An Roinn Sláinte
Department of Health

Rialtas na hÉireann
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IGEES
Seirbhís Eacnamaíoch agus Luachála Rialtas na hÉireann
Irish Government Economic and Evaluation Service

Ireland's Future Health and Social Care Workforce

Technical Note

Department of Health

December 2025

Background

This note outlines the technical approach used to calculate workforce projections, including demand, supply, and gap estimates as part of the Department of Health's work on workforce planning. It accompanies the overview and detailed versions of Ireland's Future Health and Social Care Workforce Paper and is intended to provide background to the modelling approaches, data sources and assumptions used to produce projections summarised in the Workforce Paper.

The workforce projection models were developed as part of a project funded by the European Union via the Technical Support Instrument (TSI), managed by the European Commission's Reform and Investment Taskforce (SG Reform) and delivered by AARC-Indecon Consultants in collaboration with the Department of Health. The workforce projection models have been updated and developed by Irish Government Economic and Evaluation (IGEES) staff within the Strategic Research and Evaluation Unit in the Department of Health in collaboration with the Strategic Workforce Planning Unit (SWPU) who have assisted in defining the future demand and supply scenarios. Key inputs to the demand model are taken from the HIPPOCRATES model which is funded through the DoH-ESRI Research Programme in Healthcare Reform. The workforce projection models consist of separate demand and supply sides; these are combined to estimate projected future gaps between demand and supply. From the projected gaps, the necessary increases to student places to meet future demand can be identified.

The development of these models continues growth in technical modelling capacity for workforce planning available in Ireland over the last number of years. The National Doctors Training and Planning Unit in the HSE have been undertaking projections for medical workforce planning for over a decade and their projections make key contributions to the modelling undertaken in these projections (National Doctors Training and Planning Unit, 2016, 2021). In July 2022, the ESRI, funded by the Health Service Executive (HSE), published an expansion to HIPPOCRATES to include workforce demand for publicly funded acute hospitals (Keegan et al., 2022). The Department first published research on workforce planning for medical doctors, and nurses & midwives in 2022 and 2023 (Caulfield et al., 2022; Hynes & O'Connor, 2023). The work presented here continues this increase in workforce planning capacity by estimating the required student intake for multiple professions within a consistent modelling framework.

Workforce planning is a complex exercise with significant levels of uncertainty involved. As part of its commitment to transparency in the production and communication of evidence; this technical note documents the major assumptions and uncertainties for the reader as a guide to the implications of this evidence for policy and investment decisions. The Department of Health is committed to ongoing evaluation and assessment of these assumptions and to strategically improving the data and research environment underpinning this work as part of a process of continual improvement.

Demand

For each profession, demand is calculated using growth rates applied to the proportion of the workforce currently working in each care area (Acutes, Primary care, Disabilities, Mental Health and Older Persons).[1] Demand is projected by aggregating the projections of workforce demand from individual care areas to produce an overall projection for each profession.

- The proportion of the workforce in each care area is estimated using HSE census data, regulator data, and assumptions where necessary.
    - That proportion is then scaled by the corresponding annual growth rate for the care area.
    - A simplified example, if there are a total of 60 WTE occupational therapists working in the health system and 50 work in primary care and 10 work in older persons, the 50 working in primary care will be grown at the primary care growth rate (1.6% annually) meaning demand in 2040 will be 65 and the 10 working in older persons will be grossed up by the older persons annual growth rate (3.2%) meaning demand for occupational therapists in the older persons care area is projected to be 17. In total the demand for occupational therapists will increase from 60 in 2023 to 82 WTE in 2040.

This method assumes that the growth for a given care area can be uniformly applied to each profession working within that care area. In other words, if demand for a care area is projected to grow at 1.6% annually, it is assumed that the demand for each profession working within that care area will grow by 1.6%. This is a simplification and an important assumption. In practice the impact of growth in demand for a care area may vary by profession. For example, a recent report by the ESRI found the range of annual average growth rates for professions in public acute hospitals to be 1.4-3.3% (Keegan et al., 2022). There are exceptions to this approach in the workforce projection models, for example in the disability care area whereby the growth rates applied are available on a profession specific basis.

Sources of activity growth rates

The growth rates for several care areas were sourced from the ESRI's "Hippocrates" model which projects healthcare activity, expenditure, bed capacity, and workforce for a range of services including public and private hospitals, GP and practice nurse services, long-term and home care services (public and private). For care areas not yet incorporated into the Hippocrates model, for example mental health and disabilities, growth in demand is projected using alternative sources combining CSO population projections, the Disability Capacity Review and the National Doctors Training and Planning (NDTP) Unit workforce projections.

[1] Other care groups defined within the HSE include Ambulance Services, Health & Well-Being, National & Central Services. Any workforce recorded in these categories are recategorized into the five above-mentioned care groups. This recategorization is done according to the respective proportion of the workforce working across these care groups. In general, this is a small proportion of the workforce and does not impact the results significantly.

The limitations noted above should be considered when reviewing the below growth rates. These rates are applied uniformly across all professions within each care area; however, this approach may not reflect profession-specific factors that influence growth in demand.

Primary care & Community (2.5% for Nurses and Midwives - 1.6% for all other professions)

- The model's annual growth rate for primary care is 1.6% and is applied to all professions modelled here except Nurses & Midwives. This has been derived from the Connolly et al. (2025), which notes that under a central population scenario, demand for GP consultations will increase by 24% between 2023 and 2040 (Table 4.1). A further 8% is added to the growth to reflect the additional demand due to extending eligibility to the total population. The total growth over the 17 years is therefore 32% and when annualised the resulting growth rate is 1.6% per annum.

- For the Nurses & Midwives model, the growth rate in General Practice Nurses is applied to those working in the primary care group. Under a central population scenario, demand for General Practice Nurse consultations will increase by 33% between 2025 and 2040 (Table 4.2). A further 18% is added to the growth to reflect the additional demand due to extending eligibility to the total population (Table 4.3). The total growth over the 17 years is therefore 51% and when annualised the resulting growth rate is 2.5% per annum.

Acute Hospital Care (1.6%)

- The model's annual growth rate for the acute care area is 1.6% which is sourced from the Hippocrates model as outlined in Brick et al. (2025). The growth is based on the increased demand for inpatient bed days between 2023 and 2040 of 31.5%. This is under a progress scenario which includes assumptions of a central population growth and age structure, moderate healthy ageing, a reduction in avoidable hospitalisations, an increase in elective inpatient delivered as day case, reduction of private activity being carried out in public hospitals, a reduction in waiting lists and a reduction in length of stay. It also includes a reduction in bed occupancy rate for inpatients.

Older persons (3.2%)

- The growth rate for the older persons care area is 3.2% annually. This is a weighted average of the projected growth in demand for long term care residential care (3.1% for long-term and 2,7% for short-term) and the projected growth in demand for home support (3.2%). This growth is based on the progress scenario from Walsh et al. (2025) which includes assumptions of central population growth and ageing, optimistic healthy ageing in the form of compression of morbidity, reorientation of long-term care to the home support scheme and community settings and addressing of unmet demand for home supports and LTRC.

Mental health (1.6%)

- The annual growth rate for mental health used in the model is calculated with reference to the NDTP's Specialty of Psychiatry report (2021). This is used because currently, HIPPOCRATES does not have a mental health growth rate. In order to determine future

demand for consultants in Psychiatry, NDTP facilitated engagement across HSE Mental Health Services (including National Clinical Programmes and Operations), the College of Psychiatrists of Ireland (CPsychI), the Department of Health and HSE National HR to determine and outline a joint stakeholder perspective of the future demand for consultants and the rationale underpinning the demand estimates. As part of this process these stakeholders are informed by data on waiting lists and vacancies as measures of unmet demand. The report finds that the growth in demand for consultant psychiatrists between 2020 and 2030 is approximately 42% or 3.6% annually. This is applied to the first 7 years of the projection horizon, the demand for the mental health care area is then grown at a rate proportional to the CSO's population projections under M2 between 2030 and 2040 – this is 0.6% annually. When the growth is smoothed across the projection horizon, 2023-2040, the average annual increase is 1.6%. This approach implicitly assumes that an optimal ratio of the mental health workforce to the population has been achieved by 2030 and thereafter demand is driven by increases in the population

Disabilities Profession Specific Growth Rates
(1.9% - ID nurses, 2.9% - Social workers, 3.6% - Occupational therapists)

- The growth in demand for disabilities has been calculated on a profession-specific basis and has been informed by the Disability Capacity Review (DCDE, 2021). The Disability Capacity Review projection horizon is 2017-2030. Growth rates are available for unmet need, for demographic growth and for unmet need and demographics aggregated together. The significant majority of growth in this sector arises from unmet need rather than demographic drivers. To reconcile the growth rates from the Disability Capacity Review 2021 to these workforce projections an average of two different methodological approaches is taken.

    - Method 1 – uses the total growth in demand for each profession (including increased demand as a result of demographics and also addressing unmet need) from 2017-2032, then nets out growth due to demographics from 2017-2023 and adds in demographic growth from 2032-40. Note that this method assumes the same average population growth between 2017 and 2023 and 2032-2040 which is based on the projected demographic growth between 2017-2032. The absolute increase in demand is then annualised into an annual average growth rate.

    - Method 2 - inflates the baseline demand by unmet need in 2017 and then grows this figure by the demographic trend estimated between 2017-2032. The absolute increase in demand is then annualised into an annual average growth rate.

The model results shown in this document demonstrate only one demand scenario which incorporates the components of the individual growth rates outlined above. However, there is also potential to model different future demand scenarios by altering the growth rates included. For example, a comparator demand scenario based on population and demographic changes only can aid in identifying the impact in terms of workforce demand of introducing certain policies included in the progress scenario.

Unmet demand

For each growth rate, unmet demand is captured in the following way:

- **Primary Care**: Demand arising from universal access to primary case is estimated based on data included the sensitivity analysis in Connolly et al. (2025). This paper estimates that extending eligibility to GP visit card to total population would result in an additional 8% growth in GP visits over 15 years from 2025-2040. For nurses in primary care the additional growth is 18%.

- **Public Acute Hospitals**: For public acute hospitals, the demand growth rate is increased to reflect the activity required to address waiting lists. This is undertaken as outlined in section 3.4.6 of *Brick et al. (2025)*. The waiting list management included in the progress scenario reflects a "higher non-recurring backlog and recurring activity, and a higher outpatient conversion rate (33.3%) over a shorter period (five years)".

- **Older Persons**: Unmet demand is also included in the older persons growth rate which has been calculated based on Walsh et al. (2025). Unmet demand for short and long stay beds and home support is calculated using data from the HSE on delayed discharges or delayed transfers of care for patients who have been medically cleared for discharge but are waiting on either a short or long stay bed or are awaiting home support. Long stay bed unmet demand also accounts for the NHSS waiting list and the HSE Winter Plan and home support unmet demand takes account of the numbers of the waiting list for the HSE's home support scheme.

- **Mental Health**: Demand estimates derived from the NDTP Specialty of Psychiatry report take into account unmet demand for this profession (NDTP, 2021). In their approach, the demand estimates are developed through stakeholder informed recommendations. These stakeholders included HSE Mental Health Services (including National Clinical Programmes and Operations), the College of Psychiatrists of Ireland (CPsychI), the Department of Health and HSE National HR. As part of this process these stakeholders are informed by data on waiting lists and vacancies as measures of unmet demand. Additionally, 10% of consultants is projected to be required to cover leave and flexible working arrangements which also increases demand estimates.

- **Disabilities:** The Disability Capacity Review 2021 used data from the National Intellectual Disability Database which identifies those who currently have a therapy service, but require additional therapy inputs, as well as people with no current service who require one (DCDE, 2021). Due to data limitations, it was assumed that the level of unmet need for those with an intellectual disability was the same as for those with a physical or sensory disability. To quantify the service gap, it was assumed that those with no service for a particular therapy would on average require the same level of input as those currently getting a service. Where someone required an enhanced service, the alternatives modelled were that they required a third, a half or two thirds more than they were already getting. In our demand projections

we take the midpoint of a half as the level of enhanced service required. The level of unmet need estimated for Occupational Therapists was 88%, for Social Workers was 57% and for Intellectual Disability nursing services it was 27%.

Work to identify further ways to refine the approaches to estimating unmet need is underway in the Department for inclusion in future workforce projection exercises.

Limitations

- Projections for the workforce working in primary and community care are based on the growth rates for GPs. This includes a proportion of the workforce of Optometrists, Dispending Opticians, Pharmacists and Occupational Therapists. This implies that the evolution in demand for GPs is similar across these professions. It is likely that they have growth rates which are different from GPs based on inter alia, the age-sex distribution of those utilising the services of these profession, differential effects of policy, healthy ageing, and so on.

- Approximately 1 in 3 Social Workers work in TUSLA the Child and Family Agency. Their role and therefore the demand drivers for this workforce are distinct from any of the care areas for which growth rates are available. In the absence of a specific growth rate, this workforce is grown by a weighted average of the growth rates for the above-mentioned care areas (Acutes, Primary Care, Mental Health, Disability, Older Persons). The weighting is applied on the basis the proportion of the HSE social workers across the five care areas.

Supply

The supply-side of the modelling incorporates a 'stock-flow' framework for projecting supply. Supply projections consider the current stock and historical trends in supply growth (joiners and leavers), as provided by the relevant regulator, and domestic education and training pipeline, planned expansions to education places and observed flows in international recruitment. Also taken into account is the age profile of each those on the register, those leaving and those joining.

The starting stock is the number on the professional register, adjusted for the proportion practicing – for medical practitioners, nursing and midwifery and pharmacists, this information is available for 2023 from the respective professional register. For CORU- regulated HSCPs, an assumption that 91% of registrants are practicing was made.[2] The age breakdown of the stock, in 5-year age-brackets is also included in the model.

The inflows onto the professional register, by age and country of education is included in the inflows and the outflows, by age and, where available, reason for leaving is also collected. Note that this information is not readily available for all professions and in some cases, assumptions have been made to ensure that the model can draw on information that is an assumed value. As data quality improves in the future, the number of assumptions that the model needs to make about each profession, will reduce.

Limitations

Graduation rates

A graduation rate is required in order to estimate how many graduates will be available to join a professional register based on the numbers enrolled in domestic education courses. This is of particular importance as the education places are increased into the future. Within the model, the graduation rate is aggregated by profession and education level, for example for Occupational Therapy (OT) there is a completion rate for undergraduate OT courses and a separate completion rate for postgraduate OTs.

Data on higher education enrolments and graduates are sourced from the Department of Further and Higher Education. To estimate graduation rates, the number of graduates in a given year is divided by the number of students who enrolled in the corresponding cohort at the start of their course. This assumes that all graduates completed the course in the shortest timeframe and does not account of the fact that some students will repeat a year or take a year out.

In some instances, the graduation rate derived for a particular course in a given year was over 100%. While there may be valid reasons for this, for example students repeating a year or taking a year out, the model takes the average graduation rate for the previous years of data and projects that forward. Years with graduation rates that were significant outliers had a disproportionate influence

[2] Note that CORU has recently updated their data system and it is expected that information on the proportion of registrants who are practicing will be known for future years of data.

on the average resulting in a bias in the projected graduation rate. As the projected future graduation rate cannot be continually over 100%, an adjustment was required for the professions where the data indicated this issue. This adjustment was achieved by taking the average of the graduation rate as defined above and the completion rate for the relevant cohort according to the Higher Education Authority's (HEA) Completion Data Release (2021). Further engagement will be undertaken with the HEA to improve estimations in this area. **Error! Reference source not found.** 1 shows the average graduation rates used in the model.

Table 1 Graduation rates

Profession	Graduation Rate
Pharmacists	89.8
Dispensing Opticians	81.75
Optometrists	94.25
Social Workers	96.25
Occupational Therapists	91.75
Source: DFHERIS, Authors Calculations, (Higher Education Authority, 2021)	

Unattributed flows

The supply-side methodology is based on a stock flow framework consistent with that established by the Skills and Labour Market Research Unit of FÁS on behalf of the Expert Group on Future Skills Needs (2009). In this approach, the change in the stock of workforce between any two points in time is equal to the intervening net flow. In the development of the models, it was noted that the change in the value of this stock did not equal the net flow in data available from some professional registries. This suggests either that there is measurement error in the data or that there are timing differences between when stocks and flows are recorded. This was encountered in data provided in the Medical Council, Nursing & Midwifery Board of Ireland, and in the Pharmaceutical Society of Ireland. To account for these issues an additional flow was estimated called an *unattributed flow*. This is defined as the difference between the change in stock and the net flow between two periods. The existence of this phenomenon in the data raises two complex methodological questions 1) Whether to include this unattributed flow in the projections of supply and 2) if included, how to parameterise the value of this flow into the future. On the first question it was decided not to include the unattributed flow for the medical workforce projections. Engagement with the Medical Council indicated that there were timing differences between when stocks and flows were recorded. This suggests that they may cancel out over time. Additionally, data recorded for 2023 is expected to be complete and accurate suggesting that measurement error is not causing the unattributed flow. For the Nurses and Midwives model and Pharmacists, unattributed flows were left in the model while further investigation is undertaken on their datasets. For these models, the parameter values were based on between 4 and 7 years of data in the past covering years.

The impact of this choice to include and how to parameterise can be significant. Based on supply

scenario 2 for the Nurses and Midwives model total supply in 2040 is higher by 10% if unattributed flows are not included in the model. For the Medical Practitioners model, it increases supply by 20%. Further work is underway to understand and examine the impact for Pharmacists. For all models, work will be progressed in collaboration with professional registries to better understand this issue and refine the models as part of the Health and Social Care Workforce Planning Technical Group outlined in the Workforce Paper.

Supply scenarios

The two main parameters on the supply side are the number of domestic education places and the level of inward migration of foreign educated professionals. In collaboration with Strategic Workforce Planning Unit, we have identified a number of supply scenarios which are discussed below and detailed with respect to each of the professions in the results.

Baseline supply

The baseline supply scenario presented in each of the graphs for each of the professions below demonstrates the projected supply if the 2023 domestic education places (internships in the case of medicine) are maintained into the future and there is no inward migration of foreign educated professionals.

Supply with increased education places

These supply scenarios are individual to each profession. In general, increases in supply from the baseline are achieved through a combination of inward migration and increased domestic education places to get closer to closing the gap between demand and supply in 2040.

Results

Medical Practitioners

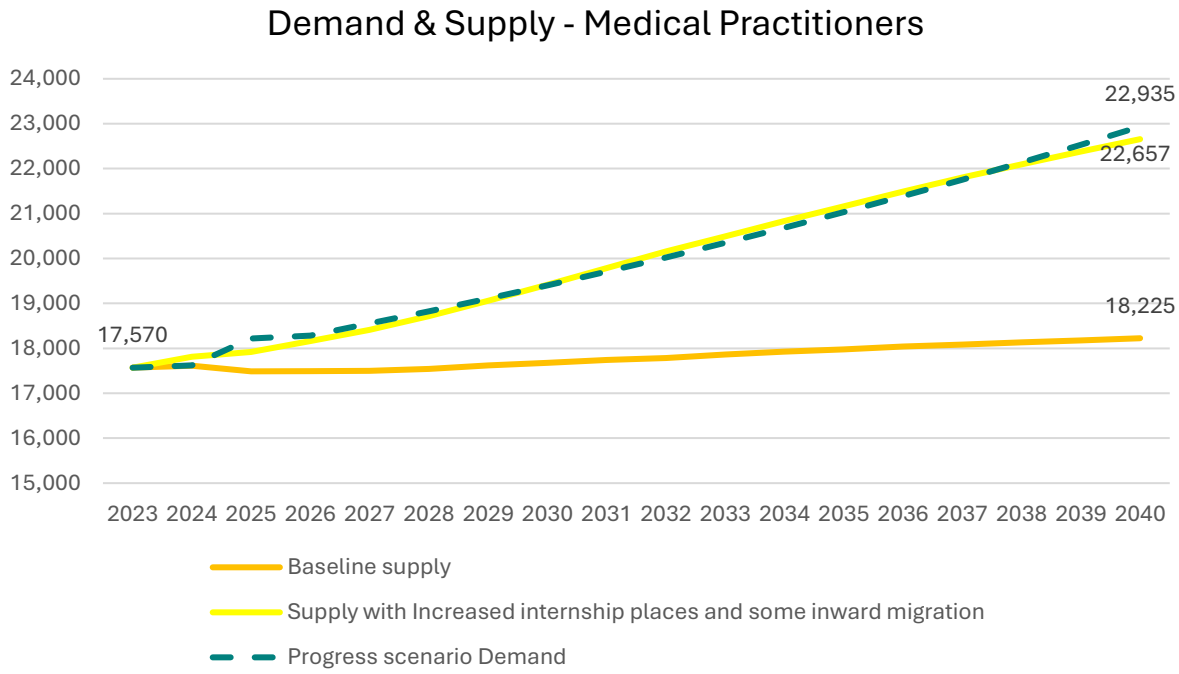

Figure 1 Demand and supply projections for Medical Practitioners

Figure 1 demonstrates the demand for medical practitioners in aggregate under the progress scenario. Details on the progress scenario are outlined in the demand section above. Over the 17-year projection period, demand for doctors is projected to increase by 31% to 22,935 WTE in 2040. The two supply scenarios project the level of supply under (1) the baseline, whereby there is no inward migration of foreign educated doctors and the number of internships is held at the 2023 levels over the projection horizon and (2) the supply scenario where internships are increased from 873 in 2023 to 1,220 in 2035 and the inward migration of foreign educated doctors is limited to less than 10% of the total inflows in any year.

The output focuses on the number of internships rather than the number of student places. In Ireland, a significant proportion of medicine students are international students undertaking their medical education in Ireland who do not complete an internship in Ireland. Policy in Ireland is to ensure that each EU student has the option of undertaking an internship in Ireland upon completion of their medical degree. As such, our focus is on the number of internship places. To identify the number of EU students required in a given year, the reader can approximate by observing the number of internships available five years in ahead e.g. the number of EU student places required in 2030 is 1,220 – the number of internships in 2035.[3]

[3] Medical degrees can take 4-6 years so estimating the number of EU student places based on a 5 year timeline is approximately accurate.

Nursing and Midwifery

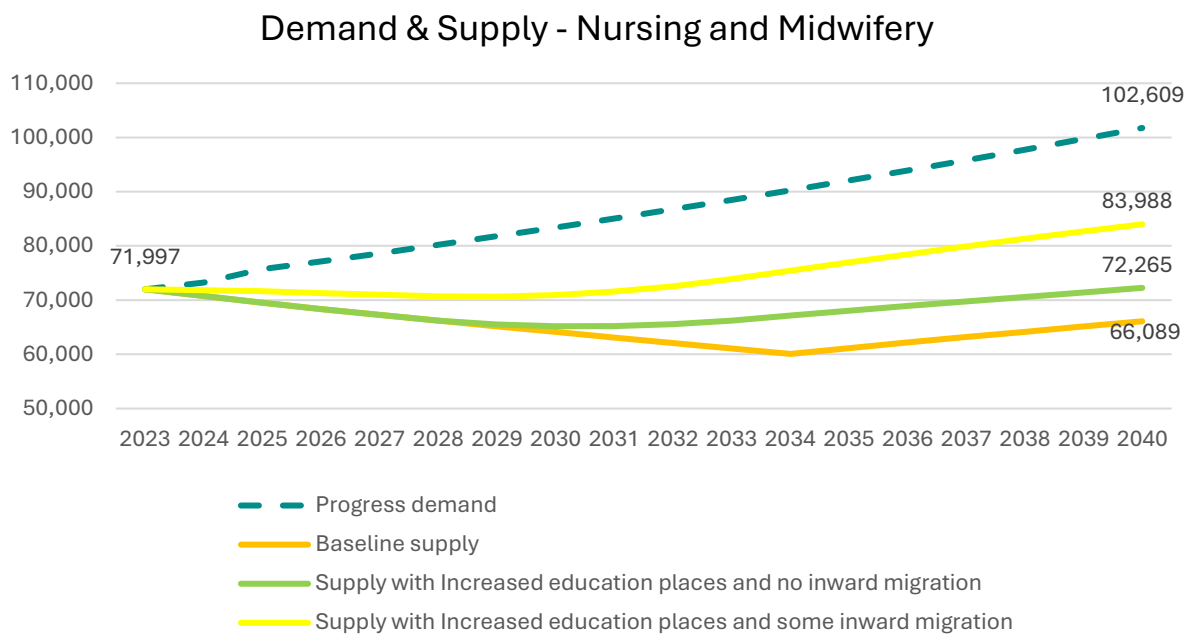

Figure 2 Demand and supply projections for Nursing and Midwifery

The projections presented demonstrate that the projected demand for nurses and midwives in 2040 under the progress demand scenario is 43% higher than the demand in 2023. Under the baseline supply scenario whereby education places remain at their 2023 level and there is no inward migration of foreign educated nurses and midwives, supply is projected to fall to 66,089 in 2040. A significant increase in education places and allowing an inflow of foreign educated nurses and midwives which will gradually wind down to 20% of inflows helps to increase supply over the projection period as shown in the graph. Student places increase from 2,110 in 2023 to 4,550 in 2040.

There will, however, still be a gap between projected supply and demand, consequently other factors will need to be considered in order to ensure there are sufficient numbers of nurses and midwives to meet the required demand. As noted in the (Workforce Paper detailed version), there is a need to find ways of working to reduce demand over the coming decades.

Pharmacists

As demonstrated below, the demand for pharmacists is projected to increase to 7,746 by 2040. Under the baseline scenario, supply is projected to increase slightly, however, under the increased education places from 247 in 2023 to 397 in 2040, there is projected to be an increase in the supply of pharmacists to 7,691 in 2040.

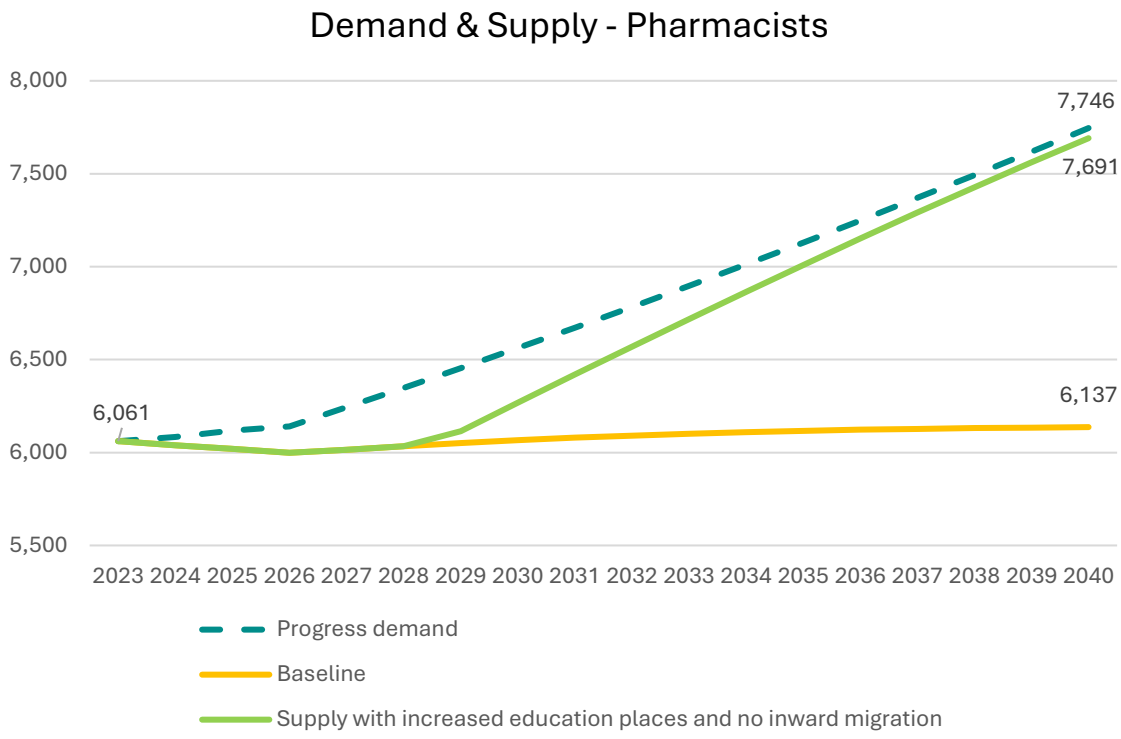

Figure 3 Demand and Supply Projections for Pharmacists

Occupational Therapists

For occupationl therapists demand rises to 4,018 from 2,886. The projected supply of occupational therapists under the baseline supply scenario is a slight increase on the 2023 level. With an increase from 131 student places in 2023 to 245 places by 2030 and some inward migration, which is limited to a maximum level of 10% of inflows in any given year, the supply is projected to meet the projected demand under the progress scenario by 2040.

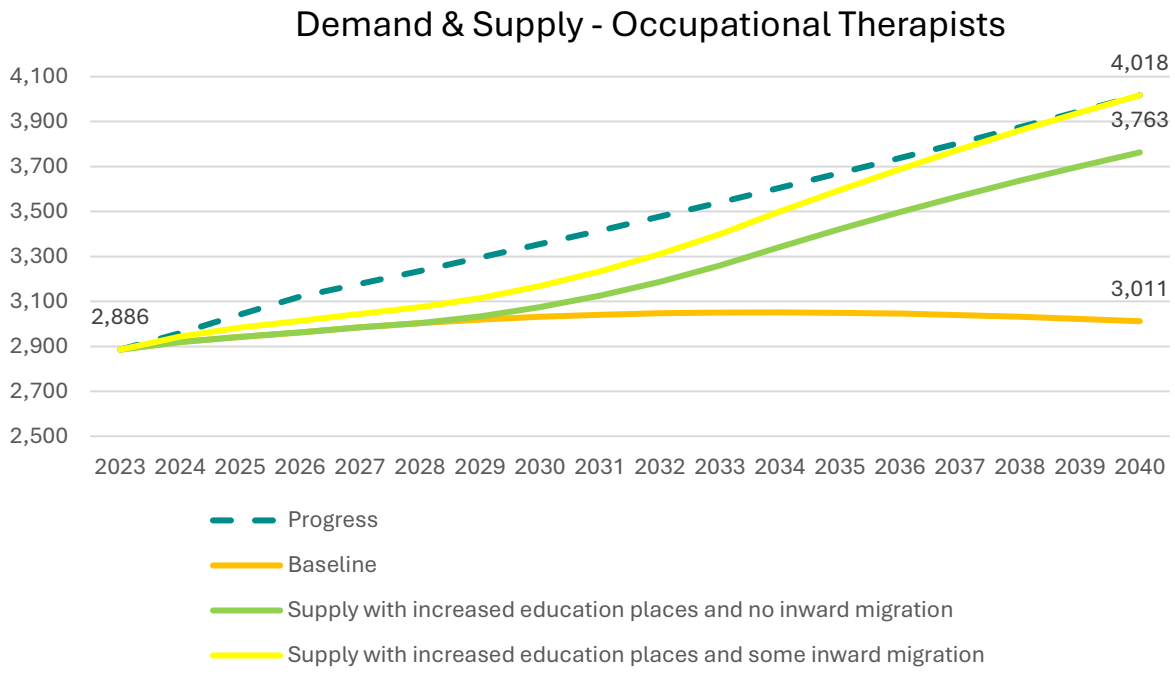

*Figure **4** Demand and supply projections for Occupational Therapists*

Social Workers

Demand is projected to increase by 35% for social workers from a baseline of 4,348 to 5,858 in 2040. Under the baseline supply scenario whereby the 2023 education places are maintained into the future and there is no imward migration of social workers educated abroad, supply will increase by 9%. However, if domestic education places are increased by 72 from 238 in 2023 to 310 by 2030 and there are some inflows of social workers from abroad, then supply is projected to increase to meet projected demand by 2040.

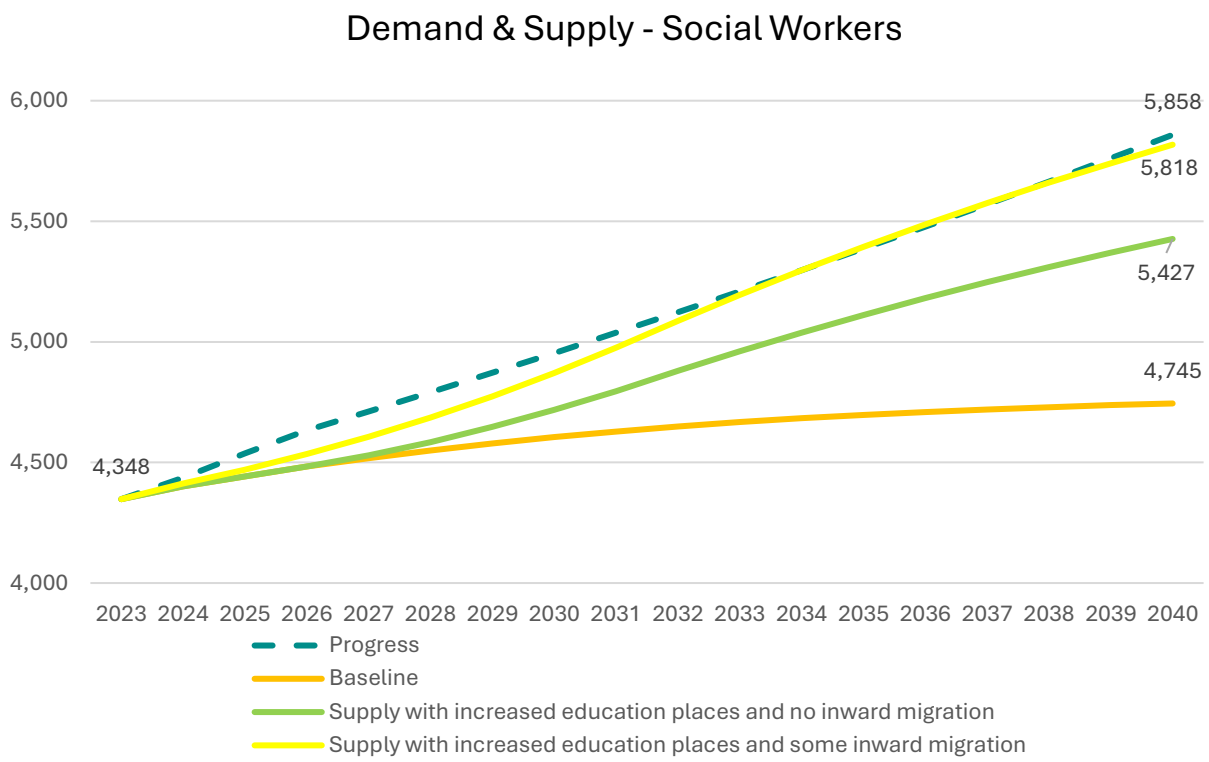

Figure 5 Demand and supply projections for Social Workers

Optometrists

Under the baseline supply scenaio, the supply of optometrists is projected to fall. Increasing education places from 38 in 2023 to 62 by 2030 along with some inward migration of optometrists educated outside of Ireland, the projected supply increases to the level required under the progress demand scenario projections.

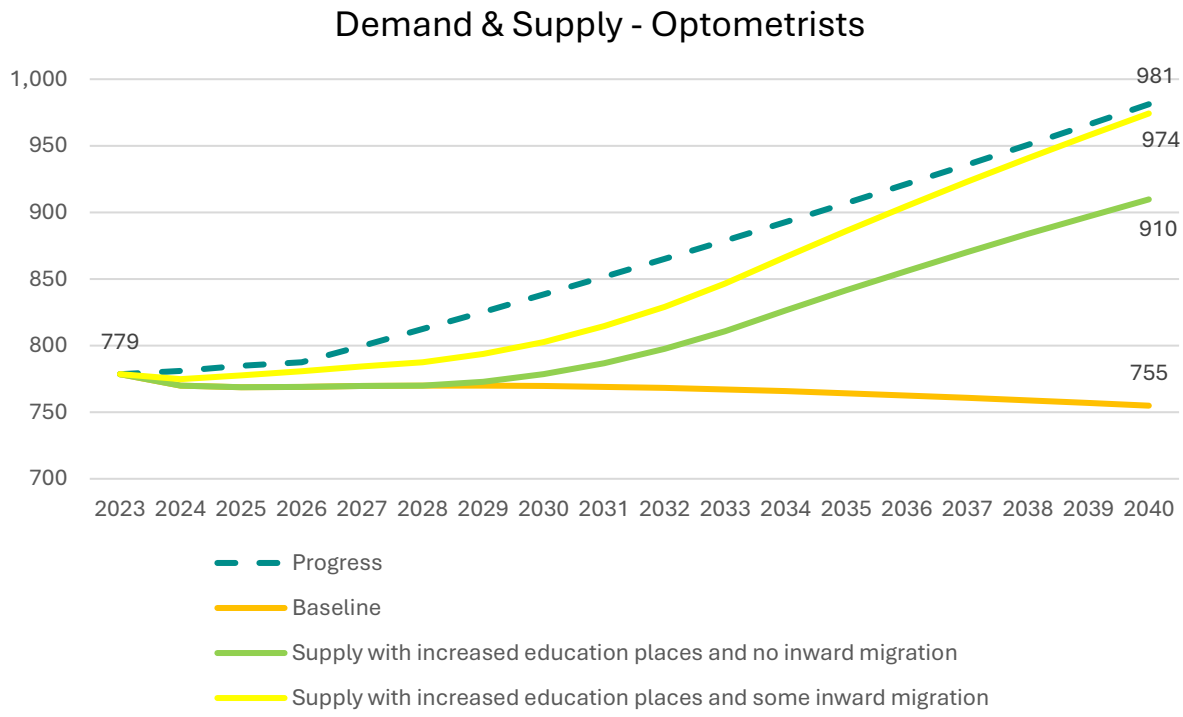

Figure 6 Demand and supply projections for Optometrists

Dispensing Opticians

As can be seen on the below graph, there is a reducing supply of dispensing opticians under the baseline supply scenario whereby there is no increases in the number of domestic education places and no infows of foreign educated dispensing opticians. In order to ensure that there is sufficient numbers of dispensing opticians to meet the projected demand under the progress scenario, an increase to 23 student places by 2030 from 11 in 2023 is required, along with some inward migration which is set at a max 10% of the inflows.

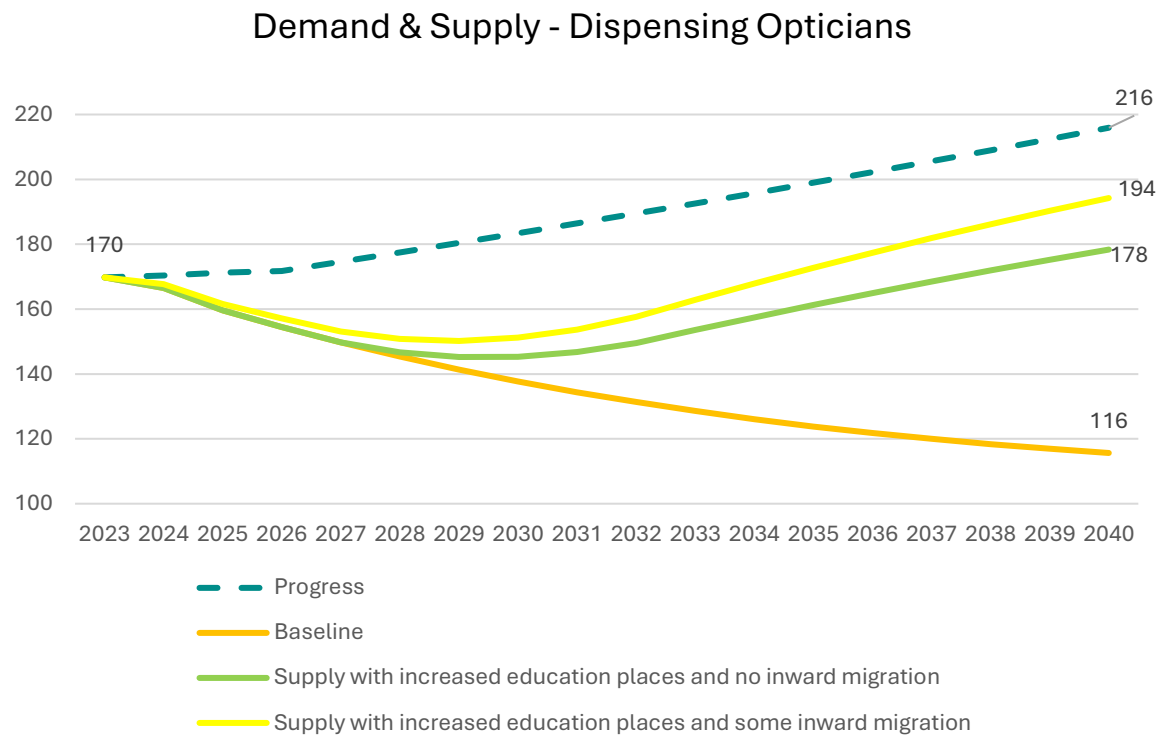

Figure 7 Demand and supply projections for Dispensing Opticians

Supply Sensitivity Analysis

A brief sensitivity analysis is undertaken to detail how sensitive the aggregate supply in 2040 is to changes in the values of flows in the model. Over the projection horizon, inflows and outflows increase and decrease the stock of a given profession. The size of these flows are based on average values in previous years. As a stylised example, if there were a stock of 100 nurses and midwives in 2023 and 1 returned to practice in that year, the flow-stock ratio would be 1% for returns to practice. The model assumes that each year 1% of the stock of nurses and midwives returns to practice. Ideally, this 1% would equal the future long-run average value of returns to practice as a percentage of stock. However, this future long-run average is unknowable. It can be approximated by the average historical value over previous decades but this data is not available. The sensitivity analysis in Table 2 and Table 3 provides information to guide the reader on how sensitive model outputs (i.e. aggregate supply) are to different values for these flow-stock ratios. It shows for a

given flow, the approximate impact on the aggregate supply of a 15% change (increase or decrease) in the value of that flow parameter. The choice of 15% is arbitrary. Over limited ranges the approximate effects are scalable and additive i.e. to understand the effects of a 30% change in flow-to-stock ratio the effect size can be doubled. To understand of the effect of a 15% change in two separate flows the effect sizes of those flows can be added can be added.

	Effect: Change in supply in 2040 as a % of supply in the baseline scenario
15% change in rate of retirements	~ 2.8%
15% change in rate emigration of doctors	~ 2.7%
15% change in rates of return to practice	~ 1.4%

Table 2: Sensitivity analysis of supply side for medical doctors

	Effect: Change in supply in 2040 as a % of supply in the baseline scenario
15% change rate of outward migration	~ 1.22%
15% change in rate of other outflow*	~ 2.22%
15% change in rate of return to practice	~ 0.56%

Table 3: Sensitivity analysis of supply side for medical doctors
Other outflows are exits from the register not otherwise defined

Limitations

- The projections are aggregated for nurses and midwives. This is necessary to maintain model simplicity and because of limitations in our ability to distinguish between those individuals that are operating in nursing or midwifery roles. Therefore, demand and supply projections reflect the total number of nurses and midwives and are not broken down further by division of the register.

- Projections are not forecasts, they are scenario- based estimates. The results, both demand, supply and therefore student places are sensitive to the assumptions made and the input data quality. As the data environment improves and the need for assumptions reduces, the models will need to be updated, and the projections will become more accurate.

Model Projections & Gap Analysis

The below table demonstrates some of the key model outputs. The table shows for medical practitioners, nurse & midwives, pharmacists, social workers, occupational therapists, dispensing opticians and optometrists, the projected demand, projected supply under a baseline supply scenario and the required student places.

Table 4 Model Projections and gap analysis

	In 2040 Demand (WTE) - Progress Scenario	% increase in Demand 2023 - 40	In 2040 Supply under baseline (2023)	In 2030 Estimated Student Places required (Current)
Nurses & Midwives	102,609	+43%	66,089	4,550 (2,110)
Medical Practitioners	22,935	+31%	18,225	1,220 (873)[4]
Pharmacists	7,746	+28%	6,137	397 (247)
Social Workers	5,858	+35%	4,745	310 (238)
Occupational Therapists	4,018	+39%	3,011	245 (131)
Optometrists	981	+26%	755	62 (38)
Dispensing Opticians	216	+27%	116	23 (11)

These are indicative demand projections based on the estimated future demand for professionals based on the current care pathways and skill mix. It does not consider new roles which will emerge or new ways of working through technological advancements and optimising the existing workforce.

[4] Based on intern intake required in 2035.Translates to the number of IRE/UK and EU students in Irish medical schools required in 2030.

Summary of Approach and Main Assumptions

- For each profession, demand is calculated using growth rates applied to the proportion of the workforce currently working in each care area (Acutes, Primary care, Disabilities, Mental Health and Older Persons).[5] This method assumes that the growth for a given care area can be uniformly applied to each profession working within that care area. There are exceptions to this approach in the workforce projection models, for example in the disability care area whereby the growth rates applied are available on a profession specific basis.

- Growth rates for Acutes, Primary Care, and Older Persons care areas are taken from the recent Capacity Review published by the ESRI.

- For care areas not yet incorporated into the Hippocrates model, for example Mental Health and Disabilities, growth in demand is projected using alternative sources combining CSO population projections, the Disability Capacity Review and the National Doctors Training and Planning (NDTP) Unit workforce projections.

- In general, some measure of unmet demand is taken into account for each profession.

- The supply-side of the modelling incorporates a 'stock-flow' framework for projecting supply. Supply projections consider the current stock and historical trends in supply growth (joiners and leavers), as provided by the relevant regulator, and domestic education and training pipeline, planned expansions to education places and observed flows in international recruitment. In this approach, the change in the stock of workforce between any two points in time is equal to the intervening net flow. In the development of the models, it was noted that the change in the value of this stock did not equal the net flow in data available from some professional registries. This required the inclusion of an unattributed flow for Nurses and Midwives, and Pharmacists.

- The starting stock is the number on the professional register, adjusted for the proportion practicing – for medical practitioners, nursing and midwifery and pharmacists, this information is available for 2023 from the respective professional register. For CORU-regulated HSCP's an assumption that 91% of registrants are practicing was made.[6]

- To estimate graduation rates, the number of graduates in a given year is divided by the number of students who enrolled in the corresponding cohort at the start of their course. In some instances, the graduation rate derived for a particular course in a given year was over 100% - requiring an adjustment. This adjustment was achieved by taking the average

[5] Other care groups defined within the HSE include Ambulance Services, Health & Well-Being, National & Central Services. Any workforce recorded in these categories are recategorized into the five above-mentioned care groups. This recategorization is done according to the respective proportion of the workforce working across these care groups. In general, this is a small proportion of the workforce and does not impact the results significantly.
[6] Note that CORU has recently updated their data system and it is expected that information on the proportion of registrants who are practicing will be known for future years of data.

of the graduation rate as defined above and the completion rate for the relevant cohort according to the Higher Education Authority's (HEA) Completion Data Release (2021). See Table 1.

- The projections are aggregated for nurses and midwives. This is necessary to maintain model simplicity and because of limitations in our ability to distinguish between those individuals that are operating in nursing or midwifery roles.

- Projections are not forecasts, they are scenario- based estimates. The results, both demand, supply and therefore student places are sensitive to the assumptions made and the input data quality.

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