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Health and social care data and the Hippocrates model: Gaps and recommendations

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Table of contents

Abbreviations ..... **iii**

Executive summary ..... **iv**

Chapter 1 Introduction **1**

Chapter 2 General data issues within the Irish health and social care system **4**

2.1 Introduction 4
2.2 Incomplete and inconsistent use of an IHI 4
2.3 Incomplete and inconsistent use of electronic health records (EHRs) 5
2.4 Incomplete data on privately provided/financed services 6
2.5 Incomplete data on primary care and community-based services 7
2.6 Incomplete data at the Health Region level 8
2.7 Summary 9

Chapter 3 Data issues relating to Hippocrates modelling **10**

3.1 The Hippocrates model 10
3.2 The Hippocrates model: Data gaps 11
3.2.1 Public acute hospitals 12
3.2.2 General practice 18
3.2.3 Older people's services 23
3.3 Discussion 27

Chapter 4 Recommendations **29**

4.1 Introduction 29
4.2 Recommendations 30
4.2.1 Data collection: Equity, ethics and efficiency 30
4.2.2 Data at the relevant Health Region level 31
4.2.3 Public acute hospitals 32
4.2.4 General practice 33
4.2.5 Older people's services 35
4.3 Discussion 36

References **38**

List of tables

Table 3.1 Data sources and gaps: Public acute hospitals 13

Table 3.2 Data sources and gaps: General practice 19

Table 3.3 Data sources and gaps: Older people's services 24

List of figures

Figure 3.1 Hippocrates model – Diagrammatic representation, 2023–2040 11

Abbreviations

AMAU	Acute medical assessment unit
BIU	Business Intelligence Unit
CHO	Community healthcare organisation
CSO	Central Statistics Office
DTOC	Delayed transfer of care
ECC	Enhanced community care
ED	Emergency department
EHR	Electronic health record
GPN	General practice nurse
HCCI	Home and Community Care Ireland
HIPE	Hospital In-Patient Enquiry scheme
HIQA	Health Information and Quality Authority
HPO	Healthcare Pricing Office
IHI	Individual health record
LTC	Long-term care
LTRC	Long-term residential care
NHSS	Nursing Home Support Scheme
NMBI	Nursing and Midwifery Board of Ireland
NM-CMS	Maternal and Newborn Clinical Management System
NOCA	National Office of Clinical Audit
NTPF	National Treatment Purchase Fund
NUTS	Nomenclature of Territorial Units for Statistics
OPD	Outpatient department
OR	Occupancy rate
PBRA	Population Based Resource Allocation
PET	Patient experience time dataset
SYOA	Single year of age
TILDA	The Irish Longitudinal Study on Ageing
TRE	Trusted Research Environment

Executive summary

Health information has an essential role to play in health and social care planning decisions. Traditionally, Ireland lagged behind its European peers in prioritising health data, with several instances of health and social care data either not being recorded, or being recorded and stored but in a manner that prevents their use for planning purposes, or not being easily accessible to those who require it. While investment in this area has increased rapidly in recent years, data and health information deficits continue to impact a range of stakeholders across the health system. This report identifies and discusses data gaps in the Irish health and social care sector, with particular reference to the data required to project future demands for health and social services within the ESRI Hippocrates model. The report focuses on the availability of data – along with notable gaps – in 2024/2025, when the Hippocrates model was most recently updated. Within this context, it is important to acknowledge that several significant data developments are currently underway, which have the potential to transform health data availability in the Irish context; these include the Digital Health Strategic Implementation Roadmap, the Health Information Act 2026 and the European Health Data Space.

Several major data issues in the Irish context limit the amount and type of analysis that can be undertaken to inform health system planning and reform in Ireland. These include:

(i) incomplete and inconsistent use of an Individual Health Identifier (IHI);
(ii) incomplete and inconsistent use of electronic health records (EHRs);
(iii) incomplete data on privately provided/financed services;
(iv) incomplete data on primary care and community-based services; and
(v) incomplete data at the Health Region level.

A number of ongoing initiatives seek to address these limitations, which when implemented will significantly improve data infrastructure and availability. In this context, consideration is required from the outset regarding how data collected through ongoing initiatives can and should be used for purposes beyond immediate patient care, including research and service planning. Drawing on recommendations from the World Health Organization (WHO), it is recommended that the sharing of data for research purposes should

be done in a manner that is equitable, ethical and efficient, including initiatives such as the Trusted Research Environment.

In 2025, the ESRI published six reports, which included projections of demand and associated capacity requirements, at both the national and HSE region level for public acute hospitals, general practice and older people's services. While these analyses included the most up-to-date, available data at the time of completion, the extent of the analysis that could be undertaken for each service area was significantly curtailed by data availability.

- **Public acute hospitals**: The best available data among the services examined are for the public acute hospital system and, in particular, for day patients and in-patients using the Hospital In-Patient Enquiry (HIPE) scheme. However, there are limitations to these data. For example, the incomplete and inconsistent use of the IHI means that the analysis is at the discharge level rather than the patient level. Consequently, a key recommendation is the enhancement of HIPE as a patient-level dataset; further, there are more limited data available on other hospital based services, including emergency departments (EDs) and outpatients; these services would benefit from a patient-level HIPE-type dataset.

- **General practice:** There are limited administrative data available on general practice in Ireland. Consequently, the projection analysis relied on survey data, which have inherent limitations, including recall bias and the exclusion of consultations for certain population groups, including those living in communal establishments and who are homeless. This report recommends the development of a regularly updated, centrally held administrative dataset on general practice with a core set of variables. Such a dataset could include information on the general practice workforce and working hours, as well as appropriately anonymised individual level data capturing variables such as age group, sex, medical card status and number of consultations of those registered with a practice.

- **Older people's services**: While there are some administrative data available on older people's services (in particular long-term residential care (LTRC) and home support), it is limited in nature and needs to be supplemented with survey data for the

Hippocrates projection analysis. As with general practice, this report recommends the development of a minimum dataset of LTRC residents and home support recipients in Ireland, which would include details for example on age, sex and dependency levels. Further, there is a need for data on other services used by older people, including Meals on Wheels and respite care.

Arising from the Digital Health Strategic Implementation Roadmap, the Health Information Act and the European Health Data Space, a wide range of initiatives aimed at strengthening the health data infrastructure and availability are currently underway. While some developments are at a more advanced stage than others, full implementation will take time. It is now essential to consider how these initiatives will operate in practice, particularly in relation to how data can be shared beyond immediate clinical care settings. In the meantime, other initiatives could significantly enhance data availability for planning, policy and research purposes. It is vital that improvements to the health data focus not just on publicly provided care, but also on the extensive care provided by voluntary and private providers, much of which is publicly funded.

Chapter 1
Introduction

Health information has an essential role to play in health and social care planning decisions (WHO, 2010). However, sometimes the ability to plan is compromised by a lack of data and poor data infrastructure – at the patient, provider and financing levels. Traditionally, Ireland lagged behind its European and OECD peers in prioritising health data (Walsh et al., 2021a), with several instances of health and social care data either not being recorded, or being recorded and/or stored but in a manner that prevents its use for planning purposes, or not being easily accessible to those who require it (HIQA, 2018; Sicari and Sutherland, 2023). Brought to the fore during the COVID-19 pandemic, these shortfalls often make even rudimentary exercises, such as counting the number of healthcare workers in a particular sector, or the amount of activity within a sector, difficult (Brick et al., 2020a; 2020b). Many of these shortfalls have been acknowledged by policymakers and, in particular, since the COVID-19 pandemic, there have been increasing commitments and investments to improve digital health, with the 2025 Programme for Government committing to working towards the full digitisation of Irish healthcare records and information systems (Department of the Taoiseach, 2025). The multitude of healthcare providers within the Irish healthcare system, with different data controllers and limited harmonisation, means that addressing deficits in this area is a complex process. Consequently, the pace at which data and information deficits are being addressed means that gaps in the available data are likely to continue to affect health and social care planning decisions in Ireland in the short term.

The current data and health information deficits impact several stakeholders and their specific objectives. The focus of this report is to examine how such deficits impact capacity planning within the Irish health and social care system, in particular how they relate to research undertaken by the ESRI to inform capacity planning.

As part of the Department of Health/ESRI Research Programme in Healthcare Reform, the Health Research team at the ESRI have developed a health and social care demand projection model – the

Hippocrates model.[1] From demand in a base year, combined with a range of assumptions, the model can provide projections of demand, workforce, bed capacity and expenditure for a range of Irish health and social care services.[2] Detailed analyses using the model have been published in a series of research reports and papers (including Wren et al., 2017; Keegan et al., 2018; Walsh et al., 2021b; Keegan et al., 2022; Brick et al., 2025a; Connolly et al., 2025a; Walsh and Kakoulidou, 2025a). In addition, an online tool, the Hippocrates Query Interface, has been developed by the ESRI and allows officials at the Department of Health and the HSE to access a broader range of Hippocrates outputs than can be practically published. Despite the importance of the Hippocrates model in informing future capacity requirements in the Irish health and social care system, the model's functionality is somewhat constrained by the quality and availability of data. For example, the lack of data on the use of many publicly provided community care services makes it challenging to incorporate these services into the model. While an individual health identifier (IHI) is being increasingly embedded into the health system, it is not yet consistently adopted and utilised across all patient systems; consequently, it is not possible for researchers to follow people within and across the health and social care system. This has implications for estimating the overall number of services used, substitution effects and evaluating policy changes, especially on integration of care. The private sector (both voluntary/not-for-profit and for-profit) is a significant provider of health and social care services in Ireland, and in many parts of the health system, it provides almost all care. Despite this, available data on activity in the private sector are lacking. This limits the ability to develop a holistic understanding of the health system. It also makes it difficult to reconcile changes observed in the publicly provided healthcare system with changes in people's behaviour or availability of alternative care services in private facilities.

This report identifies and discusses data gaps in the Irish health and social care sectors, with reference to the data required for undertaking projections on future demands for health and social services within the ESRI Hippocrates model; recommendations to improve the data environment are also discussed. This is done within the context of the

1 Additional funding for specific workforce modules in Hippocrates was provided by the HSE.
2 Further details of the model and associated publications are available https://www.esri.ie/HippocratesModel

World Health Organization (WHO) guidance on the reuse and onward sharing of health data for research purposes with an emphasis on an equitable, ethical and efficient use of data (WHO, 2022).

The report focuses on the availability of data – along with notable gaps – in 2024/2025, the time of the most recent update to the Hippocrates model.[3] It is important to acknowledge that several significant data developments are currently underway. These include system-level developments such as the *Digital Health Strategic Implementation Roadmap* (HSE, 2023), the Health Information Act 2026,[4] and the associated European Health Data Space.[5] It also includes sector-specific initiatives such as the National Electronic Prescribing Service, the Hospital Medication Management System and the National Integrated Staff Records and Payroll System. The Health Information Act, for example, will compel health service providers to share, in certain circumstances, a patient's personal health data with other health service providers providing care to the patient and for the establishment of electronic health records (EHRs) for all patients. An accompanying ESRI report on health information systems and related challenges (McHugh et al., forthcoming) provides a broader examination of Ireland's health information landscape. While that report addresses major infrastructural deficits, the present analysis adopts a narrower focus on data limitations specific to the Hippocrates model, some of which will be resolved through ongoing initiatives, though others will require additional, sometimes relatively minor, changes.

The remainder of the report is structured as follows: Chapter 2 discusses general data issues in the Irish health and social care context; Chapter 3 discusses data gaps as they relate to the latest set of projections from the Hippocrates model; and Chapter 4 provides recommendations to address these data gaps.

3 The work was primarily undertaken in 2024 and 2025, using data from 2022 and 2023.
4 See Houses of the Oireachtas, 'Health Information Act 2026'.
5 See European Commission, 'European Health Data Space Regulation (EHDS)'.

Chapter 2

General data issues within the Irish health and social care system

2.1 Introduction

Health data are essential for planning and reform. Disaggregated data on activity, resourcing and provision are key to benchmarking, monitoring and understanding service utilisation over time and among different cohorts of the population. The implementation of a Population Based Resource Allocation (PBRA) funding mechanism – a key recommendation of the Sláintecare reform proposals – necessitates matching the utilisation of health services, as well as their costs, to specific characteristics of the population, such as age and socio-economic status (Sicari and Sutherland, 2023). This is enabled by increasing linkages across various datasets and improving coverage of the individual health identifier (IHI) (Sicari and Sutherland, 2023; Walsh and Hill, 2024). Additionally, data are central to providing equitable and cost effective care and to measuring health system performance: data are required, for example, to compare patient outcomes across hospitals, and to understand patient journeys through the health system.

Several major data issues in the Irish context limit the amount and type of analysis that can be undertaken to inform health system planning and reform. While outside the scope of this report, many of these data gaps will also have implications for patient care and the efficient running of the healthcare system. Five of these issues are discussed in this chapter:

(i) incomplete and inconsistent use of an IHI;
(ii) incomplete and inconsistent use of electronic health records (EHRs);
(iii) incomplete data on privately provided/financed services;
(iv) incomplete data on primary care and community-based services; and
(v) incomplete data at the Health Region level.

2.2 Incomplete and inconsistent use of an IHI

In the Irish context, an IHI has been defined as a unique, non-transferable number assigned to all people using health and social care services, which will last for their lifetime (HIQA, 2015). Its purpose is to accurately identify the person, enabling health and social care to be delivered to the right patient, in the right place and at the right time. The lack of an IHI in Ireland was identified as potentially impacting

patient care and safety in 2009 (HIQA, 2009). Since then, progress has been made on the IHI, with an IHI now assigned to all persons in Ireland and operational across a range of national health systems. However, the IHI has yet to be fully adopted and utilised across all patient systems. This has implications not only for establishing the quantum of services used (collectively and by individuals and population groups) but also for capturing substitution effects, evaluating policy changes, calculating unmet need and identifying geographic variation in use and provision. It also limits the amount of health and social care research that can be undertaken in Ireland. There is further discussion on the implications of the lack of an IHI for the analysis undertaken with the Hippocrates model in Chapter 3.

2.3 Incomplete and inconsistent use of electronic health records (EHRs)

Care encounters for individuals in Ireland are still commonly captured by paper-based health and social care records, limiting the extent and speed at which patient information can be retrieved and shared across the health and social care system. EHRs are an electronic version of an individual's medical history (HIQA, 2015). They provide a means of overcoming the disadvantages associated with paper-based records, though implementation can be challenging (Fennelly et al., 2020), and generally requires the rollout of IHIs. While the benefits of EHRs are most often expressed in terms of clinical decision making, they also hold potential for greatly improving population health research in Ireland. Casey et al. (2016), for example, identify a range of research questions that have been addressed using the large sample sizes provided by EHRs, including a revaluation of prior findings, analyses including a range of disease and sub-groups, predictive modelling and evaluation of natural experiments. Further, studies using EHRs tend to be less expensive and require less time relative to studies that are dependent on primary data collection.

There have been some important developments in the rollout of EHRs in Ireland in recent years, including the introduction of the Maternal and Newborn Clinical Management System (MN-CMS) (McKernan et al., 2021) and the deployment of EHRs in St James's Hospital. However, Ireland remains at a relatively early stage of development in relation to national EHRs. As of March 2026, the HSE received government approval to start the procurement process for the system that will support EHRs; it is noted that the first stage will be rolled out

in the Dublin and North East Health Region, with a target date of 2029, and a goal of full rollout by 2032.[6] As discussed in the forthcoming ESRI report on health information systems (McHugh et al., forthcoming), a key issue relating to EHRs in Ireland is the lack of coordination and consistency across different forms of EHRs: multiple different EHRs can be operational within the same hospital, or applicable to the same patient at different stages over their interactions with the health system (e.g. a person with epilepsy who then becomes pregnant).

2.4 Incomplete data on privately provided/financed services

The Irish health and social care system is a complex mix of public and private financing and provision, resulting in a myriad of data systems and data custodians. While such a mix is not uncommon across health systems, the Irish system is somewhat unusual in the extent of overlap between the public and private dimensions (Murphy et al., 2020). In many cases, there is a lack of data on activity provided by the private sector, whether that care is publicly funded (e.g. publicly funded home support, long-term residential care (LTRC) or outsourced acute hospital care) or privately purchased (e.g. privately financed GP, privately financed prescriptions or private hospital services). This results in an incomplete picture of activity across the system and makes it difficult to untangle whether healthcare needs are unmet or whether some people use privately financed services as a substitute for the public system.

For services that are publicly funded and privately provided (e.g. LTRC), it would seem reasonable that funders should have access to relevant information and data. However, this does not always seem to happen in practice. A value for money review of nursing home care costs, for example, was hampered by difficulties in obtaining data from the privately provided (though generally publicly funded) LTRC facilities (Department of Health, 2021). While comprehensive financial information, including detailed accounts and additional information such as staffing numbers and skill mix, is provided to the National Treatment Purchase Fund (NTPF) – which negotiates prices with private facilities on behalf of the State – only high-level data were provided to the Department of Health (Department of Health, 2021). Consequently, one of the recommendations of that report was the

6 See HSE, 'One Health Record – A single electronic health record for Ireland'.

need to explore how data provided to the NTPF could be shared with the Department of Health.

While it is likely that much data on privately financed services (e.g. private hospital activity) are collected and stored by the private provider, these data are often not available beyond that setting. Beyond the EU Statistics Regulation,[7] the State currently has limited authority to require providers to share data. However, the Health Information Act introduces a legal mechanism that will allow the State to compel private providers to submit relevant information to the HSE.[8] Once operationalised, the Act has the potential to address a significant data gap within Ireland's health and social care system.

2.5 Incomplete data on primary care and community-based services

A key reform of the Irish health and social care system involves shifting healthcare delivery away from acute hospitals and towards greater provision of care in community and primary care settings. However, data in these areas remain underdeveloped relative to other sectors, even for services that are publicly provided and financed (Walsh et al., 2021b). For many primary care services, there is no detail on the number of patients currently receiving a service, and even when such data are available, there is generally little or no information on the age or sex profile of the recipient or the quantum, or on the complexity of care provided (Walsh et al., 2021b). In addition, some publicly funded primary and community care services are provided by voluntary/non-statutory service providers, and again, very few activity metrics are reported.

Similar to other privately financed services, there is very little available administrative data on privately financed primary and community care services. While it is possible to estimate the use of some services using health surveys, including the Healthy Ireland survey and The Irish Longitudinal Study on Ageing (TILDA), such survey data are subject to limitations, including recall bias, the exclusion of particular services and/or sub-groups of the population (e.g. residential care residents)

7 The EU Statistics Regulation is a legal framework for the development, production and dissemination of European Statistics.

8 See Minister for Health publishes Bill to provide a legal basis for digital health records in Ireland.

and limited time points (Brusco and Watts, 2015; Connolly et al., 2025a).

An important initiative in this regard is the development of the Community Care Record by the HSE.[9] Currently in development, this seeks to provide a digital system for managing patient information in all community services. Such a system has the potential to vastly improve data infrastructure for primary and community care services in Ireland (McHugh et al., Forthcoming). It is anticipated that the Community Care Record will go live by the end of 2026 for the HSE Midwest region, with full implementation expected by the end of 2027.

2.6 Incomplete data at the Health Region level

In recent decades, the Irish healthcare system has undergone several structural and regional reconfigurations, the most recent of which was the implementation of six HSE Health Regions and 96 Community Healthcare Networks. Often, the health regional geographies do not align with other regional breakdowns (or with previous health geographies);consequently, data of relevance to the health and social care system may not be available at the necessary regional level.

This is currently the case for the six HSE Health Regions, which do not align with general regional breakdowns, including counties and the Nomenclature of Territorial Units for Statistics (NUTS) regions. This contributed to several difficulties encountered in attempts to make HSE health regional projections of demand and capacity requirements for health and social care services (Brick and Kakoulidou, 2025; Connolly et al., 2025b; Walsh and Kakoulidou, 2025b). For example, at the time of undertaking the analysis, population projections at the HSE Health Region level were not produced by the Central Statistics Office (CSO), and consequently, it was necessary for the ESRI to estimate their own population projections for the HSE Health Regions (Bergin et al., 2026). Further, the projections required the use of several different surveys (the Growing up in Ireland study, TILDA and the Survey on Income and Living Conditions), most of which did not include a variable indicating which HSE Health Region (or other health geography) the respondent was living in, as the HSE Health Region was not in existence when the data was collected. While the Healthy Ireland survey included the HSE Health Region of respondents in Wave

9 See HSE, 'Community Care Record'.

8 (relating to 2022), this information was not collected in subsequent waves due to issues allocating respondents to a Health Region when interviews were undertaken via the telephone (Connolly et al., 2025b). In addition, data on health regions are generally not available in datasets relating to private providers for whom the HSE regional structure is less relevant.

2.7 Summary

There are significant data and infrastructure gaps in the Irish health and social care system. Several ongoing initiatives are designed to address these deficiencies, and once fully implemented, they are expected to significantly improve the availability and quality of health-related data. However, once implemented, it will be necessary to review the different structures to ensure that they are operating as expected, and are meaningfully increasing data and data availability in the Irish health and social care system.

Chapter 3

Data issues relating to Hippocrates modelling

3.1 The Hippocrates model

The Hippocrates model is a component-based healthcare projection model, known as a macro-simulation or cell-based model. The model is bottom-up in nature and involves grouping individuals at a service level into cells according to key attributes, typically age and sex, and projecting from that basis. This model structure allows for the flexibility required in an Irish context, given the variability in the quality of data available at a service level. A detailed discussion of the model and underlying methods is included in several published reports (including Wren et al., 2017; Keegan et al., 2018; Walsh et al., 2021b; Keegan et al., 2022; Brick et al., 2025a; Connolly et al., 2025a; Walsh and Kakoulidou, 2025a). The most recent set of projections using the Hippocrates model was published in 2025 and included projections of demand and associated capacity requirements at both the national and HSE region level for public acute hospitals (Brick and Kakoulidou, 2025; Brick et al., 2025a), general practice (Connolly et al., 2025a; 2025b) and older people's services (Walsh and Kakoulidou, 2025a; 2025b).

Figure 3.1 provides an overview of the model as applied to the acute public hospital sector for the most recent set of projections (Brick et al., 2025a).

For most analyses using the Hippocrates model, the first step is to develop age- and sex-specific activity rates for a base year.[10] Projected demand requirements are primarily based on assumptions regarding projected changes in the size and composition of the population, but activity rates are also adjusted based on a range of additional assumptions, including healthy ageing and other service-specific factors that may influence demand. Subsequently, projected demand requirements can then be converted into metrics of capacity, including

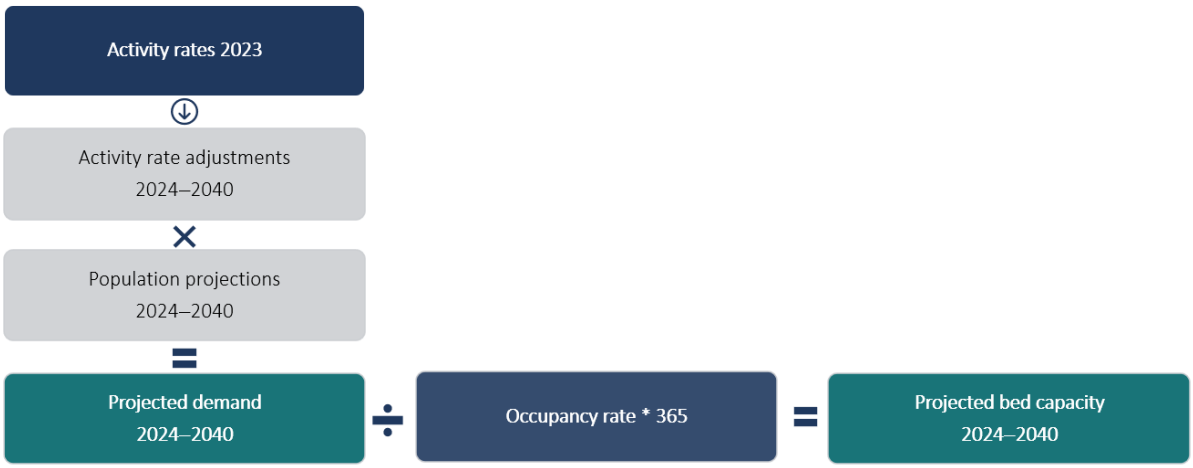
10 For some services (in particular primary care), this approach is not feasible given the absence of age/sex specific activity data, in which case alternative approaches are required (Walsh et al., 2021b).

beds, workforce or expenditure requirements (depending on the particular sector under consideration).

Where possible, activity data by single year of age (SYOA) and sex from administrative databases are used to populate the model.

Administrative data have several benefits, including that they are routinely collected, are not dependent on recipient self-reporting, and are often stringently audited and quality controlled (Wren et al., 2017). Further, they often provide information on the full population of service users rather than a sub-sample. However, administrative data do have limitations. For example, as the data are not collected for planning or research, there is often a paucity of granular information at the provider or service user level, such as disaggregation of healthcare use by age and sex (Wren et al., 2017), which would be required for projections based on the Hippocrates model.

Figure 3.1 Hippocrates model – Diagrammatic representation, 2023–2040



Source: Brick et al. (2025a)

Where disaggregated administrative data are not available, more aggregated administrative data or survey-based data are used. Survey-based data are ordinarily collected through a face-to-face or telephone interview or through computer-assisted personal interview, and are dependent on the self-reported responses of interviewees.

3.2 The Hippocrates model: Data gaps

This section discusses data gaps in each of the three service areas included in the most recent set of projections using the Hippocrates model – public acute hospitals, general practice and older people's services. In some cases, gaps in the data make it difficult to establish

reliable baseline activity rates for services; in others, the lack of detailed information limits the assumptions and scenarios that can be developed, particularly those involving policy changes.

3.2.1 Public acute hospitals

Most recently, Brick et al. (2025a) projected demand and bed capacity requirements for public acute hospitals in Ireland to 2040 using a number of administrative datasets (Table 3.1). Ten different datasets were required to undertake the projections for public acute hospitals, requiring extensive engagement with data custodians and multiple data agreements. Undoubtedly the most significant issue in undertaking the projections is the inability to follow the patient journey across the various datasets, even within the same hospital. Each attendance/discharge is treated as an independent event. Below are some examples of the disjointed nature of the data landscape.

- If a patient is admitted as an emergency in-patient through the emergency department (ED), their ED record (Patient Experience Time (PET) dataset) is entirely separate from their day/in-patient Hospital In-Patient Enquiry (HIPE) discharge record, and the two datasets cannot be linked.

- If a patient is admitted as a public elective in-patient from a waiting list, their National Treatment Purchase Fund (NTPF) record (which records waiting times) is entirely separate from their day/in-patient HIPE discharge record.

- There are no patient-level data available for outpatients and therefore no link between that activity and waiting list or discharge data.

Additionally, if a patient is admitted multiple times to the same or different hospitals, there is no accurate way to link the records.

Specific issues relating to the various data sources are outlined in Table 3.1 and discussed in the following sections. It should be noted that individual hospitals may have additional data and datasets available to them; this table reflects national/regional level administrative data available to the ESRI at the time of undertaking the analysis.

Table 3.1 Data sources and gaps: Public acute hospitals

Service	Data – Source	Availability	Gaps
Emergency department attendances	PET dataset – HSE Business Information Unit Acute (BIU Acute)	Attendance level data SYOA age and sex Some additional variables such as triage level, discharge destination and some time stamps.	Anonymised patient identifier Diagnoses Resource use indicators e.g. services accessed, scans etc. Missing time stamps (e.g. decision to admit).
Injury unit attendances	Injury unit dataset – HSE BIU Acute[a]	Aggregate unit level data. SYOA and sex distribution provided.	Attendance or patient level data.
Outpatient attendances	Outpatient attendances by hospital and clinic code – HSE Acute BIU Outpatient attendances by specialty – Healthcare Pricing Office (HPO) specialty costing	Aggregate data for three age categories, new and return attendance split. Provides a more complete count of attendances as includes activity not captured in HSE Acute BIU – but no demographic information.	Incomplete activity data (e.g. allied health professional activity) Attendance or patient level data SYOA/sex Clinical data – reason for attendance, outcome of attendance Link to day/inpatient activity or waiting lists.
Day and inpatient discharges	HIPE scheme – HPO	Discharge level data. Age, sex, patient type, admission type, length of stay, public/private status, diagnoses, procedures, discharge destination, patient complexity and costing information.	Anonymised patient identifier Medically fit for discharge date[b] Bed days in critical care not recommended for use[b] Some issues with consistency of data capture across hospitals (e.g. maternity day patients).
Occupancy rates	HSE Acute BIU	Bed days used Bed days available Hospital level occupancy rate.	Inpatient occupancy rates only Not disaggregated by bed type – paediatric, maternity, critical care, other. Not linked with HIPE activity.

Table 3.1 (contd.) Data sources and gaps: Public acute hospitals

Service	Data – Source	Availability	Gaps
Waiting lists	NTPF	Waiting list record level – if a patient is waiting for more than one appointment or procedure, they will be separate records SYOA and sex Days on the list.	No link with GP No link between OPD and day/inpatient waiting lists. No link to OPD attendance or HIPE discharge record OPD list – basic specialty category only, no outcome information (onward referral etc.) No information on waiting times for private patients in public hospitals.

Notes: a Some units do report their data to the PET dataset.
b In the dataset but has known quality issues and is not recommended for use (Healthcare Pricing Office, 2023).
Source: Authors analysis, Brick et al. (2025a).

3.2.1.1 Emergency department attendances

The main dataset used to estimate baseline emergency department (ED) attendances was the PET dataset obtained from the HSE Acute Business Information Unit (BIU Acute).[11] The dataset covers public hospital emergency department attendances. In development since 2015, the breadth and depth of the information available in the dataset has expanded over time. It is an attendance-level, anonymised dataset, which includes information on patient age and sex, source of referral, discharge destination, triage category, diagnosis and multiple attendance time stamps.

However, as of 2025, there are data gaps, which limit the development of assumptions in the projection analysis. In terms of coverage, while the PET data currently capture ED attendances, to get a full picture of unscheduled care provided in public acute hospitals it would be useful to capture full attendance information for all injury units and other emergency presentations, such as those in maternity hospitals. In terms of the range and quality of the data, there is incomplete

11 A complicating issue for the recent Hippocrates projections was that, at the time the analysis was undertaken, some injury unit attendances were included in the 2023 PET dataset and could not be removed. For this reason, the projections included both ED and injury unit attendances. This issue has since been rectified, which should allow for separate projections in future.

information on the reason for attendance, diagnosis; moreover, many of the time stamps which should be collected are not yet universally returned by the units. Additionally, there is no information in the dataset on services accessed while in the ED.

3.2.1.2 Outpatient department attendances

Outpatient department (OPD) attendance information was obtained from two HSE sources – the BIU Acute and the HPO. The BIU Acute collect (and provide to the research team) first and return attendances at a clinic/speciality level in three age categories (child, adult and older people), while the HPO collects first and return attendances at speciality level, with no age or sex disaggregation. The limitations of these data for the projections include a lack of detailed demographic (SYOA and sex) and clinical data – for example, no information on diagnostics, minor side room procedures, etc. that may have occurred during the attendance – and a lack of information on the reason for attendance or patient complexity (including pre-existing conditions). Further, neither dataset captures the full quantum of activity undertaken in OPDs; for example, there is almost no record of allied health professional clinic attendances.

3.2.1.3 Day and in-patient discharges

Baseline day and in-patient activity profiles were estimated from the HIPE data provided by the HPO. For the purpose of the Hippocrates modelling, the HPO provide discharge-level data including age, sex, patient type (day and in-patient), admission type (elective, emergency, same day acute medical assessment unit (AMAU) and maternity), public/private status, diagnoses and procedures, complexity and costing information and length of stay. The HIPE data provide comprehensive coverage of day and in-patient activity in public acute hospitals and are generally of high quality. The data have been extensively used to address a range of clinical and systems-level health-related research questions in the Irish context (e.g. Moloney et al., 2005; Connolly and O'Shea, 2015; Ni Chonchubhair et al., 2017; Nicholson et al., 2019; Brick et al., 2025b). Nicholson et al (2019), for example, used HIPE data to examine trends in subarachnoid haemorrhage in Ireland, while Brick et al. (2025b) used the data to examine trends in day surgery rates across Irish public hospitals.

However, there are still limitations associated with the dataset in terms of planning and projections, with some examples outlined below.

First, to date the lack of an Individual Health Identifier (IHI) in the HIPE dataset means that it is only possible to project at the discharge rather than patient level. Second, there is no operational indicator for inpatients that identifies when they are medically fit for discharge. This means that delayed transfers of care (DTOCs) cannot be identified within the HIPE dataset and thereby linked to their full patient record. The current DTOC dataset managed by the HSE BIU Acute has only limited clinical data. Third, length of stay in critical care units is collected in a separate dataset by the National Office of Clinical Audit (NOCA), and cannot be linked to the HIPE dataset. Fourth, regional projections for public acute hospitals are currently undertaken by aggregating hospital activity to the regional level based on the HSE Health Region to which the hospital is aligned. Given that there can be significant levels of cross regional service utilisation, particularly in the three Dublin regions, a closer examination of utilisation patterns by HSE Health Region of residence may also be worthwhile. This is not currently possible as while there is an Eircode field in the HIPE record, the quality is rated as red – 'known quality issues, the field may not be accurate or complete' (Healthcare Pricing Office, 2023; 2026a). Finally, there may be activity undertaken in public acute hospitals that falls outside the current remit of the HIPE (e.g. elective admissions to acute medical/ surgical assessment units) (Healthcare Pricing Office, 2026b).

Addressing these data limitations would facilitate a refinement of the assumptions underlying the capacity projections using the Hippocrates model. For example, the ability to generate a patient level rather than discharge-level activity profile would allow analysis of patient pathways and repeat admissions. It could also be used to identify whether delays across the pathway (for example, receipt of diagnostics) are associated with prolonged in-patient stays.

3.2.1.4 Occupancy rates

Data on occupancy rates are a key input to the Hippocrates model as they allow for the conversion of demand to bed capacity requirements; data on occupancy are provided by HSE BIU Acute. An analysis of the data suggests a misalignment between the HIPE data used for

generating underlying demand profiles and the data reported to HSE BIU Acute for calculating the occupancy rate. This may mean that for some hospitals, and consequently for some HSE Health Regions, the occupancy rate may be incorrect (Brick and Kakoulidou, 2025; Brick et al., 2025a).

In addition, in-patient occupancy rates are currently provided at the hospital level only; having occupancy rates by bed type would allow for more accurate and targeted bed projections. It would be optimal to have occupancy rates for maternity, paediatric, critical care, elective and emergency beds that could be aligned to activity. This approach would prevent the underestimation of bed requirements for general acute adult beds, which can occur if the occupancy rate is distorted by the inclusion of paediatric or maternity beds, into which general adult patients are not admitted.

3.2.1.5 Waiting list data

Data on patients waiting for OPD appointments and day/in-patient treatment in public acute hospitals are compiled and validated by the NTPF. These data are incorporated into Hippocrates to model the impact of reducing unmet demand (waiting lists) and maintaining waiting times at a target level over the projection horizon (Brick and Keegan, 2020). The NTPF provides two datasets for the analysis, one of which is an aggregate hospital level file for each service (OPD, day patient and in-patient), thus allowing for trends in the volume of additions to the waiting lists to be established. The second is a point in time dataset, which allows for a profile of those on the waiting list by hospital, service (OPD, day patient and in-patient), SYOA and sex to be generated.

Several limitations in the existing data constrain the sophistication of the Hippocrates model assumptions. Three examples are outlined below.

First, as with the activity data, the absence of an IHI within the dataset provided to the ESRI makes it impossible to track patients from their GP referral, through the NTPF outpatient or day/in-patient waiting lists, to their outpatient attendance or HIPE-recorded discharge. If such a linkage were available, it would allow for the identification of patient pathways and system pressure points. For instance, even basic

metrics, such as the conversion rate from outpatient appointments to the day/in-patient waiting list, cannot currently be calculated.

Second, data on private patients who are on waiting lists for treatment in public hospitals are not reported to the NTPF. If hospitals were to provide these data, it would enable monitoring of the pooled waiting list system at consultant, hospital, regional and national levels.

Third, current datasets do not allow retrospective waiting times to be determined, as the date of appointment or treatment is not collected for outpatients and is not a mandatory field for day/in-patient returns. Collecting these data would support greater comparability with waiting-time metrics used in other countries (Brick and Connolly, 2021).

3.2.2 General practice

Connolly et al. (2025a) projected demand and workforce requirements for general practice services to 2040. Due to a lack of a central register for general practitioners (GPs) and the nature of general practice in Ireland, with GPs operating independently, information about both GP and general practice nurse (GPN) numbers and the volume of general practice consultations is difficult to accurately quantify (Collins and Homeniuk, 2021). It was necessary to use survey data to estimate baseline consultation rates (Table 3.2).

Table 3.2 Data sources and gaps: General practice

Data	Source	Availability	Gaps
GP consultations	Healthy Ireland survey	Whether visited the GP in the previous 12 months; Number of GP consultations in the preceding four weeks. Data on the demographic and socio-economic characteristics of survey respondents.	Potential inaccuracies in the data due to recall bias. Small numbers limit the potential for sub-group analysis (including at the regional level). No data on the reason for the visit, length, outcome, etc. Not available for all years (in particular for children).
GPN consultations	Healthy Ireland survey (adults) and Growing up in Ireland (GUI) study (children)	Adults: As per GPs above. Children: Number of consultations in the previous 12 months.	As above, plus: Fewer years of data. Data for children from GUI are outdated. Data on GPN visits which included also a GP visit not recorded.
Number of GPs	HSE	Number of GPs working in Ireland and in each of the six HSE Health Regions.	Lack of accurate data on GPs without a public contract. Lack of accurate data on the individual working hours of GPs. Other sources on GP numbers provide different numbers.
Number of GPNs	Nurse and Midwifery Board Ireland (NMBI)	Number of nurses registered to work in Ireland who report their job title as 'practice nurses and GP practice nurses'.	'Practice nurse' is not a distinct category in NMBI (which is based on qualifications) so potential errors. Lack of accurate data on the individual working hours of GPNs.

Source: Authors' analysis (Connolly et al., 2025a).

3.2.2.1 General practice consultations

There is no administrative data source detailing the total number of general practice consultations in Ireland. An approximation of the number of annual consultations was made by estimating age-, sex-,

and medical or GP visit card-adjusted consultation rates using survey data and applying them to population estimates.

Age, sex and card adjusted GP and GPN consultations rates were estimated using data from the Healthy Ireland survey and the Growing up in Ireland (GUI) study (Connolly et al., 2025a). The establishment of the Healthy Ireland survey in 2014 was an important step forward in quantifying health service utilisation in Ireland on an annual basis for a representative sample of the adult population. However, there are limitations to the use of the survey for estimating consultations for general practice for the Hippocrates model.

First, as with all surveys, there is the potential for recall bias whereby survey respondents either under- or over-report service utilisation (Brusco and Watts, 2015). Second, the survey includes representatives of the adult population living in the community. Those residing in residential establishments (including long-term residential care (LTRC) facilities) and children are excluded. While some waves of the survey include questions on the utilisation of general practice services for children of survey respondents, no information is collected on the sex of the child or whether they have an individual medical or GP visit card. Third, the potential for sub-group analysis within the Healthy Ireland survey is somewhat limited by the relatively small number of respondents within some groups of interest (e.g. the number of GP visit cardholders by age group), with particular issues encountered when estimating consultation rates at the HSE Health Region level. Fourth, the question on GPN consultations excludes those GPN consultations that took place alongside a GP consultation (as part of the same appointment); it therefore likely underestimates the number of GPN consultations. Fifth, there are no questions on GPN consultations for children available from the Healthy Ireland survey. Consequently, it was necessary to use the GUI study to estimate GPN consultations for children. The use of the GUI study for this purpose comes with its own limitations. The relevant data for younger children relate to the pre-COVID years (Connolly et al., 2025a) and may not reflect current utilisation of GPN services among this age group, in particular given the increase in the number of GPNs working in general practice in recent years and, alongside that, the extension of free GP care to all those

aged under eight. However, as the GUI Cohort '24[12] age, data on GPN use among children should become available.

A common concern when using survey data relates to the appropriate timeframe for assessing health service utilisation. The question on the number of visits to the GP and GPN in Healthy Ireland relates to the four-week period before the survey, while the question in GUI relates to the 12 months prior to that survey. This causes an inconsistency in estimates from the two sources. Further, it is not clear which of the two provides a more accurate estimate. There appears to be a general consensus in the literature that the longer the recall period the less accurate the response (Bhandari and Wagner, 2006; Stull et al., 2009); however, while a shorter recall period should help minimise reporting errors (Kjellsson et al., 2014), it is not without error. Research from Australia found that the use of a short recall period (in this case two weeks) was associated with an overreporting of doctor visits (Dalziel et al., 2018). This could have significant implications when a short period recall figure is scaled up to reflect an aggregated mean number of GP visits over a longer period of time (Dalziel et al., 2018), as is done in Connolly et al. (2025a). Another potential issue with survey data is that the likelihood of making an error differs by respondent characteristics (Das et al., 2012; Dalziel et al., 2018), with some consultations rates being more or less inaccurate for some groups relative to others.

The transition to the new six HSE Health Regions is a significant reform in the Irish health and social care system. The ability to make projections on general practice at the HSE Health Regions level was restricted due to (i) the non-inclusion of the HSE Health Regions in most waves of the Healthy Ireland survey and (ii) the very small numbers in some groups, making sub-groups analysis problematic. As detailed in (Connolly et al., 2025b), different waves of the Healthy Ireland survey include different regional variables. For example, while the 'Health Region' is included in Wave 8, it is not included in Wave 9 or earlier waves.[13] Consequently, it was necessary to use other regional variables (e.g. community health organisation, county) to allocate individuals to one of the six HSE Health Regions. Given that some of these areas do not directly map onto the health regions, there is a

12 The GUI Cohort '24 is a national longitudinal study tracking babies born in 2024 through childhood.

13 The Health Regions would not have been established at the time of undertaking the earlier waves of the survey.

margin of error in such allocations. Another limitation of survey data at the regional level is that the number of respondents for particular categories is too small to provide robust estimates of utilisation. Consequently, it was necessary to combine categories (e.g. males and females combined, medical card and GP visit cardholders combined), thereby undermining the extent of the analysis that could be undertaken.

Finally, the available survey data on general practice include the number of consultations, but do not include any information on the reason for the consultation, the outcome or whether it was a regular or chronic disease treatment programme consultation. Further, there is a lack of nationally representative data on the extent to which there are unmet needs for general practice services, despite financial barriers and a shortage of supply of GPs and GPNs potentially contributing to some people not being able to access general practice services.

3.2.2.2 Workforce

There is uncertainty about the number of GPs and GPNs working in Ireland at any particular point in time. While a number of sources seek to capture the number of GPs in Ireland, each provides a different figure, due to their use of differing definitions of GP (i.e. including trainees, specialists, providing publicly financed services, etc.). For the Connolly et al. (2025a) analysis, an estimate of the number of GPs working in Ireland (including those only providing privately financed services) was provided by the HSE. However, this number differs to the number of GPs from other sources and needs to be interpreted with caution.

Data on the number of GPNs working in Ireland were obtained from the Nursing and Midwifery Board of Ireland (NMBI). In relation to GPNs, there is no specific additional qualification for a nurse to work in general practice (over and above being a registered general nurse). In the NMBI register, there are 12 divisions, which generally relate to qualifications; consequently, most GPNs are allocated to the 'registered general nurse' division rather than a specific practice nurse division. The register does, however, capture the number of nurses registered in Ireland who report their job title as 'practice nurse'. The number who identified this title was used in the Connolly et al. (2025a) analysis, though it is possible that this might inappropriately exclude some nurses currently working in general practice and/or include some

nurses not currently working in general practice. Neither are there data on the HSE Health Region that the GPNs are working in.

Further there is a lack of data on the working hours of GPs and GPNs. While some survey data is available providing the range of hours different proportions of GPs and GPNs are working, there is a lack of data on the number of hours worked by individual GPs and GPNs, making it difficult to convert headcount to whole time equivalent workers.

3.2.3 Older people's services

As part of the recent work using the Hippocrates model to project demand for a range of health and social care services, Walsh and Kakoulidou (2025a) projected demand for LTRC beds and home support hours to 2040. The analysis included both publicly and privately funded and provided LTRC and home support services. While there are some available administrative datasets on the utilisation and provision of older people's services, in general it was necessary to supplement these administrative datasets with survey data to estimate baseline utilisation for these services. Table 3.3 details the data sources used in the analysis, along with the data gaps for the two services. While individual home support agencies and LTRC homes have additional data and datasets available to them, these were not available to the ESRI for the purposes of this analysis.

Table 3.3 Data sources and gaps: Older people's services

Data	Source	Availability	Gaps
Home support – recipients and hours	Publicly financed: HSE, TILDA	Public financed: HSE data provide the number of publicly provided home support recipients. TILDA data are used to estimate the age and sex distribution of recipients.	Publicly financed: No anonymised identifier No age and sex information No hours per package No information on dependency level.
	Privately financed: TILDA, Home and Community Care Ireland (HCCI) data	Privately financed: TILDA data are used estimate percentage of privately purchased care by age and sex.	Privately financed: No centralised data on private home support use.
Long-term residential care – beds and residents	Beds: HIQA bed register, HSE public community bed register, Nursing Homes Ireland (NHI) surveys	The HIQA bed register captures data on all LTRC homes registered to provide long-stay care including maximum occupancy and location. The HSE bed register captures data on all public facilities providing short stay (non-acute public hospital) or long stay care including bed numbers and location. includes bed categories (short/long stay) and publicly provided facilities.	No anonymised individual dataset No age and sex information for short stay or privately purchased LTRC No detailed short stay bed categorisation (e.g. rehabilitation, transitional care etc.) No information on dependency level.
	Residents: HSE Nursing Home Support Scheme (NHSS) data	HSE NHSS data include information on all NHSS residents including age, sex, and county address.	
	Occupancy rate: NHI survey and HSE communications	Occupancy rate data ar available from the HSE and NHI surveys for public and voluntary/private LTRC homes respectively.	

Source: Authors' analysis, Walsh and Kakoulidou (2025a).

3.2.3.1 Home support

Two main datasets were used to estimate home support hours: HSE administrative data on publicly funded home support recipients and hours, and the Irish Longitudinal Study on Ageing (TILDA).

The HSE administrative dataset captures information on the number of people using the service and the number of home support hours provided in each month in each local health office area for publicly financed services. These data do not yet routinely capture the sex of recipients or their age. Consequently, TILDA data were used to estimate age- and sex-profiles for the HSE administrative dataset, in order to develop a baseline profile (Walsh and Kakoulidou, 2025a).

An estimated 26 per cent of home support hours in Ireland in 2022 were privately financed (Walsh and Kakoulidou, 2025a) and, similar to other privately financed services, there is dearth of administrative data on the recipients of these services. TILDA was used to estimate the percentage of respondents who privately purchased home support. These data were used to develop utilisation profiles associated with privately financed home support hours, supplemented by information on hours per package provided by Home and Community Care Ireland (HCCI). Similar to the use of the Healthy Ireland survey to estimate GP and GPN utilisation, the use of survey data to estimate the age and sex profile of home support recipients and hours comes with a number of limitations. These include: non-response and recall bias (Bhandari and Wagner, 2006; Brusco and Watts, 2015); data not being collected on an annual basis; and a lack of potential relevant variables in the survey (e.g. HSE Health Region).

While home support is a key service in enabling older people to remain in their home as they age, and is central to the new enhanced community care (ECC) programme,[14] it is only one among a number of relevant services for older people. There continues to be a dearth of data on other key services for older people, including day care, Meals on Wheels, respite care as well as the Integrated Care Programme for Older People (ICPOP). These data gaps limit the extent to which the

14 The ECC programme was introduced in 2021 and aims to deliver a more community-focused model of care in Ireland. Two key components of the programme are the Chronic Disease Management Programme (CDMP) and ICPOP. The CDMP provides free, standardised, community care for patients with long-term health conditions through their GP, while the ICPOP provides community-based alternatives to hospital admissions for older people.

totality of home support demand can be understood in the Irish context.

3.2.3.2 LTRC – Short-stay and long-stay

There is no individual level dataset capturing all LTRC residents receiving care in Ireland; consequently it was necessary to predominantly use data on short- and long-stay bed numbers (rather than residents) to estimate baseline demand and bed rates. While the HSE capture detailed information on NHSS ('Fair Deal') residents, including their age, sex and home county, such information is not captured for short-stay residents, therefore resulting in the NHSS profiles being applied to all LTRC residents.

All LTRC homes that provide long-stay care in Ireland must be registered with HIQA. Through these registrations, the HIQA bed register collates information on registered public and voluntary/private LTRC homes, including name, address and number of beds. The HSE bed register also captures similar information on public LTRC homes, with the vast majority (except for those who only provide short-stay care) of facilities also captured by HIQA. Together, these registers capture virtually all LTRC homes in Ireland.[15]

However, there exist a number of limitations to using the HIQA and HSE bed registers for the purpose of the projection analysis. The HIQA bed register does not distinguish between short- and long-stay beds, a key area of concern for policymakers for planning purposes. There are no data on the characteristics of residents, including their age, sex, health and social care needs, length of stay, health status etc., which limits the extent of projection analysis. To partially overcome this, Walsh and Kakoulidou (2025a) used the age and sex profile of NHSS recipients as a proxy for all LTRC residents. Similarly, while the HSE captures detailed information on NHSS – 'Fair Deal') residents, including their age, sex and home county, such information is not captured for short-stay residents, therefore resulting in the NHSS profiles being applied to all LTRC residents. NHSS residents make up three-quarters of LTRC residents, and it remains unclear if the age and sex profile of NHSS residents is reflective of other bed categories, specifically short-stay care residents. For publicly provided facilities,

15 A small number of private transitional care facilities are not captured by either register, but are included in the projections analyses (Walsh and Kakoulidou, 2025a).

while data did distinguish between short- and long-stay beds, there was a lack of granular information on the specific purpose of short-stay beds (e.g. rehabilitative or not). In addition, it is possible that some short- (long-) stay beds were used for long- (short-) stay purposes.

Approximately 1 in 10 long-stay beds in Ireland are paid for privately. While the NHI captures information on the number of people who privately purchase care, information on these individuals is not captured nor collated by central administrative datasets. Furthermore, in the projection analyses, a 90 per cent occupancy was assumed; while the LTRC sector has, on average, a 90 per cent occupancy rate, occupancy rates may differ by bed categorisation.

3.3 Discussion

The previous sections have outlined current gaps in the Irish health and social care data infrastructure as they relate to the data requirements for the macro-simulation approach to modelling used by the Hippocrates model.

At the aggregate level, the limited availability of IHIs and associated EHRs for planning and research purposes limits the extent of analysis that can be undertaken within and across services. Arising in part from the Sláintecare reform proposals and the move towards the increased delivery of care in the community (Houses of the Oireachtas Committee on the Future of Healthcare, 2017), a key concern for policymakers is the extent to which one service can potentially safely and efficiently act as a substitute for another service. For example, how does the community-based CDMP impact the demand for hospital-based services? How does an increase in home support hours impact on the demand for LTRC? While the most recent set of projections attempted to include the aforementioned scenarios using a range of assumptions, the lack of an IHI that can track individuals across the health and social care system significantly limits the reliability and specificity of these analyses. This makes it difficult to understand how the implementation of certain policies might impact the demand for services in the future, as well as making it difficult to quantify the success or otherwise of policies.

There are significant data gaps in each of the three areas included in the most recent set of projections using the Hippocrates model. The HIPE dataset, for example, is at the discharge level (rather than patient

level) and it is not possible to track patients through multiple hospital admissions. In comparison with the HIPE data, data on OPD are highly aggregated and requires a number of additional data sources and assumptions to estimate baseline utilisation profiles. The availability of occupancy rates at hospital level, rather than by bed type, limits the accuracy of projected bed capacity requirements.

For general practice, the lack of an administrative dataset means that it is not possible to accurately quantify even the total number of consultations that occur in general practice on an annual basis. While survey data were used to estimate age and sex consultation profiles for general practice, as well the total number of consultations, this comes with a number of limitations (including potential exclusion of some groups, recall bias, etc.), which introduces a margin of error in estimating current utilisation on which the projections are based. Further, there is a complete lack of available data on the nature of the consultation, including the reason for attendance, outcome (e.g. prescription, advice, referral), duration of the consultation, etc.

For older people's services, there are some administrative sources of data (for publicly funded services at least). However, these do not always capture the relevant metric for the projection analysis (e.g. LTRC relates to beds rather than people) and do not include any health-related data for residents. Where relevant and feasible, survey data were used to attempt to overcome some of these data limitations but, as with GP services, these data come with a number of limitations. Further, while home support and LTRC are key services for older people, there are very limited available data on a range of other services for older people, which limits the extent to which the totality of care requirements can be understood.

Chapter 4
Recommendations

4.1 Introduction

Accurate and timely health data are essential to every health system, contributing to patient care and safety, efficiency and system planning and reform. Relative to its European peers, Ireland has lagged in the collection and collation of health and healthcare data; consequently, several data and health information deficits exist. Recognising the importance of data, several initiatives to improve the health data landscape are in progress (HSE, 2025a; 2026), not least of which is the Health Information Act 2026, which will provide a legislative framework for the collection, use and sharing of health information, including underpinning the development and rollout of electronic health records (EHRs) and a digital health record for Ireland (McHugh et al., forthcoming). It remains to be seen how quickly health and social care providers begin providing the requisite data, how digital health records will be disseminated across health and social care providers in the system, and how EHRs will operate in practice. However, the new Act, which provides a legislative framework, marks an essential first step in prioritising health data in the Irish context. In thinking about the rollout of EHRs, consideration should be given to learnings from the introduction of the Maternal and Newborn Clinical Management system (NM-CMS), which started rollout in 2016, but – as of March 2026 – does not yet have complete coverage (Sheehan, 2023); this should include consideration of both the timeframe for rollout as well as identifying the challenges and barriers to the rollout of the NM-CMS, which may also have implications for the wider rollout of EHRs.

The following section presents a number of recommendations to improve the current health and social care data landscape in Ireland, synthesising key points from the preceding chapters. It is envisaged that some of the recommendations in this chapter will be met through the implementation of current initiatives; others, however, are likely to require additional, albeit sometimes relatively minor, changes and developments.

4.2 Recommendations

4.2.1 Data collection: Equity, ethics and efficiency

It is essential that ongoing initiatives to improve data infrastructure and availability, including the introduction of IHIs and EHRs, are progressed and delivered in the shortest feasible timeframe. Additionally, priority should be given to initiatives that enhance the centralisation, quality and depth of data from community and primary care services, as well as private providers.

Consideration should be given from the outset to how data collected through ongoing initiatives can and should be used for purposes beyond immediate patient care, including research and service planning. The World Health Organization (WHO) notes that the sharing of data for research purposes should be done in a manner that is equitable, ethical and efficient (WHO, 2022). An equitable approach requires recognising and balancing the needs of patients, researchers and communities, all of whom expect health benefits to arise from research. An ethical approach ensures that data sharing protects the privacy and dignity of individuals and communities while acknowledging the need to advance public health through the productive use of data. Efficiency further requires that any data-sharing framework be designed to support improvements in public health.

The principles of equitable, ethical and efficient data sharing should be embedded at the outset when designing the relevant systems and legislation, rather than addressed retrospectively when structures are already established and more difficult to amend. In particular, it is necessary to consider the potential requirement for obtaining consent from individuals whose data are being shared for purposes beyond clinical purposes, in light of the 2018 General Data Protection Regulations and the associated Irish Health Research Regulations (Kirwan et al., 2021; Mee et al., 2021). Consideration is also required regarding how data collected through the various initiatives are recorded and stored in a manner that facilitates appropriate sharing with researchers and those involved in planning decisions. This should be achieved in a way that minimises the administrative burden on data custodians while ensuring that the data provided are accurate, reliable and straightforward to use (de Kok et al., 2023). A recent paper showed that accessing MN-CMS data for research purposes in Ireland can be a complex process, with the timeline from initial request to data access

ranging from 6 to 12 months (Maher, 2024); consequently, the authors of that paper suggested that a national standardised process for managing the data was needed (Maher, 2024). A similar process will be required to ensure that data arising from EHRs can be accessed promptly for research purposes. Consideration should be given to the establishment of a Trusted Research Environment (TRE) to facilitate data sharing for research purposes. TREs are secure physical or digital environments that can only be accessed by approved researchers and are commonly used throughout the UK to enable researchers to access sensitive health data.[16] The Irish Longitudinal Study of Ageing (TILDA) recently launched a TRE to allow approved research to access the sometimes sensitive TILDA data securely, showing the feasibility of such an approach in the Irish context. The Central Statistics Office (CSO) has developed a Health Research Data Centre,[17] which provides a secure environment for researchers to access data collected by the CSO for health research purposes.

The increased use of administrative health data for research and planning purposes has the potential to enhance patient care and support a more responsive healthcare system. There is also scope for efficiency gains in research funding, where administrative data can substitute for elements of primary data collection (Emerson et al., 2024). Ireland is currently progressing a number of initiatives that, once implemented, will substantially expand the volume of health-related data held within administrative systems. It is therefore essential to give careful consideration to ensuring that these data are accessible and usable for researchers and planners.

4.2.2 Data at the relevant Health Region level

Reflecting the limited data currently available at the Health Region level discussed in Chapter 2, it is important to consider how best to ensure that health and social care data are available at the appropriate regional level. While it may not always be feasible to align Health Regions with existing administrative boundaries, maintaining continuity in regional structures over time, insofar as is practicable, would support the integration of these regions into relevant data sources, including surveys. In the interim, as the new Health Regions and associated geographies are being embedded, input from health

16 See 'What are Trusted Research Environments? Research Data Scotland'.
17 See 'Health Research Data Centre (RDC) – CSO – Central Statistics Office'.

officials is essential to ensure that relevant data are collected, recorded and reported at the HSE Health Region level. While the CSO is increasingly incorporating HSE Health Regions into its datasets, priority should be given to including relevant geocodes, such as Eircodes, to enable individuals to be accurately assigned to the appropriate health geography.

4.2.3 Public acute hospitals

Projecting future demand for public hospital services was a central objective of the recent update to the ESRI capacity projections (Brick et al., 2025a). Relative to other sectors within the Irish health and social care system, the availability of data on public acute hospitals is comparatively good. Nonetheless, further enhancements would support more comprehensive research and strengthen the system's capacity for effective planning.

A significant limitation of the current data infrastructure is the inability to track patients across different services within the public hospital system (e.g. from emergency department attendance to in-patient admission, or from outpatient appointment to subsequent admission). This gap should be addressed once the IHIs and EHRs are fully operational, in a consistent manner across all hospital services, and the relevant data are available for planning and research purposes. Given the uncertainty about when this will happen, it would appear prudent to identify shorter-term measures that could improve the data environment in the interim.

In this regard, a key recommendation is the enhancement of HIPE as a patient-level dataset rather than its current discharge-level structure, the development of a HIPE-type dataset for outpatients, and the enhancement of the patient experience time dataset (PET) for unscheduled care by including injury units and other emergency presentations. The ability to identify patients rather than just discharges would allow an assessment of individuals with repeat admissions, while a HIPE-type dataset for outpatients and expansion of PET would mean the collection and reporting of additional patient-level detail (including demographics, reason for attendance, services

received, outcome, etc.) and would support more refined projections of future hospital requirements.[18]

While some of the recommendations in this report require relatively significant changes, more modest changes could also improve understanding of the current system. Making the return of the 'medically fit for discharge' variable within HIPE mandatory, for example, would support analysis of delayed transfers of care and the demographic and clinical factors associated with them. It would also allow for more refined analysis examining the impact of service provision in one area on demand for services in another area (e.g. how provision of long-term care impacts on demand for hospital services). Within the hospital setting more broadly, disaggregated data on occupancy rates by bed type (e.g. paediatric, maternity, critical care, other) would enable more nuanced analysis of current and future bed requirements, which is fundamental to effective capacity planning. Finally, allowing trusted intermediaries (e.g. Central Statistics Office) to use existing common variables (e.g. date of birth, sex, Eircode, admission and discharge dates) across hospital datasets (e.g. HIPE, NTPF, National Perinatal Reporting System, PET and NOCA Critical Care bed days) to match datasets would provide a more comprehensive picture of the hospital service utilisation in the short term, while the IHI and EHR are being fully operationalised.

4.2.4 General practice

General practitioners are private providers and, consequently, developing centralised administrative datasets is challenging. Within the context of the Health Information Act 2026, the HSE has the authority to compel private providers (including GPs) to share data; as a consequence, it will have the potential to substantially expand both the volume and type of centrally available data on general practice in Ireland.

In light of the uncertainty surrounding when such data may become available for research and planning, a prudent interim measure could be the development of a minimum, centrally held administrative dataset on general practice. This dataset could include information on the general practice workforce and working hours, as well as

18 International examples of such an approach include the Hospital Episode Statistics (HES) dataset in England, where the data capture episodes of care; this may include multiple admissions and discharges within a set time period.

appropriately anonymised individual level data capturing variables such as the age group, sex, medical card status and number of consultations of those registered with the practice. Establishing such a dataset would represent an important step toward understanding the current workload within general practice, and would support more nuanced and accurate projections of future workforce requirements – particularly given the Sláintecare ambition to shift more care into community settings. Additionally, data on out-of-hours consultations, including the reason for attendance and the outcome (e.g. referral to emergency departments or general practice), would provide valuable insights into the functioning of the out-of-hours service and its interaction with other parts of the health system, thereby informing future capacity planning in this area.

While some general practice data are currently held centrally by the Primary Care Reimbursement Service, these data do not align neatly with the types of information outlined above, which are required for effective capacity planning. As a result, alternative approaches would be necessary to centralise the relevant data. However, this is unlikely to be straightforward, with significant ethical and legal considerations involved (ICGP Data Protection Working Group, 2019). Careful consideration will be required to balance the need for data to support planning, with the legislative and ethical obligations governing its collection and use.

Similar to the hospital data, consideration should be given to linking GP data to other data sources. Recently the UK government paved the way for coded GP patient data to be shared with consented cohorts there, including the UK's biobank dataset, thereby increasing the potential to understand the diagnosis, treatment and management of many conditions.[19] In Ireland, work is ongoing to link GP patient data to the TILDA dataset; however, while consent for such GP linkage is high, the linkage process, coordination with GP practices and data preparation mean that the process is slow (Scarlett et al., 2025).

19 See UK Biobank, 'Major milestone for health research as UK Government decision enables access to UK Biobank volunteers' GP patient data'.

4.2.5 Older people's services

As with the other services outlined above, improved data availability for older people's services would substantially enhance both the scope and the sophistication of future projection analyses.

For key older people's services, such as publicly funded home support and LTRC, there is a dearth of information captured on recipients and the care they receive, and a new approach is required to better understand care recipients and their needs. Paper-based recording remains common with in-home support, and the need to move towards electronic recording of information is a required first step. A minimum dataset on home support recipients is a second vital step. For home support, such an anonymised dataset could include recipients' age, sex, hours of care received and assessed dependency levels. In this context, the full rollout of the Single Assessment Tool (InterRAI) would represent a significant step forward in consistently and systematically identifying dependency levels and corresponding care needs. To date however, progress has been slow, and InterRAI was used to determine care needs in fewer than one-quarter of HSE home support service assessments in 2024 (HSE, 2025b).

ICT systems in LTRC are more advanced than those for home support. Therefore, the development of a minimum dataset should be more straightforward. Such a dataset could similarly include age, sex and dependency level (with InterRAI again offering a useful assessment for information). A complicating factor in the provision of services for older people is the substantial role of private providers and private financing (Walsh and Lyons, 2021; Walsh and Connolly, 2024). It is vital that data improvements cover all LTRC care. Such datasets should cover residents funded by the Nursing Homes Support Scheme (NHSS), and other LTRC residents, such as short-stay residents (including transitional care funded residents) and privately funded residents who make up to 10 per cent of all LTRC residents.

As mentioned above, the development of HSE Health Regions means that having access to granular data at the HSE Health Regions level is important. The move towards increased integrated care for older people through, for example, the Integrated Care Programme for Older People (ICPOP), means that coordination of wraparound services for home support and residential care is required. However, there is a dearth of information on other common community-based services.

Currently, the proposed Population Based Resource Allocation (PBRA) model places LTRC outside of the PBRA system, primarily due to the poor data that exist on LTRC services (O'Malley et al., 2023). Similarly, the limited data on other older people's services will likely reduce the effectiveness of PBRA in the development of efficient and equitable resource allocation (Walsh and Hill, 2024).

Given the limited availability of data on other community-based services for older people, such as community-based therapy, day centre care, respite care and social supports, there is a clear need to develop comparable datasets for these services. These services form an increasingly important component of care for older people, yet they could not be incorporated into the most recent projection analyses conducted by the ESRI due to the absence of baseline information on their current scale and utilisation. Similar to home support and LTRC, many of these services are privately purchased or delivered by voluntary and private providers. Therefore, data improvements will need to encompass all care, not just care provided by the HSE.

4.3 Discussion

Arising from the Digital Health Strategic Implementation Roadmap, the Health Information Act 2026 and the European Health Data Space, a wide range of initiatives aimed at strengthening the health data infrastructure and availability are currently underway. While some developments are at a more advanced stage than others, full implementation will take time. It is now essential to consider how these initiatives will operate in practice, particularly in relation to how data can be shared beyond immediate clinical care settings. In the meantime, other initiatives could significantly enhance data availability for planning, policy and research purposes.

It is vital that improvements to the health data focus not just on HSE provided care, but also the extensive care provided by voluntary and private providers, much of which is publicly funded. The move toward integrated care reinforces the need to improve data across all health and social care services rather than looking at particular services in isolation.

For publicly provided services, a HIPE-style dataset – ideally at the patient level – could be developed to capture key service-specific information. For privately provided services, especially those that are

privately financed, the challenge is more complex. Important questions remain about how to access these data, which are critical for developing a comprehensive understanding of the Irish health and social care system. For services that are privately delivered but publicly funded, there is likely to be greater scope to obtain data under new legislative requirements, though consideration of the type of data required is needed.

Finally, for all initiatives, consideration is required of the timeframe for implementation, with a need to ensure that improvements in the data environment are implemented in the shortest time feasible.

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