Healthcare Manpower Projection 2023

Projection Framework and Model

Legislative Council Panel on Health Services Meeting

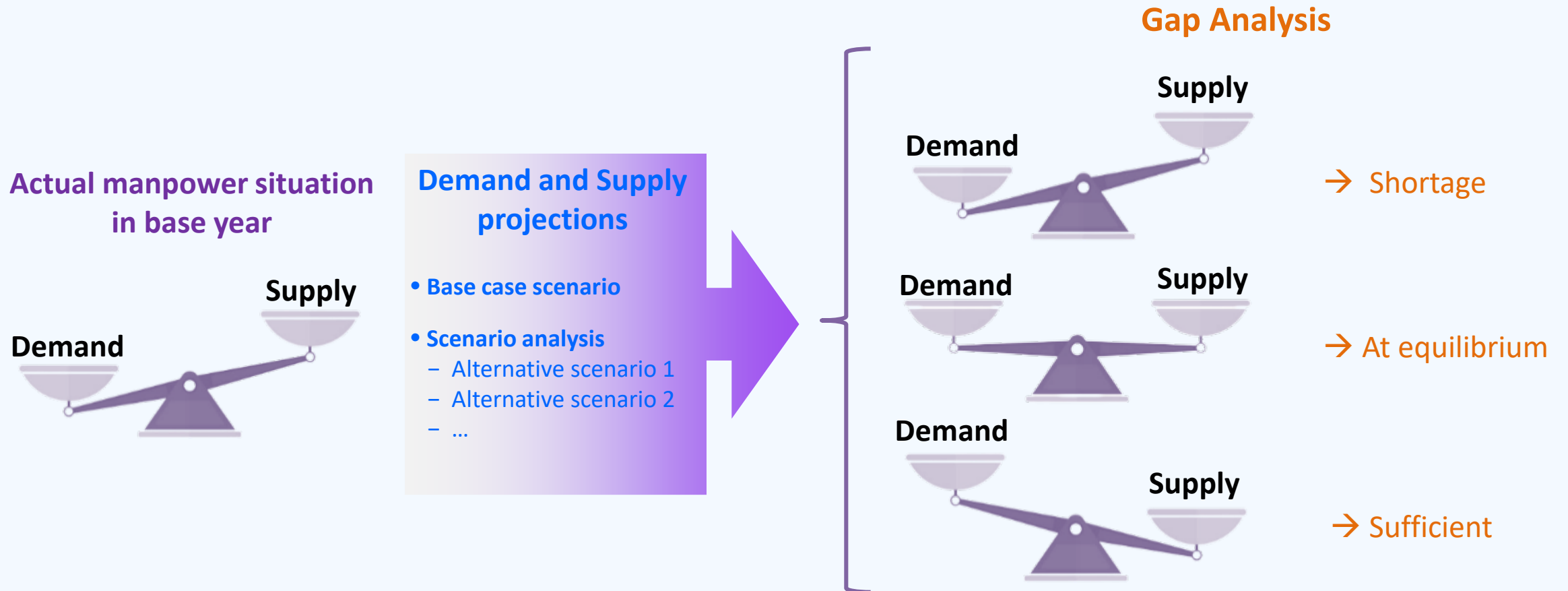10 March 2023

Healthcare Manpower Projection Framework

∗ **2019 as base year**

∗ **Project the manpower demand and supply for 13 healthcare professions which are subject to statutory registration**

- doctors, dentists, dental hygienists, nurses, midwives, Chinese medicine practitioners, pharmacists, occupational therapists, physiotherapists, medical laboratory technologists, optometrists, radiographers and chiropractors

∗ **Scenario analyses**

- **Base case scenario**: Assume the service delivery model and utilisation rates, as well as the annual throughput delivered per staff, work patterns, training and registration systems remain unchanged during the projection period

- **Alternative scenarios**: Adjust the projected manpower demand and supply, taking into account various factors such as the known and planned healthcare services and developments, and policy changes, etc.

Manpower Demand-Supply Gap Analysis

Through the gap analysis and taking into account the known manpower shortage as at the end of base year, the future manpower situation in the projection period will be assessed.
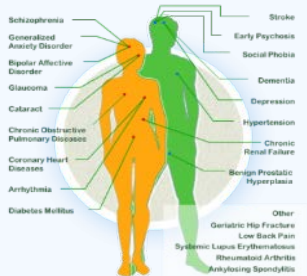
Gap Analysis

Actual manpower situation in base year

Demand and Supply projections

- **Base case scenario**
- **Scenario analysis**
  - Alternative scenario 1
  - Alternative scenario 2
  - ...

Supply

Demand

→ Shortage

Demand

Supply

→ At equilibrium

Demand

Supply

→ Sufficient

Manpower Demand Projection Model

Population projection

Demographic changes

Increase in chronic patients

Parameters:
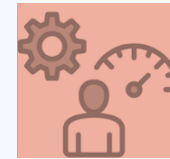Utilisation rates of various healthcare services

Project

Future healthcare service workload

Conversion parameters:
Average time required and annual throughput delivered per staff for various healthcare services, etc.

Project

Future healthcare manpower requirement to meet service needs

(in terms of full-time equivalents (FTE))

Key assumptions:

1. Manpower demand is not capped by manpower supply.
2. The utilisation rates and conversion parameters of service utilisation volume for various healthcare services remain unchanged during the projection period.

Major Data Sources
(for manpower demand projection)

covering historical data from 2015 to 2019

Hospital Authority

- Utilisation data of various healthcare services *(e.g. inpatient, surgery, accident and emergency, outpatient, allied health, diagnostic radiological, laboratory and dispensing services)*

- Healthcare human resources data

Department of Health

- Utilisation data of various outpatient services

- Utilisation data of inpatient and outpatient services of private hospitals

- Information on the claiming of the Elderly Health Care Voucher
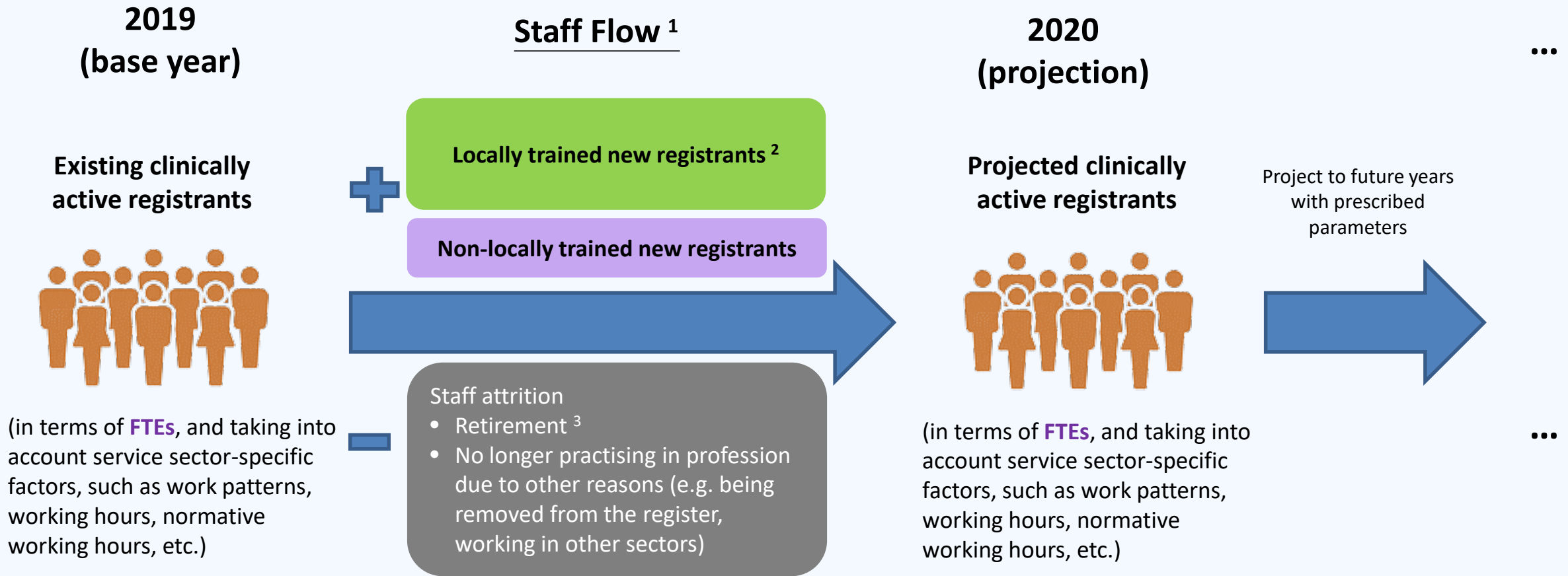
Census and Statistics Department

- Hong Kong Population Projections

- Thematic household survey data (healthcare-related)

Social Welfare Department

- Elderly service data

- Rehabilitation service data

Manpower Supply Projection Model

2019
(base year)

Staff Flow [1]

2020
(projection)

...

Existing clinically active registrants

+

Locally trained new registrants [2]

Non-locally trained new registrants

Projected clinically active registrants

Project to future years with prescribed parameters

(in terms of **FTEs**, and taking into account service sector-specific factors, such as work patterns, working hours, normative working hours, etc.)

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Staff attrition
- Retirement [3]
- No longer practising in profession due to other reasons (e.g. being removed from the register, working in other sectors)

(in terms of **FTEs**, and taking into account service sector-specific factors, such as work patterns, working hours, normative working hours, etc.)

...

Key assumption: Training and registration systems, as well as the projection parameters (such as, work patterns and working hours) of various healthcare professionals remain unchanged during the projection period

Notes:

1. With reference to historical data, formulate the parameters (such as registration rates of locally-trained graduates and renewal rates for various healthcare professions) for projecting the future manpower supply.
2. Project based on the number of students intakes and graduates of existing and planned local training programmes.
3. The assumed retirement age may vary among different healthcare professions.

Major Data Sources
(for manpower supply projection)

covering historical data from 2015 to 2019

University Grants Committee

Education Bureau

UGC-funded and non-UGC-funded Healthcare Training Programmes Information (e.g. the number of students intakes, the number of graduates, etc.)

Department of Health

Health Manpower Survey Data

Registrant information from the 12 Boards/Councils of healthcare professions

- **Medical Council of Hong Kong**
- **Dental Council of Hong Kong#**
- **Nursing Council of Hong Kong**
- **Midwives Council of Hong Kong**
- **Chinese Medicine Council of Hong Kong**
- **Pharmacy and Poisons Board of Hong Kong**

- **Occupational Therapists Board**
- **Physiotherapists Board**
- **Medical Laboratory Technologists Board**
- **Optometrists Board**
- **Radiographers Board**
- **Chiropractors Council**

including dentists and dental hygienists

Comparison of Projection Model Used in Previous Round	Projection Model Used in the Previous Round of Projection (Base Year 2017)		Projection Model Used in the New Round of Projection (Base Year 2019)
1. Factors affecting the future demand for healthcare services	• Demographic changes		• Demographic changes • **Increase in cross-border population** • **Increase in chronic patients** • **Workload indicators** • **The need to enhance healthcare services**
2. Projection methodology of utilisation rates of healthcare services	Historical service workload data of various services	**+** Artificial intelligence model / time series analysis	Historical utilisation rates of various services **+** **Views from key stakeholders / professions**
3. Parameters to convert the projected healthcare service workload into manpower requirement	Historical annual service workload & human resources data of various services **+** Statistical model ⬇ Annual throughput delivered per staff		• **Average time required / annual throughput delivered per staff / workload indicators for various services** • **Views from key stakeholders / professions** (Reality checks)
4. Assumption of healthcare manpower demand and supply gap at base year under base case scenario	Assume at equilibrium		**Take into account the known manpower shortage as at the end of base year in various sectors**

Thank You