NATIONAL DOCTORS TRAINING & PLANNING

ANAESTHESIOLOGY MEDICAL WORKFORCE IN IRELAND 2023-2038

An expert stakeholder informed review

January 2024

College of Anaesthesiologists of Ireland

Anaesthesia National Clinical Programme for Anaesthesia

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Foreword: Medical Director, National Doctors Training and Planning

It is a great pleasure to welcome the publication of NDTPs most recent report the Anaesthesiology Medical Workforce in Ireland 2023 - 2038. Workforce planning is the foundation stone of NDTP and the NDTP Strategic Plan 2022 – 2027 is the visible commitment to that foundation. Our strategic plan references our commitment to workforce planning that is informed, targeted and inclusive. The workforce reports that are generated by NDTP feed into the medical education and training aspect of NDTP via the commissioning and funding of medical training required to meet workforce needs, ensuring that the training content and delivery is responsive to the changing needs of the Irish healthcare system and supports the retention of doctors upon completion of their training.

Our ambition is to support world-class postgraduate training programmes and in so doing ensure that the right doctor is in the right place with the right competencies at the right time. NDTP will continue to invest in workforce planning and workforce analytics that will allow NDTP to make recommendations that enable evidence-based decision-making by our HSE colleagues, the Department of Health and government.

NDTP produces both high level and speciality specific workforce reports. The reports are developed to provide evidence-based data and projections for the current and future requirement for each of the medical specialities. These reviews outline the current speciality service delivery model, the configuration of the medical workforce, future drivers of change to that workforce as well as planned models of care, among other things.

Workforce planning is a collaborative process and, in this respect, I would like to thank the College of Anaesthesiologists of Ireland, the National Clinical Programmes for Anaesthesia and Intensive Care Medicine and colleagues in Paediatric Anaesthesia and Pain Medicine and all our external stakeholders for their dedication to excellence in the work we do together and more especially for their input into this workforce document.

Professor Brian Kinirons,

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Foreword: Clinical Programme Lead, National Clinical Programme for Anaesthesia

This document contains a wealth of useful information relating to the number of consultants and non-consultant hospital doctors (NCHDs) currently working in the specialty of Anaesthesiology in the Republic of Ireland, which will assist greatly in the planning of the workforce over the coming fifteen years up to 2038.

Data from the NDTPs Doctors Integrated E Management System ascertained that the number of consultants in Anaesthesiology that were employed in the public service in Ireland, as of March 2023, was 462 which is equivalent to 443 WTE's (with a WTE rate of 96%). Data provided by the Medical Council in 2022 indicated there were 58 consultants registered as working in full-time private practice in Ireland. This amounts to a total of 520 consultant anaesthesiologists working in Ireland, based on data available as of March 2023. The data relating to consultants indicated that 54% of the current consultants in Anaesthesiology working in the public sector are within 15 years of retirement, assuming the average age of retirement is 62 years. Therefore, 249 consultants (equivalent to 239 WTE positions) will be expected to retire over this period from publicly funded hospitals and these positions will require to be filled to support current service provision. Appendix B contains the data relating to the number of doctors registered on the specialist register of the Medical Council of Ireland as anaesthesiologists in 2021; this data was made available in 2022 and includes doctors who may be working abroad, either full-time or part-time, or not currently working as anaesthesiologists in Ireland and, therefore, is not strictly relevant to the process of workforce planning in Ireland.

In addition to the replacement posts due to retirement, there will be a requirement for funding for new consultant posts due to several driving factors, outlined in Section 5 of this report, with particular attention to the Model of Care for Anaesthesiology (CAI, 2019). One of the driving factors is an expected demographic change in the Republic of Ireland resulting in an increase of the population, from the current 5.1 million people, by at least 10% (more than 500,000 people) over the next fifteen years. This will result in the population increasing to approximately 5.3 million people by 2030 and possibly exceeding 5.6 million people by 2038, depending on final updated census projection figures which will be made available in 2024. By 2038 there will be an estimated 1.2 million people over the age of 65 years (50% increase from 2023), of whom 162,000 people will be over the age of 85 years, and this is a demographic which is known to make a greater use of the health services than the rest of the population. The requirement for less-than-full-time posts will also have to be taken into consideration to facilitate consultants for whom this may be a preference. The new 'Public Only Consultant Contract 2023' (POCC 2023) also makes provision for a six-day working week (to include Saturdays) and additional consultant posts will be required to enable this development.

The COVID pandemic created a situation whereby extra consultant posts in Anaesthesiology were urgently required in publicly funded hospitals. Some of these positions were filled by locums and others by provision of funding for new consultant positions, which is a process that is ongoing. A survey of publicly funded hospitals, between January 2023 and March 2023, established the following: the current number of permanent WTE consultants, the current requirement for extra WTE consultants for existing service provision and the number of new WTE consultants expected to be required for new service provision for the foreseeable future,

up to 2030. The results of this survey, and the driving factors which are further described in this document, allowed the consultant workforce numbers to be calculated up to 2030. The workforce planning figures were then extrapolated based on the expected expansion of the population up to 2038. This survey, dating from the first quarter of 2023, indicates that the total number of consultants working in Anaesthesiology in Ireland will be required to increase from a total headcount figure of 520 consultants (462 publicly funded consultants and 58 solely private posts) to a total headcount of 1000 consultants by 2038.

This total headcount of 1000 consultants (930 approximately in publicly funded posts and 70 in solely private posts) by 2038 assumes that a WTE rate of 92% will apply in, from 2030 onwards, to accommodate an increased requirement for less-than-full-time working. On this basis, by 2038, there should be 855 WTE consultant posts in anaesthesiology in publicly funded hospitals in Ireland.

This will result in an increase in the total number of consultants in Anaesthesiology, including publicly funded posts and solely private posts, from a figure of 10.4 headcount/ 9.8 WTE per 100,000 of the population (March 2023) to 17.7 headcount/16.3 WTE per 100,000 of the population (assuming the population reaches 5.6 million by 2038). The figure of 10.4 consultant anaesthesiologists per 100,000 of the population (9.3 consultants per 100,000 population for publicly funded posts) is considerably lower than comparable countries (see p37). The equivalent figure for the UK is 15 anaesthetists per 100,000 of the population for publicly funded posts in 2022. The Royal College of Anaesthetists Workforce document (UK State of the Nation Report 2022) recommends a figure of 35 anaesthetists per 100,000 of the population by 2040. Approximately 80% of this UK figure refers to consultants, and 20% refers to SAS doctors (see p37).

In Ireland, as of end 2022, the total number of specialist anaesthesiology trainees (SATs), i.e. on a training scheme, was 275 with an additional 50 entering training in mid-2023 while the number of non-training scheme doctors (NTSDs) in Anaesthesiology was 343 approximately. 44% of NCHD's were on the specialist training scheme in Anaesthesiology. The ratio of NCHDs to consultants in Anaesthesiology was 1.3:1 in the public sector. As the number of consultants increases this ratio should approach 1:1 and most trainees should be enrolled on the specialist training scheme.

The average number of trainees completing specialist training in Anaesthesiology between 2016 and 2018 was 41 per year. A survey by NDTP on the proportion of trainees who completed specialist training between 2016 and 2018 demonstrated that 56% were working in Ireland in 2022, which indicates that a high proportion (i.e. 44% attrition rate) has not taken up a consultant position in Ireland. This is the highest attrition rate of trainees of all the specialties in Ireland. The average attrition rate across all the specialties in Ireland is 32%. Anaesthesiology has a higher proportion of trainees who are international medical graduates compared with other specialties in Ireland, and this may be one of the contributory factors to the high number of trainees who do not take up a consultant position in this country. It is anticipated that the attrition rate of SATs will decrease in the coming years as more consultant

posts become available and an improvement in work/life balance leads to better working conditions, including provision for additional less-than-full-time posts.

There was an intake of 50 doctors as Specialist Anaesthesiology Trainees (SATs) to the College of Anaesthesiologists of Ireland (CAI) training scheme in 2023. **On the basis of this report, if a headcount of 1000 consultant anaesthesiologists (WTE rate 92% in publicly-funded hospitals) is to be achieved by 2038, assuming an attrition rate of 20% and that the training programme provides the requisite number of SATs who have completed their training in this country, the number of SATs recruited to the CAI training scheme would be required to be increased to 90 trainees per annum from 2026 to 2030** (see p67).

Specialist Anaesthesiology Trainees, who successfully complete the CAI training scheme receive a Certificate of Satisfactory Completion of Specialist Training (CSCST) which allows enrolment on the specialist register of the Medical Council of Ireland (MCI). Doctors who are not eligible for automatic enrolment on to the specialist division may have their existing training and experience evaluated by comparing the training and experience they have accrued to the training attained by a graduate of the relevant training programme in Ireland (see p26).

The number of vacant consultant posts that will become available up to 2038, will be a combination of replacement posts due to retirement, and new posts which will be required to be established due to service development and demographic changes.

Changed working practices under the new 2023 public only consultant contract (POCC 2023) will also be a consideration. It would be desirable if there were an increase in the number of trainees, who have completed their specialist training in Ireland, which were appointed to consultant positions in Ireland so that a greater proportion of the cohort of trainees who complete their training in this country ultimately take up permanent consultant positions here, i.e. that the attrition rate of trainees who have obtained a CSCST decreases from the current rate of 44% to a more sustainable rate of 20%.

It is inevitable that a variable proportion of trainees who complete their training in Anaesthesiology in Ireland will not take up permanent consultant positions in this country due to a number of different factors. For this reason, the intake number of training positions should increase so that the supply of available trainees who have completed training, and who wish to take up permanent consultant positions in Ireland, will match the number of consultant vacancies, taking into account the ongoing attrition rate of specialist trainees. Also, it would be preferable if the number of training places were to increase to ensure that the majority of NCHD's in Anaesthesiology are enrolled on the training scheme, and the service dependence on doctors working in non-training scheme posts is reduced. However, for those doctors who continue to be employed in non-training scheme posts the development of an Associate Specialist grade should be considered to facilitate career development and good clinical governance, and to replace the current arrangement involving contracts-of-indefinite-duration (CID).

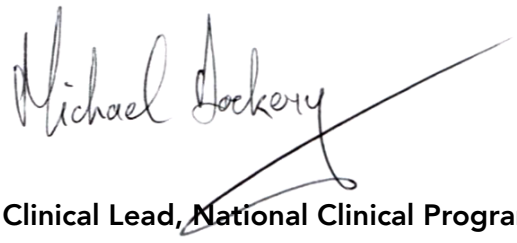
The data included in this report were taken from various sources. The adjacent text or table indicates the source and date of the relevant data. Every effort has been made to ensure that the data were accurate at the time of writing. However, the numbers employed in the medical workforce is continually changing so slight variations may be found in the data relating to individual hospitals or subspecialties at the time of reading. This should have a negligible effect on the overall workforce projections up to 2038.

There is a number of variable factors to be considered in this report, e.g. the development of new surgical hubs and elective hospitals, and the number of consultants who take up the new POCC2023 contract to allow a 6-day working week. For these reasons the workforce plan will require to be reviewed in three to five years to allow for these variable factors to be taken in to account.

The authors of this report are the NDTP and the NCPA. However, the report required input from numerous sources. I would like to thank all those who contributed, including the Chairperson of the Anaesthesiology Department from each hospital who responded to requests for data relating to workforce planning, and the HSE Business Information Unit for supplying relevant data.

In particular, I would like to thank Prof Brian Kinirons and Dr Roisin Morris from the NDTP for their expert contributions, also Dr Brian Marsh, consultant in Intensive Care Medicine, MMUH, and Dr Martina Healy, Clinical Lead for the National Clinical Programme for Critical Care, for their valuable observations. Many thanks are due to Una Quill, Programme Manager of the National Clinical Programme for Anaesthesia (NCPA) and Aileen O'Brien, Nurse Lead of the NCPA, for their enduring perseverance and patience as well as all the consulted stakeholders and the members of the CAI/HSE Liaison Group for their helpful contributions.

Dr Michael Dockery



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Executive Summary

The Medical Workforce Plan for Anaesthesiology informs the current and future demand for both consultants and NCHDs to meet Anaesthesiology population health and service needs by 2038 in the Republic of Ireland. It represents a collaborative and consultative approach to planning across HSE National Doctors Training and Planning (NDTP) and the National Clinical Programme for Anaesthesia (NCPA).

An analysis of the Anaesthesiology workforce was carried out to determine the current baseline supply of consultants, specialist trainees and non-training scheme doctors working in HSE and privately funded services. Data from the Doctors Integrated E Management System (DIME) were used for this purpose. Data was also gathered from the College of Anaesthesiologists of Ireland and the Medical Council of Ireland. Also, a survey of the Chair of the Anaesthesiology Department of each Model 3 and Model 4 hospital was carried out to establish each hospital's workforce requirements for current service provision and anticipated service expansion up to 2030.

Baseline Supply of Anaesthesiology Consultants and NCHDs in 2022/2023

- As of March 2023, there was a headcount of 483 consultant anaesthesiologists employed in publicly funded hospitals in the Republic of Ireland. Of these, 462 were actively working. This is equivalent to 443 WTE consultants working at a WTE rate of 96%.
- 58 consultant anaesthesiologists worked solely in the private sector (Medical Council of Ireland, 2022).
- Therefore, as of March 2023, the total headcount of consultant anaesthesiologists was estimated to be 520.
- As of March 2023, the number of consultant anaesthesiologists in the Republic of Ireland was 10.4 per 100,000 of the population (9.8 consultants per 100,000 population for publicly funded posts). This is considerably lower than comparable countries.
- In publicly funded hospitals 37% of consultants were female and 63% were male.
- Of the consultants working in publicly funded services in 2023, the majority of consultants worked in Model 3 and Model 4 hospitals with others working across specialist, paediatric and Model 2 services.
- Eighty eight percent of consultants in publicly funded posts held permanent contracts while the remaining 12% held non-permanent contracts and were typically in locum positions or specified purpose contracts.
- 249 consultants are expected to leave the public sector due to retirement by 2038.
- There were 45 consultant post vacancies across HSE funded services in Q3 2023.
- There was a total of 275 higher specialist trainees in Anaesthesiology as of December 2022. Approximately 56% of trainees were male. Fifty trainees entered postgraduate medical training in 2023.
- There were 15 special interest trainees registered in the areas of Regional Anaesthesia, Pain Medicine, Intensive Care Medicine, Cardiothoracic Anaesthesia and Perioperative Anaesthesia as of December 2022.
- In addition, there were 13 anaesthesiology post CSCST fellowship posts and 13 Intensive Care Medicine post CSCST fellowship posts approved in 2022/23.

- Of the 125 specialists who gained their CSCST between 2016 and 2018 it is estimated that 56% are currently working in consultant posts in Ireland with the remaining 44% are working in the UK (23), Canada (7) and Australia (5) as consultants or did not appear to be working as consultants or their whereabouts could not be established (NDTP, 2023).
- Anaesthesiology is one of the specialties more dependent on non-training scheme doctors (NTSDs). As of March 2023, there were approximately 374 NTSDs working in the publicly funded health system (see p36). Model 3 hospitals had the highest ratio of NTSDs to consultants, which suggests that there is a reliance on these doctors to deliver services.

Future Demand for Anaesthesiologists

Unlike some workforce plans, projected demand for consultants was not estimated using current ratios of consultants to activity levels (activity-based demand). This method of estimating demand was not deemed appropriate, mainly because of the emergency nature of the specialty and the requirement to adhere to staffing standards as per the Model of Care for Anaesthesiology 2019.

Table 1b and Table 2 demonstrate the demand estimates for Anaesthesiology by hospital type and specialty respectively. Demand estimates derived through the survey and consultation process described above were set to 2030, taking into consideration the demand driving factors, to allow the number of consultants required by 2030 to be calculated. The number of consultants was then further proportionately extrapolated to 2038 considering the expected expansion of the population from 5.3 million by 2030 to 5.6 million by 2038.

In the case of adult Intensive Care Medicine (ICM), the expansion in consultant numbers is based on the expansion of ICM bed capacity up to 2030, as per the ICM Workforce Planning Document 2020. The 2030 demand estimates for paediatric critical care medicine (CCM) were developed to allow for increasing complexity of care in the face of a decreasing paediatric population, as per the staffing plans for the New Children's Hospital. In the case of the remaining Anaesthesiology workforce, including Paediatric Anaesthesiology, a 20% increase in the consultant numbers was included up to 2030 to allow for a six-day working week under the new POCC2023. The exception to this 20% increase in workforce numbers up to 2030 was the specialist Maternity Units as the consultants working in these hospitals have part of their scheduled working week based in Model 4 hospitals where the 20% increase has already been included.

Key Findings

- The population of the Republic of Ireland is expected to increase from 5.1 million (2022) to 5.3 million by 2030 and to 5.6 million by 2038.
- Based on the findings of this workforce document, the total headcount of consultant anaesthesiologists in the Republic of Ireland will be required to increase from 520 (March 2023) to 1,000 by 2038. Of this number of 1000 consultants, approximately 70 consultants will work exclusively in the private sector. This will result in a figure of 17.7 consultant anaesthesiologists per 100,000 of the population.

- In WTE terms, the demand for consultants to 2038 is 920, of whom approximately 855 WTE consultants will be in the public sector working at a WTE rate of 92%. This is the equivalent of 16.3 WTE per 100,000 of the population.
- Based on this report, if the total headcount figure of 1000 consultant anaesthesiologists by 2038 is to be achieved by training alone, the annual intake of SATs will require to increase from 50 trainees (2023) to 90 trainees by 2026 and 90 trainees annually thereafter up to 2030, based on an attrition rate of 20%.

Table 1a: Current Anaesthesiologist Workforce March 2023 (DIME, 2023)

WTE	WTE	WTE	WTE	WTE	WTE	WTE	WTE Total	WTE Total	WTE Rate	Headcount Total	Headcount Total	Headcount Total	Headcount Total
Model 4	Model 3	Model 2	Other specialist	Specialist Maternity Hospital	CHI	Retrieval Service	Public Hospitals	Per 100,000 Population	Public Hospitals	Public Hospitals	Private Hospitals	Public and Private Hopsital	Per 100,000 Population
220	113	16	27	21	46	5	443	9.8	96%	462	58	520	10.4

Other specialist includes Orthopaedics, Breastcheck, Oncology, Ophthalmology and other.

Table 1b: Total Demand for Consultants to 2030 by Service/Acuity Type

Total Demand for Consultants to 2030 By Service/Acuity Type										
WTE	WTE	WTE	WTE	WTE	WTE	WTE	WTE Rate	HC	HC	HC
Model 4	Model 3	Model 2	Maternity	CHI	Retrieval	Total Public	Public	Total Public	Private	Public and Private
406.6	269.4	9	24.5	88.4	12.5	810.4	92%	881	61	942

Table 1c: Total Demand for Consultants to 2038

Total Demand for Consultants to 2038							
Public	Private	Public and Private	Rate per 100,000 population	Public	Private	Public and Private	Rate per 100,000 population
WTE	WTE	WTE	WTE	HC	HC	HC	HC
855.8	65	920	16.3	930	70	1000	17.7

Table 2: Overall Demand for Anaesthesiologists to 2038 by Specialty

Speciality	2030 WTE	2030 HC	WTE per 100,000	HC per 100,000	2038 WTE	2038 HC
Consultant Anaesthesiologists working in publicly funded hospitals, without a nominated special interest.	504	547.8	9.41	10.23	532.5	580
Obstetric Anaesthesiologists	24.5	26.6	0.46	0.50	26	28
Anaesthesiologists SI Paediatric Anaesthesiology	18	19.6	0.34	0.37	19	21
Paediatric Anaesthesiologists	68.4	74.3	1.35	1.47	72.3	78.5
Paediatric ICM consultants	20	21.7	0.37	0.4	21	23
Pain Medicine consultants	52	56.5	0.97	1.	55	60
Anaesthesiologist SI ICM	62	67.4	1.16	1.26	65	71
ICM Consultant	49	53.3	0.91	0.99	52	56
Retrieval Services	12.5	13.6	0.23	0.25	13	14
Sub-Total Public Hospitals	810.4	880.8	15.13	16.4	855.8	930
Consultants working solely in private practice	61	61	1.14	1.1	65	70
Total	**871.4**	**942**	**16.3**	**17.7**	**920**	**1000**

Notes:

1. Although the position of 'Anaesthesiologist with a special interest in Paediatric Anaesthesiology' is not based on a recognised training qualification, there are consultants who consider themselves to have a special interest in Paediatric Anaesthesiology due to their workload involving providing Anaesthesiology services to paediatric patients, particularly in Model 3 hospitals.

2. Consultants working in Intensive Care Medicine include specialists in ICM, consultants with a special interest in ICM and consultants who provide sessional and rota support in ICM (the latter in Model 3 hospitals in particular). According to the ICM Workforce Plan 2020, specialists in ICM and consultants with a special interest in ICM work in intensive care at a WTE rate of 0.47 with the rest of their working time allocated to Anaesthesiology.

3. For the purposes of this document and the tables above which considers the specialty of Anaesthesiology as whole including ICM, the WTE rate is assumed to gradually reduce to 92% to allow a final total headcount to be calculated. However, the ICM Workforce Planning Document 2020 provides more detailed breakdown of the headcount of consultants working in ICM which is based on a similar number of WTE posts in ICM as used in the tables above.

Recommendations of this Report include the Following:

Constraints to increasing the anaesthesiology workforce are multiple and include physical infrastructure as well as funding for additional training and consultant posts. These constraints are not considered in the report.

1. To meet estimated demand the consultant workforce will need to increase from a total headcount of 520 consultants, as of March 2023, to a total headcount of 1000 consultants by 2038. Increasing the consultant workforce to a total headcount of 1000 anaesthesiology consultants will improve Ireland's current ratio of 10.4 consultant anaesthesiologists per 100,000 of the population or 9.8 in WTE terms to 17.7 (16.3 WTE) per 100,000 of the population by 2038.

2. Most anaesthesiology NCHDs should be specialist anaesthesiology trainees (SATs). In 2023 approximately 44% of anaesthesiology NCHD's were on the training scheme. If Ireland were to meet the requirement for 1000 anaesthesiology consultants by 2038 through training alone, then the number of trainees required to commence specialist anaesthesiology training (SAT) per annum will require to increase from an intake of 50 trainees in 2023 to an annual intake of 90 trainees from 2026 to 2030, assuming an attrition rate of 20% of newly qualified specialists from the health service in Ireland.The view of the NDTP and the National Clinical Programme for Anaesthesiology is that the attrition rate is likely to be reduced as new consultant posts become available. The 2023 consultant contract, an improved work/life balance with better staffing levels and opportunities for less-than-full-time working may make consultant positions in Ireland more attractive.

3. The development of an associate specialist grade of anaesthesiology doctor should be considered for NTSDs who are not eligible to obtain a CSCST or enrolment on the specialist register. This will allow for a reduction in the requirement for NTSDs for service provision.

4. Provision will be required to be made for less than full time (LTFT) posts for both training positions and the consultant workforce. Approximately 10% of training positions should be reserved for LTFT. To allow for LTFT consultant posts in the future, an assumption of an overall WTE rate of 92% would allow for 77% of consultants working at 100%, 12% working at 80% and 11% working at 50% of the full working week.

5. Consideration should also be given to factors that will encourage retention of the older anaesthesiologist in the workforce including LTFT working opportunities and the cessation of participation in on-call rotas.

The development of surgical hubs and new elective hospitals may further impact the demand for extra consultant Anaesthesiologists. Due to uncertainty around when the surgical hubs and new elective hospitals will become operational and the impact they will have on consultant demand it is recommended that workforce demand and supply be revisited over the next three to five years to ensure estimated workforce requirements are aligned with future requirements.

1. Introduction to the Report

This report is a collaboration between HSE National Doctors Training and Planning (HSE, NDTP) and the National Clinical Programme for Anaesthesia. Input was sought from the College of Anaesthesiologists of Ireland, and colleagues representing the specialties of Paediatric Anaesthesiology, Paediatric Critical Care Medicine, Adult Intensive Care Medicine, Obstetric Anaesthesiology, Retrieval & Transport Medicine and Pain Medicine.

Within its Medical Workforce Planning (MWP) remit, NDTP is tasked with estimating and recommending the number of post-graduate trainees required annually for each medical specialty. To do this, NDTP works with specialty stakeholders including National Clinical Programmes, Postgraduate Training Bodies, and others to estimate the demand for consultants and specialists across the Irish healthcare system, both public and private.

This information then feeds into the medical education and training role of NDTP via the commissioning of medical training required to meet workforce needs, ensuring that the training content and delivery is responsive to the changing needs of the Irish healthcare system, and supporting the retention of doctors upon completion of their training. More recently, HSE NDTP has used workforce-planning reports to inform and influence consultant recruitment and retention initiatives across the health service.

The key objective of this report is to outline expert informed demand projections for consultant anaesthesiologists and to inform the Specialist Anaesthesiology Training (SAT) intake numbers on an annual basis to meet consultant demand by 2038. Another objective of this report is to consider how more consultants and trainees in the workforce can help reduce the health systems reliance on Non-Training Scheme Doctors (NTSD).

The approach taken to Medical Workforce Planning (MWP) is broadly based on the following principles listed in the table below:

Medical Workforce Planning (MWP) Principle	Description
MWP recommendations should be aligned with Government policy and strategy.	• Sláintecare consultant Contract • Regional Health Authorities • Trauma Strategy • Maternity Strategy • Health Service Capacity Review • Development of new surgical hubs
MWP recommendations should be aligned with clinical models of care for all specialties of Anaesthesiology	• Model of Care for Anaesthesiology • Model of Care for Adult Critical Care • Model of Care for Paediatric Anaesthesia • Model of Care for Paediatric Critical Care • Model of Care for Paediatric Health Care Services in Ireland
MWP recommendations should be aligned consultant delivered service development	Most trainees should be on a training scheme. The ratio of trainees to consultants should not exceed 1:1.
MWP recommendations should be aligned with the WHO Global Code on the International Recruitment of Healthcare Personnel (World Health Organisation, 2010, 2011)	The Irish health service should be self-sufficient in the production of medical graduates, with reduced dependence on International Medical Graduates (IMG)
MWP recommendations should encompass medical workforce requirements for the entire population to include both the public and private healthcare systems	The Irish medical training system should train therefore use best available data to ensure a medical training pipeline for public and the private health system
Development of medical staffing should ensure the appropriate skill mix to deliver Anaesthesiology services in the future	Trainee numbers for each related specialty of Anaesthesiology should be based on model of care and related workforce requirements
Where appropriate, innovative models of care should be explored	Consideration should be given to establishing a permanent associate specialist grade for Anaesthesiology to support the provision of services. This would be suitable for NTSD's who do not have a CSCST in Anaesthesiology.

It is important to note that workforce planning is an inexact science and estimated demand and supply requirements are based on the best available data, expert opinion as well as policy and other related developments relevant to the health service at the time the workforce planning report is prepared. It should also be noted that data to underpin workforce planning for the private sector are not readily available and therefore several assumptions are made for this cohort of the anaesthesiology workforce.

1.1 Methodology

The approach to medical workforce planning for Anaesthesiology is broadly based on the methodological framework 'NDTP Health Workforce Planning, Ireland: A Stepwise Approach' (HSE NDTP, 2016).

Typically, this methodology is applied to a medical specialty to determine the future medical workforce needs of the country's health system. This framework is used to guide medical workforce planning for Anaesthesiologists.

As each medical specialty is unique in its delivery and in how demand is best measured, the framework is adapted accordingly. There is no one size fits all in the development of specialty workforce plans.

A multi-method approach to workforce planning for anaesthesiology was used to include:

1. A review of Anaesthesiology service delivery in Ireland.
2. A quantitative review of the medical workforce across the public and private sectors in Ireland to establish the baseline current workforce and related demographic variables.
3. Stakeholder consultation to establish drivers of change to configuration of the Anaesthesiology workforce e.g. existing policy, strategy and models of care underpinning the future development of the specialty and the development of the New Children's Hospital.
4. Associated literature reviews and further data analysis to better understand the impact of drivers of change on the future configuration of the anaesthesiology workforce.
5. Surveys of model 3, 4 and specialist maternity hospitals to establish current unmet demand and future demand for consultants based on expected service developments. The survey was also used to validate baseline workforce statistics resulting from the quantitative review of the medical workforce.
6. Review of survey data to ensure recommendations aligned with policy, strategy and models of care for the specialty.
7. Stakeholder consultation to establish baseline assumptions and scenarios to be used in simulation modelling of medical workforce supply and demand projections.
8. Quantitative, simulation modelling of supply and demand statistics to establish the recommended annual increase in the supply of the consultant and trainee workforce numbers to meet the recommended demand for consultants by 2038.

2. Review of Anaesthesiology Service Delivery in Ireland

Anaesthesiology is a 24/7 specialty encompassing elective, emergency and out of hours care in the various surgical specialties including Paediatric and Adult Anaesthesia, Trauma, Obstetrics, Paediatric and Adult Intensive Care Medicine, Pain Medicine and transport of the critically ill patient.

Consultant and non-consultant medical staffing levels are dictated by elective, emergency and out-of-hours requirements including the following:

- Scheduled anaesthetic services cover a very wide range of areas. The theatre workload of a general anaesthesiologist typically consists of a combination of pre, intra and post-operative anaesthetic care as well as a dedicated amount of time for administrative, teaching and educational activities.
- Elective anaesthesia cover can include surgery/elective theatre work, obstetric care, critical care, pain service delivery, radiology procedures and pre-operative assessment clinics.
- Emergency and on-call services are also delivered by anaesthesiologists and staffing standards should be in place to ensure that appropriate staffing is available to cover unscheduled care requirements across different hospitals settings, model 3 and 4 hospitals in the main. Model 2 hospitals are not expected to deliver emergency, out of hours care.
- Out-of-hours service delivery is provided by the on-call anaesthesia team, which provides cover for all emergency surgery (including trauma), obstetrics (labour ward, epidural analgesia, emergency caesarean section) and intensive care. A number of critically ill patients will require urgent transfer to another centre for specialised care. These transfers of critically ill adult or paediatric cases require the presence of an anaesthesiologist.

Anaesthesiology services are provided in all publicly funded model 3 and model 4 hospitals, as well as some model 2 hospitals. There are 19 maternity units across the country, 3 of which are in specialist hospitals i.e. Coombe, Rotunda and the National Maternity Hospital. Anaesthesiology services are also provided in several specialty hospitals including Paediatric (CHI & TSH), Orthopaedic (Cappagh, Kilcreene & Croom) and the Royal Victoria Eye & Ear Hospital. Most private hospitals also provide a range of anaesthesiology services on-site.

A recommendation of 1.8 consultant anaesthesiologists per theatre currently exists in Ireland (NCPA, 2019) to allow a theatre to function 5 days per week. There were 242 functioning operating theatres (out of a total of 263 fully equipped theatres) in Ireland across HSE funded hospital sites in 2022 (NCPA). This infers a demand for approximately 436 WTE anaesthesiologists solely to cover theatre schedules. There is some difficulty in using this recommendation to inform workforce planning for the specialty as it does not take in to account the full remit of consultants in terms of their weekly workload. Most consultant anaesthesiologists will have additional duties to theatre, which may include intensive care, pain, maternity, retrieval and transport, and other commitments that fall outside of the theatre schedule.

2.1 Service Utilisation in Anaesthesiology in Ireland

Table 3 below outlines the total activity levels for the specialty across all publicly funded hospitals in 2019 (HPO). Data from 2019 is used here due to service challenges over the years 2020-2022 because of Covid 19.

Table 3 outlines total inpatient and day case activity levels which are defined by patients discharged from publicly funded hospitals who had received an anaesthetic, as recorded on the Hospital In-patient Enquiry (HIPE) system over the course of 2019. Data were extracted from the National Quality Assurance and Improvement System (NQAIS).

Table 3: Inpatient and Day Case Anaesthesiology Activity 2019

Paediatric	Adult	Total
34,164	183,293	217,457

Note: *Some anaesthesia procedures are not included: Sedation is not included.*

2.2 Specialist Training in Anaesthesiology in Ireland

Specialist Anaesthesiology Training (SAT) is delivered and overseen by the College of Anaesthesiologists of Ireland (CAI). Specialist training in Anaesthesiology, including Intensive Care and Pain Medicine is a six-year Postgraduate Specialist Training programme comprising of training, assessment, formal examination, and accreditation. It is organised and regulated by the CAI. The training combines practical clinical experience, as part of hospital team, along with knowledge and skills-based courses.

The aim of the Specialist Anaesthesiology Training (SAT) programme is to develop anaesthesiologists with specialist clinical knowledge, technical and communication skills and a focus on patient safety and care. Training is structured to maximise opportunities for learning and to provide a broad range of experience in different types of hospitals and various sub-specialties in anaesthesiology. Trainees who complete the programme are awarded a Certificate of Satisfactory Completion of Specialist Training (CSCST), which is recognised by the Medical Council of Ireland and allows enrolment on the specialist register of the Council.

Paediatric Anaesthesiology Training:

All trainees in Anaesthesiology spend a mandatory six months in either Our Lady's Children's Hospital Crumlin (CHI) or Children's University Hospital Temple Street during their training. In addition, most trainees will gain further experience as they rotate through hospitals with a paediatric service. A specialist qualification in Paediatric Anaesthesiology can be attained post-CSCST which requires 2 years training in a recognised post.

Intensive Care Medicine Training:

Successful completion of the fellowship examination of the Joint Faculty of Intensive Care Medicine is required. One year's experience in ICM is required to be eligible to sit this exam which may be completed pre-CSCST.

There are 4 categories of posts for consultants in Intensive Care Medicine:

- Consultant in Adult Intensive Care Medicine, requiring 2 years specialist training in Intensive Care Medicine.
- Consultant Anaesthesiologist with a Special Interest in Adult Intensive Care Medicine, requiring 1 year specialist training in Intensive Care Medicine.
- Consultant in Paediatric Critical Care Medicine, requiring in total 3 years specialist training in Paediatric Critical Care.
- Consultant with a Special Interest in Paediatric Critical Care Medicine, requiring 2 years core training in Paediatric Critical Care.

Qualifications are awarded by the Joint Faculty of Intensive Care Medicine of Ireland (JFICMI), which is a faculty of the College of Anaesthesiologists of Ireland.

Intensive Care services are provided by a mix of consultants in intensive care medicine and consultant anaesthesiologists with and without a special interest in intensive care medicine. It should be noted that there are consultants in Model 3 hospitals who have sessional and/or on-call rota commitments to ICU which is an essential requirement for provision of critical care in these hospitals.

Pain Medicine Training

For those with a longer-term career interest in Pain Medicine, there is a proposal for training for the post of consultant in pain medicine requiring 2 years specialist training in Pain Medicine, to replace the current requirement of one year in specialist training. The Diploma in Pain Management examination is due to be replaced by the Fellowship in Pain Medicine examination. Qualifications are awarded by the Faculty of Pain Medicine in conjunction the College of Anaesthesiologists of Ireland.

It is noted by the CAI that there is a gap in specialist training for consultants with a special interest in Pain Medicine which should be addressed to align with the proposed consultant resource requirements to deliver Pain Medicine services in Ireland. Currently, a Model of Care for Pain Medicine is proposed which will outline the requirements for specialist training in Pain Medicine and will include the requirements for consultants who wish to have a special interest in Pain Medicine.

2.3 Specialist Registration in Anaesthesiology in Ireland

Doctors with specialist registration in anaesthesiology may practise independently without supervision and may represent themselves as specialists in Ireland. Specialist anaesthesiology trainees, who successfully complete the CAI training scheme, receive a Certificate of Satisfactory Completion of Specialist Training (CSCST) which allows enrolment on the specialist register of the Medical Council of Ireland (MCI). Doctors with recognised specialist training in the European Union (EU) or European Economic Area (EEA) will have their qualifications recognised by the MCI.

There is an alternative application route to the specialist register of the MCI for doctors who have not completed the CAI training scheme or who do not have a recognised specialist training qualification in the EU or EAA. Doctors who are not eligible for automatic enrolment on to the specialist division may have their existing training and experience evaluated by comparing the training and experience they have accrued to the training attained by a graduate of the relevant training programme in Ireland. This is known as Specialist Registration – Evaluation of Existing Training and Experience (see medicalcouncil.ie).

Applicants under this category:

1. First time applicants for specialist registration who have completed their training in a country that is not a member of the European Union or European Economic Area.
2. Applicants for specialist registration who have a mixture of training and experience wholly or partly in a European Union / European Economic Area member state but whose qualifications are not eligible for automatic recognition.

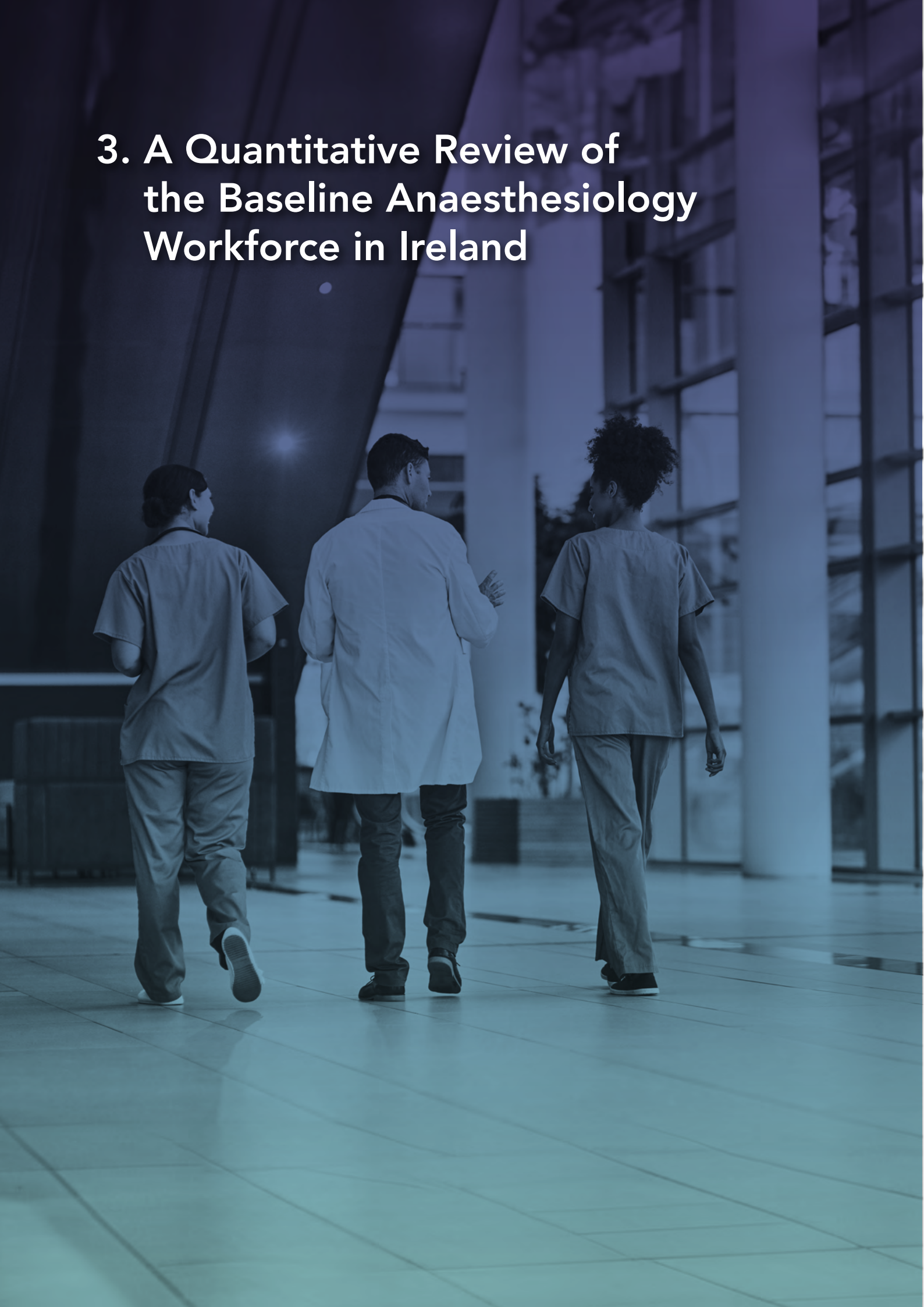
Applications are assessed on behalf of the Medical Council of Ireland by the appropriate recognised postgraduate medical training body in Ireland. The Medical Council makes a decision on an application taking into account the assessment of the appropriate postgraduate training body.

In 2020, 10 doctors applied to the Medical Council of Ireland via this alternative route, and 3 of these were successful. In 2021, there were 12 applicants and 5 were successful. In 2022, there were 19 applicants and 9 were successful. Based on the information available for 2023, at the time of writing, there have been 10 applicants and 3 have been successful.

The number of candidates who achieve specialist registration by means of this alternative route is expected to rise to approximately 10 to 15 doctors per annum, although this number may decrease as the number of specialist anaesthetic training positions increases. As it is not possible to accurately predict the number of doctors who achieve recognition of their training by this means, these figures have not been factored into the calculations for workforce planning in this document. However, there may be a requirement for an increase in consultant workforce numbers due to the opening of the new surgical hubs and elective hospitals which will create a demand for extra consultant anaesthesiologists. As the precise number of

consultant anaesthesiologists required for these new services is yet to be determined, this matter will require to be reviewed in the next three to five years. Also, it should be noted that the number of doctors who achieve specialist registration by means of the evaluation of of existing training and experience may help offset any shortfall in the attrition target rate of 20% of specialist trainees, although it is difficult to be precise about the number of doctors achieving specialist registration by this route or to be exactly precise about the attrition rate of specialist trainees.

3. A Quantitative Review of the Baseline Anaesthesiology Workforce in Ireland



A quantitative review of the consultant, trainee and non-training scheme doctor workforce was carried out using data from the following sources:

- HSE NDTP Doctors Integrated Management E-System (DIME), which receives data from the Postgraduate Medical Training Bodies, the Medical Council of Ireland and each clinical site that employs doctors in the public health system in Ireland.
- Hospital Inpatient Enquiry (HIPE) data on anaesthesiology procedures carried out in 2019, broken down by age group and hospital. These data are accessed through the National Quality Assurance and Improvement System.
- Irish Medical Council Annual Registration Form, which captures information on the registration status of doctors, where they trained for their basic medical qualification as well as those consultants working exclusively in the private sector.
- The College of Anaesthesiologists (CAI) of Ireland which collates data on trainees in Anaesthesia and Paediatric Anaesthesia.
- The Joint Faculty of Intensive Care Medicine, which collates data on trainees in Intensive Care Medicine.
- Faculty of Pain Medicine in the CAI.

In general, information on the current workforce outlined in this report has been sourced from the DIME data system, with HIPE data used to inform the WTE contribution of anaesthesiologists to Paediatric Anaesthesiology in Model 3 hospitals in particular. Private sector data is sourced from the Medical Council of Ireland.

DIME is dependent on clinical sites inputting details on their consultant workforce. Some of the data used in this report was from March 2023. As DIME is a live system it must be noted that there can be variances in the figures published dependent on the run date of the report and entries can be made with a retrospective date. Also of note is the fact that any employee currently on extended leave is not included in the workforce data. These consultants may have been temporarily replaced with locum and temporary staff.

Data on the current anaesthesiology consultant workforce was also collected by a survey of the Chairperson of each hospital's Department of Anaesthesiology, particularly in relation to the number of WTE consultant posts in each hospital required for current service provision and planned service expansion for the foreseeable future up to 2030.

This section of the report outlines the demographic breakdown of the types of doctors working in anaesthesiology in Ireland currently. The following tables provide an overview of the estimated total anaesthesiology medical workforce. It is important to note the following in relation to this section:

- Headcount (HC) employed is the number of consultants working in publicly funded services (NDTP, 2023). Please note that HC excludes those that are employed but may have had their contractual hours reduced to 0 for a period of time, for example maternity leave or secondment to another post.

- Whole Time Equivalent (WTE) is the total number of consultants working in whole time equivalent terms. WTE rates are adjusted to account for those who have had their hours reduced for some reason; this may be due to maternity leave, secondment to another post etc.

As mentioned above, consultants in Anaesthesiology may have a commitment to a sub-specialty, namely Paediatric Anaesthesiology, Paediatric Critical Care Medicine, Adult Intensive Care Medicine, Obstetric Anaesthesiology, Retrieval & Transport Medicine and Pain Medicine.

- DIME contains information on consultant posts and those consultants assigned to posts. The number of hours dedicated to another specialty, e.g. Paediatrics, Pain and Intensive Care can be based on consultant's contract and local arrangements. Historically some consultant posts have been appointed with a requirement to support e.g. Intensive Care Medicine (ICM), Paediatric Anaesthesiology or Pain Medicine but this may not be defined in their contract, rather it is outlined in their job description, or it evolves post-appointment. As such, this information will not be captured on DIME if it is not reflected in contract type.

- Information on the rostered WTE commitment of anaesthesiologists with a commitment to a sub-specialty as mentioned above was informed by research undertaken by the National Clinical Programme for Critical Care and colleagues working in Paediatric Anaesthesiology, Obstetric Anaesthesiology, Retrieval & Transport Medicine and Pain Medicine, and through HIPE activity data.

3.1 Number of Consultants in Anaesthesiology working in Publicly Funded Services

Data from the HSE DIME database is used to determine the number of consultants in Anaesthesiology working across publicly funded services. Data is from March 2023.

Table 4 below outlines the number and type of consultants working in anaesthesiology across the public health system as of March 2023.

There was a total headcount of 462 consultants in Anaesthesiology working across publicly funded hospitals in March 2023. On average, the WTE rate for these consultants was 0.96 with an overall of 443 WTEs contributing to the consultant workforce as of March 2023.

Of the 462 consultants working in publicly funded services in 2023 approximately 37% were female and 63% were male. The majority of those working in specialist and special interest posts were male. Table 3.4 below gives a breakdown by specialty and special interest of consultants in Anaesthesiology.

Approximately 88% of consultants held permanent contracts in 2023. The remaining 12% held non-permanent contracts and were typically in locum positions or specified purpose contracts (DIME, 2023). See Table 7 below.

Table 4: Number and Type of consultants working in Publicly Funded Hospitals (DIME, March 2023)

Anaesthesiology HSE Funded	HC	WTE	Inferred WTE rate	% Female	% Full Time	% Permanent
Total	462	443	0.96	37%	92%	88%

Consultants with 0 WTE's excluded from calculation. FT=37+ hours per week.

3.1.1 Whole Time Equivalent Contribution of Anaesthesiologists to Anaesthesiology and Intensive Care Medicine; Paediatric Anaesthesiology; Pain Medicine

Within public services, consultants in Anaesthesiology can be rostered to General Adult Anaesthesia as well as to Paediatric Anaesthesia, Intensive Care Medicine and less frequently to Pain Medicine.

In the main, these consultants will have been a primary appointment to anaesthesia, with dedicated hours to these other specialties either through contractual arrangements or arising post-appointment, because of the hospital recognising a service need, and will not have a nominated sub-specialty as such.

According to a survey of consultant anaesthesiologists, it was found that, of those anaesthesiologists working in ICM (JFICMI, 2020), approximately 33% of their rostered commitments are to Intensive Care Medicine.

Data from HSE HPO (2021) indicates that on average, 34% of anaesthesiologists rostered commitments are in Paediatric Anaesthesia across Model 3 hospitals.

Consultants with a sub-specialty and a special interest in Pain were estimated to have a 64% rostered commitment to Pain Medicine with the rest of their time being spent in Anaesthesiology. (Note: This Pain figure is based on 28 consultants working across 17 hospitals).

Specialists in Intensive Care Medicine and consultants with a special interest in Intensive Care Medicine also contribute to General Anaesthesiology rosters at a WTE rate of approximately 62% and 63% approximately (JFICMI, 2020).

3.1.2 Age Profile of Consultants

Table 5 below outlines the total number and percentage of the consultant workforce expected to exit the workforce through retirement by 2038 aged 62 years.

Anaesthesiology is a specialty in which many consultants will retire before the age of 65 due in part to onerous out of hours and emergency cover commitments. The average age of retirement assumed for workforce planning purposes is 62 years, based on consultation with the NCPA. It is therefore estimated that approximately 245 or 53% of public sector consultants will retire by 2038 at age 62 years.

Table 5: Age Profile of Consultants working in Publicly Funded Hospitals (DIME, March 2023)

Specialty	Special Interest	% Retiring by 2038 (aged 62)
Anaesthesiologist	N/A	55%
	Pain Medicine	33%
	Paediatric Anaesthesiology	25%
	ICM	60%
Paediatric Anaesthesiology		57%
Pain Medicine		75%
Intensive Care Medicine		17%
Total		**53%**

3.1.3 Location of Consultants by Hospital Acuity Level

Tables 6a and 6b below outlines the model of public hospital consultants work in. As expected, very few Anaesthesiologists work in Model 2 hospitals and these consultants usually are primarily based in local Model 3 or 4 hospitals, while most consultants in Model 3 hospitals are generalist and most specialist consultants in ICM, Paediatrics and Pain Medicine work in Model 4 hospitals. Specialist hospitals include paediatric, orthopaedic, oncology/ screening, ophthalmology, ENT and maternity hospitals.

Table 6a: Location of WTE Consultants by Hospital Acuity Level (DIME, March 2023)

Speciality	Special Interest	Model 2	Model 3	Model 4	Other Specialist	Paediatric	Maternity	Total
Anaesthesiology	Intensive Care Medicine		9.5	30.4	1			40.9
	No nominated special interest	14.4	101	158.45	22.9		19.6	316.4
	Paediatric Anaesthesiology			1		1		2
	Pain Medicine	1	1	7	1		1	11
Anaesthesiology Total		15.4	111.5	196.8	24.9	1	20.6	370.3
Pain Medicine				0.5				0.5
Paediatric Anaesthesiology			1	1	2	30.5		34.5
Intensive Care Medicine				22				22
Paediatric Critical Care						14		14
Total		**16**	**113**	**220**	**27**	**46**	**21**	**443**
Other specialist: Orthopaedic, oncology, ophthalmology, Breastcheck, ENT, other								

Table 6b: Location of Headcount Consultants by Hospital Acuity Level (DIME, March 2023)

Speciality	Special Interest	Model 2	Model 3	Model 4	Other Specialist	Paediatric	Maternity	Total
Anaesthesiology	Intensive Care Medicine		10	33	1			44
	No nominated special interest	16	103	168	23		20	330
	Paediatric Anaesthesiology			1		1		2
	Pain Medicine	1	1	8	1		1	12
Anaesthesiology Total		17	114	210	25	1	21	388
Pain Medicine				1				1
Paediatric Anaesthesiology			1	1	2	31		35
Intensive Care Medicine				23				23
Paediatric Critical Care						14		14
Total		**17**	**115**	**235**	**27**	**46**	**21**	**462**
Other specialist: Orthopaedic, oncology, ophthalmology, Breastcheck, ENT, other								

3.1.4 Vacancy Rates

The HSE defines a vacant post as a post that has been approved by the Consultants Applications Advisory Committee (CAAC) committee but is currently unfilled. Vacant posts generally include both those posts that have previously been filled and have now become vacant, and posts that have never been filled. Recruitment may be underway or an appointment may have been made to a number of these vacancies with a consultant yet to start in the post. The time between post approval, the commencement of the recruitment process and the commencement of a consultant in a post can be lengthy and sometimes between 12 and 18 months. Work is ongoing to reduce the time taken to recruit consultants into vacant posts across HSE funded hospitals. Vacancies in anaesthesiology are outlined below in Table 7. All but one replacement post is based on a public only contract.

Table 7: Vacancy Rates of Consultant Anaesthesiology Posts Q3 2023 (HSE DIME, 2023)

	Replacement Post	Restructured Post	New Post	Total Vacancies
Anaesthesia	12	2	20	34
Intensive Care Medicine	2	-	9	11
Grand Total	14	2	29	45

3.2 Participation of Non-Consultant Hospital Doctors in the Medical Workforce in Ireland

3.2.1 Non-Consultant Hospital Doctors

Non-Consultant Hospital Doctors (NCHD) is a term used in Ireland to describe qualified medical practitioners who work under the supervision of a consultant in a speciality. This encompasses all doctors below consultant level in the public health system including interns, senior house officers, registrars, specialist registrars, senior registrars, and fellows. These doctors who have joined the CAI's postgraduate training programme are referred to as Specialist Anaesthetic Trainees (SATs). NCHDs who are not employed on the CAI's training programme are referred to as non-training scheme doctors (NTSDs).

3.2.2 Training NCHDs

Specialist anaesthesiology trainee (SAT) refers to a doctor who rotates through individually numbered identifiable training posts in a training scheme recognised by the Medical Council of Ireland. Eligible doctors are entered onto the trainee specialist division of the Medical Councils register on receipt of confirmation of their training post from the HSE. Information on the number of Specialist Anaesthetic Trainees, (SATs) was obtained from the College of Anaesthesiology submission to NDTP as part of the service level agreement process for postgraduate medical training. As per Table 8 below, there was a total of 275 trainees in September 2022. Approximately 56% of trainees were male.

Table 8: Breakdown of Training Posts in Anaesthesiology (CAI, 2022)

Trainees	Total	Female	Male
No. of trainees (SAT 1)	48	21	27
No. of trainees (SAT 2)	48	23	25
No. of trainees (SAT 3)	46	27	19
No. of trainees (SAT 4)	44	18	26
No. of trainees (SAT 5)	35	12	23
No. of trainees (SAT 6 & 7)	54	21	33
Total	**275**	**122**	**153**

According to information from the College of Anaesthesiologists of Ireland, attrition from training for anaesthesiology trainees is approximately 2% per annum. Year 1 and 2 of specialist ICM training do not experience attrition during the training years but may be lost to the Irish system through appointment abroad. Special Interest and specialist training is completed after CSCST has been awarded. The number of trainees appointed to SAT1 posts in July 2023 was 50.

3.2.3 Retention of Newly Qualified Specialists

NDTP examined the current employment status of doctors who had completed their CSCST in Anaesthesiology from 2016-2018 to better understand where newly qualified specialists in Anaesthesiology were working post CSCST. See Table 9 for details. This analysis indicated that on average, 56% i.e. 70 of these doctors had taken up a consultant post in Ireland by 2022 while approximately 44% (attrition rate) of these specialists remained abroad. Other doctors were found to be working in UK (23), Canada (7) and Australia (5) as consultants. The remaining doctors did not appear to be working as consultants or their whereabouts was not established (20).

Table 9: Location / Employment of Doctors who Gained CSCST in Anaesthesiology in Ireland from 2016 to 2018

Cohort Year of CSCST Attainment	Working in Ireland Public	Working in Ireland Private & Other	Total Working in Ireland	Working Abroad Or Unknown	Total	% In Ireland in 2022
2016	24	3	27	29	56	48%
2017	19	4	23	13	36	64%
2018	18	2	20	13	33	61%
Total 2016-2018	61	9	70	55	125	56%

The average post-CSCST attrition rate across all specialist categories in Ireland was 32% i.e. 32% of doctors who qualified with their CSCST were not working in the Irish health service (NDTP, 2023). As more consultant posts become available, as per policy of the current government, it is expected that this attrition rate should decrease.

3.2.4 Non-Training Scheme Doctors in the Anaesthesiology Workforce

As mentioned, doctors on the General Division of the Medical Council register and not assigned to a postgraduate medical training programme are referred to as Non-Training Scheme Doctors (NTSDs). Table 10 outlines the configuration of the NTSD workforce across different hospital types. As can be seen, most of these doctors work in Model 3 and 4 hospitals.

In total, as of March 2023, there are 374 NTSDs working in the publicly funded health system. This is the equivalent of almost 1 NTSD to every consultant in Ireland. Model 3 hospitals have the highest ratio of non-trainees to consultants, inferring a parallel high reliability on these doctors to deliver services.

It is Government policy to greatly reduce the reliance on NTSDs in Irish hospitals. As the consultant and trainee workforce increases, there should be a reduction in the number of NTSDs in the workforce. This will bring the workforce in line with a consultant delivered service as proposed in the Model of Care for Anaesthesiology 2019.

A publicly funded medical workforce of 462 consultants, 275 SATs and 374 NTSDs infers a workforce consisting of 1.4 NCHDs to every consultant where only 42% of NCHDs are on the training programme. Hanly (2003) defined a consultant delivered service as one in which there was less than 1 NCHD to every consultant and all NCHDs in the workforce were on a postgraduate medical training programme.

Table 10: NTSDs in Anaesthesiology (DIME, March 2023)

Hospital Type	Specialist/Other hospitals	Model 3	Model 4	Total
NTSDs	76	159	139	374

3.2.5 Anaesthesiology Workforce Alignment with Comparable International Jurisdictions

For context and to further inform workforce planning for Anaesthesiology, an international comparison of consultant anaesthesiologists in Ireland in publicly funded hospitals versus comparable international jurisdictions was carried out. Comparator countries were based on similarity of training and workforce models as well as population size, in the case of Scotland and New Zealand. As can be seen from Table 11 below, Ireland's ratio of consultants is below that of all other countries at 9.3 versus up to 16.56. Trainee ratios are also low in comparison while the ratio of NTSDs in Ireland is significantly higher than all comparator countries.

Table 11: International Ratio Comparison of Anaesthesiology Doctors per 100,000 of the Population for the publicly funded workforce

Anaesthesiology	Ireland	England	Scotland	Wales	UK Total (excl NI)	Australia	New Zealand
Consultants	9.3	14.19	15.86	14.13	14.39	15.27	16.56
Trainees	5.17	12.25	6.18	9.96	11.73		5.57
NTSDs	6.6	2.80	7.00	4.30	3.23		2.12
Metric	WTE	WTE	WTE	WTE	WTE	HC	HC

Sources of International Data:
NHS England: NHS England Medical Workforce Statistics 20201 available here at: https://digital.nhs.uk/data-and-information/publications/statistical/nhs-workforce-statistics/september-2021
NHS Scotland: NHS Scotland Medical Workforce Statistics available here at: https://turasdata.nes.nhs.scot/data-and-reports/official-workforce-statistics/all-official-statistics-publications/01-march-2022 NHS Wales: Staff directly employed by the NHS available here at: https://statswales.gov.wales/Catalogue/Health-and-Social-Care/NHS-Staff
New Zealand: New Medical Workforce Statistics 2021 https://www.health.govt.nz/nz-health-statistics/health-statistics-and-data-sets (data available on request).
Note 1 – Data are for the publicly funded workforce for comparability.
Note 2 – Figures for UK countries includes consultants and SAS doctors. SAS doctors number 20% of the permanent anaesthetist workforce.
Note 3 - Trainee data unavailable for Australia.

The Royal College of Anaesthetists (UK) in February 2022 published 'The Anaesthetic Workforce: UK State of the Nation Report'. This calculated the number of anaesthetists working in the four countries of the UK in 2022 and the requirement for an increase in the number of anaesthetists by 2040. For the purpose of the document the term anaesthetist included consultant anaesthetist and SAS anaesthetist. In general, 80% of the workforce consists of consultant anaesthetists and 20% consists of SAS anaesthetists. SAS anaesthetists are 'specialty doctors and specialist grade doctors' with at least 4 years of postgraduate training, two of which are in a relevant specialty. SAS doctors are permanent appointments, were previously known as 'staff grade' doctors and are not considered to be trainee doctors. As of February 2022 there were 15 anaesthetists (consultants and SAS anaesthetists) per 100,000 population in the UK, based on a population of 66.8 million people. This document recommends that this figure increases to 35 anaesthetists per 100,000 population by 2040 based on an expected increase of the population to 72.9 million by that year (this includes approximately 28 consultant anaesthetists per 100,000 of the population).

4. Stakeholder Consultation to Establish Drivers of Change to the Future Configuration of the Anaesthesiology Workforce

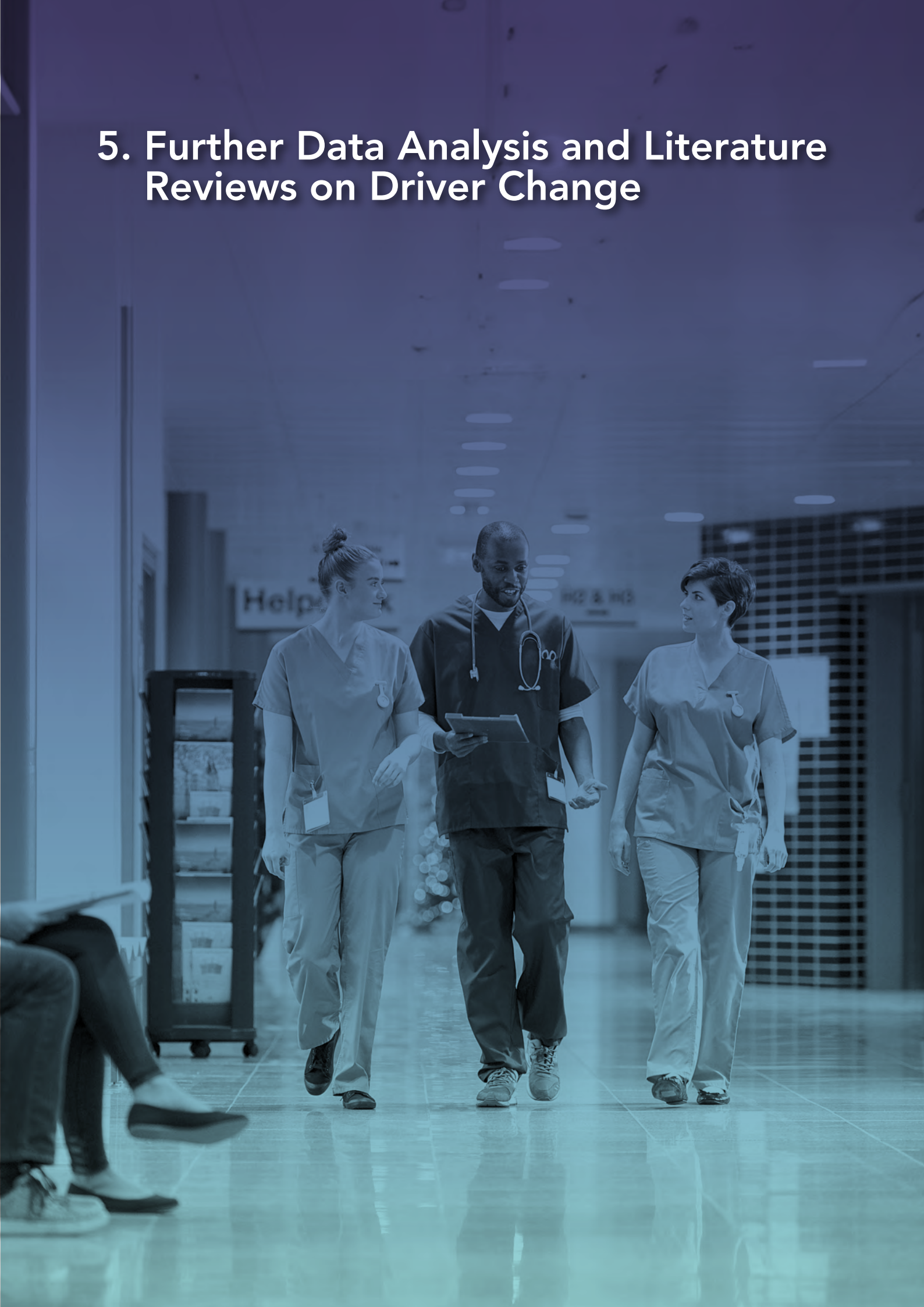
A consultative approach to determining the future demand for anaesthesiology consultants and specialists in Ireland was carried out via stakeholder meetings and email and telephone surveys over the course of the workforce plan development process. The consultation process resulted in the identification of a number of drivers of change to the specialty as outlined below.

Stakeholder	Area Consulted On
The National Clinical Programme Lead for Anaesthesia	Overall workforce plan development
The National Clinical Programme Lead for Paediatric Critical Care	Paediatric Critical Care service development and related medical workforce resource requirements
Experts in Paediatric Anaesthesiology	Paediatric Anaesthesiology service development and related medical workforce resource requirements
Experts in Pain Medicine	Pain Medicine service development and related medical workforce resource requirements
College of Anaesthesiologists of Ireland (CAI)	Overall workforce plan review and consultation on training projections
Joint Faculty of Intensive Care Medicine, CAI	Intensive Care Medicine Workforce Plan – already published and used to inform planning for Anaesthesiology
Faculty of Pain Medicine, CAI	Pain Medicine workforce estimates/information review
Anaesthesiology Department Chairs in model 3 and model 4 hospitals and in specialist maternity hospitals	Survey completion to assess current unmet demand and future demand for consultant Anaesthesiologists as well as validation of data on the consultant workforce and follow up demand estimate checks against policy and strategy recommendations

The drivers of change to the anaesthesiology workforce of the future have a major influence on medical workforce planning. Through stakeholder consultation, consideration was given to the major drivers of change to the consultant anaesthesiology medical workforce over a 15-year projection period i.e. to 2038. The drivers of change impacting the future demand for consultants working in the specialty are outlined below.

Drivers of Change to the Future Anaesthesiology Workforce	
1.	Model of Care for Anaesthesiology, National Clinical Programme for Anaesthesia (NCPA, 2019) including the hub and spoke service delivery model and staffing standards for model 3 hospitals as well as related policy and strategy
2.	Model of Care for Paediatric Anaesthesia (NCPA, 2015) and the development of the National Children's Hospital (NCH) including the hub and spoke model of paediatric care delivery and the resource plan for the NCH
3.	Intensive Care Medicine Workforce Plan (HSE,2020) and alignment of the medical workforce with requirements of the Model of Care for Adult Critical Care (NCPCC, 2013), the Health Service Capacity Review (DoH, 2018) and recommendations of the National Public Health Emergency Team (NPHET, 2020)
4.	Model of Care for Paediatric Critical Care (NCPCC, 2019)
5.	Government policy and strategy including • Sláintecare, (DoH, 2017) including new Sláintecare consultants' contract and 6-day working week. • Health Service Capacity Review (DoH, 2018), expansion in ICU bed capacity • Smaller Hospitals Framework (DoH, 2011), service reconfiguration • Trauma Strategy/ Trauma System for Ireland' (DoH, 2018) • Maternity Strategy (DOH 2016) and minimum staffing standards for emergency on-call in model 3 hospitals • Surgical hub develoment
6.	Less than full-time working arrangements
7.	Population changes and associated service utilisation changes
8.	Ageing workforce and early retirement age
9.	Attrition rates post CSCST qualification
10.	Over-reliance on Non-Training Scheme Doctors on service delivery

5. Further Data Analysis and Literature Reviews on Driver Change



While stakeholder consultation allowed for the identification of the main drivers of change to the future configuration of the specialty workforce, further data analysis and literature review was required to gain a better understanding of the impact of the drivers of change on the future anaesthesiology workforce. The results of this analysis and review are outlined below.

5.1 The Model of Care for Anaesthesiology

The Model of Care for Anaesthesiology (NCPA, 2019) outlines the strategic direction of the future development of anaesthesia services in Ireland across different hospital types as aligned with a hub and spoke service delivery infrastructure. One of the main recommendations of the model of care is the full implementation of the '2 plus 2' staffing standard for model 3 hospitals. The NCPA (2019) has recommended the 2 plus 2 staffing standard in order to ensure consultant availability across Model 3 hospitals, where cover for unscheduled care in anaesthesia, critical care and obstetrics is required. The following is taken from the model of care report (NCPA, 2019):

2 Plus 2 Staffing Standard

In order to provide a comprehensive service in model 3 hospitals, which, along with an Anaesthesia/Critical Care service, have a co-located obstetrics unit with a possible addition of a trauma service, we recommend the 2 plus 2 model of cover for unscheduled care as the minimum acceptable cover.

This 2 plus 2 model should be the basic building block for 24-hour unscheduled care.' 'We define the 2 plus 2 model as the availability, at all times, of an on-call Anaesthesia/Critical Care team of two consultants and two NCHDs. This team will be responsible for the whole service, including the ICU and obstetrics units. If there is a significant additional trauma caseload, a busy critical care service or a heavy burden of inter-hospital transfers, then further additions will need to be made (NCPA, 2019).

Further detail on staffing anaesthesiology services appropriately across hospitals and related services nationally have been set out in the Model of Care for Anaesthesiology as follows:

Elective Care: The National Clinical Programme for Anaesthesia Model of Care for Anaesthesiology (NCPA, 2019) estimates that an elective theatre work schedule of eight hours duration requires 1.8 whole time equivalents (WTEs) to staff one anaesthesia site for 52 weeks of the year, when the weekly clinical workload and leave are taken into consideration.

Obstetric Care: Recommendations from the Association of Anaesthetists of Great Britain & Ireland (AAGBI, 2013, Obstetric Anaesthetic Service) state that there must be a duty anaesthetist immediately available for emergency work on the labour ward 24 hours a day. If the duty anasthesiologists is an NCHD, there should be a consultant anaesthetist available to

assist them at all times. If the duty anaesthetist is a consultant, the workload of the unit may dictate the need for additional manpower to deliver a safe service and contact details of a backup anaesthetist should be available at all times.

Currently in Ireland, most model 3 and 4 hospitals provide a shared anaesthesia on-call cover across clinical services in each hospital (e.g. surgery, ICU, obstetrics, emergency care). In these hospitals, full implementation of the 2 plus 2 staffing standard is recommended.

Emergency Care: It is policy that every hospital has theatre space available for emergency cases during the weekly elective schedule. For model 4 hospitals, this usually means the availability of an all-day emergency theatre 7 days a week. In model 3 hospitals, the time dedicated to emergencies may be somewhat less. General hospitals should endeavour to complete as much emergency work as possible within core working hours.

Intensive Care: Intensive Care services are provided by a combination of specialist consultants in intensive care medicine (ICM) and consultant anaesthesiologists who may or may not have a special interest in ICM. Dedicated intensive care specialists are only available in larger hospitals. The JFICMI standards are that there should be one intensive care specialist per 12 beds present in the unit during normal working hours. These consultants should be supplemented by specialists in training. Trainees should have minimum roster of 1 per 6 beds and no other commitments.

5.2 The National Model of Care for Paediatric Health Care Services in Ireland (NCPPN, 2016) and the Development of the National Children's Hospital (NCH)

The development of the NCH will involve the amalgamation of the two existing children's hospitals at Temple Street Hospital and CHI Crumlin and will include the paediatric service provided in Tallaght University Hospital. Wider developments in paediatric services, outlined in the National Model of Care for Paediatric Health Care Services in Ireland (NCPPN, 2017) will see the development of an integrated national network for paediatric health services, with the NCH at the centre as the 'hub' and the regional and local paediatric units as the 'spokes' that link to each other and to the NCH.

The NCH will provide secondary paediatric services, both emergency and planned, for children and young people from the greater Dublin area. The majority of patients due to receive scheduled care will be treated and discharged on the same day. There will be three paediatric regional anaesthetic centres, each intending to provide 24/7 cover for paediatric surgical and anaesthetic care. These centres will be in Limerick, Cork and Galway. In the local hospitals, anaesthesiologists will continue to be rostered to paediatric services.

5.3 Intensive Care Medicine Workforce Plan (HSE, 2020)

The Intensive Care Medicine Workforce Plan (HSE, 2020) outlined a 2-phased approach to developing the consultant and trainee workforce across consultants in Intensive Care Medicine, consultant anaesthesiologists with a special interest in intensive care and anaesthesiologists in Model 3 hospitals who are rostered for intensive care services. Recommendations were aligned with resource requirements to ensure delivery of the Model of Care for Adult Critical Care (2014), the Health Service Capacity Review (Department of Health, 2018) as well as a memo to government in 2020 outlining the need for an increase in ICU beds (NPHET minutes 26th June 2020). At this time there was a commitment by Government to support the phased expansion of ICU beds, with most expanded capacity directed towards the Model 4 hospitals with an increasing centralisation of advanced critical care services i.e. an increase in ICU beds by 66 in phase 1 and a further increase of 117 beds in phase two. The workforce plan outlined the required increase in both consultant and trainees to support expanded services for both a 5 and a 7-day working week. The ICM Workforce Plan was based on ICM bed expansion up to 2030. For the purpose of this document (Anaesthesiology Workforce Plan) figures are then extrapolated from 2030 to 2038 based on the expected demographic expansion up to 2038.

5.4 Draft Model of Care for Pain Medicine

Currently there is a proposal by the Faculty of Pain Medicine in the College of Anaesthesiologists of Ireland and the National Clinical Programme for Pain Medicine to develop a model of care for the specialty.

This model of care will inform the strategic direction of the development Pain Medicine services and related workforce resources in Ireland. In the absence of a published model of care for the specialty, the NCPA and NDPT have consulted with Pain Medicine clinical experts to inform workforce requirements to be included in the workforce plan for anaesthesiology. Further updates to the workforce plan can be made in the future to reflect the requirements of the final model of care as required.

5.5 Model of Care for Paediatric Critical Care

The Model of Care for Paediatric Critical Care (NCPCC, 2019) sets out the required staffing configuration for consultants across paediatric critical care services, including transport services. The recommended staffing aligns with international best practice research carried out to inform the model of care while ensuring alignment with service developments for children outlined in the National Model of Care for Paediatric Health Care Services in Ireland (2017). Templates and standards for staffing were used to inform the future demand for Paediatric Critical Care consultants to resource the New Childrens Hospital and to align with the requirements of both regional and local service developments for children nationally.

5.6 Population Change

While staffing standards were determined to have a higher level of influence on demand for consultants in Anaesthesiology, population change was an influencing factor due to the increases expected in overall health service utilisation across specialties that depend on anaesthesiology services. In this way, population change impacts planned service developments for the Irish health service generally and is a key driver of demand of all medical services as the incidence of many chronic diseases increases with age.

It is estimated that by 2030 the population of the Republic of Ireland will increase to 5.3 million and that by 2038 the population will have increased to 5.6 million. By 2038 there will be an estimated 1.2 million people over the age of 65 years, of whom 162,000 people will be over the age of 85 years.

The older age group exerts the greatest pressures on the health service due to increasing chronic disease presentation and complexity of care requirements. Health care utilisation has been shown to rise substantially in the period prior to death (HPO, 2022). The number of deaths is projected to increase at a rate of 2% p.a. over the period. The ageing of the population presents the health service with many resource challenges across the acute hospital, primary and social care sectors.

In tandem with the ageing of the population, the under 15-year age group is expected to decrease by around 15% (1.1% p.a.) with the number of births declining marginally over the period. According to the National Clinical Programme for Paediatrics, despite a decreasing paediatric population, workload in related specialties will continue to be maintained due to the impact of increasing premature births and resulting increasing complex needs for children (see Table 12 below).

Figure 1. Population Pyramid

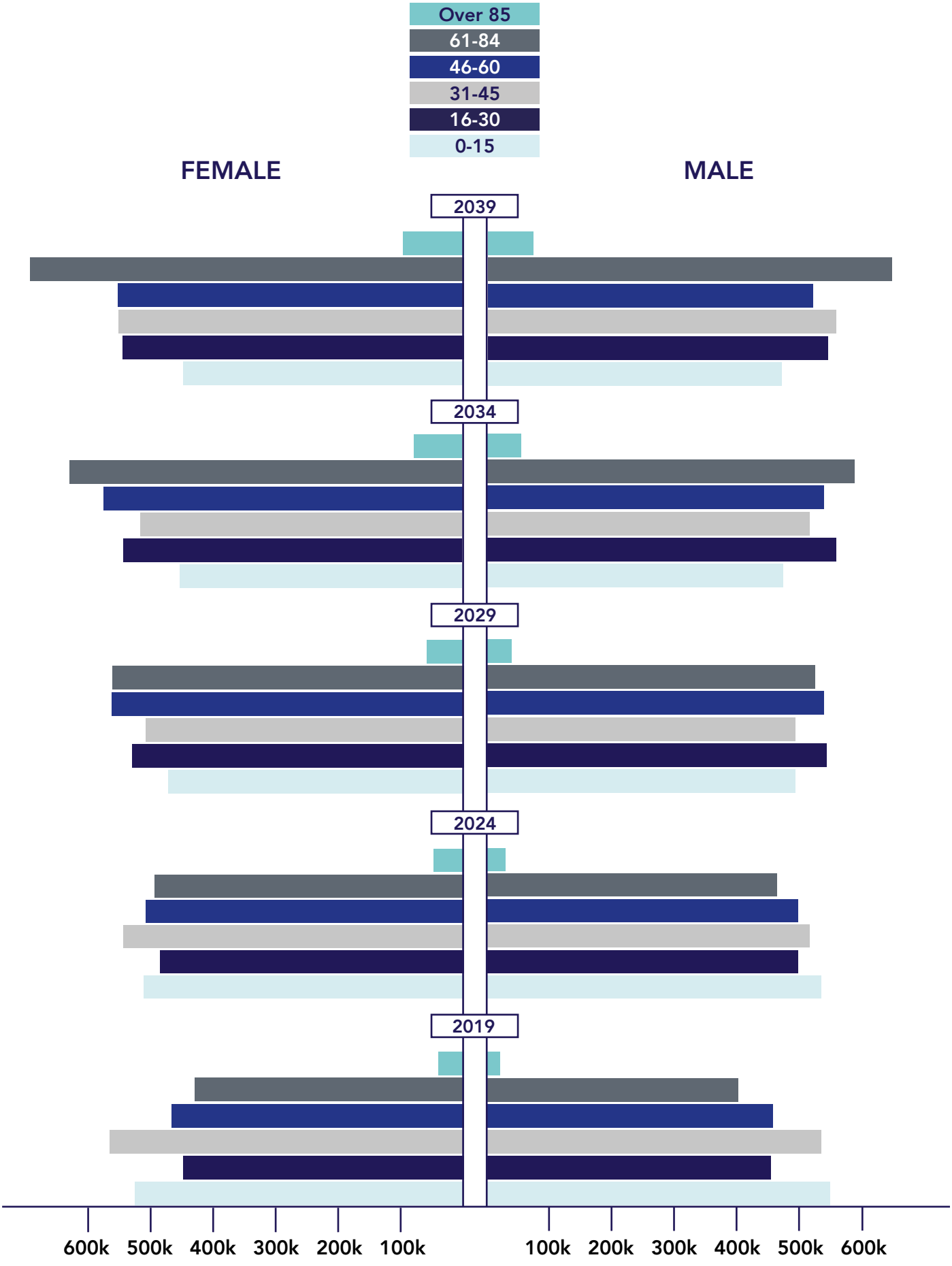


Table 12: Projected Population Changes 2019-2038

HR		2019	2024	2029	2034	2039
A	(NE)	1,118,006	1,176,762	1,227,379	1,274,165	1,320,822
B	(Mid-Lands)	1,031,264	1,099,099	1,160,177	1,217,345	1,273,602
C	(SE)	926,384	964,479	996,750	1,025,984	1,054,465
D	(SSW)	705,731	733,215	755,069	773,976	791,570
E	(Mid-West)	393,922	407,519	418,924	429,125	438,658
F	(WNW)	720,516	743,643	763,131	780,544	797,131
Total		**4,895,823**	**5,124,717**	**5,321,430**	**5,501,139**	**5,676,248**

Note: *Population projections based on CSO Census 2016 – revisions will be made when updated projections are ready*

5.7 Health Service Reform Policy and Strategy

The Model of Care for Anaesthesiology and the implementation of a number of national strategies in areas such as trauma care, maternity services and emergency medicine, reinforces the need to focus the development of anaesthesiology services to ensure the implementation of staffing standards and recommendations across hospital sites.

A number of related reform policies, strategies and standards of care which are driving change to the delivery of Anaesthesiology services in Ireland are outlined below.

- **Sláintecare:** The Sláintecare Implementation Framework report (Department of Health, 2017) references the organisation of high complexity and low volume care in fewer centres across the country, so that the appropriate level of care and expertise can be provided. The report also recommends organising services in regional and local hospitals as clinically appropriate, with specialised complex care to be appropriately centralised to ensure it is safe and of high quality.

- **Sláintecare consultant contract (POCC 2023):** which allows for a 37-hour week with routine hours of work ranging from 8am to 10pm Monday to Friday, and 8am to 6pm Saturday. As of March, the HSE funded workforce there are 437 WTE consultants working from 8am to 6pm Monday to Friday.

  Increasing the Monday to Friday work rota by 4 hours per day and adding Saturday as a working day, under the POCC 2023 will require changing rostering arrangements so that, in some circumstances, consultants work longer hours over a shorter week with weekend cover included. Taking into account more flexible rostering and additional staffing to cover the 6-day working week, it is estimated that a further increase in consultant numbers of approximately 20% will be required. It is difficult to be precise about how this will develop so it is recommended that the workforce demand estimates are reviewed in the next 3-5 years to ensure they are still relevant.

- **Trauma System for Ireland:** The report 'Trauma System for Ireland' (DoH, 2018) outlines the configuration of the new trauma system for Ireland. The system will consist of two trauma networks, the Central Trauma Network and the South Trauma Network. Within each network there will be a Major Trauma Centre and a number of Trauma Units. Major Trauma Centres will provide the most specialised trauma care to patients requiring this level of care. Care will be delivered in one single hospital site. Trauma Units will deliver more generalist level trauma care to patients who do not require the specialist expertise of a Major Trauma Centre.

  One of the Major Trauma Centres will be located in the Mater Misericordiae University Hospital in Dublin and will be the hub of the Central Trauma Network. The second Major Trauma Centre will be based in Cork University Hospital and will be the hub of the South Trauma Network. The Workforce Plan for Anaesthesiology considers the staffing requirements of both trauma centres and trauma units. Model 4 hospital surveys and NCPA review of survey results were used to ensure alignment of future consultant workforce recommendations with requirement of the new Trauma System for Ireland.

- **Maternity Strategy emergency on-call cover and 2 plus 2 staffing in model 3 hospitals** (see p42)

- **Health Service Capacity Review, 2018:** This report is key to informing reform of the health service in Ireland in general and, aligned with Sláintecare, it outlines the impact of service reconfiguration to deliver more care in the community. The Health Service Capacity Review (Department of Health, 2018) recommends an increase in Critical Care bed capacity to 430 based on projections to 2031. This will impact the demand for anaesthesiologists rostered to intensive care.

- **Smaller Hospital Framework, 2013:** Defines the operation scope of the smaller hospitals across the country and the greater need for increased centralisation of services. This Framework continues to impact on health service reconfiguration and change and is relevant to health service reform (Department of Health and Health Service Executive, 2013).

- **Ageing Workforce:** Data outlined in Table 8 above indicates that over the next 15 years, should consultants retire at an average age of 62 years, then 53% of the consultant anaesthesiology workforce will have left the workforce by 2038 i.e. 245 consultants. The ageing workforce is a particular concern due to high levels of emergency on-call, unscheduled and out-of-hours care requirements. Consultants over a particular age opting out of on-call rosters are a feature of many health systems due to the onerous nature of such working patterns and their potential impact on health and decision-making capabilities.

- **Over-Reliance on Non-Training Scheme Doctors:** As of March 2023 there were 374 NTSDs working in Anaesthesiology and the associated sub-specialties. This infers a high reliance on NTSDs to deliver services in publicly funded hospitals. The development of an associate specialist grade should be considered to allow for the reduction in the requirement for NTSDs for service provision.

  Model 3 hospitals have the highest ratio of non-trainees to consultans. It is Government policy to greatly reduce the reliance on NTSDs in Irish hospitals. As the consultant and specialist trainee workforce increases, there should be a parallel decrease in the number of NTSDs in the workforce. This will bring the workforce in line with a consultant delivered service as proposed in the Model of Care for Anaesthesiology.

- **Less Than Full-time Working (LTFT):** Currently, the WTE rate of all consultants working in Anaesthesiology is 96%. An increased demand for less than full time working is anticipated given the increase of females in the workforce and that some members of the workforce may favour a better work-life balance. An ageing workforce and the need to retain doctors reaching retirement age within the workforce is also driving a demand for increased flexible working arrangements. For these reasons, less than full time working arrangements are likely to impact the future demand for consultants and trainees within workforce.

  To allow for LTFT consultant posts in the future, an assumption of an overall WTE rate of 92% would allow for 77% of consultants working at 100%, 12% working at 80% and 11% working at 50% of the full working week. It is also proposed that 10% of trainees should be working LTFT.

6. Surveys of Model 3, 4 and Specialist Maternity Hospitals

During the early stages of stakeholder consultation on how best to develop a Workforce Plan for Anaesthesiology, it was recommended that activity-based workforce demand estimation would be inappropriate for this specialty. This recommendation was based on the fact that Anaesthesiology is an emergency specialty and has a requirement to adhere to staffing standards. Further to this, changing demographic patterns in the younger population age groups was not determined to be reflective of changing patterns in paediatric care requirements, as outlined in Section 5.6 above. The increasing number of people older than 65 years of age in the population must also be taken into consideration.

While staffing standards allowed for a relatively straight-forward method of workforce demand estimation, the NCPA recommended that a survey of all Model 3 and Model 4 hospitals as well as specialist maternity hospitals be carried out. The survey was designed to inform planners of the current unmet demand and the future demand for consultants across these hospitals to ensure alignment with models of care and staffing standards, while accounting for the any future service developments e.g. expansion or reconfiguration of services.

A decision was made to use survey results to determine the demand for consultant anaesthesiologists, based on service provision, up to 2030. Thereafter workforce demand from 2030 to 2038 is based proportionately on the expected expansion of the population from 5.3 million by 2030 to 5.6 million by 2038. Survey respondents were not requested to determine demand beyond 2030 based on service provision as the timeline was considered too far into the future to make informed estimates.

Surveys of model 3, 4 and specialist maternity hospitals, led by the National Clinical Programme for Anaesthesia, were carried out to establish current unmet demand and future demand for consultants based on expected service developments. The survey was also used to validate baseline workforce statistics resulting from the quantitative review of the medical workforce. A small number of questions were asked within the survey focusing on:

- Current consultant workforce numbers
- Tenure of the consultant workforce
- Current unmet demand for consultants
- Demand for consultants to facilitate future service development
- Demand for consultants to implement a 6-day working week as per the Sláintecare new consultants' contract

A survey of Anaesthesiology Department Chairs was carried out across all Model 3 hospitals, Model 4 and specialist maternity hospitals. An email survey was used for Model 3 hospital Chairs while a telephone survey was used for Model 4 hospital and specialist maternity hospital Chairs.

The results of the survey process were considered by the National Clinical Programme Lead for Anaesthesiology to determine whether they aligned with the main recommendations of policy, strategy and of the models of care outlined in this document. Follow-up consultation followed when clarification was required.

Unmet demand was also considered in tandem with hospital vacancies i.e. where approved posts had not been filled. The results of this survey process are outlined in more detail in Section 7 below. Demand for consultants arising from the process outlined in Section 6 above are detailed in Section 7.

7. Demand for Consultants in Anaesthesiology

7.1 Model 4 Hospital Demand for Consultant Anaesthesiologists

The Model of Care (MoC) for Anaesthesiology forms the foundation of workforce planning for the specialty. To better inform consultant demand to implement the MoC and related strategy and policy, a survey of Clinical Chairs in Departments of Anaesthesiology across all Model 4 hospitals was carried out by the NCPA in 2022. The focus of the survey was to determine whether these hospitals were adequately staffed to deliver Anaesthesiology services in the short term and further into the future, to align with expected service developments and for the specialty of Anaesthesiology as a whole, including ICM. The results of this survey indicated that:

- Additional WTE consultants required to deliver clinical commitments in the short term i.e. to fill current vacant posts and ensure adequate and sustainable rostering arrangements for doctors. This can be defined as current unmet demand for consultants in the Model 4 hospital system.
- Additional WTE consultants required over the longer term to align with future service developments.
- Additional WTE consultants required to implement a 6-day working week as per the Sláintecare consultant contract.

The additional staffing requirements for the Major Trauma Centres in both Cork and the Mater were accounted for in the estimates. The total consultant requirement for model 4 hospitals in the longer term is estimated to be 406.6 WTEs. See Table 13 below.

Table 13: Model 4 Hospital Survey Results

Model 4 Hospital Site	Current Consultant Workforce	Current Unmet Consultant Demand	Future Consultant Demand (Service Development)	Additional Consultant Demand: 6 Day Week	Total Consultants Demand
	WTE	WTE	WTE	WTE	WTE
Beaumont Hospital	33.0	3	5	7.9	47.4
University Hospital Galway	31.5	5	10	9.4	56.4
Saint James's Hospital	30.0	0	8	7.8	46.8
Tallaght Hospital	28.6	7	9	7.9	47.4
Cork University Hospital	25.6	2	22	10.4	62.4
St. Vincent's University Hospital	19.0	0	3	4	24
UL Hospitals Group	13.8	5	10	6.8	40.8
Mater Hospital	27.6	4	17	9.36	56.16
University Hospital Waterford	11.5	4	6	4.2	25.2
Total	**220.4**	**30**	**90**	**67.76**	**406.56**

7.2 Specialist Maternity Hospital Consultant Demand for Anaesthesiologists

Currently there are 20 WTE consultants in Anaesthesiology working in specialist maternity hospitals. Table 14 below gives an overview of the current consultant workforce along with the immediate additional demand (unmet demand) for consultants to meet current service needs and the longer-term demand for consultants to deliver on future service developments and expected changes is demand. If a 1-in-6 rota is to be fully implemented in these hospitals then 8 consultants in total will required be per hospital, allowing for cover for annual leave. As all of these consultants have commitments to Model 4 hospital rosters in addition to their work in maternity hospitals, additional WTE's have not been considered to account for a six-day working week under the POCC23 in specialist maternity hospitals as these additional WTEs have already been included in the Model 4 hospital projections.

Table 14: Specialist Maternity Hospital Survey Results

Hospital Site	Current Consultant Workforce	Additional Consultant Demand	Future Consultant Requirement
	WTE	WTE	WTE
The Rotunda	6.6	2	8.6
The Coombe	4.8	3.2	8
National Maternity Hospital	4.5	3.5	8
Total	**16**	**8.5**	**24.6**

Note: *The demand for Orthopaedic hospital consultants and Breastcheck is included in the Model 4 hospital demand estimates.*

7.3 Model 3 Hospital Demand for Consultant Anaesthesiologists

In line with the approach taken to determine demand in Model 4 hospitals, the MoC for Anaesthesia formed the basis of workforce planning for Model 3 hospitals.

A survey of Clinical Chairs in Departments of Anaesthesiology across all Model 3 hospitals was again carried out by the NCPA in 2022 to determine whether these hospitals were adequately staffed to deliver Anaesthesiology services in the short term and further into the future. The results of this survey indicated that to meet the demand for anaesthesiologists in Model 3 hospitals across the country, an an increase in WTE consultants would be required to meet demand. Further review of demand was carried out to ensure survey results aligned with compliance with the 2 plus 2 staffing standards. For some of the smaller hospitals with lower levels of activity, additional consultants were included in overall demand estimation.

Further consultation with stakeholders led to the estimation of consultant requirements to allow for the resourcing of a 6-day working week to ensure there are consultants available to implement the new Sláintecare consultant contact. Table 15 below outlines the current consultant workforce across these hospitals and parallel requirements for an increase in consultant numbers to comply with staffing standards and Government policy, as per the Sláintecare consultant contract and a 6-day working week. This led to a final demand estimate for model 3 hospitals by 2038 of 269.4 WTEs.

Of the overall total of 269.4 WTEs required to meet safe staffing requirements to 2030, it is estimated that a cohort of these consultants will have a commitment to Intensive Care Medicine rosters across Model 3 hospitals with co-located maternity units (HSE, NDTP, 2020). These consultants will also contribute to the Paediatric Anaesthesiology workload in Model 3 hospitals and to a lesser extent to Pain Medicine.

Further reconfiguration of services could impact these demand estimates so it will be important to ensure training intake numbers are in line with actions taken around service reconfiguration plans. If, in line with Government Policy, as per Sláintecare and the Smaller

Hospitals Framework (DoH, 2011:2017), a number of Model 3 hospitals are designated Model 2 hospitals, then the requirement for additional consultants would decrease. For this reason, it will be important to revisit the projections over the next three to five years.

Table 15: Model 3 Hospital Survey Results

Model 3 Hospital	Current WTE Consultants	Current Unmet Consultant Demand	Future Consultant Demand (Service Development)	Additional Consultant Demand for 2+2 Staffing	Additional Consultant Demand: 6 Day Week	Total Consultant Demand to 2038
	WTE	WTE	WTE	WTE	WTE	WTE
Our Lady of Lourdes Hospital, Drogheda, Louth, and Navan	18	7	5	0	6	36
Sligo University Hospital	11	2.5	2.5	0	3.2	19.2
Letterkenny University Hospital	11	2	3	0	3.2	19.2
Connolly Hospital, Blanchardstown	8	2.5	3.5	0	2.8	16.8
Mercy University Hospital	7.5	3	4	0	2.9	17.4
Midlands Regional Hospital	8	1	3	0	2.4	14.4
Mayo University Hospital	7.5	1	3.5	0	2.4	14.4
University Hospital Kerry	5.5	2.5	6	0	2.8	16.8
St Luke's General Hospital, Carlow/ Kilkenny	7	0	2	3	2.4	14.4
Cavan / Monaghan	4	3	3	2	2.4	14.4
Midlands Regional Hospital, Mullingar	6	3	1	2	2.4	14.4
Portiuncula Hospital, Ballinasloe	4	2	4	2	2.4	14.4
Wexford General Hospital	4	2	4	2	2.4	14.4
South Tipperary General Hospital	4	2	3	3	2.4	14.4
Midlands Regional Hospital, Portlaoise	3	0.5	2.5	6	2.4	14.4
Naas General Hospital	3	3	2	4	2.4	14.4
Total Model 3s	**111.5**	**37**	**52**	**24**	**44.9**	**269.4**

Note: *a survey conducted by NCPA, March 2022 recorded 123 WTEs, which is higher than the 111.5 WTEs recorded on DIME on March 2023. This is most likely due to retirements and leave arrangements and the time when data was collected. DIME does not count consultants on extended leave. The total demand, however, remains unchanged.*

7.4 Demand for Paediatric Anaesthesiologists

The demand for Paediatric Anaesthesiologists in aligned with the MoC for Paediatric Anaesthesia, the Business Plan underpinning the workforce requirements for the new children's hospital developed in 2016 and revisions to requirements outlined in the plan based on further analysis of consultant requirements from clinical leads in paediatric anaesthesiology. Table 16 below outlines the breakdown of consultant requirements to staff the new children's hospital over the coming years. The WTE consultant requirement is 2 WTEs per theatre. As there are 23 theatres in the New Children's Hospital, the total consultant requirement to run theatres is 46. An additional 5 consultants are required to work in Pain Medicine and an additional 4 consultants are required to work in Radiology services. There will be a requirement in the New Children's Hospital for two whole-time paediatric anaesthesiologists to staff weekly pre-operative assessment clinics. Finally, two additional consultants are required to act as a 'floating' consultant to trouble shoot, give breaks and to work in recovery.

Table 16: Gap between Current and Future Demand for Paediatric Anaesthesiologists in NCH

	Current Consultant Workforce WTE	Current Deficit to Meet CHI Requirements	Future Consultant Workforce Requirement
Total	**31.5**	**25.5**	**57**

Currently there are 31.5 WTE consultants in Paediatric Anaesthesia working across CHI Crumlin, CHI Temple Street (HSE DIME, 2023). To meet the future demand for consultants to ensure appropriate staffing of the New Children's Hospital, a further 25.5 WTE consultants are required giving a sub-total of 57 WTE consultants. To allow for a 6-day working week under the new consultant contract (POCC2023) an additional 11.4 WTE's would be required. See Table 16 above and Table 17 below.

Table 17: Demand for Paediatric Anaesthesiologists

Specialists in Paediatric Anaesthesiology	WTE Required for New Children's Hospital
Theatre	46
Radiology	5
Pain	4
Pre-Assessment	2
Sub-total	57
Additional for 6-day working week	11.4
Total	**68.4**

In the hub-and-spoke Model of Care (MoC) for Paediatric Anaesthesia services in Ireland, there will be three paediatric regional anaesthetic centres, each intending to provide 24/7 cover for paediatric surgical and anaesthetic care.

These centres will be in Limerick, Cork and Galway and will require a minimum of 6 consultants with a SI in paediatrics to fill the 24/7 duties and on-call rosters. There will, therefore, be a requirement for at least 18 consultants in the above three hospitals.

Given that there is currently an estimated 4 WTE consultant Paediatric Anaesthesiologists working across these hospitals, there is a requirement for a further 14 WTE consultants to sufficiently run Paediatric Anaesthesia services in regional centres. See Table 18 below.

7.4.1 Demand for Consultants in Anaesthesiology contributing to the Paediatric Anaesthesia Roster in Model 3 Hospitals

Table 18: Future Consultant Workforce Requirement for Anaesthesiologists with an SI in Paediatric Anaesthesiology

Consultant Anaesthesiologists with an SI in Paediatric Anaesthesia	Current Consultant Workforce WTE	Current Deficit to Meet MoC Requirements WTE	Future Consultant Workforce Requirement WTE
Total	**4**	**14**	**18**

It is anticipated that most of the Model 3 hospitals that are currently providing Paediatric Anaesthesia may continue to do so, albeit with a lesser level of complexity than is required for patients who are treated in the newer regional centres. Paediatric Anaesthesiology will continue to be delivered by consultant Anaesthesiologists who are rostered to Paediatrics over the course of their working week. The demand for these consultants is outlined above. Currently, these consultants dedicate approximately 34% of their working week to paediatric rosters. The expert stakeholders informing this report anticipate that the proportion of the Anaesthesiologists time working in paediatric care in Model 3 hospitals will remain the same, unless there is a re-designation of a number of these hospitals to Model 2 status.

7.4.2 Demand for Consultants in Paediatric Critical Care Medicine

As per the Model of Care in Paediatric Critical Care (NCPCC, 2019), there is an estimated demand for 20 WTE Paediatric Intensivists to work in Paediatric Critical Care Medicine (PCCM). Of these 20, 16 will work in Paediatric Critical Care (PCC). These posts can be WTE in PCC, split posts/ special interest posts between Paediatric Anaesthesiology and Paediatric Critical Care. It is recommended that for ongoing development of the Critical Care Unit that there is a core group of WTE in PCM with clinical sessions dedicated to the PCCM. A further four WTE consultants will work in Paediatric Critical Care Transport.

7.4.3 Demand for Anaesthesiologists Contributing to Intensive Care Rosters

Based on medical workforce planning projections to 2030 for Intensive Care Medicine, for a 7-day working week, it is expected that the headcount demand for Anaesthesiologists working in ICM across both Model 3 and Model 4 hospitals will be as follows:

- Approximately 176 consultants in Anaesthesiology will be required to meet the future demand for ICM services across Model 3 and 4 hospitals by 2030. The time they dedicate to intensive care medicine will equal approximately 29% of their rostered commitments.
- Approximately 132 consultants in Anaesthesiology with a Special Interest in Intensive Care Medicine will be required. Most special interest consultants will work in Model 4 hospitals. The time they dedicate to the specialty of ICM will equal approximately 49% of their rostered commitments.
- Approximately 81 specialists in Intensive Care Medicine will be required, most of whom will work in Model 4 hospitals. The time they dedicate to the specialty of ICM will equal approximately 60% of their rostered commitments.

These consultant headcount estimates are not specifically broken down across Model 3 and 4 hospitals at this point as the future skill mix across hospitals is yet unknown and will be dependent on intensive care bed configuration. These headcount figures are consistent with the WTE figures for ICM in Table 2.

As projections for these specialists are to 2030, the demand estimates for the anaesthesiology workforce planning (including ICM, for the purpose of this report) are extrapolated in proportion with expected population demographic increases from 2030 (pop. 5.3m) up to 2038 (pop. 5.6m) as per Table 2.

While a workforce plan has already been developed for the specialty of Intensive Care Medicine (HSE, 2020), it should be noted that these consultants are included in postgraduate medical training in Anaesthesiology as the majority will complete SAT training in the specialty of Anaesthesiology to become specialists in ICM, although a small number of ICM specialists will have a background of specialty training in Medicine (RCPI) or Emergency Medicine.

7.4.4 Demand for Consultants Working in Pain Medicine

The Pain Faculty of the College of Anaesthesiologists of Ireland (CAI) recommends one chronic pain consultant per 100,000 population. Given that children have less chronic pain conditions than adults, a requirement for 0.5 chronic pain consultant WTEs per head of population to service the national paediatric population by 2038. This equates to a demand for 60 WTE Pain Medicine consultants by 2038. Currently, it is estimated that approximately 64% of a specialist's time is dedicated to Pain Medicine, with the remainder dedicated generally to different areas of anaesthesiology. Based on the proposed Model of Care for Pain Medicine, these demand estimates may change. In Table 7.6 below, the overall requirement for Pain Medicine specialists is broken down across Model 3 and 4 hospitals in proportion to the

current proportion of specialists working in these hospitals. For Paediatrics, the number of Pain Medicine specialists required to staff the New Children's Hospital is in line with the overall business plan for this hospital outlined in Table 7.4 above.

7.4.5 Demand for Consultants Working in Retrieval Medicine

In general, consultants in these posts work 0.5 WTE in Retrieval and 0.5 WTE Anaesthetics or Emergency Medicine. Table 19 outlines the current workforce and the future demand for consultants to adequately staff transport/retrieval services for the country by 2030.

Table 19: Current workforce and Future Demand for Consultants for Retrieval Services

Retrieval Service	Current Consultant Workforce	Future Consultant Demand (Service Development)	Total Consultant Demand
	WTE	**WTE**	**WTE**
National Paediatric 24/7	2	3.5	5.5
National Adult 24/7	1.5	4	5.5
Cork Retrieval	1.5	-	1.5
Total	**5**	**7.5**	**12.5**

7.4.6 Additional Service Requirements and Consultant Demand Retrieval Service Consultant Demand

Consultation with lead clinicians for transport/retrieval services identified a demand for 5.5 WTE consultants to sufficiently resource the Dublin-based adult retrieval service and 5.5 WTE consultants to staff Dublin-based paediatric retrieval services. Both services operate on a 24-hour services basis. In Cork, a requirement of 1.5 WTE consultants was identified given that the Cork retrieval service is not 24/7. The retrieval service is consultant-led with considerable support from NCHDs for service provision.

Trauma Strategy Workforce Requirements

Additional workforce demand to ensure sufficient resourcing of Major Trauma Centres (MTCs) were considered through consultation with representatives of the specialty working in one of the designated MTCs.

Additional resource requirements are included in the workforce demand estimates for Model 4 hospitals as per surveys of Chairs of Anaesthesiology Departments outlined in Table 22 below.

South Infirmary Victoria Hospital is an elective surgical hospital and the workforce demand is estimated to be 9 WTE based in the South Infirmary with some other WTE's allocated from CUH for service provision.

7.4.7 Demand for Consultants Working in Private Hospitals

In Ireland, data on private hospital care is not readily available to inform health service development for the country. Data on activity and staffing by hospital to inform the demand for consultants and trainees for this sector of the health service is not available to the HSE or the NCPA. In the absence of data, workforce statistics on those consultants working exclusively in the private sector, which were accessed through the Irish Medical Councils Annual Registration Form Survey (2021), were used to inform both the current supply of consultants in Anaesthesiology in Ireland, and the future demand for consultants. A simple per head of population ratio for this purpose was used. This inferred a required increase in private sector workforce numbers from the current 58 consultants to 61 consultants by 2030, and 65 WTE consultants (HC 71) by 2038. Further data analysis will be carried out for the private sector when more data becomes available.

7.4.8 Overall Demand Estimates for Anaesthesiologists to 2038

Tables 20a and 20b demonstrate the demand estimates for anaesthesiology based on hospital type and specialty respectively, as determined by MoC recommendations, consultation with specialty stakeholders, hospital surveys of Clinical Chairs in departments of Anaesthesiology across Model 2, 3 and 4 hospitals, and consideration of the requirements for additional posts to accommodate LTFT working and a 6-day working week. Due to the difficulties associated with uncertainty around future service developments it was decided that demand estimates derived through the consultation process be set to 2030 and then further grown in line with staffing per head of population ratios to get an approximate demand for specialists to meet the projection timeline of 2038. Note that updates will be made to specialist hospital projections upon completion of a workforce plan for maternity services. The WTE rate over the course of the projection period from 2030 to 2038 is 92%.

Table 20a: Overall Estimate Consultant Anaesthesiologist Workforce 2030 to 2038 by Hospital Type

	Model 4	Model 3	Model 2	Specialist Maternity	CHI	Retrieval	Public Hospital Total	Private	Total Workforce
WTE 2030	406	269	9	25	88	12.5	810	61	871
HC 2030	440	291	10	26	96	14	876	66	942
WTE 2038	429	284	9	26	93	13	855	65	920
HC 2038	466	309	10	28	101	14	930	71	1000

Above estimates are rounded to the nearest decimal point

A projected WTE rate for consultants of 92% is used to inform total headcount consultant demand by 2038. This represents a reduction in the WTE rate from the current 96%. It is not possible to accurately predict less than full time working patterns of consultants into the future. The estimate of 92% is based on an assumption of approximately 77% of the workforce working full time, 12% working at a WTE rate of 80% and 11% working at a WTE rate of 50%.

Table 20b: Overall Demand for Anaesthesiologists to 2038 by Specialty

Speciality	2030 WTE	2030 HC	WTE per 100,000	HC per 100,000	2038 WTE	2038 HC
Consultant Anaesthesiologists working in publicly funded hospitals, without a nominated special interest.	504	547.8	9.41	10.23	532.5	580
Obstetric Anaesthesiologists	24.5	26.6	0.46	0.50	26	28
Anaesthesiologists SI Paediatric Anaesthesiology	18	19.6	0.34	0.37	19	21
Paediatric Anaesthesiologists	68.4	74.3	1.35	1.47	72.3	78.5
Paediatric ICM consultants	20	21.7	0.37	0.4	21	23
Pain Medicine consultants	52	56.5	0.97	1.	55	60
Anaesthesiologist SI ICM	62	67.4	1.16	1.26	65	71
ICM Consultant	49	53.3	0.91	0.99	52	56
Retrieval Services	12.5	13.6	0.23	0.25	13	14
Sub-Total Public Hospitals	810.4	880.8	15.13	16.4	855.8	930
Consultants working solely in private practice	61	61	1.14	1.1	65	70
Total	**871.4**	**942**	**16.3**	**17.7**	**920**	**1000**

Notes:

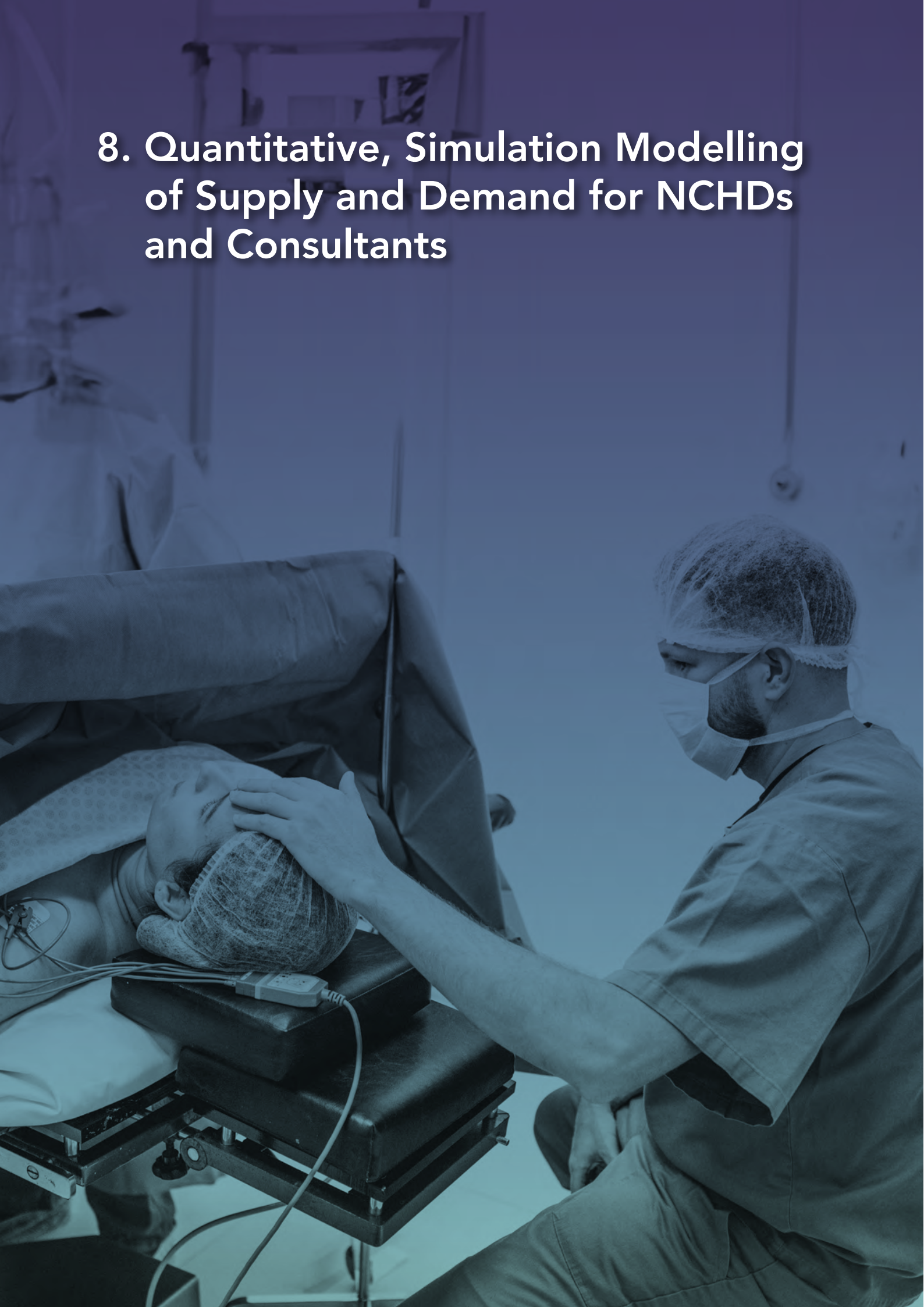
1. Although the position of 'Anaesthesiologist with a special interest in Paediatric Anaesthesiology' is not based on a recognised training qualification, there are consultants who consider themselves to have a special interest in Paediatric Anaesthesiology due to their workload involving providing Anaesthesiology services to paediatric patients, particularly in Model 3 hospitals.

2. Consultants working in Intensive Care Medicine include specialists in ICM, consultants with a special interest in ICM and consultants who provide sessional and rota support in ICM (the latter in Model 3 hospitals in particular). According to the ICM Workforce Plan 2020, specialists in ICM and consultants with a special interest in ICM work in intensive care at a WTE rate of 0.47 with the rest of their working time allocated to Anaesthesiology.

3. For the purposes of this document and the tables above which considers the specialty of Anaesthesiology as whole including ICM, the WTE rate is assumed to be 0.92 to allow a final total headcount to be calculated. However, the ICM Workforce Planning Document 2020 provides more detailed breakdown of the headcount of consultants working in ICM which is based on a similar number of WTE posts in ICM as used in the tables above.

4. Baseline workforce data was captured at March 2023 and therefore there is an expectation that data at year end 2023 will differ from the baseline.

8. Quantitative, Simulation Modelling of Supply and Demand for NCHDs and Consultants

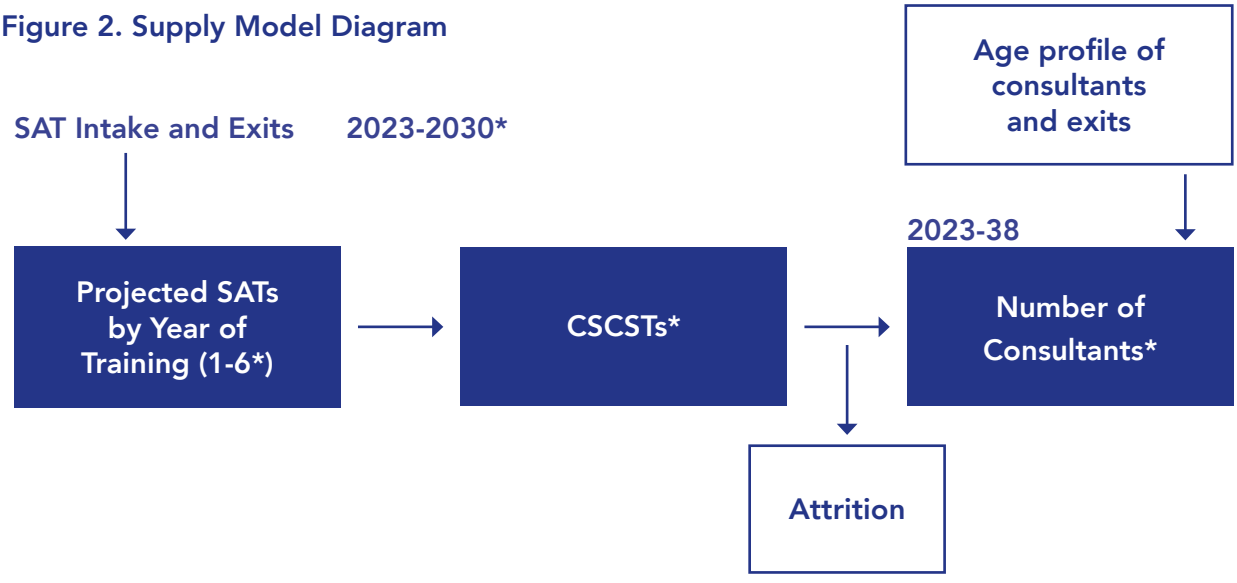


Quantitative, simulation modelling of the required future supply of consultants to meet demand outlined in Tables 20a and 20b was carried out. Statistical modelling was run using NDTPs medical workforce planning statistical model. This model brings together both supply and demand analysis comprising supply and demand modules. The workforce was modelled from 2023 to 2038. This time frame was used in line with international best practice (Van Greuningen, Batenburg, & Van der Velden, 2012) and other workforce planning models for Ireland (Keegan et al., 2020). The time frame is important. Because of the time it takes for a trainee to complete SAT training and take up a consultant post, increases in the SAT intake will only impact on consultant numbers in the later years of the model.

As the focus of the report is on informing the SAT intake, a national approach to workforce planning is primarily taken. A stock-flow model, with a standardised structure for all specialties, was used to project the number of SATs and consultants over the time period. An overview of the supply model is shown in Figure 1. More information on the supply model is outlined in Appendix A of this report.

Model parameters for the supply model were derived from current workforce statistics and demographic data and expert opinion derived from further consultation and feedback from the NCPA and the CAI.

Figure 2. Supply Model Diagram



8.1 Supply Model Variables

To adequately model the supply of consultants and NCHDs required to meet the demand for anaesthesiologists to 2038, the following parameters or supply model variables were used as listed in Table 21.

Table 21: Assumptions Used in Modelling Supply of Anaesthesiology Consultants

Variable	Value	Source
Consultant HC HSE Funded	462	DIME March 2023
Consultant WTE HSE Funded	443	DIME March 2023
WTE Rate	96%	DIME March 2023
% Male HSE Funded Services	63%	DIME March 2023
% Female HSE Funded Services	37%	DIME March 2023
Expected retirements by 2038	258	DIME March 2023
Non-retirement exits	.5% M .8% F	NDTP, 2023 assumed
Exclusive private sector*	58	IMC, 2021
SAT Years 1-6	48-54 trainees per year	CoA 2022/23
SAT Exits 2022-2028	48-54 per year	CoA 2022/23
Gender breakdown of SAT	44% F 56% M	CoA 2022/23
Attrition post CSCST	20%, based on stakeholder rec'	NDTP 2022/23 and Assumption
Years abroad between CSCST and Consultant post	2	Assumption
NTSDs	374	DIME March 2023
Assumed future WTE working rate of consultant	92%	Assumption

*In the absence of better data on the private sector workforce, assumptions are derived from equivalent public sector data re both demographics and activity per consultant

8.2 Modelling Demand

Within this report, the future demand for consultants is based on the following:

- The results of surveys of Model 2, 3, 4 and specialist maternity hospitals as outlined in Section 6 and 7 above. The NCPA reviewed survey results to ensure they aligned with staffing standards and service development recommendations of Models of Care for Anaesthesiology as outlined in Section 5 above.
- Extension of the working week to 6 days as per the Sláintecare consultant contract 2023
- Consultation with Pain Medicine specialists to ensure demand estimates were aligned with the principles of the proposed model of care for Pain Medicine.
- Consultation with Paediatrics Anaesthesiology Leads to ensure demand for consultant is aligned with the staffing requirements of the new children's hospital and other service developments anticipated within the health service that will impact Anaesthesiology, including the implementation of the MoC for Paediatrics and Neonatology.
- The workforce plan for ICM and feedback from specialty leads to ensure demand for anaesthesiology consultants and trainees accounted for those doctors who would go on to become specialist and special interest consultants in ICM.

- Consultation with Paediatric ICM experts to ensure the demand for Paediatric Critical Care consultants was aligned with the MoC for Paediatric Critical Care, the MoC for Paediatrics and developments related to the New Children's Hospital.

To estimate the demand for anaesthesiologists to 2038 statistical modelling of supply variables and demand estimates was carried out using the following assumptions.

- Attrition of newly qualified specialists from the Irish health service is kept at approximately 20%.
- SAT training intake numbers to meet demand would build up to 50 to 90 from 2023 to 2028-2030.
- Newly qualified specialists are assumed to go abroad for on average 2 years before returning to take up a consultant post.
- Consultants will retire at age 62 on average.
- The WTE rate will be reduced over time to 92%.
- By 2038 the rate per 100,000 of the population of consultants in employment will be 17.7 headcount of 16.3 WTE.

The results of statistical modelling infer the supply of consultants by 2038 will be approximately 920 WTEs or 1000 consultants in headcount terms. See Table 22 below. Tables 23 and 24 give more detail for the supply of consultants per year, including projected entrants and exits in to and out of the workforce. Note that due to the length it takes to train a consultant, supply for consultants at 2030 is estimated to reach approximately 640 headcount, 602 WTE consultants. The increased intake in to training from 2024 on will allow for an accelerated supply to 2038.

Table 22: Training Intake and Consultant Supply Analysis - Post CSCST Attrition Rate of 20% WTE 92%

		Q1 2023	Q4 2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Training Intake	HC		50	65	80	90	90	90	90	90								
Projected Supply	WTE	500	528	534	556	564	570	581	589	602	619	641	675	719	765	810	861	920
Project Supply	HC	520	550	556	579	588	594	618	627	640	659	681	734	782	831	881	935	1000
Per 100,000 population	HC	10.7	10.8	11.1	11.2	11.2	11.6	11.7	11.9	12.1	12.5	13.3	14.1	14.9	15.7	16.6	17.7	
Per 100,000 population	WTE	10	10.4	10.4	10.8	10.8	10.9	11	11.	11.2	11.5	11.8	12.4	13.1	13.8	14.54	15.4	16.3
WTE Rate		0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.94	0.94	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92

Table 23: Detailed Consultant Headcount Supply Analysis - Post CSCST Attrition Rate of 20% WTE 92%

Headcount Supply of Consultants	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Total employed (Opening Stock)	520	550	556	579	588	607	618	627	640	659	696	734	782	831	881	935
Exits other than retirement	5	5	5	5	6	6	6	6	6	6	7	7	7	7	7	7
Exits due to retirement (Public 62yrs +)	10	11	14	12	22	18	22	18	14	22	18	15	14	14	11	3
Exits due to retirement (Private)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Total Exits	17	18	21	19	29	25	29	25	21	29	27	24	23	23	19	12
Irish CCST graduates	26	24	43	28	35	37	38	38	40	52	64	72	72	72	72	72
Other entrants	20	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4
Total Entry	46	24	43	28	35	37	38	38	40	52	64	72	72	72	74	76
Total employed (Closing Stock)	**550**	**556**	**579**	**588**	**594**	**618**	**627**	**640**	**659**	**681**	**734**	**782**	**831**	**881**	**935**	**1000**

Table 24: Detailed Consultant WTE Supply Analysis - Post CSCST Attrition Rate of 20% WTE 92%

WTE Projected Supply of Consultants	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Total employed (Opening Stock)	500	528	534	556	564	570	581	589	602	619	641	675	719	765	810	861
Exits other than retirement	5	5	5	5	6	6	6	6	6	6	7	7	7	7	7	7
Exits due to retirement (Public 62yrs +)	10	11	13	12	21	17	21	17	13	21	17	14	13	13	10	3
Exits due to retirement (Private)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total Exits	16	17	20	18	28	24	28	24	20	28	24	22	21	21	18	11
Irish CCST graduates	25	23	41	27	34	35	36	36	38	49	59	66	66	66	66	66
Other entrants	19	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4
Total Entry	45	23	41	27	34	35	36	36	38	49	59	66	66	66	68	70
Total employed (Closing Stock)	**528**	**534**	**556**	**564**	**570**	**581**	**589**	**602**	**619**	**641**	**675**	**719**	**765**	**810**	**861**	**920**

An alternative scenario was explored to analyse the impact of a higher post-CSCST attrition rate i.e. 32%. While this scenario is not recommended, the impact on consultant supply and trainee demand is outlined in Table 25 below for context, in the event that attrition remains high.

Scenario 2: Demand for consultants and trainees based on the implementation of workforce recommendations for the various specialties of anaesthesiology outlined in Table 25. Under this scenario the following assumptions apply:

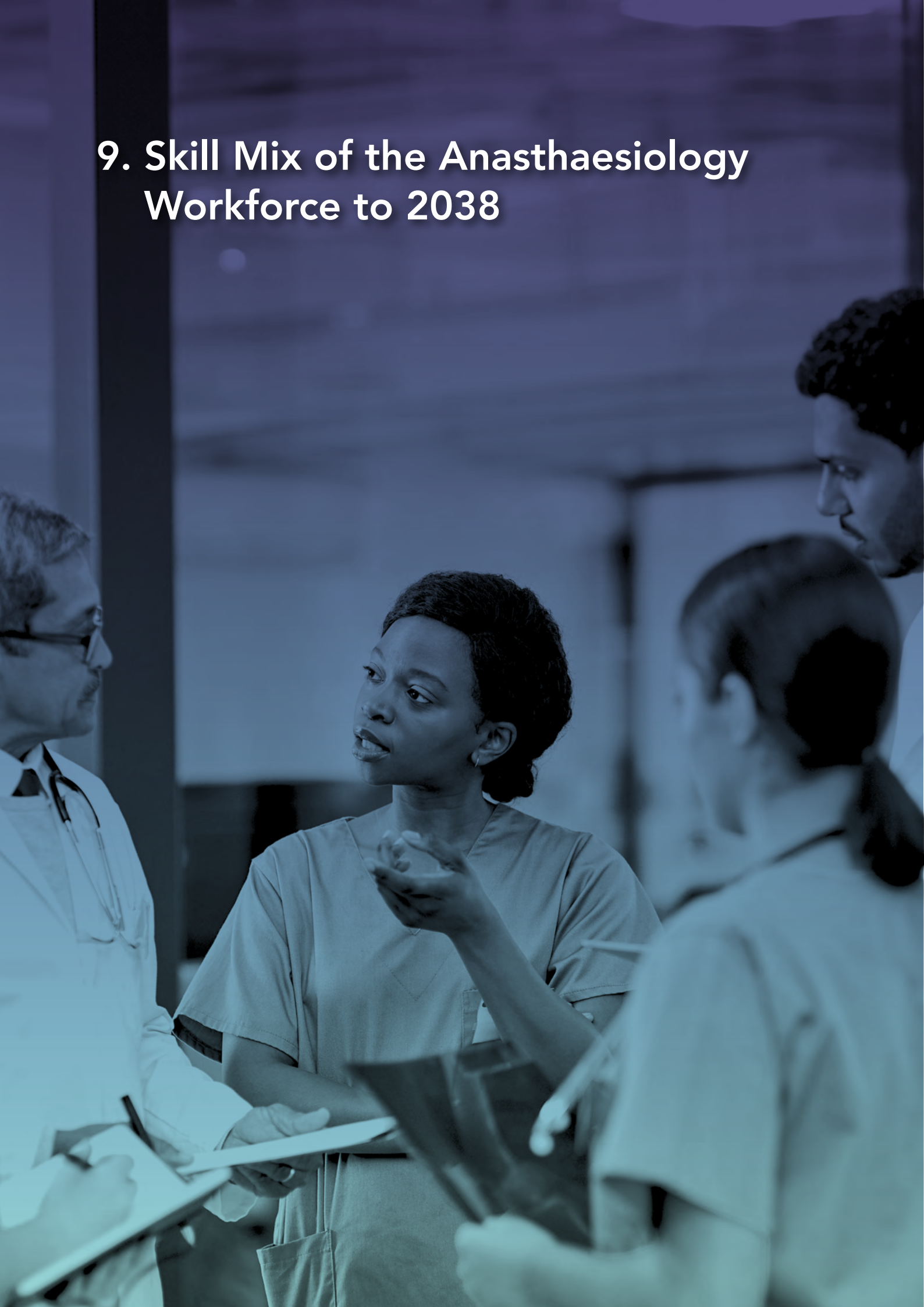
- Attrition of newly qualified specialists from the Irish health service is kept at approximately 32%.
- SAT training intake numbers increase to meet demand, building up to 125 approximately from 2023 to 2032.
- Newly qualified specialists are assumed to go abroad for on average 2 years before returning to take up a consultant post.
- Consultants will retire at age 62 on average.

Under this scenario, the supply of consultants by 2038 will be approximately 920 WTEs or 1000 consultants in headcount terms. The rate of consultants per 100,000 of the population would move up to 17.8 by 2038. See Table 25 below.

Table 25: Scenario 2 Demand and Supply Analysis Post CSCST Attrition Rate of 32%; WTE 92%

		2023 Base-line	YE 2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Training Intake	Head count	50	50	70	95	118	125	125	125	125								
Projected Supply	WTE	500	516	519	534	539	540	546	549	555	567	585	619	672	729	786	849	920
Project Supply	Head count	520	538	541	557	562	562	580	584	591	604	622	673	730	792	855	922	1000
Per 100,000	HC	10.3	10.6	10.6	10.8	10.8	10.7	11.0	11.0	11.0	11.2	11.5	12.3	13.3	14.3	15.3	16.5	17.7
Per 100,000	WTE	10	10.2	10.1	10.3	10.4	10.3	10.3	10.3	10.4	10.5	10.8	11.3	12.2	13.2	14.1	15.1	16.3
WTE Rate	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.94	0.94	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	

9. Skill Mix of the Anasthaesiology Workforce to 2038



The Model of Care for Anaesthesiology proposes a consultant delivered service. Hanly (2003) defined a consultant delivered service as one in which the ratio of consultants to NCHDs 1:1 and whereby all NCHDs are assigned to a training programme i.e. SATs.

NDTP and the National Clinical Programme for Anaesthesiology recommend moving towards a consultant delivered service by increasing the consultant and trainee workforce numbers in line with the recommended projections outlined in Table 22 above. In order to do this, a reduction in the attrition of newly qualified specialists to overseas jurisdiction should be realised. As the number of consultants and trainees in the health system increase, a parallel reduction in service reliance on NTSDs can be achieved.

10. Regional Breakdown of Demand for Consultant Anaesthesiologists

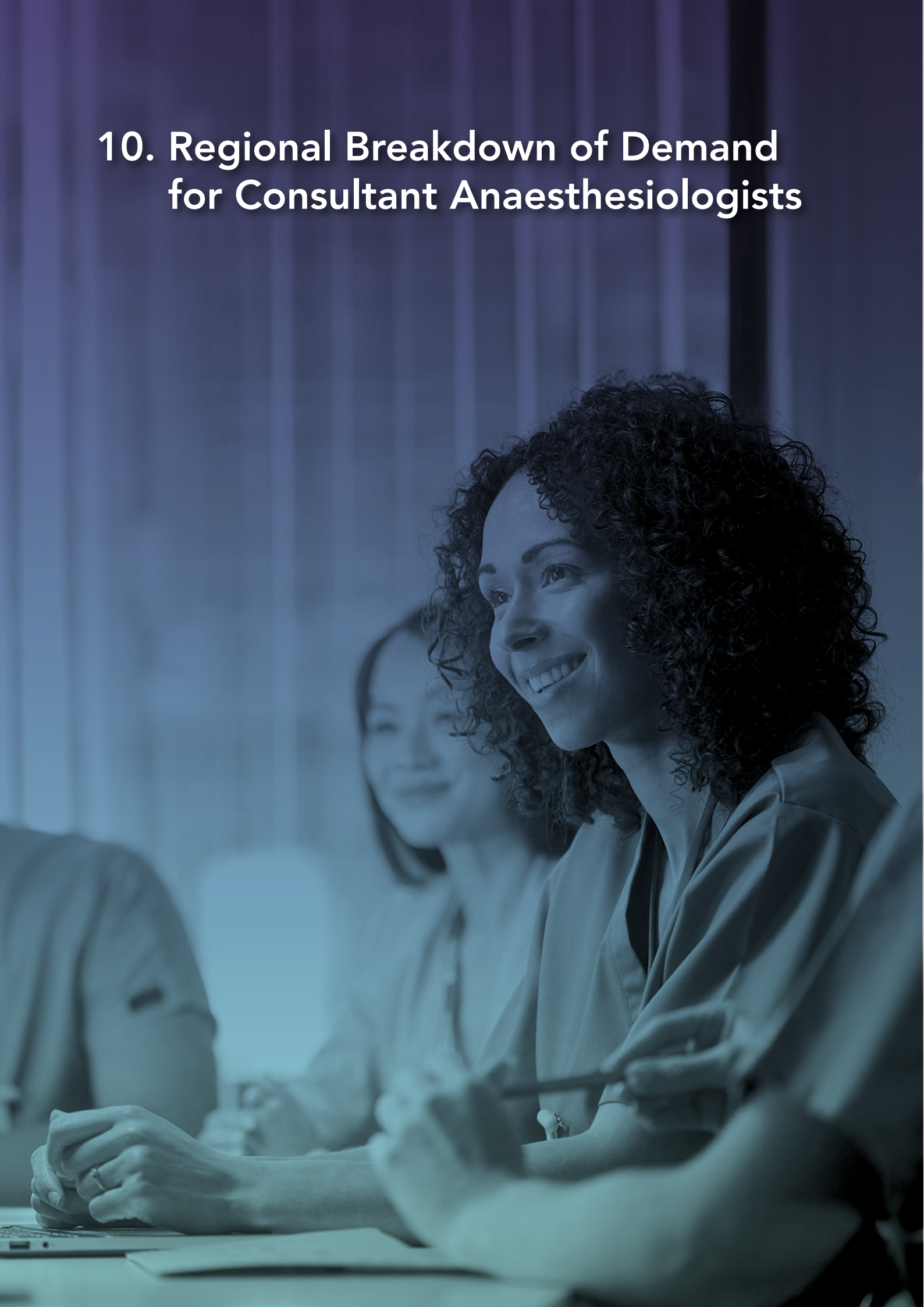


Table 26 gives a breakdown of the approximate breakdown of consultant numbers across Health Regions (HR), CHI, retrieval services and the private sector by 2038. This breakdown can be used by human resource management to monitor the development of the workforce over the coming 15 years at a regional level. Health Regions are due to be set up by Q1 2024 whereby decision making related to service delivery, including funding of services, will be devolved to health regions for both community and acute service development and delivery.

Table 26: Approximate Regional Breakdown of Projected WTE Consultant Numbers

Health Region	Population projection 2038	Projected Consultants 2038
A	1,310,391.92	191
B	1,254,386.08	171
C	1,053,324.73	105
D	793,886.91	110
E	440,119.11	43
F	800,337.23	129
CHI		93
National Retrieval		13
Private		64
Total	**5,652,446**	**920**

11. Conclusion and Recommendations

There are several significant drivers of change to the future of anaesthesiology service delivery in Ireland as outlined in the various models of care for related specialties. These drivers include staffing standards; new models of service delivery; consultant delivered service development; the 2023 Consultant Contract with associated longer working week, the requirement for less-than-full-time (LTFT) consultant positions, change in demographics including population ageing and related epidemiological trends as well as long waiting lists and an over-reliance on NTSDs to deliver care. The analysis of supply and demand for consultants and SATs and NTSDs in anaesthesiology outlined within this report illustrates that a significant increase in recruitment of NCHDs to the specialist anaesthetic training programme and an expansion in consultant anaesthesiologist numbers are required to deliver the levels of care appropriate to the future population of Ireland. Consultation with stakeholders across Anaesthesiology services in model 2, 3 and 4 hospitals as well as in Obstetric, Paediatric, Pain and Retrieval services has led to the identification of future consultant and trainee staffing requirements across the various specialties of Anaesthesiology. Also integrated into the demand for anaesthesiologists is the projected demand for specialists in Intensive Care Medicine (ICM Workforce Plan, NDTP/NCPCC/JFICMI, November 2020) and specialists in Paediatric Critical Care Medicine (Model of Care for Paediatric Critical Care, NCPCC, 2019).

1. To implement the 2 plus 2 staffing standards across relevant Model 3 hospital services and to meet current and future consultant demand in Model 4 hospitals as well as national Intensive Care, Obstetric, Paediatric, Pain and Retrieval services, it is estimated that the consultant workforce will need to increase from a total headcount of 520 consultants, as of March 2023, to a total headcount of 1000 consultants by 2038. Increasing the consultant workforce to a total headcount of 1000 anaesthesiology consultants will improve Ireland's current ratio of 10.4 consultant anaesthesiologists per 100,000 of the population or 9.8 in WTE terms to 17.7 (16.3 WTE) per 100,000 of the population by 2038.

2. Most anaesthesiology NCHDs should be specialist anaesthesiology trainees (SATs). In 2023 approximately 42% of anaesthesiology NCHD's were on the training scheme. If Ireland were to meet the requirement for 1000 anaesthesiology consultants by 2038 through training alone, then the number of trainees required to commence specialist anaesthesiology training (SAT) per annum will require to increase from an intake of 50 trainees in 2023 to an annual intake of 90 trainees from 2026 to 2030, assuming an attrition rate of 20% of newly qualified specialists from the health service in Ireland.

   The view of the NDTP and the National Clinical Programme for Anaesthesiology is that the attrition rate is likely to be reduced as new consultant posts become available. The 2023 consultant contract, an improved work/life balance with better staffing levels and opportunities for less-than-full-time working may make consultant positions in Ireland more attractive.

3. The development of an associate specialist grade of anaesthesiology doctor should be considered for NTSDs who are not eligible to obtain a CSCST or enrolment on the specialist register. This will allow for a reduction in the requirement for NTSDs for service provision.

4. Provision will be required to be made for less than full time (LTFT) posts for both training positions and the consultant workforce. Approximately 10% of training positions should be reserved for LTFT. To allow for LTFT consultant posts in the future, an assumption of an overall WTE rate of 92% would allow for 77% of consultants working at 100%, 12% working at 80% and 11% working at 50% of the full working week.

5. Consideration should also be given to factors that will encourage retention of the older anaesthesiologist in the workforce including LTFT working opportunities and the cessation of participation in on-call rotas.

The workforce requirements for the proposed surgical hubs and elective hospitals to manage long-waiting lists for elective surgery have not been considered in this report as there is insufficient information on these developments at the time of writing.

The workforce plan may require to be reviewed in the next three to five years depending on the development of these new elective surgical facilities.

Further Workforce Planning Recommendations for Anaesthesiology

In addition to the projected staffing requirements to align with proposed future service needs, a number of workforce development recommendations are outlined below in the form of identified challenges and related actions to meet these challenges.

Planning Challenge	Proposed Action
Development of a Consultant Delivered Service with a Reduced Reliance on NTSDs	Any increase in consultant and trainee numbers in the specialty should happen in parallel with a reduction in NTSD numbers. To achieve capacity in the system to move towards a consultant delivered service, then there will need to be a push to identify posts in the system that can be converted from non-training to training scheme posts
Recruitment Delays	The HSE should continue to work towards the development of a more efficient system of consultant recruitment to ensure Irish trained doctors take up consultant posts within an appropriate timeframe.
Attrition of Newly Qualified Specialists to overseas health systems	Enhanced communication with specialists who have been trained in Ireland and are currently working overseas is required to ensure that current levels of attrition of newly qualified specialists are minimised. A recruitment campaign should be developed to specifically target these doctors when consultant posts arise. This could have an impact on the number of trainee doctors estimated to be required to meet the future demand for consultants in the specialty. At the same time Ireland would be aligning itself to the WHO Code.

Attrition of Newly Qualified Specialists to overseas health systems	Additionally there is a need to work towards the development of a more effective retention system whereby trainees who are about to complete training and who are going to leave Ireland to gain further experience abroad, can be contacted and notified of upcoming consultant post vacancies, details of the new consultant contract and opportunities as they arise. Proleptic consultant appointments should be considered to assess whether this form of recruitment would have a positive impact on retention.
Over-reliance on NTSDs for service delivery	A contributing factor to high levels of dependence on NTSDs is 24-hour unscheduled care provision across the large number of hospital sites. Implementation of policy recommendations related to the reduction in the number of unscheduled care centres across the country would support the development of consultant delivered service with a reduced reliance on NTSDs.
Contractual arrangements, turnover and educational/ developmental opportunities for NTSDs (continued)	The NCPA recommends that the issue of a permanent non-training grade of doctor (Associate Specialist) requires to be discussed amongst interested parties across the health service. Agreement on the role and qualifications required for such posts would have to be reached across all specialties with a view to replacing the current arrangement of contracts of indefinite duration for NTSDs who are not eligible, or who are not likely to become eligible, for a CSCST in Anaesthesiology.
Work Life Balance	More flexible and less than full time working arrangements should be made available to trainees and consultants as the proportion of female doctors in the workforce increases and as more doctors in general favour better work-life balance.
Retention in the face of an ageing workforce and the loss of valuable clinical and educational expertise	Less onerous on-call commitments for those consultants approaching retirement age should be made to encourage them to remain in the workforce. This would ensure that valuable clinical and training expertise is maintained within the workforce for longer. Something that will be required as the training numbers increase. The NCPA supports the proposal that each hospital has a process in place to review older anaesthesiologists out-of-hours working and to address any concerns that an individual might raise in relation to working on-call and onerous working hours. The NCPA proposes that criteria for eligibility to cease on-call duty be clearly outlined and notes that age may not be the only factor to be taken into consideration in relation to ability to work on-call, i.e. general health and functional ability are also relevant. Increased daytime clinical activities, scheduled weekend activities and additional non-clinical duties such as management and educational/training roles are options for alternative practice in these circumstances.

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NHS Wales: Staff directly employed by the NHS available here at: https://statswales.gov.wales/Catalogue/Health-and-Social-Care/NHS-Staff

New Zealand: New Medical Workforce Statistics 2021 https://www.health.govt.nz/nz-health-statistics/health-statistics-and-data-sets (data available on request)

Canada: Scott's Medical Data Base 2021 is available here at: https://www.cihi.ca/en/

Appendix A

Supply Module of the NDTP Workforce Planning Simulation Model

The supply module is based on a stock-flow model as depicted below. The model follows SATs though each year of training. Following a lag in which time trainees go abroad for an assumed number of years (2-3 years as informed by the specialty) and an assumed level of attrition final year trainees go into consultant posts. Consultants for each specialty are aggregated into one group and exits are calculated based on the age profile of consultants.

Specialty Specific Models

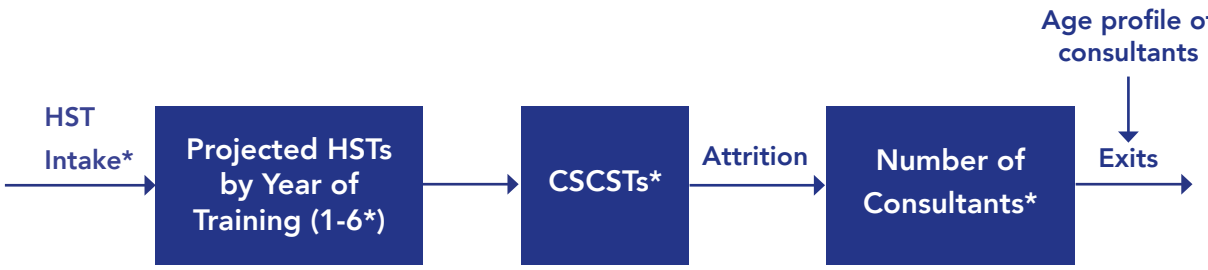

Figure 1 Supply model overview

Table 1 describes the variable used in the supply module. The data sources are described in Data Sources section.

Table 1 Supply Module Variables

Variable	Description
s	Gender
t	Year
SAT INTAKE	User inputted number of SATs that commence training each year
SAT1st	Year 1 trainees
SAT2st	Year 2 trainees
SAT3st	Year 3 trainees
SAT4st	Year 4 trainees
SAT5st	Year 5 trainees
SAT6st	Year 6 trainees
CONS NEWs	New consultants
ATT	CSCST Attrition Rate. This is the proportion of CSCST that are retained in the Irish Health System. (NDTP internal analysis and/or stakeholder consultation)
FOREIGNs	Number of foreign trained specialists recruited to fill consultant posts. This can be used in modelling supply if required. For the purpose of the analysis outlined in this report, this variable is set to 0 assuming Ireland is self-sufficient in the production of consultants.

RET AGE	Number of Consultants at retirement age. In Year 1 of the model all consultants at or over the retirement age are assumed to retire.
CONSs	Number of Consultants employed at time t
EXITSs	Total number of exits from the workforce
OEXITs	Other exits rate
EXITP	Exit rate of private consultants.

The supply of consultants at time is estimated as follows. The year SAT1 is the user inputted SAT 1 Intake, in each year the number of SATs is the number from the previous year.

SAT1t = SAT_INTAKE
SAT2t = SAT1t-
SAT3t = SAT2t-
SAT4t = SAT3t-
SAT5t = SAT4t-
SAT6t = SAT6t-

The number of new consultants is the number of year 6 consultants, lagged by two years (to account for CSCSTs going abroad – this may need to be changed based on specialty experience) plus the number of foreign consultants recruited. The number of foreign consultants recruited is set to zero as a default but may need to be changed following the advice of the clinical programme.

CONS NEWt = SAT6t-3 * ATT + Foreign

Retirements are determined by the number of consultants in the age bracket of retirement i.e. 62 in each year. In the first year all consultants over 62 are assumed to retire. Other exits are based on an overall rate. As the age profile of the private sector consultants is not known an average exit rate is included. Total exits are the sum of the retirements, other exits, and retirements from the private sector.

EXITSt = RET_AGEt + CONSt-1 *OEXITsg + PRIVATE0*EXITP
CONSt = CONSt-1 + CONS NEWt - EXITSt

The number of headcount consultants calculated above is then converted into WTE using the baseline WTE rate for each gender. The assumption of static WTE rates may need to be reviewed.

CONS_WTEt = CONSt * WTE0

For the specialty of Anaesthesiology, demand for consultants was determined through surveys as well as policy and strategy analysis and stakeholder consultation. Final demand estimates to 2030 were inputted into the model and per head of population demand projections to 2038 were run using CSO population projection statistics (CSO, 2016).

In determining the required training intake to meet inputted demand in the simulation model, training intake numbers were manipulated until the overall supply of consultants at the end of the projection period, was aligned with inputted demand.

Appendix B - Number of Doctors on the Specialist Register Practicing in Anaesthesiology 2021 (data made available in 2022)

Tables below outline the breakdown of the Anaesthesiology and Intensive Care Medicine specialist registered doctors participating in the workforce, both public and private, by sub-specialty, as per Medical Council Annual Retention Application Form (ARAF) data for 2021 (which was made available in 2022). A total of 591 doctors working in Anaesthesiology in 2021 were on the Specialist Division of the Register and actively working in the specialty, of whom 366 received their basic medical qualification (BMQ) in Ireland and 225 received their basic medical qualification elsewhere. A further 54 doctors were working in Intensive Care Medicine and were on the Specialist Division of the Register. Of these doctors 40 received their BMQ in Ireland and 14 received their BMQ outside Ireland.

Of the total of 591 doctors on the Anaesthesiology Specialist Division of the Register, 509 worked in Ireland only, 76 worked in Ireland and abroad and 44 worked exclusively in the private sector. Of the 54 specialist registered doctors working in Intensive Care Medicine, 46 practiced in Ireland only and 8 practiced in Ireland and abroad in 2021.

Specialist Registered Doctors by Jurisdiction of Basic Medical Qualifications (Irish Medical School and Elsewhere) IMC, 2021

Specialty	Irish Medical School	Medical school outside Ireland	Total
Anaesthesiology	366	225	591
Intensive Care Medicine	40	14	54

Specialist Registered Doctors by Employment Jurisdiction (inside and outside Ireland) IMC, 2021

Specialty	Within the Republic of Ireland only Within and outside	Within the Republic of Ireland	Not Available	Total
Anaesthesiology	509	76	6	591
Intensive Care Medicine	46	8	0	54

Specialist Registered Doctors Working Exclusively Privately IMC, 2021

Specialty	Provision of privately funded services only
Anaesthesiology	58

Note: *Information on WTE contribution of these doctors to the specialty of Anaesthesiology is unknown*


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Anaesthesiology Medical Workforce in Ireland 2023-2038

January 2024