additional visits. However, this appears to exclude out of hours and telephone consultations which are included in the estimates for the population as a whole. Hence in order to ensure comparability and consistency with the definition of a GP consultation used by Behan *et al* we include out of hours and telephone consultations in the under 6s estimates.

<sup>70</sup> Williams (2015, para. 46).

rent, mortgage, house insurance), travel to work costs, together with accompanying documentation.<sup>71</sup> In contrast, a free GP Visit Card requires the completion of a four page form seeking the patient's name, date of birth, gender, PPS number, and choice of GP.<sup>72</sup> Application for a means tested and free GP Visit Card can be either through hard copy or online.

Two testable propositions emerge from this discussion:

- First, in view of the higher costs of applying for a means tested as opposed to a free GP Visit Card, other things being equal, a smaller proportion of the eligible population for a means tested GP Visit Card will hold a GP Visit Card compared to the corresponding take up percentage of those eligible for a free GP Visit Card.
- Second, the greater the frequency with which a patient is likely to visit a GP, the more likely it is an eligible patient will apply for a GP Visit Card. In other words, in deciding whether or not to apply for a means tested or a free GP Visit Card the patient will compare the costs, in terms of time and effort, of completing the application form with the benefits – avoiding the payment, on average, of €50 per GP visit.

Taken together, if these two propositions hold, the GP visiting rates of means tested GP Visit Card holders will be higher than the GP visiting rates of patients likely to be in receipt of a free GP Visit Card, even if the underlying demand for GP services is the same in the population of those eligible for means tested and free GP Visit Cards.

In terms of the first proposition, Callan *et al* (2015, Table 8, p. 17), find only one in four those eligible for means tested GP Visit Cards have such a Card. In contrast, for those under 6, between 1 July 2015 and 31 December 2015, 220,890 under 6s, or 80 to 90 per cent of those eligible for a free GP Visit Card, had signed up for the free GP Visit Card.<sup>73</sup> At the same time, 93 per cent of GPs had signed the under 6 GP

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<sup>71</sup> Note that the same form has to be completed for a means tested Medical Card. For details see [http://www.hse.ie/eng/services/list/1/schemes/mc/forms/Medical\\_Card\\_GP\\_Visit\\_Card\\_Application\\_Form.pdf](http://www.hse.ie/eng/services/list/1/schemes/mc/forms/Medical_Card_GP_Visit_Card_Application_Form.pdf) accessed 26 April 2016).

<sup>72</sup> See <https://www.pcrsonline.ie/libr/html/Under6sForm.pdf> for the application form for the under 6s, accessed 26 April 2016.

<sup>73</sup> The population of under 6s in 2011 was 421,266, based on CSO (2012, Table 2, pp. 36-37). The number of persons age under 6 with a Medical Card or a means tested GP Visit Card in 2013 was 150,798 (HSE, 2014, Table 7, pp. 30-37) and 15,333 (HSE, 2014, Table 8, pp. 38-45), respectively. (HSE (2014) provided such data for those in the age groups under 5 and 5 to 11, so that prorating with respect to the latter age group was necessary in order to estimate the number of persons under 6 with a means tested Medical or GP Visit Card). Approximately 39 per cent or 255,535 persons (i.e. 421,266-(150,798+15,333)) under 6 were not in receipt of a Medical Card or means-tested GP Visit Card in 2013. The HSE, personnel communication, 29 January 2016, reported 220,890 under 6s had register by 31 December 2015 (and 216,329 had been accepted onto GP panels) or 86 per cent (220,890/255,535) of those eligible for free GP care under 6. It is recognised, of course, that a number of approximations and assumptions have been based to derive this percentage, but is nevertheless considered indicative of the success of the extension of free GP care to the under 6s.

contract by 2 November 2015.<sup>74</sup> The GP sign-up rate varied from 100 per cent of GPs in Roscommon to 77 per cent in Dun Laoghaire. Hence the first proposition is consistent with the data.

In terms of the second proposition, we do not have evidence of the health of those holding a means tested GP Visit Card as compared to those eligible for a means tested GP Visit Card, but not in possession of such a Card. However, Callan *et al* (2015) provide such indicators but with respect to the Medical Card. The same reasoning that applies to the means tested GP Visit Card also applies to the Medical Card. The evidence suggests that those with a Medical Card are in a worst state of health as compared to those persons eligible for a Medical Card but not in receipt of one (Table 12). For example, 50 per cent of those with a Medical Card reported as having a chronic illness, whereas amongst those eligible but without a Medical Card, only 16 per cent reported having a chronic illness.

Table 12

Medical Card, Eligibility & Take-Up, Health Indicators, Population Over 15, Ireland, 2010

Health Indicator	Eligible & Hold Medical Card	Eligible & Do Not Hold a Medical Card
% Very good/good health	67	93
% fair, bad/very bad health	33	7
% with a chronic illness	50	16

Source: Callan *et al* (2015, Table 5, p. 15).

The issue thus becomes how to adjust the GP visit rate of 5.06 of holders of means tested GP Visit Cards so that it is representative of all those eligible for means tested GP Visit Card. The adjusted GP visit rate will be weighted average of the GP visit rate of the one in four of those eligible and holding a means tested GP Visit Card (i.e.  $0.25 \times 5.06$ ) plus the three in four of those eligible for but not holding a means tested GP Visit Card (i.e.  $0.75 \times Y$ ). The issue is thus the magnitude of Y.

The patient in applying for a means tested GP Visit Card will consider the benefits in terms of avoiding a €50 per GP visit charge with the time and effort of completing the means tested GP Visit Card form. We assume that the patient values his/her time at (say) €10 per hour, somewhat above the minimum hourly wage of €9.15 per hour since 1 January 2016. Thus if completion of the application form for a means tested GP Visit Card, including any time to seek assistance from a Citizens Advice Bureau or a local TD, takes less than five hours the benefits of completing the form would be greater than the costs if the patient anticipated visiting a GP at least once in the next year; less than 10 hours, twice in the next year.

It seems reasonable to assume that completing the form is likely to take less than 10 hours (may be less than five). Hence if Y is set equal to two, then the adjusted GP visit rate of for means tested the GP Visit Card is not 5.06 but rather 2.8 (i.e.  $0.25 \times 5.06 + 0.75 \times 2$ ). Since this is scarcely above the current GP visit rate of private patients – 3.4 – it implies that the impact of free GP care, based on the six GP practice administrative records, will result in a small *reduction* in the number of GP visits - 0.6 visits per person as a result of free GP care. In other words, there is likely to be little change in the demand for GP visits, as a result of free GP care, once Behan *et al's* (2013, 2014) means tested GP Visit Card GP visit rate is

<sup>74</sup> HSE, personnel communication, 8 December 2015. The data refer to those GPs signed up as of 2 November 2015.

adjusted to take into account those patients that are eligible for a means tested GP Visit Card but are not in receipt of such a Card.

### 5.3 Counting Private Patients

Section 3.6.4 established that Behan *et al* (2013, 2014) had, given its methodology, was likely to considerably underestimate the proportion of private patients that visited a GP over the period studied by the authors. Hence the GP visit rate of private patients presented by Behan *et al* needs to be adjusted to reflect this underestimate. The results are set out for the population (Table 13) and those under 6 (Table 14). The current GP visiting results of Behan *et al* are presented in panel A, together with Behan *et al*'s estimates of the impact of awarding free GP care, based on the assumption that private patients visit GPs with the same frequency as holders of GP Visit Cards (panel B); panel C corrects panel A for Behan *et al*'s underestimate of the proportion of private patients that visit a GP.

Table 13

Impact of Free GP Care on GP Visits, Various Assumptions, All Persons, Ireland,

Panel A: as per Behan <i>et al</i> (2013)			
GP Cover	Population (Million)	GP Visits (number, per year)	Total GP Visits (million)
Public	1.99	5.06	10.1
Private	2.60	3.35	8.8
Total	4.59	-	19.1
Panel B: private patients replicate GP visit rate of GP Visit Card holders			
Public	1.99	5.06	10.1
Private	2.60	5.06	13.2
Total	4.59	-	23.3
Panel C: panel A corrected for underestimate of % of private patient that visit a GP (italics)			
Public	1.99	5.06	10.1
Private	2.60	<i>4.8</i>	<i>12.5</i>
Total	4.59	-	22.6

Source: Behan *et al* (2013) and text.

Correcting Behan *et al* (2013) for underestimating the visiting rate of private patients that did not visit their GP in the year in question suggests that, for the population as a whole, the increase in GP visiting due to the roll out of free GP care will be 0.7 million additional visits or 3 per cent (panel B compared to panel C), not Behan *et al*'s (2013) estimate of 4.4 million or 23 per cent, respectively (panel B compared to panel A).

The differences are not so dramatic for those under 6. Instead of an extra 0.59 million GP visits due to free GP care for those under 6 based on Behan *et al* (2014), the estimated increase should be closer to 0.3 million. In other words, the actual increase in GP visits due to the provision of free GP care to the under 6s will be half that based on the unadjusted or raw Behan *et al* (2014) numbers.

Table 14

Impact of Free GP Care on GP Visits, Various Assumptions, Under 6s, Ireland, 2010

Panel A: as per Behan <i>et al</i> (2014) adjusted for out of hours/telephone consultations <sup>a</sup>			
GP Cover	Population (Million)	GP Visits (number, per year)	Total GP Visits (million)
Private	0.25	2.72	0.68
Panel B: private patients replicate GP visit rate of GP Visit Card holders, adjusted for out of hours/telephone consultations <sup>a</sup>			
Private	0.25	5.1	1.27
Panel C: panel A corrected for underestimate of % of private patient that visit a GP (italics), adjusted for out of hours/telephone conversations <sup>a</sup>			
Private	0.25	3.89	0.97

a. For details see footnote 69 of the text.

Source: Behan *et al* (2014) and text.

#### 5.4 Health Status/Demand for GP Services

The methodology used by Behan *et al* to estimate the impact of free GP care makes the assumption that public (i.e. those patients with a GP Visit Card)<sup>75</sup> and private (i.e. those patients without a GP Visit Card or a Medical Card) would visit the GP with the same frequency *but* for the fact that private patients do not have access to free GP care. Implicit in this approach is the view that public and private patients share the same characteristics that determine the demand for GP services in terms of patient ‘need,’ socio-economic factors and financial incentives, except for the fact that one group has to pay for GP services. According to this line of argument once private patients are in receipt of a free GP Visit Card they will visit GPs with the same frequency as those currently in receipt of such a Card.

Behan *et al* (2013) offer no evidence that those private patients without a GP Visit Cards share similar characteristics to those with a GP Visit Card with respect to the demand for GP services, merely stating that [W]ere private patients to attend at the same rate as GPVC [GP Visit Card] patients, then one might anticipate an increase ...<sup>76</sup> Furthermore, while Behan *et al* (2013, 2014) acknowledging some limitations in their estimates, different characteristics between private and public patients is not listed. In contrast, Williams (2015, para. 51), who approvingly cites Behan *et al*, states when considering the impact of the extension of free GP care for the under 6s that it will result in “far too much of GPs’ scarce time and resources ... [being devoted] to a large cohort of newly imported ‘patients’ in rude health ...”

GUI, TILDA and QNHS all provide extensive reports of the determinants of GP visits by GP cover status taking into account the threefold classification of Nolan and Nolan (2007) set out in Section 4.1. The results were presented in Sections 4.2 (patient characteristics by GP cover category) and 4.3 (multivariate analysis). Public patients have a lower health status, lower levels of education and lower levels of income than private patients. In other words, they are likely to have a higher demand for GP services. Factors such as health status explain a considerable proportion of the variance in GP visiting

<sup>75</sup> The same reasoning applies to a Medical Card.

<sup>76</sup> A similar statement appears in Behan *et al* (2014).

rates. Furthermore, a substantial proportion – around a quarter of all patients 5 and under<sup>77</sup> - had PHI with GP cover and this may partly mitigate the cost of a GP visit.<sup>78</sup> Taken together this means that it is inappropriate to argue that if private patients were to receive a GP Visit Card that they would replicate the same GP visiting rates as those on a means tested GP Visit Card. Indeed, the latter is very much an upper bound of the likely impact of rolling out free GP care across the population.

In sum, Behan *et al's* assumption that private patients will assume the same GP visiting rates as public patients is likely to overstate the increase in demand for GP services as free GP care is extended to private patients.

### 5.5 How Many Extra GP Visits?

There can be little doubt that Behan *et al* (2013, 2014) estimates of the impact of free GP care, irrespective of income, are too high. Three reasons were discussed in Sections 5.2 to 5.4 all of which, it is argued, mean that Behan *et al* overestimates of the increase in GP visits due to free GP care for all. We have only been able to correct Behan *et al* for two of these – correcting the means tested GP Visit Card GP visit rate to take into account the behaviour of those patients eligible for a means tested GP Visit Card, but not in receipt of such as Card and in relation to the treatment of private patients that did not visit a GP practice. The former suggests that free GP care will lead to little change in the demand for GP services. The latter reduces Behan *et al's* estimate of the impact of free GP care for the whole population from an extra 4.4 million or 23 per cent GP visits per year to 0.7 million and 2.5 per cent, respectively (Table 13). If attention is confined to those under 6, then instead of an additional 0.59 million GP visits, the figure is 0.3 million (Table 14). However, these revised or adjusted estimates should be very much viewed as maximum estimates since the Behan *et al's* estimates have not been adjusted to take into account health need.

In contrast to the administrative sources used by Behan *et al*, the retrospective self-reported GUI, TILDA and QHNS have the potential to quantify the impact of free GP care by taking into account the determinants of GP visits such as patient need and socio economic factors. On a cross section basis taking into account these determinants typically results in a considerable narrowing of the difference in GP visiting rates between public and private patients. In other words, moving from a being a private to a public patient results in a smaller increase in GP visits as compared to an examination of unadjusted GP visiting rates.

These findings are confirmed by a comparison of individuals that gain a GP Visit Card between two dates, with similar individuals that did not experience a change in their GP cover status over the same period. However, in view of the small number of individuals that change status in these surveys and the need for a large enough sample for statistical purposes, GUI has only been able to gauge the impact of awarding of a Medical Card to a person that did not have such Card between nine months and 3 years,

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<sup>77</sup> See Table 1.

<sup>78</sup> As shown in Table 8 the incomes of those on PHI with and w/o GP cover are much the same. Hence it may be that those patients that expect to have a higher number of GP visits take out PHI with GP cover. There is some evidence to support this since the average number of GP visits is higher for those with as opposed to those w/o GP cover (Table 2).

while for TILDA the transition is for those gaining a Medical or GP Visit Card between 2009/11 and 2012/13. The results, reported in Section 4.3.2 for GUI, suggested that a person gaining a Medical Card will increase the number of GP visits per year between 0.6 and 0.7. Given a prior visiting rate of 2.4, this implies a 25 per cent increase. The corresponding numbers for TILDA, presented in Section 4.3.3, suggest that for those 50 and over gaining Medical/GP Visit Card is associated with an increment 1.3 GP visits per year or an extra 43 per cent.

### 5.5 *Postscript: A Paradox?*

In a recent report prepared for the HSE on the future demand for GPs, McGovern (2015) estimates that extending free GP care to all in 2015 would have resulted in an increase in the number of GP visits by 3.4 million or 23 per cent (*ibid*, Table 6, pp. 21-23). It is this report which, in part, has led to the more gradual approach to extending free GP care noted in the opening paragraph of this paper.

McGovern's (2015) results pose something of a paradox. On the one hand, GUI, TILDA, QNHS and SILC are used as data sources by McGovern (2015, p. 20), not Behan *et al* (2013, 2014)'s six GP administrative practice records, while McGovern (2015, p 20) in "estimating the change in consultation rates should free GP care be introduced, adjustments were made to account for the association between deprivation and poor health outcomes, among other factors." This is very much in the thrust of the approach suggested in this paper.

On the other hand, however, McGovern (2015)'s overall estimate of the increase in demand for GP services due to free GP care is quite similar to that of Behan *et al* (2013) set out in Table 13. Indeed, if attention is confined to private patients, then Behan *et al* (2013) predict an increase of 4.4 million GP visits or 50 per cent for such patients as a result of free GP care, while the corresponding numbers for McGovern (2015, Table 6, pp. 21-23) are 3.4 million and 55 per cent, respectively.

McGovern (2015) presents a table detailing, for seven age groups,<sup>79</sup> the annual number of GP visits for public and private patients for 2015, together with an estimate of the impact of free GP care for each age group. However, McGovern does not relate the annual number of GP visits to the various data sources that were used to derive these GP visit rates for public and private patients, nor is the underlying research on which the estimated increase in demand for GP visits occasioned by the introduction of free GP care cited. However, McGovern (2015, p. 20) states that these estimated were "derived from the best available information." It is not clear if it includes all of the references cited in this paper. Hence it is difficult to comment on McGovern (2015) without further background information on sources and assumptions. Nevertheless, some observations can be made.

First, we compare McGovern's (2015, Table 6, pp. 21-23) GP visits rates for private and public patients,<sup>80</sup> by age group, with those presented in this paper. In making these comparisons we rely on GUI for those aged 0-5 and 6-11,<sup>81</sup> QNHS for those aged 18-44,<sup>82</sup> and, TILDA for those aged 45-64, 65-69 and 70+.<sup>83</sup> It

<sup>79</sup> 0-5, 6-11, 12-17, 18-44, 45-64, 65-69, 70+.

<sup>80</sup> McGovern (2015) uses the terms covered and uncovered rather than public and private patients.

<sup>81</sup> There is no alternative source of which we are aware for these age groups.

<sup>82</sup> GUI and TILDA do not cover this age group.

is to be expected that there will be differences with McGovern since, for example, differing weights might be used to aggregate the underlying more detailed age groups for which data is reported in the various data sources used both by McGovern and in this paper. Furthermore, McGovern relies on not only GUI, TILDA and QNHS, but also on SILC, but as pointed out above this data source contains a narrow set of information on GP visits with the recall period of four weeks not a year.<sup>84</sup>

McGovern's estimates of GP visits for public and private patients are present in column 1 of Table 15, while the estimates presented in this paper are included in column 2, under the heading 'Alternative.' In a number of cases the GP visit rates are, as expected, quite similar (e.g. 6-11, private patients, 18-44 public and private patients, 45-64, 70+ public patients). Nevertheless, there are some striking differences: for those aged 0-5, McGovern suggests that there is little difference in GP visit rates between public and private patients (3.2 vs. 3.0), whereas the data reported in this paper suggests that this is not the case (3.5 vs. 2.3); for those aged 6-11, McGovern records a GP visit rate for public patients 2.6, compared to 1.4 in this paper; and, for those 70+ McGovern reports a GP visit rate for private patients of 4.1 compared to 3.0 in this paper. Finally, it is not at all clear that the underlying data sources – GUI, SILC, QNHS and TILDA - report public and private GP visit rates for those 12-17.

Nevertheless, notwithstanding these differences neither McGovern nor the Alternative estimates of the number of GP visits by Medical/GP Visit Card patients accord with the 2016 *A Programme for a Partnership Government's* estimate of six annual GP consultations for such patients.<sup>85</sup> Based on Table 15, the average number of GP visits for a Medical/GP Visit Card patient is 4.6 for McGovern and 4.4 for Alternative.<sup>86</sup> Such a difference may account in part for the *Programme for a Partnership Government* claim that extending free GP care to those under 18 "will require a substantial increase in GP numbers to support the additional workload."<sup>87</sup>

Second, we compare McGovern's estimates of the increase in the number of GP visit rates for private patients (column 3 of Table 13) with those reported in this paper (column 4 of Table 13). In each case we report the absolute increase in the number of GP visits and the percentage increase. As can be readily observed, over several of the age groups no estimate of the likely increase in the number of GP visit occasioned by free GP care have been made in this paper.

Apart from those aged 0-5, McGovern (2015) typically predicts that the provision of free GP care will result in a larger percentage increase than the results reported in this paper, although the absolute difference is the same for those aged 45-64. In four of the seven age groups McGovern (2105) predicts

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<sup>83</sup> While it is the case that QNHS reports GP visit rates for these age groups (CSO, 2011a, Table 1.3, p. 4), there is an overlap between Medical/GP Visit Card w & w/o PHI and PHI w & w/o Medical/GP Visit Card (i.e. Medical/GP Visit Card and PHI). The importance of the overlap in QNHS increases as age increases (*ibid*, Table 1, p. 10). TILDA does not suffer from this problem.

<sup>84</sup> See footnote 10 above.

<sup>85</sup> Government of Ireland (2016, p. 53).

<sup>86</sup> The population weights are taken from McGovern (2015, Table 6, pp. 21-23). The number of GP visits from Table 15 in the text, with in the case of Alternative the use of McGovern's estimate for those 12-17.

<sup>87</sup> Government of Ireland (2016, p. 55).

an 80 per cent or more increase, in five or more 60 per cent of more increase. In contrast, the results reported in this paper suggest a range of 21 to 43 per cent.

Furthermore, while McGovern (2015) suggests that the increase in the number of GP visits increases between those aged 45-64 compared to those aged 65-69, and 70+, the reverse was suggested in Section 4.3.3 when a comparison is made for those 70+. Furthermore, for those 70+ McGovern (2015) predicts that if private patients were given free GP care their GP visit rate would increase from 4.1 to 6.2, which is *above* the GP visit rate of 5.6 for public patients of this age group. This does not seem a tenable result in view of the findings reported in Table 9 of the generally better health of private as compared to public patients 70+, where such comparisons could be made.

It thus appears that part of the paradox identified above is that the rates of increase in GP visits due to free care used by McGovern (2015) are much greater than those reported in this paper, with the exception of those aged 0-5.

Table 15

Estimates of GP Visits Rates, Public & Private Cover, Impact of Free GP Care, by Age Group, Ireland

Eligibility	Age	No of GP visits per year		Increase in GP visits if private patients received free GP care: no & %	
		McGovern	Alternative	McGovern	Alternative
		(1)	(2)	(3)	(4)
Medical/GP Visit Card	0-5	3.2	3.5 <sup>a</sup>	0.1 or 3.3%	0.6-0.7 or 21-25% <sup>l</sup>
Private Patient		3.0	2.3 <sup>a</sup>		
Medical/GP Visit Card	6-11	2.6	1.4 <sup>b</sup>	0.7 or 87.5%	- <sup>m</sup>
Private Patient		0.8	0.8 <sup>b</sup>		
Medical/GP Visit Card	12-17	2.8	- <sup>c</sup>	1.2 or 80%	- <sup>m</sup>
Private Patient		1.5	- <sup>c</sup>		
Medical/GP Visit Card	18-44	4.8	4.6 <sup>d</sup>	1.3 or 61.9%	- <sup>m</sup>
Private Patient		2.1	2.0 <sup>e</sup>		
Medical/GP Visit Card	45-64	5.8	5.7 <sup>f</sup>	1.3 or 61.9%	1.3 or 43% <sup>n</sup>
Private Patient		2.1	2.4 <sup>g</sup>		
Medical/GP Visit Card	65-69	5.2	5.6 <sup>h</sup>	2.1 or 80.8%	1.3 or 43.3% <sup>n</sup>
Private Patient		2.6	3.2 <sup>i</sup>		
Medical/GP Visit Card	70+	5.6	5.4 <sup>j</sup>	2.1 or 51.2%	1.3 or 43.3% <sup>n</sup>
Private Patient		4.1	3.0 <sup>k</sup>		

a. Table 7 above.

b. Williams *et al* (2009, Figure 5.2, p. 67). The data source presented GP visit rates by gender (a simple average was taken) and for private patients (i.e. "No Card") and public patients. The latter were divided into those with a Medical Card and those with a GP Visit Card. A weighted

average of these two GP visit rates was used, with the weights being derived from the number of persons with a Medical Card and a GP Visit Card as of December 2007, taken from HSE (2008, p. 11).

- c. No estimate available from GUI, QNHS or TILDA.
- d. CSO (2011a, Table 1.3, p. 4) provides GP visit rates for Medical/GP Visit Card holders aged 18-24, 25-34 and 35-44. CSO (2012, Table 2, pp. 36-37) provides population data for 2011 for these age groups which can then be used as weights to derive the 18-44 Medical/GP Visit Card GP visit rate.
- e. CSO (2011a, Table 1.3, p. 4) provides GP visit rates for PHI and No Cover aged 18-24, 25-34 and 35-44, while Table 1, p. 10 provides data on the share of PHI (i.e. "PHI Only" plus "Both") and No Cover, which can be used to estimate the weighted average of GP visits for private patients aged 18-24, 25-34 and 35-44. CSO (2012, Table 2, pp. 36-37) provides population data for 2011 for these age groups which can then be used as weights to derive the 18-44 private patient GP visit rate.
- f. Table 4 above for Medical/GP Visit Card for 50-59 and 60-64. The weights to estimate the GP visit rate for these two age groups combined were obtained from the underlying TILDA data. TILDA refers to 2009-2011.
- g. The weighted average of the GP visits for 50-59 and 60-64 of No Cover and PHI, where the weights are taken from the shares in Table 3 and the GP visit rates from Table 4. The weights to estimate the GP visit rate for these two age groups combined were obtained from the underlying TILDA data. TILDA refers to 2009-2011.
- h. Table 4 above.
- i. The weighted average of the GP visits of No Cover and PHI, where the weights are taken from the shares in Table 3 and the GP visit rates from Table 4.
- j. Table 7 above.
- k. Tables 3 and 4 are used to estimate GP visits of private patients for those 70-79 and 80+, since we have the overall GP visit rate and the public GP visit rate so the private GP visit rate can be derived. The weights to estimate the GP visit rate for these two age groups combined were obtained from the underlying TILDA data. TILDA refers to 2009-2011.
- l. Section 4.3.2 above
- m. No estimate
- n. Section 4.3.3 above.

Source: McGovern (2015, Table 6, pp. 21-23) and table footnotes.

Third, in order to make sensible public policy decisions concerning the impact of free GP care for all and the implications for GPs it is important that the basis on which those decisions are made should be as transparent as possible. That way debate and discussion can take place. Optimal policy is the likely outcome of such a process. The alternative and McGovern (2015) estimates of GP visits and the impact of free GP care presented in Table 15 differ in some important respects. However, we have no way of knowing the reasons for the disparity. It is therefore vitally important that the underlying assumptions and precise sources for McGovern (2015) with respect to free GPs is published so that an appropriate debate and discussion can take place on the impact of free GP care.<sup>88</sup>

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<sup>88</sup> A similar statement applies to the Government of Ireland (2016, p. 53) estimate of six annual GP consultations per Medical Card patient.

## Annex 1

### Estimating the Impact of Using Age Corrected Adjustment Factors in Estimating GP Visits for Private Patients from Administrative Records of GP Surgeries

The average number of GP visits per patient can be defined as: total number of GP patient visits (NV)/total number of patients (TP). The total number of patients can be divided into those patients that visited the GP at least once (PV) and those that did not visit the GP (PNV).

Behan *et al.* (2013) collect, for each age group across six GP practices, the number of total number of GP visits (NV) and the number of patients who visited the GP surgery at least once during the year in question (PV). The ratio of NV to PV is an inappropriate measure of the average number of GP visits per patient because no account is taken of those patients that do not visit the GP during the year in question (PNV).

Behan *et al.* (2013) are able to estimate, for those patients with a Medical/GP Visit Card registered with one of the six GP practices, the number of such patients that did not visit one of the six GP practices. This reflects the fact that a patient with a Medical/GP Visit Card receives GP care from a specific GP practice, which receives a capitation payment in return, irrespective of whether or not the patient visits the GP.

Table A1.1

Illustrative Example of the Impact of Use of Non-Age Specific Correction Rates to Estimate Number of GP Visits, Private Patients, Selected Age Groups

	Total Number of GP Visits <sup>a</sup>	Number of Patients With At Least One Annual GP Visit <sup>a</sup>	Proportion of Age Group With At Least One Annual GP Visit <sup>a</sup>	Average Number of GP Visits Per Patient
Age Group				
18-24	NV <sub>1</sub>	PV <sub>1</sub>	0.57	0.57(NV <sub>1</sub> /PV <sub>1</sub> ) <sup>b</sup>
65-69	NV <sub>2</sub>	PV <sub>2</sub>	0.57	0.57(NV <sub>2</sub> /PV <sub>2</sub> ) <sup>c</sup>
All	NV <sub>ALL</sub>	PV <sub>ALL</sub>	0.57	0.57(NV <sub>ALL</sub> /PV <sub>ALL</sub> ) <sup>d</sup>

a. Based on QNHS data for 2010 for patients without Medical /GP Visit Card or PHI cover.

b.  $NV_1/(PV_1/0.57)=(NV_1/(PV_1 \times 1.75))=0.57(NV_1/PV_1)$

c.  $NV_2/(PV_2/0.57)=(NV_2/(PV_2 \times 1.75))=0.57(NV_2/PV_2)$

d.  $NV_{ALL}/(PV_{ALL}/0.57)=(NV_{ALL}/(PV_{ALL} \times 1.75))=0.57(NV_{ALL}/PV_{ALL})$

Source: CSO (2011a, Table 1.3, p. 4) and text.

In contrast, Behan *et al.* (2013) are unable, for private patients, to estimate the visiting levels of those patients that did not visit the selected GP surgeries within the year in question. Behan *et al.* (2013) thus need to make an assumption of the magnitude of GP visiting for those private patients that did not visit a GP practice. As noted in Section 4.5 Behan *et al.* (2013) use the proportion of those over the age of 18 years of with at least one GP visit – from the QNHS Quarter 3 ‘Health Status and Health Service

Utilisation’ – to correct for those private patients that did not visit a GP. This proportion for private patients – defined as those without PHI or Medical/GP Visit Card cover – was 0.57.<sup>89</sup>

Table A1.1 presents the results of using 0.57 when applied to the data on the total number of visits and the number of patients with at least one GP visit for two age groups and all age groups. As can be readily observed the impact is to reduce, not surprisingly, NV/PV by 0.57 for all age groups.

Instead of using the proportion of those over the age of 18 years of age with at least one GP visit, Behan *et al.* (2013) could have used age specific correction factors: the proportion of those in the *i*th age group with at least one GP visit, rather than the proportion across all age groups. Table A1.2 uses the former approach to measuring the average number of GP visits. As can be seen the use of these age specific correction factors leads to a greater lowering of the GP visit rate for younger compared to older persons, since younger persons tend not to visit the GP as much as older persons (i.e. 0.52<0.77).

Table A1.2

Illustrative Example of the Impact of Use of Age Specific Correction Rates to Estimate Number of GP Visits, Private Patients, Selected Age Groups

	Total Number of GP Visits <sup>a</sup>	Number of Patients With At Least One Annual GP Visit <sup>a</sup>	Proportion of Age Group With At Least One Annual GP Visit <sup>a</sup>	Average Number of GP Visits Per Patient
Age Group				
18-24	NV <sub>1</sub>	PV <sub>1</sub>	0.52	0.52(NV <sub>1</sub> /PV <sub>1</sub> ) <sup>b</sup>
65-69	NV <sub>2</sub>	PV <sub>2</sub>	0.77	0.77(NV <sub>2</sub> /PV <sub>2</sub> ) <sup>c</sup>
All	NV <sub>ALL</sub>	PV <sub>ALL</sub>	0.57	0.57(NV <sub>ALL</sub> /PV <sub>ALL</sub> ) <sup>d</sup>

a. Based on QNHS data for 2010 for patients without Medical /GP Visit Card or PHI cover.

b.  $NV_1/(PV_1/0.52)=(NV_1/(PV_1 \times 1.92))=0.52(NV_1/PV_1)$

c.  $NV_2/(PV_2/0.77)=(NV_2/(PV_2 \times 1.30))=0.77(NV_2/PV_2)$

d.  $NV_{ALL}/(PV_{ALL}/0.57)=(NV_{ALL}/(PV_{ALL} \times 1.75))=0.57(NV_{ALL}/PV_{ALL})$

Source: CSO (2011a, Table 1.3, p. 4) and text.

If we compare the two tables we can observe that failure to apply age specific correction factors will impart an *upward bias* to the number of GP consultations from the six GP practices for *younger* persons, not on a Medical Card/GP Visit Card or covered by PHI, since, for 18-24 year olds,

$$0.57(NV_1/PV_1) > 0.52(NV_1/PV_1),$$

and a *downward bias* for the number of GP consultations from the six GP practices for *older* persons, since for 65-69 year olds,

$$0.57(NV_1/PV_1) < 0.77(NV_1/PV_1).$$

<sup>89</sup> In Section 4.5 0.70 is used which refers to those without a Medical/GP Visit Card. The age specific correction rates used in Table A1.2 are presented by the CSO (2011a, Table 1.3, p. 4) for three categories: those on a Medical/GP Visit Card; those with PHI; and those with neither. We use the latter. No age specific correction rates are presented for those without either a Medical Card or a GP Visit Card.

The bias is greater for older as compared to younger age groups. This reflects the fact that the proportion of private patients with at least one GP visit per year is a weighted average of these proportions across the various age groups. Since other things being equal, the younger age groups will be weighted more heavily and the overall average will be more reflective of their behaviour than older persons.

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<sup>90</sup> All page references in the text refer to the 2014 draft manuscript.

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	532	An Examination of energy efficiency retrofit depth in Ireland <i>Matthew Collins and John Curtis</i>
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