حكومة دبي
GOVERNMENT OF DUBAI

هيئة الصحة بدبي
DUBAI HEALTH AUTHORITY

Dubai Clinical Services Capacity Plan

2022-2033

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Executive Summary

Disclaimer
All the data used to calculate the gaps are primarily collected through the sup- ply survey and the demand is estimated by the DHA technical team. For citation purposes, the source of all the tables and graphs presented in this report is the Dubai Health Authority (DHA).

Awadh Seghayer Al Ketbi

Director-General

Dubai Health Authority

Message from the Director General

Dubai's healthcare sector has seen exponential growth over the last few years both in terms of scale and specialised service-delivery. In order to further support the growth and development of this vital sector, we at the Dubai Health Authority, have launched the Dubai Clinical Service Capacity Plan (DCSCP) 2022- 2033.

DCSCP is in line with the vision of His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai, the 50-year charter and the DHA strategy 2026, to ensure the provision of the highest quality of specialised and accessible patient-centered care for visitors and residents in Dubai as well as to provide the sector with support to build a robust, agile and innovative healthcare system.

DCSCP is a scientific evidence-based study that will help the Emirate respond to its current and future healthcare demands. It serves as a base to devise evidence-based plans, strategies and policies, identify priority health services and needs, guide investments and investors, and undertake future health provision planning.

DCSCP will enable healthcare organizations such as hospitals, clinics, and private practices to anticipate and respond to changes in the Emirate's healthcare environment, while ensuring their services are effective, efficient, and sustainable.

The comprehensive plan delivers essential updated healthcare delivery infrastructure and manpower data and provides a complete snapshot of Dubai's public and private healthcare sector, in addition to demand supply gap analysis for medical specialties, healthcare manpower (doctors and nurses), beds, medical imaging and procedural care, over the next eight years in the Emirate of Dubai.

The plan provides valuable data for health sector, especially for investors and providers, to continue planning and developing their services. I take this opportunity to invite stakeholders to utilise the information contained in this in-depth plan to support their decisions on current and future health planning with an aim to provide patients with the highest-quality of care and to enhance the health and wellbeing of the community.

“The DCSCP comprehensively outlines new and existing capacity gaps across Dubai. Our focus and strategic efforts will be geared towards addressing the priority gaps through shift towards adopting innovative smart technologies, implementing new and alternative care models and create a health system that has the ability to deal with complexity and survive under uncertainty. “

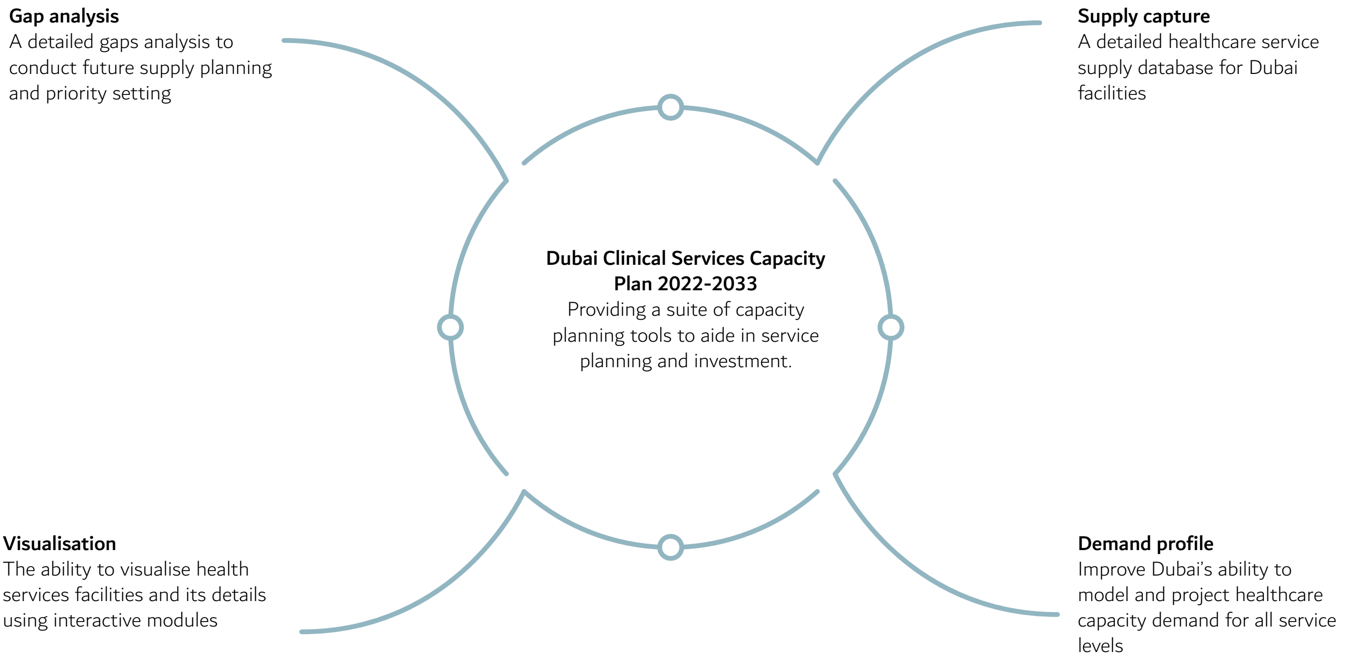
Ms. Fatima Abbas
CEO, Strategy & Corporate Development Sector

01 PROJECT OVERVIEW

This chapter describes the rationale, framework, the main objectives and the benefits of the Dubai Clinical Services Capacity Plan

Dubai Clinical Services Capacity Plan 2022 - 2033

Endorsed and supported by the H.E. Awad Sagayer Al Keitbi, the Dubai Clinical Services Capacity Plan 2022-2033 (DCSCP) assists in delivering the health sector vision 2071, Dubai Health Strategy 2026 and Dubai Plan 2033. The DCSCP aims to develop a health capacity plan to benefit investors, providers and the community.



The objectives of the DCSCP are to:

- To capture and validate the current supply of clinical service capacity in the Emirate of Dubai.
- Project the demand for clinical service capacity through to 2033 taking account of the Dubai's resident population and visitors and COVID-19 implication on service utilization.
- Develop population growth scenarios to assess the impact of demand on health service capacity.
- Assess the gap in the current clinical service capacity for each scenario based on current supply.
- Identify short and long-term priorities and strategies for the development of clinical services capacity.
- Develop a mapping tool for displaying the current supply of health service facilities.
- Produce a guide to clinical service capacity development and policy recommendations.
- Provide input to Dubai Healthcare Investment Guide.

The DCSCP is a periodic study conducted to understand the current healthcare sector demand, supply and existing gaps of services. The study was conducted across government and private sectors in Dubai (i.e. it includes all healthcare facilities working within the geographical jurisdiction of Emirate of Dubai). The study was conducted in three rounds 2012, 2018 and 2022. The data collected during this round was validated and analyzed to provide a comprehensive report to guide capacity planning for Dubai healthcare sector until 2033.

The DCSCP brings together the collaborative efforts of the Dubai Health Authority to create a detailed and practical planning guide that supports the development of the Dubai health sector in delivering efficient, effective, comprehensive and quality services to the community.

The DCSCP in undertaken by the Strategy & Governance Department of Dubai Health Authority (DHA) and executed in collaboration with Total Alliance Health Partners International (TAHPI), an experienced and internationally renowned health planning firm.

This report is based on a robust and detailed survey of the current supply of services provided by facilities. In addition a systematic assessment and forecast of the future demand is conducted to identify the gaps in healthcare services.

"The Dubai Clinical Services Capacity Plan (DCSCP) applies a rigorous, evidence-based methodology to assess the current and future healthcare needs of Dubai. Through a systematic approach encompassing population modelling, supply validation, and demand forecasting, the plan identifies critical service gaps across infrastructure and workforce. This comprehensive analysis provides a solid foundation for data-driven decision-making, ensuring that health services are responsive, equitable, and aligned with projected demographic and epidemiological trends through to 2033."

Dr. Nahed Monsef
Director, Strategy & Governance Dept

02 METHODOLOGY OVERVIEW

The chapter describes the methodology used to conduct the supply and demand assessment, as well as give an understanding of the areas focused to identify gaps for development.

2.1 Study Methodology

A systematic and incremental method was adopted in developing the DCSCP, progressing from population modelling to supply capture, demand modelling and gap assessment. This process is illustrated below.

POPULATION	SUPPLY CAPTURE	DEMAND PROFILE	GAP ANALYSIS	STRATEGY
Population modelling for low, medium and high scenarios for Dubai until 2033 taking into account population flows including health tourism population.	2022 DHA Health Facility Survey, 2021-22 Health Statistics analysis, E-Claims data analysis, Systematic validation process.	Projected future demand for healthcare by age, sex, nationality and geographical sector adjusted for Dubai burden of disease, COVID-19 impact and relative utilization for UAE nationals and expats. A sensitivity analysis was conducted to validate the results.	Gaps by Key Planning Units (KPU's), Episodes and Stay periods for 2022, 2025 & 2033 based on the projected demand and current supply.	Develop recommendations Requirements Priorities Strategic direction.

Initially supply data was gathered by conducting a survey of clinical services provided by all healthcare facilities in the Emirate of Dubai in 2022. The results were validated using external data sources such as E-Claims and 2021-22 Annual Statistical Book.

Population modelling was performed to project the Dubai population by sector, nationality, age and gender in 5-year intervals up to the year 2033. Health service demand projections were calculated using a statistical tool (Demand Module), developed using refined international population-based reference datasets from advanced healthcare systems and adjusted for burden of disease to project service demand based on population per capita projections of key utilization and capacity measures for outpatient, inpatient and continuing care service types.

The gaps identified in the key planning unit measures is a result of the difference between supply and demand. Further nominal adjustments were made, in consultation with an Expert Panel, to ensure that results are sensitive to local factors and incorporate relative utilization factors which adjust the international reference rates to account for local utilization and efficiency factors relevant to Dubai.

2.2 Supply

Supply is the total amount of a services that are available for consumer use. In this study, supply is defined

as the clinical services reported by survey respondents as available and provided at their facility during 2022. A survey on health services capacity was distributed to all new licensed hospitals and clinics between 2019 and 2022. In addition, the survey also was also sent to any existing health facility that added a new service between 2019-2022. A four-week period was allocated for all health facilities to fill the survey with continuous support provided by DHA staff during that period.

The collected data for the period of 2019-2022 was added to the supply database prior to 2019. Thus, creating a comprehensive data base on the current supply of healthcare services and professionals for the Emirate of Dubai.

The survey data was validated using the DHA Annual Statistical Book and the Insurance claims (E-Claims database). Further adjustments were made to supply estimates to account for an incomplete response rate.

2.3 Demand

Dubai's population health service demand was calculated using a demand module. Demand projections were

based on refined international population-based reference health provision datasets to project service demand by key planning units as stated below. The demand module uses reference datasets from Australia, UK, USA, the world Bank, WHO and OECD participating countries using disease related groups (DGRs). There referenced countries were selected based on health status, equitable access to affordable healthcare and availability of comprehensive high quality healthcare utilization data.

These reference datasets were refined to create best fit regression demand estimates for primary, secondary and tertiary care by specialty and case-mix level, using at least twelve years of historical data to project demand for up to 2033. The refined reference datasets were then used to estimate and project capacity needs for the Emirate of Dubai population by age group, gender and nationality. Further adjustments were made to account for the impact of regional and national burden of disease, relative utilization, occupancy, length of stay, per- centage same day and changes in utilization patterns driven by COVID-19.

The demand projections generated for episodes and stay periods were converted to capacity measures, such as beds and rooms, based on agreed occupancy rates.

The capacity measures were categorized into eight key planning units (KPU) as stated below:

- **Acute overnight and same day care**
- **Non-acute, sub-acute and extended care**
- **Operating theatre care**
- **Critical care**
- **Emergency department care**
- **Outpatient care**
- **Procedural care (Medical Imaging)**
- **Health workforce**

2.4 Gap analysis

The gap analysis is calculated by the difference between supply and demand, where a deficit indicates a need for

additional capacity and a surplus suggests an opportunity for reallocation of capacity to deficient services. This analysis report identifies the health service gaps in the Emirate of Dubai and is helps to prioritize the future investment and health workforce planning to address the gaps till 2033.

All health service needs were measured in terms of beds, chairs, operating theatres, consultations rooms, full time equivalent professionals. These measures were then categorized into eight key planning units (KPUs) using locally validated operational assumptions such as occupancy, turnover and operational days. KPUs and their associated service capacity measures are stated below.

Table 1: Key Planning Unit definitions and capacity measures

Capacity Measure	KPU Setting
Acute Overnight Care	Beds
Acute Same Day Care	Places/Chairs
Non-Acute Overnight Care	Beds
Intensive Care	Beds
Emergency Department	Bays/Rooms/Cubicles
Operating Theatres	Rooms
Outpatients	Rooms/Chairs
workforce	Full Time Equivalents

* Place-A specified area in a facility designated for same day procedures

Each KPU is disaggregated into comprehensive list of service lines (specialties) and their relevant DRGs, each with their own demand growth profile that is sensitive to the population structure changes. This service line (specialties) classified by DRGs are presented in Chapter 8 – Appendix.

2.4 Gap analysis

The reference files applied to Dubai's population catchment calculates several measures, such as overnight episodes, same day episodes and outpatient visits, converting them to beds, places and consultations room using stay period estimates. This is then adjusted to suit Dubai's context interms of burden of disease and socio-economic characteristics as compared to the healthcare reference utilization countries. In addition, the adjusted projected demand has been categorized by age group, gender, service type, service mode, specialty and casemix.

Table 2: Key Planning Unit-assumptions

Assumption	KPU Measure	Utilisation Statistic Measure	Type
Acute Care **Non-acute Care**	Same Day Separations Overnight Separations Overnight Stay Periods (days)	Overnight Beds Same Day Places	Beds = 70% occupancy, 365 days/year, Places = 1.5 patient per day/ KPU, 248 days/year
Emergency Department Care	Presentations Stay Periods (minutes)	Emergency Bays	70% occupancy, 365 days/year
Intensive Care	Separations Stay Periods (days)	Intensive Care Beds	70% occupancy, 365 days/year
Outpatient Care	Occasions	Consultation Rooms	70% occupancy, 248 days/year, 8 hours/day
Procedural Care	Scans	Medical Imaging Units	70% occupancy, 248 days/year, 8 hours/day
Operating Theatre	Operations Stay Periods (minutes)	Theatre rooms	70% occupancy (Elective) 45% occupancy (Emergency)

Each service type has been defined according to a service lines based on a list of relevant case mix and DRG codes as shown in Chapter 8 – Appendix.

03 | BACKGROUND AND CONTEXT

This chapter describes the current Dubai healthcare environment, geography, population demographics, population growth scenarios, and health status.

3.1 Health Care Environment

3.1.1 Dubai Healthcare Sector

The Dubai healthcare sector consists of government and private facilities that are aligned to the overall healthcare needs of the population of Dubai with a reasonable geographical distribution. Healthcare facilities in Dubai strive to provide high quality services that are appropriate, available, accessible and affordable for the Dubai community.

Key Planning Unit assumptions

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3.1.2 Dubai Health Sector Strategy 2022-2026

The Dubai Health Strategy has been developed in alignment with Dubai Plan 2033 and it aims to realize the vision and mission stated below while maintaining a set of core values to support the implementation of the strategy.

Our Vision

Dubai the homeland of pioneering in health, happiness and prosperity

Our Mission

Transforming Dubai into a leading healthcare destination by advancing public health and prevention; ensuring universal access to high-value healthcare; and fostering innovation and research.

Our Values

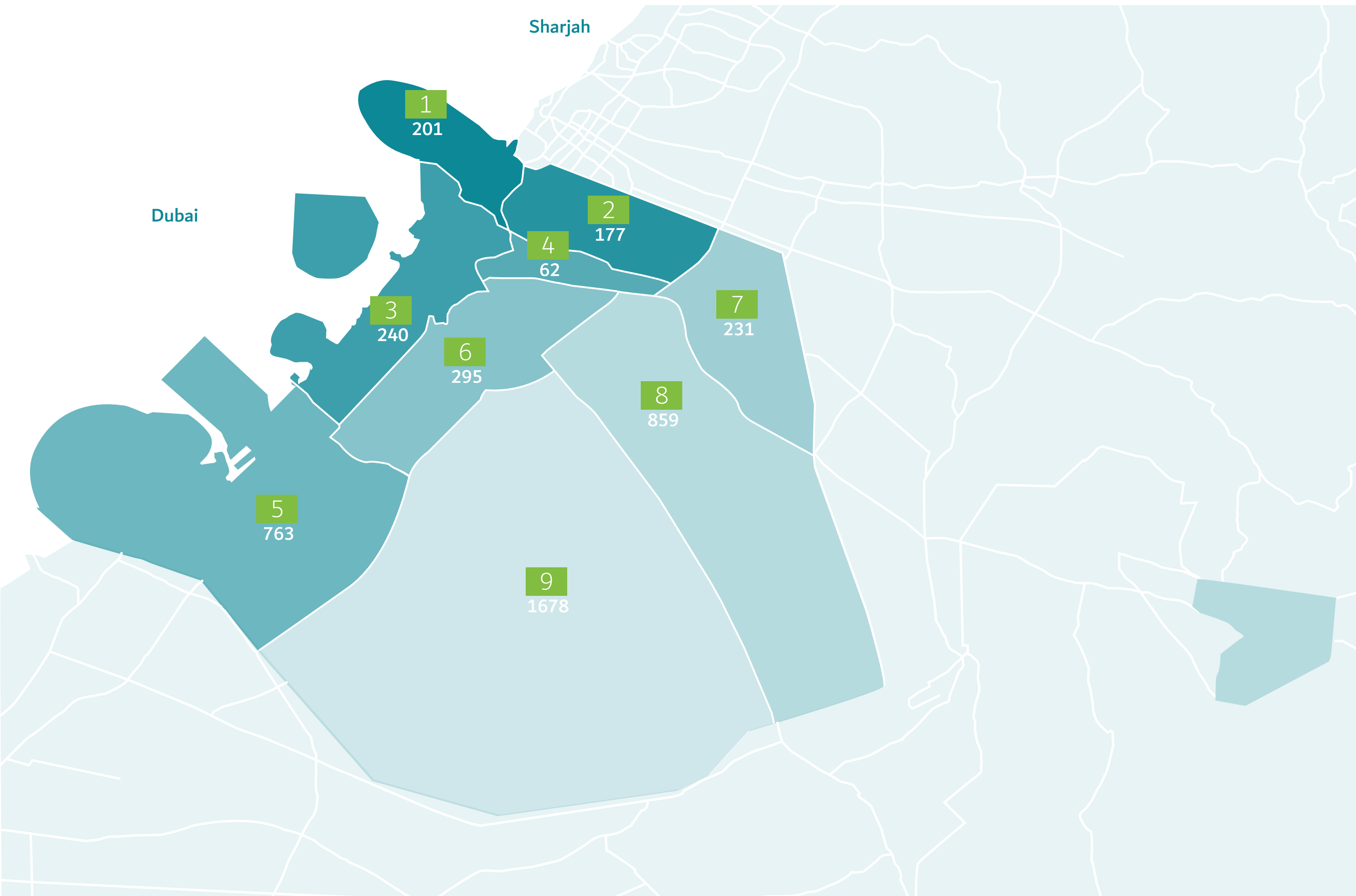
- Human-centered healthcare
- Resilience
- Accountability
- Innovation
- Transparency

3.2 Dubai Geography and Population Demographics

3.2.1 Geography

Dubai is one of the seven Emirates of the United Arab Emirates, occupying an area of 4,114Km square with a population density of 763 persons per square kilometer. Dubai is divided into nine geographic sectors with each sector having a specific mix of population, density, age, gender and nationality distribution.

Figure 1: Dubai land sectors and sector size (km2)

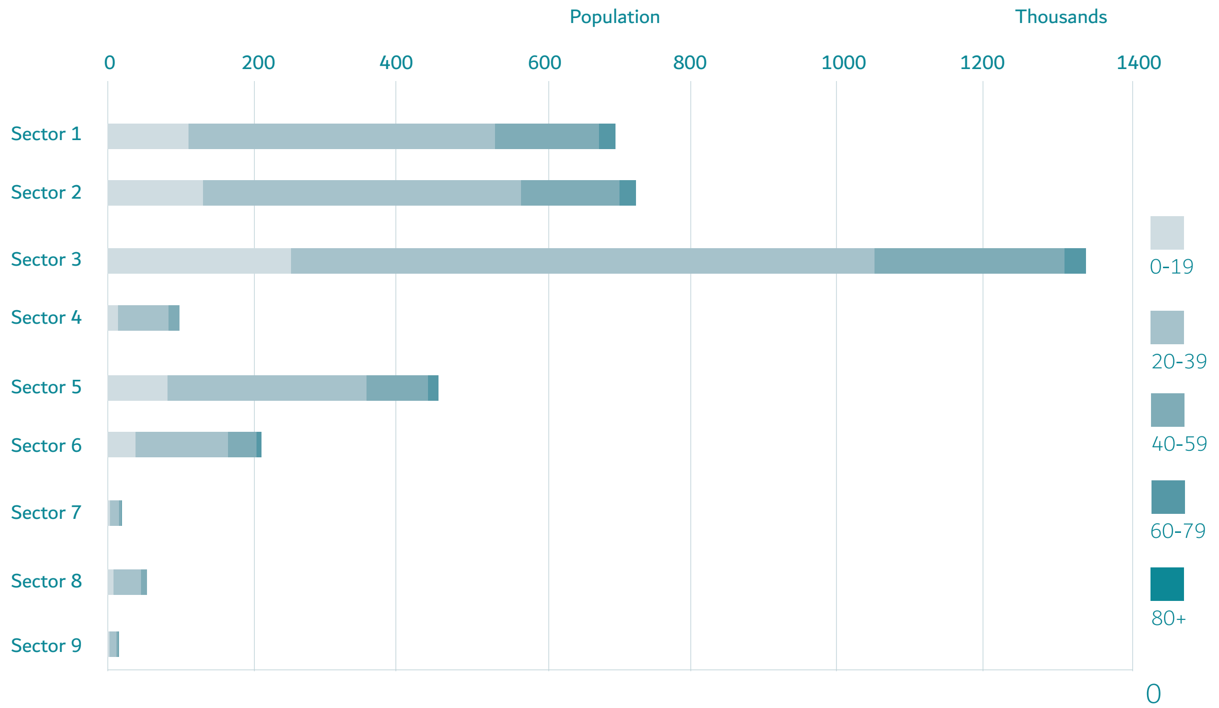


3.2.1 Population Demographics

The population structure of Dubai displays a relatively young population and comprised by a majority of 67% males and 90% non-nationals.

Table 3: Age group distribution, by sector, 2022

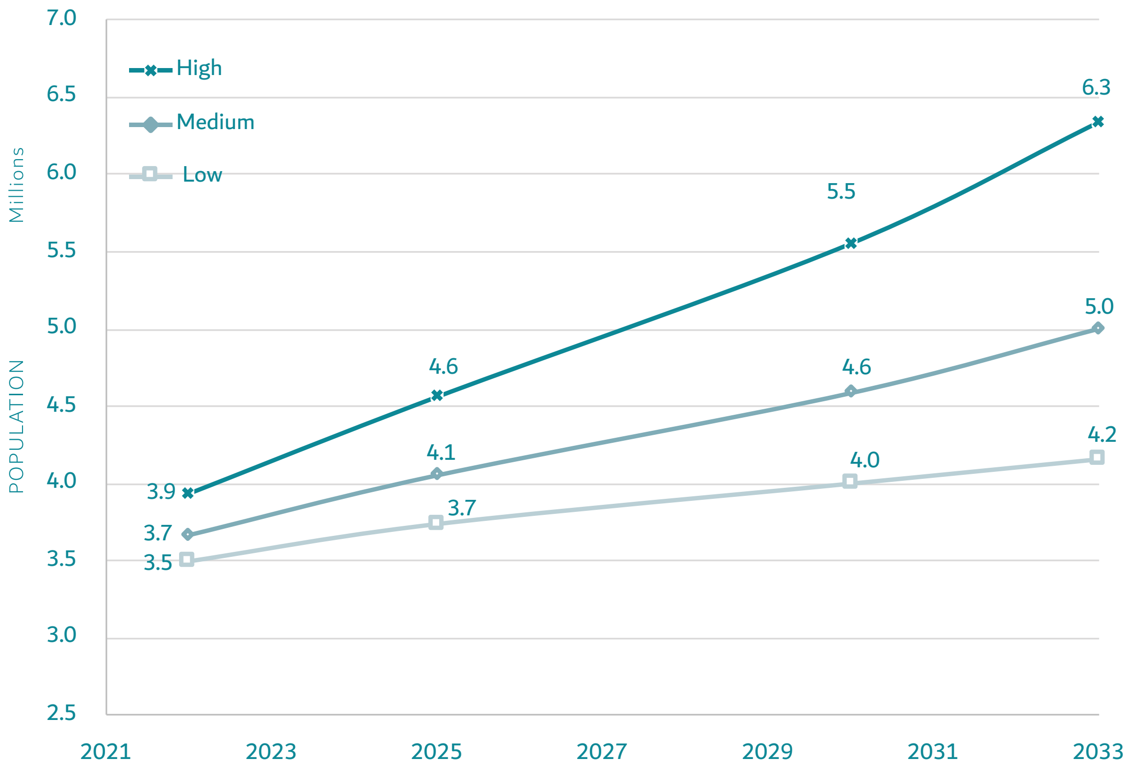
	Population	Nationals	Non - Nationals	Male	Female
2022	3,550,871	284,602	3,266,270	2,450,176	1,100,696



3.2.1 Population Projection Scenario

For estimating the future demand three population growth scenarios were considered i.e. low (1.7%), medium (2.8%) and high (4.3%). The medium scenario was used as the agreed projections for capacity planning, where the population is expected to increase from 3.5 million in 2022 to 4.8 million by 2033. For further information on population modelling, please refer to Chapter 8 – Appendix.

Figure 2: Population projection scenarios, 2022 to 2033

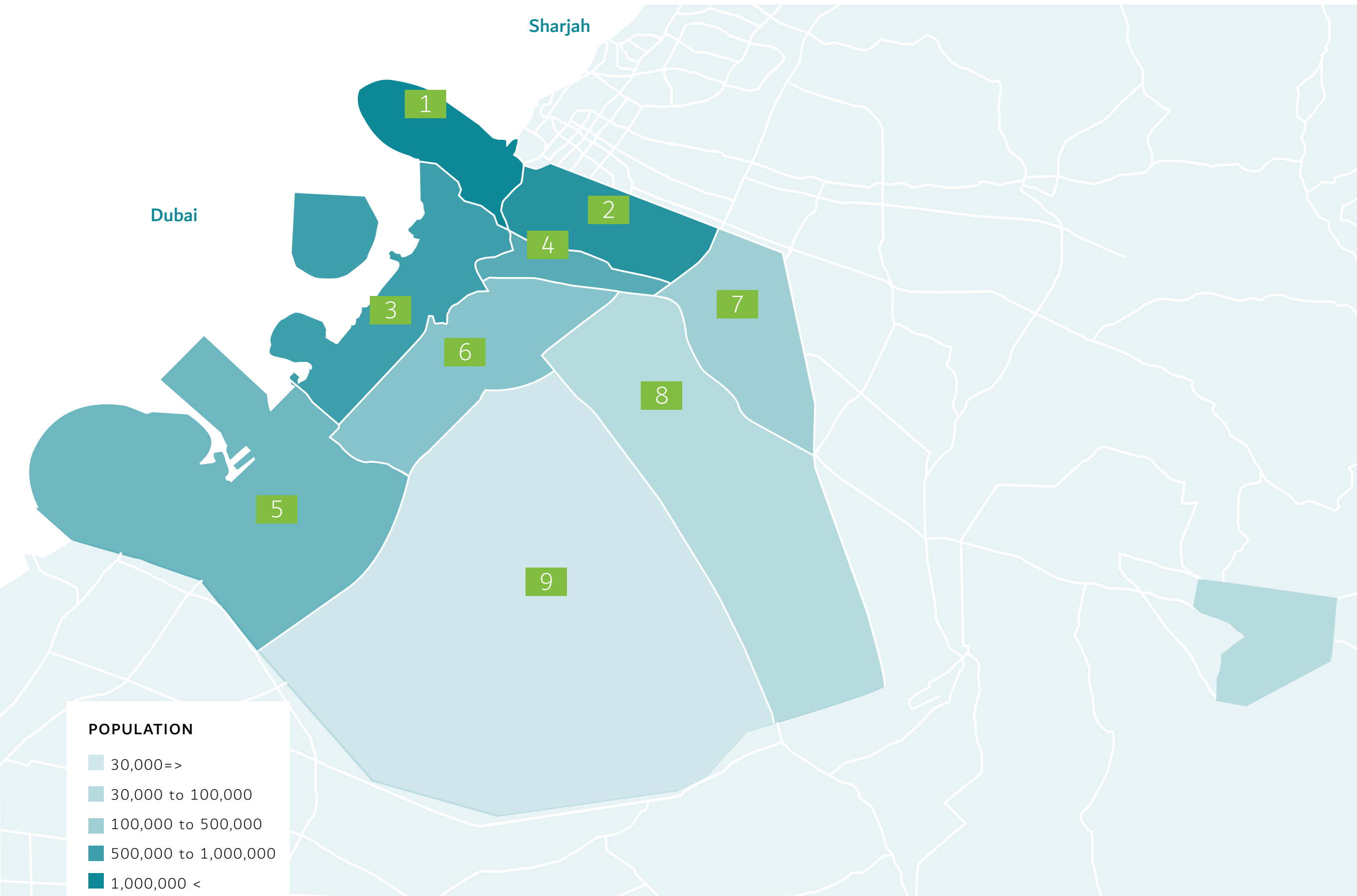


The accurate projection of health service demand is significantly influenced by the population's age and gender structure with people in the high dependency age groups of 0-4 and 60+, and fertile women having higher service demand than other population components. Also, it is crucial that a clear understanding of the sector residency location and their expected growth is understood so that services and facilities can be estimate for locations of growth and need.

3.2.3 Population Projection by Sectors

Population projections were conducted separately for each of the nine sectors using best fit probabilistic modelling from historical trends with 2006 as the base year (using sectorial population data reported from Dubai population bulletins and the 2012 Dubai Clinical Services Capacity Plan).

Figure 3: Projected Population by Sector



3.2.4 Current and Projected Population by Gender and Nationality

Table 4: Medium scenario population profile, 2022 and 2033

	Population	Nationals	Non - Nationals	Male	Female
2022	3,550,871	284,602	3,266,270	2,450,176	1,100,696
2033	4,803,962	446,119	4,357,843	3,088,184	1,715,778

In-terms of population structure, the Dubai population is young, predominately a male population and largely expat as illustrated by the population pyramids below.

Figure 4: Dubai population by age, gender and nationality, 2022

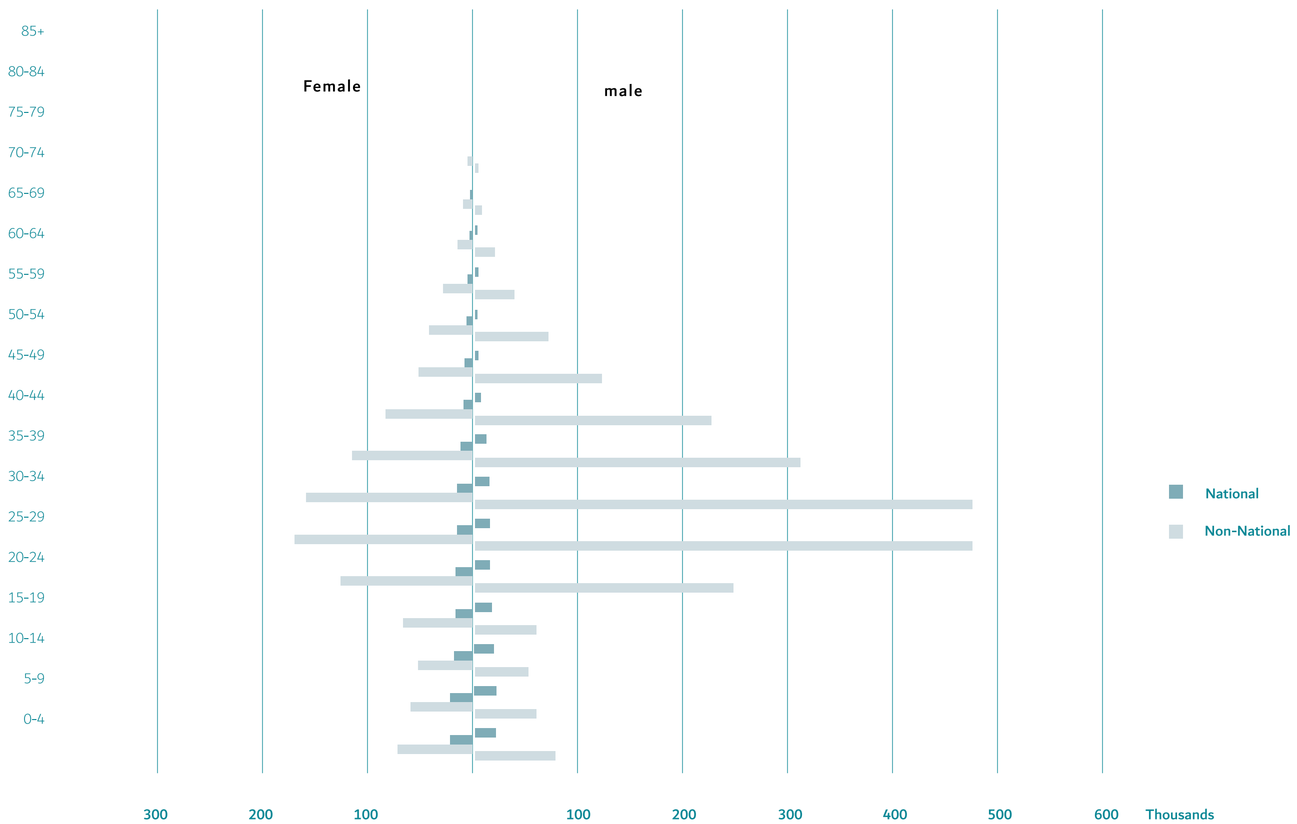
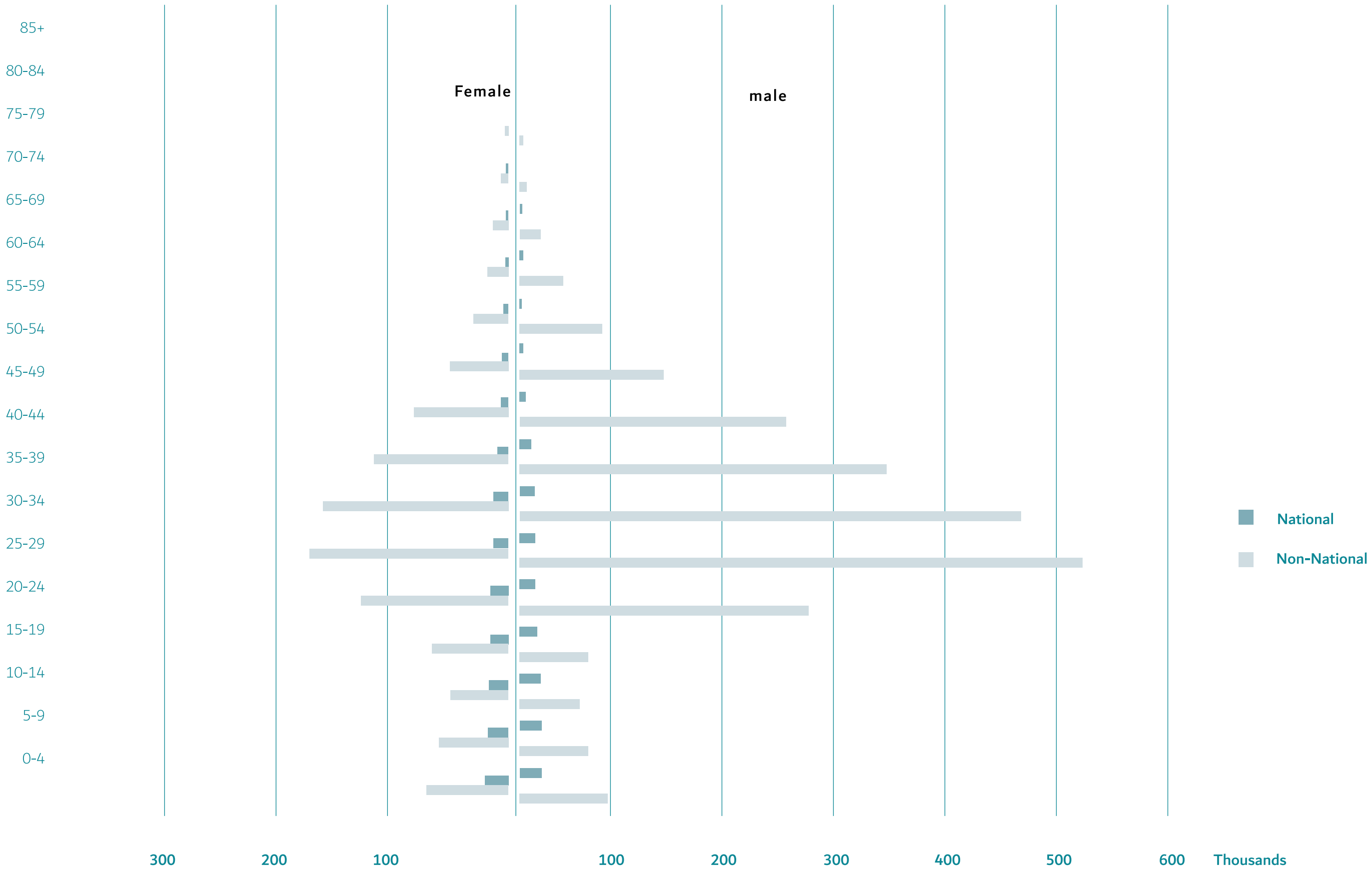


Figure 5: Dubai population by age, gender and nationality, 2033



3.2.5 Economic Status

The World Economics provide estimates of 2022 GDP per capita for the world's nations and regions. The table below shows a selection of countries by GDP per capita ranking in US dollar adjusted for parity purchasing power (PPP). The UAE is ranked number six worldwide with a GDP per capita of 80,352 US dollars. While Dubai is ranked number 21 with a GDP per capita of 60,105 US dollars (World Economics estimates for 2022).

Table 5: GDP per capita by Selected Countries (in USD – adjusted for PPP), 2022

Ranking	Country	GDP per capita 2022 (PPP) , USD
1	Luxembourg	131,813
4	Qatar	106,004
12	United States	68,615
22	Australia	57,210
18	Sweden	63,081
6	United Arab Emirates	80,352
21	Dubai	60,105

3.2.6 Health Status

Dubai's health status has been closely studied and discussed in its 2021 Dubai Annual Health Statistics Report from which this section has drawn key measures. Life expectancy in Dubai in 2021 was 79 years for total population, 78 years for males and 79 years for females. The figure below shows that lifestyle related diseases, such as heart disease and cancer, are the main causes of death and morbidity in Dubai (as illustrated in Figure 6 and 7). Early screening, prevention and health promotion strategies included in Dubai Plan 2033 and Health Sector Strategy 2022-2026 are not at the top of the health agenda for Dubai Health Authority to improve the quality of life and reduce deaths of the Dubai population.

Figure 6: Major Causes of Death in Dubai in 2021 by Nationality, per 1,000 capita

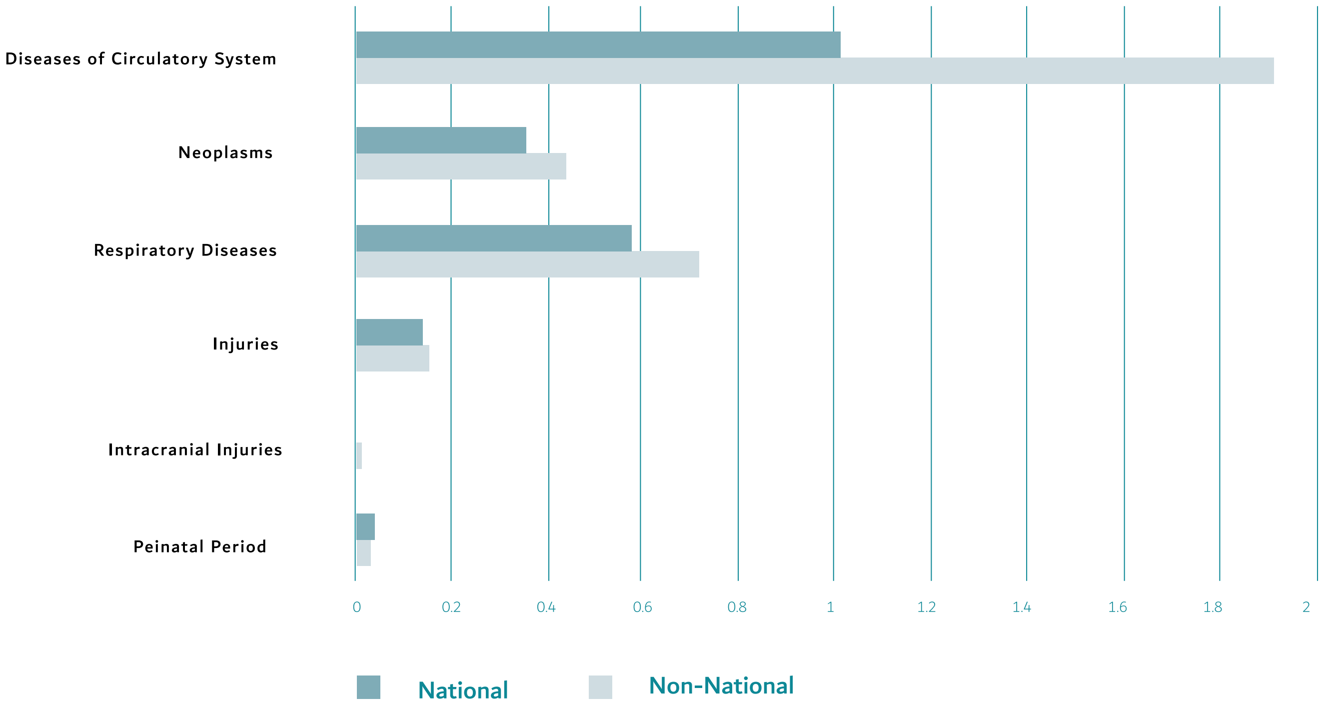
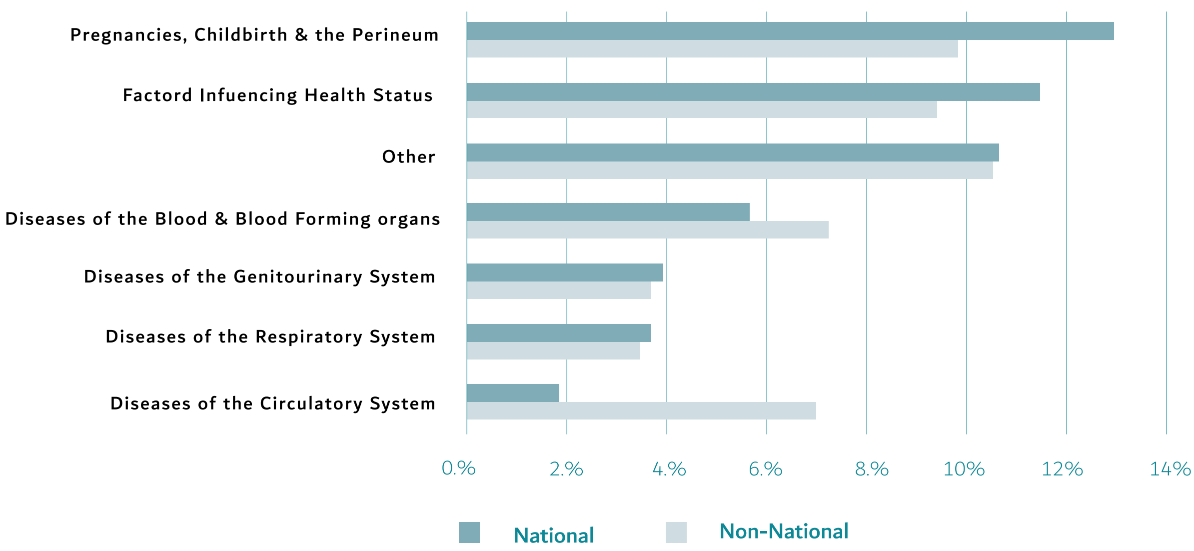


Figure 7: Major Causes for Hospital Admission in Dubai in 2021 by Nationality



Like the rest of the world (with the exception of the COVID-19 pandemic times) the Middle Eastern region's population has experienced a shift from infectious diseases and childhood illnesses to non-communicable dis- eases. This notion paired with the increasing life expectancy suggests that the population of UAE is now living for longer with their disabilities, which can cause pain, limit mobility and impair the senses. The most recent Burden of Disease study in 2019 conducted by the Institute for Health Metrics and Evaluation (IHME) report- ed the following metrics for UAE.

Table 6: UAE burden of disease indicators, 2021 (IHME 2021)

Rank	Causes of death by rate	Causes of Prema-ture death (YLLs)	Causes of disability (YLDs)	Causes of death and disability (DALYs)
1	Ischaemic heart disease	Road injuries	Drug use disorders	Ischemic heart disease
2	Road injuries	Ischaemic heart disease	Low back pain	Diabetes
3	Stroke	Stroke	Headache disorders	Stroke
4	Chronic kidney disease	Other malignant neoplasms	Diabetes	Road Injuries
5	Diabetes	Congenital defects	Depressive disorders	Chronic kidney disease
6	COPD	COPD	Neck pain	COPD
7	Hypertensive heart disease	Diabetes	Other musculoskeletal	Hypertensive heart disease
8	Drug use disorders	Chronic kidney disease	Anxiety disorders	Low back pain
9	Pancreatic cancer	Drug use disorders	COPD	Lower respiratory infect
10	Self-harm	Self-harm	Neonatal disorders	Depressive disorders

04 | SUPPLY ANALYSIS

This chapter presents the results of the supply analysis gathered through the Emirate-wide Health Care Facility Survey and validated using the Statistical Year Book, E-Claims and other sources of supply data.

3.2.6 Health Status

Dubai's health status has been closely studied and discussed in its 2021 Dubai Annual Health Statistics Re- port from which this section has drawn key measures. Life expectancy in Dubai in 2021 was 79 years for total population, 78 years for males and 79 years for females. The figure below shows that lifestyle related diseases, such as heart disease and cancer, are the main causes of death and morbidity in Dubai (as illustrated in Figure 6 and 7). Early screening, prevention and health promotion strategies included in Dubai Plan 2033 and Health Sector Strategy 2022-2026 are at the top of the health agenda for Dubai Health Authority to improve the quality of life and reduce deaths of the Dubai population.

HEALTH SECTOR

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DUBAI HEALTH AUTHORITY

UNITED ARAB EMIRATES
MINISTRY OF HEALTH & PREVENTION

مؤسسة دبي الصحية الأكاديمية
Dubai Academic Health Corporation

PRIVATE SECTOR

100% Response rate of all hospitals

81% Response rate of all Clinics and Centers

Table 7: Distribution of Completed Surveys by Sector and Facility Type

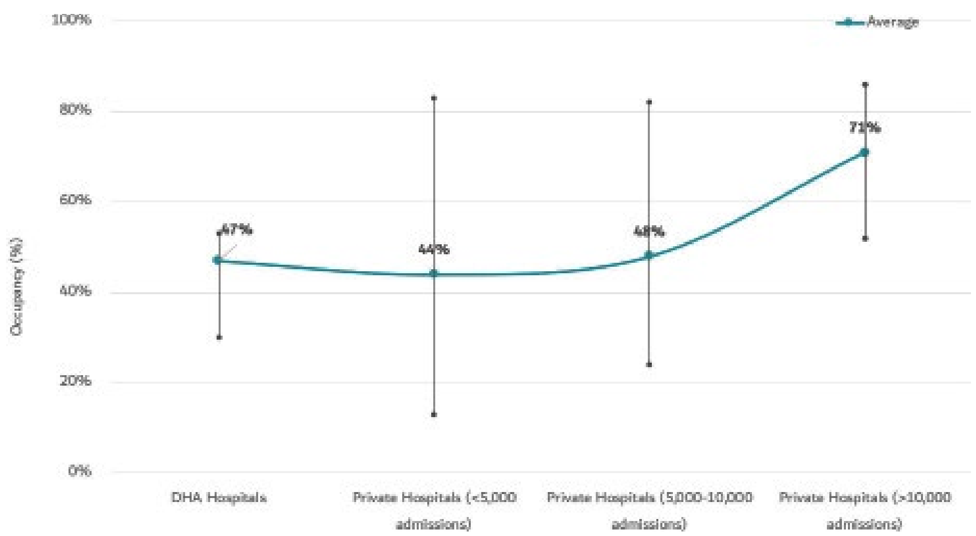
Type	Sector									Total
	1	2	3	4	5	6	7	8	9	
Center	9	15	58	2	1	12	1	0	0	98
Clinic	184	114	803	28	46	78	1	3	2	1,259
Day Care Survey Center	4	1	30	1	1	2	0	0	0	39
Diagnostic Center	6	3	14	0	0	1	0	0	0	24
Dialysis Center	1	1	2	0	0	1	0	0	0	5
Fertility Center	0	0	5	0	0	0	0	0	0	5
Hospital	5	12	27	0	3	1	0	1	0	49
Rehabilitation Center	5	17	100	2	2	7	0	1	1	135
Telehealth	0	0	4	0	0	0	0	0	0	4
Home Healthcare Agency	6	2	40	1	0	3	0	0	0	52
Total	220	165	1,084	34	53	104	2	6	3	1,670

Following the completion of the survey, a supply validation process was performed using Dubai Health Statistics 2021 report and E-Claims records.

4.1.1 Hospital Length of stay and Occupancy

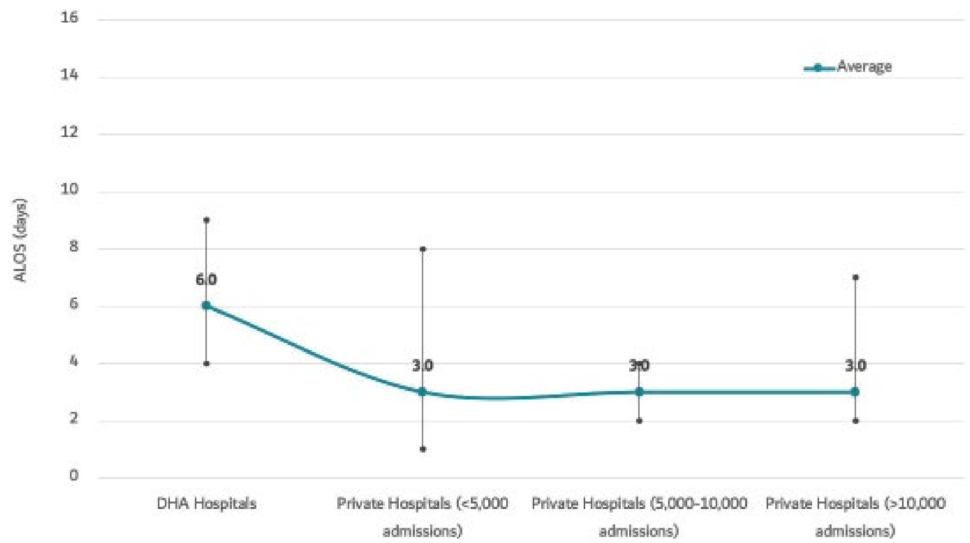
In the year 2021, the unweighted average bed occupancy rate was 47% for DHA hospitals and 54% for private sector hospitals. The distribution of hospital bed occupancy for both sectors is shown in the graph below.

Figure 8: Average hospital occupancy by facility ownership and number of admissions



Average length of stay, which includes same day admissions, for the private sector ranged from 1.0 to 8 days and had an unweighted average of 3 days during 2021.

Figure 9: Average hospital length of stay (ALOS) by facility ownership and number of admissions



4.1.2 Clinical Service Infrastructure Supply

The capacity results of the Dubai Health Care Facility Survey are displayed below, after adjustment for the non-responders of the survey. This supply profile was then further validated with additional supply sources as discussed in the next section.

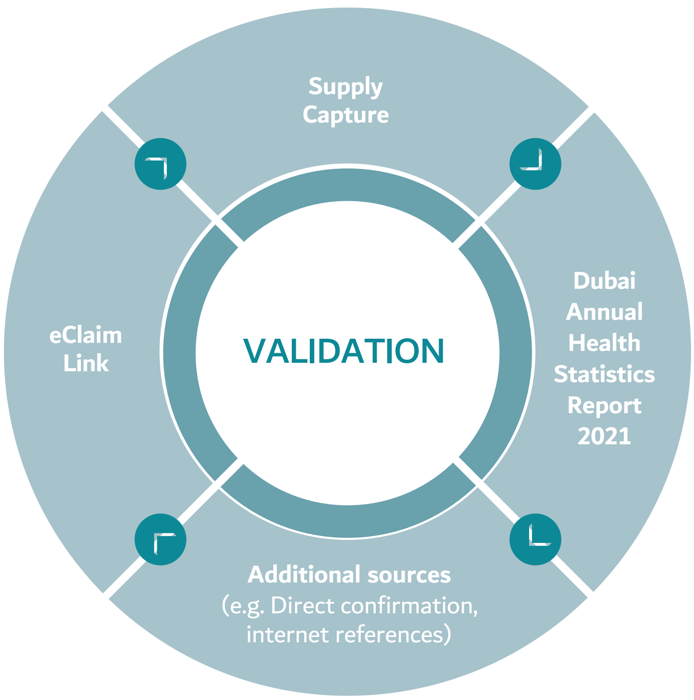
Table 8: Summary of current capacity captured by the survey

Type	Sector									Total
	1	2	3	4	5	6	7	8	9	
Acute beds	969	1094	3,746	0	62	182	0	69	0	6,122
Acute overnight beds	625	1021	2,997	0	59	161	0	64	0	4,927
Acute same day beds	344	73	749	0	3	21	0	5	0	1,195
Non-Acute beds	13	5	205	0	0	0	0	0	0	223
Rehabilitation	13	5	141	0	0	0	0	0	0	159
Other Non-Acute	0	0	64	0	0	0	0	0	0	64
Outpatient rooms*	852	1,144	4,942	199	206	435	9	107	8	7,901
Hospital	299	459	1,255	0	28	0	0	100	0	2,14
Clinic and Centres	553	685	3,686	199	178	435	9	7	8	5,760
Critical Care	155	289	880	0	24	0	0	54	0	1,402
ICU	72	126	371	0	17	0	0	35	0	621
Adult HDU	14	21	157	0	0	0	0	4	0	196
Paediatric HDU	1	9	38	0	0	0	0	0	0	48
ED beds	100	84	292	0	35	0	0	25	0	536
Resuscitation bays	10	14	39	0	7	0	0	3	0	73
High Acuity bays	45	24	114	0	9	0	0	3	0	195
Low Acuity bays	39	30	99	0	16	0	0	17	0	201
Isolation rooms	6	16	40	0	3	0	0	2	0	67
Operating Theatres	28	49	202	2	10	0	0	7	0	298
Elective	24	30	167	2	6	0	0	5	0	234
Emergency	4	19	35	0	4	0	0	2	0	64
Dental Chairs	280	162	1,110	46	21	79	1	10	0	1,709

Type	Sector									Total
	1	2	3	4	5	6	7	8	9	
Procedural Care	187	210	1010	21	59	32	0	60	0	1,579
Angiography	3	5	16	0	1	1	0	1	0	27
Computed Tomography	8	10	42	1	4	2	0	2	0	69
Lithotripsy	7	16	18	0	0	0	0	0	0	41
Magnetic Resonance	10	13	47	1	1	0	0	2	0	74
Mammography	8	10	50	1	2	0	0	2	0	73
PET	2	1	2	0	1	0	0	0	0	6
Linear Accelerators	0	0	2	0	0	0	0	0	0	2
Ultrasound	49	55	311	4	12	9	0	15	0	455
x-ray (fixed)	32	39	185	7	13	10	0	10	0	296
Fx-ray (portable)	18	11	76	0	6	0	0	9	0	120
x-ray (total)	50	50	261	7	19	10	0	19	0	416

4.2.1 Supply validation sources

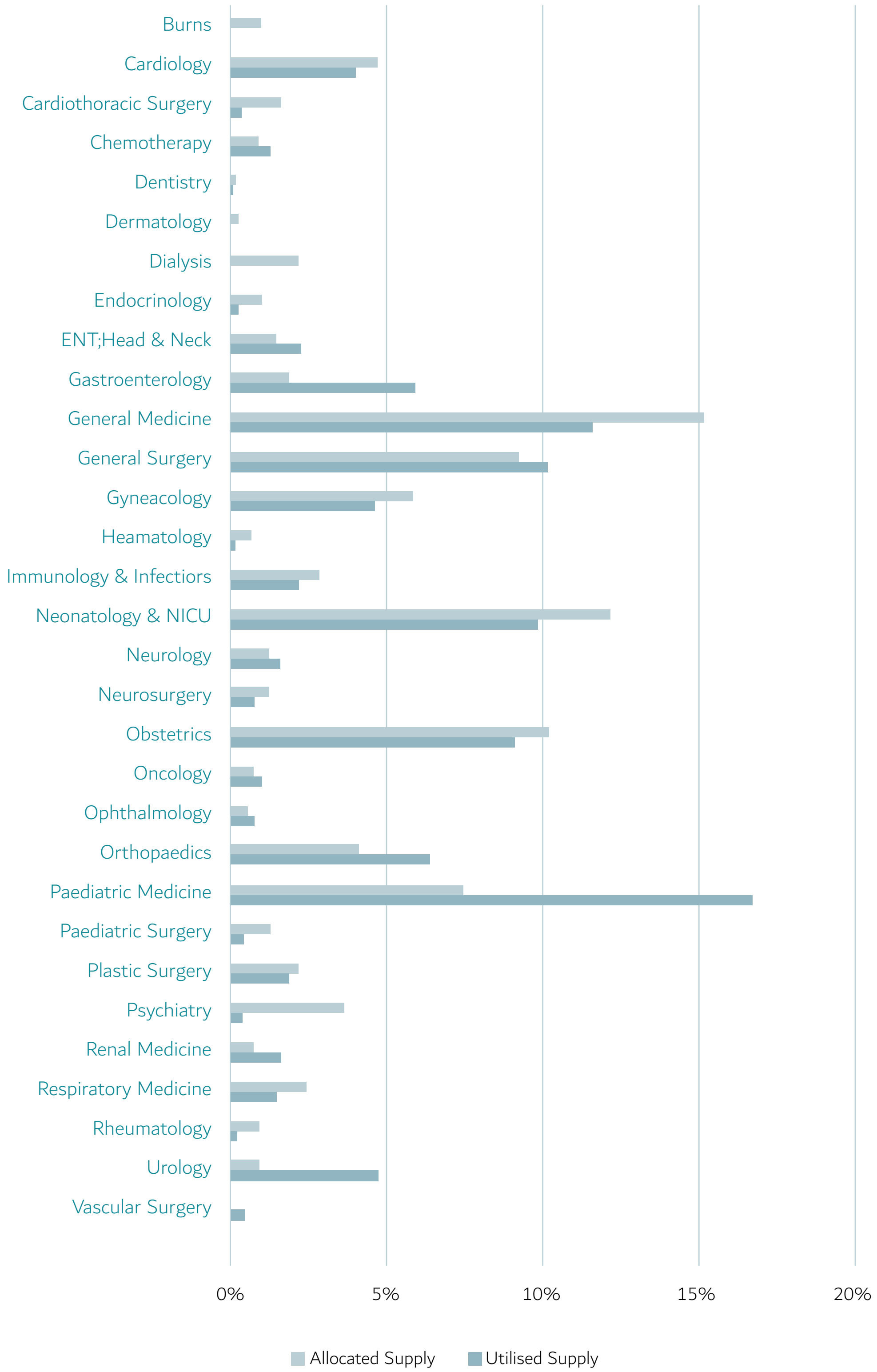
Supply validation processes were undertaken to ensure the validity of survey results regarding capacity. The purpose of the supply validation process was to assess the concordance between the survey responses, Dubai Health Statistical Yearbook 2021 report and DHA E-Claims records for the year 2021 as a secondary validation source (as illustrated in the diagram below). In case of significant discrepancies, facilities were re-contacted to confirm the results. Accordingly, the necessary adjustments were made for supply data. For further reading on an in-depth methodology of supply validation, please see Chapter 8 – Appendix



4.2.2 Bed Supply Validation

The supply that has been captured by the survey has been validated against the Statistical Yearbook utilization rates which are converted into supply by specialty as illustrated be the figure below.

Figure 10: Supply scenario comparison, by proportion of total supply



4.2.3 Workforce Supply

Workforce supply has been derived from official workforce licensing data, by headcount, and cross validated with results from the survey, which quantifies a workforce profile by Full Time Equivalents (FTEs). An FTE is the number of working hours that represents one full-time employee during a fixed time period. FTE simplifies work measurement by converting work load hours into the number of full-time personnel required to complete that work.

Table 9: Summary of current license workforce by facility type and category, 2022*

Facility Type	Category				Comp. Alt. Medicine	Total
	Medical	Nurses & Midwives	Allied Health	Dentist		
Hospital/DSC	5,631	18,302	4,275	343	1	28,552
Outpatient Care Facility	4,609	4,678	3,185	3,444	196	16,112
Pharmaceutics	0	0	3,559	0	0	3,559
Others	430	224	840	5,028	0	6,522
Diagnostic Centres	104	24	555	355	0	1,038
Total FTE	10,774	23,228	12,414	9,170	197	55,783

Only 3% of the entire licensed healthcare workforce are UAE Nationals, with the largest majority from India and Philippines which contribute nearly 70% of the workforce by headcount.

Table 10: Top 10 largest proportion of workforce by nationality and category, 2022*

Nationality	Medical	Nurses & Midwives	Allied Health	Dentist	Comp. Alt. Medicine	Grand Total
India	2,994	10,792	7,415	1,010	173	22,384
Philippines	77	6,174	2,451	55	44	8,801
Egypt	1,237	326	745	165	12	2,485
UAE	824	549	761	209	4	2,347
Pakistan	840	247	596	61	0	1,744
Syria	639	45	457	333	2	1,476
Jordan	229	347	492	144	2	1,214
Sudan	378	128	527	37	0	1,070
United Kingdom	589	127	208	66	20	1,010
Iran	236	120	139	106	0	601
Other Countries	2,750	1,050	1,882	831	112	6,625

***Estimates are based on 2021 FTE**

Across all workforce categories, the Dubai healthcare workforce has an average age of 41 years and is made up of 66% of females. A breakdown of workforce categories is shown in the table below, highlighting the differences in each measure between each category.

Table 11: Workforce average age and proportion by gender and by category, 2022

Measure	Category					Total
	Medical	Nurses & Midwives	Allied Health	Dentist	Comp. Alt. Medicine	
Average age	46	36	37	40	44	41
Males	5,909	2,936	6,426	1,286	119	16,676
Females	4,884	16,969	9,309	1,731	188	33,081
Unidentified	0	0	0	0	0	0

05 | DEMAND ANALYSIS

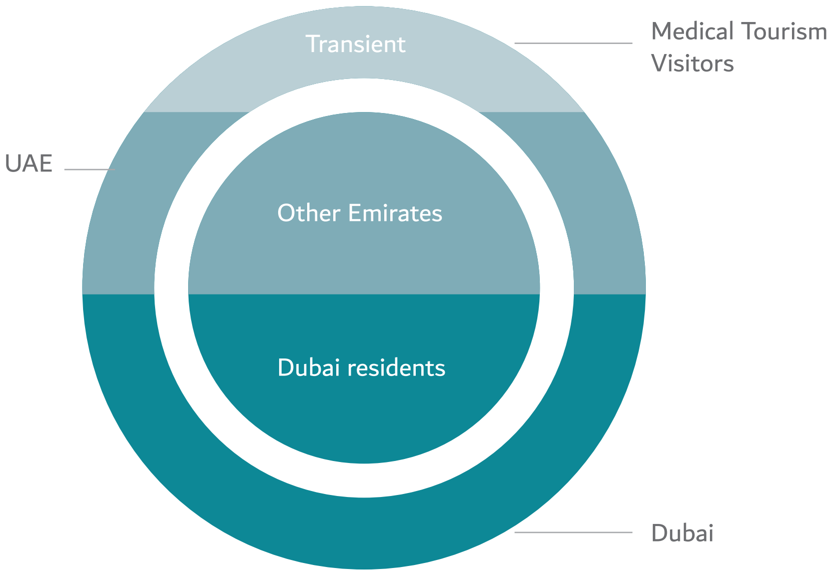
This chapter contains the descriptions and implications of the Demand results as we as discussion on scenarios, assumptions and additional inflow and outflow of demand.

What is Demand?

The demand for healthcare is estimated as a need-based demand that depends on age, gender and nationality composition of the population. The demand for all service types is calculated based on the three scenarios described above and disaggregated by KPUs across nationality and geographical sector. This chapter will define the different population segments or catchment which will demand healthcare services provided in the Emirate of Dubai. The medium scenario is chosen to represent the demand which is later used in calculating the gap in service capacity.

5.1 Catchment and Assumptions

A catchment or population segment is defined as a residential area within a defined geographical jurisdiction as per the Dubai Municipality urban plan. These catchment areas are regrouped to represent three main population categories i.e. Dubai residents, residents from other emirates and transient population of health tourism who visit Dubai for receiving healthcare services.

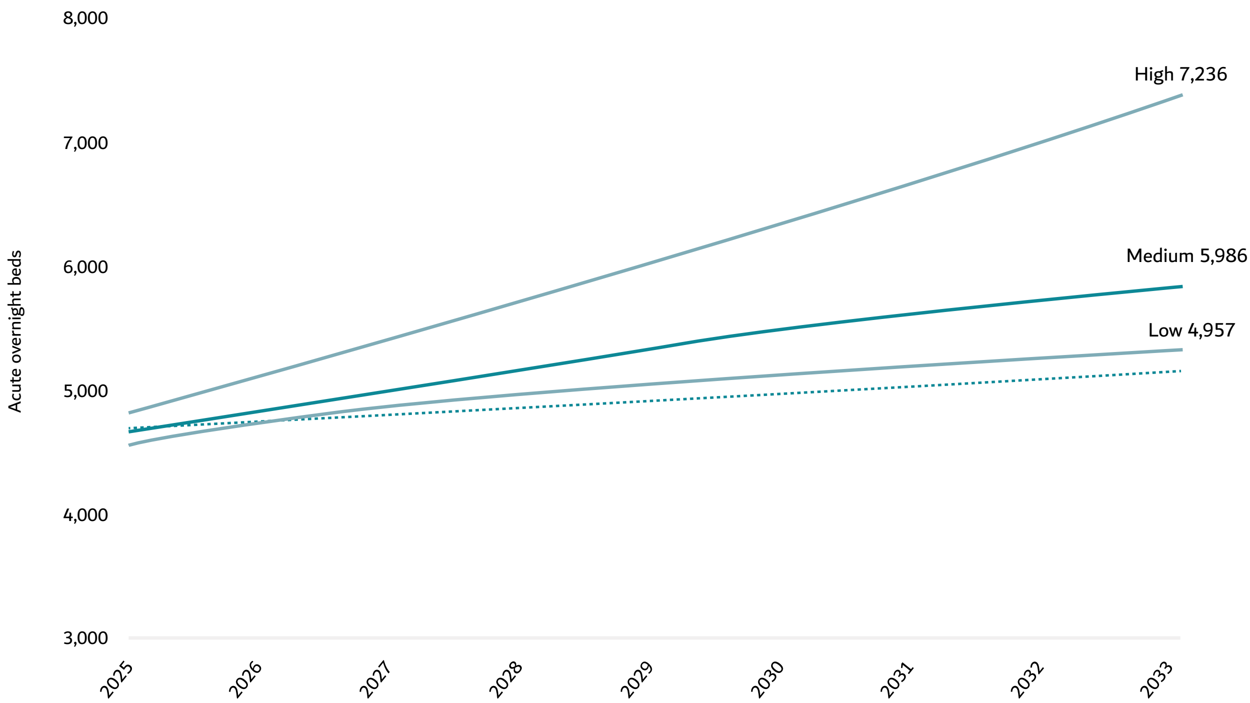


5.2 Demand scenarios

Three healthcare utilization scenarios were developed to identify Dubai's demand for clinical capacity until 2033; namely low, medium and high population growth scenarios applicable to the three main population categories illustrated above. The projected demand has been adjusted for the difference in utilization between national and non-nationals for all eight KPUs. These adjustments were conducted by an Expert Panel based on E-claims data and DHA Health Statistical Yearbook 2021 and input from subject matter experts with extensive knowledge and experience in the field both locally and internationally.

For each service type, the current utilization rates were applied to the low, medium and high population growth profiles to generate the projected demand for each KPU and related specialties. As an example, the medium population demand scenario for acute overnight bed is shown below.

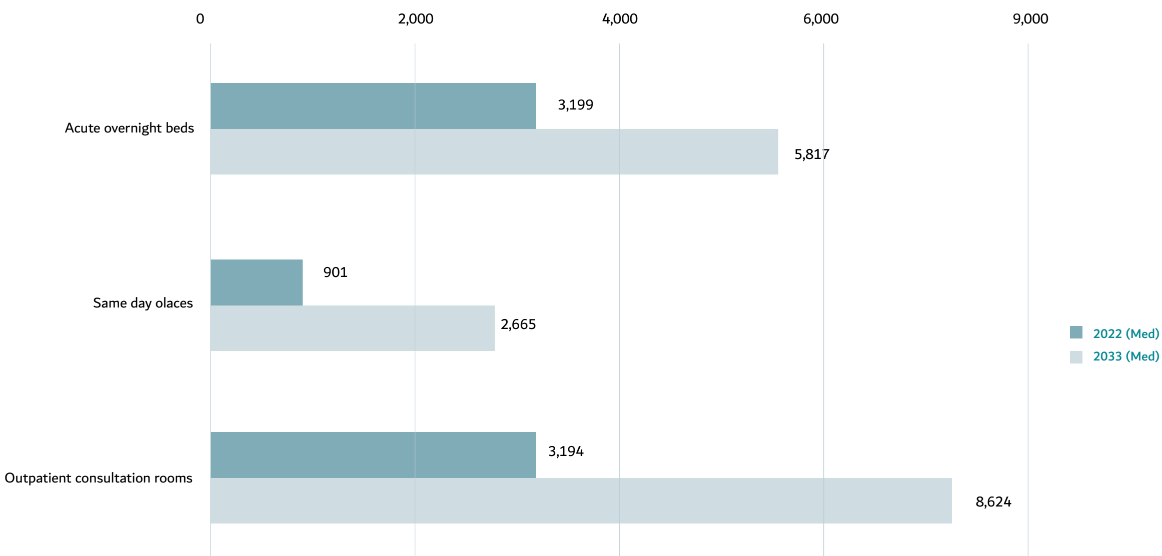
Figure 11: Demand scenarios for acute overnight beds

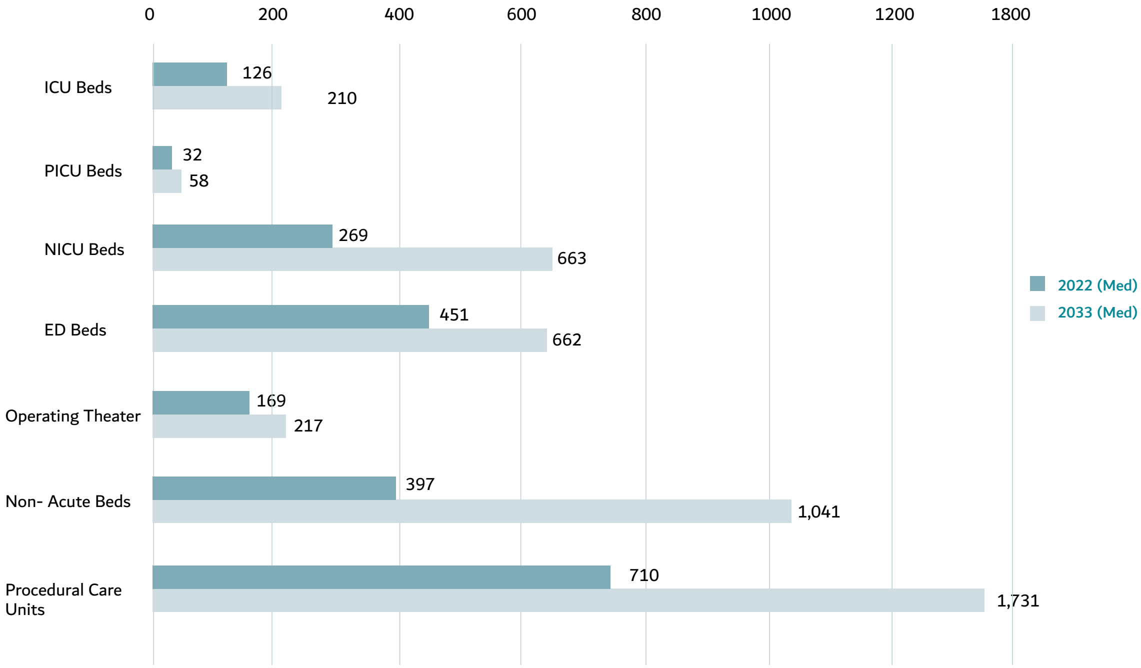


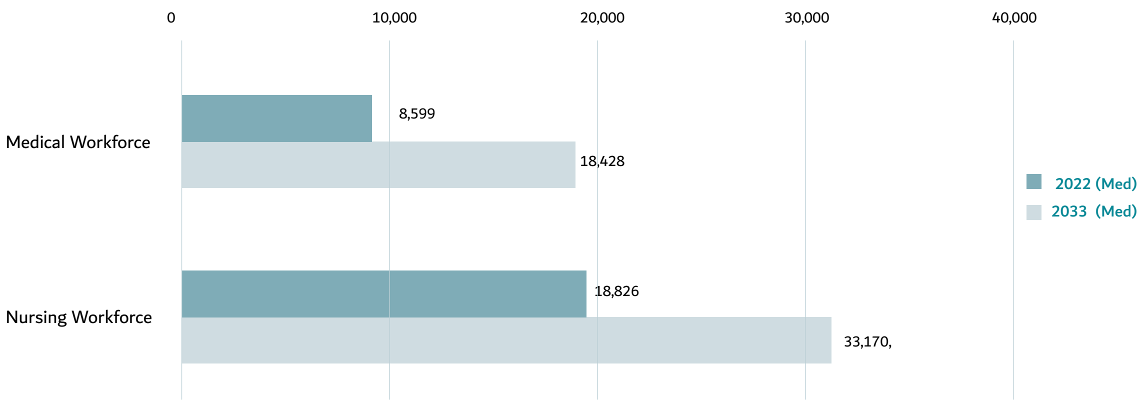
5.2.1 Projected Demand by KPUs

The below figure shows projected demand of different KPUs across three population growth scenarios for the year 2022 and 2033.

Figure 12: Demand projections for each population series, by service type, 2022 and 2033







5.3 Additional demand

Medical Tourism

Through local initiatives and the Dubai Health Experience (DxH), Dubai has developed into an emerging global health tourism destination. Medical tourism inflows present an additional component to health care demand for the Dubai health system as medical patients typically receive outpatient consultation(s) and depending on their purpose of travel may also include use of an operating theatre, inpatient bed or same day care. Demand modelling assumptions for Medical Tourism are outlined in detail in Chapter 8 – Appendix.

06 | GAP ANALYSIS

This chapter describes the priorities that will require new investment and development of the existing healthcare facilities and workforce to accommodate Dubai's future health needs till 2033 All gap figures displayed in this Chapter are based on the medium population growth scenario.

Introduction

This chapter presents the results of the gaps at the KPU level, specialty and geographical area for the years 2022, 2025 and 2033. Graphical and tabular presentations of the gaps (oversupply /undersupply) are provided for each KPU.

6.1 Acute Inpatient care (Overnight)

Of the 6,030 licensed beds in Dubai, 5,359 are functional beds which includes 4,927 as acute-overnight beds, and 1,103 as same-day. The 671 non-functional licensed beds are available supply which can be used in case of rapid or sudden increase in demand. The results shows a significant increase towards providing same-day care as manifested by the rise in the same-day beds from 703 in 2018 to 1,103 in 2022 which aligns with the international trends of new care delivery models that focuses on same-day care. Thus, providing care more efficiently and at a lower cost.

Bed status	Number
Licensed beds	6,030
- Non-functional beds	671
Functional beds	5,359
- Same day beds (functional)	1,103
- Same day beds (non-functional)	92
Acute overnight functional beds	4,927

Figure 13: Acute overnight bed gap, 2022 to 2033

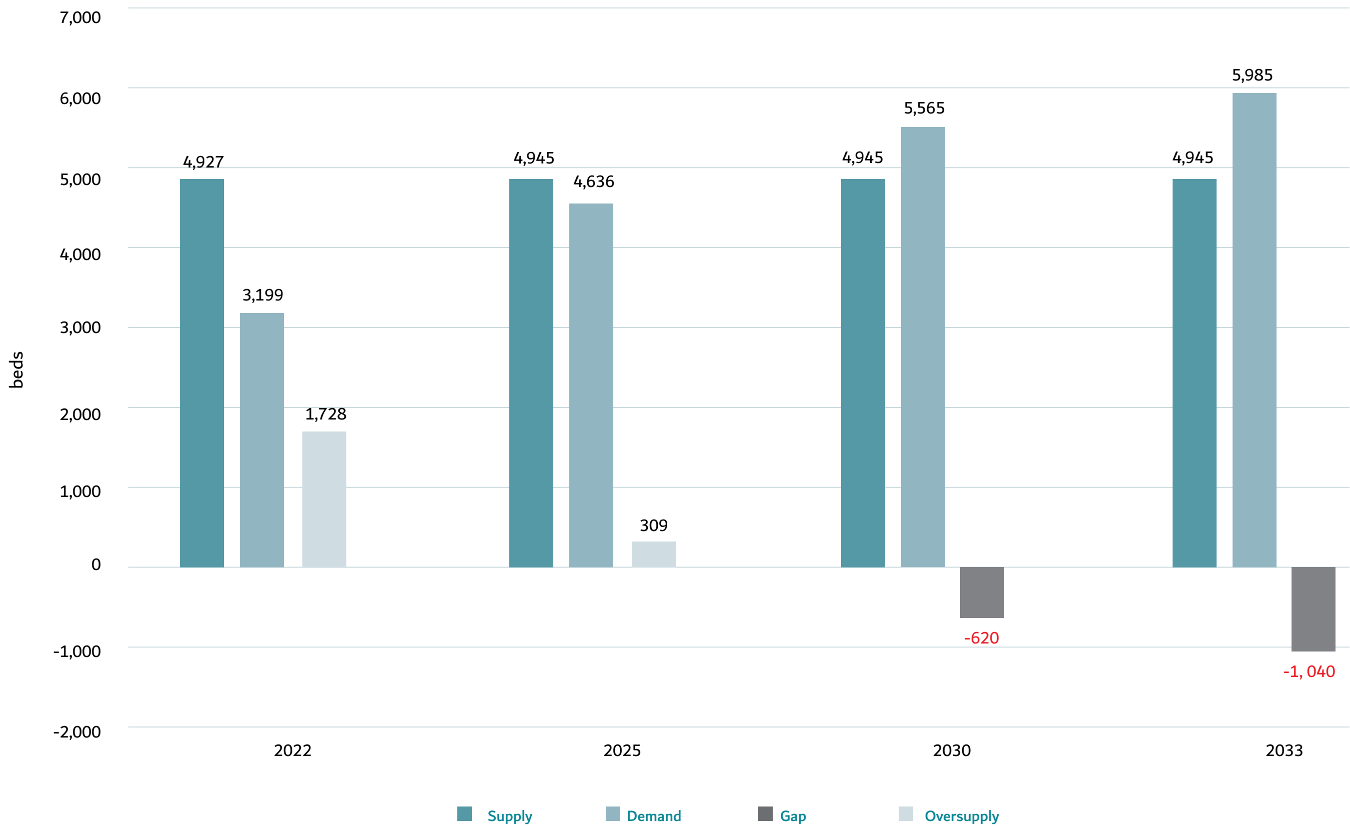


Table 12: Acute overnight bed gap by specialty, 2022 to 2033 and sorted by 2033 gap

As of 2022, the range of the gap by specialty spans from a small bed gap of 2 to a highly significant of more than 40 beds which includes respiratory medicine and psychiatry. The gap increases over time and by the year 2033, it will increase significantly to more than 86 beds per specialty as shown for the top 10 specialties in the table below.

	Specialty	Supply				Demand				Gap			
		2022	2023	2024	2025	2022	2025	2030	2033	2022	2025	2030	2033
1	Pediatric Medicine	369	369	369	369	386	470	580	646	-17	-101	-211	-277
2	Gastroenterology	91	91	91	91	71	178	284	347.6	20	-87	-194	-257
3	Orthopedics	213	213	213	213	141	272	390	460.8	72	-59	-177	-248
4	Cardiothoracic Surgery	101	101	101	101	127	213	278	317	-25	-111	-176	-216
5	Respiratory Medicine	135	135	135	135	203	293	328	349	-67	-159	-193	-214
6	Psychiatry	216	216	216	216	264	323	343	355	-48	-107	-127	-139
7	Renal Medicine	38	38	38	38	33	82	132	162	5	-44	-94	-124
8	Paediatric Surgery	64	64	64	64	68	112	148	169.6	-4	-48	-84	-106
9	Obstetrics	579	579	579	579	331	513	618	681	245	65	-39	-102
10	Urology	56	56	56	56	30	67	114	142.2	26	-11	-58	-86
11	Oncology	45	45	45	45	63	84	102	112.8	-18	-39	-57	-68
12	General Surgery	461	461	461	461	288	403	471	511.8	169	58	-10	-51
13	Rheumatology	23	23	23	23	22	35	46	52.6	1	-12	-23	-30
14	Neurology	55	55	55	55	38	65	75	81	17	-10	-20	-26
15	Vascular Surgery	26	26	26	26	17	31	43	50.2	9	-4	-16	-24
16	Haematology	32	32	32	32	39	45	50	53	-7	-13	-17	-21
17	Endocrinology	46	46	46	46	43	54	58	60.4	3	-8	-12	-14
18	Dialysis	1	1	1	1	2	3	8	11	-1	-2	-7	-10
19	Transplantation	3	3	3	3	5	8	11	12.8	-2	-5	-8	-10
20	Chemotherapy	0	0	0	0	0	0	0	0	0	0	0	0
21	Dentistry	6	6	6	6	3	4	4	4	2	2	1	2
22	Dermatology	11	11	11	11	2	5	6	6.6	8	5	4	4
23	Ophthalmology	21	21	21	21	5	11	12	12.6	16	10	9	8
24	ENT; Head & Neck	71	71	71	71	22	43	48	51	49	28	23	20
25	Neurosurgery	64	64	64	64	26	34	36	37.2	38	30	28	27
26	Burns	54	54	54	54	5	9	10	10.6	49	45	44	43
27	Cardiology	231	231	231	231	118	178	180	181.2	113	53	51	50
28	Plastic Surgery	81	81	81	81	23	30	28	26.8	58	51	53	54

29	Immunology & Infections	166	166	166	166	45	66	73	77.2	116	100	94	89
30	Gynaecology	225	225	225	225	43	75	104	121.4	182	150	121	104
31	Neonatology & NICU	748	748	748	748	474	579	603	617.4	271	169	146	131
32	General Medicine	713	713	713	713	263	350	384	404.4	446	363	329	309

Note: Gap numbers highlighted in red colour with a –ve sign represents an under-supply.

6.2 Acute Inpatient care (Same Day)

The acute same day place supply of 1,195 places consists of all designated medical and surgical same day beds as well as treatment chairs for chemotherapy, infusions and renal dialysis (i.e. a specified area in a facility designated for same day procedures). The distribution of this supply to specialties is based on acute overnight bed as reported by the survey and adjusted for local utilization.

The gap analysis shows that Dubai has an oversupply of 294 acute same day places in 2022, however, in 2025 it is projected that the same day place will have a gap of 382 and by 2033 the gap will increase to 1,477 chair/ place.

Figure 14: Acute same day place gap, 2022 to 2033

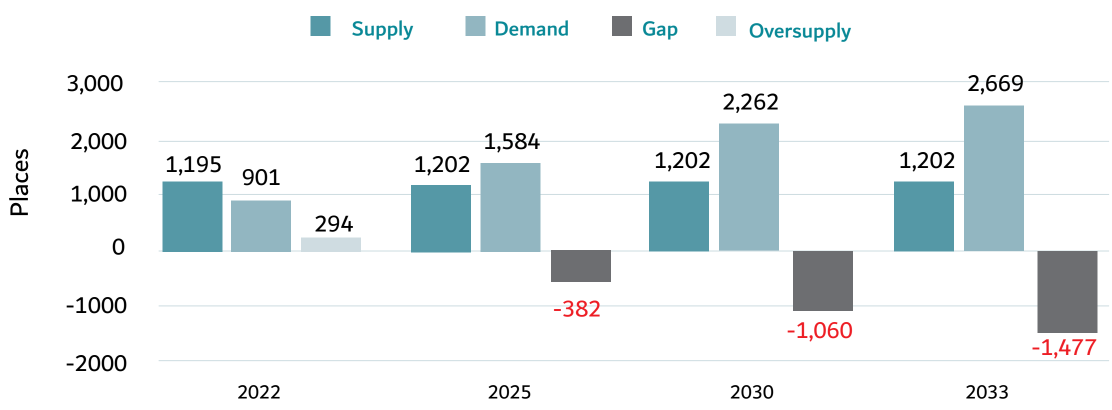


Table 13: Acute same day place gap by specialty, 2022 to 2033

As of 2022, the range of the gap by specialty spans from a small bed gap of 3 to a moderate gap of 30 beds observed for hematology. The gap increases over time and by the year 2033, to more than 50 beds per specialty as shown for the top 10 specialties in the table below.

Gap analysis shows that by 2025 there will be an oversupply of 309 acute overnight beds. However, if there is no further increase in supply after 2025, there will be a projected gap of 1,040. beds by 2033.

Specialty		Supply	Demand				Gap			
		2022	2022	2025	2030	2033	2022	2025	2030	2033
1	Dialysis	133	130	262	419	513	3	-129	-286	-380
2	Pediatric Medicine	90	108	155	225	267	-18	-65	-135	-177
3	Gastroenterology	27	34	90	154	192	-7	-63	-127	-165
4	Orthopedics	42	32	68	108	132	10	-26	-66	-90
5	Pediatric Surgery	17	33	57	83	99	-16	-40	-66	-82
6	Hematology	9	39	56	74	85	-30	-47	-65	-76
7	Renal Medicine	8	11	33	62	79	-3	-25	-54	-71
8	General Surgery	113	94	134	162	179	19	-21	-49	-66
9	Cardiology	61	32	66	104	127	29	-5	-43	-66
10	Rheumatology	8	18	36	52	62	-10	-28	-44	-54
11	Urology	15	9	22	41	52	6	-7	-26	-37
12	Ophthalmology	14	12	28	39	46	2	-14	-25	-32
13	Gynecology	136	54	103	140	162	82	33	-4	-26
14	Neurology	16	11	23	34	41	5	-7	-18	-25
15	Respiratory Medicine	14	10	20	30	36	4	-6	-16	-22
16	Obstetrics	51	21	44	61	71	30	7	-10	-20
17	Dentistry	4	14	18	19	20	-10	-14	-15	-16
18	Psychiatry	8	13	18	21	23	-5	-10	-13	-15
19	Cardiothoracic Surgery	0	5	8	11	13	-5	-8	-11	-13
20	Chemotherapy	57	17	36	57	70	40	21	0	-13
21	Endocrinology	16	13	20	25	28	3	-4	-9	-12
22	Oncology	3	6	10	13	15	-3	-7	-10	-12
23	ENT; Head & Neck	22	7	17	24	28	15	5	-2	-6

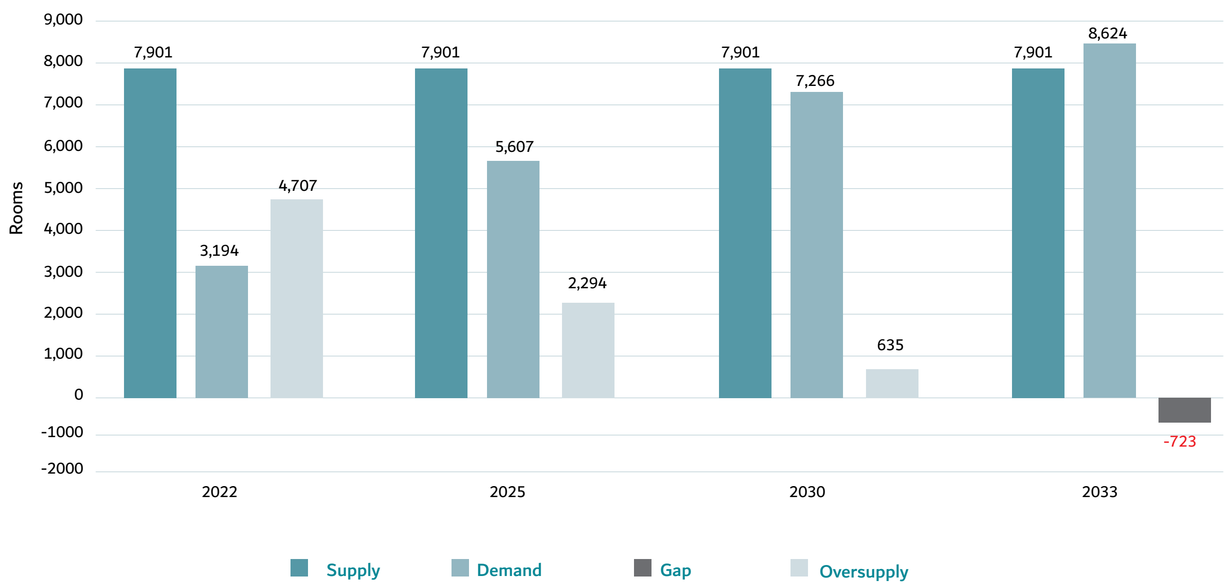
24	Vascular Surgery	4	2	5	8	10	2	-1	-4	-6
25	Transplantation	0	0	0	0	0	0	0	0	0
26	Dermatology	3	1	3	3	3	2	0	0	0
27	Neurosurgery	14	5	8	11	13	9	6	3	1
28	Neonatology & NICU	5	3	3	3	3	2	2	2	2
29	Burns	8	0	1	2	3	8	7	6	5
30	Immunology & Infections	17	4	7	9	10	13	10	8	7
31	Plastic Surgery	55	10	15	14	13	45	40	41	42
32	General Medicine	225	153	218	25	-91	72	7	-25	316

6.3 Outpatient care (Consultation rooms)

There are a reported 7,901 outpatient consultation rooms in Dubai across the facility settings of hospitals, clinics and centres, in 2022. The vast majority (72%) of these rooms are in Sector 3, with Sector 2 and 1 contributing 13% and 7% respectively.

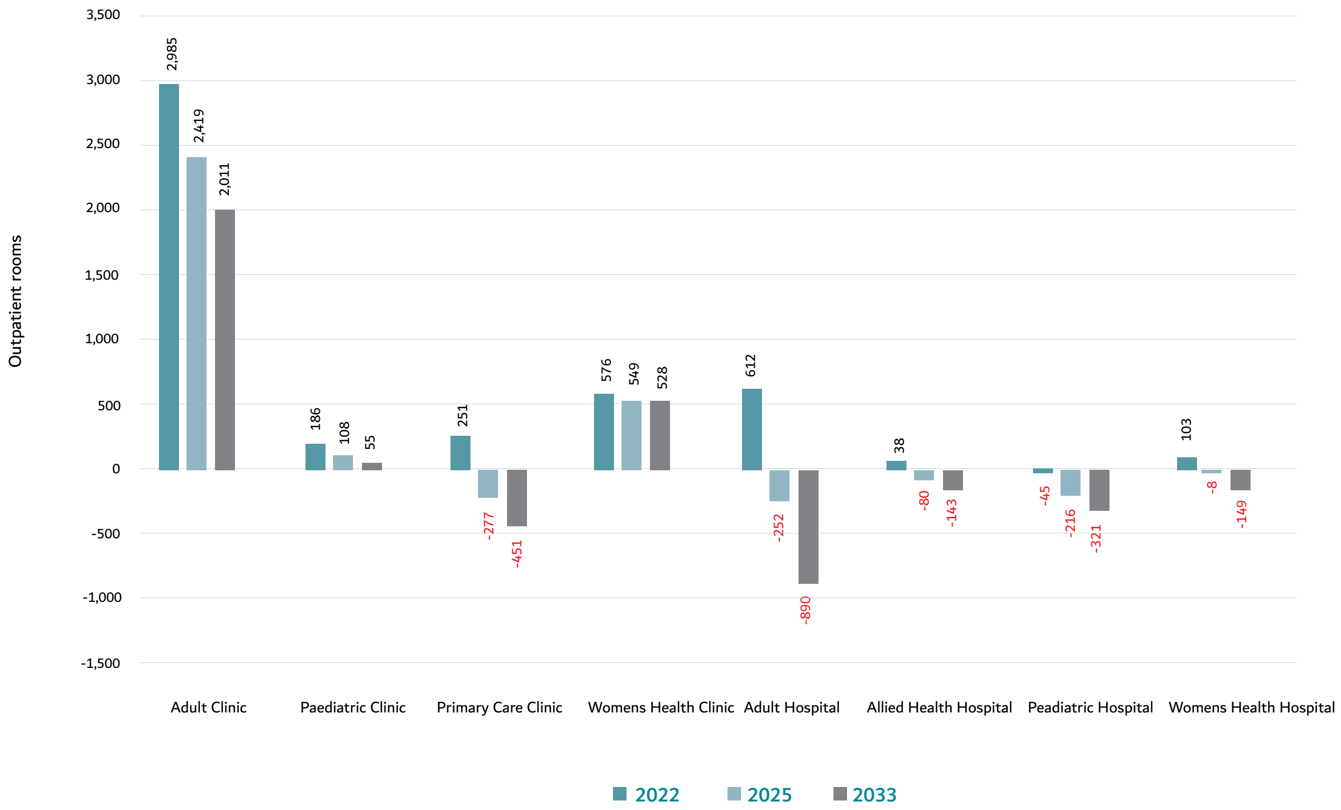
The gap analysis shows that Dubai is currently well served with outpatient consultation rooms with an over supply until 2030. A gap on outpatient consultation rooms will occur in 2033.

Figure 15: Outpatient consultation room gap, 2022 to 2033



However, the analysis shows gaps in consultation rooms by specific specialty services which includes primary care clinic, adult hospitals, allied health pediatric hospitals and women's hospital. Whereas, there is a significant oversupply in adult clinic consultation rooms.

Figure 16: Outpatient consultation room gap by service mode, 2022 to 2033



When viewing the gap by geographical sector, the large concentration of supply in Sector 3. The majority of the gap will occur in Sectors 1, 5, 7 & 9 with the significant bulk of the gap in Sector 5 followed by Sector 1.

Figure 17: Outpatient consultation room gap by sector, 2022 to 2033

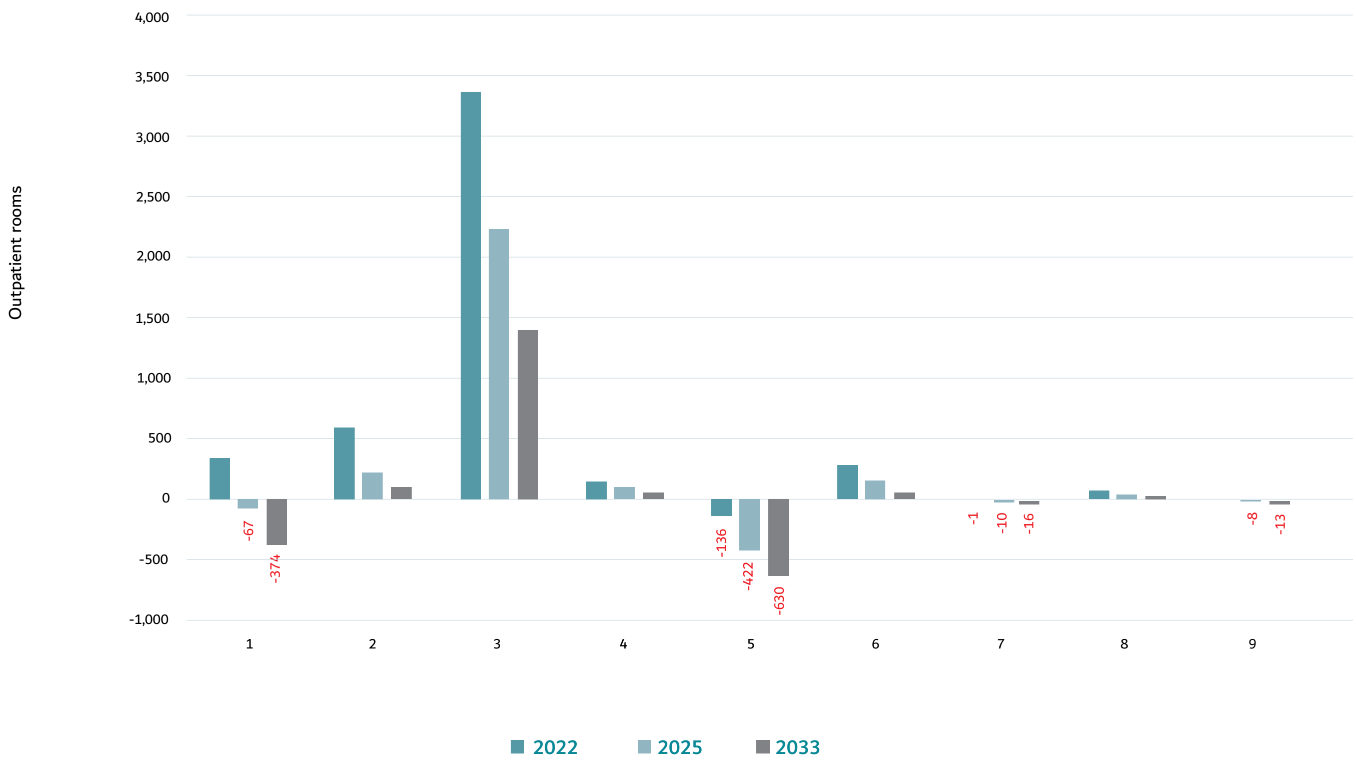


Table 14: Outpatient consultation room gap by specialty, 2022 to 2025, sorted by largest 2033 gap

As of 2022, the range of the gap in outpatient consultation room by specialty spans from a small gap of 11 rooms to a moderate gap of 67 rooms observed for respiratory medicine. The gap increases over time and by the year 2033, to more than 40 consultation rooms per specialty as shown for the top 10 specialties in the table below.

	Specialty	Supply	Demand				Gap			
		2022	2022	2025	2030	2033	2022	2025	2030	2033
1	Pediatrics	468	290	499	651	742	178	-31	-183	-274
2	Respiratory Medicine	42	109	181	245	283	-67	-139	-203	-241
3	General Medicine	821	305	596	870	1034	516	225	-49	-213
4	Endocrinology	143	113	207	286	333	30	-64	-143	-190
5	Gastroenterology	122	87	172	256	306	35	-50	-134	-184
6	Neurology	89	120	191	232	257	-31	-102	-143	-168
7	Hematology	20	40	67	83	93	-20	-47	-63	-73
8	Immunology & Infections	21	32	52	65	73	-11	-31	-44	-52
9	Orthopaedics	353	148	264	348	398	205	89	5	-45
10	Urology	143	60	113	158	185	83	30	-15	-42
11	Trauma and Injury	7	22	36	42	46	-15	-29	-35	-39
12	Rheumatology	49	29	51	71	83	20	-2	-22	-34
13	Renal Medicine	34	23	38	53	62	11	-4	-19	-28
14	Oncology	57	15	33	52	63	42	24	5	-6
15	Neonatology	9	5	8	10	11	4	1	-1	-2
16	Transplantation	1	0	0	0	0	1	1	1	1
17	Vascular Surgery	45	15	26	34	39	30	19	11	6
18	Cardiology	157	44	78	113	134	113	79	44	23
19	Neurosurgery	50	10	16	20	22	40	34	30	28
20	Cardiothoracic Surgery	56	7	13	18	21	49	43	38	35
21	Psychiatry	192	89	111	138	154	103	81	54	38
22	ENT; Head & Neck	226	62	116	149	169	164	110	77	57

23	Obstetrics	371	120	179	262	312	251	192	109	59
24	Ophthalmology	236	46	90	140	170	190	146	96	66
25	General Surgery	219	53	91	122	141	166	128	97	78
26	Allied Health	559	177	295	363	404	382	264	196	155
27	Plastic Surgery	346	19	31	37	41	327	315	309	305
28	Gynaecology	630	96	170	247	293	534	460	383	337
29	Dentistry	577	32	57	80	94	545	520	497	483
30	Dermatology	656	50	81	93	100	606	575	563	556

6.4 Emergency Department

Across Dubai, there are 634 Emergency bays with an oversupply till 2030. The analysis indicates that Dubai is well served by total emergency bays currently. Gap of 16 ED bays will likey occur in 2033 if supply remains the same.

Figure 18: Supply, demand and gap for ED bays, 2022 to 2033

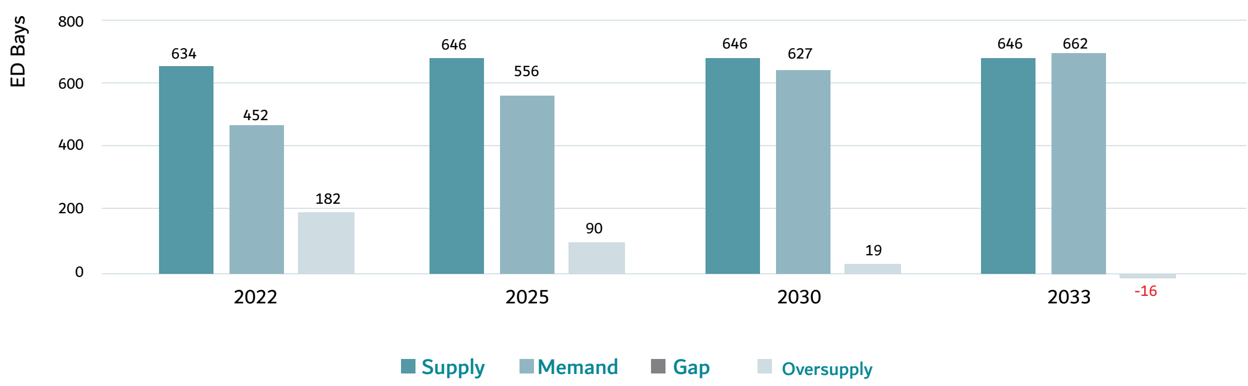
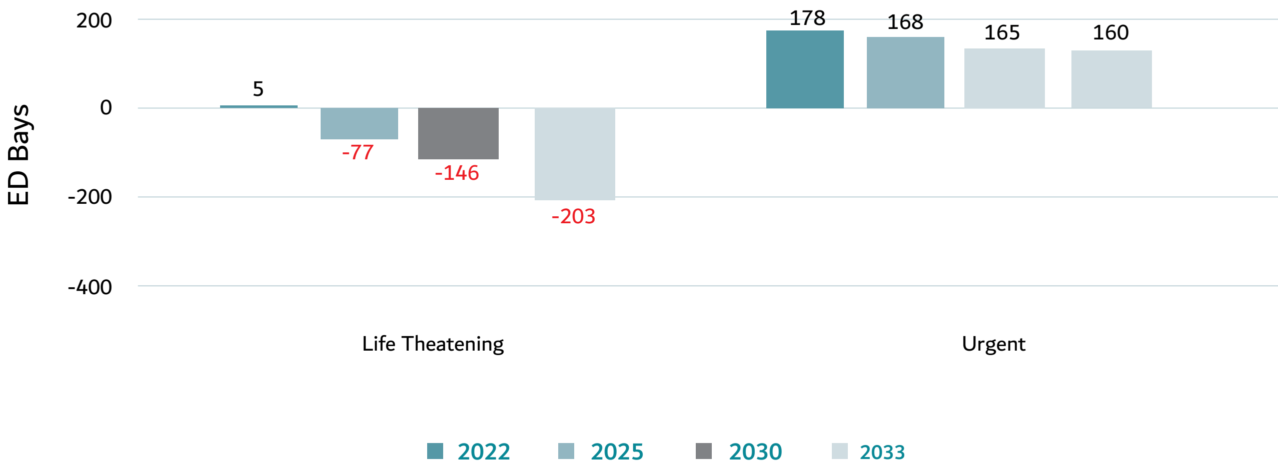


Figure 19: Gap type of care, 2022 to 2033

When the gap is analyzed by type of care, it shows a future requirement for Life Threatening bays, increasing from 77 in 2025 to 203 bays by 2033. Most of these bays are in Sector 3 (54%), followed by Sector 1 (18%) and Sector 2 (15%). The sectors that do not have any emergency bays for care are 4, 6, 7, & 9.



6.5 Procedural Care / Medical Imaging

The distribution of procedural care, or medical imaging equipment/ units amongst the Emirate is heavily concentrated in Sector 3 (64%), Sector 2 (14%) and Sector 1 (12%) as presented in Table 9. The gap analysis by procedural care equipment/units is summarized in the table below, followed by accompanying supply, demand and gap figures for each unit type.

As of 2022, the range of the gap in procedural care, or medical imaging equipment/ units a small gap of 4 to 9. The gap increases over time and by the year 2033, it increases to to over 20 across certain procedural equipment. For details on the specific gaps for procedural care, or medical imaging equipment/ units please figures 6.5.1-6.5.9 below.

Table 15: Procedural care equipment/unit gap by type, 2022 to 2033

	Specialty	Supply	Demand				Gap			
		2022	2022	2025	2030	2033	2022	2025	2030	2033
1	Ultrasound	455	422	642	860	991	33	-187	-405	-536
2	Computed Tomography	69	64	87	108	121	5	-18	-39	-52
3	Mammography	73	70	88	100	107	3	-15	-27	-34
4	Angiography	27	31	42	52	58	-4	-15	-25	-31
5	SPECT/SPECT-CT	7	16	21	25	27	-9	-14	-18	-20
6	Positron Emission Tomography	6	2	4	5	6	4	2	1	0
7	Radiation Therapy	4	2	3	3	3	2	1	1	1
8	Magnetic Resonance	74	39	56	72	82	35	18	2	-8
9	X Ray	416	162	222	273	304	254	194	143	112

Figure 6.5.1 Procedural care equipment/unit gap by type, 2022 to 2033- Ultrasound

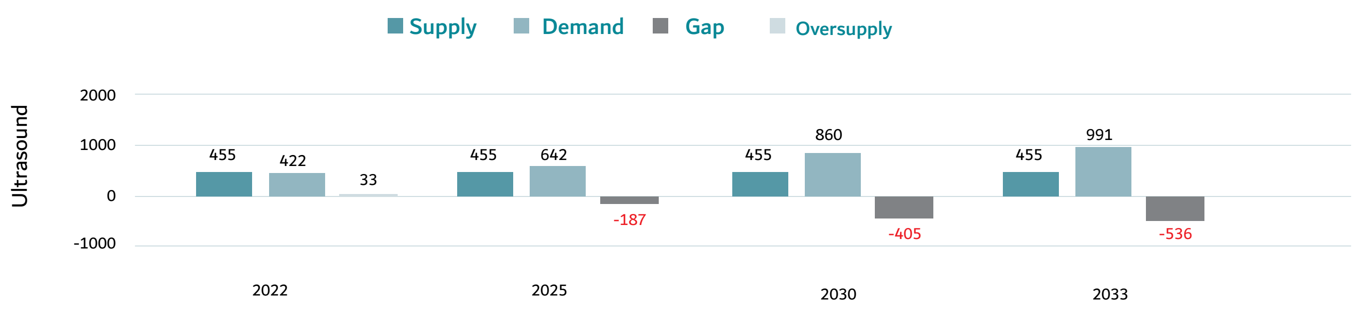


Figure 6.5.2 Procedural care unit gap by type, 2022 to 2033- Computed Tomography

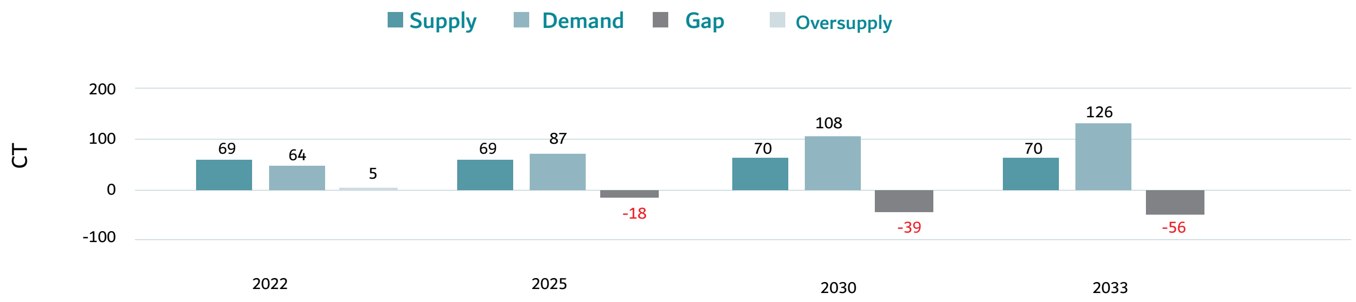


Figure 6.5.3 Procedural care unit gap by type, 2022 to 2033- Mammography

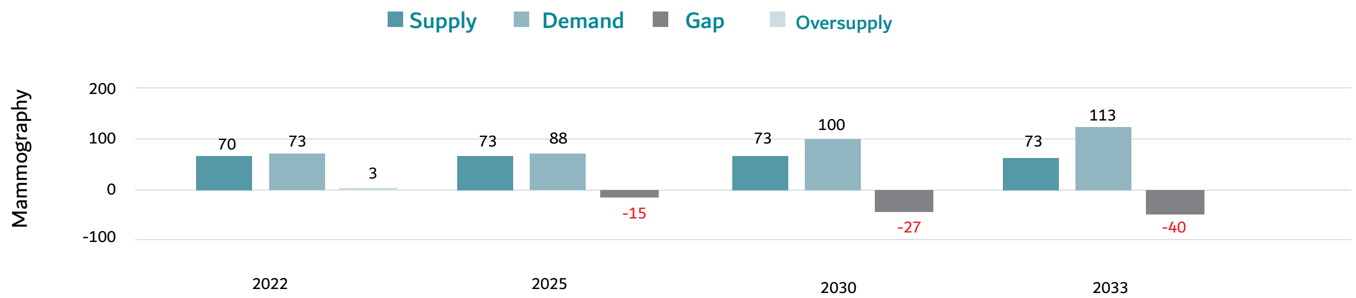


Figure 6.5.4 Procedural care unit gap by type, 2022 to 2033- Angiography

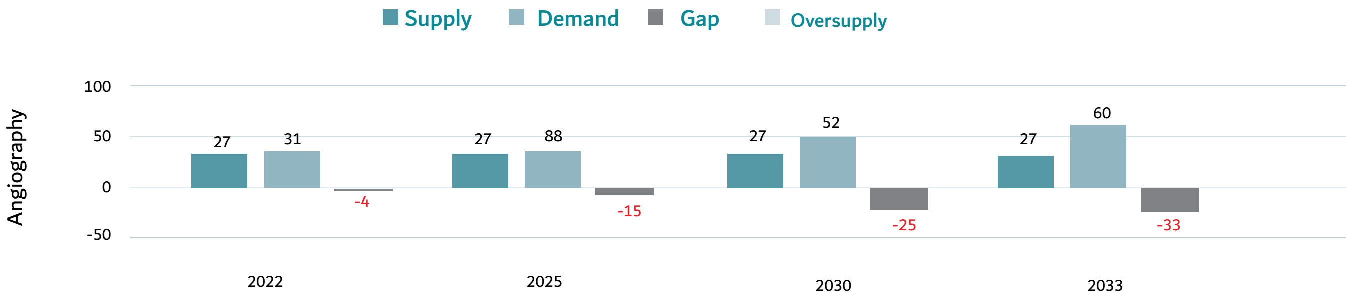


Figure 6.5.5 Procedural care unit gap by type, 2022 to 2033- SPECT

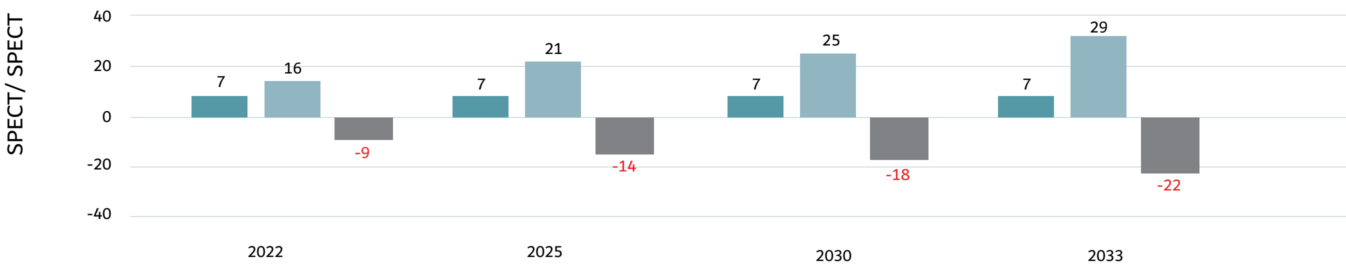


Figure 6.5.6 Procedural care unit gap by type, 2022 to 2033- Positron Emission Tomography

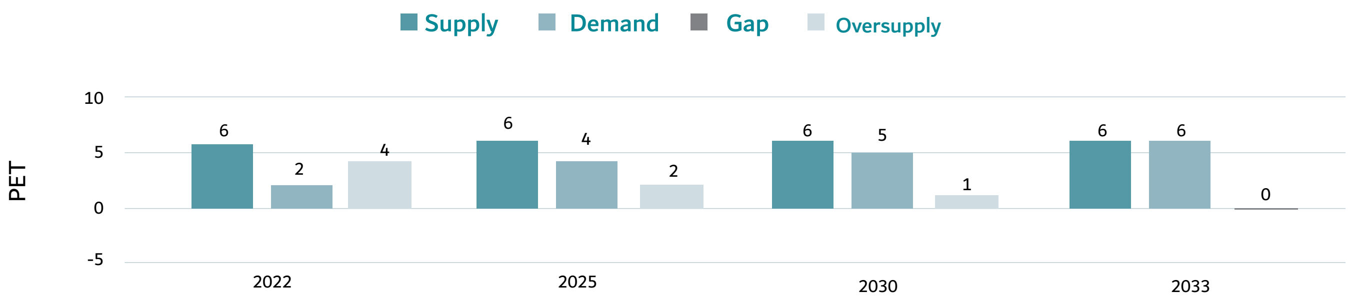


Figure 6.5.7 Procedural care unit gap by type, 2022 to 2033- Radiation Therapy

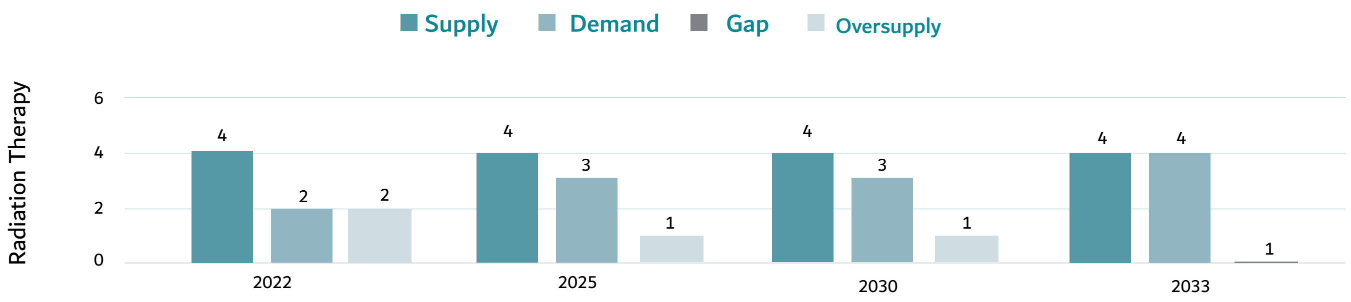


Figure 6.5.8 Procedural care unit gap by type, 2022 to 2033- Magnetic Resonance

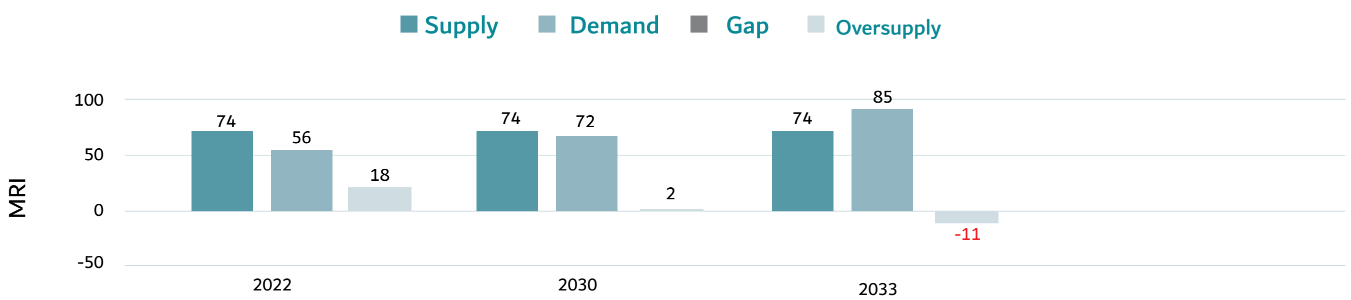
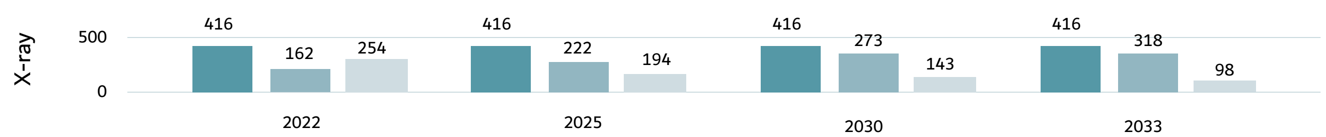


Figure 6.5.9 Procedural care unit gap by type, 2022 to 2033- X-Ray



6.6 Critical Care beds

There are currently 1,402 critical care beds in Dubai (817 Adult, 480 Neonatal and 105 Paediatric).The gap analysis indicates that critical care beds will remain oversupplied up to 2033, however when displayed by type of bed, there is a projected gap of 232 Neonatal ICU beds by 2033.

Figure 6.6.1 Critical Care Beds- Adult ICU

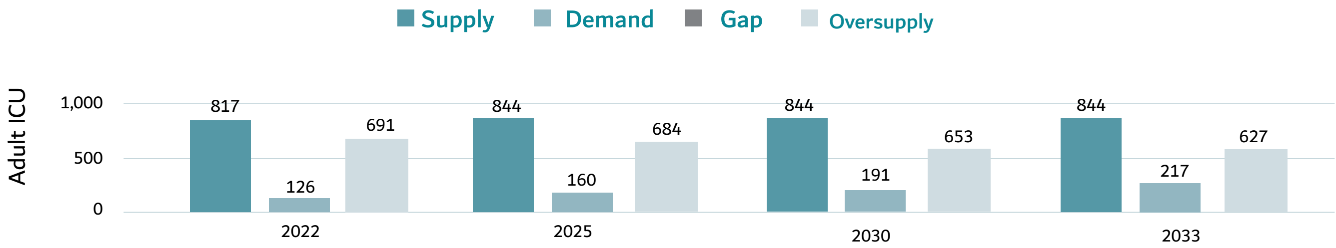


Figure 6.6.2 Critical Care Beds- Pediatric ICU

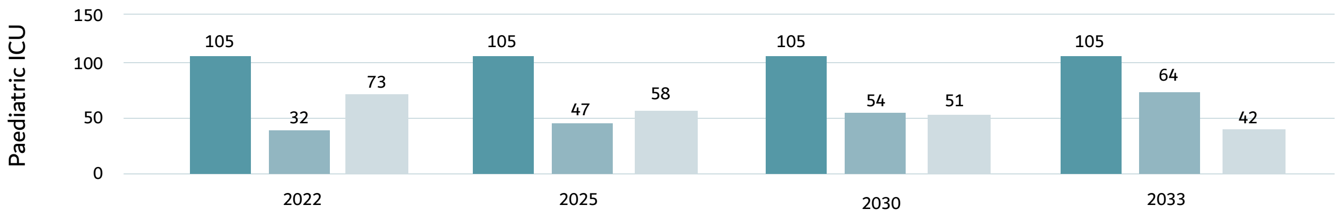
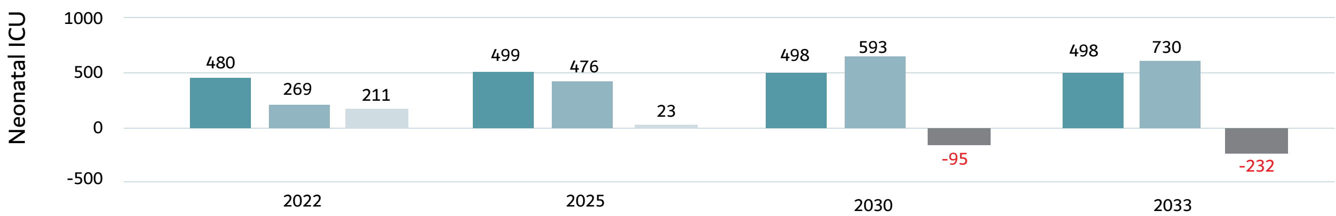


Figure 6.6.3 Critical Care Beds- Neonatal ICU



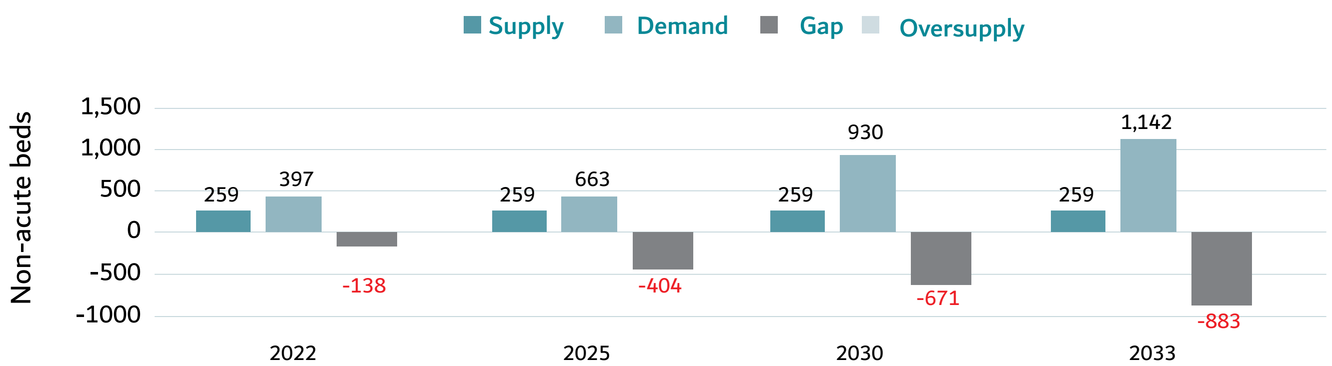
6.7 Non-Acute Care and Long-Term Care beds

The current supply of non-acute care beds is made up of 100 long term care beds and 159 rehabilitation beds in 2022.

The demand profile for non-acute care has been adjusted for local utilization factors, with only 10% of non-national population demand being considered needed.

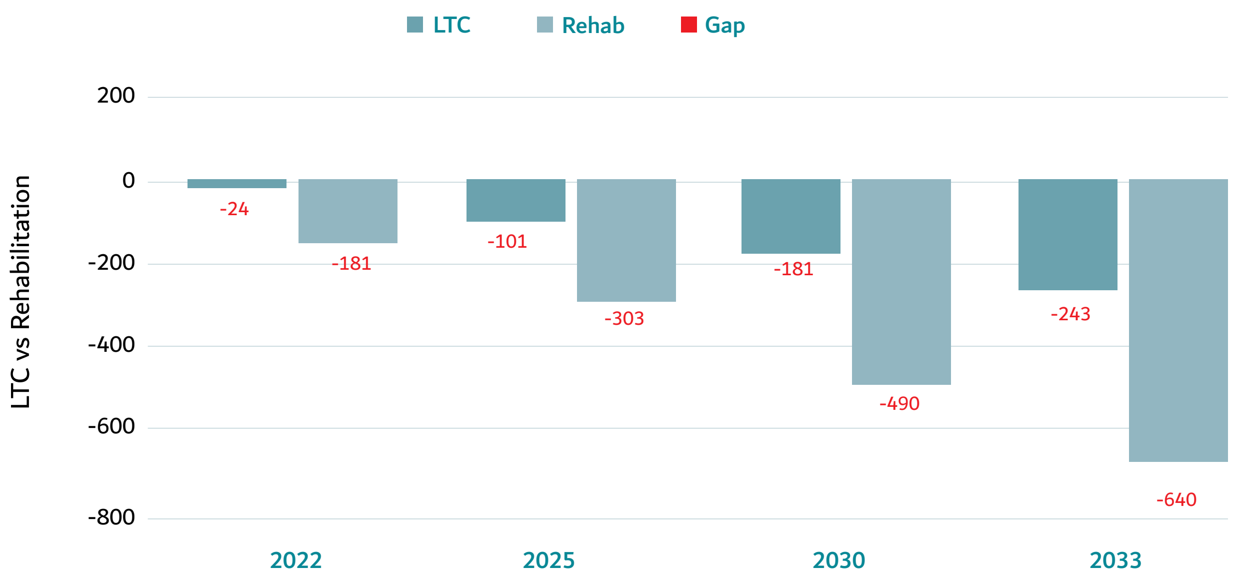
The gap analysis indicates that non-acute care beds are currently in undersupply and their future requirements will continue to grow, increasing from 404 beds in 2025 to 883 beds by 2033.

Figure 20: Supply, demand and gap for Non-acute care beds, 2022 to 2033



When analyzed by type of bed, the largest contributor to non-acute care bed gap is Rehabilitation, which currently requires 181 beds and will increase to 640 beds by 2033.

Figure 21: Gap by bed type, 2022 to 2033



Several medical conditions and disorders treated under the service lines of Orthopedics, Neurology, Respiratory, Cardiology, and Oncology require extended rehabilitation. The growth in Acute Orthopedics and Respiratory Medicine are estimated to require a significant bed demand by 2033.

6.8 Operating Theatres

There are currently 298 operating theatres within Dubai, of which 234 are used for elective surgeries and 64 for emergency surgeries.

Figure 22: Supply, demand and gap for Operating Theatres, 2022 to 2033

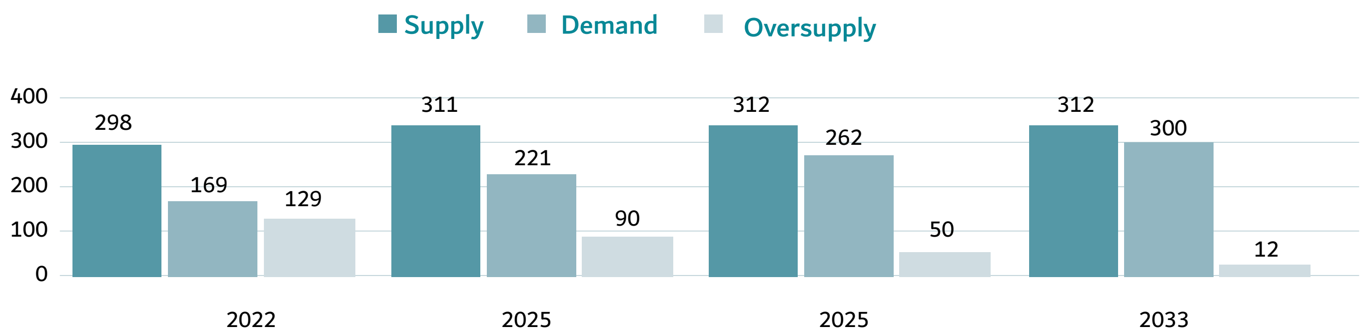
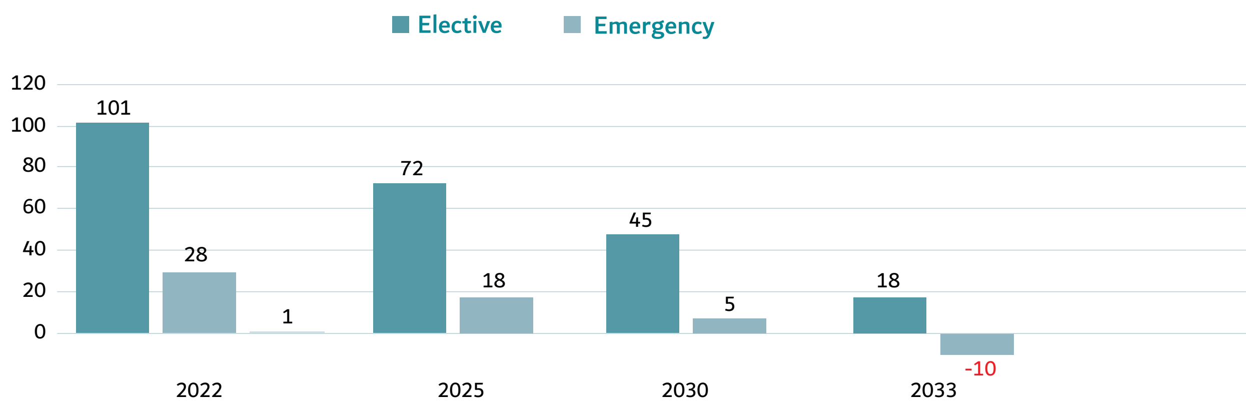


Figure 23: Gap by theatre type, 2022 to 2033

The below graph shows the breakdown of the oversupply in operating theater by type (elective/emergency). As the graph shows, there is a significant oversupply in elective operating theaters as compared to emergency operating theaters, with a slight gap occuring in 2033.



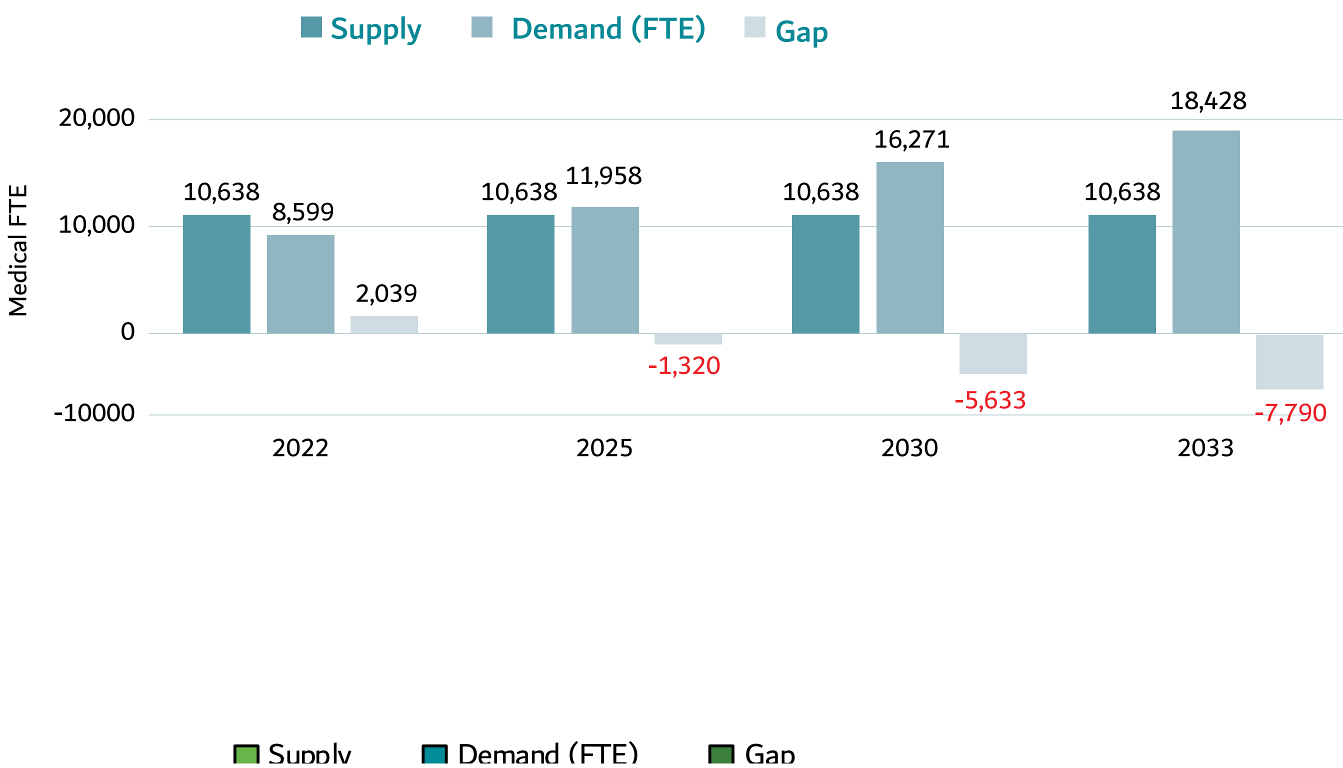
6.9 Human Resources

The workforce profile in Dubai healthcare sector has been collected via the survey and has been cross validated using the DHA Annual Statistical book for the year 2021.

The demand profile for workforce within the catchment is based on activity levels for inpatients, outpatients and community care with adjustments made for burden of disease and relative utilization factors linked to patient episode activity.

The licensed medical workforce in Dubai is comprised of 10, 638 professionals across both the public and private sector. Largest gaps remain in certain medical specialized care including care including General Medicine and Surgery, Pediatrics, Endocrinology, Respiratory Medicine, Renal Medicine, Hematology, Psychiatry, Critical Care Medicine, Immunology & Infections by 2033.

Figure 24: Medical workforce gap by FTE, 2022 to 2033



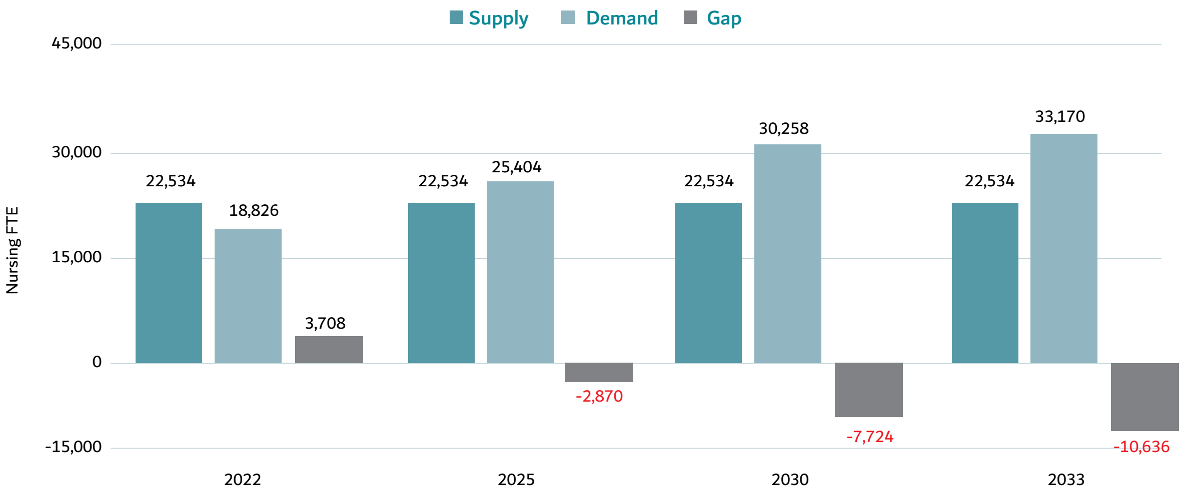
Medical workforce requirements by specialty are shown below and have been derived from demand growth in inpatient and outpatient activity for each specialty.

Table 16: Summary of gaps by KPU, 2022 to 2033

2022			2033		
Medical specialty	Supply	Gap	Medical specialty	Supply	Gap
Pediatrics	798	-563	General Medicine and Surgery	3823	-1,985
Endocrinology	123	-115	Pediatrics	798	-1,981
Respiratory Medicine	79	-111	Endocrinology	123	-310
Psychiatry	160	-63	Respiratory Medicine	79	-314
Hematology	20	-58	Renal Medicine	69	-150
Immunology & Infections	40	-38	Hematology	20	-146
Clinical Genetics	5	-12	Psychiatry	160	-137
Audiological Medicine	3	-11	Critical Care Medicine	103	-102
Nuclear Medicine	12	-6	Immunology & Infections	40	-85
Renal Medicine	69	-1	Cardiothoracic Surgery	84	-38
Critical Care Medicine	103	8	Neurology & Neurosurgery	239	-36
Cardiothoracic Surgery	84	27	Audiological Medicine	3	-29
Oncology	68	32	Clinical Genetics	5	-24
Rehabilitation	41	40	Oncology	68	-18
Neurology & Neurosurgery	239	48	Nuclear Medicine	12	-12
Otolaryngology	277	87	Otolaryngology	277	-3
Cardiology	254	162	Rehabilitation	41	39
Ophthalmology	323	254	Cardiology	254	82
Orthopedic Surgery	507	283	Radiology	410	95
Plastic Surgery	334	288	Obstetrics and Gynecology	833	129
Plastic Surgery	334	288	Obstetrics and Gynecology	833	129
Anesthetics	561	426	Anesthetics	561	137
Dermatology	576	490	Orthopedic Surgery	507	166
Obstetrics and Gynecology	833	540	Ophthalmology	323	190
General Medicine and Surgery	3823	727	Plastic Surgery	334	263
Dentistry	3,503	3429	Dermatology	576	461
			Dentistry	3,503	3,397

There are currently 22,534 FTE nurses licensed in Dubai with gaps reported in 2025 and increasing to nearly 10,63 6FTEs by 2033. The growth in nurse demand is aligned with the growth in overnight, same day and ambulatory health care services within the Emirate.

Figure 25: Nursing workforce gap by FTE



07 | DISCUSSION & RECOMMENDATIONS

This chapter summarizes the results and implications for future developments in infrastructure and workforce for the Dubai health sectorg] It further outlines the recommended actions to be undertaken to meet projected demands in an efficient and effective manner

7.1 Summary

Dubai's population is experiencing continuing significant growth above the average world's current growth of 0.84% per annum. This growth and a progressive shift in age, gender and nationality structure are all impacting utilization patterns of health care services in Dubai. Health care requirements are thereby increasing at faster rates requiring more efficient utilization of existing infrastructure and further planning and investment in additional capacity to address projected short- age (gaps). Systematic capacity planning ensures not only that total capacity continues to keep up with the demands on the health system, but that appropriate new capacity is distributed to the sectors experiencing population growth. In addition, the existing infrastructure needs to be adapted to accommodate emerging roles, technologies and systems whilst more efficiently addressing demand growth. The results of the 2022-2033 DCSCP KPU gap analysis is shown in the table below, highlighting current supply and the projected gaps moving towards 2033.

Table 17: Summary of gaps by KPU, 2022 to 2033

Key Planning Unit	Supply	Demand				Gap			
	2022	2022	2025	2030	2033	2022	2025	2030	2033
Acute overnight beds	4,927	3,199	4,636	5,565	5,817	1,728	309	-620	-1,040
Acute same day beds	1,195	901	1,584	2,262	2,665	294	-382	-1,060	-1,477
Outpatient consultation rooms	7,901	3,194	5,607	7,266	8,624	4,707	2,294	635	-723
Non-Acute overnight beds	259	397	663	930	1041	-138	-404	-671	-782
Emergency department bays	634	452	556	627	662	182	90	19	-16
CC – Adult ICU	817	126	160	191	210	691	684	653	627
CC – Paediatric ICU	105	32	47	54	58	73	58	51	42
CC – Neonatal ICU	480	269	476	593	663	211	22	-95	-165
Operating Theatres (Elective)	234	133	174	201	217	101	72	45	18
Operating Theatres (Emergency)	64	36	47	60	68	28	18	5	-10
Human Resources - Medical	10,638	8,599	11,958	16,271	18859	2,038	-1,320	-5,633	-7,790
Human Resources - Nursing	22,534	18,826	25,404	30,258	33170	3,708	-2,870	-7,724	-10,636
Ultrasound	455	422	642	860	991	33	-187	-405	-536
Computed Tomography	69	64	87	108	121	5	-18	-39	-52
Mammography	70	73	88	100	107	3	-15	-27	-40
Angiography	27	31	42	52	58	-4	-15	-25	-33
SPECT/SPECT-CT	7	16	21	25	27	-9	-14	-18	-22

Magnetic Resonance	74	56	56	72	82	18	9	2	-11
Positron Emission Tomography	6	2	4	5	6	4	2	1	0
Radiation Therapy	4	2	3	3	3	2	1	1	0
X Ray	416	162	222	273	304	254	194	143	98

7.2 Service specialty priorities

A "traffic light" illustration is presented for inpatient and outpatient service specialties based on capacity with the greatest growth in demand and gaps in supply. The assessment dashboard is presented in the figure below for each scenario for the years 2022 and 2033 based on the following evaluation criteria.

Table 18: "Traffic light" illustration for supply gaps

GAP/SUPPLY	PRIORITY	DESCRIPTION
> 50%	HIGH	> 50% DEFICIT IN TOTAL SUPPLY GAP
25-50%	MEDIUM	50-25% DEFICIT IN TOTAL SUPPLY GAP
0-25%	LOW	25-0% DEFICIT IN TOTAL SUPPLY GAP
<0%	NO	< NO DEFICIT IN TOTAL SUPPLY GAP

Table 19: Acute overnight priorities by specialty, shown by gap percentage and number, 2022-33

Acute overnight beds					
2022			2033		
%	No.	Specialty	%	No.	Specialty
-50%	-67	Respiratory Medicine	>100%	-124	Renal Medicine
-40%	-18	Oncology	>100%	-257	Gastroenterology
-25%	-25	Cardiothoracic Surgery	>100%	-216	Cardiothoracic Surgery
-22%	-47	Psychiatry	>100%	-214	Respiratory Medicine
-21%	-7	Haematology	>100%	-106	Paediatric Surgery
-6%	-4	Paediatric Surgery	>100%	-68	Oncology
-5%	-17	Paediatric Medicine	>100%	-86	Urology
3%	1	Rheumatology	-98%	-30	Rheumatology
7%	3	Endocrinology	-82%	-248	Orthopaedics
12%	5	Renal Medicine	-69%	-24	Vascular Surgery
22%	20	Gastroenterology	-59%	-139	Psychiatry
31%	17	Neurology	-58%	-277	Paediatric Medicine
33%	9	Vascular Surgery	-54%	-21	Haematology
34%	72	Orthopaedics	-39%	-26	Neurology
36%	271	Neonatology & NICU	-34%	-14	Endocrinology
37%	169	General Surgery	-6%	-102	Obstetrics
40%	2	Dentistry	-2%	-51	General Surgery
43%	245	Obstetrics	19%	-102	Neonatology & NICU
47%	26	Urology	22%	-86	Cardiology
49%	113	Cardiology	26%	1	Dentistry
59%	38	Neurosurgery	34%	24	ENT; Head & Neck
63%	446	General Medicine	40%	25	Neurosurgery
70%	49	ENT; Head & Neck	40%	4	Dermatology
72%	58	Plastic Surgery	41%	9	Ophthalmology
72%	116	Immunology & Infec-tions	47%	334	General Medicine
75%	16	Ophthalmology	54%	122	Gynaecology
77%	8	Dermatology	56%	-30	Immunology & Infections
81%	182	Gynaecology	66%	54	Plastic Surgery
91%	49	Burns	82%	44	Burns

Table 20: Acute same day priorities by specialty, shown by gap percentage and number, 2022-33

Acute same day beds					
2022			2033		
%	No.	Specialty	%	No.	Specialty
>100%	-29	Haematology	>100%	-76	Haematology
>100%	-11	Dentistry	>100%	-74	Renal Medicine
>100%	-4	Oncology	>100%	-54	Rheumatology
>100%	-10	Rheumatology	>100%	-165	Gastroenterology
-96%	-16	Paediatric Surgery	>100%	-16	Dentistry
-62%	-5	Psychiatry	>100%	-82	Paediatric Surgery
-32%	-3	Renal Medicine	>100%	-12	Oncology
-28%	-8	Gastroenterology	>100%	-380	Dialysis
-20%	-18	Paediatric Medicine	>100%	-32	Ophthalmology
3%	3	Dialysis	>100%	-37	Urology
15%	2	Ophthalmology	>100%	-15	Psychiatry
17%	19	General Surgery	>100%	-90	Orthopaedics
21%	3	Endocrinology	>100%	-177	Paediatric Medicine
24%	10	Orthopaedics	>100%	-6	Vascular Surgery
29%	4	Respiratory Medicine	>100%	-25	Neurology
32%	72	General Medicine	>100%	-22	Respiratory Medicine
33%	1	Vascular Surgery	-70%	-66	Cardiology
33%	5	Neurology	-57%	-12	Endocrinology
43%	6	Urology	-42%	-66	General Surgery
44%	2	Neonatology & NICU	-19%	-10	Obstetrics
47%	28	Cardiology	-10%	-23	General Medicine
57%	2	Dermatology	-9%	-2	ENT; Head & Neck
58%	30	Obstetrics	-3%	-4	Gynaecology
60%	82	Gynaecology	0%	0	Chemotherapy
62%	9	Neurosurgery	3%	0	Dermatology
69%	15	ENT; Head & Neck	19%	3	Neurosurgery
70%	40	Chemotherapy	38%	2	Neonatology & NICU
77%	13	Immunology & Infections	47%	8	Immunology & Infections

7.3 Market Shaping Forces

The use of evidence-based models of care and service delivery frameworks will continue to reduce inappropriate clinical variation, support better utilization of hospitals, and improve the patient journey. Enhancements to new and existing models being considered in the development of clinical services include:

Shift in healthcare provision from hospital to home leveraging technology, with enhanced person- alized offerings.

Consumerization of healthcare and «productization“ of delivery.

Emerging gap in data regulation of patient data driven by explosion of electronic transfer of patient data to/from healthcare provider internationally.

Drastic change in healthcare labor market by incubating new medical professions and training fu- ture global talent to fulfil new market needs

Role of Healthcare providers to be diminished and redefined given new industry entrants and pa- tients› direct contact with payors and pharma companies.

Disruption in payor space due to changing distribution of value/costs in the system will change and rise in patients power.

Emergence of innovative and sustainable healthcare funding models to cover health needs of populations who are living longer in retirement and overall, especially low-income and sicker groups.

Emerging tech-enabled healthcare market offering people high quality low-cost healthcare through self-funding or insurance at an affordable price-point.

Shift in value drivers in pharma industry towards curative care, and stratification of treatments into high and low value/cost.

Creation of new opportunities in wellness related healthcare needs (e.g., wellbeing, centeredness, happiness, etc.) and potential to engage older populations in delivery of those services.

Growth in human enhancement as a healthcare offering and a key source of delivering value for providers.

Shift in healthcare as a service to be "Exported" rather than exclusively received at a specific location.

Increasing role of leveraging health and happiness and political stability as competitive advantage in retaining and growing local talent and attracting people from abroad in cities.

Need for a destination city for affluent residents and visitors to deliver best care in the world both locally and remotely.

Emerging need for a state to pioneer regulation to support innovation in healthcare while solving in parallel for novel ethical concerns.

Shift to predictive treatments. Shift to weighting prevention over treatment using data and technology.

Growing need for a cross-industry super regulator to protect patients/consumer privacy of data in an increasingly integrated HC market with numerous non-HC players.

Growing need for a cross-border «super» regulator to protect patients/consumer privacy of data due to the rise of remote service delivery and care options.

7.4 DHA Strategy 2022-2026

The new DHA strategy themes and priorities indicate the strategic areas of focus for the upcoming 5 years.

DHA Vision, Mission and Corporate Values

Vision

Dubai the homeland of pioneering in health, happiness and prosperity

Mission

Transforming Dubai into a leading healthcare destination by advancing public health and prevention; ensuring universal access to high-value healthcare; and fostering innovation and research.

Values

- Human-centered Healthcare
- Accountability
- Transparency
- Resilience
- Innovatiov

4 Themes

- Health
- Sustainability
- Innovation and Resilience
- Increase contributio to the economy

10 Strategic Priorities

- Promote the healthiest lifestyle for the people of Dubai.
- Pioneering prevention efforts against non-communicable diseases.
- Pioneering Human-centered health system to promote trust, safety, quality and care for patients and their families.
- Make Dubai a model for accessible value-based health care.
- Make Dubai a lighthouse for healthcare governance, integration and regulation.
- Ensure a conducive environment to attract and develop the best health talents while enhancing the Emiratization in the healthcare sector.
- Pioneering in combating epidemics and infectious diseases and prepare for disasters.
- Become a global digital health hub.
- Foster medical education, research and innovation.
- Strengthening the economic contribution of the health sector, including health tourism to support Dubai economy.

7.5 Recommendations

Since the last DSCSP of 2018, there has been a significant growth in hospitals and outpatient facilities leading to an increase in capacity for the defined KPUs including medical equipment and healthcare workforce. However, because of the continuing population growth there remain significant shortage (gaps) in certain service lines. This chapter will highlight some innovative solutions (based on the analysis of supply, demand, gap and most recent models of care delivery) to minimize the gap with the existing resources while being mindful of any future investments that is required.

Table 21: Summary of Capacity Planning Recommendations for each Service Type

Acute Overnight Care

- Distribution of capacity to meet clinical services with significant gaps and to improve hospital occupancy thus enhancing the quality of healthcare.
- Encourage the use of non-functional beds and bring them into operation which will help reduce the gap in the future and rapidly without further investment.
- Role delineation and referral networks to improve referral patterns and efficient use of infrastructure.
- Standardize and unify the definitions of bed and bed capacity will help in efficient reallocation and reimbursement.
- Keep real-time records of bed capacity reporting to efficiently reallocate beds where needed and particularly during times of pandemic and major emergencies and health crisis.
- Link of future planned supply of beds to clinical service capacity requirements.
- Promote hub-and-spoke networks to improve general capacity in high growth Sectors and tertiary centers of excellence
- Invest in prevention efforts to reduce pressure on demand for acute overnight beds
- Expediate the full implementation of DGRs

Acute Same Day care

- Increase awareness and orientation for expediated and expanded adoption of standards of care and funding mechanisms for same day care utilization.
- Promote expansion of short stay surgical units to address growth and supply gaps.
- Improve and unify coding standards for clear definitions to ensure accurate reporting and monitoring of different care types

Outpatient care

- Enhance and promote primary care as a
- gate-keeper service delivery model with strong referral systems across the continuum of care.
- Review licensing and land allocation strategies to address overcapacity of clinics based in Sector 3
- Encourage and facilitate investment in outpatient clinics in areas with major gaps namely sectors 1, 5, 7 & 9.
- Encourage establishment of Multi-disciplinary teams to support more coordinated and efficient delivery of ambulatory and outpatient care.

Emergency department care

- Study the possibility and feasibility of utilizing the oversupply of urgent emergency bays as
- life-threatening bays to address the future shortage (gap) .
- Increase the capacity of high acuity bays in Dubai public hospital emergency departments.
- Promote walk-in urgent care clinics for non- life threatening patients in smaller hospitals to reduce pressure on larger hospitals.
- Facility licensing policies be reviewed to limit the development of low-quality and poorly utilized emergency bays and enforce a minimum requirement for high acuity emergency service provision in private sector.

Operating theatres

- Better utilization of the current supply of operating theaters thus enhancing efficiency of utilization.
- Review policies for minimum operating theatre rooms a planning stage to reduce unnecessary licensing of elective theatres.
- Use facility guideline definitions to encourage clinically appropriate utilization of operating theatres.

Critical care

- Improve critical care capacity and its model of delivery to reduce unnecessary adult intensive care bed utilization.
- Address future gap in NICU beds through investment post 2025.

Non-acute and Long-term care

- Support license and funding incentives to improve investment in rehabilitation, transitional and
- long-term care facilities.
- Encourage more public private partnership opportunities for the funding, development of long-term care systems and facilities.
- Development of rehabilitation, post-acute and long-term care service delivery models to address insufficient supply.
- Establish a clearly defined insurance reimbursement framework and process for rehabilitation and long-term care
- Explore options for community -based and outreach care to mitigate facility capacity gaps.
- Plan for the impact on demand as a result of implementation of DRGs on long term care facilities due to payment caps.

Procedural care

- Establish health technology assessment function to examine the cost-effectiveness of new advanced equipment's and technologies.
- Review planning and licensing requirements to ensure that only necessary capacity is approved at the planning stage.
- Establish comprehensive diagnostic centers/ center of excellence to reduce unnecessary duplication of services.
- Review of policies and requirements to encourage uptake of tele-radiology and develop cost-effectiveness incentives.
- Enabling diagnostic results to be shared among facilities through NABIDH to improve efficiency of patient care and prevent duplication.

Workforce

- workforce licensing to capture working hours status in conjunction with headcount to better represent workforce estimates.
- Long-term workforce recruitment strategies should be tied to both activity projection modelling and local benchmarking exercises.
- Ensure allocated and utilized distribution of workforce capacity reflects skill set capacity.
- Develop and implement strategies to recruit, retain and train National health professionals.
- Better capture of Medical Tourism activity to assist in workforce planning and coordination of human resource allocation.
- Restructuring of current facilities to improve occupancy and patient throughput to assist with better workforce utilization.
- Enabling appropriately qualified nurses to provide independent care under the guidance of a managing physician.

Conclusion

The analysis presented in this report highlight that an incremental shift is required in the Dubai health system from the current delivery model to a more contemporary specialist model that is supported by appropriate clinical governance policies. The establishment of clinical peer review panels to accredit specialist and consultant practitioners will provide an improved framework for the leadership of healthcare in Dubai, one of the world's most dynamic and fastest growing cities.

Importantly, if Dubai is to maintain its international exemplar status, its healthcare capacity framework must be at the cutting edge of biomedical and innovative technology systems for excellence in clinical service delivery.
To adapt the innovative and efficient care models, such as the expansion home dialysis services and home care program for LTC to meet future growing demand on those specialties . Empowering the patient to make better access choices through information (DHA Public Map) on outpatient service availability.

08 | APPENDIX

This chapter describes in further detail the technical aspects of the project and its modelling methodology. It outlines the comprehensive modelling performed on population projections, health care capacity supply and demand, as well as a sensitivity analysis to test different scenarios.

Terms & Definitions

This section presents all the terms used in the supply and demand of healthcare services planning and their definitions as illustrated below.

Bed Type	Description
Acute Overnight-beds	A bed which accommodates any admission in the hospital for more than 12 hours or overnight
Same-day bed	A bed accommodating any admission that does not involve an overnight stay
Non-Acute Bed	A bed which accommodate patients requiring long-term care and rehabilitation
Hospital Inpatient Licensed Beds	Total number of beds as per the facility license application/profile
Functional Bed	A staffed bed that is occupied by a patient or available to be occupied by a patient
Non-functional bed	A bed that is not available due to medical or maintenance reasons

Acute Care	
Medical	Provides general acute care for a medical patient
Surgical	Provides general acute care for surgical patients
Gynecology	Provides care for female patients requiring gynecological care
Obstetrics	Provides antenatal and postnatal care for maternity patients and normal newborns and for female requiring reproductive system intervention
Pedatric	Provides general acute care for pediatric patients (<18 yrs).

Critical Care

Bed Type	Description
Adult-Intensive Care Unit (ICU)	Provides intensive comprehensive observation and care for medical/ surgical/cardiovascular/thoracic patients
Adult-High dependency Unit (HDU)	Provides care for post, pre and sub critical care medical and surgical pa- tients requiring observation and care more comprehensive than a general acute inpatient unit.
Neonatal Intensive Care Unit (ICU)	Provides intensive comprehensive observation and care for neonates
Pediatric Intensive Care Unit (PICU)	Provides intensive comprehensive observation and care for pediatric pa- tients (<18)
Isolation Room	For patients who require airborne droplet nuclei isolation.

Extended/ Post Acute Care

Rehabilitation	Provides rehabilitation care for patients having experienced stroke, head, or spinal cord trauma, musculoskeletal injury or other forms of physical disability
LTC-Adult	Provides sub-acute chronic care or restorative services for post-acute patients
LTC -Pediatric	Provides sub-acute chronic care or restorative services for post-acute pediatric patients (<18yrs)

8.1 Technical Document

8.1.1 Population modelling

The DCSCP has developed a series of population projections based on probability model from historical estimates for 5-year age and gender groups for a relatively stable but growing number of persons. In addition, the DCSCP has collected from DSC publications the sector estimates for the same period, these were projected using the same probabilistic model. Population projections were conducted separately for each of the nine sectors using best fit probabilistic modelling from historical trends with 2019 as the base year - using sectorial population data provided from the previous version of DCSCP. Holding capacity for each sector was used to determine the capacity for growth in each sector and allow for distribution amongst adjacent sectors if reached in future years.

The proportions of Nationals and Non-Nationals in each of the sectors were weighted for each projection year by the differential proportions for Nationals specified in the previous DCSCP. The population projections were then scaled back based on the population estimates for Nationals and Non-Nationals provided by an Expert Panel from the DHA for the projection years. Furthermore, the populations of nationals and non-nationals in each sector were then split into gender and age groups based on the proportions also provided by this panel.

Table 22: Medical specialty workforce gap analysis, 2020 to 2033

Scenario	population 2033	Average annual growth rate	Compound annual growth rate
Low	4,162,000	1.7%	2.2%
Medium	5,006,179	2.8%	3.4%
High	6,329,474	4.3%	5.1%

8.1.2 Relative utilisation

Relative utilization adjustments were performed to ensure that reference files were adapted to local service utilization rates and trends. This process ensures that both over- and under-utilization of specific services are captured in both the national and non-national cohorts. It also allows for a regression of utilization rates over and agreed period to reach closer to international benchmarks in planning for a more efficient and equitable health care service.

This process was performed by analyzing Health Statistics 2021 bed days per capita rates by specialty and nationality and then comparing these to the international reference benchmarks. The aggregate effect of this utilization adjustment can be seen in the second demand scenario 'RU', which adjusts the demand profile to maintain an In- Status Quo situation where future planning is based on the current coverage, utilization and flow parameters.

After extensive workshop discussions with an Expert Panel, a utilization adjustment profile was created for each service line that was specific to nationality and year up to 2033. This profile allowed for demand to be adjusted towards local trends in immediate years whilst allowing for a regression closer towards international benchmarks by 2033. This regression was based on discussions of current policies and likelihood of policy change as well as strategic plans set in place by the DHA that could impact service provision and reduction of outflows

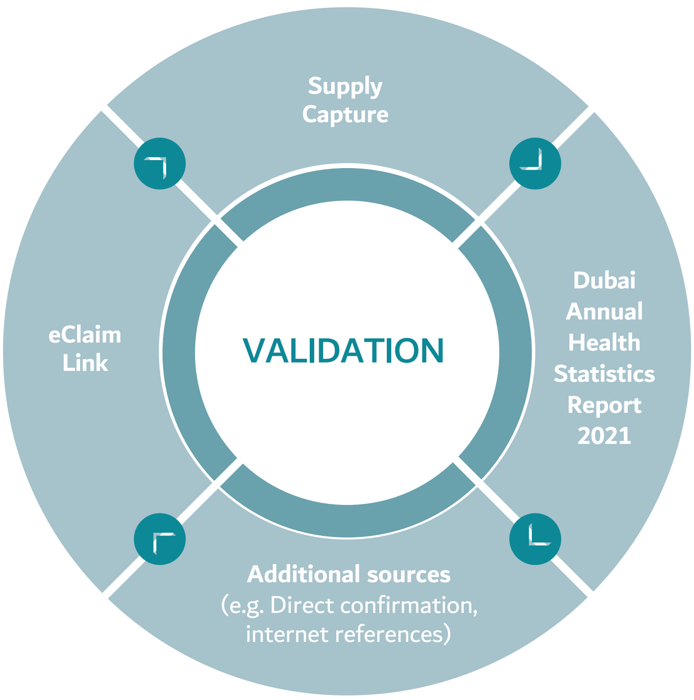
8.1.3 Supply validation

An extensive supply validation was performed to create a comprehensive supply capture of the historical capacity, activity and utilization levels of the Dubai health care market.

The purpose of the supply validation process was to assess the concordance between the survey responses and the Dubai Health Statistics 2021 report using DHA E-Claims records for the year 2021 as a secondary validation source to align the clinical specialties in the Health Statistics Report.

Initially, the total number of beds, the calculated average length of stay and the number of inpatient and out- patient episodes for each hospital from the Health Statistics Report was compared to the figures provided in the survey. The variance was calculated at an aggregate level for the public and private sector hospitals and separately for each of the hospitals. Where there were large variations in bed numbers, further validations were conducted using publicly accessible official data sources or by re-contacting the facility in coordination with the DHA. The survey results were adjusted if the Health Statistics figures were found to be accurate in the additional validation checks.

The validation study also utilized the unit level Health Statistics and E-Claims datasets for the year 2021 to align the DHA allocated specialties to ICD and IRDRG codes-based service lines, however clinical specialties of the service provider were not available in the private sector Health Statistics data. Initially, a mapping reference was developed from the E-Claims and public sector Health Statistics data to proportionally allocate the principal ICD codes in the private sector Health Statistics dataset to each clinical service line. This comparison was done to highlight the discrepancies between the two supply scenarios (allocated and utilized distribution) and compare the magnitude of difference for each specialty.



A three-phase approach was conducted to assess the sensitivity of the capacity planning findings.

- A population-based analysis is presented to assess the impact of different age distribution on the potential demand for services
- A 70% occupancy rate is applied to the aggregate bed demand for both scenarios. The gaps in supply at 60% occupancy and the 80% occupancy, used for the capacity planning, are contrasted to illustrate the differences for these occupancy assumptions
- The crude per capita rates were calculated and contrasted against other countries in the western Asia region and the selected high-income regions.

Table 23: Gap analysis for medium population series

Key Planning Unit	Medium			
	2022	2025	2030	2033
Overnight beds	1,728	309	-620	-1,040
Same day places	294	-382	-1,060	-1,477
Outpatient rooms	4,707	2,294	635	-723
Non -acute beds	-138	-404	-671	-782
ICU beds	691	684	653	627
PICU beds	73	58	51	42
NICU beds	211	22	-95	-165
ED beds	182	90	19	-16
Operating room	129	90	50	8
Procedural Care	306	-43	-367	-599

Note: Gap numbers highlighted in red color with a –ve sign represents an undersupply

8.1.5 Definitions and assumptions used in the calculation of key planning units

Each service type has a service definition framework which categorizes service lines based on a list of relevant DRG codes, the framework for acute inpatient care used for this report is shown in the table below.

Table 24: Service definition mapping for acute inpatient care

Service line	DRG
Burns	• Burns • Skin Graft with Burns
Cardiology & Cardiothoracic Surgery	• Acute Myocardial Infarction Acute & Subacute Endocarditis Heart Failure • Atherosclerosis • Cardiac Congenital & valvar Disorders Cardiac Arrhythmia & Conduction Dis- orders Angina Pectoris & Chest Pain • Syncope & Collapse • Other Circulatory System Diagnoses • Cardiac valve Procedures with Cardiac Catheterization Cardiac valve Proce- dures without Cardiac Catheterization Coronary Bypass with Cardiac Cathe- terization • Coronary Bypass without Cardiac Catheterization Complex Thoracic vascular Procedures • Cardiac Defibrillator & Heart Assist System Insertion Permanent Cardiac Pacemaker Insertion • Cardiac Catheterization • Cardiac Catheterization with AMI Percutaneous Cardiovascular Procedures
Chemotherapy	Chemotherapy
Dentistry	• Dental & Oral Disease • Dental Procedures
Dermatology	• Major Skin Disorders • Other Skin & Breast • Disorders Skin Ulcers
Dialysis	Renal Dialysis
Endocrinology	• Diabetes & Nutritional & Misc. Metabolic Disorders • Inborn Errors of Metabolism • Other Endocrine Disorders
ENT; Head & Neck	• Epistaxis • Epiglottitis-Otitis Media-Upper Respiratory Tract Infection & Laryngotrachei- tis Other Ear-Nose-Mouth & Throat Diagnoses • Other Complex Head & Neck Procedures Sinus & Mastoid Procedures • Salivary Gland Procedures Tonsil & Adenoid Procedures • Other Ear-Nose-Mouth & Throat Procedures Cochlear Implant • Nasal Procedures • Myringotomy with Tube Insertion Mouth Procedures • Thyroid-Parathyroid & Thyroglossal Duct Procedures

Service line	DRG
Gastroenterology	• Diverticulitis-Diverticulosis & Inflammatory Bowel Disease Gastrointestinal Obstruction • Other Gastroenteritis & Abdominal Pain Other Digestive System Diagnoses Cirrhosis & Alcoholic Hepatitis Pancreas Disorders except Malignancy • Liver Disorders except Malignancy-Cirrhosis Or Alcoholic Hepatitis Other Biliary Tract Disorders • Non-Complex Small & Large Bowel Procedures Complex Small & Large Bowel Procedures Rectal Resection • Complex Upper Gastrointestinal Endoscopy Noncomplex Upper Gastrointesti- nal Endoscopy Pancreas & Liver Procedures • Complex Biliary Tract Procedures • Other Hepatobiliary & Pancreas Procedures
Haematology & Oncology	• Coagulation Disorders • Blood & Blood Forming Organs Disorders • Red Blood Cell Disorders including Sickle Cell Anemia Other Procedures Of Blood & Blood Forming Organs Nervous System Malignancy & Degenerative Disorders Ear-Nose-Mouth & Throat Malignancy • Respiratory Malignancy Digestive Malignancy • Malignancy Of Hepatobiliary System & Pancreas • Musculoskeletal & Connective Tissue Malignancy & Pathological Fractures Malignant Breast Disorders • Kidney & Urinary Tract Malignancy & Renal Failure Male Reproductive System Malignancy • Female Reproductive System Malignancy Acute Leukemia • Lymphoma & Non-Acute Leukemia Radiotherapy • Other Myeloproliferative Disorders & Poorly Differentiated Neoplasm Diagno- sis Lymphoma & Leukemia with OR Procedure • Bone Marrow Transplantation • Bone Marrow Transplantation Autologous
Immunology & Infections	• Simple Pneumonia & whooping Cough Septicemia • Post-Operative & Post-Traumatic Infections Fever • Non-Bacterial Infections • Other Bacterial & Parasitic Diseases Human Immunodeficiency virus Infection Allergic Reactions
Neurology	• Multiple Sclerosis & Cerebellar Ataxia • Non-Specific CvA & Pre-Cerebral Occlusion without Infarct viral Meningitis • Non-Traumatic Stupor & Coma Seizure • Migraine & Other Headaches Concussion • Other Nervous System Disorders Disequilibrium
Neurosurgery	• Head Trauma • Craniotomy • Cranial & Peripheral Nerve Procedures • Pituitary & Pineal Procedures

Service line	DRG
Obstetrics	• Abortion • Antepartum Disorders Postpartum Disorders Caesarean Delivery • vaginal Delivery with Procedure • vaginal Delivery
Ophthalmology	• Acute Major Eye Infections • Neurological Eye Disorders • Other Eye Disorders • Orbital & Extraocular Procedures • Intraocular & Lens Procedures
Orthopaedics & Rheumatology	• Fractures of Femur • Fracture of Pelvis Or Dislocation Of Hip • Osteomyelitis • Medical Back Problems • Other Bone & joint Diseases • Injuries to Unspecified or Multiple Sites • Carpal Tunnel Release • Spine Procedures • Bilateral & Multiple Major Lower Extremity joint Procedures • Amputation • Major Lower Extremity joint & Limb Reattachment Procedures • Major Upper Extremity joint & Limb Reattachment Procedures • Spinal Fusion Procedures for Curvature of the Spine • Spinal Fusion Procedures except for Curvature of the Spine • Hip & Femur Procedures except Major joint • Foot Procedures • Local Excision & Removal of Internal Fixation Device • Soft Tissue Procedures • Other Musculoskeletal System & Connective Tissue Procedures • Knee & Lower Leg Procedures except Foot • Upper Extremity Procedures • Arthroscopy • Septic Arthritis • Connective Tissue Disorders • Musculoskeletal Signs-Symptoms-Sprains & Minor Inflammations • Other Musculoskeletal System & Connective Tissue Diagnoses
Neonatology	• Respiratory System Problems Arising in Neonatal Period • Neonate Birthwt <x000 Grams with Major Procedure • Neonate Birthwt 1000-1499 Grams with Major Procedure • Neonate Birthwt 1500-1999 Grams with Major Procedure • Neonate Birthwt 2000-2499 Grams with Major Procedure • Neonate Birthwt >2499 Grams with Major Procedure • Neonate Died or Transferred to Another Acute Care Facility • Neonate Birthwt 1000-1499 Grams without Major Procedure

Service line	DRG
Neonatology	• Neonate Birthwt 1500-1999 Grams without Major Procedure • Neonate Birthwt 2000-2499 Grams without Major Procedure • Neonate Birthwt >2499 Grams without Major Procedure • Mechanical ventilation with/without Tracheostomy (Neonatal)
Plastic Surgery	• Cleft Lip & Palate Repair • Cranial & Facial Bone Reconstructive Procedures Skin Graft without Burns • Skin Graft without Burns Excluding Hand Skin Graft without Burns to Hands • Other Skin-Subcutaneous Tissue & Breast Procedures Breast Procedures
Psychiatry	• Coagulation Disorders • Organic Disturbances & Mental Retardation Schizophrenia • Major Depression • Personality & Impulse Control Disorders Depression • Neuroses except Depression Childhood Mental Disorders Compulsive Nutri- tion Disorders Other Mental Disorders • Other Mental Disorders with ECT • Alcohol & Drug Rehab &/Or Detox Therapy Drug Rehab &/Or Detox Therapy
Rehabilitation	• Rehabilitation
Renal Medicine	• Hypertension • Kidney & Urinary Tract Infections • Urinary Stones • Kidney & Urinary Tract Signs & Symptoms • Other Kidney & Urinary Tract Diagnoses
Respiratory Medicine	• Respiratory Failure • Pulmonary Embolism • Major Chest Trauma • Respiratory Infections & Inflammations • Chronic Obstructive Pulmonary Disease • Asthma & Bronchiolitis • Interstitial Lung Disease • Pneumothorax & Pleural Effusion • Respiratory System Signs-Symptoms & Other Diagnoses • Mechanical ventilation with/without Tracheostomy • Mechanical ventilation with/without Tracheostomy for Nervous System Disor- der • Mechanical ventilation with/without Tracheostomy for Respiratory System Disorder • Mechanical ventilation with/without tracheostomy for Circulatory Systems Disorder • Mechanical ventilation with/without Tracheostomy for Infectious and Parasitic Disorder • Mechanical ventilation with/without Tracheostomy For Trauma Poisoning or Toxic Effects • Complex Respiratory System Procedures

Service line	DRG
Respiratory Medicine	• Non-Complex Respiratory System Procedures • Bronchoscopy
Transplanta- tion	• Heart &/or Lung Transplantation • Liver Transplantation • Kidney Transplantation
General Medicine	• Deep vein Thrombophlebitis • Cellulitis • Complications of Treatment • Other Injury-Poisoning & Toxic Effect Diagnoses • Signs & Symptoms • Other Factors Influencing Health Status • Poisoning & Toxic Effects of Drugs • Trauma to The Skin-Subcutaneous Tissue & Breast
General Surgery	• Peritoneal Adhesiolysis • Hernia Procedures except Inguinal & Femoral • Appendiceal Procedures • Non-Complex Stomach-Oesophageal & Duodenal Procedures • Other Digestive System Procedures • Anal Procedures • Colonoscopy • Cholecystectomy except Laparoscopic • Laparoscopic Cholecystectomy • Lower Limb Procedure with Ulcer/Cellulitis • Lower Limb Procedure without Ulcer/Cellulitis • Adrenal Procedures • Other Endocrine Metabolic And Nutritional Procedure • Obesity Procedure • Endoscopic and Investigation Procedures for Metabolic Disorder • Circumcision • Male Sterilization Procedures • Spleen Procedures • OR Procedures for Infectious and Parasitic Diseases • OR Procedures Injuries to Unspecified or Multiple Sites • OR Procedures Injuries to Hand • Or Procedures Injuries to Lower Limb
Urology	• Male Reproductive System Diagnoses except Malignancy • Complex Bladder Procedures • Upper Urinary Tract Procedures • Bladder & Lower Urinary Tract Procedures • Urethral & Transurethral Procedures • Extracorporeal Shockwave Lithotripsy

Service line	DRG
Urology	• Cystoscopy & Urinary Tract Endoscopy • Penis Procedures • Non-Complex Prostate & Scrotal Contents Procedures • Transurethral Prostatectomy • Other Male Genital Procedures
Vascular Surgery	• Extra cranial vascular • Procedures vein Ligation & Stripping • Other Circulatory System Procedures • Amputation for Circulatory System Disorder • Create-Revise-Remove Dialysis Device Extra • cranial Hematological Procedures

8.1.6 Medical Tourism

The DCSCP has developed a series of population projections based on probability model from historical es- Through local initiatives and the Dubai Health Experience (DxH), Dubai has developed into an emerging glob- al health tourism destination. Medical and wellness tourism is a growing phenomenon which sees patients travelling outside their local area of residence to receive healthcare services that are more readily available, less expensive or of higher quality than local options. Medical tourism is focused on the medical treatment of pre-existing conditions whereas wellness tourism is a holistic, preventative service looking to maintain or improve overall health. This spectrum of care places cosmetic and dental surgery for aesthetic reasons, weight- loss management and other holistic-styled clinic treatment between wellness and medical tourism

The global medical tourism market is driven by affordability and accessibility of good quality healthcare ser- vices along with assistance from tourism departments and local governments. In addition, availability of latest medical technologies in medical tourism hubs, throughout the world, is expected to fuel the market growth. Medical tourism inflows present an additional scenario to health care demand for the Dubai health infrastruc- ture, medical patients typically receive outpatient consultation(s) and depending on their purpose of travel may also include use of an operating theatre, inpatient bed or same day place.

Future demand figures have been derived from medical tourism targets, distributed across specialties by their current activity proportions. It is reported currently that roughly 50% of all health tourists arriving in Dubai seek medical care, split amongst the specialties of Orthopedics, Gynecology, Neurology & Neurosurgery, Cardi- ology, Fertility, Ophthalmology, Oncology, Dentistry & Plastic Surgery

The medical tourism requirements are outlined below, generated by the following assumptions:

• All medical patients will require 2 outpatient consultations

• A small proportion (10-30%) of patients will require overnight care (at specialty specific length of stay periods), with the remainder requiring the use of a same day place

Table 25: Medical Tourism requirements, 2022 to 2033

	2022	2025	2033
Medical Tourists	250,000	375,000	500,000
Overnight Beds	734	1,101	1,468
Same Day Places	556	835	1,113
Outpatient Rooms	143	214	285

8.2 Acknowledgements

The DCSCP and its results have been tested with in depth stakeholder consultations and collaboration across various departments and sectors. Sincere gratitude and appreciation go to the public and private facilities and other stakeholders for their cooperation in providing information to the surveyors, filling out the survey forms and actively participating and providing feedback during the consultation workshops and the initial presentation of the results.

The authors of this report recommend its adoption as a fundamental basis for health sector strategy and its implementation. It is also recommended that this document be regarded as live, subject to updates every three years to align with prevailing conditions, changes to the healthcare industry, technology and Government policy

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