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Department of Public Expenditure and Reform

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Medical Workforce Analysis

Ireland and the European Union compared

Labour Market & Enterprise Policy Division

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** This paper has been prepared by the Labour Market and Enterprise Policy Division of the Department of Public Expenditure and Reform. The views presented in this paper are those of the author alone and do not represent the official views of the Department of Public Expenditure and Reform or the Minister for Public Expenditure and Reform. The paper was prepared in the context of an on-going budget negotiation process and reflects the data available to the author at a given point in time.*

Abstract

Having and maintaining the appropriate level of medical staffing is a central public health priority. If the workforce is understaffed, patient safety is put at risk and overworked and dissatisfied clinicians may exit the health system for better working conditions elsewhere, exacerbating the problem. On the other hand, if the workforce is overstaffed funding is drawn away from areas where it could be better utilised such as drugs, medical technology and capital investment. The object of this paper is to understand the Irish medical workforce in relation to the European Union in terms of staffing levels, healthcare demands and medical education. Some of the key findings are set out below.

Summary of key findings

- Ireland has among the least doctors and most nurses per 1,000 population in the EU, at 2.69 and 12.64 respectively.
- Despite their low number, Irish doctors are among the least active in terms of consultations provided – 60% of average.
- About one-third of practicing doctors did not train at an Irish medical school.
- 12.7% of the Irish population are elderly dependents, the lowest proportion in the EU.
- Irish people consider themselves the healthiest in Europe and have among the best outlooks in terms of healthy life years.
- Ireland has lower-than-average incidence of diabetes and dementia but among the highest rates of cancer diagnosis.
- Levels of alcohol consumption, smoking and obesity may pose challenges in the future.
- From 2003 to the end of 2014, over 900 additional consultants were employed.
- The recruitment of 1,400 additional NCHDs in the same period has meant the ratio of NCHDs to consultants has not substantially changed in the past twenty years.
- Despite investing €200 million into medical training in the last decade and producing the most medical graduates per capita in the EU, 87% of medicine students are either intending to emigrate or contemplating it.

Figure 0.1: Overview of medical personnel

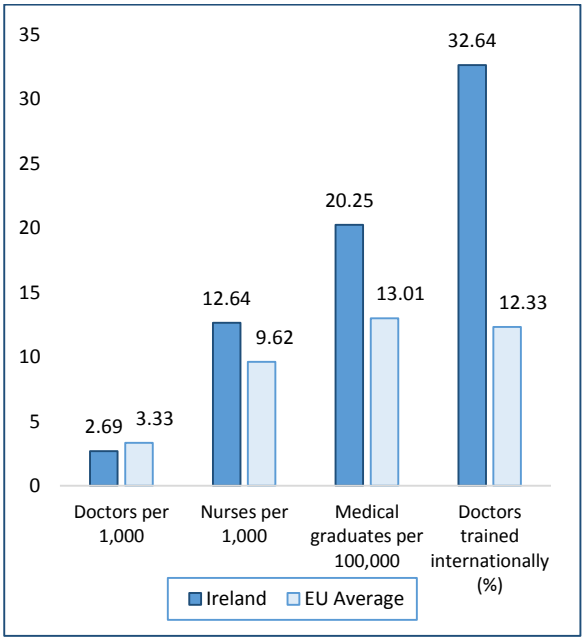
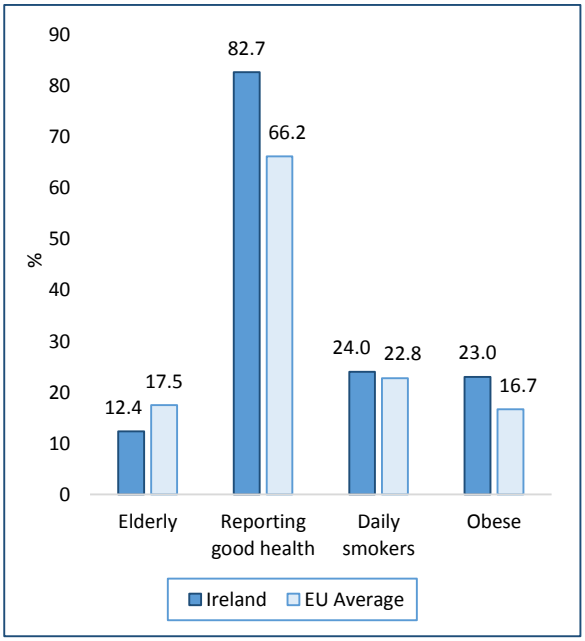


Figure 0.2: Population health indicators



Introduction

From January 2014 to September 2015, the number of whole-time equivalents (WTEs) employed in the Irish public health system rose from 97,205 to 102,245, an increase of 5.2%. Across the same period, the number of doctors increased by 10.1% and the number of nurses by 1.6%. Adjusting to take account of the transference of staff to the Department of Children and Youth Affairs and other distortions, this means that over half of WTEs lost by the health service since 2008 as a consequence of the financial crisis have been restored in a twenty-one month period. Indeed, if current rates of staffing growth are maintained, the workforce will be fully restored by the end of 2016[1].

The aim of this paper is to understand the Irish medical workforce in a European context, predominately through use of OECD data and drawing on other material where appropriate.

Section 1 will give an overview of the current medical workforce, or 'supply' of personnel. It will consider doctor and nursing levels and compare them with our European counterparts, look at productivity and discuss the contribution made by internationally-trained doctors and nurses in advanced roles.

Section 2 will consider demand for medical services, and hence personnel, from the population. This will be done by looking at demographics, people's self-perceived health status, the incidence of common disease and our standing across a range of health determinants. Again, these measures will be compared with the relevant data from elsewhere in Europe.

Finally, Section 3 will look at medical education in this country and its capacity to produce the personnel required to meet the healthcare demands of the future. The recommendations of various Department of Health reports from the early-to-mid 2000s will be discussed, medical graduate numbers will be compared across Europe and their emigration intentions assessed, and international schemes to improve the retention rate of new graduates in the domestic health system considered.

The paper will conclude with some summary remarks and suggestions for future research.

[1] Mullins, D. 2015. *HSE Employment Strategy – Outlook 2015 and Beyond*. Dublin: Irish Government Economic and Evaluation Service.

Section 1: Overview of the medical workforce

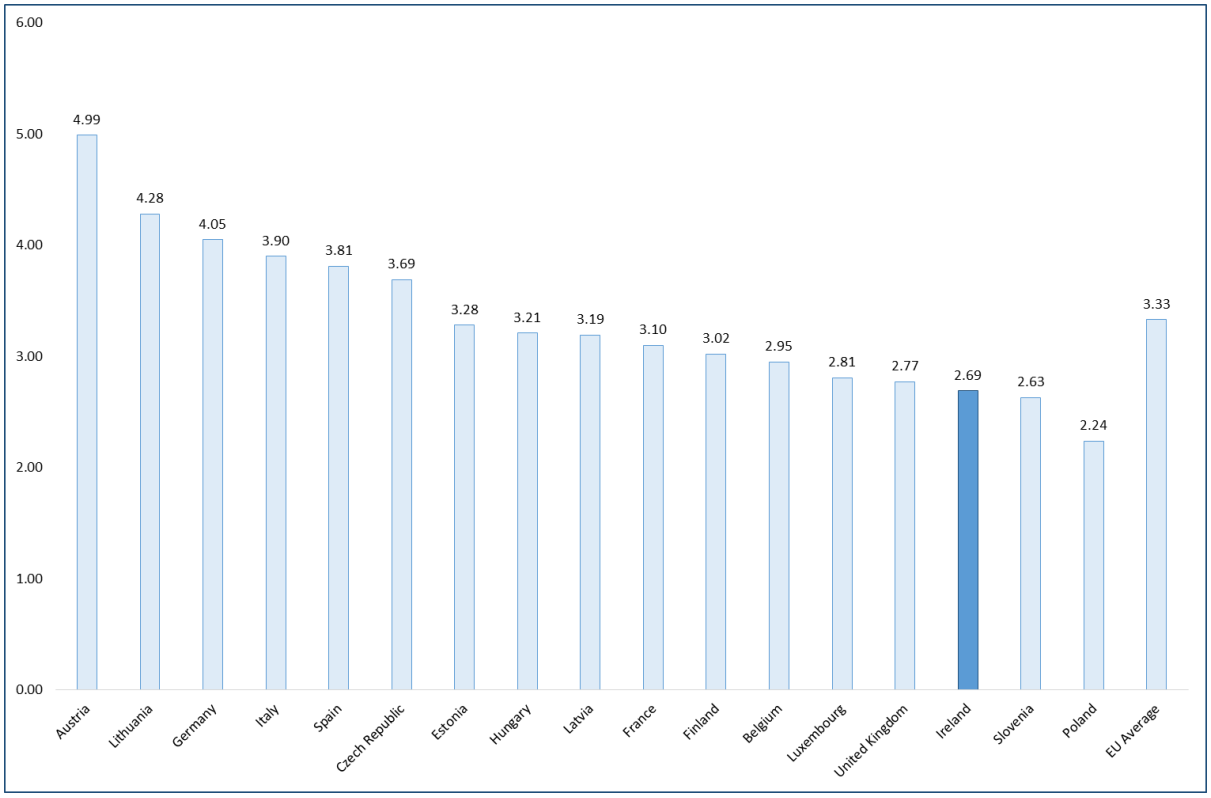
This section will give a snapshot of the current state of the Irish medical workforce by focusing on the numbers of frontline clinicians. Using as much data as is available, these numbers will be compared to other countries in the European Union (EU). Firstly, doctors will be examined – the number per capita, the proportion internationally-trained, the proportion practicing, and their activity. Then, nursing numbers and their evolution will be analysed.

Doctors per capita

Figure 1.1 below gives the number of practicing doctors for every 1,000 people across the EU in 2013, with Ireland's position highlighted. The figure ranges from 2.24 in Poland up to 4.99 in Austria, at an average of 3.33. Ireland is towards the lower end of the spectrum with 2.69 doctors for every 1,000 people, ahead of only Slovenia and Poland and with 0.64 doctors less than the average.

While a low number of doctors per capita could indicate a shortage, it would be premature to suggest that this is the case in Ireland. Before making such a judgement, it is necessary to first develop some picture of the pressures that the health service is under. If doctors per capita is thought of as supply, we need to have an idea of demand before we can say whether or not the current resource is adequate. Indeed, when compared to the United Kingdom, our closest neighbour, Ireland has only marginally less doctors per capita.

Figure 1.1: Doctors per 1,000 population, 2013

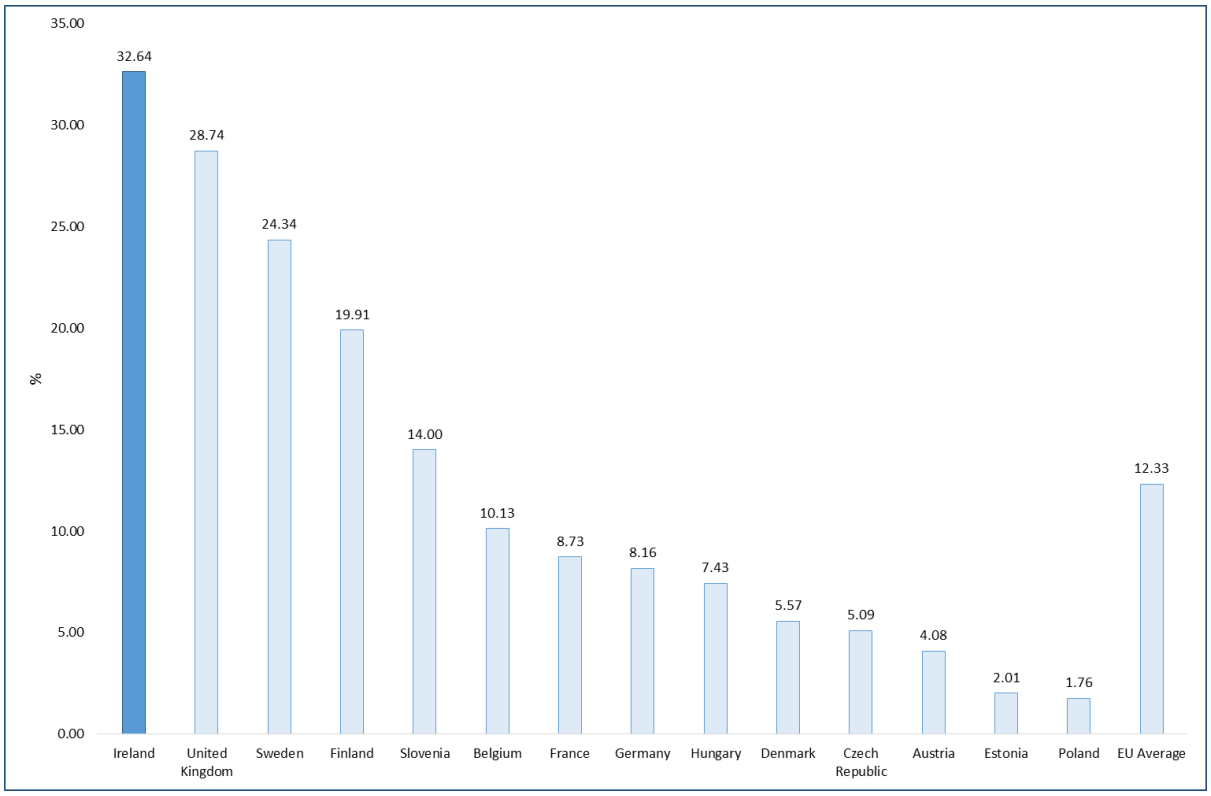


Source: OECD

Internationally-trained doctors

Curiously, despite having one of the lowest numbers of practicing doctors per capita in the EU, in recent years Ireland has struggled for self-sufficiency in this regard. Indeed, no other EU country was more reliant on internationally-trained doctors in 2012 than Ireland, as Figure 1.2 shows. In that year 32.6% of doctors licensed to practice in Ireland were trained overseas[2], which was almost three times the average level of 12.3% and almost twenty times the level reported in Poland of 1.8%. What is especially striking about the high level of internationally-trained doctors in Ireland is the rapid growth in the last decade underlying it – in 2000, only 13.4% of our doctors were internationally-trained[3]. From near-average levels, the proportion of our doctors trained overseas almost tripled in twelve years and has continued to grow according to the latest OECD figures, to 34.2% in 2013 and 36.1% in 2014.

Figure 1.2: Percentage of practicing doctors trained internationally, 2012



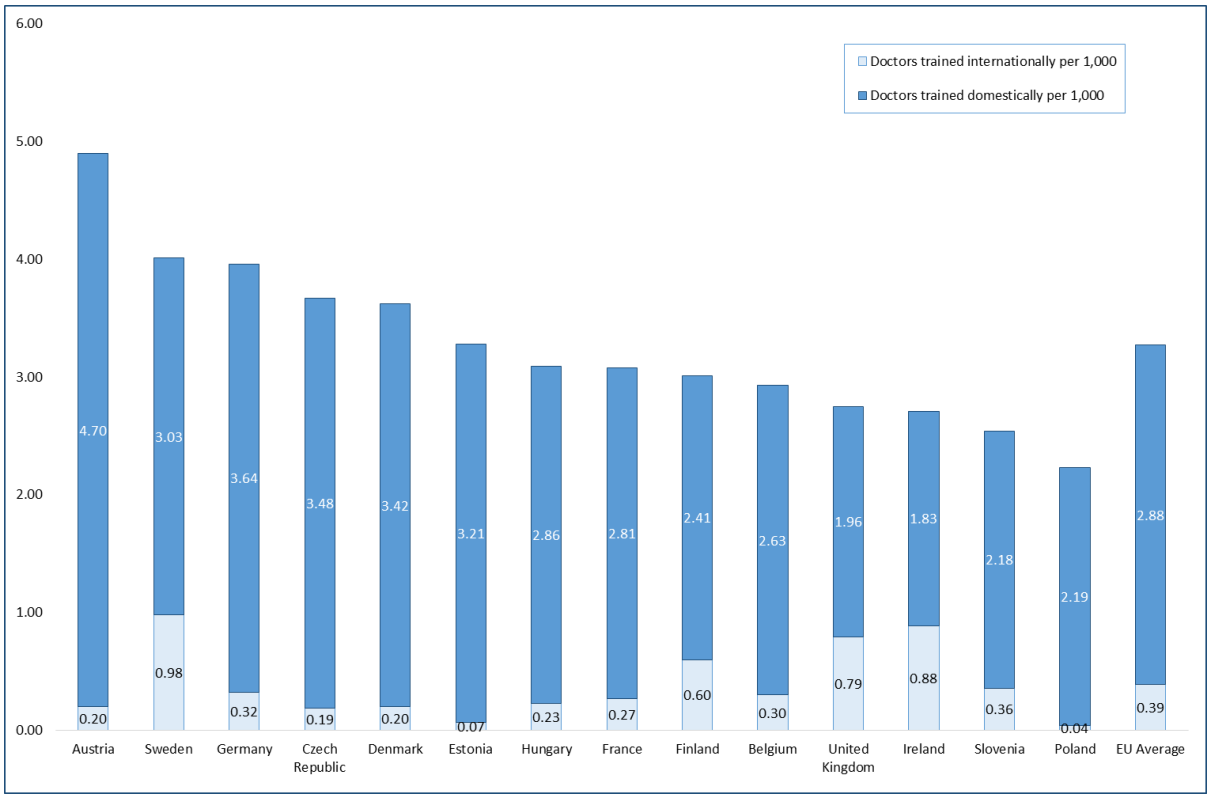
Source: OECD

Figure 1.3 combines practicing doctors per capita data from 2012 with the above proportions of doctors who were internationally trained, thereby giving the domestically and internationally-trained doctors per capita for each country. As can be seen, even though Ireland has a relatively low number of doctors, the fact it is so heavily reliant on doctors trained overseas means it has the second highest number of internationally-trained doctors per capita in the EU, slightly behind Sweden. To put this in context, though, Sweden had 48.0% more doctors per capita in total but only 11.4% more internationally-trained ones. Given the substantial investment this

[2] This excludes any Irish doctors who trained overseas.
[3] Bidwell, P. et al. 2013. 'The National and International Implications of a Decade of Doctor Migration in the Irish Context' in *Health Policy*, Vol. 110, pp. 29–38.

country makes in medical education (to be discussed in Section 3), this dependence on internationally-trained doctors is a cause for concern.

Figure 1.3: Domestically and internationally-trained doctors per 1,000, 2012



Source: OECD

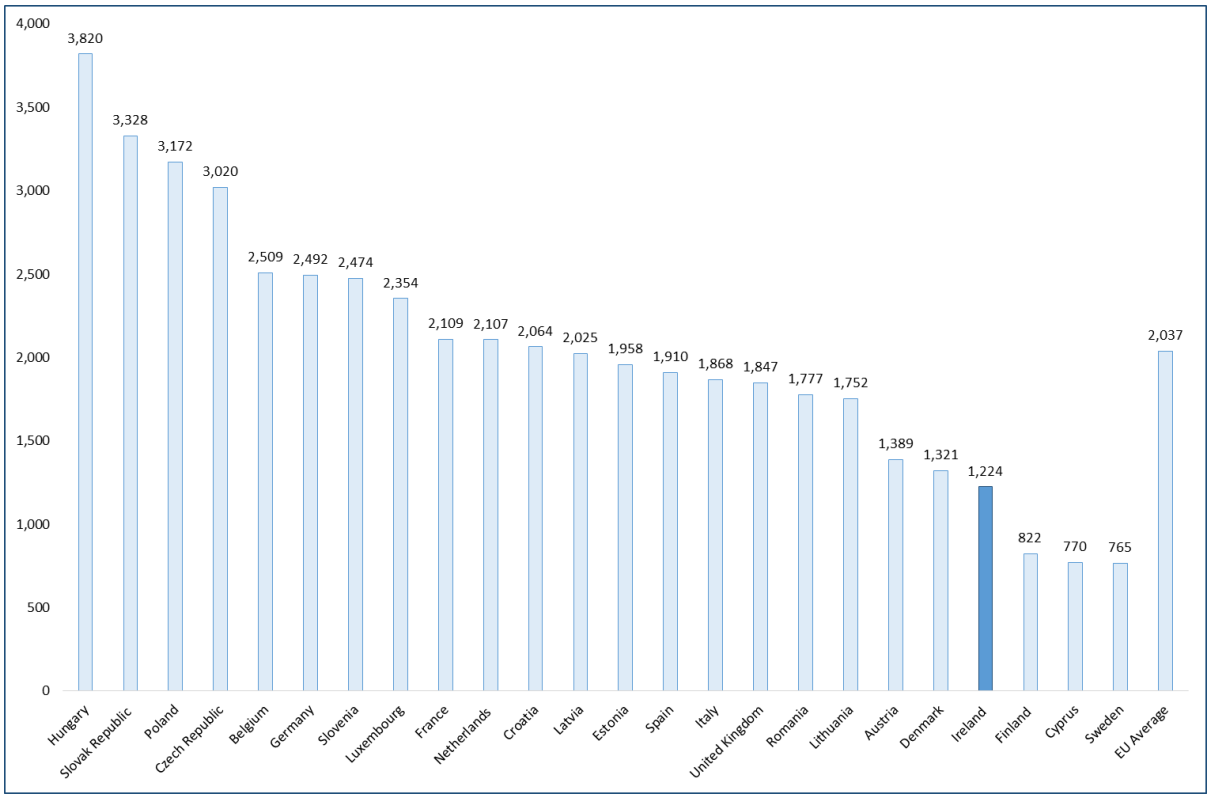
Productivity of doctors

Given that Ireland has a relatively low number of doctors per capita, it is natural to assume that they will be more active as a consequence. However, as discussed previously, the number of doctors is only the supply side of the issue. While Section 2 will deal with the demand for medical services in greater depth, Figure 1.4, which depicts the average number of consultations given per doctor in 2012, would seem to suggest that Irish doctors are not being overworked. Hungarian doctors were by far the most active, giving an average of 3,820 consultations, though this number is something of an overestimate as it includes consultations for diagnostic exams. At 765 consultations a year, Swedish doctors gave least.

In Ireland, across both GPs and specialists, doctors gave an average of 1,224 consultations in 2012 – a rate of about 3.35 per day – which was 813 lower than and about 60% of the EU average. It should be noted that the Irish figure comes from health surveys rather than an administrative source, and is likely to underestimate the true number of consultations as a consequence. That said, telephone contacts are included, to some extent mitigating that underestimation, and the other four countries for which figures are based on surveys (Italy, the Netherlands, Spain and the United Kingdom) all report average consultations per doctor 50 to 75% higher than Ireland. A possible explanation for the relatively low number of consultations per doctor in Ireland, and in

Finland also, is the enhanced role of nurses compared with other countries[4]. It is also important to stress that the number of consultations is just one metric by which productivity might be measured

Figure 1.4: Average number of consultations per doctor, 2012



Source: OECD

Nurses per capita

As shown in Figure 1.5, Ireland reported the third highest number of professionally-active[5] nurses per capita in the EU in 2012. The figure ranged from 17.56 per 1,000 in Denmark to a low of 4.89 in Latvia, with Ireland about 3 above average at 12.64. Notably, the three countries with the highest numbers of nurses per capita in 2012 were all among the five countries with the fewest number of consultations per doctor.

In 2009 about 4% of nurses registered in Ireland were classed as being in an advanced role. Assuming that rate was unchanged in 2012, this means that there were approximately 0.50 nurses in advanced roles for every 1,000 people that year.

Breaking this down, around 95% of Irish nurses in advanced roles are Clinical Nurse Specialists, whose functions include the assessment, planning, delivery and evaluation of care, providing consultancy in education and clinical practice, and prescribing medication. In 2009 there were 2,066 CNSs. The remaining 5% of advanced role nurses

[4] Delamaire, M. L. and Lafortune, G. 2010. 'Nurses in Advanced Roles: A Description and Evaluation of Experiences in 12 Developed Countries', *OECD Health Working Papers*, No. 54. Paris: OECD Publishing.

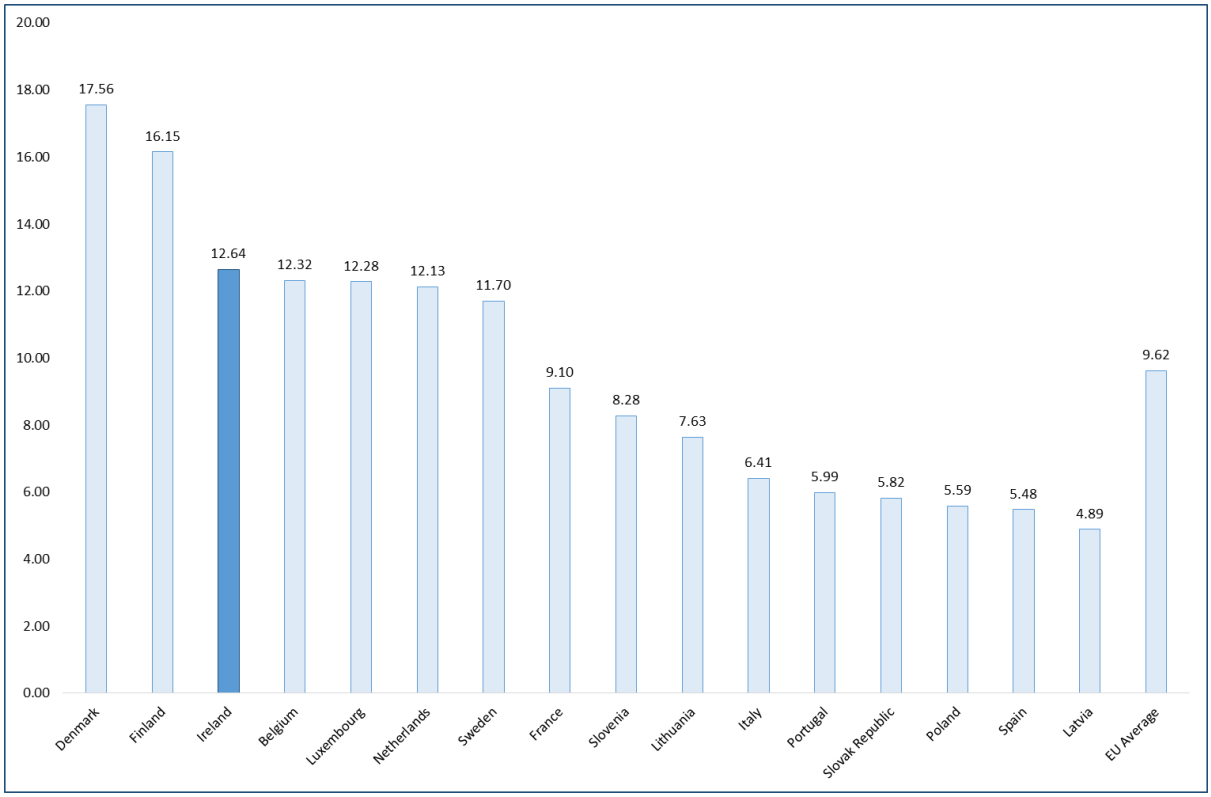
[5] Practicing nurses are those directly providing services to patients, while professionally-active also takes in those working as managers and so on. For countries where data is available for both, on average 93% of professionally-active nurses are also practicing.

are Advanced Nurse Practitioners (ANPs), of whom there were 121 in 2009. ANPs are autonomous practitioners who work in collaboration with other healthcare professionals to deliver services. Beyond the responsibilities of CNSs, ANPs are able to manage, for example, Emergency Department minor injury units, and can also look after the care of patients suffering from a range of chronic diseases such as diabetes[3].

As advanced role nurses take on some of the functions that are typically the preserve of doctors, it seems reasonable to assume that advanced nursing can at least partially explain the lower than average number of doctors per capita in Ireland. Moreover, adding the number of advanced nurses to the number of doctors suggests a figure of about 3.2 clinicians carrying out at least some of the functions of a doctor per 1,000 people, which brings Ireland much closer to the EU average in terms of doctor numbers.

It is important to note that the above is only a very crude estimate, based upon the implicit assumption that one advanced nurse is equivalent to one doctor. As there are certain functions that only a doctor can carry out, this is clearly not the case in reality. The question of how much of a doctor each advanced nurse is worth is an interesting one however, and could perhaps be a topic of future value-for-money research. To date, evaluations of the advanced nursing role have tended to focus on patient outcomes rather than the fiscal issue of value.

Figure 1.5: Professionally-active nurses per 1,000 population, 2012



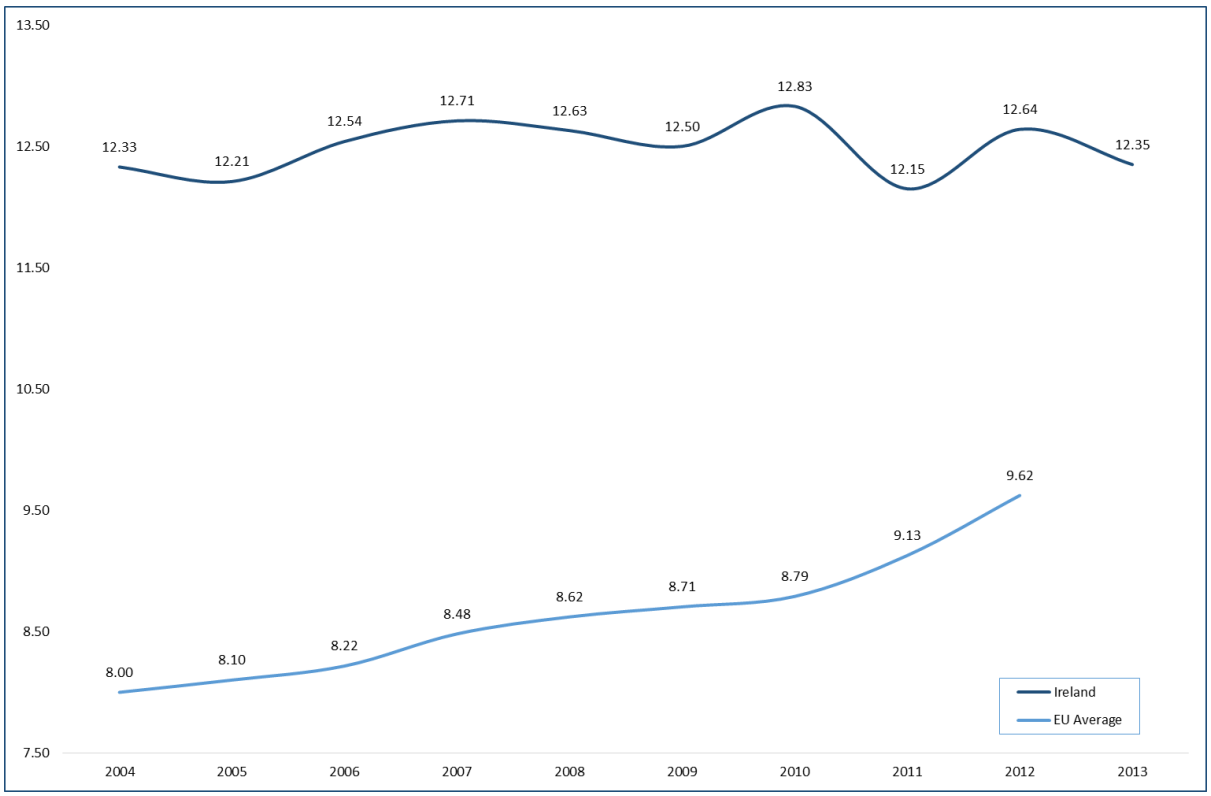
Source: OECD

Evolution of nursing numbers

Figure 1.6 shows the annual number of nurses per 1,000 in Ireland plotted alongside the EU average from 2004 to 2013 (the 2013 EU average figure has been omitted as figures are still becoming available). Across the ten years, Ireland had an average of 12.49 nurses per 1,000, reaching a peak of 12.83 in 2010. Though this number did decline in 2011, presumably as a consequence of the economic downturn, it rebounded to approximately 2008 levels the following year.

Ireland has consistently had many more nurses per capita than the EU average. In the mid-2000s there were over 50% more nurses in Ireland than the comparable EU figure. Though this gap has steadily narrowed, this is due to rising nursing levels elsewhere in Europe rather than declining levels here and Ireland still had about a third more nurses per capita than elsewhere in Europe in 2012. Even allowing for the fact that 4% of Irish nurses are in advanced roles and perhaps inappropriately compared to nurses found in other European nations, deducting the roughly 0.5 nurses per 1,000 that they represent still leaves Ireland with between 2.5 and 4.0 more nurses per capita than average over the last ten years. Given the consistently high level of professionally-active nurses in Ireland, possible questions about their productivity and the efficient use of resources inevitably arise.

Figure 1.6: Professionally-active nurses per 1,000 population, 2004 to 2013



Source: OECD

Concluding remarks

With 2.69 doctors for every 1,000 people, Ireland has among the lowest numbers of doctors per capita in the EU. However, despite this modest requirement, we are also singularly reliant on internationally-trained doctors

to supplement our workforce. In recent years around a third of doctors practicing in Ireland have had to be imported.

In terms of productivity, Irish doctors appear to be about 40% less active than their counterparts elsewhere in Europe. The average Irish doctor gave 1,224 consultations in 2012 compared with the EU average of 2,037. This discrepancy might partially be explained by the emphasis on advanced nursing within the Irish health system, mitigating the need for doctors to carry out certain functions. However, even allowing for advanced nursing, we ostensibly appear to be over-resourced in terms of our nurses.

Some of the areas of comparison are summarised in Table 1.1.

Table 1.1: Medical workforce summary, Ireland and the EU

	Ireland	EU Average
Doctors per 1,000 (2013)	2.69	3.33
Percentage of doctors trained internationally (2012)	32.64	12.33
Average consultations given per doctor (2012)	1,224	2,037
Nurses per 1,000 (2012)	12.64*	9.62

*Includes approximately 0.5 nurses per 1,000 in advanced roles

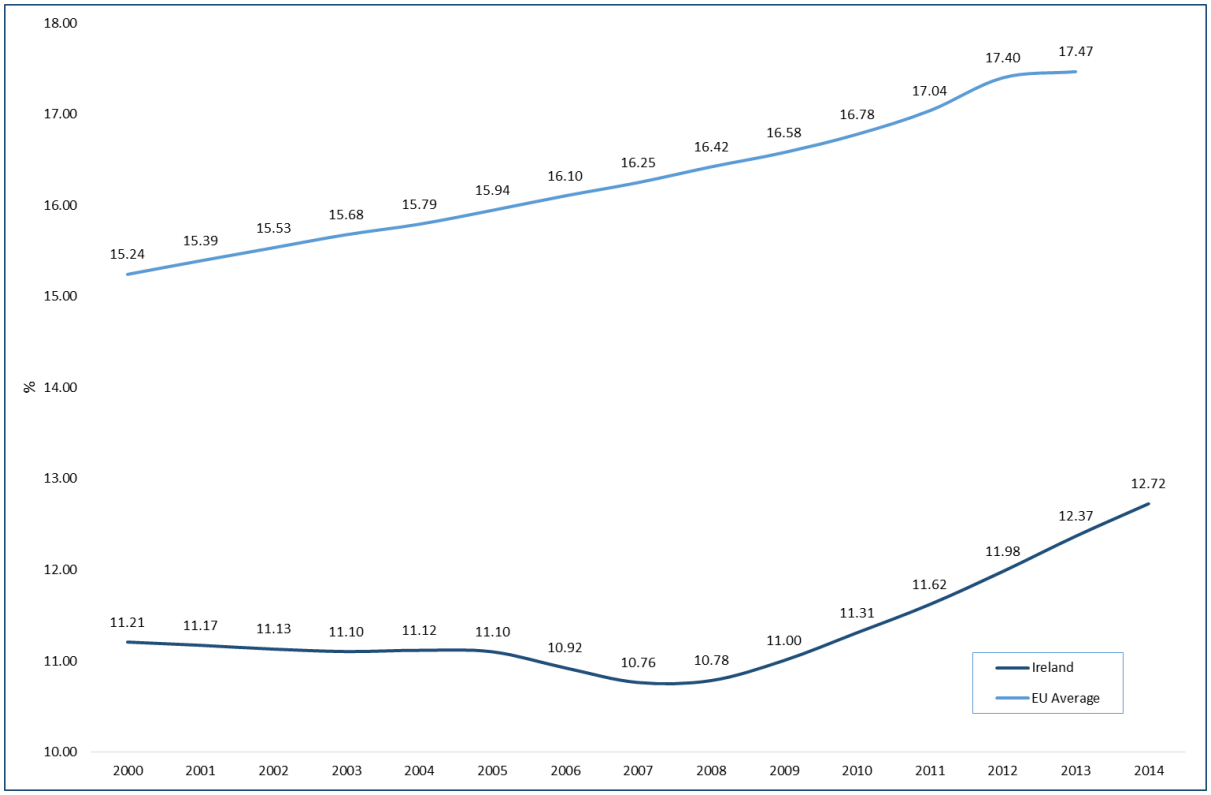
Section 2: Demand for medical services

In order to determine the appropriate level of medical staffing, consideration must be given to the sources of healthcare demand. Demographics, personal wellbeing, prevalence of disease and lifestyle choices can all impact on a population's health status and consequently on the demands that population places on the health system. Demand can also be induced regardless of health status due to the provision of universal schemes, as exemplified by the significantly higher number of GP visits made by medical card holders compared with non-medical card holders[6]. This section will consider some of these factors in order to better judge whether the existing level of medical staffing in Ireland is sufficient for its population's needs.

Demographics

One simple proxy for demand for medical services is the age of a given population. It is widely understood that demand for medical services increases with age, with healthcare costs found to rise exponentially after the age of 50[7] as more support is required in the form of short-stay hospital beds, nursing homes, and so on.

Figure 2.1: Elderly population percentage, 2000 to 2014



Source: OECD

[6]Madden, D., Nolan, A. and Nolan, B. 2005. 'GP Reimbursement and Visiting Behaviour in Ireland' in *Health Economics*, Vol. 1, No. 10, pp. 1047-1060.

[7] Alemayehu, B. and Warner, K. E. 2004. 'The Lifetime Distribution of Health Care Costs' in *Health Services Research*, Vol. 39, No. 3, pp. 627-642.

In 2015, the median age in Ireland was estimated to be 36.1. This was 6.4 years younger than the estimated EU average of 42.5[8]. Given the low median age of the Irish population and the relationship that exists between ageing and utilisation of medical services, it seems reasonable to assume that Ireland will have relatively low healthcare demand compared to other EU countries. Adding further weight to this assumption, the elderly population proportion in Ireland is significantly below EU average, as shown in Figure 2.1. Though this proportion has steadily grown in the past seven years, with 12.4% of the Irish population classed as elderly versus an average rate of 17.5% in 2013, the disparity has actually widened since 2000.

Moreover, though the size of the elderly population in Ireland is increasing, studies have found that the impact ageing has on health spending growth (and, by extension, demand for services) is vastly overstated[9]. Increases in life expectancy lead to increases in the number of years of healthy life, with the demand for medical services effectively postponed as the population ages. Proximity to death rather than age *per se* is the main driver of the growth in medical costs for the elderly.

Healthy life years

While a small elderly population indicates that Ireland will have a lower demand for medical services than the European average, the analysis can be improved by taking into account the number of years for which people are likely to be healthy. For example, if people are on average only likely to be in good health for the first 60 years of their life, a lower than average elderly population proportion might not translate into lower than average demand for healthcare – the elderly population, though small, has costly medical needs.

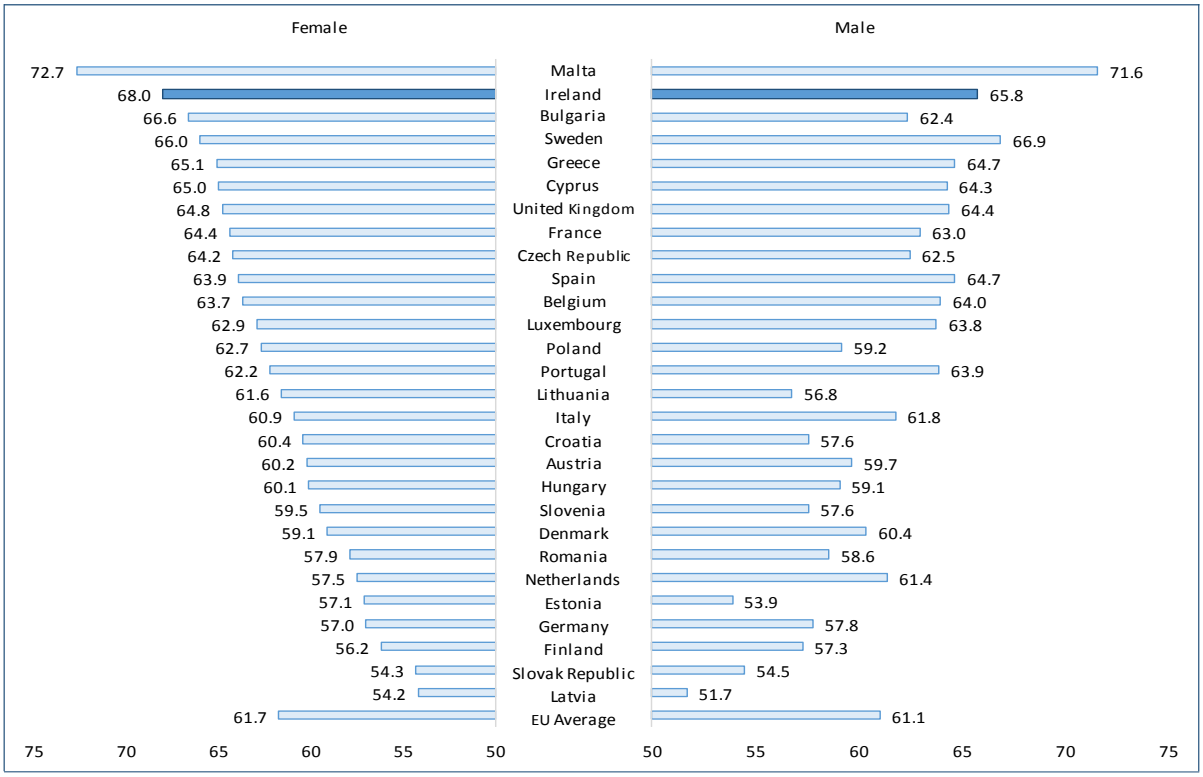
Figure 2.2 shows the expected number of healthy life years at birth for EU countries in 2013, calculated using mortality data and population health surveys. Though life expectancy has steadily risen over the past three decades, expected healthy life years focuses on the number of those years lived in good health, on quality rather than quantity. According to this measure, Ireland has one of the healthiest populations in Europe. The number of healthy life years a female born in 2013 can expect to lead is 68.0, 6.3 years more than the average and second only to Malta. The expected healthy life years for males born in 2013 is lower at 65.8, but this is still 4.7 more healthy years than average and third in Europe behind Malta and Sweden.

As those born today are not likely to make significant demands of the health system for some time, perhaps it is more appropriate to focus on the number of healthy years a 65 year old can expect to lead. On this measure Ireland again ranks among the healthiest countries in the EU. As shown in Figure 2.3, in 2013 a 65-year-old Irish female could expect to lead a further 12.1 years of healthy life, the fourth most in the EU and 3.5 more than average. As with healthy life years at birth, the outlook for men at age 65 is not quite as good. However, with

[8] Central Intelligence Agency. 'Median Age' in *The World Factbook*. Available online at: https://www.cia.gov/library/publications/the-world-factbook/fields/2177.html#download (Accessed 13 October 2015).
[9] Appleby, J. 2013. *Spending on health and social care over the next 50 years*. London: The King's Fund.

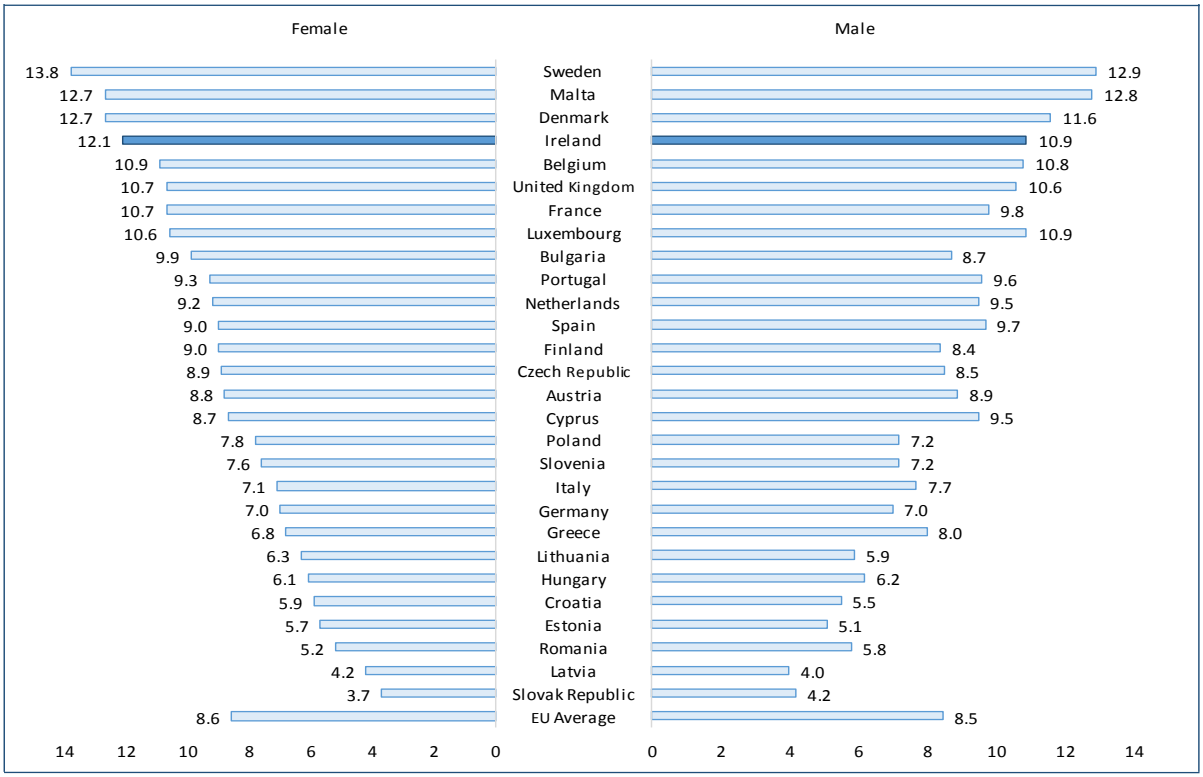
an expected 10.9 healthy life years ahead of them, Irish males were still 2.4 years better off than average, also the fourth best outlook in the EU.

Figure 2.2: Expected healthy life years at birth, 2013



Source: Eurostat

Figure 2.3: Expected healthy life years at 65, 2013



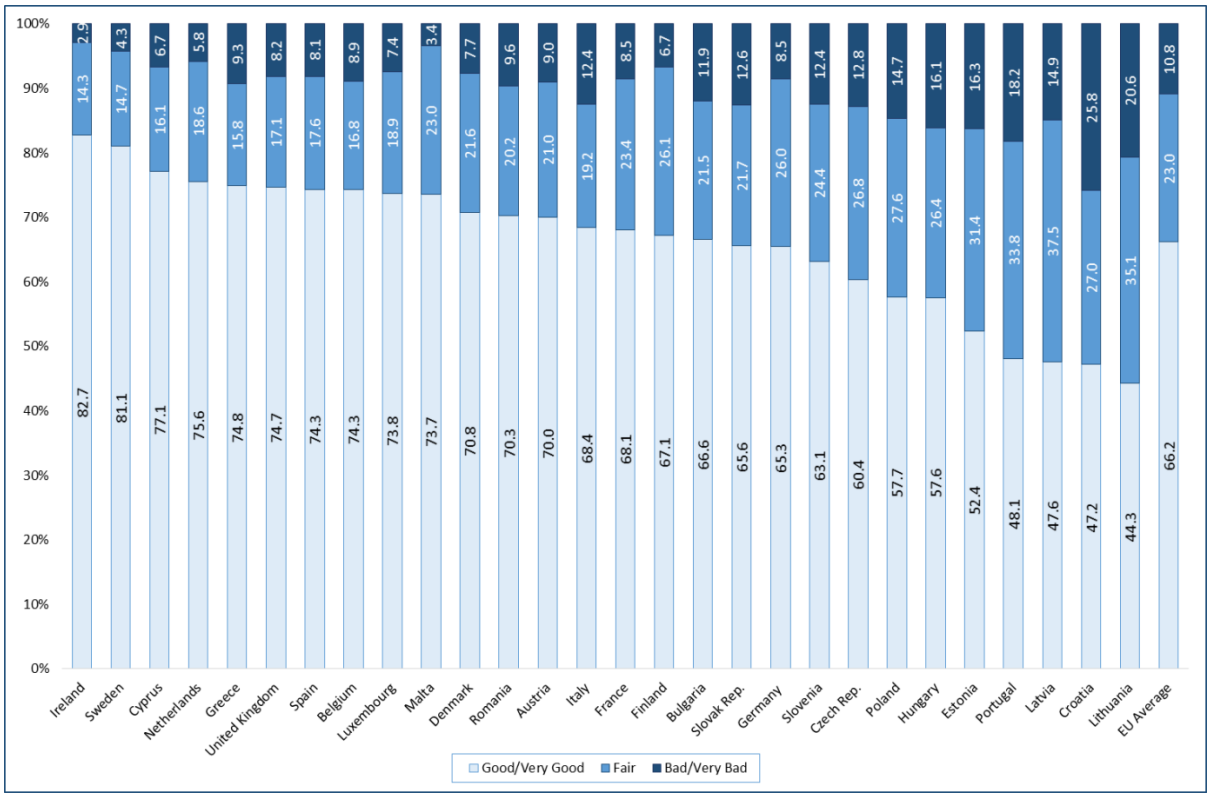
Source: Eurostat

Taking a combined view of demographics and healthy life years, then, Ireland has the youngest population in the EU and the lowest number of elderly people to make costly demands of the health system. Moreover, our older persons have among the best outlooks in the EU for healthy life years remaining, further depressing the population's medical demands. This suggests that the level of medical staffing in Ireland can be lower than the EU average while still meeting the medical needs of our elderly.

Self-perceived health status

Another means to assess the likely demand for medical services is the reported health status of the population, with studies finding that self-rated health is a strong predictor of subsequent mortality[10]. All else being equal, the more people in a population who report that they are in poor health, the higher the demand for healthcare should be. As Figure 2.4 shows, on this measure Irish people feel the healthiest in the EU. In 2012, 82.7% of people asked reported that they were in good or very good health, 16.5 points higher than the average. At the same time, merely 2.9% of Irish people reported their health as being bad or very bad, almost quarter the average level of 10.8%.

Figure 2.4: Self-reported health status, 2012



Source: EU-Statistics on Income and Living Conditions survey

Given that we have the highest proportion of people reporting good health in the EU, and the least number of people reporting bad health, it seems likely that the demands placed on our health system will be less than

[10] Heistaro, S. et al. 2001. 'Self rated health and mortality: a long term prospective study in eastern Finland' in *Journal of Epidemiology and Community Health*, Vol. 55, No. 4, pp. 227-232.

average. One important caveat to note, however, is that people are more likely to consider themselves in bad health the older they get. As previously set out, Ireland has the youngest population in Europe. Consequently, Irish people are less likely to report bad health than elsewhere regardless of their actual health status. Self-reported health status, then, is a useful indicator but in the case of Ireland likely to underestimate the true demand for medical services.

Disease incidence

Of course, demographics are not the only source of demand for healthcare and self-reporting, though a strong predictor, can be misleading. Even with a relatively young population, if there are large numbers of people living with chronic illness or diagnosed with life-threatening diseases, the demands placed on the health system might be great. Conversely, those living with chronic illnesses or who have recovered from a life-threatening disease might consider themselves to be in good health while placing considerable demand on the health system. The actual incidence of disease in a population can control for such distortion.

As the second leading cause of mortality in the EU, high rates of cancer might be one such source of demand. As Table 2.1 shows, Ireland has one of the highest rates of cancer in Europe. In 2008, 317.0 people out of every 100,000 were diagnosed with some form of cancer. This was second only to the rate in Denmark of 321.1 and almost 20% greater than the average of 266.2.

Table 2.1: Cancer incidence per 100,000, 2008 and 2012

	2008	2012
Denmark	321.1	338.1
Belgium	309.4	321.1
Ireland	317.0	307.9
Netherlands	289.9	304.8
France	300.4	303.5
Slovenia	264.8	296.3
Czech Republic	288.5	293.8
Hungary	286.6	285.4
Germany	282.1	283.8
Luxembourg	284.0	280.3
Italy	274.3	278.6
Slovak Republic	260.6	276.9
United Kingdom	269.4	272.9
Sweden	259.7	270.0
Finland	250.1	256.8
Austria	250.6	254.1
Spain	241.4	249.0
Portugal	223.2	246.2
Estonia	230.1	242.8
Poland	225.1	229.6
Greece	162.0	163.0
EU Average	**266.2**	**274.0**

Source: OECD

By 2012 the picture was marginally improved with 307.9 cancer diagnoses per 100,000, but this was still the third highest rate in the EU. Combining this decline with the rising EU average, Irish people were 12% more likely to be diagnosed with cancer than the typical European in 2012. While a high rate of cancer incidence is worrying in itself, it also implies a higher-than-average requirement for medical personnel to provide treatment.

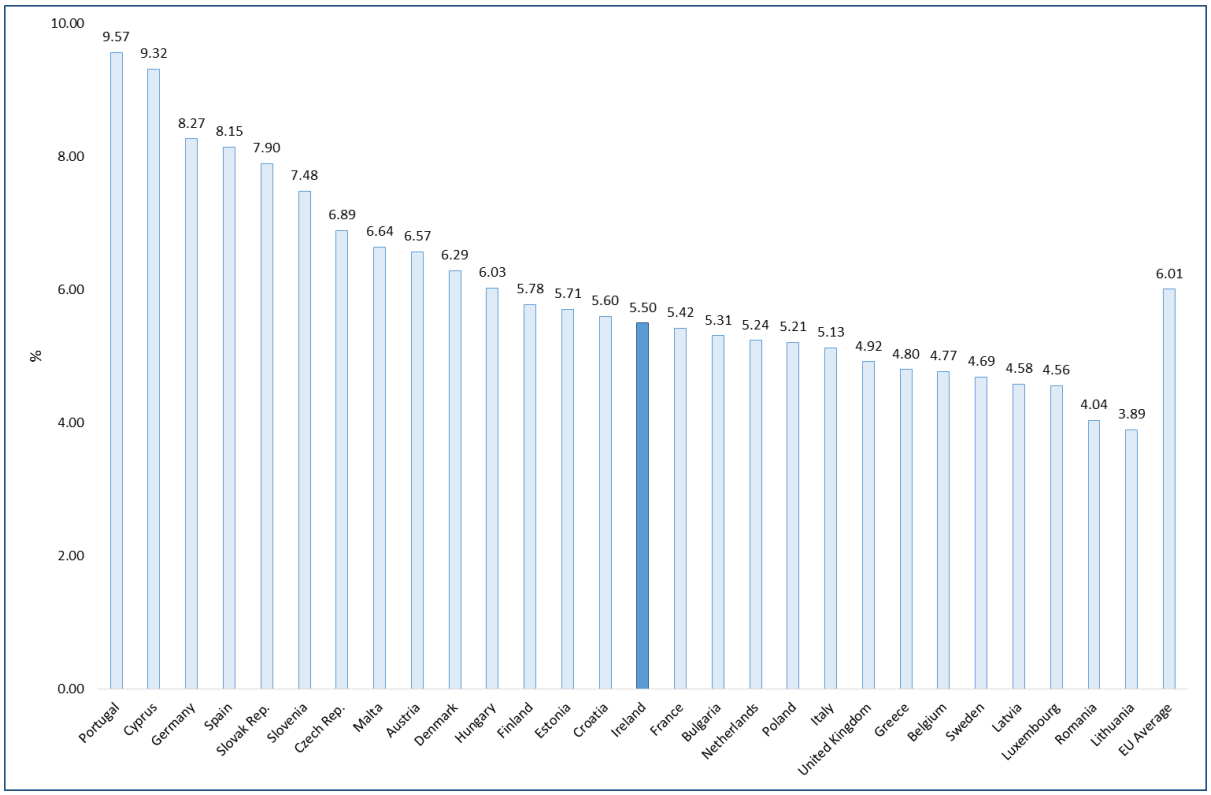
In 2013, an estimated 32 million adults in the EU aged 20 to 79 were living with diabetes. Also in that year, over 270,000 diabetics were estimated to have died from complications related to the illness, making it the fourth leading cause of mortality in Europe[11]. As shown in Figure 2.5, the prevalence of diabetes among 20 to 79 year

[11] International Diabetes Federation. 2013. *Diabetes Atlas, 6th edition*. Brussels: International Diabetes Federation.

olds in Ireland was slightly better than average, with 5.5% of the age group having the disease compared to 6.0%.

It may be worth noting, however, that though a high incidence of diabetes brings with it substantial cost (approximately €100 billion was allocated to diabetes care across the EU in 2013[11]), it may not necessarily translate into greatly increased demand for medical staff. Unlike with cancer, where treatment predominately takes place in the acute hospital setting, diabetics are largely responsible for looking after their own care at home, with interventions required only for check-ups, which can be planned for, and complications arising from the disease.

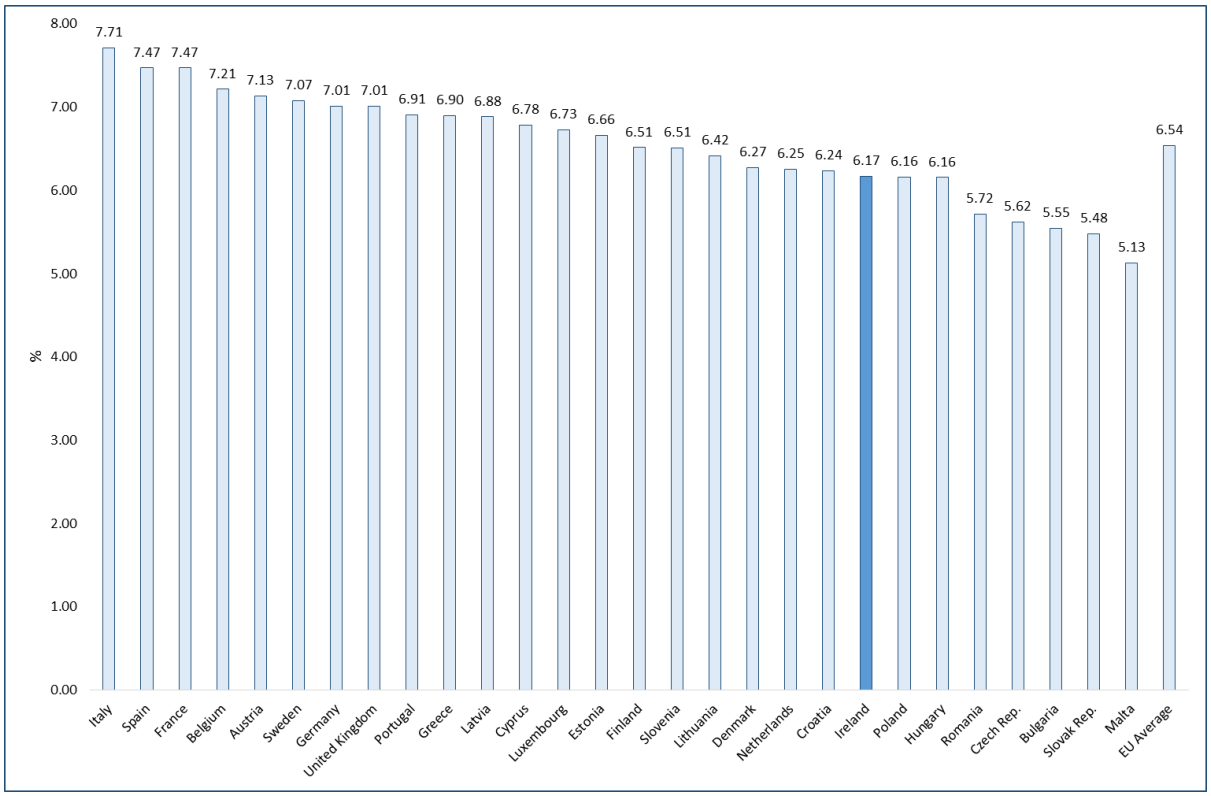
Figure 2.5: Percentage of population aged 20 to 79 with diabetes, 2013



Source: International Diabetes Federation

Lastly, Figure 2.6 sets out the prevalence of dementia in the population aged 60 and over in 2012. Of all the indicators, this one shows the least variation across Europe, ranging from a low of 5.13% in Malta to a high of 7.71% in Italy. Taking the EU as a whole the prevalence rate was 6.96%, while average prevalence was 6.54%. Ireland was in a slightly better position than average, with 6.17% of those aged 60 and over living with the disease. As life expectancy increases the number of people with dementia can be expected to rise and this has implications for the required level of medical staffing, particularly in the social care space. With a lower than average rate of dementia, Ireland should currently be able to meet the requirements of its population living with the illness with a proportionally smaller workforce.

Figure 2.6: Percentage of population aged 60 and over with dementia, 2012



Source: OECD

In terms of the prevalence of disease, then, Ireland seems to be in a better position than most for chronic illnesses such as diabetes and dementia. In terms of cancer, however, we have one of the highest rates in the EU. As for the demands that these diseases make in terms of medical staffing, it seems reasonable to assume that in the normal course of things diabetes is the least staff-intensive, with only those procedures that arise out of complications requiring a concerted medical presence. Dementia, on the other hand, generates demand for home care and nursing home staffing, particularly as the disease progresses. The overall effect of these opposing pressures on staffing across the health service is difficult to determine but, ostensibly, the current health status of the Irish population based on these three conditions does not suggest the size of the medical workforce need deviate significantly from the norm.

Determinants of future health

So far the focus of this section has been on drivers of current demand for medical staff such as healthy life years, self-perceived health status, and incidence of disease. In terms of future staffing requirements, however, people's lifestyle choices are also an important determinant. Table 2.2 compares Ireland with the EU average across three common indicators[12].

[12] For most countries data is obtained through self-reporting, which tends to produce underestimates, while for Ireland the indicators are actually measured. Consequently, Ireland may not be as significantly above average as the figures initially suggest.

Table 2.2: Determinants of health for Ireland and the EU, 2012 (or nearest year)

	Ireland	EU Average
Daily smoking rates (%)	24.0	22.8
Per capita alcohol consumpiton (litres)	11.6	10.1
Adult obesity rate (%)	23.0	16.7

Source: OECD

Across the board, Ireland compares unfavourably. For smoking, which is the largest avoidable risk to health in Europe and a leading cause of circulatory disease and cancer, we had a slightly higher proportion of daily smokers than average, 24.0% versus 22.8%. However, it should be noted that the latest figure available for Ireland is from 2007, five years more outdated than the EU average it is being compared to. Given that smoking rates across Europe have consistently declined over the past ten to fifteen years, it is not unreasonable to assume that the Irish smoking rate is now closer to average. Nevertheless, Ireland is still significantly above the likes of Sweden, where only 13.1% of the adult population were daily smokers in 2012.

In terms of annual per capita alcohol consumption, at 11.6 litres Ireland had the fifth highest intake in Europe. The average Irish person drank 1.5 litres more pure alcohol a year than the European average – roughly equivalent to 16 bottles of wine or 65 pints of beer – and 5.5 litres more than the average Italian – almost 60 bottles of wine or 240 pints of beer. After tobacco and high blood pressure, alcohol is the third leading risk factor for disease and mortality in Europe, and accounted for 7.6% of all men's deaths and 4.0% of all women's deaths globally in 2012[13]. Ireland's high rate of alcohol consumption means that we are at increased risk of diseases such as stroke, heart disease, liver cirrhosis and certain types of cancer.

Finally, and perhaps the category where Ireland compares most unfavourably, with an obesity rate of 23.0% Irish adults were almost 50% more likely to be obese than the average European and the third most overweight people in the EU in 2012. Indeed, as the most recent Irish figure is actually from 2007 and obesity levels have consistently risen in recent years, it seems likely that the proportion of clinically obese Irish adults is even higher than 23.0%, perhaps encompassing over a quarter of the population. This means that a substantial minority of Irish adults are at increased risk of developing diabetes, cardiovascular disease and cancer.

Taken individually, Ireland's standing in any one of these indicators would be cause for concern. Taken collectively they suggest that we are storing up a significant amount of avoidable health problems, with all the additional resourcing those will entail. We are perhaps already seeing the effects of our poor lifestyles in the high incidence of cancer, while our position as one of the most obese countries in the EU suggests that our lower-than-average incidence of diabetes could face upward pressure in the future.

[13] World Health Organisation. 2014. *Global Status Report on Alcohol and Health*. Geneva: World Health Organisation.

Concluding remarks

Taking Section 2 as a whole and relating it back to the demand for medical services, and the required medical workforce levels implied, it appears the requirement can be broken into two periods. At present, we have the youngest population in the EU and our older persons have one of the best outlooks in Europe in terms of expected healthy years. Even as our elderly population grows, however, there is no reason to think that our medical workforce will need to grow in equal proportion – various studies have found increasing life expectancy to be an insignificant driver of healthcare costs, with the average period of old-age disablement delayed rather than extended. Our population feels the healthiest in Europe and, with the glaring exception of cancer, we compare favourably to average in terms of the incidence of common diseases. All these factors indicate that our demand for healthcare should be lower than the EU average.

Going forward, however, there is reason to believe that this positive outlook may begin to deteriorate. Across leading risk factors for disease and mortality, Irish people smoke more than average, drink more than average and are almost 50% more likely to be obese. Consequently, we can expect increasing numbers of people to require expensive medical care for illnesses ranging from stroke and heart disease to diabetes and cancer, with all the associated staffing.

Our current medical workforce might be adequate to meet the needs of a relatively healthy population today but if our population continues to lead poor lifestyles it should not be assumed that they will still be relatively healthy tomorrow. In order to contain the increases in healthcare resourcing necessary in the future, focus should be placed on improving our standing across the key determinants of health.

Section 3: Medical training

As the last section concluded by looking at some of the determinants of future demand for medical services, it seems appropriate to give some consideration to our capacity to meet this demand. Following a series of reports in the early-to-mid 2000s, medical training in Ireland has been drastically overhauled with significant new investment made. This section will focus not only on the impact these reforms have had on the number of medical graduates we produce each year, but also on the limited number of these graduates who end up in the workforce. Some consideration will also be given to a means by which this situation might be redressed.

Consultant and non-consultant hospital doctor numbers

In June 2003, the Department of Health published the *Report of the National Task Force on Medical Staffing*, or Hanly Report. The key recommendation of the report was that in order to ensure compliance with the European Working Time Directive (EWTD), as well as to improve quality of care and doctors' job satisfaction, Ireland would need to transition from a consultant-led to a consultant-provided health service. To deliver such a service, the report envisioned that the number of consultants working nationally would have to more than double in ten years, from 1,731 on the 1 January 2003 to 3,625 in 2013. As the number of consultants increased, the proportion of non-consultant hospital doctors (NCHDs), of whom there were 3,932 on 1 January 2003, would decline.

Table 3.1: Numbers of consultants and NCHDs, January 2003 to December 2014

	2003 January	2011 December	2012 December	2013 December	2014 December
Consultants	1,731	2,474	2,514	2,555	2,635
NCHDs	3,932	4,938	4,905	4,919	5,304
NCHDs per consultant	2.27	2.00	1.95	1.93	2.01

Sources: Hanly Report (2003) and HSE (2011 to 2014)

Table 3.1 shows the evolution of consultant and NCHD numbers over the past decade or so, and it is clear that the central recommendation of the Hanly Report has not been successfully implemented. While the number of consultants working in the health service did increase by 904 from January 2003 to December 2014, this is less than halfway to the 2013 target set by Hanly of 3,625. Indeed, it does not even meet the 2009 interim target of 3,063 consultants despite having the benefit of five extra years to achieve it. Moreover, the recruitment of 1,372 additional NCHDs across the same period has meant the ratio of NCHDs to consultants has remained static at roughly two-to-one for the past four years.

Given the failure to effectively implement consultant-provided services, it should come as no surprise that twelve years on from the Hanly Report we find ourselves in noncompliance with the EWTD. As of July 2015, Irish hospitals are 97% compliant with the maximum 24-hour shift target but only 71% compliant with the average 48-hour working week[14].

[14] Health Service Executive. 2015. *Health Service Performance Report July 2015*. Dublin: Health Service Executive.

Medical graduate numbers

Following the Hanly Report, two follow-up reports on medical education were published in 2006: *Preparing Ireland's Doctors to Meet the Health Needs of the 21st Century*, or Buttimer Report, and *Medical Education in Ireland: A New Direction*, or Fottrell Report. The Buttimer Report again identified increasing the number of consultants as a priority and recommended creating a new graduate access pathway to medical training.

The Fottrell Report, which is the more pertinent of the two for present purposes, looked at the levels of EU and non-EU medical students in Irish universities. In 1978 a cap on the number of EU students that could be admitted to Irish medical schools of 305 was introduced, and this cap remained in place for the following three decades despite growing demographic pressure. This led to a gap between the supply of doctors produced by medical schools and the demand for doctors from our population, which was closed by recruiting from overseas. Moreover, universities' reliance on income from non-EU students meant that 60% of the medical school intake in 2003/04 were from outside the EU, the majority of whom would return to their country of origin following graduation.

In order to address this reliance on internationally-trained doctors, the Fottrell Report recommended a significant increase in the number of EU students admitted to our medical schools. Over a four-year period, this intake would increase to 725 while the proportion of non-EU students taking up medical training places would fall to a quarter at most. As the loss of non-EU fee income would threaten the viability of some Irish medical schools (in 2001/02 it was the source of over half of their combined revenue), resources would have to be put in place to compensate them.

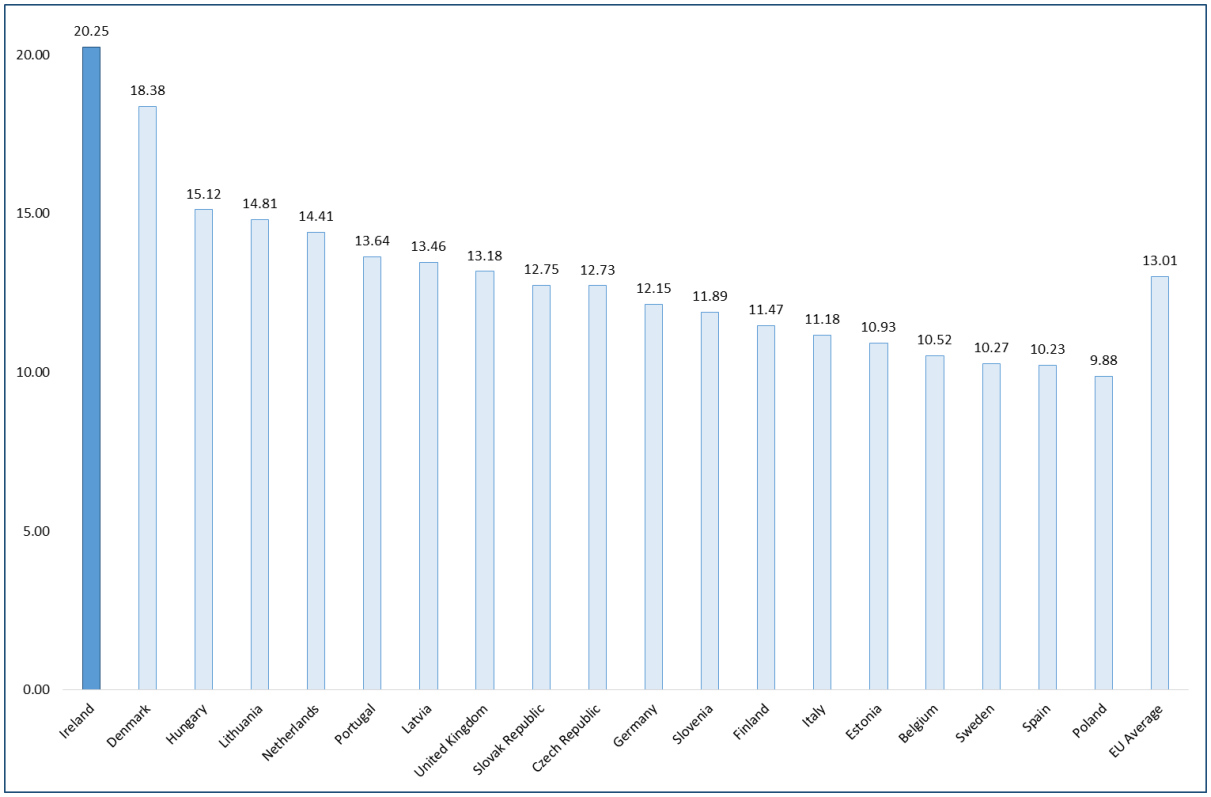
Collectively, the Buttimer and Fottrell Reports led to a €200 million multi-annual investment programme in medical education, which had as its aims the doubling of EU student places and the creation of a new graduate pathway[15]. Due to the extended nature of medical training, with undergraduate courses in medicine typically lasting five or six years, there is an inherently long lead time with any reform. However, the 2006 investment in medical training has begun to manifest itself in recent years and in 2013 Ireland produced the most medical graduates per capita in the EU, overtaking Denmark from the previous year. As Figure 3.1 shows, in 2013 there were 20.25 Irish medical graduates for every 100,000 people, over 7 more than average and 25% more than any other country with the exception of Denmark.

It should be noted, though, that even prior to the reforms implemented on foot of the Buttimer and Fottrell reports, Ireland was consistently producing many more medical graduates per capita than average for a number of years. As Figure 3.2 shows, from 2000 to 2010 Ireland produced an average of 15.26 medical graduates for every 100,000 people compared to 10.25 for the EU as a whole. Although the gap between the two numbers

[15] Department of Education and Skills. 2006. 'Statement by Ms Mary Hanafin T.D., Minister for Education and Science, to Seanad Eireann concerning funding for Third Level Education and the Fottrell Report.' Available online at: http://www.education.ie/en/Press-Events/Speeches/2006-Speeches/SP06-02-08.html (Accessed 16 October 2015).

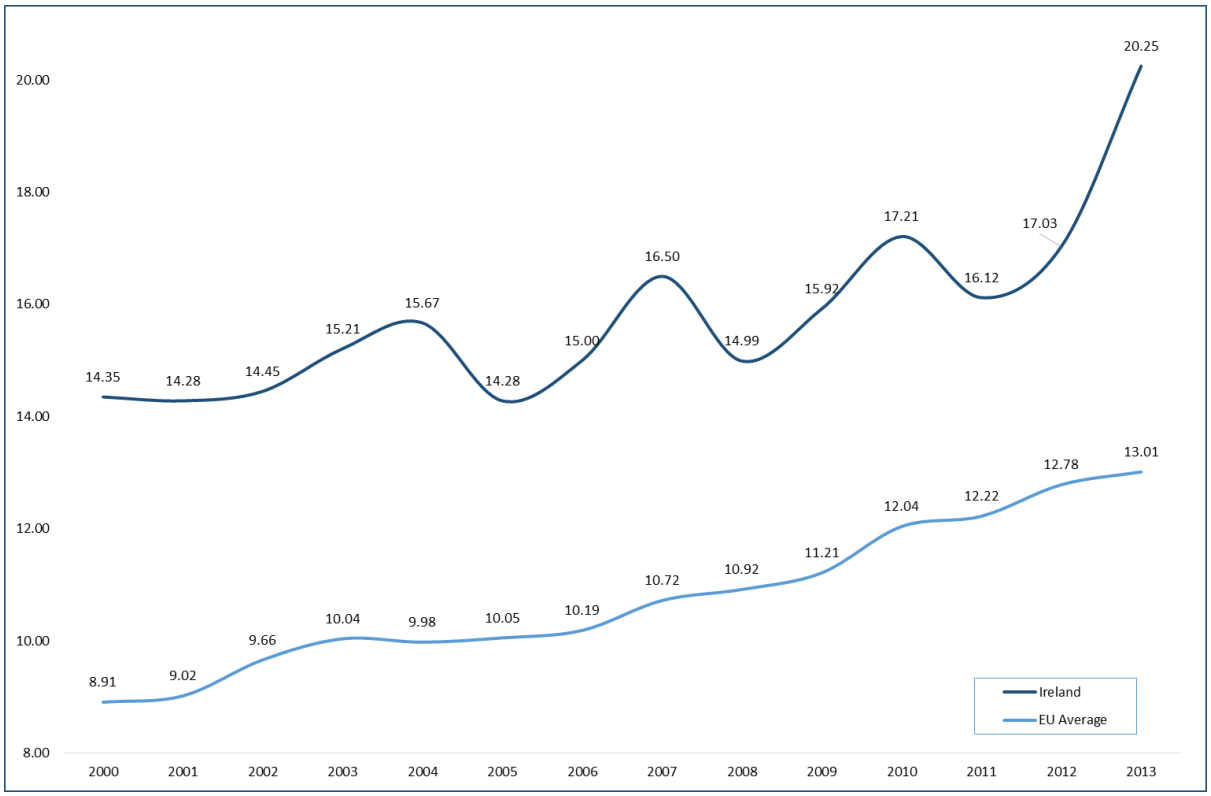
had been narrowing across those ten years, Ireland's recent surge in graduate numbers means it has accelerated away from the average and the gap in 2013 was the widest of any year this century.

Figure 3.1: Medical graduates per 100,000, 2013



Source: OECD

Figure 3.2: Medical graduates per 100,000, 2000 to 2013



Source: OECD

Retention of graduates

While the Fottrell Report seems to be having the desired effect in terms of the number of medical graduates produced, there are reasons to be concerned about the Irish health system's ability to retain them once they qualify. According to a survey carried out in March 2012, 34% of students in Irish medical schools definitely intend to emigrate after graduation and a further 53% report that they are contemplating it, with 40% intending to return within 5 years. For context, merely 3% stated that their definite intention was not to go abroad. Controlling for age and gender, second and third year students were the most likely to report definite emigration intentions, which suggests that the desire to emigrate lessens as students near the end of their studies[16].

Following up with respondents to determine how many actually emigrated would be a useful contribution to our understanding of graduate retention but, assuming such intentions are borne out in reality, it seems likely that the substantial investment made in medical education will do little to reduce the large number of doctors we recruit from overseas (see Section 1).

A striking finding of the report is that the most-frequently cited reason for emigrating was career prospects, with 85% of respondents listing it as an influential factor. For comparison, a survey of UK junior doctors, albeit a slightly outdated one, found that only 7% of those who were contemplating emigrating were doing so for career reasons[17]. Given that the Hanly Report identified the removal of career bottlenecks as an important reason for moving to a consultant-provided system in 2003, and the Tierney Report recommended a reduction of the two-to-one ratio between NCHDs and consultants a further ten years before that, it cannot be claimed that this issue has not been well-flagged.

More recently, the second interim MacCraith Report published in April 2014 made a number of recommendations to improve the retention of consultants in the public system. These included harmonising remuneration rates, increasing flexibility of working arrangements, addressing the unattractiveness of working in some Level 2 and 3 hospitals through the Hospital Groups, and more centralised and coordinated workforce planning. Whether or not these recommendations are successfully implemented and are sufficient to address the barriers to consultant retention will be a matter of interest going forward.

The cost of medical training

Producing a medical graduate comes at considerable expense to the Exchequer. A 2005 report put the cost per annum at between €18,523 and €23,716[18]. Taking €21,000 as a rough midpoint of the two estimates, each graduate our medical schools produce costs in the region of €105,000 to €126,000, depending on the duration of their studies. With the OECD reporting that 931 students graduated from Irish medical schools in 2013, the

[16] Gouda et al. 2015. 'Ireland's medical brain drain: migration intentions of Irish medical students' in *Human Resources for Health*, Vol. 13, No. 11.
[17] Moss, P. J. 2004. 'Reasons for considering leaving UK medicine: questionnaire study of junior doctors' comments' in *The BMJ*, Vol. 329, No. 1263.
[18] Indecon. 2005. *The Cost of Undergraduate Medical Education and Training in Ireland*. Dublin: Indecon.

gross cost to the State of producing those doctors could be as high as €120 million before the income from non-EU students is offset.

Coming at the question of cost from another direction, in 2011 the base cost of a unit of inpatient care in major teaching hospitals was €4,952 while in other acute hospitals it was €4,510[19], a difference of 9.8%. In 2011 major teaching hospitals accounted for about 48% or €1.85 billion of total hospital spending and, assuming the additional 9.8% base cost reflects the costs of the teaching mission, about €180 million of this spend is attributable to medical education.

Combining the figures above with the intention of so many of our medicine students to emigrate after graduation, it suggests that there might be very little return on our substantial investment in medical training. For each student who chooses to practice overseas after graduation, the Irish Exchequer effectively subsidises the training costs of the destination country. Moreover, for each departing graduate we have to replace by then importing a doctor to work in our health service, a secondary cost is incurred integrating the new doctor into the system.

Clearly, a situation where we produce the most medical graduates in the EU but are also the most reliant on internationally-trained doctors, and this despite having among the lowest numbers of doctors, cannot represent good value. Even if Ireland is a net beneficiary of these movements, with the subsidised training costs of the doctors we import more than offsetting the training costs of the doctors who leave, the logical consequence from the perspective of public expenditure is that we should train no doctors whatsoever and recruit exclusively from overseas. Given the absurdity of that scenario, the health service needs to become better at enticing medical graduates to work in our hospitals.

Return of service

Another means by which a greater number of domestic medical graduates could be retained in our health service is the introduction of some form of return-of-service agreement. Such an arrangement is already in operation in Australia, where a proportion of medical school places are reserved for the Bonded Medical Places (BMP) Scheme each year. Participants in the scheme receive government funding to cover some amount of their student fees and in return, once qualified, they undertake to work for equal duration to their funded studies in an area identified as having a shortage of doctors – a 'District of Workforce Shortage'. The scheme is only open to Australian citizens or those who can prove their intention to remain a resident after graduation, and those who breach the agreement are required to repay some portion of the funding they received. For example, if someone only works 3 years of a 6-year arrangement they would be liable to repay 50% of their funding[20].

[19] Material submitted by the Department of Health, 11 November 2014.
[20] Australian Department of Health. 2014. *Bonded Medical Places Scheme – Information Booklet for 2015*. Canberra: Department of Health.

What makes the Australian scheme interesting from an Irish perspective is that it has the potential not only to address the poor graduate retention rate in our health service but also to distribute graduates to where they are needed most. This could be an effective means of reducing the reliance on agency staffing and bringing down the pay costs of hospitals which have longstanding issues around attracting sufficient full-time personnel. Table 3.2 lists the six hospitals where agency staff made up more than 10% of the total workforce in July 2015, and the proportion of pay they accounted for. At only one of the six were agency costs not disproportionately large compared to the level of agency staffing.

Table 3.2: Agency staff and pay, July 2015

	Agency WTEs	Total WTEs	Agency staff as percentage of total	Agency pay as percentage of total
Midland Regional Hospital Portlaoise	101	713	14.17%	22.52%
Connolly Hospital Blanchardstown	165	1,220	13.52%	12.06%
Naas General Hospital	94	750	12.53%	16.81%
Midland Regional Hospital Mullingar	106	907	11.69%	15.46%
Midland Regional Hospital Tullamore	113	1,071	10.55%	12.27%
Our Lady's Hospital Navan	55	532	10.34%	14.70%

Source: HSE

Similar to the BMP Scheme, return-for-service (RFS) agreements operate in all the provinces and territories of Canada with the exception of Yukon. A study of the effectiveness of these arrangements in Newfoundland and Labrador found that 71.6% of doctors who entered into an RFS agreement completed their service commitment. The researchers also found that doctors were more likely to remain in the same place ten years after starting practice if they held an RFS agreement, even after it had expired[21]. Returning to the hospitals in Table 3.2 above, this suggests that the introduction of such a scheme in Ireland might not only help fill problem posts at these hospitals for the duration of a doctor's agreement but into the longer term as well.

One interesting distinction between the Australian scheme and that operating in Newfoundland and Labrador is that graduates from international medical schools are allowed to enter Canadian RFS agreements and compete for residencies. These may be Canadian citizens who studied overseas or international students with authorisation to work in Canada, but the study found that only a third of such graduates completed their service obligations. Given that the likelihood of an international medical graduate completing their agreed period of service is less than half of average, it suggests that eligibility for such a scheme should be limited to graduates of domestic medical schools.

For the introduction of such a scheme in an Irish context, this finding poses a problem. An EU student of medicine at an Irish university is currently obliged to pay a maximum of €3,000 a year in the form of the student contribution. On the other hand, an international student of medicine studying at University College Dublin will pay €48,000 in the 2015/16 academic year[22]. Given the large discrepancy between the amount of money EU

[21] Matthews, M. et al. 2013. 'Evaluation of Physician Return-for-Service Agreements in Newfoundland and Labrador' in *Healthcare Policy*, Vol. 8, No. 3, pp. 42-56.
[22] University College Dublin. 'Non EU Undergraduate Fees 2015'. Available online at: http://www.ucd.ie/students/fees/noneuundergrad2015.html (Accessed 19 October 2015).

and non-EU students are liable for, any agreement that offers fee remission in return for a period of service should be much more attractive to international students. However, in the Canadian experience these students were also much more likely to renege on their agreement. So, the students for whom a return-of-service agreement might offer the greatest initial attraction are those least likely to honour their obligations, while the EU students perhaps most likely to complete their service obligation have little financial incentive to enter such an agreement in the first place.

A possible solution would be to offer loan financing to medical students which can either be paid down or written off through service. For example, students could access an annual amount of €5,000 to help with living costs during their studies and upon graduation either repay their borrowings as they would a normal loan or have €5,000 written off for each year of service they complete in the domestic health system. The agreement could also specify that their service take place in hospitals or areas where there are shortages of staff.

The European Committee of Social Rights has previously concluded that the Irish practice of requiring army officers to repay some of their training costs if they do not complete a minimum period of service was a contravention of Article 1 of the European Social Charter, on the grounds that it interfered with an officer's right to freely choose work[23]. An advantage of a loan-based system such as the one described is that by making funding a voluntary arrangement to assist with living costs rather than a subsidy for training costs it might circumvent issues around the right to work.

Concluding remarks

Following the introduction of the European Working Time Directive in 2003, the Government commissioned a number of reports which collectively set out the reforms of our health system necessary to achieve compliance, changes which had additional benefits for quality of care and doctors' job satisfaction. These reports demanded an overhaul of the provision of hospital services, moving from consultant-led to consultant-provided, as well as of our medical schools, to ensure sufficient doctors were trained domestically to satisfy our future health needs.

The implementation of these reports' recommendations has been mixed. The Hanly and Buttimer Reports called for a significant decrease in the ratio of NCHDs to consultants, as indeed did the Tierney Report in 1993, but only slight reductions have been achieved in reality with the relationship standing at approximately two-to-one for the past four years.

On the other hand, the €200 million medical training package introduced in 2006 has had the desired effect in terms of the number of graduates our medical schools produce. With 20.25 medical graduates per capita in 2013, Ireland is producing the most doctors in the EU – over 55% more than the average level. However, with many of our medicine students intent on emigrating after graduation it appears that this investment in medical

[23] Council of Europe. 2013. *European Committee of Social Rights: Conclusions 2012 (Ireland).* Brussels: Council of Europe.

education will be of little benefit to the domestic health system. Furthermore, with 85% of students reporting that improved career prospects are an influential factor in their decision to emigrate, it seems that the failure to address the career bottlenecks identified in the Hanly Report is at least partly to blame for this state of affairs.

The introduction of some form of return-of-service scheme has the potential to improve our graduate retention rate and better distribute doctors to where they are most needed. However, with non-EU students likely to renege on such an agreement, any scheme will need to be targeted at EU students, who have much less to gain from fee remission. A solution might be to offer loan financing to students that can be repaid either monetarily or through service in the domestic health system, an approach which has the additional benefit of avoiding issues surrounding the right to work.

Conclusion

The aim of this paper was to understand the Irish medical workforce in terms of supply, demand and training in a European context.

Section 1 found that we have among the lowest numbers of doctors per capita in the EU. Despite this fact, Irish doctors appear to be much less active than their counterparts elsewhere, carrying out only 60% as many consultations as average. Additionally, in spite of the modest demand for doctors from our population, we have the highest proportion of internationally-trained doctors practicing anywhere in Europe. In contrast to doctors, we have among the most nurses per capita in Europe. About 4% of these nurses are in advanced roles and this might be a partial explanation for the low number of consultations carried out by our doctors. The value-for-money of advanced-role nursing could be a topic of future research.

Section 2 found that the Irish population is in relatively good health. We have the youngest median age and the lowest proportion of elderly dependents, among the best outlooks for healthy life years, and our population reports that they feel the healthiest in Europe. We also have lower than average incidence rates for diabetes and dementia, though cancer rates are among the highest in Europe. Going forward, however, there are reasons to think that this position will deteriorate due to higher than average smoking rates, alcohol consumption and obesity levels. Taken together, these determinants put us at risk of incurring a significant amount of avoidable health problems in the future.

Lastly, Section 3 found that the key reform proposed by the Hanly Report – transition to consultant-provided hospital care – has not been effectively implemented, making us noncompliant with the European Working Time Directive. However, €200 million was invested in medical training following the Fottrell and Buttimer Reports meaning that our medical schools now produce the most medical graduates in Europe but, faced with the prospect of entering a health service with poor career prospects, many are choosing to emigrate. A possible solution to this effective subsidisation of medical training in other countries is to introduce some form of return-of-service arrangement for students. The implementation and workability of such a scheme might merit further investigation.