

# Mind The Gaps: A Novel Approach to Population Healthcare Planning

TAHPI A to Z of Health Planning



**Health Planning A to Z**



**Architecture Medical Planning Master Planning**



**Health Service Planning**



**Mechanical Electrical Public Health**



**Medical Equipment Planning**



**Project Management Services**



**HFBS Health Planning Software Suite**



**HIMS Software Suite**





**Modular Design & Construction**

# Our Locations

TAHPI is headquartered in Sydney, Australia. We have 10 Regional Offices and 11 Joint Venture Offices Across the globe

250	Direct and locally contracted staff
6	Service Planners, Nurse Planners and Software Department
200	Architects, Interior Designers & Technicians
6	Dedicated Interior Designers



 TAHPI Offices  
 Joint Venture Offices

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We understand **public** and **private** hospitals





We understand **service planning, design and construction** techniques



+ over to 300 more projects



## Context: the “Why”

- Health service planning and Diagnosis-Related Groups (DRGs) are closely interconnected.
- In Australia, DRGs are used to determine public hospital funding as well as health service planning.
- DRG system provides a structural framework for promoting higher quality of care standards
- A systematic approach that utilise AR-DRG classification in hospital service planning.



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## Goal: the “What”

- To present the possibility of using DRGs in health service planning
- Gap analysis:
  - What are the projected Demand?
  - What is the existing healthcare provision?
- Are there any gaps? If so,
  - In what service modes and what specialities?
  - In which geographical areas?



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# The “How”: two programs to achieve the aim



## Ready to Use - Health Service Planning

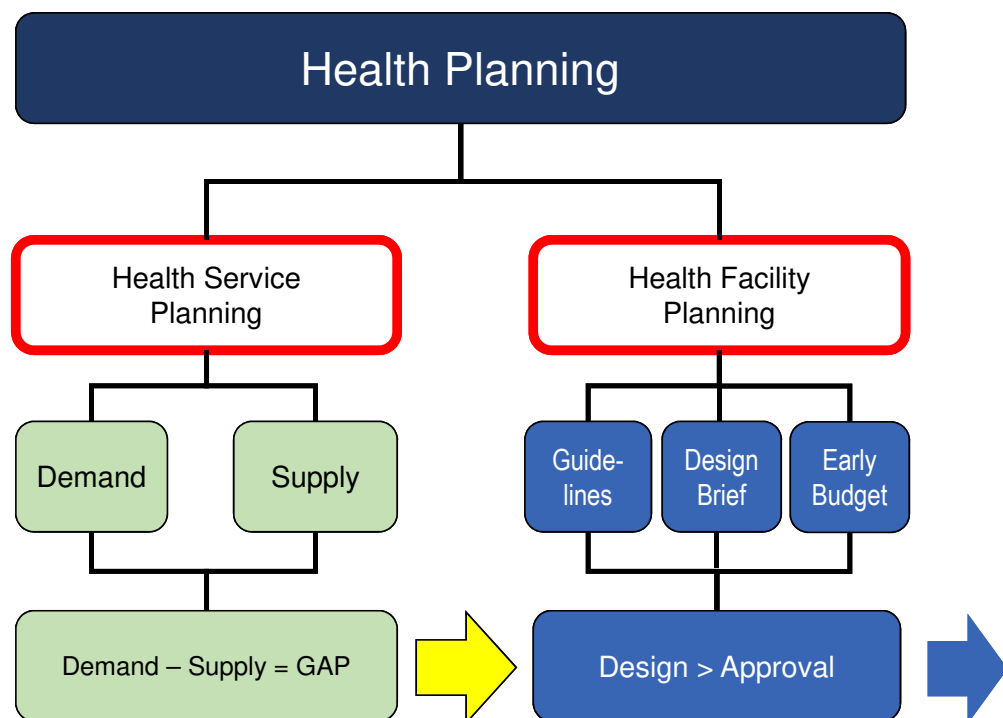
- Focused on optimizing valuable resources.
- Engender the efficiency of health systems and assets
- To meet the changing needs of patients into the future.



## Ready to Use - Health Facility Guidelines

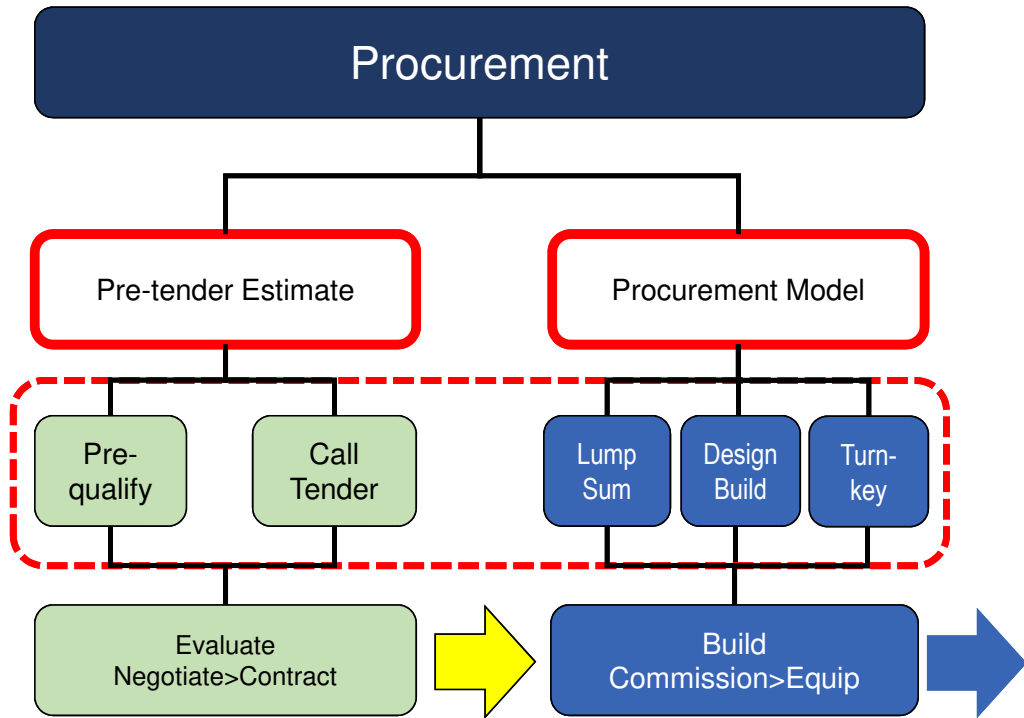
- Author of International Health Facility Guidelines (iHFG) referenced
- iHFG is the encyclopedia of knowledge for the design of healthcare facilities and reference for healthcare designers
- Open-source and can be used freely on all types of healthcare projects

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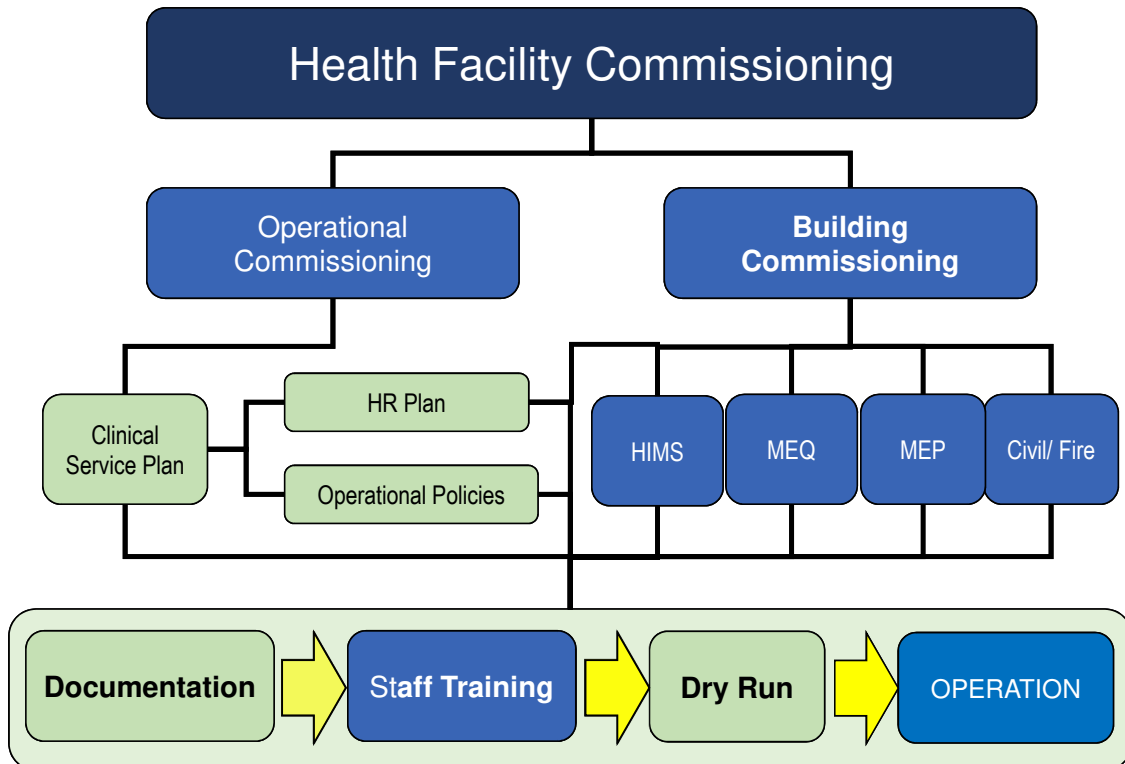


There are tools for every aspect of Health Planning

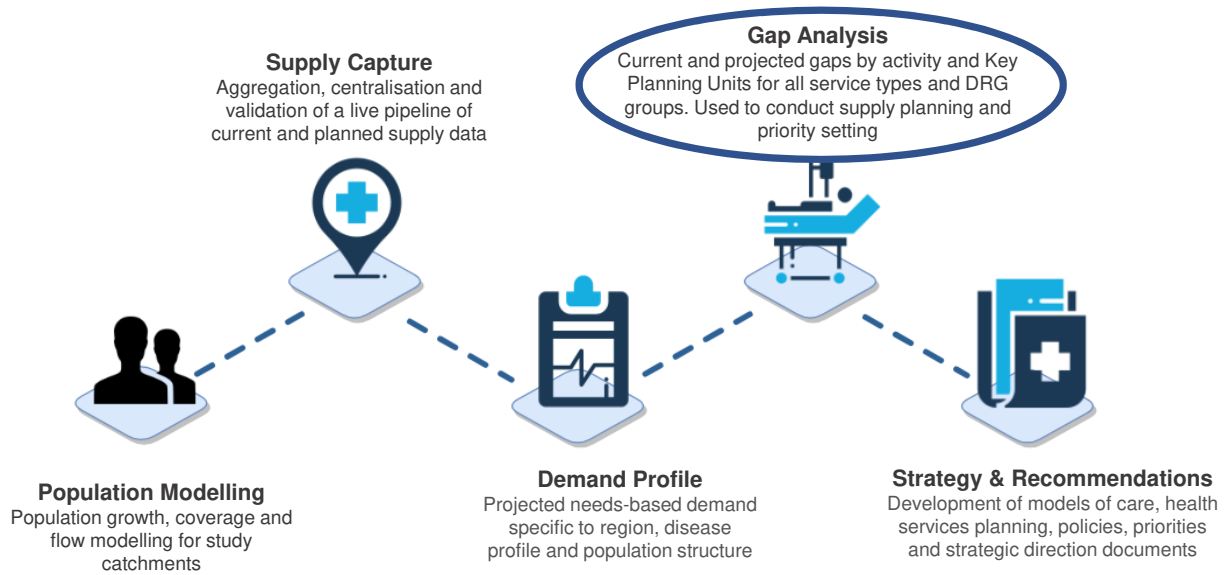
The Health Planning Discipline Framework



The Health Planning Discipline Framework Continued..



# Health Service Planning



# Service Planning – Service Mapping

By Service Type, Service Mode, Service Lines and DRGs

**Service Types**

**Service Modes**

**Service Lines**

**Service DRGs**

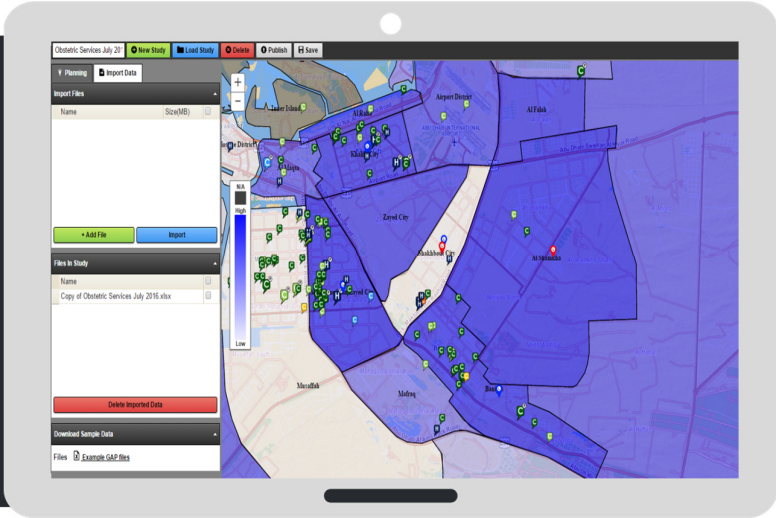
Service Types	Service Modes	Service Specialties	Service DRGs
1 Adult Outpatient Service	1 Adult Medical	11 Cardiology	023 Other Gastroscopy for Major Digestive Disease
2 Acute Same Day Service	2 Adult Surgical	12 Interventional Cardiology	024 Other Gastroscopy for Major Digestive Disease
3 Non-acute Overnight Service	3 Adult Prosthetic	13 Gastroenterology	025 Complex Colonoscopy
4 Non-acute Same Day Service	4 Children Medical	16 Diagnostic GI Endoscopy	026 Complex Gastroscopy w/ Colonoscopic or Sigmoid CC
5 Emergency Service	5 Children Surgical	17 Hematology	027 Complex Gastroscopy w/ Colonoscopic or Sigmoid CC
6 Intensive Care Service	6 Children Prosthetic	24 Respiratory Medicine	028 Complex Gastroscopy w/ Colonoscopic or Sigmoid CC
7 Operating Theatre	7 Mental Health	47 Dentistry	029 BSCP Complex Therapeutic Procedure w/ Colonoscopic or Sigmoid CC
8 Alcohol and Other Drugs	8 Rehabilitation	52 Urology	030 BSCP Other Therapeutic Procedure w/ Colonoscopic or Sigmoid CC
9 Rehabilitation	10 Palliative Care	76 Endocrine/Endocrine Metabolic	031 BSCP Other Therapeutic Procedure w/ Endoscopy
10 Palliative Care	11 Older Person's Care	82 Psychiatry	032 BSCP Other Therapeutic Procedure w/ Endoscopy
11 Older Person's Care	12 Psychogeriatric	13 Dermatology	033 Endoscopic or Invasive Procedure for Hemobiochemistry w/ Endoscopy
12 Psychogeriatric	14 Endocrinology	20 Chemotherapy	034 Rehabilitation
13 Dermatology	15 Intensive Care Unit	21 Neurology	035 Non-Acute Geriatric
14 Endocrinology		22 Bone Medicine	036 Palliative Care
15 Intensive Care Unit		23 New Medicine	037 Maintenance
		25 Rheumatology	038 Geriatric
		26 Non-Management	039 Emergency
			040 Palliative Care
			9012 Extensive OR Procedure Unrelated to Principal Diagnosis
			9013 Non-Extensive OR Procedure Unrelated to Principal Diagnosis
			9014 Prosthetic OR Procedure Unrelated to Principal Diagnosis
			9015 Unprovable
			9016 Unacceptable Principal Diagnosis



# Supply Capture

## Supply Planning

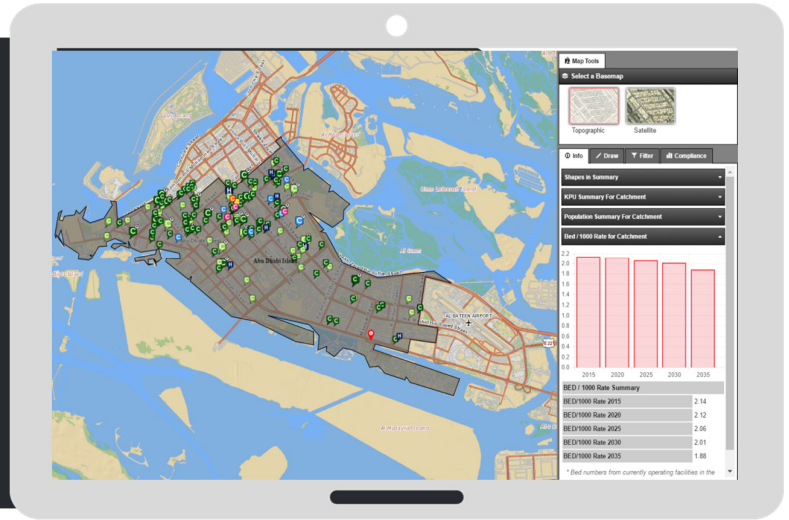
**Configure health service data for analysis at speciality, and Key Planning Units (KPU) levels**





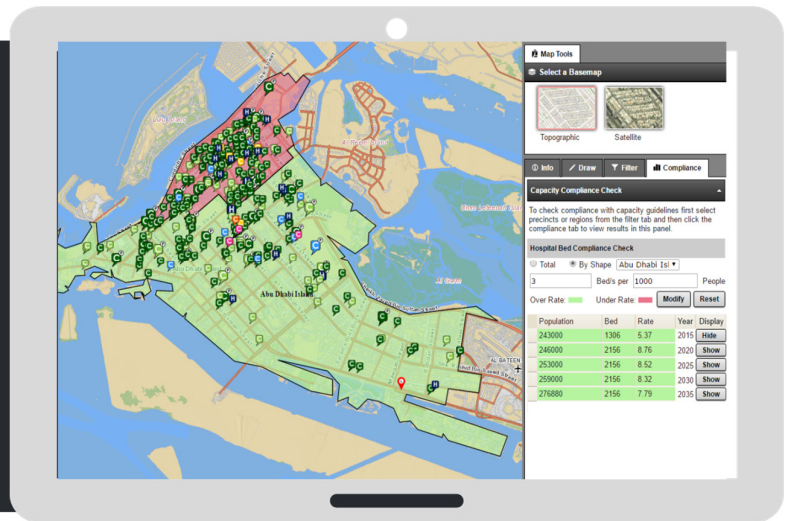
# Supply Planning

Analyse custom geographical catchments using population, statistical boundaries and shapes



# Supply Planning

Calculate compliance to health service and community planning guidelines





# Demand Projection

## Demand Module

### 20-year simulation of the future

- Based on population projections
- Locally specific
- **Calculated at DRG level**
- Wide range of service types
- Full simulation and pre-processing



 Demand Module

# Demand Module

## Population Based Demand Projection



## Population Based Health Service Demand

- Service activity that a population generates if no access constraints exists
- Simulated from:
  - Reference population with equilibrium between Supply and Demand
  - Apply to the local population projections by age gender, number and location
  - Adjust demand for local conditions



**Service Types**

**Service Modes**

**Service Specialities**

**DRGs**

# Demand Module Service Profile

**Service Types**

**Service Modes**

**Service Specialities**

**Service DRGs**

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# Demand Module Service Profile

Adult Overnight  
 Adult Same day  
 Non-acute Overnight  
 Non-acute Same Day  
 Emergency  
 Intensive Care  
 Operating Theatre

Adult Medical  
 Adult Surgical  
 Adult Procedural  
 Childrens Medical  
 Childrens Surgical  
 Childrens Procedural  
 Mental Health  
 Rehabilitation  
 Palliative Care  
 Older Persons Care  
 Phychogeriatric  
 Maintenance  
 Consult Therapy  
 Emergency  
 Intensive Care Unit

Cardiology  
 Interventional Cardiology  
 Gastroenterology  
 Diagnostic GI Endoscopy  
 Haematology  
 Respiratory Medicine  
 Dentistry  
 Urology  
 Definitive Paed. Medicine  
 Psychiatry  
 Dermatology  
 Endocrinology  
 Immunology  
 Medical Oncology  
 ....  
 ....

G42A Other Gastroscopy  
 G42B Other Gastroscopy for Major Digestive.....  
 G43Z Complex Colonoscopy  
 G46A Complex Colonoscopy Q Catastrophic or ....  
 G46B Complex Gastroscopy W/O Catastrophic or ....  
 G46C Complex Gastroscopy Sameday  
 IH41A ERCP Complex Therapeutic Procedure W ....  
 H41B ERCP Complex Therapeutic Procedure A/O...

**Service Types**

**Service Modes**

**Service Specialities**

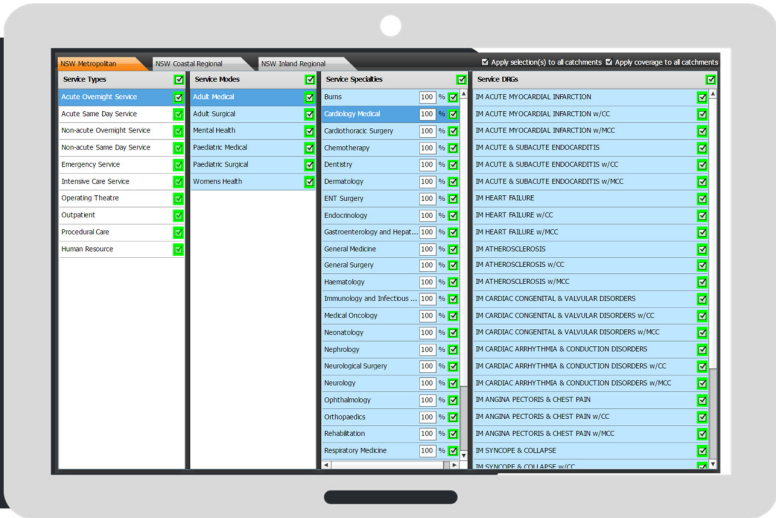
**Service Diagnosis Related Groups (DRGs)**

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# Demand Module

Select to study a complete range of service types service modes Specialties or DRGs



# Demand Module - Burden of Disease (BOD)

Localisation with Top Causes of Death

Cause	2009 rank	2019 rank
Stroke	1	1
Ischemic heart disease	2	2
COPD	3	3
Lung cancer	4	4
Stomach cancer	5	5
Alzheimer's disease	8	6
Hypertensive heart disease	9	7
Colorectal cancer	10	8
Esophageal cancer	7	9
Road injuries	6	10

# Demand Module

Visualise projected demand for the future healthcare system



## Mind the “Gap”: a Data-Driven Approach

### Demand

- Raw Demand
  - 700 DRGs
  - Episodes
  - Stay Periods
- Service Types
- Service Modes
- Service Lines
- Casemix Groups



### Supply

- Current
- Future/Planned

### Gap

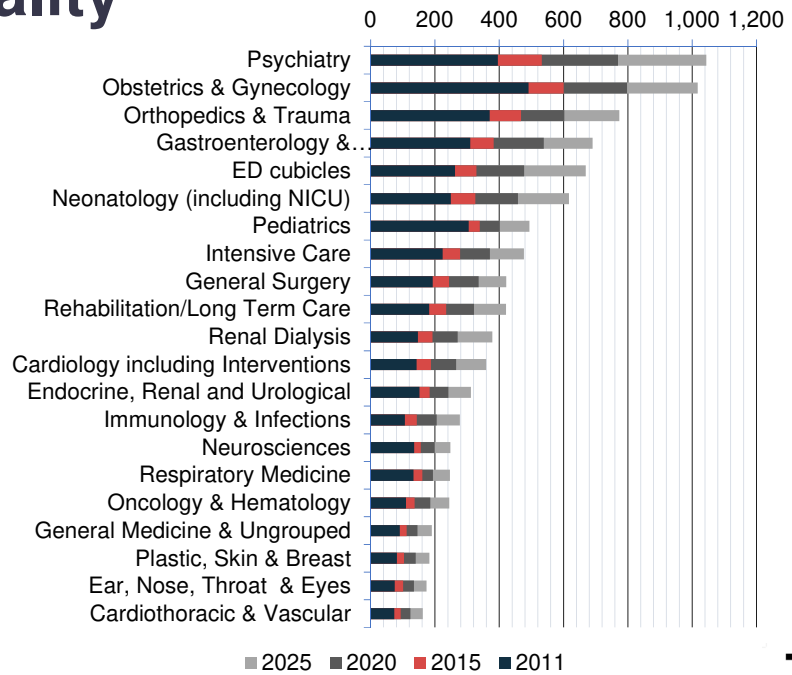
- Key Planning Units (KPU's)
  - Beds, OR's ED, Consult
- Workforce (HR)
  - Doctors, Nurses, Support

DEMAND
-
SUPPLY
=
GAP

# Gaps by Speciality

## Also Gaps by:

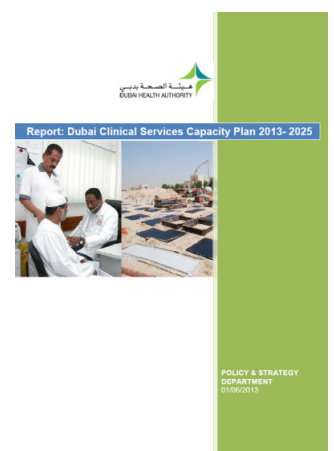
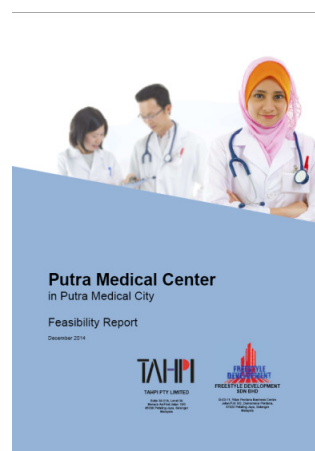
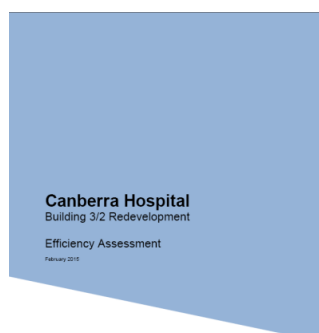
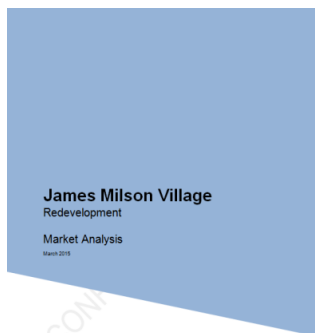
- By Population Type
- By Sector
- By Date
- By Gender
- By Aged Group
- By KPU



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# Reporting



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# Healthcare Capacity Masterplan

An ongoing **Capacity Master Plan** is developed annually by TAHPI (twice completed):

- 2018 first version
- 2020 second version
- 2023 current version



# Abu Dhabi Health Workforce Plan

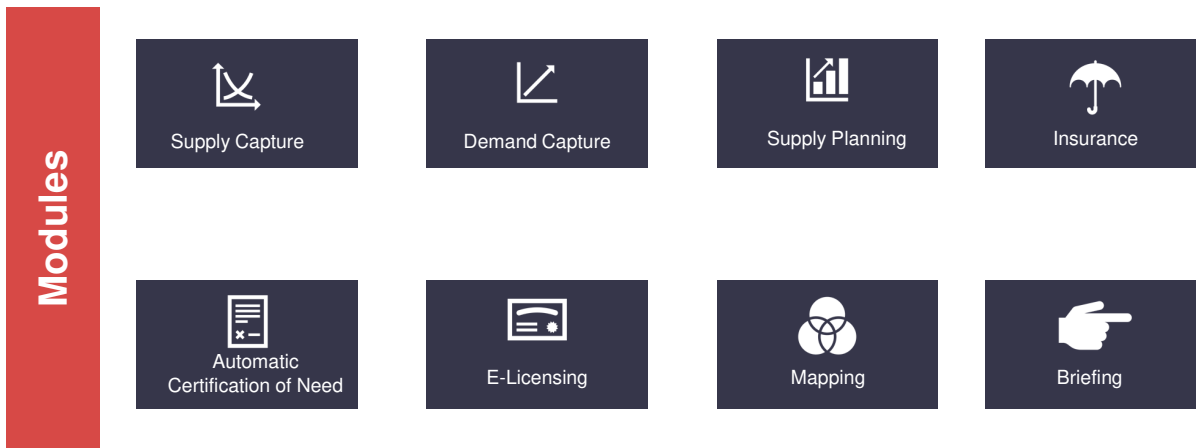
TAHPI has completed the 2020-2040 Abu Dhabi Health Workforce Plan in 2023 which provides an in depth, Emirate wide review to assist strategies to meet health workforce shortages into the future.





# HFBS Software

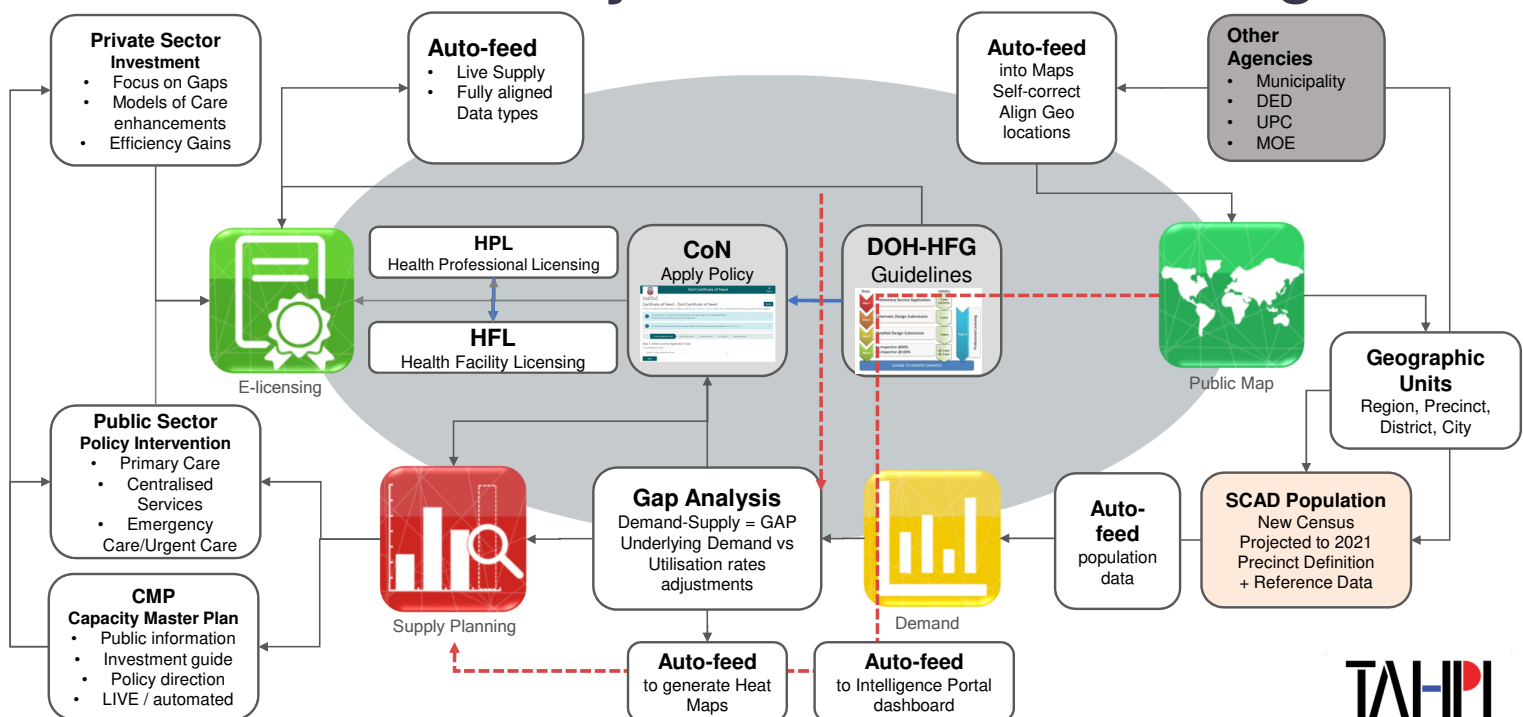
HFBS is a web-based platform for Healthcare Service Planning, Briefing, Design and Project Management for the entire industry.



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## Data-Drive Ecosystem: Health Planning



# Welcome to the International Health Facility Guidelines

An encyclopaedia of knowledge for the Briefing, Planning and Design of Healthcare facilities.



<https://www.healthfacilityguidelines.com/>

(Open-source and can be used freely on all types of healthcare projects)

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## iHFG Guidelines for multiple countries



Australia



New Zealand



United Arab Emirates



India



Oman



Kingdom of Saudi Arabia



Singapore



Papua New Guinea



Australasian

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# Awards and Recognitions



Winner of a prestigious International Award in 2012 Hospital Build, Dubai



TAHPI won **two** awards for ground breaking initiatives in Health Facility Guidelines and innovations in designing Healthcare Facilities:

- 1st prize for the Most Innovative Idea
- 1st prize for the Most Innovative Technology Award.



TAHPI won **two** awards in recognition of the Modular design and Off-site construction technology adopted in the design of Meitra Hospital, Calicut , Kerala

- Six Sigma Healthcare Excellence award 2017- Best Hospital of the Year
- Outstanding Concrete Structure

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# Public Entities



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# Private Entities



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# Thank You!



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