Saolta University Health Care Group

Demand and Capacity Analysis
Model 3 Hospitals

KPMG N.V.

September 2022

This report contains 103 pages

Model 3:- Demand and Capacity Analysis:-Saolta Addendum re Daycase Beds

Introduction and Context:-

In 2021, Saolta engaged KPMG to conduct a demand and capacity analysis across the Model 3 Hospitals to identify the future inpatient and daycase bed capacity requirements up to 2030.

This final report was provided in Dec 2021 that identified requirements for inpatients (including ICU beds), and daycase beds for Letterkenny, Mayo, Portiuncula and Sligo University Hospitals respectively. The outcomes of the report were considered by the Executive Management Team at the April 2022 meeting. While there were no issues highlighted around the outcomes related to either Inpatient or ICU bed requirements, universal concern was expressed by the group around recommended daycase bed numbers and in particular the efficiency assumptions as the foundation for the calculations.

It is accepted that while the KPMG analysis followed the methodology and assumptions set out in the National Capacity Review of 2018 (as included in the scope of the review), but an internal exercise was conducted to revisit a high level analysis of daycase requirements using a more conservative approach based on actual efficiencies yielded over the past 2 years/implementation of Sláintecare and resource implications.

This is set out below in 2 distinct Stages:-

Amended Efficiency Assumptions

Stage	KPMG Efficiency Assumptions	Revised High Level Analysis- Assumptions	Rationale
Stage 1	10% of Day Cases to community 10% of Day Cases to outpatients	7.5% of Day Cases to Community 7.5% of Day Cases to Outpatients	Time required to implement shift to CHOs/OPD
	>65 years -5% Elective admissions reductions >65 years -10% Non-Elective admissions reductions	No Change	ICPOPs being rolled out across the CHOs/RHAs
	6 Days per week 2.6 per day	5 days per week 2 per day	Resource implications – will take considerable time to implement
Stage 2	In line with National Capacity Review 2018 – No account taken for further move from IP to DC	10% move from IP to Daycases (both elective and non-elective beddays)	New technological advances and reduce LOS as well as focus on ambulatory care for both elective and non-elective services.

The high level analysis used the base data within the KPMG report broken down to number of daycases and the revised assumptions were applied to consider the impact on the daycase beds. The impact of this is set out in Table 2 below:-

Impact on Daycase Beds

Table 2 Hospital	KPMG Recommendation	Stage 1 - Impact	Stage 2 Impact (incl. Stage 1)
LUH	47	74	99
MUH	40	63	83
PUH	16	25	36
SUH	51	80	101
Total Daycase Beds Required	**154**	**242**	**319**

Notes:-

- The methodology as adopted by KPMG followed the National Capacity Review and therefore Stage 2 (10% move from IPs to DCs) – was not considered as part of efficiency assumptions.
- The impact of Stage 2:- i.e. further move from IP to DC may reduce IP bed requirements across model 3 hospitals.
- In considering the efficiency measure (Stage 1) of 2.0 cases per bed per day to 2.6 cases per bed per day and from 5 days per week to 6 days per week, it is accepted that this will take time and resources to achieve incrementally, however it should remain a key target deliverable.

Conclusion:-
In accordance with the above, Saolta proposes that this high level analysis is more reflective of the anticipated demand for daycase beds based on all the factors listed.

Tony Canavan
CEO Saolta on behalf of Group Management Team

Definitions

ALOS	Average length of stay
DRG	Diagnosis-Related Group
DC	Daycase (bedday)
ED	Emergency Department
ED conversion rate	The % of emergency department attendances that are admitted to the hospital.
ICU	Intensive care unit (bedday)
IPC	Inpatient care (bedday)
LOS	Length of stay
LUH	Letterkenny University Hospital
MUH	Mayo University Hospital
PUH	Portiuncula University Hospital
Saolta Group	Saolta University Health Care Group
SUH	Sligo University Hospital
Trolley and Surge	In cases where patients are admitted to the hospital (from the ED), but there are no beds available, they are either accommodated on trolleys or surge beds. These beds are used when inpatient volumes exceed a hospital's inpatient bed capacity.

Contents

1 Executive Summary

1.1 Purpose

Saolta requested KPMG to expand the demand and capacity model developed (as part of the GUH Options Appraisal Report, completed in 2019 for the model 4 hospital) to calculate the demand and capacity (by specialty for inpatient and day cases) for the model 3 hospitals across the group.

The purpose of this Demand Analysis Report is to enable Saolta to consider the future inpatient and daycase bed capacity requirements for model 3 hospitals within the West and North-West of Ireland. The future capacity requirements are based on population forecasts and also consider potential efficiency gains, substitution effects and stated policy changes, using similar methods and assumptions to those used in the GUH Options Appraisal Report. This report also factors in the key scenarios outlined in the National Demand and Capacity Review[1] published in 2018.

In the model 3 forecast, potential impacts due to COVID-19 are also taken into account.

1.2 Scope

This report estimates demand and capacity in 2030 for Saolta model 3 hospitals for inpatient, day cases and ICU activities. Within these activities elective, non-elective and maternity patients are distinguished, where possible. Theatre, diagnostic and outpatients activities are out of scope in this analysis. Furthermore, this report does not examine the effectiveness or efficiency of Saolta's current operational processes in meeting current demand. The report estimates the number of future beds required but consideration of the physical infrastructure or staffing needed to manage these is also out of scope.

1.3 Approach

The four steps outlined below were followed to estimate the capacity required in 2030 for each model 3 hospital.

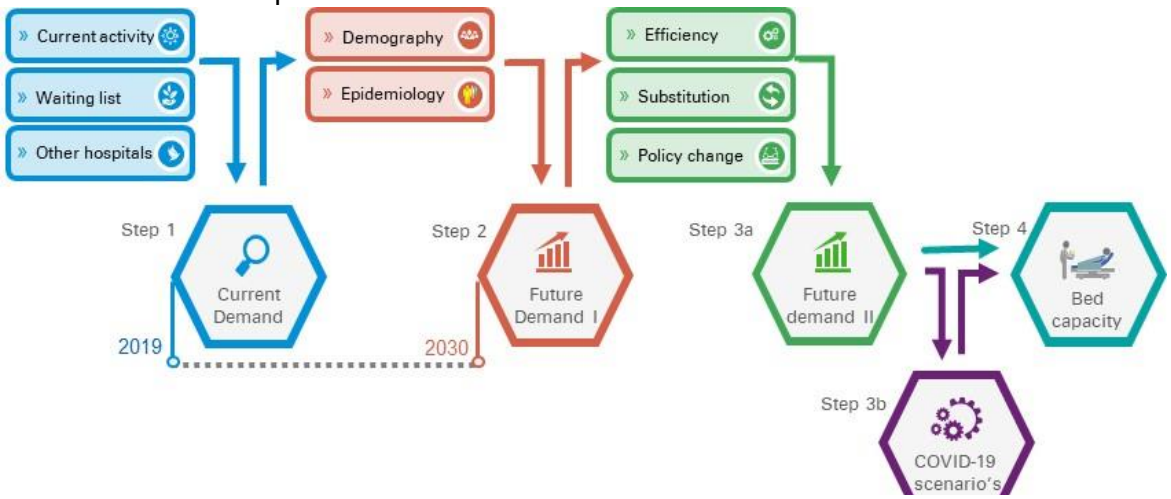


Figure 1: Approach of calculating demand and capacity analyses Saolta model 3 hospitals

[1] Department of Health, 2018. [Online]. Health Service Capacity Review 2018 Executive report. Available: link.

The first step involved an assessment of the current activity level in model 3 hospitals combined with the numbers of patients on the waiting list and factored in additional demands from delayed transfers.

In the second step, the future care demand was calculated by including demographic and epidemiological effects.

In step 3a, the changes in demand were calculated based on three scenarios: changes due to substitution, changes due to efficiency and changes due to policy. This step also involved reviewing Emergency Department (ED) conversion rates and including the number of patients on trolleys and surge beds overnight. ALOS was also considered by DRG and demand adjusted accordingly where required. The effects of policy change, including moving care to appropriate lower complexity care facilities were then factored in (for example, shifting care from model 4 to model 3 and model 3 to community care) as set out in the National Demand and Capacity Review of 2018[2].

Furthermore, the impact of COVID-19 was built into the model to calculate the additional bed capacity required to address similar crisis scenarios in the future.

The final step involved analysing the overall required bed capacity per hospital.

1.4 Key findings

Key Finding 1: Without significant policy intervention, the increased future patient demand towards 2030 is 13%-32%.

Saolta is responsible for the care of over 800,000 people across the West/North-West of Ireland. CSO forecasts[3] indicate that this area of Ireland faces significant increases in its elderly population. These forecasts assume increases of 20%-37% in the age category 65-79 years and 47%-63% in the age range of 80+ years. The ageing population, combined with patients on waiting lists, delayed transfers and epidemiological effects, e.g. in oncology treatment, indicate that Saolta will experience a significant increase in its inpatient care demand towards 2030.

Table 1 outlines the potential increase in capacity required, under a scenario without any demand mitigation measures. The current demand includes both the 2019 activity level and the 2019 unmet demand. The future demand includes demographic and epidemiological effects. The results are shown for the three types of inpatient care: inpatient beds (IPC), daycase beds (DC) and intensive care beds (ICU/NICU). Note: all patient and patient beddays figures in this report are rounded to the nearest hundred.

[2] Department of Health, 2018. [Online]. Health Service Capacity Review 2018 Executive report. Available: link.
[3] Central Statistics Office (CSO). [Online]. Regional Population Projections 2017 – 2036. Available: link.

Table 1: Current demand and forecasted future demand without mitigating measures

Hospital	Type of bed	Current demand[1,2] (in bed days)	Future demand without mitigation (in bed days)[3]	Forecast demand increase / reduction (%)
LUH	IPC	108,900	140.100	29%
LUH	DC	35,000	44.200	26%
LUH	ICU/NICU	5,200	5.900	13%
MUH	IPC	86,900	109.900	26%
MUH	DC	31,000	37.600	21%
MUH	ICU	2,500	3.300	32%
PUH	IPC	49,500	61.900	25%
PUH	DC	10,700	13.200	23%
PUH	ICU	1,900[4]	2.500	32%
SUH	IPC	92,100	117.800	28%
SUH	DC	39,000	48.300	24%
SUH	ICU/NICU	6,300	7.400	17%

[1]This is based on the HIPE patient data of 2019, waitlisted patients on June 29h 2019 model 4 to model 3 hospitals.
[2] A shift in patients between private and public hospitals was considered, but according to the National Demand and Capacity Review [4] and the Independent Review Group commissioned by Sláintecare [5] this shift is expected to be limited in the short to medium term. Hence, both a shift from public to private as from private to public are not factored into the model.
[3]This is the future demand based on HIPE patient data and waitlisted patients including demographic and epidemiological growth effects. COVID-19 impact is not incorporated in these numbers.
[4]PUH ICU beddays include CCU and HDU – reflects combined ICU/HDU/CCU
LUH: Letterkenny University Hospital MUH: Mayo University Hospital
PUH: Portiuncula University Hospital SUH: Sligo University Hospital

Key Finding 2: The increase in future demand ranges from 3%-10% after factoring in mitigating measures.

As identified in the National Demand and Capacity Review[4], a number of policy interventions may mitigate forecast increases on the inpatient healthcare demand. Key opportunities are outlined in the table below.

Table 2: Mitigating measures for forecasted increase on inpatient demand

Mitigating opportunity	Key opportunities
Efficiency	- Lower length of stay on average across all services - Less day cases, due to a shift to outpatient and community care
Substitution	- Decrease in elderly inpatient visits, due to increased primary and residential care
Policy change	- Lowering ED conversion rates (when above 30%)

The combined impact of these mitigating measures is not expected to offset overall increases in demand. This means an increase in capacity will be required. Also, the results of the mitigating opportunities are dependent of various conditions, such as sufficient resources, infrastructure, and investment in community, diagnostics and ambulatory care. This analysis assumes that preconditions as such are in place in 2030, in order to fulfil the substitution, efficiency and policy changes.

[4] Department of Health, 2018. [Online]. Health Service Capacity Review 2018 Executive report. Available: link.
[5] Independent Review Group, 2019. [Online]. Report of the Independent Review Group established to examine Private Activity in Public Hospitals. Available: link.

Table 3 illustrates the impact on bed capacity after factoring in mitigating measures. The current demand is based on 2019 activity and the 2019 unmet demand. The future demand includes current unmet demand, demographical and epidemiological effects, a correction for ED conversion rates, trolley and surge bed nights, substitution and efficiency, and policy change (shift from model 4 to model 3) effects. COVID-19 impact is not incorporated in these numbers.

Table 3: Current demand and forecasted future demand with mitigating measures

Hospital	Type of bed	Current demand (in bed days)[1]	Future demand without mitigation (in bed days)	Future demand with mitigation (in bed days)	Forecast demand increase / reduction (%)
LUH	**IPC**	108,900	140.100	123.200	13%
LUH	**DC**	35,000	44.200	36.700	5%
LUH	**ICU/NICU**	5,200	5.900	5.600	8%
MUH	**IPC**	86,900	109.900	102.700	18%
MUH	**DC**	31,000	37.600	30.900	0%
MUH	**ICU**	2,500	3.300	3.100	24%
PUH	**IPC**	49,500	61.900	55.600	12%
PUH	**DC**	10,700	13.200	12.400	16%
PUH	**ICU**	1,900[2]	2.500	2.400	26%
SUH	**IPC**	92,100	117.800	104.100	13%
SUH	**DC**	39,000	48.300	39.600	2%
SUH	**ICU/NICU**	6,300	7.400	7.000	11%

[1]This is based on the HIPE patient data of 2019, 80% of patients waitlisted on June 29th 2019 and delayed transfers from model 4 hospitals.
[2]PUH ICU beddays include CCU and HDU – reflects combined ICU/HDU/CCU.
LUH: Letterkenny University Hospital MUH: Mayo University Hospital
PUH: Portiuncula University Hospital SUH: Sligo University Hospital

Figure 2 shows the estimated required bed capacity in 2030 per hospital, based on the above expected future demand in beddays at 85% occupancy rate. The results are subdivided by the three types of inpatient care: inpatient beds, daycase beds and ICU beds. ICU beddays includes critical care and NICU.[6] A comparison between the calculated number of future beds and current (2019 pre-COVID) number of beds can be found in sections 3.4.3 (LUH), 3.5.3 (MUH), 3.6.3 (PUH) and 3.7.3 (SUH).

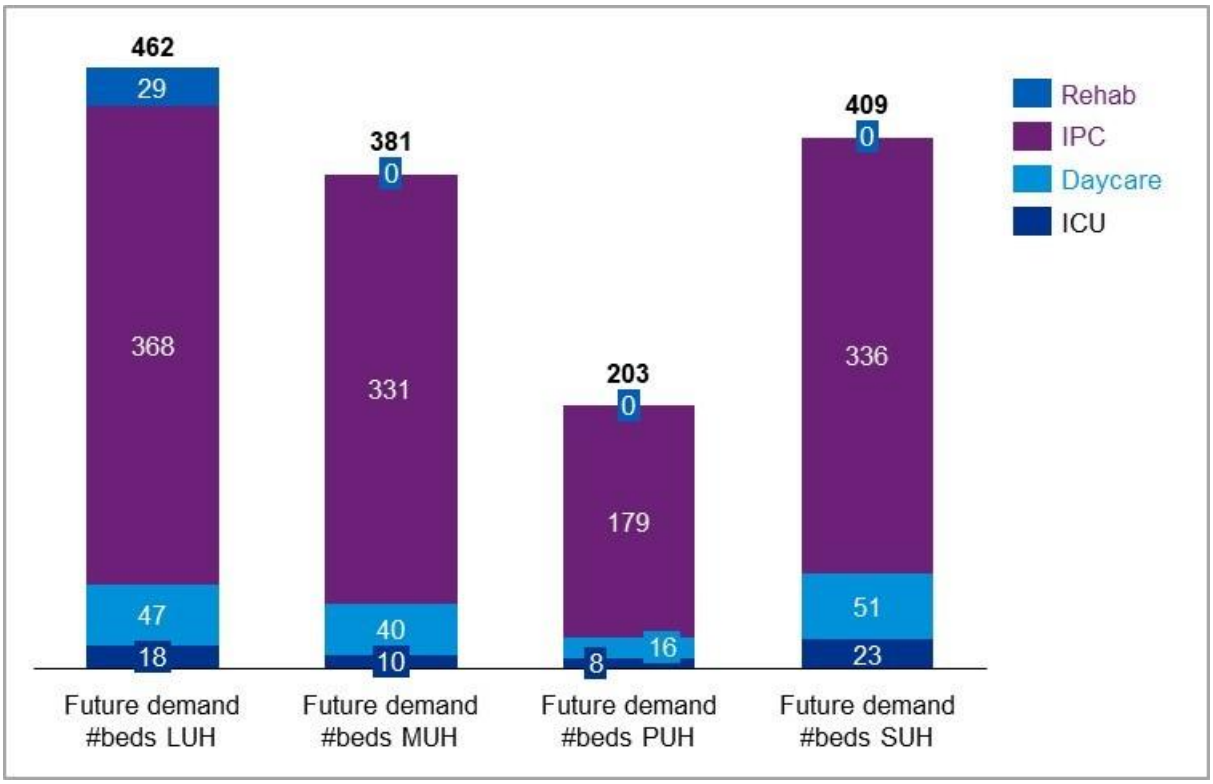


Figure 2: Total future demand per model 3 hospital in beds per type of bed
(COVID-19 impact is not incorporated in these numbers)
LUH: Letterkenny University Hospital *MUH: Mayo University Hospital*
PUH: Portiuncula University Hospital *SUH: Sligo University Hospital*

The future demand may be impacted by events similar to the COVID-19 outbreak. A number of different scenarios on COVID-19 were calculated in order to estimate increased demand assuming a similar outbreak in the future.

[6] In the current DRG coding system activity taking place in LUH and SUH CCU beds does not receive any specific coding that enables identification of the DRG as an CCU bed. As CCU care will most likely be cardiology related this care is included in the bed group "IPC medical". In appendix A5 this is most likely included in the number of current and future cardiology IPC beddays. All neonatology specialty ICU beddays are recorded as NICU. Please see appendix 5.1 to 5.4 for a further breakdown per specialty per bed. The number of ICU beddays for patients under 16 within other specialties is very limited and therefore no further split is made. Furthermore, almost all inpatient beddays for patients under 16 are included in the paediatric beds. Within some other specialties a limited number of beddays for these patients are seen, leading to 3.6 extra paediatric inpatient bed in LUH, which is to be subtracted from the calculated "normal" inpatient beds. An overview is found in appendix A11

Figure 3 shows the additional bed capacity that may be required to deliver COVID-19 care, based on the maximum peak in admissions (1.2 admissions per day per 100,000 population) during the COVID-19 period in March - July in Ireland (Scenario 2) and an 85% occupancy rate. During this period this capacity is not available for 'regular' care. The results are subdivided by two types of inpatient care: normal inpatient beds and ICU beds.

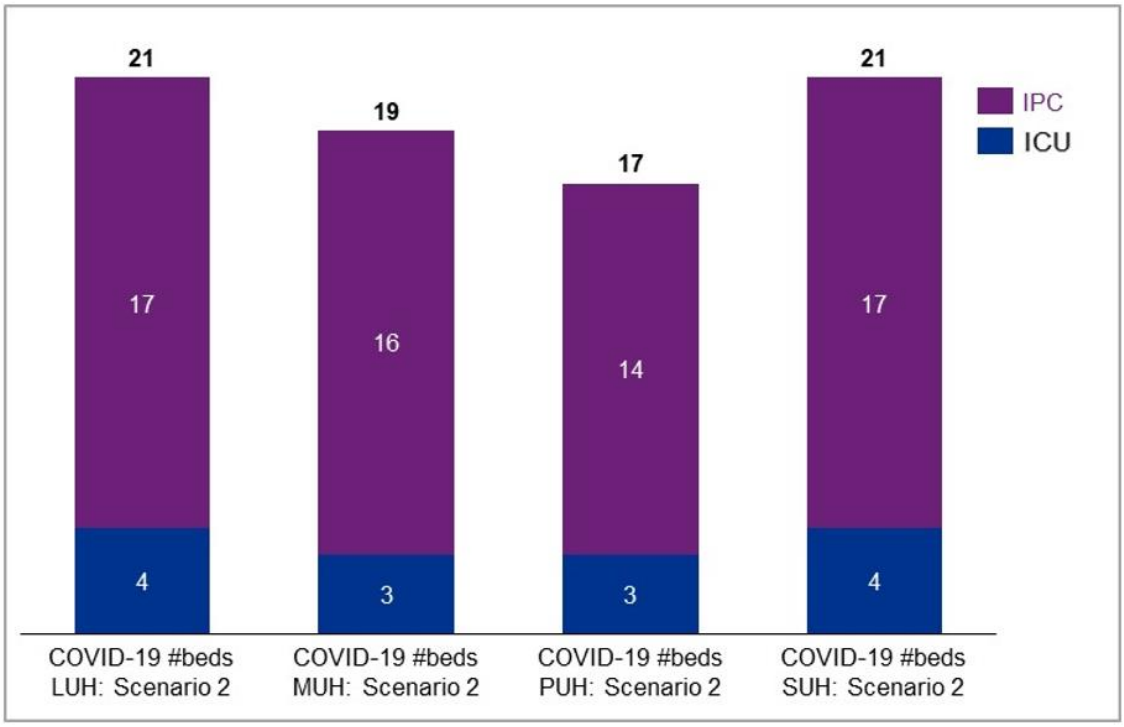


Figure 3: Estimated COVID-19 capacity per model 3 hospital in beds per type of bed for the maximum peak of admissions in Ireland (scenario 2)
LUH: Letterkenny University Hospital *MUH: Mayo University Hospital*
PUH: Portiuncula University Hospital *SUH: Sligo University Hospital*

1.5 Conclusion

Outcomes of the model are to be seen in the light of capacity management, following expected changes due to demography, epidemiology, efficiency, substitution and policy. In this model several assumptions are made and intentions are expressed, for instance the lowering of conversion rates and (average) length of stay. The below table gives an overview of total 2019 and future forecasted beds per hospital. As the outcomes have been modelled for 2030, the reality may deviate from these outcomes. However these outcomes can be used as a directive for a transition period (2021 – 2030) in which the intended effects are to be realised.

Hospital	Type of bed	# 2019 beds	# forecasted 2030 beds (excl. COVID capacity)	# forecasted 2030 beds including COVID capacity)
Letterkenny University Hospital	IPC	322	368	385
Letterkenny University Hospital	Rehab	19	29	29
Letterkenny University Hospital	ICU	5	10	14
Letterkenny University Hospital	NICU	8	8	8
Letterkenny University Hospital	DC	38	47	47
Mayo University Hospital	IPC	248	331	347
Mayo University Hospital	ICU	8	10	13
Mayo University Hospital	DC	57	40	40
Portiuncula University Hospital	IPC	158	179	193
Portiuncula University Hospital	ICU/HDU/CCU	15	8	11
Portiuncula University Hospital	DC	23	16	16
Sligo University Hospital	IPC	273	336	353
Sligo University Hospital	ICU	5	13	17
Sligo University Hospital	NICU	10	10	10
Sligo University Hospital	DC	66	51	51

2 Introduction

2.1 Background

The Saolta University Health Care Group provides acute and specialist hospital services to the West and North West of Ireland. Although the hospitals are located in counties Galway, Mayo, Roscommon, Sligo and Donegal, the catchment population also includes residents from a number of other counties including, Leitrim and West Meath. Saolta University Health Care Group comprises 6 hospitals across 7 sites. Four of those hospitals are model 3 hospitals: Letterkenny University Hospital (LUH), Mayo University Hospital (MUH), Portiuncula University Hospital (PUH) and Sligo University Hospital (SUH). This report is focused on the demand and capacity of these four hospitals.

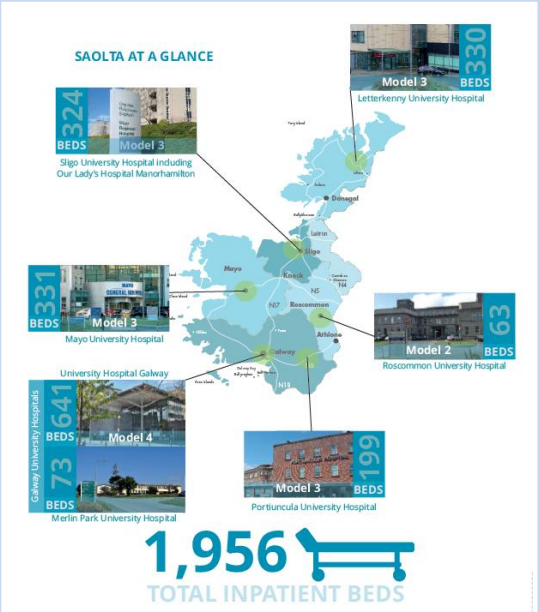


Figure 4: Saolta at a glance

2.2 Purpose

In 2019 KPMG finalised an options appraisal for the future of Saolta Model 4 Hospital Services in Galway ('Options Appraisal'). A key foundational aspect of that report included the development of a model which calculated the current and future care demands and capacity requirement for the GUH model 4 hospital. Saolta requested KPMG to further extend the model to calculate the demand and capacity (by specialty for inpatients, daycase and ICU) for the model 3 hospitals across the group.

The purpose of this Demand Analysis Report is to enable Saolta to consider its future bed capacity requirements for model 3 hospitals, based on forecast patient demand within the West and North-West of Ireland in 2030. The future inpatient capacity requirements also need to take strategic choices and short term insights on COVID-19 into account.

This demand and capacity analysis has been carried out in line with the model that was built for the Options Appraisal of Galway and aligned to the National Demand and Capacity Review published in 2018[7]. Similar methods and assumptions have been used, so as to have comparable outcomes between the model 4 and model 3 hospitals.

[7] Department of Health, 2018. [Online]. Health Service Capacity Review 2018 Executive report. Available: link.

2.3 Scope

Within this demand and capacity analysis, the following activities are in scope: inpatient care, day cases and ICU activities. Within these activities, elective, non-elective and maternity patients are distinguished when applicable. Theatre, diagnostic and outpatient activities are out of scope of this analysis.

The baseline for this analysis was based on HIPE data. Consequently, the input for the analysis was consistent for each of the four hospitals.

The output of this assignment is the estimated number of beds required for each model 3 hospital (per specialty, per type of bed). Calculations on physical infrastructure (such as the required floor space or number of wards) and staffing resources were out of scope.

This demand and capacity analysis does not factor in any proposed shift in patients from private to public hospitals and vice versa. This is in accordance with the National Demand and Capacity Review[8] and the Independent Review Group commissioned by Sláintecare[9], which state that this shift is expected to be limited in the short-to-medium term.

This Report does not examine the effectiveness or efficiency of Saolta's current operational processes in meeting the current demand.

2.4 Reading guide

The approach of this demand and capacity analysis is explained in Chapter 3. Chapter 4 contains the results. The results section starts with a global overview of all hospitals together. The following paragraphs illustrate the results per hospital, for each of the model 3 hospitals. Lastly, the conclusion is stated in Chapter 5.

The appendices include information on source data, underlying assumptions, calculation methods and the detailed results of the demand analysis.

[8] Department of Health, 2018. [Online]. Health Service Capacity Review 2018 Executive report. Available: link.
[9] Independent Review Group, 2019. [Online]. Report of the Independent Review Group established to examine Private Activity in Public Hospitals. Available: link.

3 Approach

The process consisted of two workstreams in order to reach a reasonable estimate for future demand. This approach was based on that of the Galway Options Appraisal report. The process followed is illustrated in the graphic below and involved a series of engagements with both clinical and management staff of the individual hospitals.

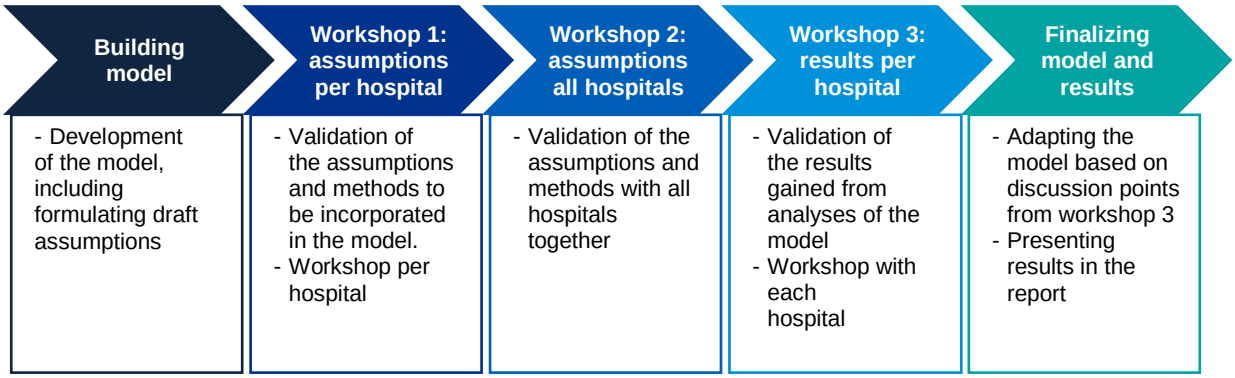


Figure 5: The process of modelling the demand and capacity for Saolta's model 3 hospitals in 2030

The approach can be further distilled into two major categories, which are:

1. Building the model and performing analyses (see paragraph 3.1)
2. Validation of assumptions and results during three workshops (see paragraph 3.2)

The rest of this chapter explains these two categories in further detail. In appendix A.10 we discuss limitations of the analyses.

3.1 Building the model and performing analyses

To estimate the capacity needed for the future hospital four steps were followed.

Figure *6* illustrates the steps that were taken to calculate the bed capacity up to 2030. For purposes of comparison, this approach is identical to the one used for the Galway Options Appraisal. In some cases different choices within the steps are made, for instance to add surge and trolley beds, to add expected shifts in care from Model 3 to Model 4 hospitals and to correct for the percentage of ED admissions. All differences aim to improve the model outcome, representing reality as accurately as possible.

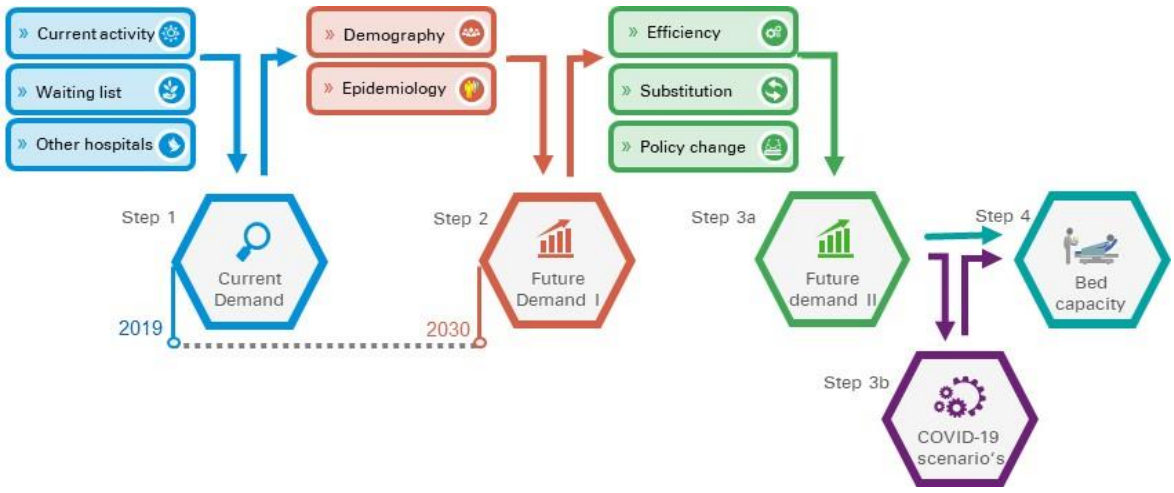


Figure 6: Approach of calculating demand and capacity analyses Saolta model 3 hospitals

The following subparagraphs describe the work undertaken in each step.

3.1.1 Step 1: Current Demand

The current activity level of each hospital was based on the 2019 HIPE data. This data was the most recent full-year representative information available. Waiting list data was also reviewed to assess current demand. Patients on the waiting list as of June 27th 2019 were included, as this was felt to be more representative (in the context of National Treatment Purchase Fund activity). Data cleansing activities have been performed, ensuring data represents reality as accurately as possible. For this, patients with a DRG referring to one of the 41 procedures on the BADS list[10] registered as elective inpatient DRG's with the maximum stay of 1 bed day have been treated as daycase in the model. Furthermore, some changes on specialty names were made in the data in order to achieve comparable and reliable outcomes on future demand in bed days per specialty (see appendix A.7). In addition, for each patient who has been registered as an IPC DRG and has received an endoscopic daycase procedure one endoscopic daycase bedday is added (see appendix A.8), to better reflect actual demand for this specialist unit.

Lastly, current demand also factored in delayed transfers from model 4 hospitals, as these delays indicate insufficient capacity within the model 3 hospitals.

3.1.2 Step 2: Future demand I - Demography and Epidemiology Factors

Once the current demand was calculated, predictable factors of demography and epidemiology were applied to forecast future demand. National CSO forecasts[11] and the Health Atlas county data[12] were used to factor in demographic effects. Region and county specific forecasts were used per hospital, based on age and gender profiles, taking differences in population profiles into account.

[10] British Association of Day Surgery
[11] Central Statistics Office (CSO). [Online]. Regional Population Projections 2017 – 2036. Available: link.
[12] Health Atlas Ireland. [Online]. Population projections. Available: link.

Epidemiology trends involved factoring in the expected growth of most prevalent diseases. These were based on the assumptions used in the Options Appraisal assignment for the Model 4 hospital, ensuring consistency across the group. Epidemiological effects on different types of cancers were included in the model. Other relevant diseases such as cardiac and respiratory diseases and diabetes were also considered and discussed with Public Health. However, expected changes in the incidence of these diseases follow the demographic changes (population growth and aging population). Therefore, these factors are accounted for in the demographic changes and no extra epidemiological effect is modelled in for these diseases.

3.1.3 Step 3: Future demand II

3.1.4 Step 3a: Efficiency, Substitution and Policy Changes

Efficiency, substitution and policy changes based on the National Demand and Capacity Review[13] were included in the model, but were adjusted to ensure they were in line with the assumptions made in the Galway hospital model.

3.1.4.1 Efficiency

Efficiency measures are divided into two categories: transition of daycases to other care settings and decreasing IPC average length of stay (ALOS). The National Demand and Capacity Review[13] report states that up to 20% of all daycases should move out to outpatient and community. In line with the Galway Options Appraisal, this demand and capacity analysis hypothesises that 10% of the inpatient daycases will transition to community services and another 10% will transition to outpatient care. During the Galway model development, Saolta Group Clinical Directors had agreed to use 10% efficiency per type of shift in care, rather than a range up to 20%, as this was considered to be more realistic for the region. For two types of daycases exceptions apply:

- Transition of endoscopic daycases will not take place. We do not foresee this type of care to be delivered in an outpatient or community care setting as (highly) specialized knowledge and equipment is needed.
- No transition of chemotherapy (oncological daycases) to the outpatient care setting. Special equipment and a physical space is needed, for which an outpatient care setting is not suitable. We do foresee the possibility of shifting chemotherapy towards a community (homecare) setting.

Table 4: Efficiency assumptions daycases

Assumptions daycases	
Daycases to community	- 10 %
Daycases to outpatients	- 10 %

[13] Department of Health, 2018. [Online]. Health Service Capacity Review 2018 Executive report. Available: link.

Also, new policies aim to lower the average length of stay per specialty by specific standards. In this approach, the preferred LOS was based on the lowest ALOS per specialty out of the four Saolta model 3 hospitals. A lowest ALOS was only recognized as "valid" in the case the hospital had at least 15% of the total model 3 hospitals DRG's within this specific specialty. An example of this calculation method is shown below.

Table 5: Working example determining the lowest ALOS

Hospital	Specialty	# of DRG's	ALOS	% of total DRG's within specialty	Applied as being the lowest ALOS?
LUH	A	35	2.5	37.6%	Yes, of hospitals with >15% of patient group the lowest ALOS
MUH	A	25	2.8	26.9%	No, higher ALOS than LUH
PUH	A	3	1.9	3.2%	No, although lowest ALOS, this is only based on 3.2% of total patients This is therefore not seen as a valid sample
SUH	A	30	3.1	32.3%	No, higher ALOS than LUH
Total		**93**		**100%**	

These ALOS per specialty per hospital were calculated within the current model, based on the HIPE data. Appendix A.7 gives an overview of the lowest ALOS per specialty of all hospitals, setting the "ALOS standard". These ALOS standards were applied to the model for each hospital to calculate future demand in bed days.

A shift from inpatient to daycases has not been considered in line with the the Galway model approach and following the National Demand and Capacity Review scenario's.[14] If future policy or strategic choices does trigger this shift daycases capacity should be changed in line with these future shifts.

3.1.4.2 Substitution

The National Demand and Capacity Review[15] also contains suggestions for substitution measures. It states that elective inpatient care for patients over 65 years should reduce by 5%. Furthermore, it states that non-elective inpatient care for patients above 65 should reduce by 15%. This is higher than the percentage that was decided to be used by Saolta Group Clinical Directors during in the Options Appraisal of Galway (which used 10%). A 15% shift was not seen as feasible for the region.

Table ***6*** summarises the substitution assumptions that were built into the model.

Table 6: Substitution assumptions

Assumptions	
Elective admissions 65+ aged patients	- 5 %
Non-elective admissions 65+ aged patients	- 10 %

[14] Efficiency scenario's in the National Demand and Capacity Review did not cover a shift from inpatient care to daycases. Department of Health, 2018. [Online]. Health Service Capacity Review 2018 Executive report. Available: link
[15] Department of Health, 2018. [Online]. Health Service Capacity Review 2018 Executive report. Available: link.

3.1.4.3 ED conversion rates & trolley/surge beds

E*mergency Department (ED) conversion rates* and *ED trolley and surge bed nights* (patients exceeding national standards in length of stay) were included in the model as these indicate existing efficiency and capacity challenges. The ED conversion rate reflects the percentage of Emergency Department attendances who are subsequently admitted to the hospital[16]. ED conversion rates in individual hospitals range from 25.2% to 34.3%. The underlying reason for the range in conversion rates is multifaceted and may include a number of factors, such as access to diagnostics and issues with alternative referral pathways to hospitals. A higher conversion rate may also indicate some system inefficiencies, with patients admitted to the acute setting when it would be more appropriate to treat them in a lower care complexity setting (e.g. as an outpatient or in a community hospital).

Although there is not currently a national target ED conversion rate, the 2019 national average for model 3 hospitals was 30%, so this was selected for use in the model as a consistent 'target' for calculation purposes. Therefore, all conversion rates above 30% are assumed to reduce to 30% in 2030[17].

The number of inpatients was also corrected by eliminating the number of bed nights for patients exceeding national standards in length of stay at the ED. These bed nights (trolley and surge demand for full year 2019) were added to the inpatient non-elective bed days as additional demand.

3.1.4.4 Policy changes

Lastly, policy changes were included as a shift in care from model 4 to model 3 hospitals, to align with government policy to have patients treated in appropriate lower-complexity care facilities. Table 7 shows the expected additional inpatient and daycase procedures for certain specialties per hospital from known service developments and Group-wide surgical plans.

Table 7: Assumed extra procedures for certain specialties from model 4

Hospital	Specialty	Extra inpatient procedures per week	Extra daycase procedures per week
Letterkenny University Hospital	Urology	5	10
Mayo University Hospital	General Surgery	8	8
Portiuncula University Hospital	General Surgery	1	5
	Gynaecology	1	5
	Urology	2	10
	Plastic Surgery	1	5
	Max Fax	1	5
Sligo University Hospital	Urology	5	10

[16] In cases where unscheduled care patients require admission to the hospital (from ED), and there are no beds available, they are accommodated on either trolleys or surge beds – (i.e. where inpatient bed capacity is exceeded).
[17] This was incorporated as the hospital with a lower conversion rate than the benchmark, Sligo University Hospital, expects the ED conversion rate to increase in the future.

A transition of patients from model 3 hospitals to community settings is accounted for in the efficiency and substitution measures that were explained earlier in this section (see 3.1.4.1).

3.1.5 Step 3b: Assessment of Covid-19 Impacts

A key factor which may influence demand and capacity in the short-term is the effect of COVID-19. The impacts of COVID-19 are uncertain and are therefore calculated in the model to account for potential additional bed capacity required for each model 3 hospital. Although COVID-19 is likely to have a short term impact on the future demand, the hospitals should take into consideration the effects of similar potential pandemics/crises which may arise in the future. Figure 7 illustrates three scenarios used in the calculation.

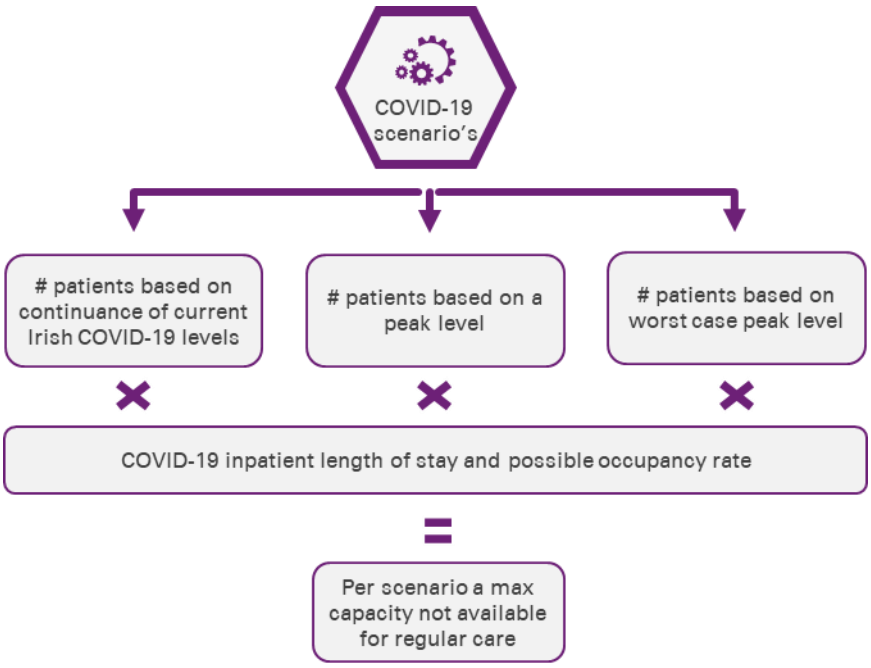


Figure 7: the approach of calculating COVID-19 bed capacity in three scenarios

The three scenarios:

1. A relatively small effect on the number of beds required for COVID-19 based on a continuance of current Irish COVID-19 infection rates and admission rates (in line with the current number of infected persons per 100,000 inhabitants in a specific time frame);
2. A moderate effect on the number of beds required for COVID-19 based on a peak in number of patients in line with the highest Irish peak in infection rates yet (with more than the current number of infected persons per 100,000 inhabitants in a specific time frame);
3. A large effect on the number of beds required for COVID-19 based on the highest peak in number of patients in the UK (predicting the number of infected persons per 100,000 inhabitants in a specific time frame based on UK data).

The model quantified the effects of the three scenarios by bringing two factors together: 1) the expected peak in the number of patients with COVID-19 admitted to the hospital, and 2) the effect of COVID-19 on the bed usage (including length of stay). Within these calculations, we assessed the impact on inpatient and ICU beds. The analysis was conducted using the following methodology

The historic and expected peaks in number of patients was derived from current Irish and UK COVID-19 numbers, trends, publications and academic papers.

The second stage of our analysis involved examining the primary catchment area of the hospital. In particular, the numbers on peak admissions per 100,000 population was considered. The primary catchment area includes the portion of the population in the area that would go to the hospital in case of a COVID-19 infection. These numbers were provided by the hospitals themselves and based on the Health Atlas database. In order to calculate expected ICU patients, data on the historic ratio of COVID-19 normal inpatient admissions to ICU admissions was used.

Additionally, the effect on the bed usage was also derived from current COVID-19 numbers, trends, publications and academic papers on average length of stay for COVID-19 patients (normal inpatient LOS and ICU LOS). The occupancy rate of 85% also applies here.

Finally, once the raw information was collected, the three scenarios were applied to the catchment area of the hospital. Table 8 summarizes all above assumptions.

Table 8: COVID-19 assumptions

Assumptions	Scenario 1	Scenario 2	Scenario 3
# peak admissions per day per 100,000 pop	0.06[18]	1.15	5.13[19]
Possible occupancy rate	85%	85%	85%
Average length of stay (in days)	8[20]	8	8
% Admissions ICU of total hospitalization in Ireland	13%[21]	13%	13%
Average length of stay ICU (in days)[22,23,24,25,26]	11.7	11.7	11.7

[18] Health Service Executive (HSE), 2020. [Online]. Coronavirus daily operations updates. Available: link.
[19] Government UK, 2020. [Online]. Coronavirus (COVID-19) statistics and analysis. Available: link.
[20] Express News, 2020. [Online]. Coronavirus patients UK hospitals: How long do COVID-19 patients stay in hospital? Available: link.
[21] Government of Ireland, 2020. [Online]. Hospital statistics. Available: link.
[22] European Society of Anaesthesiology (ESA), 2020. [Online]. Analysis of COVID-19 data on numbers in intensive care from Italy. Available: link.
[23] Zhou et al., "Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study", *The Lancet,* 2020.
[24] Cao et al., "A Trial of Lopinavir–Ritonavir in Adults Hospitalized with Severe Covid-19", *the New England Journal of Medicine,* 2020.
[25] NOS, 2020. [Online]. Coronacijfers 28 mei: patiënten nu gemiddeld 34 dagen op de IC. Available: link.
[26] Intensive care national audit & research centre, 2020. ICNARC report on COVID-19 in critical care 08 May 2020. Available: link.

Hospital	Primary catchment area
Letterkenny University hospital	148,911
Mayo University hospital	130,638
Portiuncula University hospital	120,737
Sligo University hospital	150,579

The goal of these scenario analyses is to compute the additional number of beds required to deliver COVID-19 care during a peak. During this period this capacity is not available for 'regular' care.

3.1.6 Step 4: Bed Capacity

In the final step the capacity required to match future care demand was calculated by number of beds (per hospital, per specialty, per type of bed and by type of care (elective/non-elective/maternity). The number of beds was based on the number of DRG's, average lengths of stay, working hours and the expected occupancy rate (or in case of daycases the number of DRG's per bed per day). All assumptions are stated in appendix A.2.

3.2 Validation of assumptions and results

Three workshops were held with the model 3 hospitals, along with other Group-level colleagues, where the stated assumptions and indicative results were validated. Table 9 provides a summary of the content of these workshops.

Table 9: Illustration of the three workshops

	Aim	Examples of Areas Discussed
Workshop 1: validating assumptions per hospital	The purpose of this workshop is to validate the assumptions used. These can either be hospital-specific assumptions, or overall model 3 hospital assumptions.	1 Cardiac and respiratory growth assumptions. 2 ED conversion rates in 2030. 3 Less admissions for elderly patients due to increase of managed primary and residential care.
Workshop 2: validating assumptions Saolta Group all hospitals	The purpose of this workshop is to validate assumptions with all model 3 hospitals together in a discussion.	Similar assumptions as workshop 1
Workshop 3: validating results per hospital	The purpose is to discuss and validate the new results after incorporating adjustments into the model due to discussions of workshop 1 and 2.	1 Validation of effects on current demand towards future demand. 2 Validation of expected bed capacity per type of bed.

In appendix A.10 we discuss the limitations of the analyses.Results

This chapter starts with an overview of the results for all hospitals collectively, then goes on to outline results for each hospital individually.

3.3 Global results

Saolta is responsible for the care of over 800,000 people across the West and North-West of Ireland. CSO forecasts[27] indicate that this area of Ireland faces significant increases in its elderly population. These forecasts hypothesise increases of 20%-37% in the age category 65-79 years and 47%-63% in the age range of 80+ years. The ageing population, combined with patients on waiting lists, delayed transfers, and epidemiological effects, indicate that Saolta will experience a significant increase in its inpatient care demand to 2030. The table below outlines the potential increase in demand, under a scenario without any demand mitigation measures. The current demand includes both the 2019 activity level and unmet demand. The future demand factors in the demographic and epidemiological effects. The results are shown for the three types of inpatient care: normal inpatient beds (IPC), daycase beds (DC) and intensive care beds (ICU). Note: all patient and patient beddays figures in this report are rounded to the nearest hundred.

Table 10: Current demand and forecasted future demand without mitigating measures

Hospital	Type of bed	Current demand[1,2] (in bed days)	Future demand without mitigation (in bed days)[3]	Forecast demand increase / reduction (%)
LUH	IPC	108,900	140.100	29%
LUH	DC	35,000	44.200	26%
LUH	ICU/NICU	5,200	5.900	13%
MUH	IPC	86,900	109.900	26%
MUH	DC	31,000	37.600	21%
MUH	ICU	2,500	3.300	32%
PUH	IPC	49,500	61.900	25%
PUH	DC	10,700	13.200	23%
PUH	ICU/CCU/HDU	1,900	2.500	32%
SUH	IPC	92,100	117.800	28%
SUH	DC	39,000	48.300	24%
SUH	ICU/NICU	6,300	7.400	17%

LUH: Letterkenny University Hospital *MUH: Mayo University Hospital*
PUH: Portiuncula University Hospital *SUH: Sligo University Hospital*

[1]This is based on the HIPE patient data of 2019, 80% of the waitlisted patients on June 29th 2019 and delayed transfers from model 4 hospitals
[2] A shift in patients between private and public hospitals was considered, but according to the National Demand and Capacity Review[28] and the Independent Review Group[29] this shift is expected to be limited. Hence, this is not factored into the model.
[3]This is the future demand based on HIPE patient data including demographic and epidemiological growth effects. COVID-19 impact is not incorporated in these numbers.

As identified in the National Demand and Capacity Review[30], a number of policy interventions could mitigate forecast increases on the inpatient healthcare demand. Key opportunities are outlined below.

[27] Central Statistics Office (CSO). [Online]. Regional Population Projections 2017 – 2036. Available: link.
[28] Department of Health, 2018. [Online]. Health Service Capacity Review 2018 Executive report. Available: link.
[29] Independent Review Group, 2019. [Online]. Report of the Independent Review Group established to examine Private Activity in Public Hospitals. Available: link.
[30] Department of Health, 2018. [Online]. Health Service Capacity Review 2018 Executive report. Available: link.

Table 11: Mitigating measures for forecasted increase on inpatient demand

Mitigating opportunity	Key opportunities
Efficiency	- Lower length of stay on average across all services - Less day cases, due to a shift to outpatient and community care
Substitution	- Decrease in elderly inpatient visits, due to increased primary and residential care
Policy change	- Lowering ED conversion rates (when above 30%)

The combined impact of these mitigating measures is not expected to offset overall increases in demand. This means an increase in capacity will be required. Also, the results of the mitigating opportunities are dependent of various conditions, such as sufficient resources, infrastructure, and investment in community, diagnostics and ambulatory care. This analysis assumes that preconditions as such are in place in 2030, in order to fulfil the substitution, efficiency and policy changes.

The table below illustrates the impact on bed capacity after factoring in the mitigation measures. The current demand includes both the 2019 activity level and the 2019 unmet demand. The future demand includes current demand, demographical and epidemiological effects, a correction for ED conversion rates, trolley and surge bed nights, substitution and efficiency, and policy change (shift from model 4 to model 3) effects. COVID-19 impact is not incorporated in these numbers, as outlined in table 12.

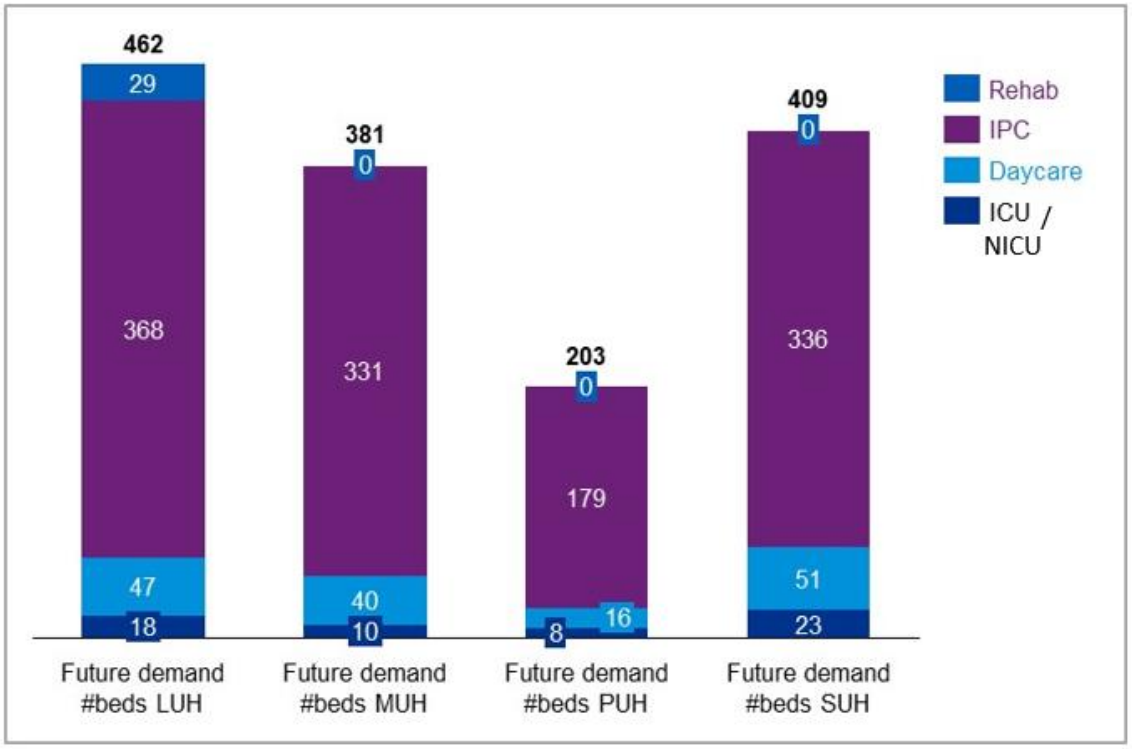
Table 12: Current demand and forecasted future demand with mitigating measures

Hospital	Type of bed	Current demand (in bed days)[1]	Future demand without mitigation (in bed days)[2]	Future demand with mitigation (in bed days)[3]	Forecast demand increase / reduction (%)
LUH	**IPC**	108,900	140.100	123.200	13%
LUH	**DC**	35,000	44.200	36.700	5%
LUH	**ICU/NICU**	5,200	5.900	5.600	8%
MUH	**IPC**	86,900	109.900	102.700	18%
MUH	**DC**	31,000	37.600	30.900	0%
MUH	**ICU**	2,500	3.300	3.100	24%
PUH	**IPC**	49,500	61.900	55.600	12%
PUH	**DC**	10,700	13.200	12.400	16%
PUH	**ICU/CCU/HDU**	1,900	2.500	2.400	26%
SUH	**IPC**	92,100	117.800	104.100	13%
SUH	**DC**	39,000	48.300	39.600	2%
SUH	**ICU/NICU**	6,300	7.400	7.000	11%

LUH: Letterkenny University Hospital *MUH: Mayo University Hospital*
PUH: Portiuncula University Hospital *SUH: Sligo University Hospital*

[1] This is based on the HIPE patient data of 2019, 80% of patients waitlisted on June 29th 2019 and delayed transfers from model 4 hospitals.
[2] The future demand without mitigation includes current demand, demographical and epidemiological effects. COVID-19 impact is not incorporated in these numbers.
[3] The future demand with mitigation includes future demand without mitigation with ED conversion rate correction, trolley and surge bed nights, substitution and efficiency, and policy change effects. COVID-19 impact is not incorporated in these numbers

Figure 8 shows the estimated required bed capacity in 2030 per hospital, based on the above expected future demand in beddays, the working hours and a 85% occupancy rate or 2.6 daycases a bed. The results are subdivided by the three types of inpatient care: inpatient beds, daycase beds and ICU beds. ICU beddays includes critical care and NICU.[31]

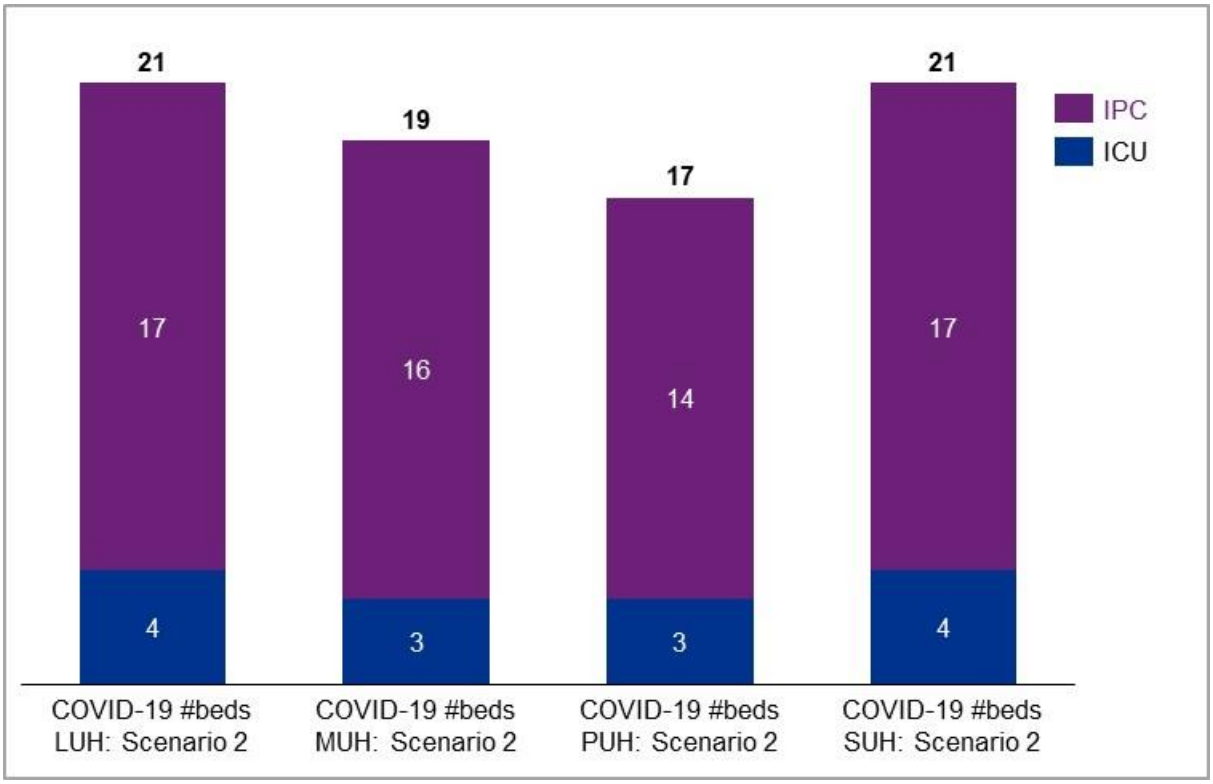


[1] PUH ICU beddays include CCU and HDU – reflects combined ICU/HDU/CCU.
LUH: Letterkenny University Hospital *MUH: Mayo University Hospital*
PUH: Portiuncula University Hospital *SUH: Sligo University Hospital*

Figure 8: Total future demand per model 3 hospital in beds per type of bed

[31] In the current DRG coding system activity taking place in LUH CCU beds does not receive any specific coding that enables identification of the DRG as an CCU bed. As CCU care will most likely be cardiology related this care is included in the bed group "IPC medical". In appendix A5 this is most likely included in the number of current and future cardiology IPC beddays

Figure 9 shows the additional bed capacity that may be required to deliver COVID-19 care, based on the maximum peak of admissions (1.2 admissions per day per 100,000 population) during the COVID-19 period in March - July in Ireland (Scenario 2) and a 85% occupancy rate.. During this period this capacity is not available for 'regular' care. The results are subdivided by two types of inpatient care: normal inpatient beds and ICU beds.



LUH: Letterkenny University Hospital *MUH: Mayo University Hospital*
PUH: Portiuncula University Hospital *SUH: Sligo University Hospital*

Figure 9: Estimated COVID-19 capacity per model 3 hospital in beds per type of bed for the maximum peak of admissions in Ireland

The following sections show the individual results per hospital.

3.4 Letterkenny University Hospital

3.4.1 Background

Letterkenny University Hospital (LUH) is a model 3 general hospital serving most of County Donegal. In 2019 it provided inpatient and daycase care to 54,500 patients[32]. The table below summarises the high level statistics for LUH.

Table 13: Background statistics Letterkenny University Hospital

Topic	Letterkenny University Hospital statistics
Current (pre-Covid) capacity as reported by the hospital (see appendix A.4 for current capacity in detail)	341 inpatient beds including 40 maternity and 19 rehab beds 38 daycase beds 13 ICU-beds
Number of treated patients in 2019[1]	- **IPC:** 22,600[2] - **DC**: 30,900 - **ICU:** 1,000 **Total:** 54,500 patients
Current activity (in bed days)[1]	- **IPC:** 108,900 - **DC**: 35,000 - **ICU/NICU:** 5,200 **Total:** 149,100 bed days
Number of waitlisted patients[3]	500 IPC patients 2,900 DC patients
Estimated number of transferred patients from model 4 hospitals[4]	940 patients
Patients' county origin[1]	99% of all treated patients are resident in County Donegal
Expected demographic growth in DRG's per age category	0 – 17: -14.2% 18 – 64: +5.4% 65+: +35.6%
ED conversion rate[5]	34.3%
Surge bed nights and trolley bed nights in 2019	6,900

[32] All numbers on patients and bed days are rounded to the nearest hundred in this report.

Topic	Letterkenny University Hospital statistics
Planned Transfer procedures per year from model 4 to model 3 due to policy change[6]	760

[1] These numbers are based on the 2019 HIPE data.and include waiting list + transferred patients
[2] These numbers exclude ICU patients that also received normal IPC. The total number of IPC patients is summed up by IPC and ICU patients.
[3] Based on the patients registered on the waiting list of June 27th, 2019. This is the total amount of patients on the waiting list, in the model we factor in 80% of waiting list patients in the current demand.
[4] Based on all transferred patients from Galway to model 3 hospitals in 2019. This is the total expected amount of transfer patients, including the factor of 1.75 to estimate transfer patients from all model 4 to model 3 hospitals (also Dublin).
[5] Based on numbers from February 2020.
[6] This policy change estimates 15 patients per week transferred from model 4 hospitals for Urology.
[7]IPC beddays also include 7,790 medical rehab beddays

To identify future demographic changes, the regional and county population projections from the Central Statistic Offices (CSO) and Health Atlas were used. The population changes for 2030 compared to 2019 were calculated according to age and gender. Figure 10[33] shows the demographic changes per age group for Donegal, which accounts for 99% of all Letterkenny patients.

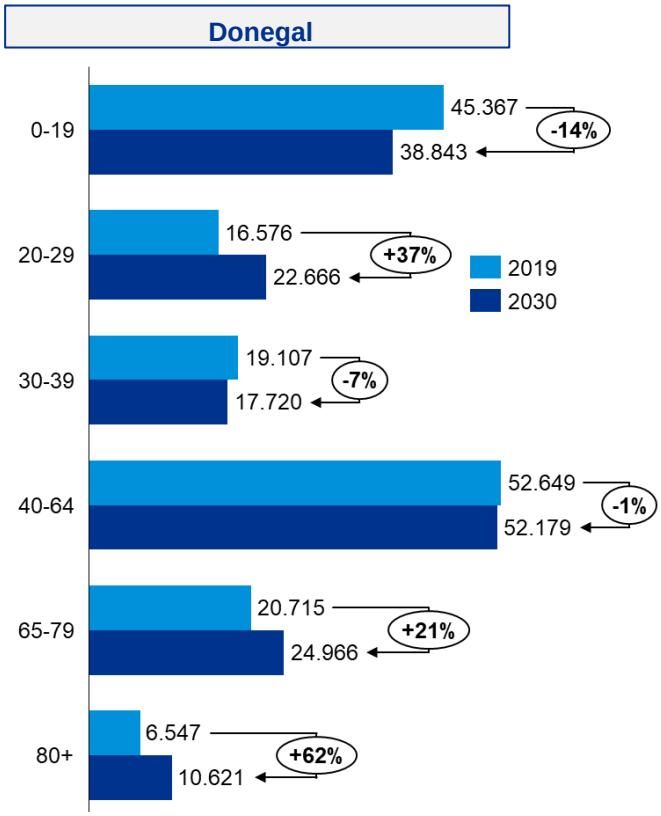


Figure 10: Demographic changes towards 2030 per age group for County Donegal

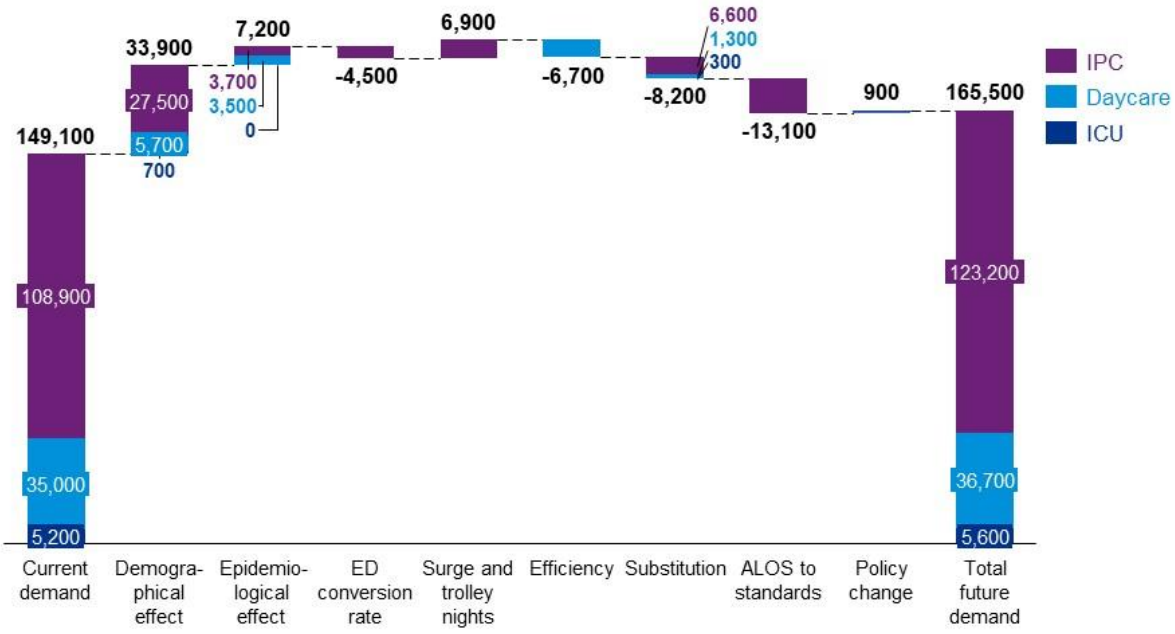
In order to calculate the impact of demographics on the future demand of 2030, the population growth factors were multiplied with the number of treated and waitlisted patients in 2019 that reside in county Donegal. For patients from other counties, corresponding county and regional projections towards 2030 were used.

[33] Health Atlas Ireland. [Online]. Population projections. Available: link.

3.4.2 The demand analysis

In following the approach outlined in chapter 3, the demand and capacity (as a change) in bed days was calculated per step. Figure 11 illustrates the demand and capacity from current demand to projected demand in 2030. COVID-19 is excluded from this figure, as this is a separate calculation that shows the potential extra needed beds for this particular situation. The COVID-19 effects are separate from the usual expected future impacts such as demographics. COVID-19 results on bed capacity are shown later in this section.

Figure 11: Demand and capacity analyses per step and per type of bed in bed days for Letterkenny University Hospital



— The current demand (step 1) includes the number of bed days based on HIPE patient data of 2019, waitlisted patients and delayed transfers. For Letterkenny hospital, the starting point was 149,100 bed days.

— Demographical (step 2) includes the number of bed days based on population growth (county or regional, by age and gender), which results in a +23.0% increase in bed days.

— Epidemiological effects (step 2) increase the number of bed days required for diseases such as cancer, which results in a +3,9% increase in bed days.

— ED conversion rate and trolley and surge nights (step 3a): This calculation takes into account the current conversion rate of the hospital and the use of surge and trolley beds. By lowering the ED conversion rate to the national average for model 3 hospitals of 30%, the demand lowers by –2.4%. By adding ED trolley and surge bed nights (as additional demand over and above capacity) to current demand, an increase of +3.7% in number of bed days is reached.

— Efficiency and substitution (step 3a): Efficiency measures of -10% daycase patients shifting to community and -10% shifting to outpatient care[34] result in a reduction of –

[34] For exceptions on endoscopy and oncology see section 3.1.4.1 page 14

3.5% bed days. Substitution of elective (-5%) and non-elective 65+ patients (-10%) results in a decrease of –4.4% in bed days.

— Reduction of ALOS to standard (step 3a): The ALOS (per specialty) used in the model is based on the hospital with the lowest LOS. Applying this efficiency as a benchmark target measure reduces the estimated bed days by -7.4%.

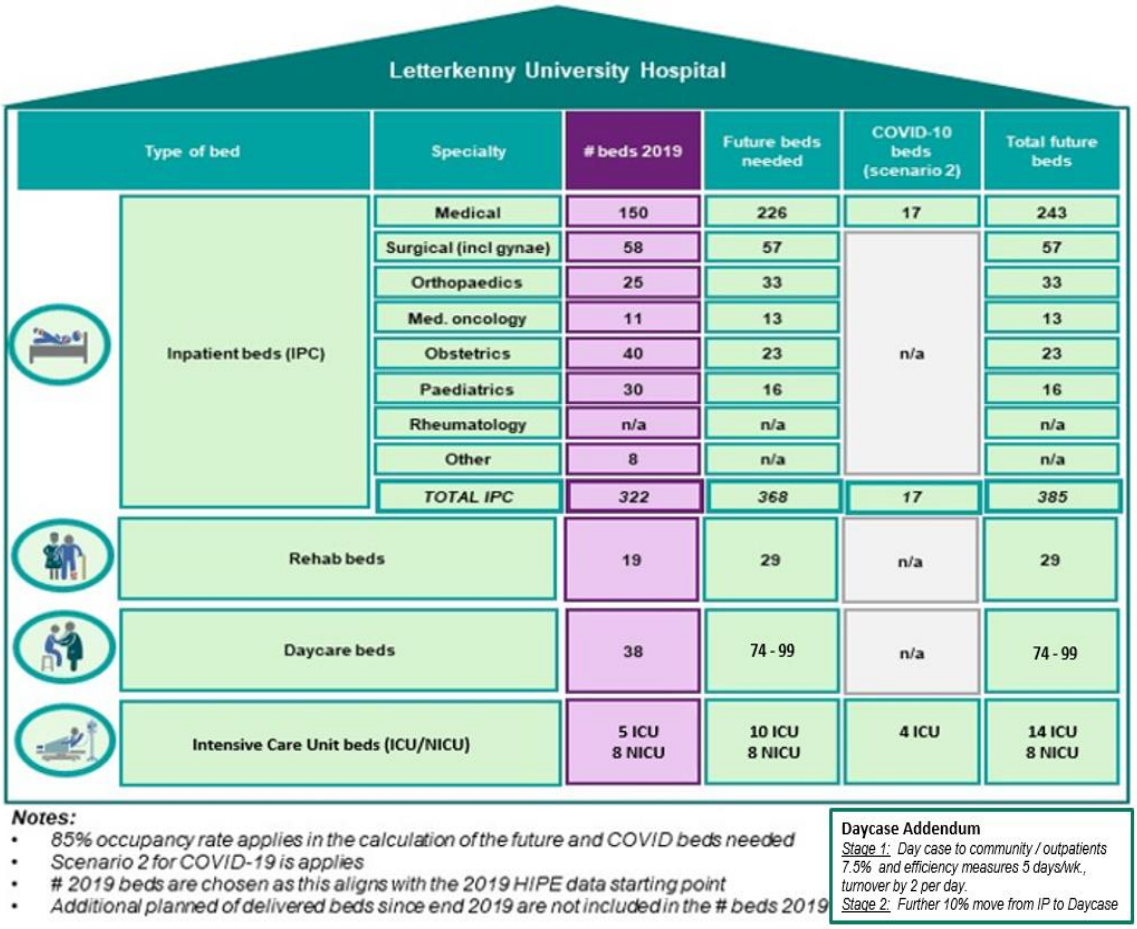
— Policy change (step 3a): Policy changes on the treatment of patients transitioned from model 4 hospitals for Urology increases the expected bed days by +0.5% for inpatient and daycase beds.

— Total future demand (step 4). The total future demand (COVID-19 excluded) is estimated at 165,500 bed days; an increase of +11,0% compared to the current demand.

3.4.3 Future needed capacity

The results of the future care demand projections were transformed into capacity required. Figure 12 shows the future required bed capacity per type of bed based on the effects as presented in section 4.2.2.[35] Additionally, we calculated the expected extra beds needed for COVID-19. We included the amount of beds in case of scenario 2 in the figure below.

[35] Current LUH CCU beds are included in the category “IPC other”. In the outcomes these beds are most likely included in the “IPC medical” category. HIPE data does not state if a DRG was delivered in a CCU bed, therefore this cannot be extracted from the data. As this will most likely be cardiology related DRG’s this care is included in the group “IPC medical”. In appendix A5 this is most likely included in the number of current and future cardiology IPC beddays.



Letterkenny University Hospital

Type of bed	Specialty	# beds 2019	Future beds needed	COVID-10 beds (scenario 2)	Total future beds
Inpatient beds (IPC)	Medical	150	226	17	243
	Surgical (incl gynae)	58	57	n/a	57
	Orthopaedics	25	33		33
	Med. oncology	11	13		13
	Obstetrics	40	23		23
	Paediatrics	30	16		16
	Rheumatology	n/a	n/a		n/a
	Other	8	n/a		n/a
	TOTAL IPC	*322*	*368*	*17*	*385*
Rehab beds		19	29	n/a	29
Daycare beds		38	74 - 99	n/a	74 - 99
Intensive Care Unit beds (ICU/NICU)		5 ICU 8 NICU	10 ICU 8 NICU	4 ICU	14 ICU 8 NICU

Notes:
- *85% occupancy rate applies in the calculation of the future and COVID beds needed*
- *Scenario 2 for COVID-19 is applies*
- *# 2019 beds are chosen as this aligns with the 2019 HIPE data starting point*
- *Additional planned of delivered beds since end 2019 are not included in the # beds 2019*

Daycase Addendum
Stage 1: Day case to community / outpatients 7.5% and efficiency measures 5 days/wk., turnover by 2 per day.
Stage 2: Further 10% move from IP to Daycase

Figure 12: Future beds needed per type of bed and type of care, also including COVID-19, for Letterkenny University Hospital

The results above on future beds needed were calculated by use of various assumptions. The table below gives information on the assumptions and calculations used per type of bed.

Table 14: Underlying assumptions on bed capacity for Letterkenny University Hospital[36]

Resource	Underlying calculated total future beddays and beddays to beds calculation assumptions
Inpatient beds 	- 70,100 medical beddays - 17,800 Surgical beddays - 10,100 Orthopaedic beddays - 4,000 Medical oncology beddays - 7,200 obstetrics beddays - 5,000 Paediatric beddays
	- ALOS is per specialty and of the hospital with the lowest out of all model 3 hospitals. - Beds are used 52 weeks a year and 7 days a week. - Bed capacity has been planned at the optimum best practice level of 85%.
Rehab beds 	- 8,900 Rehab beddays
	- ALOS of 43,5 days following average of ALOS at LUH and ALOS at Galway University Rehab unit - Beds are used 52 weeks a year and 7 days a week. - Bed capacity has been planned at the optimum best practice level of 85%.
Daycare beds 	- 36,700 daycases
	- Some beds are specialism specific (see appendix). - Beds are used only during working weeks (50 weeks per year) and working days (6 days a week), making them occupied 300 days a year. - We hypothesize 2.6 daycases on average per bed per day, in line with Model 4 hospital analysis
ICU beds 	- 5,600 ICU/NICU beddays
	- ALOS is the average of HIPE ICU LOS. - Beds are used 52 weeks a year and 7 days a week. - Bed capacity has been planned at the optimum best practice level of 85%.

[36] All neonatology specialty ICU beddays are recorded as NICU. Please see appendix 5.1 to 5.4 for a further breakdown per specialty per bed. The number of ICU beddays for patients under 16 within other specialties is very limited and therefore no further split is made. Furthermore, almost all inpatient beddays for patients under 16 are included in the paediatric beds. Within some other specialties a limited number of beddays for these patients are seen, leading to 3.6 extra paediatric inpatient bed in LUH, which is to be subtracted from the calculated “normal” inpatient beds. An overview is found in appendix A11.

3.5 Mayo University Hospital

3.5.1 Background

Mayo University Hospital is a model 3 general hospital located in Castlebar, County Mayo, Ireland. The hospital provided inpatient care to 47,300[37] patients in 2019. The table below summarises some high level statistics of Mayo University Hospital.

Table 15: Background statistics Mayo University Hospital

Topic	Mayo University Hospital statistics
Current (pre-Covid) capacity as reported by the hospital (see appendix A.4 for current capacity in detail)	248 inpatient beds including 26 maternity 57 daycase beds 8 ICU-beds
Number of treated patients in 2019[1]	- **IPC:** 18,500[2] - **DC**: 28,100 - **ICU:** 700 **Total:** 47,300 patients
Current activity (in bed days)[1]	- **IPC:** 86,900 - **DC**: 31,000 - **ICU:** 2,500 **Total:** 120,400 bed days
Number of waitlisted patients[3]	270 IPC patients 2,050 DC patients
Estimated number of transferred patients from model 4 hospitals[4]	670 patients
Patients' county origin[1]	91% of all treated patients are resident in County Mayo, 5% are resident in County Roscommon
Expected demographic growth in DRG's per age category	0 – 17: -19.6% 18 – 64: -2.9% 65+: +35.1%
ED conversion rate[5]	29.2%
Surge bed nights and trolley bed nights in 2019	6,000

[37] All numbers on patients and bed days are rounded to the nearest hundred in this report.

Topic	Mayo University Hospital statistics
Planned transfer of procedures per year from model 4 to model 3 due to policy change[6]	832

[1] *These numbers are based on the 2019 HIPE data.and include waiting list + transfered patients*
[2] *These numbers exclude ICU patients that also received normal IPC. The total number of IPC patients is summed up by IPC and ICU patients.*
[3] *Based on the patients registered on the waiting list of June 27th, 2019. This is the total amount of patients on the waiting list, in the model we factor in 80% of waiting list patients in the current demand.*
[4] *Based on all transferred patients from Galway to model 3 hospitals in 2019. This is the total expected amount of transfer patients, including the factor of 1.75 to estimate transfer patients from all model 4 to model 3 hospitals (also Dublin).*
[5] *Based on numbers from February 2020.*
[6] This policy change estimates 10 patients per week transferred from model 4 hospitals for General Surgery.

To identify future demographic changes, the regional and county population projections from the Central Statistic Offices (CSO) and Health Atlas were used. The population changes for 2030 compared to 2019 were calculated according to age and gender. Figure 13[38] shows the demographic changes per age group for County Mayo (left), where 91% of all MUH patients are resident, and County Roscommon (right).

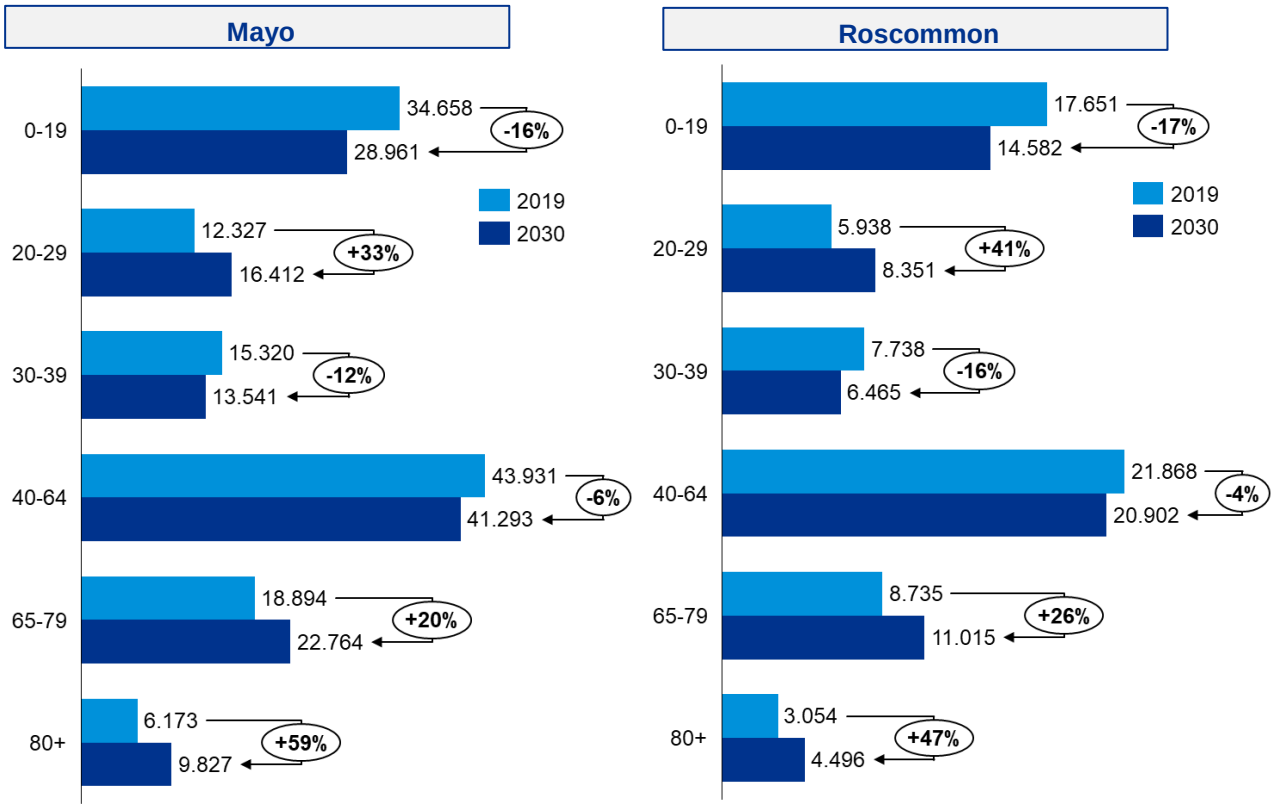


Figure 13: Demographic changes towards 2030 per age group for County Mayo (left) and County Roscommon *(right)*

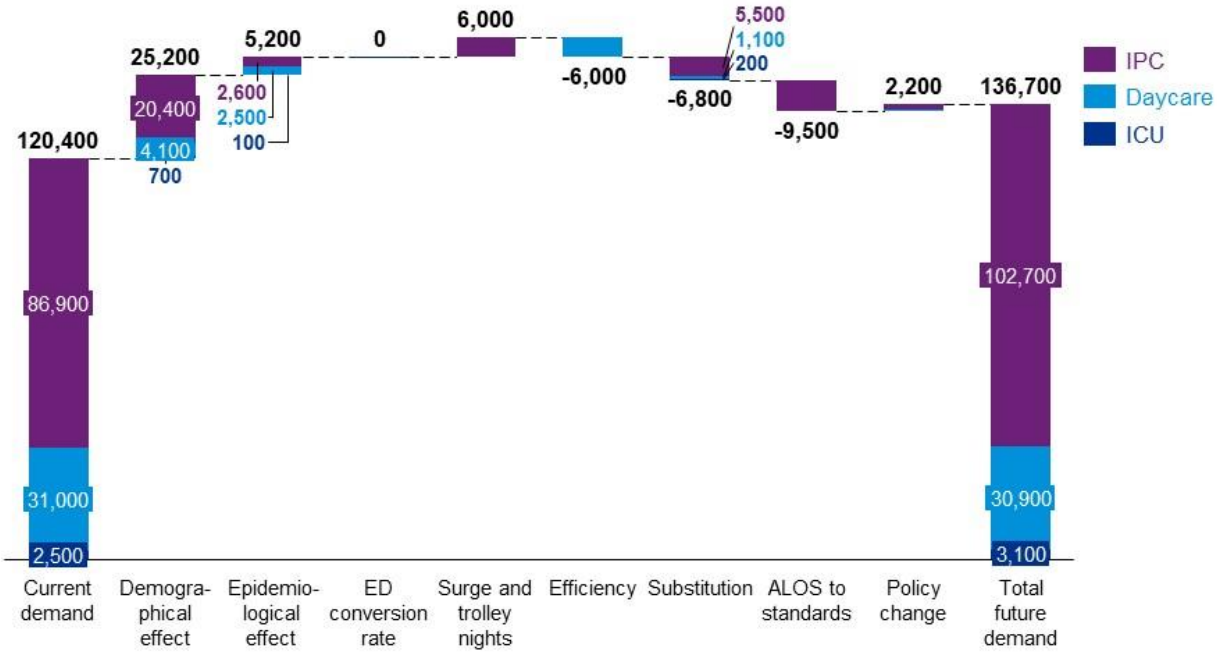
In order to calculate the impact of demographics on the future demand of 2030, these upper growth factors were multiplied with the number of treated and waitlisted patients in 2019 that reside in counties Mayo and Roscommon. For patients from other counties, corresponding county and regional projections towards 2030 were used.

[38] Health Atlas Ireland. [Online]. Population projections. Available: link.

3.5.2 The demand analysis

In following the approach outlined in chapter 3, the demand and capacity (in bed days) was calculated. Figure 14 illustrates the demand and capacity from current demand to projected demand in 2030. COVID-19 is excluded from this figure, as this is a separate calculation that shows the potential extra needed beds for this particular situation. The COVID-19 effects are separate from the other expected future impacts such as demographics. COVID-19 results on bed capacity are shown later in this section.

Figure 14: Demand and capacity analyses per step and per type of bed in bed days for Mayo University Hospital



— The current demand (step 1) sets out the number of bed days based on HIPE patient data of 2019, waitlisted patients and delayed transfers. For Mayo hospital, the starting point was 120,400 bed days.

— Demographical (step 2) includes the number of bed days based on population growth (county or regional, by age and gender), which results in a +20.2% increase in bed days.

— Epidemiological effects (step 2) increases the number of bed days required for diseases such as cancer, which results in a +3.5% increase in bed days.

— ED conversion rate and trolley and surge nights (step 3a): This calculation takes into account the current conversion rate of the hospital and the use of surge and trolley beds. The ED conversion rate is not corrected because it is already below the national average of 30% for 2019 for model 3 hospitals in Ireland. By adding the ED trolley and surge bed nights (as additional demand over and above capacity) to current demand, an increase of +4.0% in number of bed days is reached.

— Efficiency and substitution (step 3a): Efficiency measures of -10% daycase patients shifting to community and -10% shifting to outpatient care[39] result in a reduction of –

[39] For exceptions on endoscopy and oncology see section 3.1.4.1 page 14

3.9% bed days. Substitution of elective (-5%) and non-elective 65+ patients (-10%) results in a decrease of –4.5% bed days.

— Reduction of ALOS to standard (step 3a): The ALOS (per specialty) used in the model is based on the hospital with the lowest LOS. Applying this efficiency as a benchmark target measure reduces the estimated bed days by –6.6%.

— Policy change (step 3a): Policy changes on the treatment of patients from model 4 hospitals for certain specialties increase the expected bed days by +1.7% for inpatient and daycase.

— Total future demand (step 4). The total future demand (COVID-19 excluded) is estimated at 136,700 bed days; an increase of +13,5% compared to the current demand.

3.5.3 Future needed capacity

The results of the future care demand projections were transformed into capacity parameters. Figure 15 shows the future bed capacity required per type of bed and type of care (elective/non-elective/maternity) based on the effects as presented in section 4.3.2. Additionally, we calculated the expected extra beds needed for COVID-19. We included the amount of beds in case of scenario 2 in the figure below.

The results above on future beds needed were calculated by use of various assumptions. The table below gives information on the assumptions and calculations used per type of bed.[40]

[40] Extracting all pre-eclampsia and delivery related DRG's from the in MUH combined gynaecology-obstetrics specialty data (categorized as surgical beds) and stating these are obstetric beddays leads to an expected number of 12 obstetric future beds within MUH. These twelve are to be subtracted from the 53 future calculated surgical beds.

Figure 15: Future beds needed per type of bed and type of care, also including COVID-19, for Mayo University Hospital [41]

Mayo University Hospital

Type of bed	Specialty	# beds 2019	Future beds needed	COVID-10 beds (scenario 2)	Total future beds
Inpatient beds (IPC)	Medical	121	229	16	245
	Surgical (incl gynae)	43	53	n/a	53
	Orthopaedics	32	35		35
	Med. oncology	n/a	n/a		n/a
	Obstetrics	26	n/a		n/a
	Paediatrics	22	15		15
	Rheumatology	n/a	n/a		n/a
	Other	4	n/a		n/a
	TOTAL IPC	*248*	*331*	*16*	*347*
Rehab beds		n/a	n/a	n/a	n/a
Daycare beds		57	63 - 83	n/a	63 - 83
Intensive Care Unit beds (ICU)		8	10	3	13

Notes:

- *85% occupancy rate applies in the calculation of the future and COVID beds needed*
- *Scenario 2 for COVID-19 is applies*
- *# 2019 beds are chosen as this aligns with the 2019 HIPE data starting point*
- *Additional planned of delivered beds since end 2019 are not included in the # beds 2019*
- *Within MUH Obstetrics and gynecology are not coded as a separately specialty in HIPE and therefore categorized as a surgical (incl gynae) beds*

Daycase Addendum
Stage 1: Day case to community / outpatients 7.5% and efficiency measures 5 days/wk., turnover by 2 per day.
Stage 2: Further 10% move from IP to Daycase

[41] Further analysis was undertaken on Obstetrics and Gynaecology future bed requirements given that they are not coded as separate specialities in HIPE. From this exercise the obstetric DRGs were extracted and the number of IPC beds are then calculated based on the occupancy which forecasts that 15 of the above 53 IPC beds would be required for Obstetric Care.

Table 16: Underlying assumptions on bed capacity for Mayo University Hospital[42]

Resource	Underlying calculated total future beddays and beddays to beds calculation assumptions
Inpatient beds 	- 70,900 medical beddays - 16,500 Surgical beddays - 10,800 Orthopaedic beddays - 4,500 Paediatric beddays
	- ALOS is per specialty and of the hospital with the lowest out of all model 3 hospitals. - Beds are used 52 weeks a year and 7 days a week. - Bed capacity has been planned at the optimum best practice level of 85%.
Daycare beds 	- 30,900 daycases
	- Some beds are specialism specific (see appendix). - Beds are used only during working weeks (50 weeks per year) and working days (6 days a week), making them occupied 300 days a year. - We hypothesize 2.6 daycases on average per bed per day, in line with Model 4 hospital analysis
ICU beds 	- 3,000 ICU beddays
	- ALOS is the average of HIPE ICU LOS. - Beds are used 52 weeks a year and 7 days a week. - Bed capacity has been planned at the optimum best practice level of 85%.

[42] All neonatology specialty ICU beddays are recorded as NICU. Please see appendix 5.1 to 5.4 for a further breakdown per specialty per bed. The number of ICU beddays for patient under 16 within other specialties is very limited and therefore no further split is made. Furthermore, almost all inpatient beddays for patients under 16 are included in the paediatric beds. Within some other specialties a limited number of beddays for these patients are seen, leading to 2.7 extra paediatric inpatient bed in MUH, which is to be subtracted from the calculated “normal” inpatient beds. An overview is found in appendix A11.

3.6 Portiuncula University Hospital

3.6.1 Background

Portiuncula University Hospital is model 3 general hospital located in Ballinasloe, County Galway, Ireland. The hospital provided inpatient and daycase care to 22,900[43] patients in 2019. The table below summarizes some high level statistics of Portiuncula University Hospital.

Table 17: Underlying assumptions on bed capacity for Portiuncula University Hospital

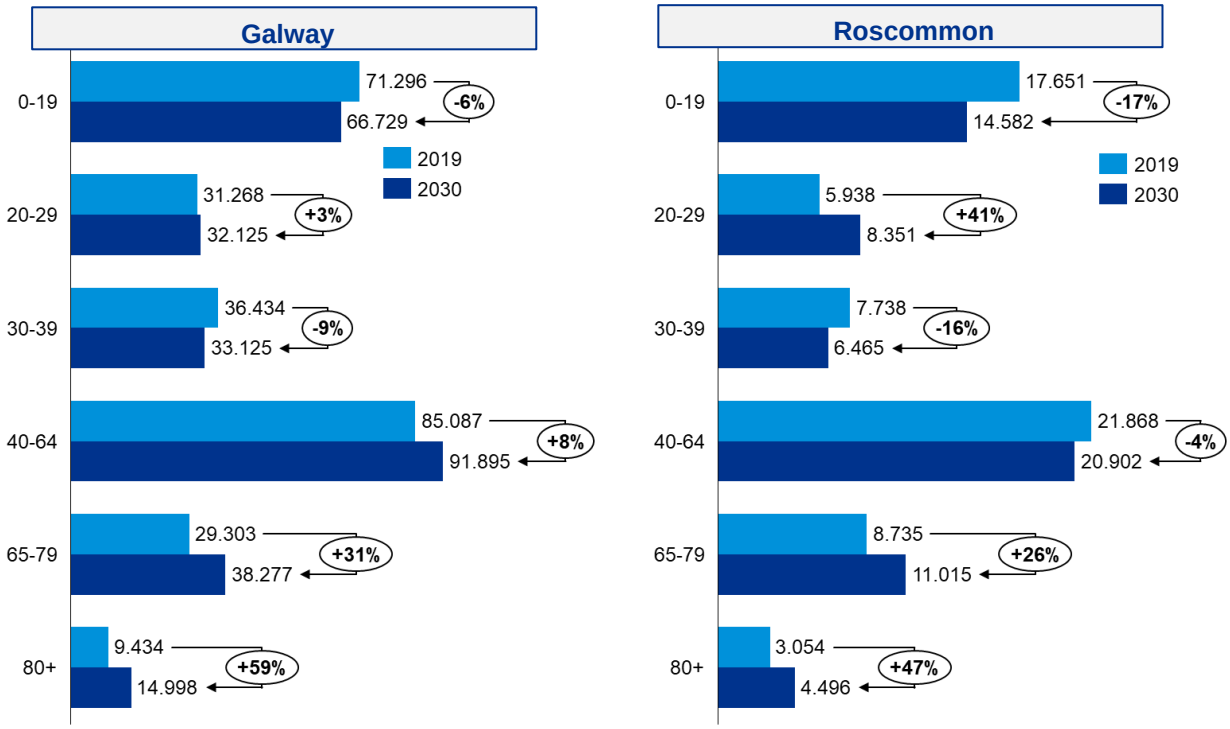
Topic	Portiuncula University Hospital statistics
Current (pre-Covid) capacity as reported by the hospital (see appendix A.4 for current capacity in detail)	158 inpatient beds including 33 maternity 23 daycase beds 15 ICU-beds
Number of treated patients in 2019[1]	- **IPC:** 12,500[2] - **DC**: 9,800 - **ICU:** 500 **Total:** 22,900 patients
Current activity (in bed days)[1]	- **IPC:** 49,500 - **DC**: 10,700 - **ICU/CCU/HDU:** 1,900 **Total:** 62,100 bed days
Number of waitlisted patients[3]	25 IPC patients 490 DC patients
Estimated number of transferred patients from model 4 hospitals[4]	210 patients
Patients' county origin[1]	46% resident in County Galway 22% resident in County Roscommon 18% resident in County Westmeath
Expected demographic growth in DRG's per age category	0 – 17: -13.4% 18 – 64: +1.6% 65+: +41.9%
ED conversion rate[5]	31.4%

[43] All numbers on patients and bed days are rounded to the nearest hundred in this report.

Topic	Portiuncula University Hospital statistics
Surge bed nights and trolley bed nights in 2019	3,000
Planned transfer of procedures per year from model 4 to model 3 due to policy change[6]	1,872

[1] *These numbers are based on the 2019 HIPE data.and include waiting list + transfered patients.*
[2] *These numbers exclude ICU patients that also received normal IPC. The total number of IPC patients is summed up by IPC and ICU patients.*
[3] *Based on the patients registered on the waiting list of June 27th, 2019. This is the total amount of patients on the waiting list, in the model we factor in 80% of waiting list patients in the current demand.*
[4] *Based on all transferred patients from Galway to model 3 hospitals in 2019. This is the total expected amount of transfer patients, including the factor of 1.75 to estimate transfer patients from all model 4 to model 3 hospitals (also Dublin).*
[5] *Based on numbers from February 2020.*
[6] This policy change estimates 5 patients per week transferred from model 4 hospitals for General Surgery, Gynaecology, Plastic surgery and Maxillo-Facial and Urology.
[7] *PUH ICU beddays include CCU and HDU – reflects combined ICU/HDU/CCU.*

To identify future demographic changes, the regional and county population projections from the Central Statistic Offices (CSO) and Health Atlas were used. The population changes for 2030 compared to 2019 were calculated according to age and gender. Figure 16[44] shows the demographic changes per age group for County Galway (left), the where 45% of all Portiuncula patients are resident, as well as County Roscommon (right) and County Westmeath (below left).



[44] Health Atlas Ireland. [Online]. Population projections. Available: link.

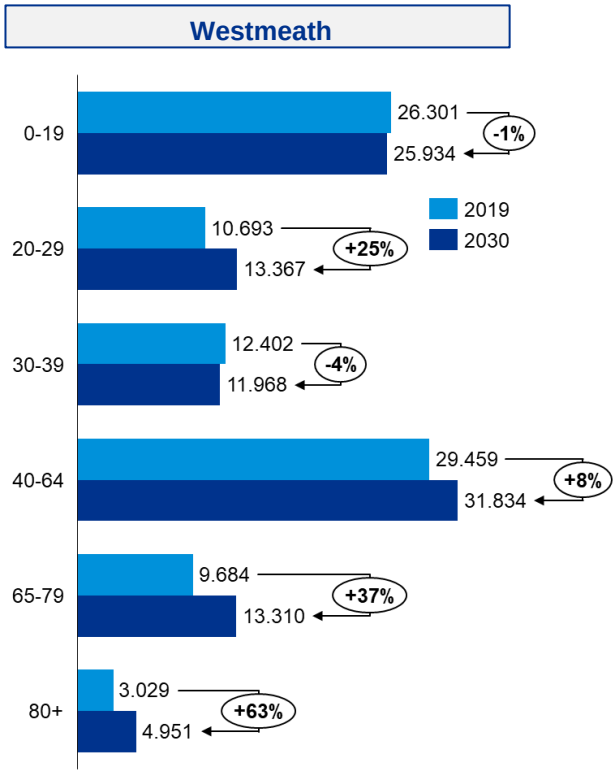


Figure 16: Demographic changes towards 2030 per age group for counties Galway (left), Roscommon (right) and Westmeath (below left)

In order to calculate the impact of demographics on the future demand of 2030, these upper growth factors were multiplied with the number of treated and waitlisted patients in 2019 that reside in Galway. Roscommon and Westmeath. For patients resident in other counties, corresponding county and regional projections towards 2030 were used.

3.6.2 The demand analysis

Following the approach outlined in chapter 3, the demand and capacity (in bed days) was calculated. Figure 17 illustrates the demand and capacity from current demand to projected demand in 2030. COVID-19 is excluded from this figure, as this is a separate calculation that shows the potential extra needed beds for this particular situation. The COVID-19 effects are separate from other expected future effects such as demographics. COVID-19 results on bed capacity are shown later in this section. The current demand (step 1) includes the number of bed days based on HIPE patient data of 2019, waitlisted patients and delayed transfers.

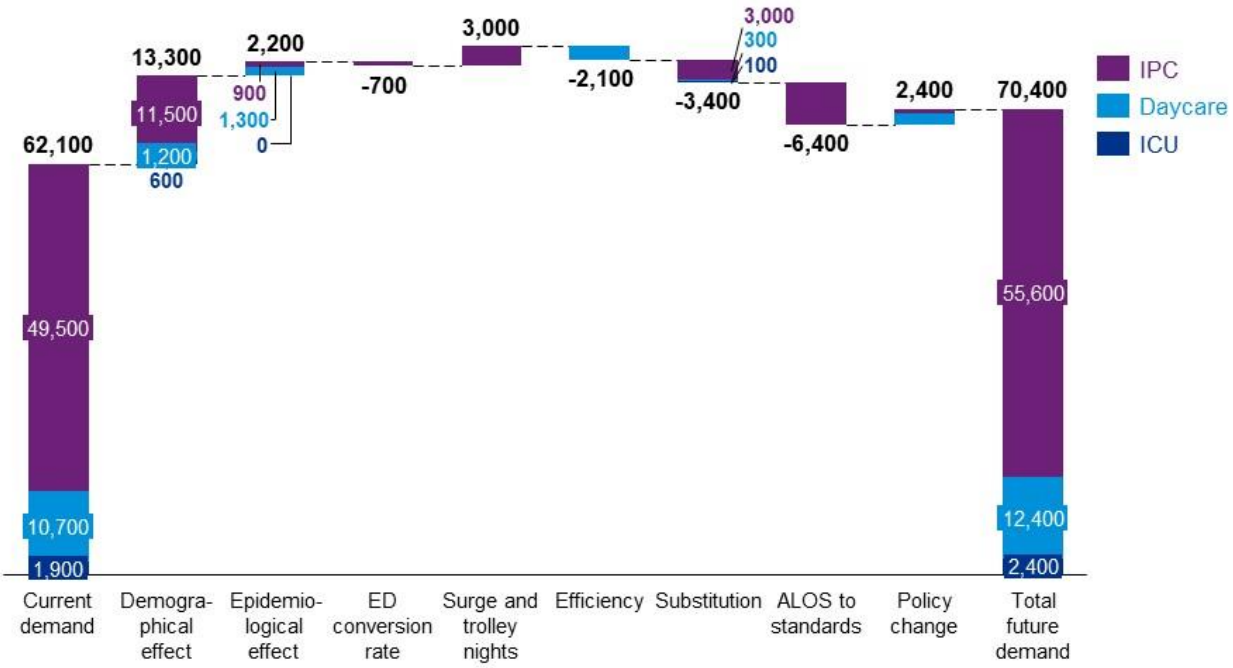


Figure 17: Demand and capacity analyses per step and per type of bed in bed days for Portiuncula University Hospital

— For Portiuncula hospital, the starting point was 62,100 bed days.

— Demographical (step 2) includes the number of bed days based on population growth (county or regional, by age and gender), which results in a +20,9%% increase in bed days.

— Epidemiological effects (step 2) increases the number of bed days required for diseases such as cancer, which results in a +3,1%% increase in bed days.

— ED conversion rate and trolley and surge nights (step 3a): This calculation takes into account the current conversion rate of the hospital and the use of surge and trolley beds. By lowering the ED conversion rate to the national average for model 3 hospitals of 30%, the demand lowers by –0.8%. By adding the ED trolley and surge bed nights (as additional demand over and above capacity) to current demand, an increase of +3.9%% in number of bed days is reached.

— Efficiency and substitution (step 3a): Efficiency measures of -10% daycase patients shifting to community and -10% shifting to outpatient care[45] result in a reduction of –2.6% bed days. Substitution of elective (-5%) and non-elective 65+ patients (-10%) results in a decrease of –4.4% bed days.

— ALOS to standards (best LOS) (step 3a): The ALOS (per specialty) used in the model is based on the hospital with the lowest LOS. Applying this efficiency as a benchmark target measure reduces the estimated bed days by –8.6%.

— Policy change (step 3a): Policy changes on the treatment of patients from model 4 hospitals for certain specialties increase the expected bed days by +3.5% for inpatient care.

[45] For exceptions on endoscopy and oncology see section 3.1.4.1 page 14

— Total future demand (step 4). The total future demand (COVID-19 excluded) is estimated at 70,400 bed days; an increase of +13,4% compared to the current demand.

3.6.3 Future needed capacity

The results of the future care demand projections were transformed into capacity parameters. Figure 18 shows the future bed capacity required per type of bed and type of care (elective/non-elective/maternity) based on the effects as presented in section 4.4.2. Additionally, we calculated the expected extra beds needed for COVID-19. We included the amount of beds in case of scenario 2 in the figure below.

Portiuncula University Hospital

Type of bed	Specialty	# beds 2019	Future beds needed	COVID-10 beds (scenario 2)	Total future beds
Inpatient beds (IPC)	Medical	102	112	14	126
	Surgical (incl gynae)	n/a	34	n/a	34
	Orthopaedics	n/a	n/a		n/a
	Med. oncology	n/a	n/a		n/a
	Obstetrics	33	24		24
	Paediatrics	23	9		9
	Rheumatology	n/a	n/a		n/a
	Other	n/a	n/a		n/a
	TOTAL IPC	*158*	*179*	*14*	*193*
Rehab beds		n/a	n/a	n/a	n/a
Daycare beds		23	25 - 36	n/a	25 - 36
Intensive Care Unit beds (ICU/CCU/HDU)		15	8	3	11

Notes:
- *85% occupancy rate applies in the calculation of the future and COVID beds needed*
- *Scenario 2 for COVID-19 is applies*
- *# 2019 beds are chosen as this aligns with the 2019 HIPE data starting point*
- *Additional planned of delivered beds since end 2019 are not included in the # beds 2019*

Daycase Addendum
Stage 1: Day case to community / outpatients 7.5% and efficiency measures 5 days/wk., turnover by 2 per day.
Stage 2: Further 10% move from IP to Daycase

Figure 18: Future beds needed per type of bed and type of care, also including COVID-19, for Portiuncula University Hospital

The results above on future beds needed were calculated by use of various assumptions. The table below gives information on the assumptions and calculations used per type of bed.

Table 18: Underlying assumptions on bed capacity for Portiuncula University Hospital[46]

Resource	Underlying calculated total future beddays and beddays to beds calculation assumptions
Inpatient beds 	- 34,700 medical beddays - 10,700 Surgical beddays - 7,300 Obstetrics beddays - 2,900 Paediatric beddays
	- ALOS is per specialty and of the hospital with the lowest out of all model 3 hospitals. - Beds are used 52 weeks a year and 7 days a week. - Bed capacity has been planned at the optimum best practice level of 85%.
Daycare beds 	- 12,400 daycases
	- Some beds are specialism specific (see appendix). - Beds are used only during working weeks (50 weeks per year) and working days (6 days a week), making them occupied 300 days a year. - We hypothesize 2.6 daycases on average per bed per day, in line with Model 4 hospital analysis
ICU beds 	- 2,400 ICU/ CCU/ HDU beddays
	- ALOS is the average of HIPE ICU LOS. - Beds are used 52 weeks a year and 7 days a week. - Bed capacity has been planned at the optimum best practice level of 85%.

[46] All neonatology specialty ICU beddays are recorded as NICU. Please see appendix 5.1 to 5.4 for a further breakdown per specialty per bed. The number of ICU beddays for patient under 16 within other specialties is very limited and therefore no further split is made. Furthermore, almost all inpatient beddays for patients under 16 are included in the paediatric beds. Within some other specialties a limited number of beddays for these patients are seen, leading to 2.6 extra paediatric inpatient bed in PUH, which is to be subtracted from the calculated “normal” inpatient beds. An overview is found in appendix A11.

3.7 Sligo University Hospital

3.7.1 Background

Sligo University Hospital is a model 3 general hospital located in Sligo, Ireland. It also serves as a regional centre for the North West for the following specialties – ENT, ophthalmology, neurology and dermatology. The hospital provided inpatient and daycase care to 53,500[47] patients in 2019. The table below summarises some high level statistics of Sligo University Hospital.

Table 19: Background statistics Sligo University Hospital

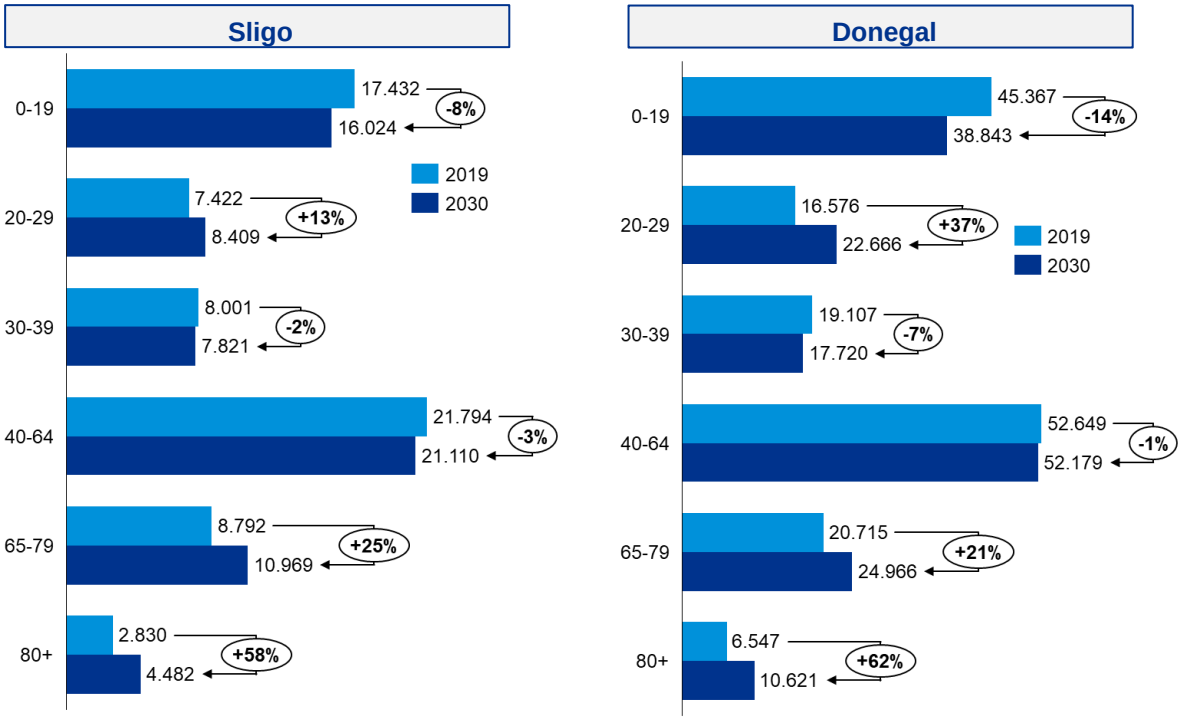
Topic	Sligo University Hospital statistics
Current (pre-Covid) capacity as reported by the hospital (see appendix A.4 for current capacity in detail)	273 inpatient beds including 29 maternity 66 daycase beds 15 ICU-beds
Number of treated patients in 2019[1]	- **IPC:** 16,700[2] - **DC**: 35,500 - **ICU:** 1,300 **Total:** 53,500 patients
Current activity (in bed days)[1]	- **IPC:** 92,100 - **DC**: 39,000 - **ICU/ NICU:** 6,300 **Total:** 137,400 bed days
Number of waitlisted patients[3]	1,050 IPC patients 2,900 DC patients
Estimated number of transferred patients from model 4 hospitals[4]	360 patients
Patients' county origin[1]	57% Sligo County 16% Donegal County 14% Leitrim County 7% Roscommon County
Expected demographic growth in DRG's per age category	0 – 17: -12.1% 18 – 64: +1.5% 65+: +36.6%
ED conversion rate[5]	25.2%

[47] All numbers on patients and bed days are rounded to the nearest hundred in this report.

Topic	Sligo University Hospital statistics
Surge bed nights and trolley bed nights in 2019	5,800
Transferred procedures per year from model 4 to model 3 due to policy change[6]	760

[1] *These numbers are based on the 2019 HIPE data.and include waiting list + transfered patients*
[2] *These numbers exclude ICU patients that also received normal IPC. The total number of IPC patients is summed up by IPC and ICU patients.*
[3] *Based on the patients registered on the waiting list of June 27th, 2019. This is the total amount of patients on the waiting list, in the model we factor in 80% of waiting list patients in the current demand.*
[4] *Based on all transferred patients from Galway to model 3 hospitals in 2019. This is the total expected amount of transfer patients, including the factor of 1.75 to estimate transfer patients from all model 4 to model 3 hospitals (also Dublin).*
[5] *Based on numbers from February 2020.*
[6] This policy change estimates 15 patients per week transferred from model 4 hospitals for Urology.

To identify future demographic changes, the regional and county population projections from the Central Statistic Offices (CSO) and Health Atlas were used. The population changes for 2030 compared to 2019 were calculated according to age and gender. Figure 19[48] shows the demographic changes per age group for Sligo (upper left), the county where 57% of all Sligo patients are from, and County Donegal (upper right), Leitrim (left below) and Roscommon (right below).



[48] Health Atlas Ireland. [Online]. Population projections. Available: link.

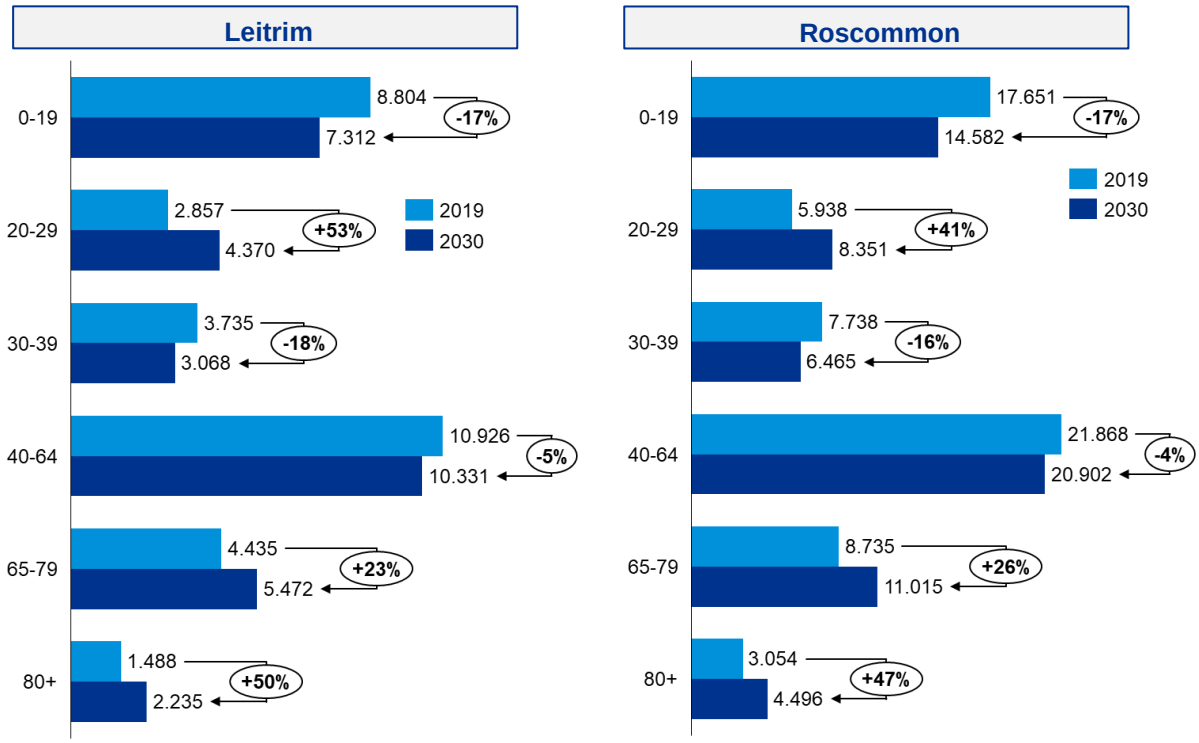


Figure 19: Demographic changes towards 2030 per age group for counties Sligo, Donegal, Leitrim and Roscommon

In order to calculate the impact of demographics on the future demand of 2030, these upper growth factors were multiplied with the number of treated and waitlisted patients in 2019 that reside in counties Sligo, Donegal, Leitrim and Roscommon. For patients from other counties, corresponding county and regional projections towards 2030 were used.

3.7.2 The demand analysis

Following the approach outlined in chapter 3, the demand and capacity (in bed days) was calculated. Figure 20 illustrates the demand and capacity from current demand to projected demand in 2030. COVID-19 is excluded from this figure, as this is a separate calculation that shows the potential extra needed beds for this particular situation. The COVID-19 effects are separate from the usual expected future effects such as demographics. COVID-19 results on bed capacity are shown later in this section.

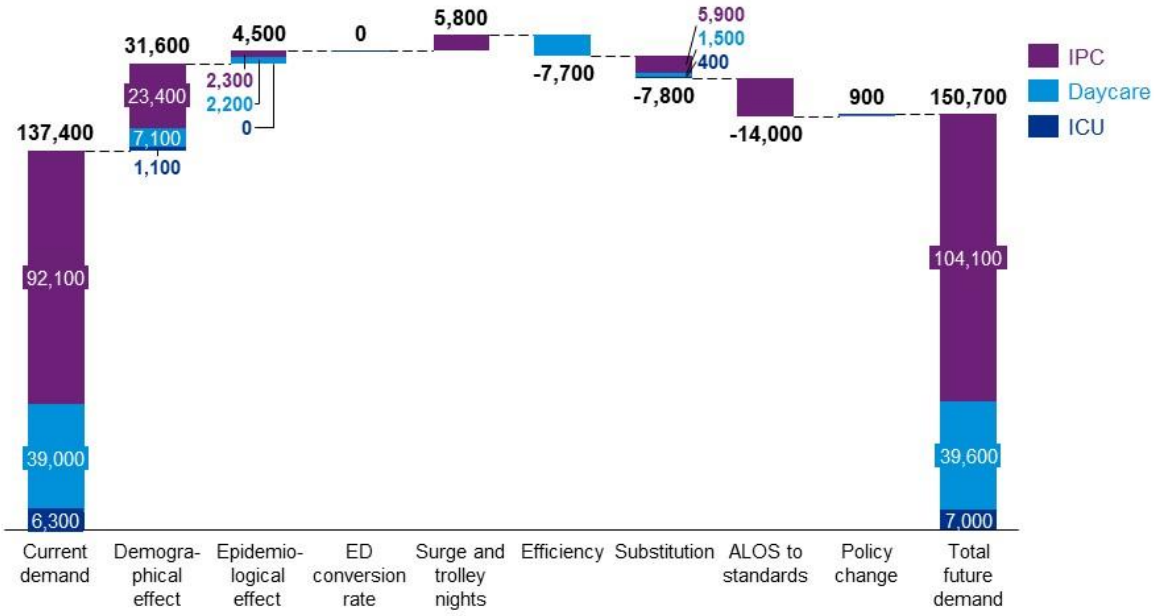


Figure 20: Demand and capacity analyses per step and per type of bed in bed days for Sligo University Hospital

— The current demand (step 1) includes the number of bed days based on HIPE patient data of 2019, waitlisted patients and delayed transfers. For Sligo hospital, the starting point was 137,400 bed days.

— Demographical (step 2) includes the number of bed days based on population growth (county or regional, by age and gender), which results in a +22.6% increase in bed days.

— Epidemiological effects (step 2) increases the number of bed days required for diseases such as cancer, which results in a +2,7% increase in bed days.

— ED conversion rate and trolley and surge nights (step 3a): This calculation takes into account the current conversion rate of the hospital and the use of surge and trolley beds. The ED conversion rate is not corrected for given that the current conversion rate in SUH (at 25.2%) is below the national average for model 3 hospitals of 30%. By adding the ED trolley and surge bed nights ((as additional demand over and above capacity) to current demand, an increase of +3.4% in number of bed days is reached.

— Efficiency and substitution (step 3a): Efficiency measures of -10% daycase patients shifting to community and -10% shifting to outpatient care[49,50] result in a reduction of –4.4% bed days. Substitution of elective (-5%) and non-elective 65+ patients (-10%) results in a decrease of –4.5% in bed days.

— ALOS to standards (best LOS) (step 3a): The ALOS (per specialty) used in the model is based on the hospital with the lowest LOS. Applying this efficiency as a benchmark target measure reduces the estimated bed days by –8.6%.

[49] For exceptions on endoscopy and oncology see section 3.1.4.1 page 14
[50] Sligo suggested less perceived scope for shifts to community based on current practice. A decision was made to apply the same measure across all hospitals in the model.

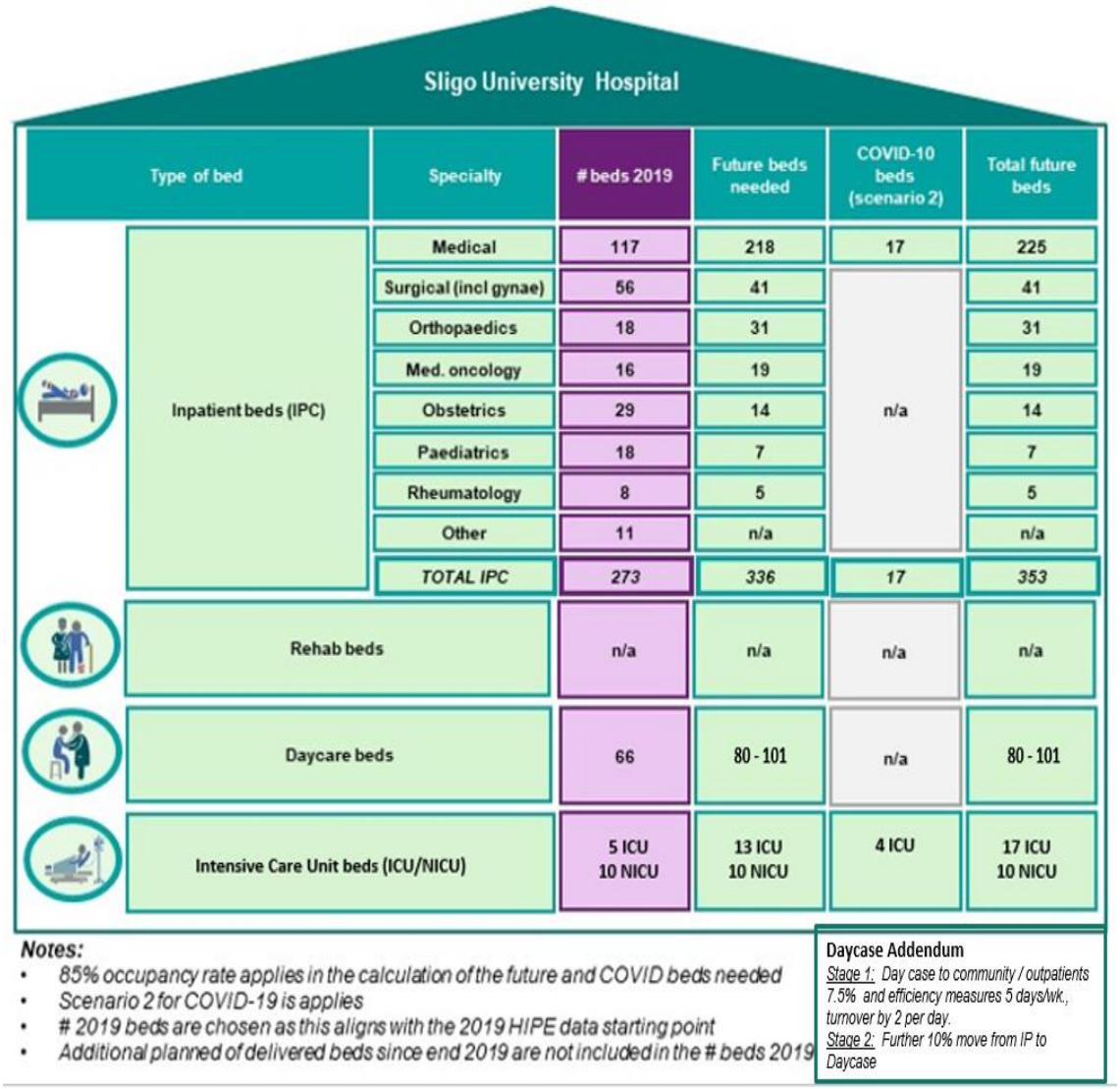
— Policy change (step 3a): Policy changes on the treatment of patients from model 4 hospitals for certain specialties (in particular Urology) increase the expected bed days by +0.6% for inpatient care.

— Total future demand (step 4). This is the result of summing up all steps 1 to 3a. The total future demand (COVID-19 excluded) estimated at 150,700 bed days; an increase of +9,7% compared to the current demand.

3.7.3 Future needed capacity

The results of the future care demand projections were transformed into capacity parameters. Figure 21 shows the future bed capacity required per type of bed and type of care (elective/non-elective/maternity) based on the effects as presented in section 4.5.2.[51] Additionally, we calculated the expected extra beds needed for COVID-19. We included the amount of beds in case of scenario 2 in the figure below.

[51] In the current DRG coding system activity taking place in SUH CCU beds does not receive any specific coding that enables identification of the DRG as an CCU bed. As CCU care will most likely be cardiology related this care is included in the bed group “IPC medical”. In appendix A5 this is most likely included in the number of current and future cardiology IPC beddays.



Sligo University Hospital

Type of bed	Specialty	# beds 2019	Future beds needed	COVID-10 beds (scenario 2)	Total future beds
Inpatient beds (IPC)	Medical	117	218	17	225
	Surgical (incl gynae)	56	41	n/a	41
	Orthopaedics	18	31		31
	Med. oncology	16	19		19
	Obstetrics	29	14		14
	Paediatrics	18	7		7
	Rheumatology	8	5		5
	Other	11	n/a		n/a
	TOTAL IPC	*273*	*336*	*17*	*353*
Rehab beds		n/a	n/a	n/a	n/a
Daycare beds		66	80 - 101	n/a	80 - 101
Intensive Care Unit beds (ICU/NICU)		5 ICU 10 NICU	13 ICU 10 NICU	4 ICU	17 ICU 10 NICU

Notes:
- *85% occupancy rate applies in the calculation of the future and COVID beds needed*
- *Scenario 2 for COVID-19 is applies*
- *# 2019 beds are chosen as this aligns with the 2019 HIPE data starting point*
- *Additional planned of delivered beds since end 2019 are not included in the # beds 2019*

Daycase Addendum
Stage 1: Day case to community / outpatients 7.5% and efficiency measures 5 days/wk., turnover by 2 per day.
Stage 2: Further 10% move from IP to Daycase

Figure 21: Future beds needed per type of bed and type of care, also including COVID-19, for Sligo University Hospital

The results above on future beds needed were calculated by use of various assumptions. The table below gives information on the assumptions and calculations used per type of bed.

Table 20: Underlying assumptions on bed capacity for Sligo University Hospital[52]

Resource	Underlying calculated total future beddays and beddays to beds calculation assumptions
Inpatient beds 	- 67,700 medical beddays - 12,800 Surgical beddays - 9,700 Orthopaedic beddays - 5,800 Medical oncology beddays - 4,400 Obstetric beddays - 2,200 Paediatric beddays - 1,500 Rheumatology beddays
	- ALOS is per specialty and of the hospital with the lowest out of all model 3 hospitals. - Beds are used 52 weeks a year and 7 days a week. - Bed capacity has been planned at the optimum best practice level of 85%.
Daycare beds 	- 39,600 daycases
	- Some beds are specialism specific (see appendix). - Beds are used only during working weeks (50 weeks per year) and working days (6 days a week), making them occupied 300 days a year. - We hypothesize 2.6 daycases on average per bed per day, in line with Model 4 hospital analysis
ICU beds 	- 7,000 ICU/NICU beddays
	- ALOS is the average of HIPE ICU LOS. - Beds are used 52 weeks a year and 7 days a week. - Bed capacity has been planned at the optimum best practice level of 85%.

[52] All neonatology specialty ICU beddays are recorded as NICU. Please see appendix 5.1 to 5.4 for a further breakdown per specialty per bed. The number of ICU beddays for patient under 16 within other specialties is very limited and therefore no further split is made. Furthermore, almost all inpatient beddays for patients under 16 are included in the paediatric beds. Within some other specialties a limited number of beddays for these patients are seen, leading to 3.4 extra paediatric inpatient bed in SUH, which is to be subtracted from the calculated “normal” inpatient beds. An overview is found in appendix A11.

4 Conclusion

Overall we expect the capacity needed in 2030 to be higher than current capacity, following increases in the number of beddays demand between 9.7% (Sligo) and 13.5% (Mayo). A higher expected increase follows from mainly demographic changes, but is somewhat mitigated through efficiency, substitution and other policy effects.

Outcomes of the model are to be seen in the light of capacity management, following expected changes due to demography, epidemiology, efficiency, substitution and policy. In this model several assumptions are made and intentions are expressed, for instance the lowering of conversion rates, reduced length of stay, and transition of services from acute to community settings in line with Sláintecare objectives. As the outcomes have been modelled for 2030 the reality may deviate from these outcomes. However, as the assumptions follow national guidelines and goals set internally, these forecast outcomes and targets can be used as a directive for developing plans for a transition period (2021 – 2030) in which the intended effects may be realised.

A Appendix

A.1 Data source

Table 21 shows the source of the input data used for each step.

Table 21: Source data for each step

Step	Factor	Input	Source data used
Step 1	Current activity	Data on inpatient and day care DRG's 2019 per model 3 hospital per specialty per age category	HIPE data 2019
	Waiting list	Data on current waiting lists in # of patients for elective treatment per specialty per model 3 hospital	Inpatient and daycase waiting lists only. As current waiting list have severely been influenced by COVID-19 waiting list and 2019 data was the starting point of these calculations and a subsequent decision was made to instead use point-in-time waiting list data from the end June 2019 to be more reflective of the 'normal position in that year.
	Waiting list	Assumption regarding expected/aimed decline in waiting list	In line with assumptions made in Options Appraisal for Galway
	Activity other hospitals	Data on delays in transferring patients from model 4 to model 3 hospitals	Data from HIPE in 2019.
Step 2	Demography projections	Data on demographic projections per age category (in line with age categories DRG's)	Data from CSO and Health Atlas on projections per age category on county and regional level. For counties Donegal, Mayo, Sligo, Roscommon, Leitrim, Westmeath and Galway.
	Epidemiology projections	Choices on which epidemiological developments to take into account	Projected changes in oncology, cardiac and respiratory diseases factored into the model. Increase in oncology taken into account as the other Chronic diseases factored into the demographic changes.
	Epidemiology projections	Data on epidemiological developments per age category (in line with age categories DRG's)	
Step 3	Efficiency gains	Assumptions 2030 as used in previous analyses. Choice between progressive and conservative scenario	See appendix A2. Starting point is the Options Appraisal for Galway
	Substitution effect	Assumptions 2030 as used in previous analyses. Choice between progressive and conservative scenario	See appendix A2. Starting point is the Options Appraisal for Galway
	ALOS to standards (best LOS)	Best ALOS of all hospitals per specialty	Based on HIPE data 2019
	ED conversion rate	Data on ED conversion rates per hospital	Data provided by Saolta: ED rates from February 2020 and compared against national BIU data for Model 3 hospitals

Step	Factor	Input	Source data used
	ED trolley and surge bed nights (patients exceeding national standards in length of stay)	Number of bed days for patients that stay on trolleys or surge beds and exceed the national standards in LOS	National Special Delivery Unit for each Saolta Hospital data on trolley and surge bed days in 2019
	Policy change	Assumptions on treatment of extra patients as planned transfer of elective activity from model 4 hospital to model 3 hospitals	Saolta provided numbers following consultation with Clinical Director for Peri-operative Directorate.
Step 4	Current capacity	Data on current number of inpatient and daycase beds	Individual hospital current beds provided by Saolta.
	Length of stay	Data on current average length of stay inpatient (in days) and day care (in hours) per DRG. If not possible per specialty.	Follows from HIPE data
	Occupancy rate	Assumptions on average *desired/expected* occupancy rate 2030 per specialty	Occupancy rate of 85%, aligning with the Galway demand and capacity analysis and current national standards. Outcomes when applying a 80% are given in the appendix 11.

A.2 Assumptions

Table 22 shows all the assumptions that are used in each step in the model.

Table 22: Underlying assumptions for each step

Step	Factor	Assumption
Step 1	**Current demand**	
	Current activity	1. Patient numbers derived from 2019 HIPE data. 2. Patients with a DRG referring to one of the 41 procedures on the BADS list registered as elective inpatient DRG's with the maximum stay of 1 bed day are assumed to be daycases. 3. Length of stay IPC = Length of stay – ICU length of stay
	Waitlist patients	1. Number of patients on the waiting lists on June 27th 2019 were added, split in daycase and IPC waiting list patients. 2. 31 waitlist patients within the overall number of 12,715 (0.002%) were excluded from the model, due to a mismatch with the HIPE data 3. All waiting list cases are elective (No ICU patients) 4. As the age of these patients was not included in the data, patients were divided over HIPE patients by ratio on hospital, specialty, region,

		gender and daycase (yes/no). Next, the ALOS of these corresponding patient groups was used to calculate expected inpatient bed days. 5. In factoring into demand, an assumption was agreed around optimal waiting list management whereby the waiting list would be reduced to 20% of current (27 June 2019) waiting list in 2030. 6. All expected future changes (for example the demographic changes) also apply to the number of waiting list patients.
	Other hospitals (transfer patients)	1. Data from the model 4 hospital Galway was used in the analysis of discharges to Saolta model 3 hospitals and vice versa. 2. Given that the model 3 hospitals also refer patients to Dublin for tertiary services, a factor per hospital was agreed to estimate total model 4 hospital transfers of patients to model 3, as upper calculations are only based on Galway patient data, and a. Letterkenny University Hospital: 1.5 b. Mayo University Hospital: 1.2 c. Portiuncula University Hospital: 1.2 d. Sligo University Hospital: 1.75 *This hospital sends more patients to Dublin than the other hospitals.* 3. 39 of 1,605 patients (0.02%) were excluded from the model, due to a mismatch with the HIPE data. 4. For each daycase patient, a delay of 1 bed day was counted. For other inpatient care a delay of 2 bed days was included per patient. No bed days delay in ICU transfers were included.
	All current demand	1. In the data, some hospitals had few or no patients for some specialties. In addition, some specialties only occurred in one of the four included model 3 hospitals. Also, some specialties were represented in the transfer data, but not in the HIPE data. This reflects differing practices between the hospitals in the recording and coding of inpatient cases. Therefore, some changes on specialty names were made in the data in order to achieve comparable and reliable outcomes on future demand in bed days per specialty. Appendix B.1 shows the changes made in the data.
Step 2	**Future demand I**	
	Demography development	1. Health atlas county data and CSO Ireland region data was utilised as starting point. Projection data was based on age (categories) and sex, and county or region. 2. County projections were modelled in for counties Donegal, Galway, Leitrim, Mayo, Roscommon, Sligo and Westmeath. Other counties account for only a small portion of the patient population. Therefore, these projections were not included. For example, Northern-Ireland and West Cavan were analysed (for LUH and SUH respectively), but the patient population resident in these areas in 2019 was significantly smaller than expected. For patients from other counties, regional growth factor was used. The growth factor for international patients was zero (0).

		3. Growth factors were computed with HIPE patients and waitlisted patients.
	Epidemiology developments	Assumptions for epidemiology only included oncological diseases. The following epidemiological assumptions were factored into the model. For Respiratory, Cardiac and Diabetes, advice was given from Public Health that the growth factor is accounted for in the demographic projections.

Colon cancer	+ 115 %
Breast cancer	+ 122 %
Lung cancer	+ 115 %
Prostate cancer	+102 %
Melanoma	+ 154 %
Respiratory diseases	0%
Cardiac diseases	0%
Diabetes	0%

Step 3a	**Future demand II**	
	Efficiency gains	For efficiency, two scenarios were possible: progressive or conservative efficiency. In line with the Options Appraisal of Galway, the progressive efficiency scenario was modelled in. This meant: 1. -10% day cases to community 2. -10% shift day cases to outpatients This means that this efficiency measure has impacted only on daycase bed days. Two exceptions have been made: - No shift of endoscopic daycases to either community or outpatient, as both in a community as an outpatient setting the required specialized materials are not present; - No shift of oncology (chemotherapy) daycases to outpatient, as the required specialized materials are not present. We do foresee opportunities to shift chemotherapy to a community setting.
	Substitution effect	For substitution, two scenarios were possible: progressive or conservative efficiency. In line with the Options Appraisal of Galway, the conservative substitution scenario was modelled in. This meant: 1. -5% medical elective admissions (65+) 2. -10% medical non elective admissions (65+) This means substitution has impacted inpatient, daycase and ICU bed days.
	ALOS to standards (best LOS)	1. A target average length of stay (ALOS) was factored in the model at the end to calculate expected bed days and needed bed capacity for normal inpatient care. This is based on the assumption (also from

		the National Demand and Capacity Review[53] report) that LOS will reduce into the future. 2. This target ALOS used as a benchmark was the best ALOS (lowest) of all model 3 hospitals per specialty. The 'best' LOS was calculated in the model based on 2019 HIPE patient data per hospital, specialty, patient type (elective or emergency) and age category for non-ICU non-daycase inpatient care. 3. The best LOS was only factored in as the target if the number of patients corresponding with this figure were made up of at least 15% of all four hospitals' patients. Otherwise, next best LOS based on at least 15% of all total patients was used as the aim. Hence, outlying numbers were prevented from becoming the new standard. Please see section 3.1.3 of the main report for an example. 4. Appendix A.7 shows the numbers on best ALOS. These ALOS standards were factored in the model to calculate future demand in bed days, based on the precondition that there is no delay in transfer from model 4 hospitals to model 3 hospitals in 2030. 5. The best ALOS was incorporated at the end of the calculations in the model, after all effects on patient numbers was applied. In this way, the best ALOS is not affected by other analyses.
	ED conversion rate	1. ED rates per hospital from February 2020 were used. 2. The target rate used is the national average rate of model 3 hospitals, being 30%. 3. Lower or higher ED conversion rates reflect the number of inpatient patients admitted via the ED. A correction on expected DRG's with an admission was made for hospitals with higher conversion rates only. 4. No corrections on ICU patients was completed as ICU indicates that the need for admission was non-disputable. 5. The best ALOS was used to calculate the impact on bed days.
	ED trolley and surge bed nights (patients exceeding national standards in length of stay)	1. Surge bed nights and trolley bed nights 2019) are defined as extra inpatient demand. Surge bed nights and trolley bed nights are historical numbers, sourced via the national Special Delivery Unit and reflects full year Saolta 2019 data. 2. The aim is to eliminate ED trolley and surge bed nights (patients exceeding national standards in length of stay). Hence, we factor in all surge and trolley bed nights. 3. Trolley and surge bed nights are added to the inpatient non-elective beds (ward but not daycase or ICU). 4. These bed nights were distributed over specialties based on current ratio of non-elective specialty bed days.
	Policy change	1. Policy change reflects the Saolta Strategic Plan for the transfer of elective activity from the model 4 to model 3 hospitals with a view to optimising use of the model 3 facilities. This in turn will provide necessary capacity in the model 4 hospital to focus on specialist tertiary work for the region. Extra availability and capacity of the OR-programme and specialists makes this possible. Also, for urology,

[53] Department of Health, 2018. [Online]. Health Service Capacity Review 2018 Executive report. Available: link.

new consultant appointments in both SUH and LUH will contribute to this.
2. Patients receive elective, inpatient care or daycase care.
3. Patients are divided over HIPE patients by hospital, specialty, type of bed (IPC only) and type of care (elective only).
4. Bed days for IPC are based on the best LOS per specialty.
5. A shift in patients between private and public hospitals was considered, but according to the National Demand and Capacity Review[54] and the Independent Review Group commissioned by Sláintecare[55] this shift is expected to be limited in the short and medium term. Hence, neither a shift from public to private, or from private to public is factored into the model.
6. The following expected numbers were factored into the model:

Hospital	Specialty	Extra IPC procedures per week	Extra daycare procedures per week
Letterkenny University Hospital	Urology	5	10
Mayo University Hospital	General Surgery	8	8
Portiuncula University Hospital	General Surgery	1	5
	Gynaecology	1	5
	Urology	2	10
	Plastic surgery	1	5
	Max Fax	1	5
Sligo University Hospital	Urology	5	10

7. For Portiuncula, it is expected that less major surgery and emergency care will be provided in the hospital. However, this is not yet factored into this model.

Step 3b **Future demand II**

COVID-19

1. COVID-19 bed capacity was calculated based on the assumption that on the short term, this will be required. On the longer term, a similar future crisis could occur again in which hospitals might need a similar extra bed capacity.
2. Three COVID-19 scenarios were calculated in order to compute potential extra needed bed capacity. These three scenarios were as follows:
    a. Scenario 1: A scenario in which current infection rates and admission rates continue in Ireland. Hence, calculations were based on the average admission rate of June in Ireland[56].

[54] Department of Health, 2018. [Online]. Health Service Capacity Review 2018 Executive report. Available: link.
[55] Independent Review Group, 2019. [Online]. Report of the Independent Review Group established to examine Private Activity in Public Hospitals. Available: link.
[56] Health Service Executive (HSE), 2020. [Online]. Coronavirus daily operations updates. Available: link.

b. Scenario 2: A scenario with worse infection and admission rates. These calculations involve the highest daily admission rate in Ireland in the total period of COVID-19 infections and admissions.
c. Scenario 3: A scenario with worst case scenario infection and admission rates. These calculations involve the highest daily admission rate in the UK in the total period of COVID-19 infections and admissions[57].

3. By the use of the admission rate per 100,000 population per scenario, extra required bed capacity was calculated by use of the hospital's primary population catchment area, ALOS, occupancy rate. The ALOS is based on UK numbers[58].

4. Also, beds were calculated for inpatient COVID-19 care and ICU care. ICU beds were calculated by the use of an ICU admission rate and ALOS ICU. The ICU admission rate is based on Irish numbers[59]. The ALOS ICU is based on the average ALOS ICU of Italy, China, the Netherlands and the UK[60].

5. Therefore, the following assumptions were factored into the model for COVID-19 bed capacity in three scenarios:

Assumptions	Scenario 1	Scenario 2	Scenario 3
# peak admissions per day per 100.000 pop	0.06	1.15	5.13
Possible occupancy rate	85%	85%	85%
Average length of stay (in days)	8	8	8
% Admissions ICU of total hospitalisation in Ireland	13%	13%	13%
Average length of stay ICU (in days)	11.7	11.7	11.7

6. The primary catchment area includes the portion of the population in the area that would go to the hospital in case of a COVID-19 infection. These numbers are provided by the model 3 hospitals and based on the Health Atlas. The primary catchment area numbers are as follows.

a. Letterkenny: 148,911
b. Mayo: 130,638
c. Portiuncula: 120,737
d. Sligo: 150,579

[57] Government UK, 2020. [Online]. Coronavirus (COVID-19) statistics and analysis. Available: link.
[58] Express News, 2020. [Online]. Coronavirus patients UK hospitals: How long do COVID-19 patients stay in hospital? Available: link.
[59] Government of Ireland, 2020. [Online]. Hospital statistics. Available: link.
[60] European Society of Anaesthesiology (ESA), 2020. [Online]. Analysis of COVID-19 data on numbers in intensive care from Italy. Available: link.
Zhou et al., "Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study", *The Lancet,* 2020.
Cao et al., "A Trial of Lopinavir–Ritonavir in Adults Hospitalized with Severe Covid-19", *the New England Journal of Medicine,* 2020.
NOS, 2020. [Online]. Coronacijfers 28 mei: patiënten nu gemiddeld 34 dagen op de IC. Available: link.
Intensive care national audit & research centre, 2020. ICNARC report on COVID-19 in critical care 08 May 2020. Available: link.

Step 4	**Bed capacity**	
	Future demand	1. Calculations for the future number of beds required for inpatient care are based on the following assumptions: a. ALOS is per specialty and of the hospital with the lowest out of all model 3 hospitals. b. Beds are specialism specific. c. Beds are used 52 weeks a year and 7 days a week. d. Bed capacity has been planned at the optimum best practice level of 85% 2. Calculations for future daycase beds required: a. Beds are used 300 days per year,: i. 48 working hours a week (6 days a week) ii. 50 working weeks a year b. Beds are used for 2.6 daycases per day 3. Calculations for the future number of beds required for intensive care are based on the following assumptions: a. ALOS is the average of HIPE ICU LOS. b. Beds are used 52 weeks a year and 7 days a week. c. Bed capacity has been planned at the optimum best practice level of 85%

A.3 Calculation methods

This section explains the calculation methods used to define the estimated future bed capacity for 2030.

Table 23: Calculation method normal inpatient beds

Number of bed days of normal inpatient beds	
Assumptions	— 365 days a year — Occupancy rate = 85%
Rationale assumptions	See Appendix A1 and A2
Calculation example	Assume you have 3,650 normal inpatient bed days per year. To calculate the number of bed days per day you divide the number of bed days per year by 365. This means 3,650 bed days per year/ 365 days = 10 bed days per day. Dividing the number of bed days per day by the occupancy rate, this results in the number of beds required. This means 10 bed days per day/ 85% occupancy rate = 11.7 normal inpatient beds needed to cover the 3,650 bed days.
Current demand (number of bed days)	Letterkenny: 108,900 (including Rehab) Mayo: 86,900 Portiuncula: 49,500 Sligo: 92,100
Output (number of bed days)	Letterkenny: 123,200 (including Rehab) Mayo: 102,700 Portiuncula: 55,600 Sligo:104,100
Number of beds calculated	Example Letterkenny: 123,200 bed days per year / 365 days = 338 bed days per day 338 bed days per day / 85% occupancy rate = 397 normal inpatient beds required (including Rehab)

Table 24: Calculation method daycase beds

Number of bed days of daycase beds	
Assumptions	— Beds are used 300 days per year,: o 48 working hours a week (6 days a week) o 50 working weeks a year — Beds are used for 2.6 daycases per day
Rationale assumptions	See Appendix A1 and A2
Calculation example	Assume you have 3,000 daycase bed days per year. To calculate the number of bed days per day you divide the number of bed days per year by 300. This means 3,000 bed days per year/ 300 days = 10 bed days per day. Dividing the number of bed days per day by the amount of daycases per day, this results in the number of beds required. This means 10 bed days per day/ 2.6 daycase ratio = 3.8 daycase beds needed to cover the 3,000 bed days.
Current demand (number of bed days)	Letterkenny: 35,000 Mayo: 31,000 Portiuncula: 10,700 Sligo:39,000
Output (number of bed days)	Letterkenny: 36,700 Mayo: 30,900 Portiuncula: 12,400 Sligo: 39,600
Number of beds calculated	Example Mayo: 30,900 bed days per year / 300 days = 103 daycases per day 103 bed days per day / 2.6 daycases per/day = 40 daycase beds required

Table 25: Calculation method ICU (critical care) beds

Number of bed days of ICU beds	
Assumptions	— 365 days a year — Occupancy rate = 85%
Rationale assumptions	See Appendix A1 and A2
Calculation example	Assume you have 3,650 ICU bed days per year. To calculate the number of bed days per day you divide the number of bed days per year by 365. This means 3,650 bed days per year/ 365 days = 10 bed days per day. Dividing the number of bed days per day by the occupancy rate, this results in the number of beds required. This means 10 ICU bed days per day/ 80% occupancy rate = 12.5 ICU beds needed to cover the 3,650 bed days.
Current demand (number of bed days)	Letterkenny: 5,200 Mayo: 2,500 Portiuncula: 1,900 Sligo:6,300
Output (number of bed days)	Letterkenny: 5,600 Mayo: 3,100 Portiuncula: 2,400 Sligo: 7,000
Number of beds calculated	Example Sligo: 7,000 bed days per year / 365 days = 19 bed days per day 19 bed days per day / 85% occupancy rate = 23 ICU beds required

[1]ICU beddays also include the NICU beddays for both Letterkenny and Sligo University Hospitals.

[2]Portiuncula University Hospital ICU beddays include CCU and HDU – reflects combined ICU/HDU/CCU

A.4 Current capacity per hospital

This appendix presents the current bed capacity of hospitals. These numbers were provided by the hospitals themselves. We did not use these numbers in the analyses as we used current demand numbers derived from the HIPE data.

A.4.1 Current capacity Letterkenny University hospital`

Table 26: Current capacity Letterkenny University Hospital per type of bed

	LUH		
Type of Bed	**No. 2019 beds (pre-COVID)**	**Current beds**	**Extra beds planned**
INPATIENT BEDS (IPC)			
Medical	*150*	*173*	*n/a*
Surgical (incl. Gynae)	*58*	*74*	*n/a*
Orthopaedic	*25*	*25*	*n/a*
Paediatrics	*30*	*30*	*n/a*
Medical Oncology	*11*	*11*	*n/a*
CCU	*8*	*8*	*n/a*
Medical Rehabilitation	*19*	*19*	*n/a*
Rheumatology (offsite)	*n/a*	*n/a*	*n/a*
TOTAL INPATIENT	**301**	**340**	**n/a**
TOTAL MATERNITY INPATIENT	**40**	**40**	**n/a**
DAYCASE BEDS (DC)			
General / DSU	*9*	*9*	*n/a*
Medical Oncology	*7*	*7*	*n/a*
Endoscopy	*8*	*8*	*n/a*
Renal	*14*	*14*	*n/a*
Maternity	*n/a*	*n/a*	*n/a*
Rheumatology (offsite)	*n/a*	*n/a*	*n/a*
TOTAL DAYCASE	**38**	**38**	**n/a**
INTENSIVE CARE UNIT BEDS (ICU/CRITICAL CARE)			
Intensive care unit beds	*5*	*14*	*n/a*
NICU / SCBU	*8*	*8*	*n/a*
TOTAL ICU	**13**	**22**	**n/a**
Total beds	**392**	**440**	**n/a**

A.4.2 Current capacity Mayo University hospital

Table 27: Current capacity Mayo University Hospital per type of bed

	MUH		
Type of Bed	**No. 2019 beds (pre-COVID)**	**Current beds**	**No. Extra beds planned**
INPATIENT BEDS (IPC)			
Medical	*121*	*138*	A feasibility study is being progressed for an additional 50 bed block on site
Surgical (incl. Gynae)	*43*	*43*	
Orthopaedic	*32*	*32*	
Paediatrics	*22*	*22*	
Medical Oncology	*n/a*	*n/a*	
CCU	*4*	*4*	
Medical Rehabilitation	*n/a*	*n/a*	
Rheumatology (offsite)	*n/a*	*n/a*	
TOTAL INPATIENT	**222**	**239**	**289**
TOTAL MATERNITY INPATIENT	**26**	**26**	**n/a**
DAYCASE BEDS (DC)			
General / DSU	*20*	*20*	*n/a*
Medical Oncology	*11*	*11*	*n/a*
Endoscopy	*7*	*7*	*n/a*
Renal	*15*	*15*	*n/a*
Maternity	*4*	*4*	*n/a*
Rheumatology (offsite)	*n/a*	*n/a*	*n/a*
TOTAL DAYCASE	**57**	**57**	*n/a*
INTENSIVE CARE UNIT BEDS (ICU/CRITICAL CARE)			
Intensive care unit beds	*8*	*8*	*n/a*
NICU / SCBU	*n/a*	*n/a*	*n/a*
TOTAL ICU	**8**	**8**	*n/a*
Total beds	**313**	**330**	*380*

A.4.3 Current capacity Portiuncula University hospital

Table 28: Current capacity Portiuncula University Hospital per type of bed

	PUH		
Type of Bed	**No. 2019 beds (pre-COVID)**	**Current beds**	**No. Extra beds planned**
INPATIENT BEDS (IPC)			
Medical	*102*	*92*	Immediate conversion of outpatient department to 14 additional beds. Furthermore enabling works are underway for an new 50 bedded block.
Surgical (incl. Gynae)	*n/a*	*n/a*	
Orthopaedic	*n/a*	*n/a*	
Paediatrics	*23*	*23*	
Medical Oncology	*n/a*	*n/a*	
CCU	*n/a*	*n/a*	
Medical Rehabilitation	*n/a*	*n/a*	
Rheumatology (offsite)	*n/a*	*n/a*	
TOTAL INPATIENT	**125**	**115**	**179**
TOTAL MATERNITY INPATIENT	**33**	**27**	**n/a**
DAYCASE BEDS (DC)			
General / DSU	*17*	*11*	*n/a*
Medical Oncology	*6*	*4*	*n/a*
Endoscopy	*n/a*	*n/a*	*n/a*
Renal	*n/a*	*n/a*	*n/a*
Maternity	*n/a*	*n/a*	*n/a*
Rheumatology (offsite)	*n/a*	*n/a*	*n/a*
TOTAL DAYCASE	**23**	**15**	*n/a*
INTENSIVE CARE UNIT BEDS (ICU/CRITICAL CARE)			
Intensive care unit beds	*7*	*7*	*n/a*
NICU / SCBU	*8*	*8*	*n/a*
TOTAL ICU	**15**	**15**	*n/a*
Total beds	**196**	**172**	*236*

A.4.4 Current capacity Sligo University hospital

Table 29: Current capacity Sligo University Hospital per type of bed

	SUH		
Type of Bed	**No. 2019 beds (pre-COVID)**	**Current beds**	**No. Extra beds planned**
INPATIENT BEDS (IPC)			
Medical	*117*	*117*	46 additional beds planned
Surgical (incl. Gynae)	*56*	*54*	
Orthopaedic	*18*	*18*	
Paediatrics	*18*	*18*	
Medical Oncology	*16*	*16*	
CCU	*11*	*11*	
Medical Rehabilitation	*n/a*	*n/a*	
Rheumatology (offsite)	*8*	*7*	
TOTAL INPATIENT	**244**	**241**	**287**
TOTAL MATERNITY INPATIENT	**29**	**29**	**n/a**
DAYCASE BEDS (DC)			
General / DSU	*20*	*20*	*n/a*
Medical Oncology	*8*	*8*	*n/a*
Endoscopy	*10*	*10*	*n/a*
Renal	*11*	*11*	*n/a*
Maternity	*n/a*	*n/a*	*n/a*
Rheumatology (offsite)	*10*	*10*	*n/a*
TOTAL DAYCASE	**66**	**66**	*n/a*
INTENSIVE CARE UNIT BEDS (ICU/CRITICAL CARE)			
Intensive care unit beds	*5*	*13*	*n/a*
NICU / SCBU	*10*	*10*	*n/a*
TOTAL ICU	**15**	**23**	*n/a*
Total beds	**354**	**359**	*405*

A.5 Calculated demand per specialty per hospital

This section illustrates the current and future demand in bed days per specialty and type of bed, and the future demand in beds per specialty.

A.5.1 Demand Letterkenny University hospital

Table 30: Current and future demand in bed days per specialty and type of bed for Letterkenny University Hospital

Specialty	Type of bed	Bed group	Current demand (in bed days)	Future demand (in bed days)	Forecast demand increase / reduction (%)	No. Future beds (per bed group)1[61]
Cardiology	DC	General daycase	1.200	1.180	-2%	15
Cardiology	ICU	ICU	860	990	15%	18
Cardiology	IPC	Medical	3.610	4.250	18%	255
Dental Surgery	DC	General daycase	250	140	-44%	15
Endocrinology	DC	General daycase	60	50	-17%	15
Endocrinology	ICU	ICU	170	200	18%	18
Endocrinology	IPC	Medical	3.640	4.340	19%	255
Endoscopic daycase	DC	Endoscopic - daycase	5.730	8.260	44%	11
Gastroenterology	DC	General daycase	140	130	-7%	15
Gastroenterology	IPC	Medical	40	60	50%	255
General Medicine	DC	General daycase	2.400	2.110	-12%	15
General Medicine	ICU	ICU	940	1.120	19%	18
General Medicine	IPC	Medical	27.990	34.640	24%	255
General Surgery	DC	General daycase	3.320	2.990	-10%	15
General Surgery	ICU	ICU	270	320	19%	18
General Surgery	IPC	Surgical (incl. Gynae)	12.070	14.350	19%	57
Geriatric Medicine	DC	General daycase	30	30	0%	15
Geriatric Medicine	ICU	ICU	220	260	18%	18

[61] Some beds are assigned to specific specialties/types of care. Other beds are, from a efficiency perspective, used by more than 1 specialty. We call this the “bed group”. In this case, no specialty specific beds are assigned. If “grouping applies can be stated from the column “bed group”. This grouping of specialties applies for all hospitals and is based on how beds are used in practice.

Specialty	Type of bed	Bed group	Current demand (in bed days)	Future demand (in bed days)	Forecast demand increase / reduction (%)	No. Future beds (per bed group)1[62]
Geriatric Medicine	IPC	Medical	2.340	2.640	13%	255
Gynaecology	DC	General daycase	1.500	1.220	-19%	15
Gynaecology	IPC	Surgical (incl. Gynae)	2.540	2.680	6%	57
Haematology	ICU	ICU	60	70	17%	18
Haematology	IPC	Medical	2.620	2.350	-10%	255
Haematology /medical oncology - daycase	DC	Haematology / medical oncology - daycase[63]	6.440	6.730	+5%	9
Maternity daycase	DC	Maternity - daycase	450	360	-20%	1
Neonatology	ICU	ICU	1.530	1.280	-16%	-
Neonatology	IPC	Paediatrics	340	280	-18%	16
Nephrology	DC	General daycase	110	120	9%	15
Nephrology	ICU	ICU	140	160	14%	18
Nephrology	IPC	Medical	4.220	5.220	24%	255
Obstetrics	DC	Maternity - daycase	470	370	-21%	1
Obstetrics	IPC	Obstetrics	8.700	7.190	-17%	23
Oncology	IPC	Medical oncology	4.120	3.960	-4%	13
Ophthalmology	DC	General daycase	220	240	9%	15
Orthopaedics	DC	General daycase	1.700	1.590	-6%	15
Orthopaedics	ICU	ICU	40	50	25%	18
Orthopaedics	IPC	Orthopaedics	8.990	10.080	12%	32
Paediatrics	DC	General daycase	750	480	-36%	15
Paediatrics	ICU	ICU	300	260	-13%	18

[62] Some beds are assigned to specific specialties/types of care. Other beds are, from a efficiency perspective, used by more than 1 specialty. We call this the “bed group”. In this case, no specialty specific beds are assigned. If “grouping applies can be stated from the column “bed group”. This grouping of specialties applies for all hospitals and is based on how beds are used in practice.
[63] A 5-10% underestimation of Haematology / medical oncology – daycase may be the case. A sample of DSU oncology ward data showed around 300 oncology chemotherapy cases registered as inpatient days and therefore not in the daycase figures.

Specialty	Type of bed	Bed group	Current demand (in bed days)	Future demand (in bed days)	Forecast demand increase /	No. Future beds (per bed group)1[64]
Paediatrics	IPC	Paediatrics	4.980	4.730	-5%	16
Renal daycase	DC	Renal - daycase	9.630	9.660	0%	12
Respiratory Medicine	DC	General daycase	310	250	-19%	15
Respiratory Medicine	ICU	ICU	680	810	19%	18
Respiratory Medicine	IPC	Medical	14.480	16.620	15%	255
Urology	DC	General daycase	410	910	122%	15
Urology	ICU	ICU	10	40	300%	18
Urology	IPC	Surgical (incl. Gynae)	480	740	54%	57
General Medicine	IPC	Rehab	2.870	3.190	11%	29
Geriatric Medicine	IPC	Rehab	4.920	5.790	18%	29

A.5.2 Demand Mayo University Hospital

Table 31: Current and future demand in bed days per specialty and type of bed for Mayo University Hospital

Specialty	Type of bed	Bed group	Current demand (in bed days)	Future demand (in bed days)	Forecast demand increase / reduction (%)	No. Future beds (per bed group)
Endocrinology	DC	General daycase	430	400	-7%	14
Endocrinology	ICU	ICU	180	210	17%	10
Endocrinology	IPC	Medical	5.960	6.120	3%	229
Endoscopic daycase	DC	Endoscopic - daycase	3.480	4.900	41%	6
General Medicine	DC	General daycase	4.420	4.030	-9%	14
General Medicine	ICU	ICU	1.650	1.860	13%	10
General Medicine	IPC	Medical	42.080	55.350	32%	229
General Surgery	DC	General daycase	1.560	1.650	6%	14
General Surgery	ICU	ICU	390	680	74%	10
General Surgery	IPC	Surgical (incl. Gynae)	9.760	10.950	12%	53

[64] Some beds are assigned to specific specialties/types of care. Other beds are, from a efficiency perspective, used by more than 1 specialty. We call this the “bed group”. In this case, no specialty specific beds are assigned. If “grouping applies can be stated from the column “bed group”. This grouping of specialties applies for all hospitals and is based on how beds are used in practice.

Specialty	Type of bed	Bed group	Current demand (in bed days)	Future demand (in bed days)	Forecast demand increase / reduction (%)	No. Future beds (per bed group)
Geriatric Medicine	DC	General daycase	70	70	0%	14
Geriatric Medicine	ICU	ICU	200	230	15%	10
Geriatric Medicine	IPC	Medical	7.130	9.460	33%	229
Haematology /medical oncology - daycase	DC	Haematology / medical oncology - daycase[65]	4.810	5.100	6%	6
Maternity daycase	DC	General daycase	1.040	670	-36%	14
Obstetrics /Gynaecology	DC	Maternity - daycase	2.160	1.640	-24%	2
Obstetrics /Gynaecology	ICU	ICU	20	20	0%	10
Obstetrics /Gynaecology	IPC	Surgical (incl. Gynae)	6.290	5.510	-12%	53
Oncology	IPC	Medical oncology	20	40	100%	0
Orthopaedics	DC	General daycase	3.470	3.160	-9%	14
Orthopaedics	ICU	ICU	40	40	0%	10
Orthopaedics	IPC	Orthopaedics	9.590	10.780	12%	35
Paediatrics	DC	General daycase	1.140	690	-39%	14
Paediatrics	ICU	ICU	20	20	0%	10
Paediatrics	IPC	Paediatrics	6.080	4.520	-26%	15
Renal daycase	DC	Renal - daycase	8.510	8.580	1%	11

A.5.3 Demand Portiuncula University hospital

Table 32: Current and future demand in bed days per specialty and type of bed for Portiuncula University Hospital

Specialty	Type of bed	Bed group	Current demand (in bed days)	Future demand (in bed days)	Forecast demand increase / reduction (%)	No. Future beds (per bed group)
Cardiology	DC	General daycase	260	270	4%	8
Cardiology	ICU	ICU	140	170	21%	8
Cardiology	IPC	Medical	1.400	1.510	8%	112
Dental Surgery	DC	General daycase	80	50	-38%	8

[65] A 5-10% underestimation of Haematology / medical oncology – daycase may be the case. A sample of DSU oncology ward data showed around 300 oncology chemotherapy cases registered as inpatient days and therefore not in the daycase figures.

Specialty	Type of bed	Bed group	Current demand (in bed days)	Future demand (in bed days)	Forecast demand increase / reduction (%)	No. Future beds (per bed group)
Dermatology	DC	General daycase	30	30	0%	8
Endoscopic daycase	DC	Endoscopic - daycase	2.190	2.830	29%	4
General Medicine	DC	General daycase	880	820	-7%	8
General Medicine	ICU	ICU	950	1.160	22%	8
General Medicine	IPC	Medical	22.260	27.200	22%	112
General Surgery	DC	General daycase	1.300	1.720	32%	8
General Surgery	ICU	ICU	570	780	37%	8
General Surgery	IPC	Surgical (incl. Gynae)	7.440	9.480	27%	35
Gynaecology	DC	General daycase	620	790	27%	8
Gynaecology	ICU	ICU	10	10	0%	8
Gynaecology	IPC	Surgical (incl. Gynae)	1.020	1.010	-1%	35
Haematology /medical oncology - daycase	DC	Haematology / medical oncology - daycase[66]	2.850	3.260	14%	4
Maxillo-Facial	DC	General daycase	280	480	71%	8
Maxillo-Facial	IPC	Surgical (incl. Gynae)	-	50	n/a	35
Obstetrics	DC	Maternity - daycase	40	30	-25%	0
Obstetrics	ICU	ICU	30	20	-33%	8
Obstetrics	IPC	Obstetrics	8.370	7.290	-13%	23
Paediatrics	DC	General daycase	1.350	880	-35%	8
Paediatrics	IPC	Paediatrics	4.470	2.910	-35%	9
Pain Relief	DC	General daycase	390	370	-5%	8
Respiratory Medicine	DC	General daycase	20	20	0%	8
Respiratory Medicine	ICU	ICU	150	190	27%	8
Respiratory Medicine	IPC	Medical	4.390	6.010	37%	112
Urology	DC	General daycase	360	860	139%	8

[66] A 5-10% underestimation of Haematology / medical oncology – daycase may be the case. A sample of DSU oncology ward data showed around 300 oncology chemotherapy cases registered as inpatient days and therefore not in the daycase figures.
*PUH ICU beddays include CCU and HDU – reflects combined ICU/HDU/CCU

Urology	IPC	Surgical (incl. Gynae)	-	170	n/a	35

A.5.4 Demand Sligo University hospital

Table 33: Current and future demand in bed days per specialty and type of bed for Sligo University Hospital

Specialty	Type of bed	Bed group	Current demand (in bed days)	Future demand (in bed days)	Forecast demand increase / reduction (%)	No. Future beds (per bed group)
Dental Surgery	DC	General daycase	220	130	-41%	26
Dermatology	DC	General daycase	820	820	0%	26
Dermatology	IPC	Medical	10	10	0%	218
Endocrinology	DC	General daycase	10	10	0%	26
Endocrinology	ICU	ICU	180	210	17%	23
Endocrinology	IPC	Medical	2.950	3.530	20%	218
Endoscopic daycase	DC	Endoscopic - daycase	3.520	4.940	40%	6
Gastro Enterology	DC	General daycase	180	170	-6%	26
Gastro Enterology	ICU	ICU	60	70	17%	23
Gastro Enterology	IPC	Medical	330	290	-12%	218
General Medicine	DC	General daycase	2.220	2.040	-8%	26
General Medicine	ICU	ICU	3.680	4.400	20%	23
General Medicine	IPC	Medical	41.630	49.720	19%	218
General Surgery	DC	General daycase	1.960	1.700	-13%	26
General Surgery	ICU	ICU	400	510	28%	23
General Surgery	IPC	Surgical (incl. Gynae)	10.070	10.850	8%	41
Geriatric Medicine	IPC	Medical	440	750	70%	218
Gynaecology	DC	General daycase	630	490	-22%	26
Gynaecology	ICU	ICU	10	10	0%	23
Gynaecology	IPC	Surgical (incl. Gynae)	1.450	1.220	-16%	41
Haematology	ICU	ICU	30	30	0%	23
Haematology	IPC	Medical	2.060	2.750	33%	218

Specialty	Type of bed	Bed group	Current demand (in bed days)	Future demand (in bed days)	Forecast demand increase / reduction (%)	No. Future beds (per bed group)
Haematology /medical oncology - daycase	DC	Haematology / medical oncology - daycase[67]	5.580	6.690	20%	8
Maternity daycase	DC	General daycase	130	90	-31%	26
Maxillo-Facial	DC	General daycase	40	30	-25%	26
Neonatology	ICU	ICU	1.390	1.150	-17%	-
Neonatology	IPC	Paediatrics	390	240	-38%	7
Nephrology	DC	General daycase	80	90	13%	26
Nephrology	ICU	ICU	180	210	17%	23
Nephrology	IPC	Medical	2.590	2.670	3%	218
Neurology	DC	General daycase	840	710	-15%	26
Neurology	ICU	ICU	50	60	20%	23
Neurology	IPC	Medical	2.650	3.000	13%	218
Obstetrics	DC	Maternity - daycase	10	10	0%	0
Obstetrics	ICU	ICU	30	20	-33%	23
Obstetrics	IPC	Obstetrics	6.310	4.370	-31%	14
Oncology	ICU	ICU	40	50	25%	23
Oncology	IPC	Medical oncology	4.550	5.840	28%	19
Ophthalmology	DC	General daycase	8.890	9.620	8%	26
Ophthalmology	IPC	Medical	250	300	20%	218
Orthopaedics	DC	General daycase	1.090	990	-9%	26
Orthopaedics	ICU	ICU	190	240	26%	23
Orthopaedics	IPC	Orthopaedics	8.180	9.680	18%	31
Otolaryngology	DC	General daycase	1.970	1.600	-19%	26
Otolaryngology	ICU	ICU	50	50	0%	23

[67] A 5-10% underestimation of Haematology / medical oncology – daycase may be the case. A sample of DSU oncology ward data showed around 300 oncology chemotherapy cases registered as inpatient days and therefore not in the daycase figures.

Specialty	Type of bed	Bed group	Current demand (in bed days)	Future demand (in bed days)	Forecast demand increase / reduction (%)	No. Future beds (per bed group)
Otolaryngology	IPC	Medical	4.020	4.620	15%	218
Paediatrics	DC	General daycase	160	110	-31%	26
Paediatrics	ICU	ICU	30	20	-33%	23
Paediatrics	IPC	Paediatrics	2.850	1.990	-30%	7
Pain Relief	DC	General daycase	510	460	-10%	26
Radiology	DC	General daycase	260	220	-15%	26
Radiology	IPC	Medical	20	30	50%	218
Renal daycase	DC	Renal - daycase	7.220	6.570	-9%	8
Rheumatology	DC	Rheumatology - daycase	2.450	2.190	-11%	3
Rheumatology	IPC	Rheumatology	1.250	1.490	19%	5
Urology	DC	General daycase	360	890	147%	26
Urology	IPC	Surgical (incl. Gynae)	250	720	188%	41

A.6 Graphs COVID-19 scenarios in beds per hospital

As previously mentioned, extra future bed capacity was calculated for COVID-19 (similar) crisis. Three scenarios were modelled. This appendix shows graphs on normal inpatient beds and ICU beds for each scenario per hospital.

A.6.1 COVID-19 scenario's Letterkenny University Hospital – 85% occupancy rate

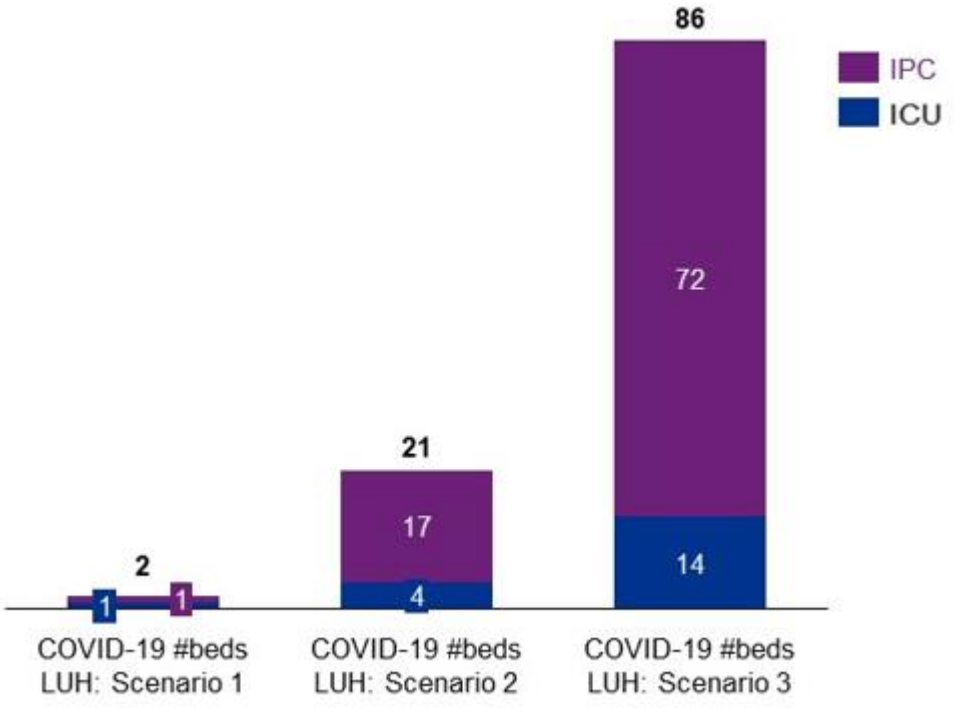


Figure 22: Future bed capacity COVID-19 scenario's Letterkenny University Hospital (in beds)

A.6.2 COVID-19 scenario's Mayo University Hospital – 85% occupancy rate

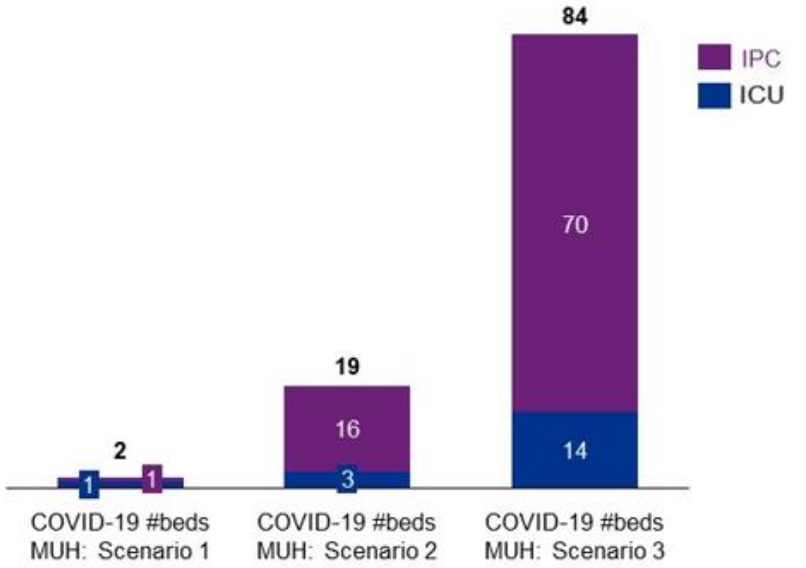


Figure 23: Future bed capacity COVID-19 scenario's Mayo University Hospital (in beds)

A.6.3 COVID-19 scenario's Portiuncula University Hospital – 85% occupancy rate

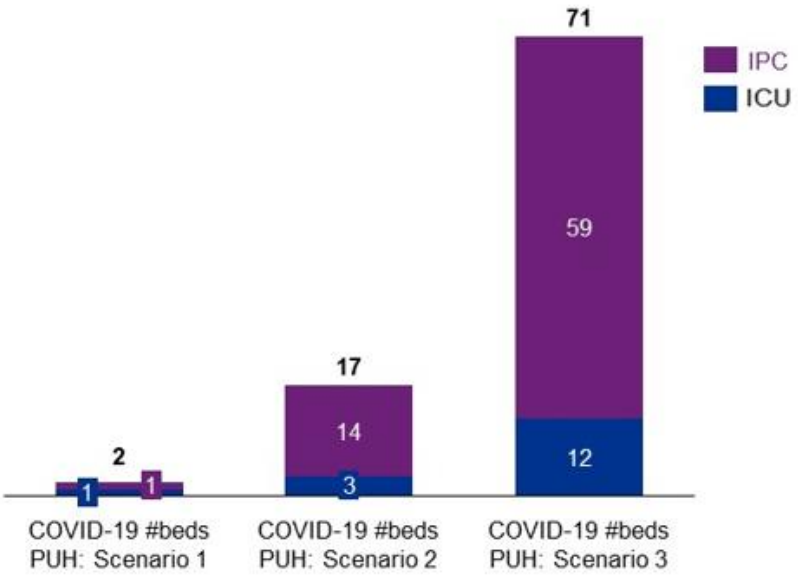


Figure 24: Future bed capacity COVID-19 scenario's Portiuncula University Hospital (in beds)

A.6.4 COVID-19 scenario's Sligo University Hospital – 85% occupancy rate

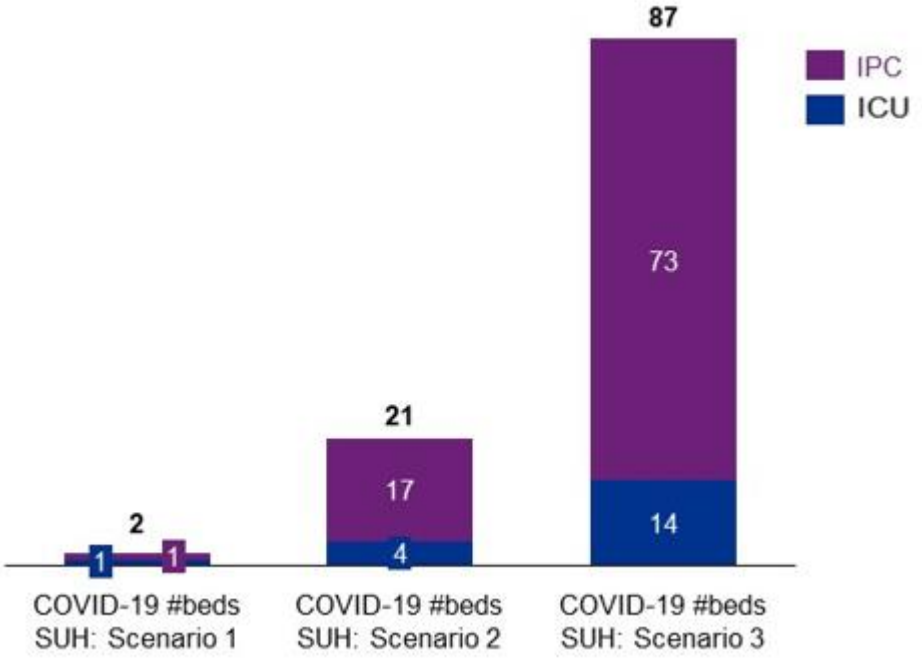


Figure 25: Future bed capacity COVID-19 scenario's Sligo University Hospital (in beds)

A.7 Best LOS per specialty, type of care, age category for inpatient beds

Table 34 include the calculated best ALOS per specialty for efficiency measures of inpatient care beds. The LOS for inpatient care beds was calculated by subtracting the total LOS of patients with the ICU LOS.

Table 34: Best length of stay per specialty, type of care and age category

Specialty	Type of care	Age categories	Best ALOS for IPC care (in days)	Hospital with best ALOS (see section 3.1.3)
Cardiology	Elective	18-64	3,7	Letterkenny University Hospital
Cardiology	Elective	65+	3,9	Portiuncula University Hospital
Cardiology	Non-elective	0-17	1,0	Letterkenny University Hospital
Cardiology	Non-elective	18-64	4,6	Letterkenny University Hospital
Cardiology	Non-elective	65+	6,2	Letterkenny University Hospital
Dental Surgery	Non-elective	0-17	1,0	Letterkenny University Hospital
Dermatology	Elective	18-64	1,0	Sligo University Hospital
Dermatology	Elective	65+	1,0	Sligo University Hospital
Dermatology	Non-elective	18-64	1,0	Sligo University Hospital
Dermatology	Non-elective	65+	4,0	Sligo University Hospital
Endocrinology	Elective	18-64	2,3	Letterkenny University Hospital
Endocrinology	Elective	65+	5,0	Letterkenny University Hospital
Endocrinology	Non-elective	0-17	1,7	Mayo University Hospital
Endocrinology	Non-elective	18-64	2,7	Letterkenny University Hospital
Endocrinology	Non-elective	65+	5,9	Sligo University Hospital
Gastro Enterology	Elective	18-64	3,0	Letterkenny University Hospital
Gastro Enterology	Elective	65+	0,0	Sligo University Hospital
Gastro Enterology	Non-elective	18-64	2,0	Letterkenny University Hospital
Gastro Enterology	Non-elective	65+	7,2	Sligo University Hospital
General Medicine	Elective	0-17	20,0	Letterkenny University Hospital
General Medicine	Elective	18-64	4,7	Sligo University Hospital
General Medicine	Elective	65+	6,2	Sligo University Hospital
General Medicine	Non-elective	0-17	2,1	Mayo University Hospital
General Medicine	Non-elective	18-64	3,0	Portiuncula University Hospital
General Medicine	Non-elective	65+	6,2	Mayo University Hospital
General Surgery	Elective	0-17	1,3	Letterkenny University Hospital
General Surgery	Elective	18-64	3,8	Letterkenny University Hospital
General Surgery	Elective	65+	4,9	Letterkenny University Hospital

Specialty	Type of care	Age categories	Best ALOS for IPC care (in days)	Hospital with best ALOS (see section 3.1.3)
General Surgery	Non-elective	0-17	1,6	Portiuncula University Hospital
General Surgery	Non-elective	18-64	2,8	Portiuncula University Hospital
General Surgery	Non-elective	65+	5,4	Letterkenny University Hospital
Geriatric Medicine	Elective	18-64	8,1	Mayo University Hospital
Geriatric Medicine	Elective	65+	15,5	Mayo University Hospital
Geriatric Medicine	Non-elective	0-17	1,9	Mayo University Hospital
Geriatric Medicine	Non-elective	18-64	3,4	Mayo University Hospital
Geriatric Medicine	Non-elective	65+	7,6	Mayo University Hospital
Gynaecology	Elective	0-17	1,5	Letterkenny University Hospital
Gynaecology	Elective	18-64	2,4	Letterkenny University Hospital
Gynaecology	Elective	65+	2,7	Letterkenny University Hospital
Gynaecology	Non-elective	0-17	1,5	Portiuncula University Hospital
Gynaecology	Non-elective	18-64	2,1	Portiuncula University Hospital
Gynaecology	Non-elective	65+	4,3	Letterkenny University Hospital
Haematology	Elective	0-17	1,0	Mayo University Hospital
Haematology	Elective	18-64	3,1	Sligo University Hospital
Haematology	Elective	65+	5,8	Sligo University Hospital
Haematology	Non-elective	0-17	1,0	Letterkenny University Hospital
Haematology	Non-elective	18-64	7,3	Sligo University Hospital
Haematology	Non-elective	65+	10,5	Sligo University Hospital
Maxillo-Facial	Elective	0-17	1,0	Portiuncula University Hospital
Neonatology	Elective	0-17	0,0	Sligo University Hospital
Neonatology	Non-elective	0-17	0,0	Sligo University Hospital
Nephrology	Elective	18-64	7,6	Letterkenny University Hospital
Nephrology	Elective	65+	8,8	Sligo University Hospital
Nephrology	Non-elective	0-17	1,0	Sligo University Hospital
Nephrology	Non-elective	18-64	4,1	Letterkenny University Hospital
Nephrology	Non-elective	65+	6,4	Letterkenny University Hospital
Neurology	Elective	0-17	1,0	Sligo University Hospital
Neurology	Elective	18-64	5,8	Sligo University Hospital
Neurology	Elective	65+	5,9	Sligo University Hospital
Neurology	Non-elective	0-17	1,0	Sligo University Hospital
Neurology	Non-elective	18-64	8,4	Sligo University Hospital
Neurology	Non-elective	65+	16,1	Sligo University Hospital
Obstetrics	Elective	18-64	1,2	Letterkenny University Hospital
Obstetrics	Maternity	0-17	1,6	Letterkenny University Hospital
Obstetrics	Maternity	18-64	2,2	Portiuncula University Hospital

Specialty	Type of care	Age categories	Best ALOS for IPC care (in days)	Hospital with best ALOS (see section 3.1.3)
Obstetrics	Non-elective	0-17	1,0	Portiuncula University Hospital
Obstetrics	Non-elective	18-64	1,1	Letterkenny University Hospital
Obstetrics	Non-elective	65+	7,5	Portiuncula University Hospital
Obstetrics/Gynaecology	Elective	0-17	1,0	Mayo University Hospital
Obstetrics/Gynaecology	Elective	18-64	2,9	Mayo University Hospital
Obstetrics/Gynaecology	Elective	65+	2,2	Mayo University Hospital
Obstetrics/Gynaecology	Maternity	0-17	2,1	Mayo University Hospital
Obstetrics/Gynaecology	Maternity	18-64	2,5	Mayo University Hospital
Obstetrics/Gynaecology	Non-elective	0-17	3,1	Mayo University Hospital
Obstetrics/Gynaecology	Non-elective	18-64	2,0	Mayo University Hospital
Obstetrics/Gynaecology	Non-elective	65+	4,7	Mayo University Hospital
Oncology	Elective	18-64	4,9	Sligo University Hospital
Oncology	Elective	65+	6,1	Sligo University Hospital
Oncology	Non-elective	18-64	7,9	Sligo University Hospital
Oncology	Non-elective	65+	9,7	Sligo University Hospital
Ophthalmology	Elective	65+	1,0	Sligo University Hospital
Ophthalmology	Non-elective	0-17	2,8	Sligo University Hospital
Ophthalmology	Non-elective	18-64	2,1	Sligo University Hospital
Ophthalmology	Non-elective	65+	4,8	Sligo University Hospital
Orthopaedics	Elective	0-17	1,0	Sligo University Hospital
Orthopaedics	Elective	18-64	3,6	Mayo University Hospital
Orthopaedics	Elective	65+	5,2	Sligo University Hospital
Orthopaedics	Non-elective	0-17	1,5	Mayo University Hospital
Orthopaedics	Non-elective	18-64	3,8	Letterkenny University Hospital
Orthopaedics	Non-elective	65+	10,3	Sligo University Hospital
Otolaryngology	Elective	0-17	1,5	Sligo University Hospital
Otolaryngology	Elective	18-64	2,7	Sligo University Hospital
Otolaryngology	Elective	65+	4,8	Sligo University Hospital
Otolaryngology	Non-elective	0-17	1,7	Sligo University Hospital
Otolaryngology	Non-elective	18-64	2,9	Sligo University Hospital
Otolaryngology	Non-elective	65+	4,1	Sligo University Hospital
Paediatrics	Elective	0-17	1,7	Letterkenny University Hospital
Paediatrics	Non-elective	0-17	1,5	Letterkenny University Hospital
Paediatrics	Non-elective	18-64	0,5	Mayo University Hospital
Pain Relief	Non-elective	18-64	4,0	Sligo University Hospital
Radiology	Elective	65+	1,0	Sligo University Hospital
Radiology	Non-elective	65+	8,0	Sligo University Hospital

Specialty	Type of care	Age categories	Best ALOS for IPC care (in days)	Hospital with best ALOS (see section 3.1.3)
Respiratory Medicine	Elective	18-64	4,0	Portiuncula University Hospital
Respiratory Medicine	Elective	65+	6,1	Letterkenny University Hospital
Respiratory Medicine	Non-elective	0-17	3,0	Portiuncula University Hospital
Respiratory Medicine	Non-elective	18-64	3,4	Portiuncula University Hospital
Respiratory Medicine	Non-elective	65+	7,2	Portiuncula University Hospital
Rheumatology	Elective	0-17	4,0	Sligo University Hospital
Rheumatology	Elective	18-64	3,9	Sligo University Hospital
Rheumatology	Elective	65+	4,0	Sligo University Hospital
Urology	Elective	0-17	2,0	Letterkenny University Hospital
Urology	Elective	18-64	1,6	Sligo University Hospital
Urology	Elective	65+	1,5	Sligo University Hospital
Urology	Non-elective	0-17	1,0	Letterkenny University Hospital
Urology	Non-elective	18-64	3,6	Sligo University Hospital
Urology	Non-elective	65+	5,0	Sligo University Hospital

A.8 Endoscopies in 2019 per hospital

The table below shows insight in the amount of endoscopy procedures in 2019 per hospital. Input follows from registration at the endoscopic rooms. In the outcomes, these specific procedures (DRG's) are grouped as "endoscopic - daycase". We assume one procedure leads to one endoscopic daycase bedday.

Table 35: Number of endoscopy daycase beddays in 2019 per hospital

DRG code	DRG description	Letterkenny		Mayo		Portiuncula		Sligo	
		# DC DRG	# IPC DRG	# DC DRG	# IPC DRG	# DC DRG	# IPC DRG	# DC DRG	# IPC DRG
801A	OR Procedures Unrelated to Principal Diagnosis; Major Complexity	0	2	0	2	0	0	0	0
801C	OR Procedures Unrelated to Principal Diagnosis, Minor Complexity	0	0	0	1	0	0	0	0
A06A	Tracheostomy and/or Ventilation >=96hours, Major Complexity	0	0	0	1	0	0	0	0
A06B	Tracheostomy and/or Ventilation >=96hours; Intermediate Complexity	0	2	0	1	0	1	0	0
A06C	Tracheostomy and/or Ventilation >=96hours; Minor Complexity	0	1	0	3	0	1	0	2
B06A	Procedures for Cerebral Palsy, Muscular Dystrophy and Neuropathy, Major Comp	0	0	0	0	0	0	0	1
B60B	Acute Paraplegia and Quadriplegia W or W/O OR Procedures; Minor Complexity	0	0	0	0	0	1	0	0
B63A	Dementia and Other Chronic Disturbances of Cerebral Function, Major Complexity	0	0	0	1	0	0	0	0
B66A	Nervous System Neoplasms; Major Complexity	0	0	0	0	0	1	0	0
B67A	Degenerative Nervous System Disorders, Major Complexity	0	0	0	0	0	1	0	2
B67B	Degenerative Nervous System Disorders; Intermediate Complexity	0	2	0	0	0	0	0	0
B68A	Multiple Sclerosis and Cerebellar Ataxia, Major Complexity	0	0	0	0	0	0	0	1
B70A	Stroke and Other Cerebrovascular Disorders; Major Complexity	0	1	0	3	0	1	0	2
B70B	Stroke and Other Cerebrovascular Disorders; Intermediate Complexity	0	3	0	2	0	0	0	1
B71A	Cranial and Peripheral Nerve Disorders; Major Complexity	0	1	0	0	0	0	0	1
B76A	Seizures; Major Complexity	0	1	0	1	0	0	0	2
B77A	Headaches; Major Complexity	0	0	0	1	0	1	0	0
B80A	Other Head Injuries; Major Complexity	0	1	0	1	0	1	0	0
B81A	Other Disorders of the Nervous System; Major Complexity	0	2	0	3	0	0	0	0
B81B	Other Disorders of the Nervous System, Minor Complexity	0	0	0	0	0	0	0	0
B82B	Chronic & Unspec Para/Quadriplegia W or W/O OR Proc; Intermediate Complexity	0	1	0	0	0	0	0	2

DRG code	DRG description	Letterkenny		Mayo		Portiuncula		Sligo	
		# DC DRG	# IPC DRG	# DC DRG	# IPC DRG	# DC DRG	# IPC DRG	# DC DRG	# IPC DRG
C61A	Neurological and Vascular Disorders of the Eye, Major Complexity	0	0	0	0	0	0	0	1
C62A	Hyphaema and Medically Managed Trauma to the Eye; Major Complexity	0	1	0	0	0	0	0	0
D12A	Other Ear, Nose, Mouth and Throat Procedures, Major Complexity	0	0	0	0	0	0	0	1
D12B	Other Ear, Nose, Mouth and Throat Procedures, Minor Complexity	0	0	0	0	0	0	0	0
D14B	Mouth and Salivary Gland Procedures, Minor Complexity	0	0	0	0	0	0	0	1
D60A	Ear, Nose, Mouth and Throat Malignancy, Major Complexity	0	0	0	0	0	0	0	1
D61A	Dysequilibrium; Major Complexity	0	2	0	0	0	0	0	0
D61B	Dysequilibrium; Minor Complexity	0	1	0	0	0	0	0	0
D62A	Epistaxis, Major Complexity	0	0	0	0	0	1	0	1
D63A	Otitis Media and Upper Respiratory Infections; Major Complexity	0	1	0	0	0	0	0	0
D65A	Nasal Trauma and Deformity; Major Complexity	0	1	0	0	0	0	0	0
D66A	Other Ear, Nose, Mouth and Throat Disorders, Major Complexity	0	0	0	0	0	0	0	0
D66B	Other Ear, Nose, Mouth and Throat Disorders, Minor Complexity	0	0	0	0	0	0	0	4
D67A	Oral and Dental Disorders, Major Complexity	0	0	0	0	0	0	0	1
D67B	Oral and Dental Disorders, Minor Complexity	0	0	0	0	0	0	0	2
E02A	Other Respiratory System OR Procedures; Major Complexity	0	3	0	0	0	0	0	0
E40A	Respiratory System Disorders W Ventilator Support; Major Complexity	0	1	0	0	0	0	0	0
E41A	Respiratory System Disorders W Non-Invasive Ventilation, Major Complexity	0	0	0	0	0	0	0	3
E41B	Respiratory System Disorders W Non-Invasive Ventilation; Minor Complexity	0	2	0	0	0	1	0	1
E42A	Bronchoscopy, Major Complexity	22	3	3	2	3	1	1	1
E42B	Bronchoscopy, Minor Complexity	254	0	69	1	27	0	73	0
E61A	Pulmonary Embolism; Major Complexity	0	1	0	2	0	0	0	1
E61B	Pulmonary Embolism; Minor Complexity	0	1	0	0	0	0	0	0
E62A	Respiratory Infections and Inflammations; Major Complexity	0	14	0	2	0	3	0	5
E62B	Respiratory Infections and Inflammations; Minor Complexity	0	1	0	0	0	0	0	1
E64A	Pulmonary Oedema and Respiratory Failure; Major Complexity	0	1	0	0	0	0	0	0
E64B	Pulmonary Oedema and Respiratory Failure; Minor Complexity	0	2	0	0	0	0	0	0
E65A	Chronic Obstructive Airways Disease; Major Complexity	0	7	0	4	0	4	0	1
E65B	Chronic Obstructive Airways Disease; Minor Complexity	0	3	0	1	0	1	0	0
E66A	Major Chest Trauma; Major Complexity	0	1	0	0	0	0	0	0

DRG code	DRG description	Letterkenny		Mayo		Portiuncula		Sligo	
		# DC DRG	# IPC DRG	# DC DRG	# IPC DRG	# DC DRG	# IPC DRG	# DC DRG	# IPC DRG
E67A	Respiratory Signs and Symptoms, Major Complexity	0	0	0	0	0	0	0	3
E67B	Respiratory Signs and Symptoms; Minor Complexity	0	1	0	0	0	0	0	1
E71A	Respiratory Neoplasms; Major Complexity	0	3	0	3	0	1	0	0
E71B	Respiratory Neoplasms; Minor Complexity	0	1	0	0	0	0	0	1
E73A	Pleural Effusion; Major Complexity	0	0	0	0	0	1	0	0
E73B	Pleural Effusion, Intermediate Complexity	0	0	0	0	0	0	0	1
E75A	Other Respiratory System Disorders; Major Complexity	0	9	0	10	0	0	0	5
E75B	Other Respiratory System Disorders; Minor Complexity	0	2	0	1	0	0	0	0
F18A	Other Pacemaker Procedures; Major Complexity	0	1	0	0	0	0	0	0
F42A	Circulatory Dsrds; Not Adm for AMI W Invasive Cardiac Inves Proc; Major Comp	0	1	0	0	0	0	0	0
F43A	Circulatory Disorders W Non-Invasive Ventilation, Major Complexity	0	0	0	0	0	0	0	2
F60A	Circulatory Dsrd; Adm for AMI W/O Invas Card Inves Proc	0	3	0	1	0	2	0	0
F62A	Heart Failure and Shock; Major Complexity	0	5	0	3	0	0	0	3
F63B	Venous Thrombosis, Minor Complexity	0	0	0	1	0	0	0	0
F64A	Skin Ulcers in Circulatory Disorders, Major Complexity	0	0	0	1	0	0	0	0
F65A	Peripheral Vascular Disorders; Major Complexity	0	1	0	0	0	1	0	0
F65B	Peripheral Vascular Disorders; Minor Complexity	0	1	0	0	0	0	0	0
F66A	Coronary Atherosclerosis, Major Complexity	0	0	0	1	0	0	0	0
F66B	Coronary Atherosclerosis, Minor Complexity	0	0	0	1	0	0	0	1
F69A	Valvular Disorders, Major Complexity	0	0	0	0	0	1	0	1
F69B	Valvular Disorders; Minor Complexity	0	1	0	0	0	0	0	0
F72A	Unstable Angina, Major Complexity	0	0	0	0	0	0	0	1
F73A	Syncope and Collapse; Major Complexity	0	3	0	1	0	4	0	4
F73B	Syncope and Collapse; Minor Complexity	0	5	0	1	0	0	0	1
F74A	Chest Pain; Major Complexity	0	1	0	0	0	1	0	0
F74B	Chest Pain; Minor Complexity	0	2	0	1	0	2	0	0
F75A	Other Circulatory Disorders; Major Complexity	0	1	0	0	0	0	0	0
F75B	Other Circulatory Disorders; Intermediate Complexity	0	1	0	3	0	0	0	0
F76A	Arrhythmia; Cardiac Arrest and Conduction Disorders; Major Complexity	0	1	0	1	0	1	0	4
F76B	Arrhythmia, Cardiac Arrest and Conduction Disorders, Minor Complexity	0	0	0	0	0	0	0	1

DRG code	DRG description	Letterkenny		Mayo		Portiuncula		Sligo	
		# DC DRG	# IPC DRG	# DC DRG	# IPC DRG	# DC DRG	# IPC DRG	# DC DRG	# IPC DRG
G01A	Rectal Resection, Major Complexity	0	0	0	1	0	0	0	0
G01B	Rectal Resection, Intermediate Complexity	0	0	0	1	0	0	0	1
G01C	Rectal Resection, Minor Complexity	0	0	0	1	0	0	0	2
G02A	Major Small and Large Bowel Procedures; Major Complexity	0	1	0	1	0	1	0	1
G02B	Major Small and Large Bowel Procedures; Intermediate Complexity	0	3	0	2	0	4	0	2
G02C	Major Small and Large Bowel Procedures; Minor Complexity	0	7	0	8	0	1	0	7
G03A	Stomach; Oesophageal and Duodenal Procedures; Major Complexity	0	1	0	1	0	0	0	0
G03B	Stomach; Oesophageal and Duodenal Procedures; Intermediate Complexity	0	1	0	0	0	0	0	1
G04C	Peritoneal Adhesiolysis; Minor Complexity	0	0	0	1	0	1	0	0
G05B	Minor Small and Large Bowel Procedures, Minor Complexity	0	0	0	5	0	0	0	0
G10A	Hernia Procedures, Major Complexity	0	0	0	0	0	1	0	1
G10B	Hernia Procedures; Minor Complexity	0	0	0	0	0	1	0	0
G11A	Anal and Stomal Procedures, Major Complexity	0	0	0	1	0	0	0	1
G11B	Anal and Stomal Procedures, Minor Complexity	0	0	0	3	0	2	0	2
G12A	Other Digestive System OR Procedures; Major Complexity	0	0	0	0	0	1	0	0
G12B	Other Digestive System OR Procedures, Intermediate Complexity	0	0	0	0	0	0	0	1
G12C	Other Digestive System OR Procedures; Minor Complexity	0	2	0	1	0	0	0	0
G46A	Complex Endoscopy, Major Complexity	21	26	7	24	8	11	4	19
G46B	Complex Endoscopy, Minor Complexity	405	5	253	14	148	2	140	5
G47A	Gastroscopy, Major Complexity	10	69	4	30	1	26	1	49
G47B	Gastroscopy, Intermediate Complexity	79	55	41	41	17	23	28	54
G47C	Gastroscopy, Minor Complexity	1277	86	941	52	496	18	718	92
G48A	Colonoscopy, Major Complexity	92	41	43	45	35	16	28	45
G48B	Colonoscopy, Minor Complexity	2063	39	1411	38	584	16	1364	50
G60B	Digestive Malignancy; Minor Complexity	0	1	0	0	0	0	0	0
G61A	Gastrointestinal Haemorrhage, Major Complexity	0	0	2	0	1	0	0	0
G61B	Gastrointestinal Haemorrhage, Minor Complexity	31	1	36	0	3	0	4	0
G64A	Inflammatory Bowel Disease; Major Complexity	0	1	0	0	0	0	0	0
G64B	Inflammatory Bowel Disease; Minor Complexity	0	2	0	0	0	0	0	0
G66A	Abdominal Pain and Mesenteric Adenitis; Major Complexity	0	1	0	0	0	0	0	0
G67B	Oesophagitis and Gastroenteritis; Minor Complexity	0	1	0	0	0	0	0	0

DRG code	DRG description	Letterkenny		Mayo		Portiuncula		Sligo	
		# DC DRG	# IPC DRG	# DC DRG	# IPC DRG	# DC DRG	# IPC DRG	# DC DRG	# IPC DRG
G70A	Other Digestive System Disorders; Major Complexity	0	2	0	0	0	0	0	0
H02B	Major Biliary Tract Procedures, Minor Complexity	0	0	0	1	0	0	0	1
H06A	Other Hepatobiliary and Pancreas OR Procedures, Major Complexity	0	0	0	1	0	0	0	0
H06B	Other Hepatobiliary and Pancreas OR Procedures, Intermediate Complexity	0	0	0	1	0	0	0	0
H07C	Open Cholecystectomy, Minor Complexity	0	0	0	1	0	0	0	1
H08B	Laparoscopic Cholecystectomy, Minor Complexity	0	0	0	3	0	0	0	0
H40A	Endoscopic Procedures for Bleeding Oesophageal Varices; Major Complexity	0	0	0	1	0	1	0	0
H40B	Endoscopic Procedures for Bleeding Oesophageal Varices, Intermediate Complexity	0	0	0	1	0	0	0	0
H40C	Endoscopic Procedures for Bleeding Oesophageal Varices, Minor Complexity	0	0	3	1	0	0	1	0
H43B	ERCP Procedures, Intermediate Complexity	0	0	0	0	8	0	0	0
H43C	ERCP Procedures, Minor Complexity	0	0	0	0	37	0	0	0
H60A	Cirrhosis and Alcoholic Hepatitis; Major Complexity	0	6	0	3	0	1	0	0
H60B	Cirrhosis and Alcoholic Hepatitis; Intermediate Complexity	0	1	0	3	0	1	0	0
H60C	Cirrhosis and Alcoholic Hepatitis; Minor Complexity	0	1	0	0	0	1	0	0
H61A	Malignancy of Hepatobiliary System and Pancreas; Major Complexity	0	8	0	4	0	0	0	2
H61B	Malignancy of Hepatobiliary System and Pancreas, Minor Complexity	0	0	0	0	0	0	0	1
H62A	Disorders of Pancreas, Except Malignancy, Major Complexity	0	0	0	0	0	0	0	1
H62B	Disorders of Pancreas, Except Malignancy, Minor Complexity	0	0	0	0	0	0	0	1
H63A	Other Disorders of Liver; Major Complexity	0	2	0	2	0	1	0	1
H63B	Other Disorders of Liver; Intermediate Complexity	0	1	0	4	0	3	0	2
H63C	Other Disorders of Liver; Minor Complexity	0	1	0	3	0	0	0	0
H64A	Disorders of the Biliary Tract; Major Complexity	0	4	0	1	0	0	0	1
H64B	Disorders of the Biliary Tract; Minor Complexity	0	2	0	2	0	1	0	4
I03A	Hip Replacement; Major Complexity	0	1	0	1	0	0	0	0
I08A	Other Hip and Femur Procedures, Major Complexity	0	0	0	0	0	0	0	1
I19A	Other Elbow and Forearm Procedures; Major Complexity	0	1	0	0	0	0	0	0
I24A	Arthroscopy, Major Complexity	2	0	0	0	0	0	1	0
I24B	Arthroscopy, Minor Complexity	32	0	15	0	0	0	6	0
I65B	Musculoskeletal Malignant Neoplasms, Minor Complexity	0	0	0	0	0	0	0	1

DRG code	DRG description	Letterkenny		Mayo		Portiuncula		Sligo	
		# DC DRG	# IPC DRG	# DC DRG	# IPC DRG	# DC DRG	# IPC DRG	# DC DRG	# IPC DRG
I66A	Inflammatory Musculoskeletal Disorders; Major Complexity	0	1	0	0	0	0	0	1
I66B	Inflammatory Musculoskeletal Disorders, Intermediate Complexity	0	0	0	1	0	0	0	0
I68A	Non-surgical Spinal Disorders, Major Complexity	0	0	0	1	0	0	0	0
I69A	Bone Diseases and Arthropathies; Major Complexity	0	1	0	0	0	0	0	1
I69B	Bone Diseases and Arthropathies; Minor Complexity	0	1	0	0	0	0	0	0
I71A	Other Musculotendinous Disorders, Major Complexity	0	0	0	1	0	0	0	2
I72A	Specific Musculotendinous Disorders; Major Complexity	0	0	0	0	0	1	0	0
I77A	Fractures of Pelvis, Major Complexity	0	0	0	2	0	0	0	0
I77B	Fractures of Pelvis; Minor Complexity	0	1	0	0	0	0	0	0
I79A	Pathological Fractures, Major Complexity	0	0	0	0	0	0	0	1
J08A	Other Skin Grafts and Debridement Procedures, Major Complexity	0	0	0	0	0	0	0	1
J09Z	Perianal and Pilonidal Procedures	0	0	0	0	0	0	0	1
J11A	Other Skin, Subcutaneous Tissue and Breast Procedures, Major Complexity	0	0	0	0	0	0	0	1
J11B	Other Skin, Subcutaneous Tissue and Breast Procedures, Minor Complexity	0	0	0	0	0	0	0	0
J62A	Malignant Breast Disorders; Major Complexity	0	2	0	0	0	0	0	1
J63A	Non-Malignant Breast Disorders; Major Complexity	0	0	0	0	0	1	0	0
J64A	Cellulitis, Major Complexity	0	0	0	0	0	1	0	1
J64B	Cellulitis; Minor Complexity	0	1	0	0	0	0	0	0
J65A	Trauma to Skin, Subcutaneous Tissue and Breast, Major Complexity	0	0	0	0	0	0	0	1
J67A	Minor Skin Disorders, Major Complexity	0	0	0	0	0	0	0	0
J67B	Minor Skin Disorders, Minor Complexity	0	0	0	0	0	0	0	2
J68A	Major Skin Disorders; Major Complexity	0	1	0	0	0	0	0	2
K40A	Endoscopic and Investigative Procedures for Metabolic Disorders, Major Comp	1	6	1	8	0	3	4	8
K40B	Endoscopic and Investigative Procedures for Metabolic Disorders; Minor Comp	0	7	0	6	0	2	0	3
L60A	Kidney Failure; Major Complexity	0	2	0	0	0	0	0	1
L60B	Kidney Failure; Intermediate Complexity	0	2	0	0	0	0	0	3
L62A	Kidney and Urinary Tract Neoplasms; Major Complexity	0	0	0	0	0	0	0	0
L63A	Kidney and Urinary Tract Infections; Major Complexity	0	14	0	5	0	0	0	4
L63B	Kidney and Urinary Tract Infections; Minor Complexity	0	1	0	2	0	1	0	0
L64A	Urinary Stones and Obstruction; Major Complexity	0	3	0	0	0	0	0	0

DRG code	DRG description	Letterkenny		Mayo		Portiuncula		Sligo	
		# DC DRG	# IPC DRG	# DC DRG	# IPC DRG	# DC DRG	# IPC DRG	# DC DRG	# IPC DRG
L64B	Urinary Stones and Obstruction; Minor Complexity	0	1	0	0	0	0	0	0
L65A	Kidney and Urinary Tract Signs and Symptoms, Major Complexity	0	0	0	0	0	0	0	1
L67A	Other Kidney and Urinary Tract Disorders; Major Complexity	0	1	0	1	0	0	0	1
N08Z	Endoscopic and Laparoscopic Procedures, Female Reproductive System	4	0	3	0	36	0	7	0
N09Z	Other Vagina, Cervix and Vulva Procedures	0	0	0	0	0	0	0	1
N10Z	Diagnostic Curettage and Diagnostic Hysteroscopy	0	0	0	1	0	0	0	1
N11A	Other Female Reproductive System OR Procedures; Major Complexity	0	0	0	0	0	1	0	0
N60A	Female Reproductive System Malignancy; Major Complexity	0	2	0	0	0	0	0	0
N61A	Female Reproductive System Infections, Major Complexity	0	0	0	1	0	0	0	0
N62B	Menstrual and Other Female Reproductive System Disorders, Minor Complexity	0	0	0	0	0	0	0	0
O66A	Antenatal and Other Obstetric Admissions; Major Complexity	0	0	0	0	0	1	0	0
O66B	Antenatal and Other Obstetric Admissions; Minor Complexity	0	1	0	0	0	0	0	1
Q02A	Blood and Immune System Disorders W Other OR Procedures; Major Complexity	0	1	0	0	0	0	0	1
Q02B	Blood and Immune System Disorders W Other OR Procedures, Minor Complexity	0	0	0	0	0	0	0	1
Q60A	Reticuloendothelial and Immunity Disorders; Major Complexity	0	3	0	0	0	0	0	0
Q60B	Reticuloendothelial and Immunity Disorders; Minor Complexity	0	1	0	0	0	0	0	0
Q61A	Red Blood Cell Disorders; Major Complexity	0	22	0	15	0	12	0	14
Q61B	Red Blood Cell Disorders; Intermediate Complexity	0	19	0	9	0	4	0	8
Q62A	Coagulation Disorders; Major Complexity	0	3	0	0	0	0	0	0
R02C	Other Neoplastic Disorders W Major OR Procedures, Minor Complexity	0	0	0	0	0	0	0	1
R60A	Acute Leukaemia; Major Complexity	0	0	0	1	0	1	0	0
R61A	Lymphoma and Non-Acute Leukaemia; Major Complexity	0	2	0	1	0	0	0	1
R61B	Lymphoma and Non-Acute Leukaemia; Minor Complexity	0	2	0	0	0	0	0	1
R62A	Other Neoplastic Disorders, Major Complexity	0	0	0	1	0	0	0	0
R62B	Other Neoplastic Disorders, Intermediate Complexity	0	0	0	1	0	0	0	0
T60A	Septicaemia, Major Complexity	0	0	0	1	0	1	0	1
T60B	Septicaemia; Intermediate Complexity	0	1	0	1	0	0	0	0
T64B	Other Infectious and Parasitic Diseases; Intermediate Complexity	0	0	0	0	0	1	0	0
T64C	Other Infectious and Parasitic Diseases, Minor Complexity	0	0	0	0	0	0	0	0

DRG code	DRG description	Letterkenny		Mayo		Portiuncula		Sligo	
		# DC DRG	# IPC DRG	# DC DRG	# IPC DRG	# DC DRG	# IPC DRG	# DC DRG	# IPC DRG
U65A	Anxiety Disorders; Major Complexity	0	0	0	0	0	1	0	0
U66A	Eating and Obsessive-Compulsive Disorders, Major Complexity	0	0	0	0	0	0	0	1
V60A	Alcohol Intoxication and Withdrawal; Major Complexity	0	2	0	0	0	2	0	1
V60B	Alcohol Intoxication and Withdrawal, Minor Complexity	0	0	0	0	0	0	0	1
W02B	Hip, Femur and Lower Limb Procedures for Multiple Sig Trauma, Minor Complexity	0	0	0	0	0	0	0	1
X06B	Other Procedures for Other Injuries, Intermediate Complexity	0	0	0	0	0	0	0	1
X60A	Injuries, Major Complexity	0	0	0	0	0	2	0	1
X61A	Allergic Reactions, Major Complexity	0	0	0	1	0	0	0	0
X62A	Poisoning/Toxic Effects of Drugs and Other Substances, Major Complexity	0	0	0	0	0	0	0	2
X63A	Sequelae of Treatment; Major Complexity	0	1	0	1	0	0	0	2
X63B	Sequelae of Treatment; Minor Complexity	0	2	0	0	0	0	0	0
X64B	Other Injuries, Poisonings and Toxic Effects, Minor Complexity	0	0	0	0	0	0	0	1
Z40Z	Other Contacts W Health Services W Endoscopy, Sameday	489	0	216	0	236	0	372	0
Z60A	Rehabilitation, Major Complexity	0	0	0	1	0	0	0	0
Z61A	Signs and Symptoms, Major Complexity	0	0	0	0	0	0	0	6
Z61B	Signs and Symptoms; Intermediate Complexity	0	0	0	2	0	1	0	0
Z61C	Signs and Symptoms; Minor Complexity	0	0	0	0	0	1	0	0
Z63A	Other Follow Up After Surgery or Medical Care, Major Complexity	0	0	0	0	0	0	0	3
Z64A	Other Factors Influencing Health Status; Major Complexity	0	1	0	1	0	3	0	1
Z64B	Other Factors Influencing Health Status, Minor Complexity	0	0	0	1	0	1	0	1
	Total DRG's with an endoscopy patient in 2019	**4782**	**587**	**3048**	**430**	**1640**	**207**	**2752**	**507**

A.9 Daycase dialysis patients in 2019 per hospital

The table below shows insight in the amount of daycase haemodialysis patients on the basis of the related DRG in 2019 per hospital. As some dialysis patients might be registered under a different DRG, probably not all patients are covered in this table. In the outcomes these daycases are classified as Renal – daycase.

Table 36: Daycase dialysis patients per hospital in 2019

Hospital	DRG description	Number of daycase patients
Letterkenny University Hospital	Haemodialysis	9,625
Mayo University Hospital	Haemodialysis	8,505
Sligo University Hospital	Haemodialysis	7,220

A.10 No. of beds when applying 80% occupancy rate

A occupancy rate of 80% is to be aimed for in the case COVID-19 or similar events lead to precautionary measures, affecting the capacity available. With the calculated bed days a 80% capacity will lead to the following number of beds per hospital.

Hospital	Type of bed	Current capacity (in beddays)	Future demand (in beddays)	Total future beds - 80% occ rate
Letterkenny University Hospital	IPC*	108900	123200	422
Letterkenny University Hospital	ICU	5200	5600	19
Letterkenny University Hospital	DC	35000	36700	47
Mayo University Hospital	IPC	86900	102700	352
Mayo University Hospital	ICU	2500	3100	11
Mayo University Hospital	DC	31000	30900	40
Portiuncula University Hospital	IPC	49500	55600	190
Portiuncula University Hospital	ICU	1900	2400	8
Portiuncula University Hospital	DC	10700	12400	16
Sligo University Hospital	IPC	92100	104100	357
Sligo University Hospital	ICU	6300	7000	24
Sligo University Hospital	DC	39000	39600	51

(*) Including Rehab

A.11 Overview of IP and ICU beddays patients under 16 years

The below table provides an overview of the number of IP beddays for patients under 16 per specialty. It shows that very limited number of IP beddays are not within either the neonatology or paediatrics specialty. The limited number of beddays for patients under 16 within other specialties leads to an expected 12 extra paediatrics beds (for all hospitals in total). These beds are to be subtracted from the expected future required beds of the underlying specialties, for instance general surgery.

Hospital	Specialty	daycare	# IPC beddays under age 16	# IPC beddays total	% of days under 16	Total future beddays	Paediatric future beddays based on % patients below 16	Extra IPC paedriatic beds
Letterkenny University Hospital	Cardiology	No	0	3483	0,0%	4250	0	0,0
Letterkenny University Hospital	Dental Surgery	No	1	1	100,0%	0	0	0,0
Letterkenny University Hospital	Endocrinology	No	0	3640	0,0%	4340	0	0,0
Letterkenny University Hospital	Gastro Enterology	No	0	42	0,0%	60	0	0,0
Letterkenny University Hospital	General Medicine	No	0	30852	0,0%	37830	0	0,0
Letterkenny University Hospital	General Surgery	No	568	11378	5,0%	14350	716	2,3
Letterkenny University Hospital	Geriatric Medicine	No	0	7260	0,0%	8430	0	0,0
Letterkenny University Hospital	Gynaecology	No	21	2322	0,9%	2680	24	0,1
Letterkenny University Hospital	Haematology	No	0	2608	0,0%	2350	0	0,0
Letterkenny University Hospital	Neonatology	No	340	340	100,0%	280	280	n/a
Letterkenny University Hospital	Nephrology	No	1	4224	0,0%	5220	1	0,0
Letterkenny University Hospital	Obstetrics	No	4	8700	0,0%	7190	3	0,0
Letterkenny University Hospital	Oncology	No	0	4116	0,0%	3960	0	0,0
Letterkenny University Hospital	Orthopaedics	No	295	7700	3,8%	10080	386	1,2
Letterkenny University Hospital	Paediatrics	No	4964	4977	99,7%	4730	4718	n/a
Letterkenny University Hospital	Respiratory Medicine	No	0	14482	0,0%	16620	0	0,0
Letterkenny University Hospital	Urology	No	1	334	0,3%	740	2	0,0
Mayo University Hospital	Endocrinology	No	9	5964	0,2%	6120	9	0,0
Mayo University Hospital	General Medicine	No	88	41831	0,2%	55350	116	0,4
Mayo University Hospital	General Surgery	No	429	9511	4,5%	10950	494	1,6
Mayo University Hospital	Geriatric Medicine	No	10	7127	0,1%	9460	13	0,0
Mayo University Hospital	Haematology	No	0	3	0,0%	0	0	0,0
Mayo University Hospital	Obstetrics/Gynaecology	No	16	6219	0,3%	5510	14	0,0
Mayo University Hospital	Oncology	No	0	8	0,0%	40	0	0,0
Mayo University Hospital	Orthopaedics	No	147	8266	1,8%	10780	192	0,6
Mayo University Hospital	Paediatrics	No	5922	6065	97,6%	4520	4413	n/a
Portiuncula University Hospital	Cardiology	No	0	1331	0,0%	1510	0	0,0
Portiuncula University Hospital	General Medicine	No	0	22243	0,0%	27200	0	0,0
Portiuncula University Hospital	General Surgery	No	612	7395	8,3%	9480	785	2,5
Portiuncula University Hospital	Gynaecology	No	16	940	1,7%	1010	17	0,1

Hospital	Specialty	daycare	# IPC beddays under age 16	# IPC beddays total	% of days under 16	Total future beddays	Paediatric future beddays based on % patients below 16	Extra IPC paedriatic beds
Portiuncula University Hospital	Maxillo-Facial	No	0	1	0,0%	50	0	0,0
Portiuncula University Hospital	Obstetrics	No	4	8352	0,0%	7290	3	0,0
Portiuncula University Hospital	Paediatrics	No	4423	4454	99,3%	2910	2890	n/a
Portiuncula University Hospital	Respiratory Medicine	No	0	4381	0,0%	6010	0	0,0
Portiuncula University Hospital	Urology	No	0	1	0,0%	170	0	0,0
Sligo University Hospital	Dermatology	No	0	8	0,0%	10	0	0,0
Sligo University Hospital	Endocrinology	No	0	2949	0,0%	3530	0	0,0
Sligo University Hospital	Gastro Enterology	No	0	329	0,0%	290	0	0,0
Sligo University Hospital	General Medicine	No	1	41420	0,0%	49720	1	0,0
Sligo University Hospital	General Surgery	No	455	9770	4,7%	10850	505	1,6
Sligo University Hospital	Geriatric Medicine	No	0	439	0,0%	750	0	0,0
Sligo University Hospital	Gynaecology	No	8	1224	0,7%	1220	8	0,0
Sligo University Hospital	Haematology	No	0	2042	0,0%	2750	0	0,0
Sligo University Hospital	Neonatology	No	394	394	100,0%	240	240	n/a
Sligo University Hospital	Nephrology	No	0	2579	0,0%	2670	0	0,0
Sligo University Hospital	Neurology	No	0	2646	0,0%	3000	0	0,0
Sligo University Hospital	Obstetrics	No	8	6306	0,1%	4370	6	0,0
Sligo University Hospital	Oncology	No	0	4548	0,0%	5840	0	0,0
Sligo University Hospital	Ophthalmology	No	17	93	18,3%	300	55	0,2
Sligo University Hospital	Orthopaedics	No	141	7178	2,0%	9680	190	0,6
Sligo University Hospital	Otolaryngology	No	140	2161	6,5%	4620	299	1,0
Sligo University Hospital	Paediatrics	No	2798	2842	98,5%	1990	1959	n/a
Sligo University Hospital	Pain Relief	No	0	4	0,0%	0	0	0,0
Sligo University Hospital	Radiology	No	0	9	0,0%	30	0	0,0
Sligo University Hospital	Rheumatology	No	0	950	0,0%	1490	0	0,0
Sligo University Hospital	Urology	No	0	232	0,0%	720	0	0,0
Total								12,4

The below table provides an overview of the number of ICU beddays for patients under 16 per specialty. It shows that very limited number of ICU beddays are not within either the neonatology or paediatrics speciality, which strengthens the case that all these beddays can be seen as the proxy for NICU bed demand.

Hospital	Specialty	ICU care	# ICU beddays under age 16	# ICU beddays total	% of days under 16
Letterkenny University Hospital	Cardiology	Yes	0	867	0%
Letterkenny University Hospital	Dental Surgery	Yes	0	0	0%
Letterkenny University Hospital	Endocrinology	Yes	0	170	0%
Letterkenny University Hospital	Endoscopic daycase	Yes	0	0	0%
Letterkenny University Hospital	Gastro Enterology	Yes	0	0	0%
Letterkenny University Hospital	General Medicine	Yes	0	936	0%
Letterkenny University Hospital	General Surgery	Yes	0	265	0%
Letterkenny University Hospital	Geriatric Medicine	Yes	0	219	0%
Letterkenny University Hospital	Gynaecology	Yes	0	3	0%
Letterkenny University Hospital	Haematology	Yes	0	59	0%
Letterkenny University Hospital	Haematology oncology - daycase	Yes	0	0	0%
Letterkenny University Hospital	Maternaty daycase	Yes	0	0	0%
Letterkenny University Hospital	Medical oncology - daycase	Yes	0	0	0%
Letterkenny University Hospital	Neonatology	Yes	1526	1526	100%
Letterkenny University Hospital	Nephrology	Yes	0	140	0%
Letterkenny University Hospital	Obstetrics	Yes	0	0	0%
Letterkenny University Hospital	Oncology	Yes	0	3	0%
Letterkenny University Hospital	Ophthalmology	Yes	0	0	0%
Letterkenny University Hospital	Orthopaedics	Yes	0	40	0%
Letterkenny University Hospital	Paediatrics	Yes	302	302	100%
Letterkenny University Hospital	Renal daycare	Yes	0	0	0%
Letterkenny University Hospital	Respiratory Medicine	Yes	0	679	0%
Letterkenny University Hospital	Urology	Yes	0	14	0%
Mayo University Hospital	Endocrinology	Yes	0	184	0%
Mayo University Hospital	Endoscopic daycase	Yes	0	0	0%
Mayo University Hospital	General Medicine	Yes	0	1655	0%
Mayo University Hospital	General Surgery	Yes	6	392	2%
Mayo University Hospital	Geriatric Medicine	Yes	0	200	0%
Mayo University Hospital	Haematology	Yes	0	0	0%
Mayo University Hospital	Haematology oncology - daycase	Yes	0	0	0%
Mayo University Hospital	Maternaty daycase	Yes	0	0	0%
Mayo University Hospital	Medical oncology - daycase	Yes	0	0	0%
Mayo University Hospital	Obstetrics/Gynaecology	Yes	0	22	0%
Mayo University Hospital	Oncology	Yes	0	0	0%
Mayo University Hospital	Orthopaedics	Yes	0	38	0%
Mayo University Hospital	Paediatrics	Yes	18	24	75%

Hospital	Specialty	ICU care	# ICU beddays under age 16	# ICU beddays total	% of days under 16
Mayo University Hospital	Renal daycare	Yes	0	0	0%
Portiuncula University Hospital	Cardiology	Yes	0	169	0%
Portiuncula University Hospital	Dental Surgery	Yes	0	0	0%
Portiuncula University Hospital	Dermatology	Yes	0	0	0%
Portiuncula University Hospital	Endoscopic daycase	Yes	0	0	0%
Portiuncula University Hospital	General Medicine	Yes	0	948	0%
Portiuncula University Hospital	General Surgery	Yes	4	574	1%
Portiuncula University Hospital	Gynaecology	Yes	0	8	0%
Portiuncula University Hospital	Haematology oncology - daycase	Yes	0	0	0%
Portiuncula University Hospital	Maternaty daycase	Yes	0	0	0%
Portiuncula University Hospital	Maxillo-Facial	Yes	0	0	0%
Portiuncula University Hospital	Medical oncology - daycase	Yes	0	0	0%
Portiuncula University Hospital	Obstetrics	Yes	0	28	0%
Portiuncula University Hospital	Oncology	Yes	0	0	0%
Portiuncula University Hospital	Paediatrics	Yes	4	4	100%
Portiuncula University Hospital	Pain Relief	Yes	0	0	0%
Portiuncula University Hospital	Respiratory Medicine	Yes	0	146	0%
Portiuncula University Hospital	Urology	Yes	0	0	0%
Sligo University Hospital	Dental Surgery	Yes	0	0	0%
Sligo University Hospital	Dermatology	Yes	0	0	0%
Sligo University Hospital	Endocrinology	Yes	0	175	0%
Sligo University Hospital	Endoscopic daycase	Yes	0	0	0%
Sligo University Hospital	Gastro Enterology	Yes	0	60	0%
Sligo University Hospital	General Medicine	Yes	0	3677	0%
Sligo University Hospital	General Surgery	Yes	0	402	0%
Sligo University Hospital	Geriatric Medicine	Yes	0	0	0%
Sligo University Hospital	Gynaecology	Yes	0	5	0%
Sligo University Hospital	Haematology	Yes	0	25	0%
Sligo University Hospital	Haematology oncology - daycase	Yes	0	0	0%
Sligo University Hospital	Maternaty daycase	Yes	0	0	0%
Sligo University Hospital	Maxillo-Facial	Yes	0	0	0%
Sligo University Hospital	Medical oncology - daycase	Yes	0	0	0%
Sligo University Hospital	Neonatology	Yes	1386	1386	100%
Sligo University Hospital	Nephrology	Yes	0	180	0%
Sligo University Hospital	Neurology	Yes	0	54	0%
Sligo University Hospital	Obstetrics	Yes	0	28	0%
Sligo University Hospital	Oncology	Yes	0	41	0%
Sligo University Hospital	Ophthalmology	Yes	0	0	0%
Sligo University Hospital	Orthopaedics	Yes	0	188	0%
Sligo University Hospital	Otolaryngology	Yes	0	45	0%

Hospital	Specialty	ICU care	# ICU beddays under age 16	# ICU beddays total	% of days under 16
Sligo University Hospital	Paediatrics	Yes	25	25	100%
Sligo University Hospital	Pain Relief	Yes	0	0	0%
Sligo University Hospital	Radiology	Yes	0	0	0%
Sligo University Hospital	Renal daycare	Yes	0	0	0%
Sligo University Hospital	Rheumatology	Yes	0	0	0%
Sligo University Hospital	Urology	Yes	0	1	0%

A.12 Limitations

This analysis has tried to estimate the demand and capacity as accurately as possible. Nevertheless, the quantitative model and approach applied has limitations. Firstly, the physical infrastructure characteristics of each site cannot be taken into account in the model. For example, this analysis does not include where occupancy and bed blocking is required because of physical distancing measures or where there is a lack of isolation rooms for certain specialties or wards. Secondly, the analysis does not consider the implications of the availability and effectiveness of staff resources to manage the current or projected demand.

Also, in preparing this report, we have had access to information provided by Health Service Executive and publicly available information. The findings and recommendations in this report are given in good faith but, in the preparation of this report, we have relied upon and assumed, without independent verification, the accuracy, reliability and completeness of the information made available to us in the course of our work, and have not sought to establish the reliability of the information by reference to other evidence.

Any findings or recommendations contained within this report are based upon our reasonable professional judgement based on the information that is available from the sources indicated. Should the project elements, external factors and assumptions change then the findings and recommendations contained in this report may no longer be appropriate. Accordingly, we do not confirm, underwrite or guarantee that the outcomes referred to in this report will be achieved.

This report does not constitute an expression of opinion as to whether any forecast or projection of the project will be achieved, or whether assumptions underlying any forecast or projections of the project are reasonable. We do not warrant or guarantee any statement in this report as to the future prospects of the project. There will usually be differences between forecast or projected and actual results, because events and circumstances frequently do not occur as expected or predicted, and those differences may be material

A.13 List of stakeholders involved

Name	Role	Participation
Dr Kevin Clarkson	Group Clinical Director, Perioperative	Workshop 2
Ann Cosgrove	Group Chief Operating Officer	Report review Workshop 3 (SUH)
Dr Kieran Cunningham	Consultant in Emergency Medicine, SUH	Workshop 1
Catherine Donohoe	General Manager, MUH	All workshops
Fiona Duffy	Patient Information and Freedom of Information Lead, PUH	Workshop 1
Dr Anne Drake	Director of Nursing, Quality and Patient Safety, LUH	Workshop 1 Workshop 3
Marita Fogarty	Director of Nursing, PUH	Workshop 1 Workshop 2
Mary Garvey	General Manager, RUH	Workshop 1
Frank Harburn	Group Project Manager, PMO	All workshops and report development
Dr Fergal Hickey	Consultant in Emergency Medicine, SUH	Workshop 1 Workshop 2 ED conversion rates
Helene Horsnell	General Manager, Unscheduled Care	Workshop 2
Paul Hurney	Finance Manager, GUH	All workshops and HIPE data provision
James Keane	General Manager, PUH	All workshops
Maire Kelly	Clinical Support and Services Director, PUH	Workshop 1 Workshop 2
Jean Kelly	Chief Director of Nursing/Midwifery	Workshop 1 Workshop 2
Eileen Kelly	Office of the Chief Clinical Director	All workshops
Prof Michael Kerin	Director of Cancer MCAN	Workshop 1
Dr Chris McBrearty	Quality Improvement Lead, PUH	Workshop 1 Workshop 3
Grainne McCann	General Manager, SUH	All workshops
Siobhan McEniff	Clinical Project Officer, SUH	All workshops
Dr Olga Mikulich	Associate Clinical Director Medicine, LUH	Workshop 1

Name	Role	Participation
Ailish Mohan	Business Manager, Women & Children's MCAN	Workshop 3
Sean Murphy	General Manager, LUH	Workshop 2 Workshop 3
Dr Pat Nash	Group Chief Clinical Director	Report review
Padraig O'Luanaigh	Director of Nursing, LUH	Workshop 1 Workshop 3
Mr Peter O'Rourke	Associate Clinical Director Perioperative, LUH	Workshop 1
Mr Naishadh Patil	Associate Clinical Director Perioperative, SUH	All workshops
Marion Ryder	Director of Nursing, SUH	Workshop 1 Workshop 3
Jo Shortt	Group Portfolio Lead, PMO	All workshops and report development
Breda Smyth	Director of Public Health Medicine, CHO West	Workshop 1 Provision of public health data
Joe Travers	Assistant General Manager, LUH	Workshop 1 Workshop 3

B. 1 Changes in data in specialties

In the data, some hospitals had few or no patients for some specialties. In addition, some specialties only occurred in one of the four included model 3 hospitals. Also, some specialties occurred in the transfer data, but not in the HIPE data. Therefore, some changes on specialty names were made in the data in order to achieve comparable and reliable outcomes on future demand in bed days per specialty. Table 37 illustrates which changes were made and how much patients were involved.

Table 37: Specialty changes per data type and hospital

HIPE data 2019			
Hospital	**Specialty in HIPE data**	**# patients**	**New specialty**
Letterkenny University Hospital	Neurology	2	General medicine
Letterkenny University Hospital	Otolaryngology	4	General Surgery
Letterkenny University Hospital	Pain Relief	1	General medicine
Letterkenny University Hospital	Psychiatry	1	General medicine
Letterkenny University Hospital	Radiology	1	Oncology
Letterkenny University Hospital	Breast Surgery	80	General Surgery
Letterkenny University Hospital	Accident & Emergency	4	General Surgery
Letterkenny University Hospital	Anaesthetics	9	General medicine
Mayo University Hospital	Dental Surgery	12	General Surgery
Mayo University Hospital	Gastroenterology	1	General Medicine
Mayo University Hospital	Otolaryngology	18	General Surgery
Mayo University Hospital	Diabetes Mellitus	22	Endocrinology
Portiuncula University Hospital	Gastro Enterology	1	General Medicine
Portiuncula University Hospital	Radiology	20	Oncology
Portiuncula University Hospital	Anaesthetics	26	Pain Relief
Sligo University Hospital	Cardiology	15	General Medicine
Sligo University Hospital	Psychiatry	15	Neurology
Sligo University Hospital	Histopathology	1	Oncology
Sligo University Hospital	Anaesthetics	1	Pain Relief

Waiting list data 2019			
Hospital	**Specialty in Waitlist data**	**# patients**	**New specialty**
Letterkenny University Hospital	Anaesthetics	5	General medicine
Portiuncula University Hospital	Radiology	2	Oncology
Portiuncula University Hospital	Plastic Surgery	1	General Surgery
Transfer data 2019 from Galway			
Hospital	**Specialty in Transfer data**	**# patients**	**New specialty**
Mayo University Hospital	Neurology	2	General medicine
Mayo University Hospital	Radiology	6	Oncology
Mayo University Hospital	Urology	14	General medicine
Mayo University Hospital	Respiratory Medicine	1	General medicine
Mayo University Hospital	Radiotherapy	14	Oncology
Mayo University Hospital	Infectious Diseases	1	General medicine
Mayo University Hospital	Cardiology	443	General medicine
Mayo University Hospital	Cardio Thoracic Surgery	6	General Surgery
Mayo University Hospital	Otolaryngology	2	General Surgery
Mayo University Hospital	Gastroenterology	37	General medicine
Mayo University Hospital	Vascular Surgery	19	General Surgery
Mayo University Hospital	Plastic Surgery	5	General Surgery
Portiuncula University Hospital	Plastic Surgery	2	General Surgery
Portiuncula University Hospital	Infectious Diseases	1	General medicine
Portiuncula University Hospital	Gastro Enterology	4	General medicine
Portiuncula University Hospital	Cardio Thoracic Surgery	4	General Surgery
Portiuncula University Hospital	Radiotherapy	2	Oncology
Portiuncula University Hospital	Vascular Surgery	2	General Surgery
Portiuncula University Hospital	Geriatric Medicine	1	General medicine
Portiuncula University Hospital	Haematology	1	Oncology
Portiuncula University Hospital	Nephrology	5	General medicine

Hospital	Specialty in Transfer data	# patients	New specialty
Portiuncula University Hospital	Orthopaedics	4	General Surgery
Sligo University Hospital	Cardiology	150	General Medicine
Sligo University Hospital	Cardio Thoracic Surgery	11	General Surgery
Sligo University Hospital	Vascular Surgery	12	General Surgery
Sligo University Hospital	Radiotherapy	16	Radiology
Sligo University Hospital	Plastic Surgery	3	General Surgery
Letterkenny University Hospital	Maxillo-Facial	1	General Surgery
Letterkenny University Hospital	Cardio Thoracic Surgery	7	General Surgery
Letterkenny University Hospital	Plastic Surgery	4	General Surgery
Letterkenny University Hospital	Radiotherapy	2	Oncology
Letterkenny University Hospital	Vascular Surgery	28	General Surgery
Letterkenny University Hospital	Neurology	1	General medicine
Letterkenny University Hospital	Otolaryngology	1	General Surgery

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