



**World Health  
Organization**

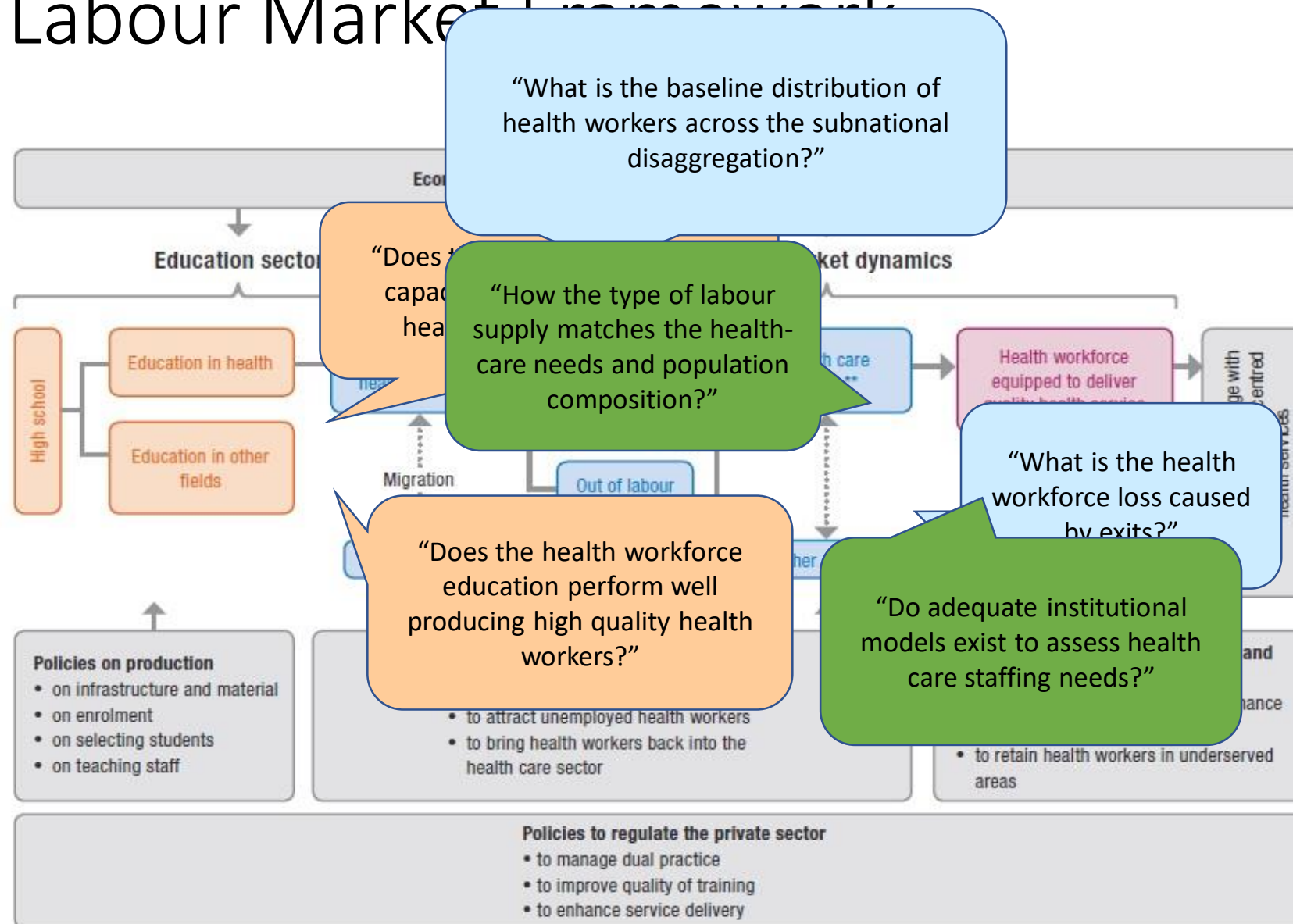
# NHWA: Health workforce indicators and data sources to monitor progress towards UHC

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# Outline

- The starting point: Countries priorities and policy questions
- Indicators and domains
- Standardization of indicators
- Data sources and quality
- Example of analysis and use
- Regional and Global reporting

# Health Labour Market Framework



# Approach for selecting indicators

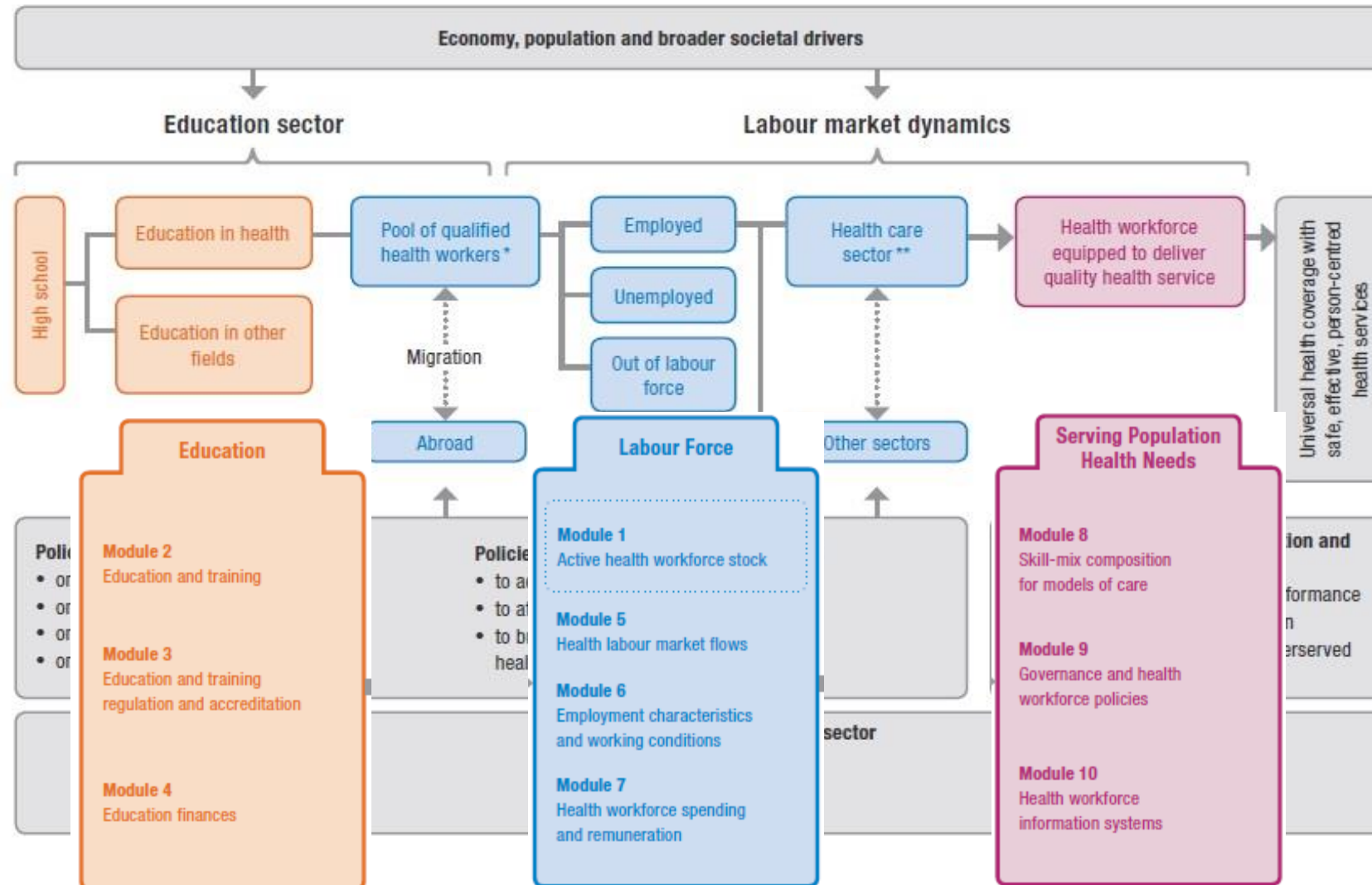
Priority areas/main challenges	Key policy options	Relevant question	Relevant Indicator	Methodology
Unequal distribution of health workers across districts	Financial incentives for rural deployment	Can <b>financial incentives</b> for health workers stimulate them to settle in underserved areas and lead to a <b>more balanced geographical distribution</b> of the health workforce across the country or region?	Density disaggregated by sub-national areas Financial Incentives	Trends analysis Comparison before/after
	Two year compulsory rural service for new graduates	Would the compulsory rural service be enough to address shortages in under-served areas	Density disaggregated by sub-national areas Graduates Recruitment	Trends analysis Comparison before/after
	Rural pipeline scheme for health workers training	Is the rural pipeline scheme the best retention strategy to address staffing imbalances.	Density disaggregated by sub-national areas Graduates by origin Recruitment by origin	Trends analysis Comparison before/after

# National level: Data for decision making what?

Domains	Examples of indicators and methodologies
Stocktaking	Density and distribution, descriptive analyses
Planning	Projections, scenarios, applications, enrolments and graduates tracking, exits
Advocacy	Gap analyses, shortages, gender analyses, scenarios
Resource mobilization and allocation	Density and distribution, incentives, comparisons
Accreditation/Regulation	Education stats – licensing and relicensing indicators
UHC index	Density, distribution, Access, coverage link with outcomes
Labour market dynamics	Production, entries and exits, performance, productivity, compensations
Gender	Distribution (sex, working conditions, wages/salaries, full and part time work

# National Health Workforce Accounts: Modular approach

- The concept of the NHTWA is closely aligned with the health labour market framework for UHC



```

graph TD
    A[1 Active health workforce stock] --> B[Stock]
    A --> C[Distribution]
    A --> D[Migration]
    B --> B1[• Health worker density]
    B --> B2[• Health worker density at subnational level]
    C --> C1[• Health worker distribution by age group]
    C --> C2[• Female health workforce]
    C --> C3[• Health worker distribution by facility ownership type]
    C --> C4[• Health worker distribution by facility type]
    D --> D1[• Share of foreign-born health workers]
    D --> D2[• Share of foreign-trained health workers]
    
```

**1 Active health workforce stock**

**Stock**

- Health worker density
- Health worker density at subnational level

**Distribution**

- Health worker distribution by age group
- Female health workforce
- Health worker distribution by facility ownership type
- Health worker distribution by facility type

**Migration**

- Share of foreign-born health workers
- Share of foreign-trained health workers

**Distribution**

- Share of workers across health and social sectors

**6 Employment characteristics and working conditions**

<b>Working time</b>	<b>Labour market characteristics</b>	<b>Working conditions</b>
<ul style="list-style-type: none"><li>• Standard working hours</li><li>• Health workers with a part-time contract</li></ul>	<ul style="list-style-type: none"><li>• Health worker status in employment</li><li>• Regulation on dual practice</li><li>• Regulation on compulsory service</li></ul>	<ul style="list-style-type: none"><li>• Measures to prevent attacks on health workers</li><li>• Attacks on health-care system</li></ul>
<b>Decent work</b> <ul style="list-style-type: none"><li>• Regulation on working hours and conditions</li><li>• Regulation on minimum wage</li><li>• Regulation on social protection</li></ul>		

**Indicator**

- Admissions
  - Ratio of admissions to available places
  - Ratio of students to qualified educators for education and training
- Duration of education and training
- Applications for education and training
- Exit / drop out
  - Exit / drop-out rate from education and training
- Drop-out rate from education and training

**Data elements**

**Data elements:**  
numerator,  
denominator

# Disaggregation

## Definition

## Definition

- Glossary
- Data sources

# Data sources

## Entry into labour market

- Graduates starting practice within one year
- Postgraduate training in health professions

## Exit from labour market

- Voluntary exit rate from health
- Unemployment rate

## References

### Health worker distribution by age group

Dimension: Distribution

**Numerator**  
**Denominator**

➔ **Definition**

10

## Potential data sources

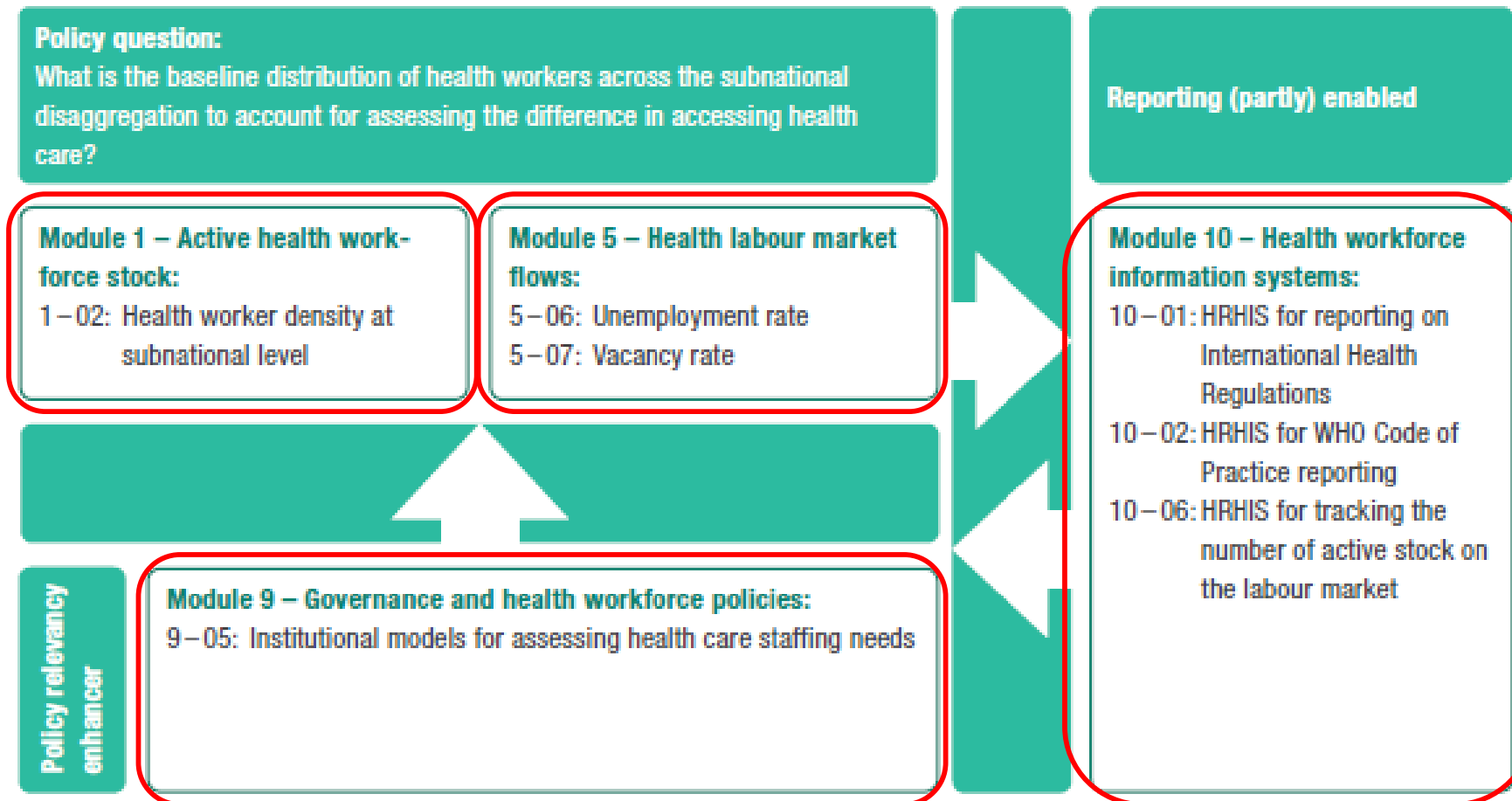
L

and related links

Additional references

(International Labour Organization 2013, USAID and CapacityPlus 2015)

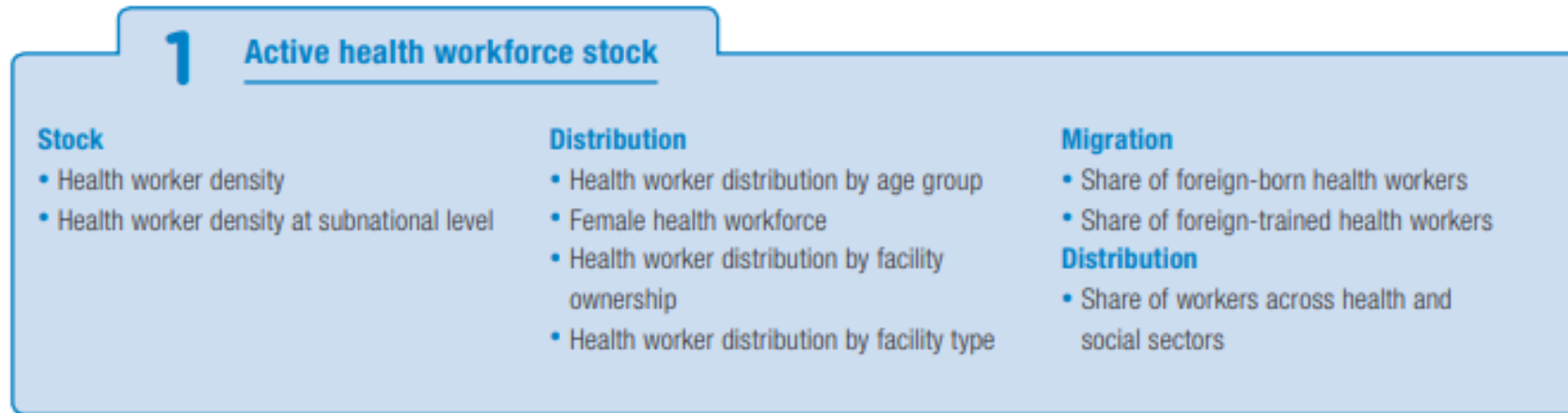
# Possible supporting indicators for geographical distribution of the health workforce



HRHIS: human resource health information system; IHR: International Health Regulations (2005).



# Module 1: Active health workforce stock

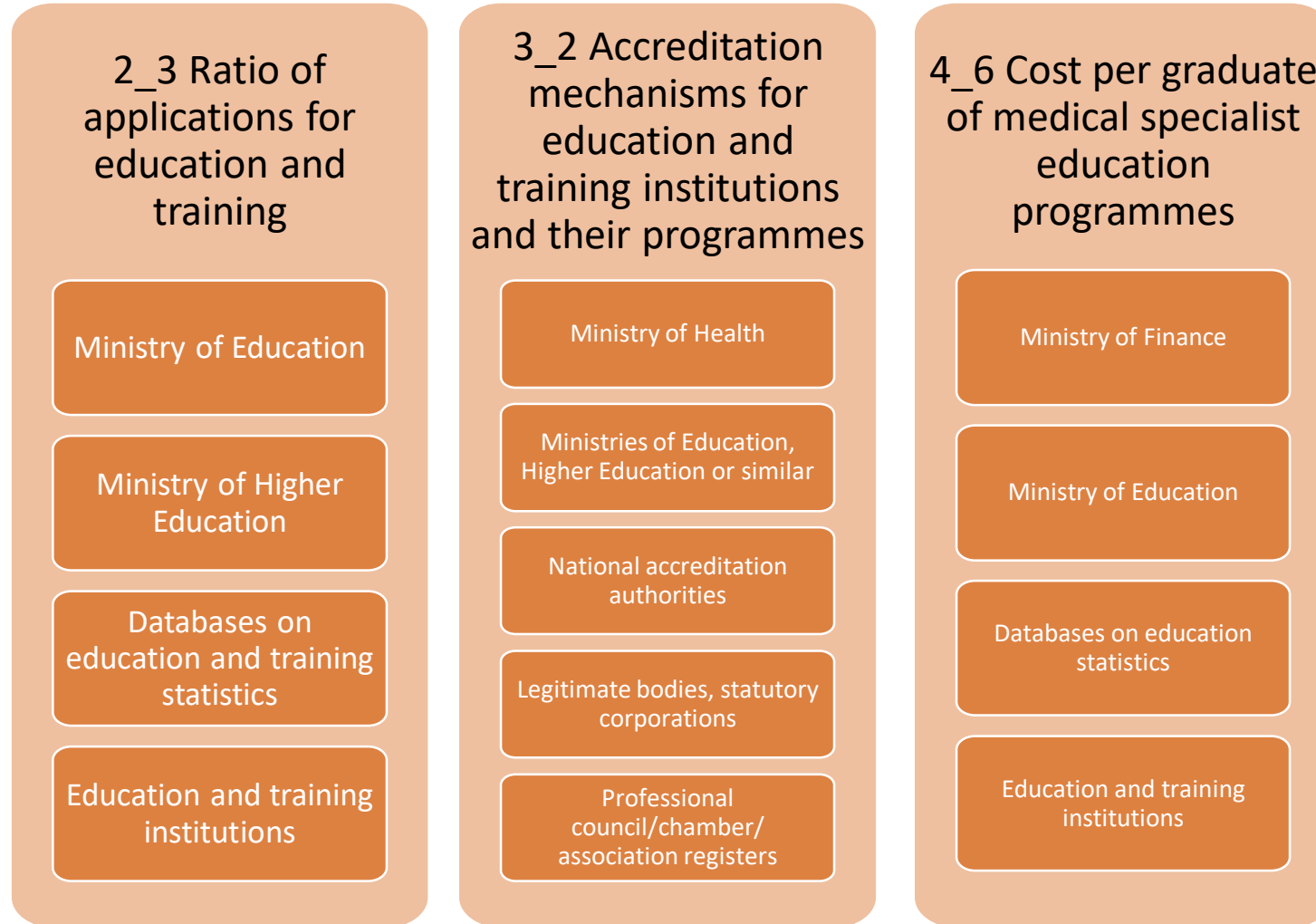


- Indicators on the **density and distribution of health workers** (geographical, by age and by sex, institutional sector and facility types), which allows monitoring progress towards halving inequalities in access to a health worker (Global milestone 1, by 2030)

## Potential data sources?

- Health workforce registry or database
- Health facilities
- Professional council/chamber/association registers
- Censuses and Labour force surveys

# Education: potential sources of data



# Key attributes/quality of data sources

Attribute	Census	Labour Force Surveys	Health Facility Surveys	Routine administrative Sources (payrolls, HRH registries)
Complete count of health workforce	***	*	**	**
Across sectors coverage (public, private)	***	***	*	**
Disaggregated data (Age, Sex, Geographical)	***	**	**	**
Capturing unemployment	*	***	-	*
Rigorous data collection / management	***	***	**	**
Periodicity and regular updating	*	**	**	**
Occupational data coding	*	**	**	**
Sampling errors	***	**	*	**
Tracking of workforce entry-to-exit	*	**	-	*
Tracking of in-service Training / Productivity)	-		***	*
Accessibility to micro-data	**	***	**	*
Relative cost	*	**	***	**

(\*\*\*) very good (\*) less appropriate

# Triangulation

- Example for one OECD country

Sources	Physicians (generalists and specialists)	Nursing and midwifery personnel (P&A)
<b>LFS 2016</b>		
Stock	195000	627000
Density per 1,000	<b>3.01</b> [2.65, 3.41]	<b>9.69</b> [9.03, 10.39]
<b>Census 2014</b>		
Stock	237263	590416
Density per 1,000	<b>3.60</b>	<b>8.96</b>
<b>OECD 2016</b>		
Density per 1,000	<b>3.35 (doctors)</b>	<b>10.19 (nurses)</b>
<b>Other sources</b>		
Atlas of medical demography 2014 Density per 1,000	<b>2.81</b>	
WHO-EURO 2015 density per 1,000		<b>10.61</b>
National organism in charge of labour 2013 density per 1,000		<b>8.87</b>

Examples of data analysis and use from  
various sources

# LFS – Example of Country profile: Brazil.

Human Resources for Health- Statistics from Labour Force Survey

## Survey characteristics

Country: **Brazil**

Year: **2017**

Occupation definition: ISCO-08 4<sup>th</sup> digits

National continuous household survey  
Whole population 14+ (excl. institutionalised)

Sample size: 2,279,742 out of which 927,501 active workers representing approximately 88 million\* active workers

## Stock

Overall 43,155 health workers were included, representing 4,560,000\* health workers†.

They represent 4.65% of the active workforce (95%CI 4.61%-4.70%).

Occupation	Percentage (number in survey)	Estimated national stock* [95% CI]	Estimated density* per inhabitant [95%CI]	Density per 10,000 +
Physicians (generalists and specialists)	7.1% (3062)	397000 [383000, 411000]	19 [18.3, 19.6]	21.8
Nursing and midwifery personnel (P&A)	27.4% (11823)	1252000 [1230000, 1275000]	59.8 [58.8, 60.9]	
Dentistry personnel (P&A)	6.9% (2972)	338000 [326000, 350000]	16.1 [15.6, 16.7]	
Pharmaceutical personnel (P&A)	3.7% (1587)	172000 [163000, 180000]	8.2 [7.8, 8.6]	
Community health workers (3253)	13.3% (5737)	437000 [425000, 448000]	20.9 [20.3, 21.4]	
Home based personal care (5322)	12.0% (5176)	575000 [559000, 590000]	27.5 [26.7, 28.2]	
Other health workers	29.7% (12798)	1394000 [1370000, 1418000]	66.6 [65.4, 67.8]	

P&A= Professionals and associate. NR: Cells with less than 5 respondent not reported

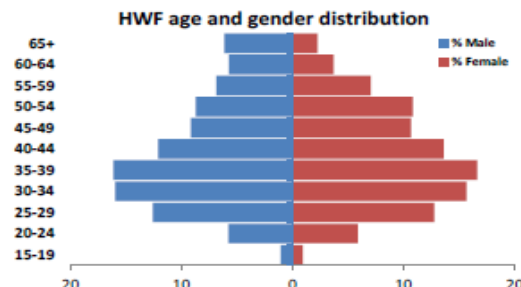
† Triangulation: from Demografia medica no Brasil 2018 (p148).

## Distribution

### Age & Gender

76% of health workers were women, significantly higher than in other sectors (40% p<0.01).

This percentage varies between occupations, for example being 42% of women for physicians, and 87% for nursing and midwifery personnel.



Youth employment (15-24) represented 7% among health workers, and 13% of health workers were aged 55 and above.

The median age of men and women was similar (37 years), although the distribution significantly differed (p<0.01) with 17% of men in the older categories 55 years and more, and 12% for women.

The median age differed between occupations and was for example 42 for physicians and 37 for nursing and midwifery personnel.

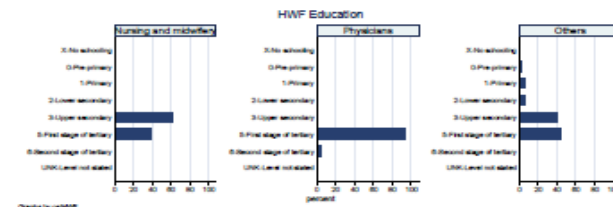
### Urban/rural

No data on rural vs urban areas available.

## Education

The education level classified with ISCED-97 showed variability.

Health workers employed in the private sector had a lower education level as compared to health workers in public sector (p<0.01).



## Labour Market

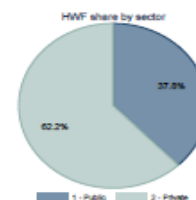
### Unemployment

No data on previous occupation available.

### Sector

62% of health workers were employed in the private sector.

Health workers represented 17% of the employed workers in the public sector.



The employment in the private sector varied by occupation and it was 53% of physicians, 46% of nursing and midwifery personnel, 75% of dentists, 77% of pharmacists, 2% of community health workers and 99% of home based social care personnel.

Women were more frequently employed in the private sector (56% of women) than men (52%) p<0.01. Workers in the private sector were also younger (median age of 37 in private vs 42 in public, p<0.01).

### Working conditions

67% of health workers worked full time, which was less than for non-health workers (71% working full time p<0.01).

Most health workers were employees (88%) as compared to 62% in other sectors (p<0.01). Health

workers declared an average weekly working time of 39 hours\*\* which was higher than non-health workers (38 hours, p<0.01).

Data on earning were available only in local currency

The median monthly earning was 1600 BRL and the median hourly earning was 9.51 BRL.

Occupation	Part time workers (%)	Employees ICSE 93 (%)	Average working hours per week	Median monthly earning (BRL)	Median hourly earning (BRL)
Physicians (generalists and specialists)	42%	73%	43	10,000	52.9
Nursing and midwifery personnel (P&A)	34%	99%	40	1,600	9.5
Dentistry personnel (P&A)	33%	59%	38	4,000	26.4
Pharmaceutical personnel (P&A)	21%	90%	41	3,000	17.4
Community health workers	16%	100%	37	1,200	7.2
Home based personal care	33%	96%	40	937	5.4
Other health workers	38%	80%	36	2,400	13.2

P&A= Professionals and associate. NR: Cells with less than 5 respondent not reported

**Gender Pay Gap:** The unadjusted gender pay gap between men and women was 29.6%, it was 11% for equivalent occupations. The pay gap varied by occupation and was 20% for physicians, 12% for nursing and midwifery personnel, 10% for dentists, and 5.7% for pharmacists.

\* These statistics are estimations of the number of workers at national level based on the sampling weights. These do not correspond to the actual count of workers.

\*\* Weekly working hour was missing for 931 health workers. Monthly earning was available for 42910 (99%) health workers and hourly earnings for 41982 (97%).

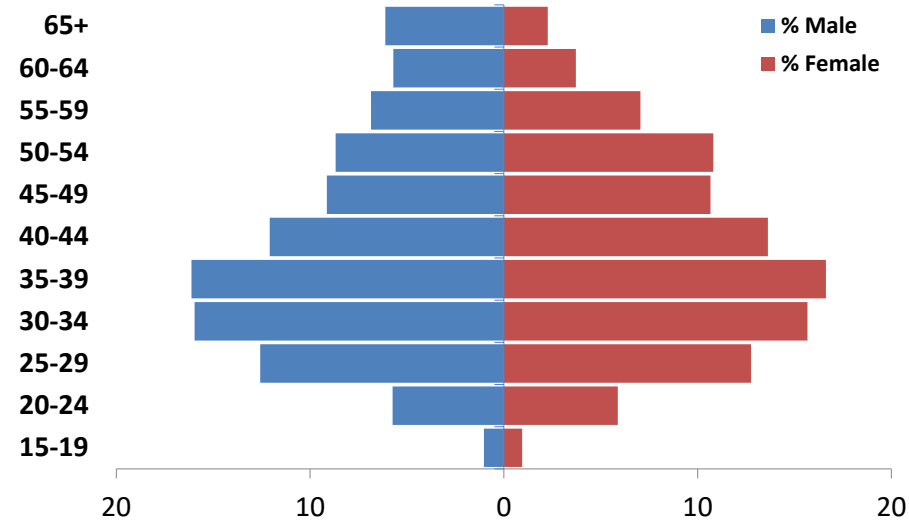
Country profile: Example from Brazil (sample size: 43000 Health workers)

Distribution

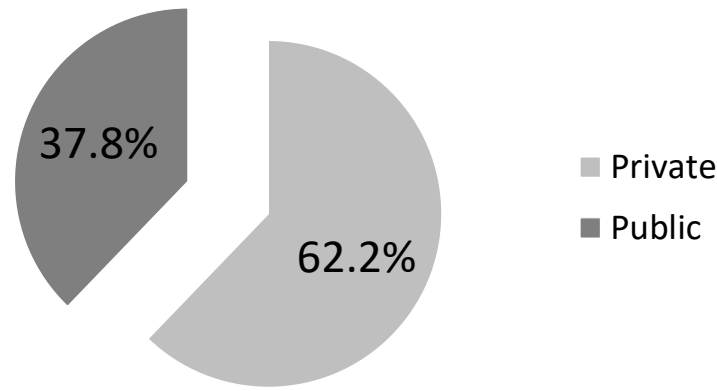
76% of the health workforce were women

42% among physicians

87% among nursing and midwifery (N&M)



Sector



Occupation in private sector:

53% of physicians

46% of N&M personnel

75% of dentists

77% of pharmacists

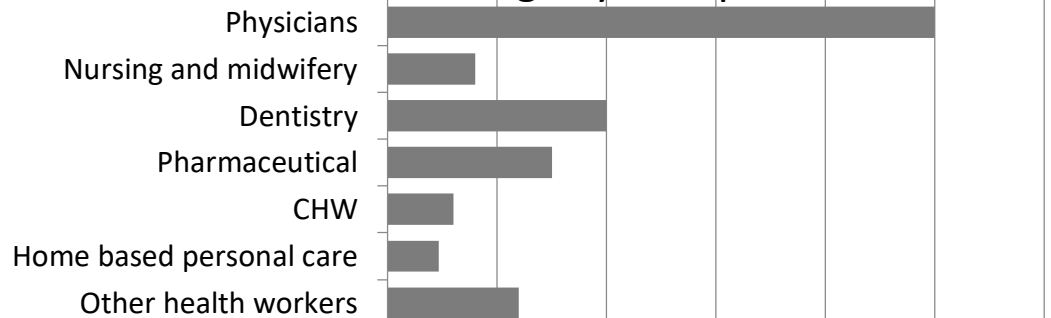
Pay

Gender pay gap (unadjusted) **29.6%.**

Occupation specific:

Occupation	Percentage
Physicians	20%
Dentists	10%
N&M	12%
Pharmacists	6%

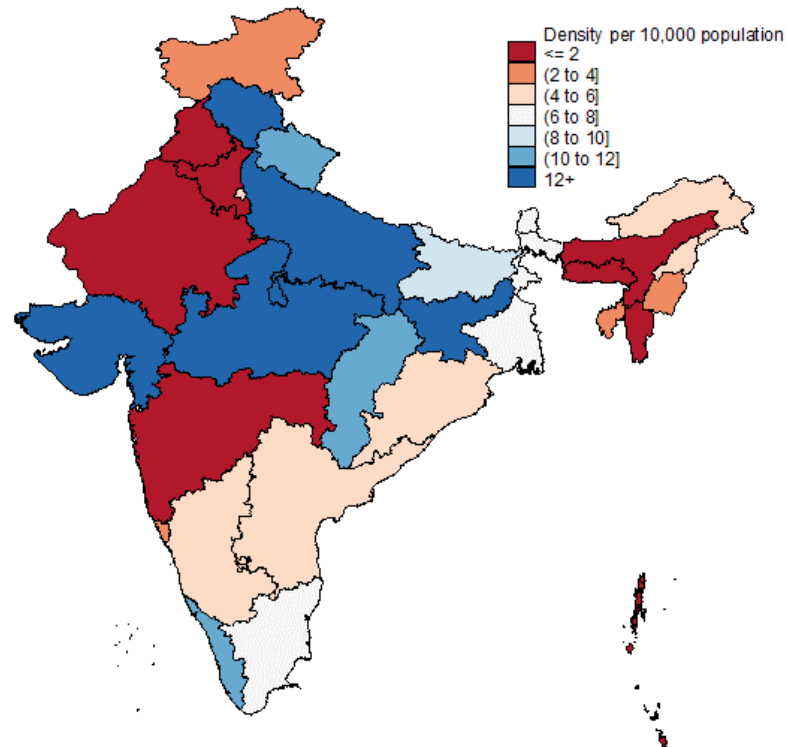
Earnings by occupation



Source: ILO Labour Force Survey. Brazil 2017

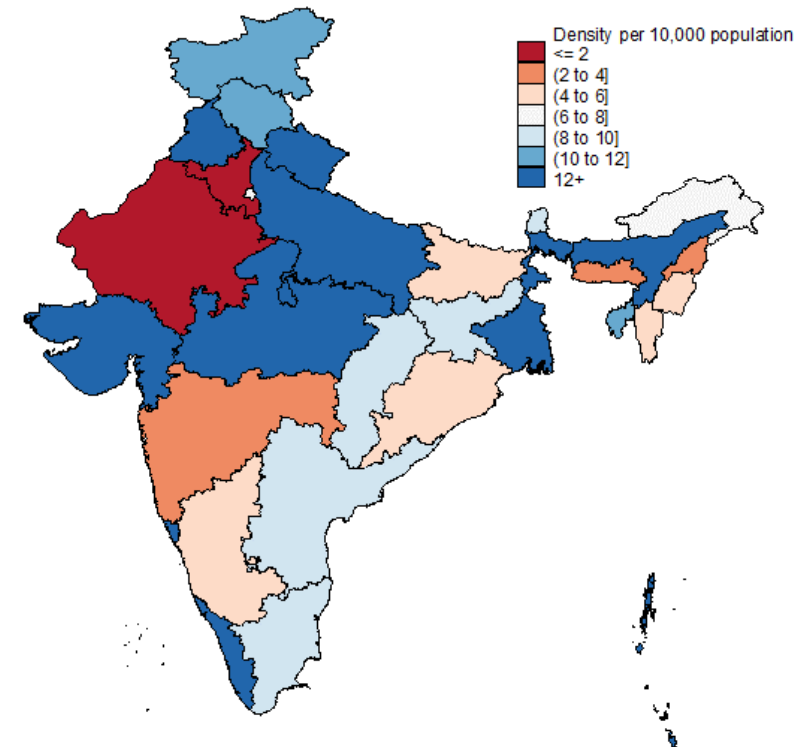
# Census - Subnational densities of nursing and midwifery personnel in India 2004-2009

Density of Nursing and Midwifery personnel\* in India 2004  
Employment survey, sample size 602,833



\* Nurses, Midwives and health visitors

Density of Nursing and Midwifery personnel\* in India 2009  
Census socio economic survey, sample size 560,741



\* Professionals and associates

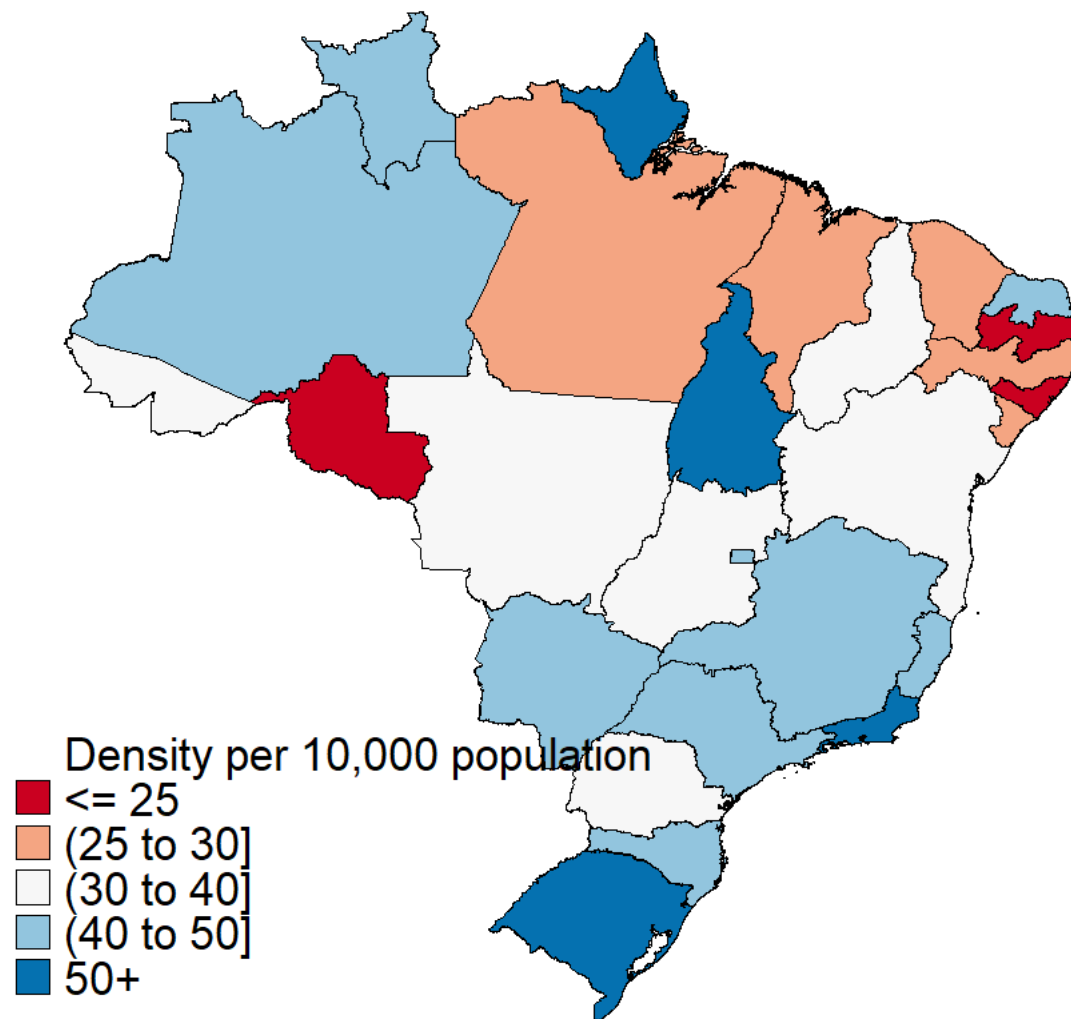
Source: Minnesota Population Center. Integrated Public Use Microdata Series, International: Version 7.0 [dataset]. Minneapolis, MN: IPUMS, 2018.  
<https://doi.org/10.18128/D020.V7.0>. Data from the Ministry of Statistics and Programme Implementation, India



# Census - Subnational densities of nursing personnel Brazil 2010

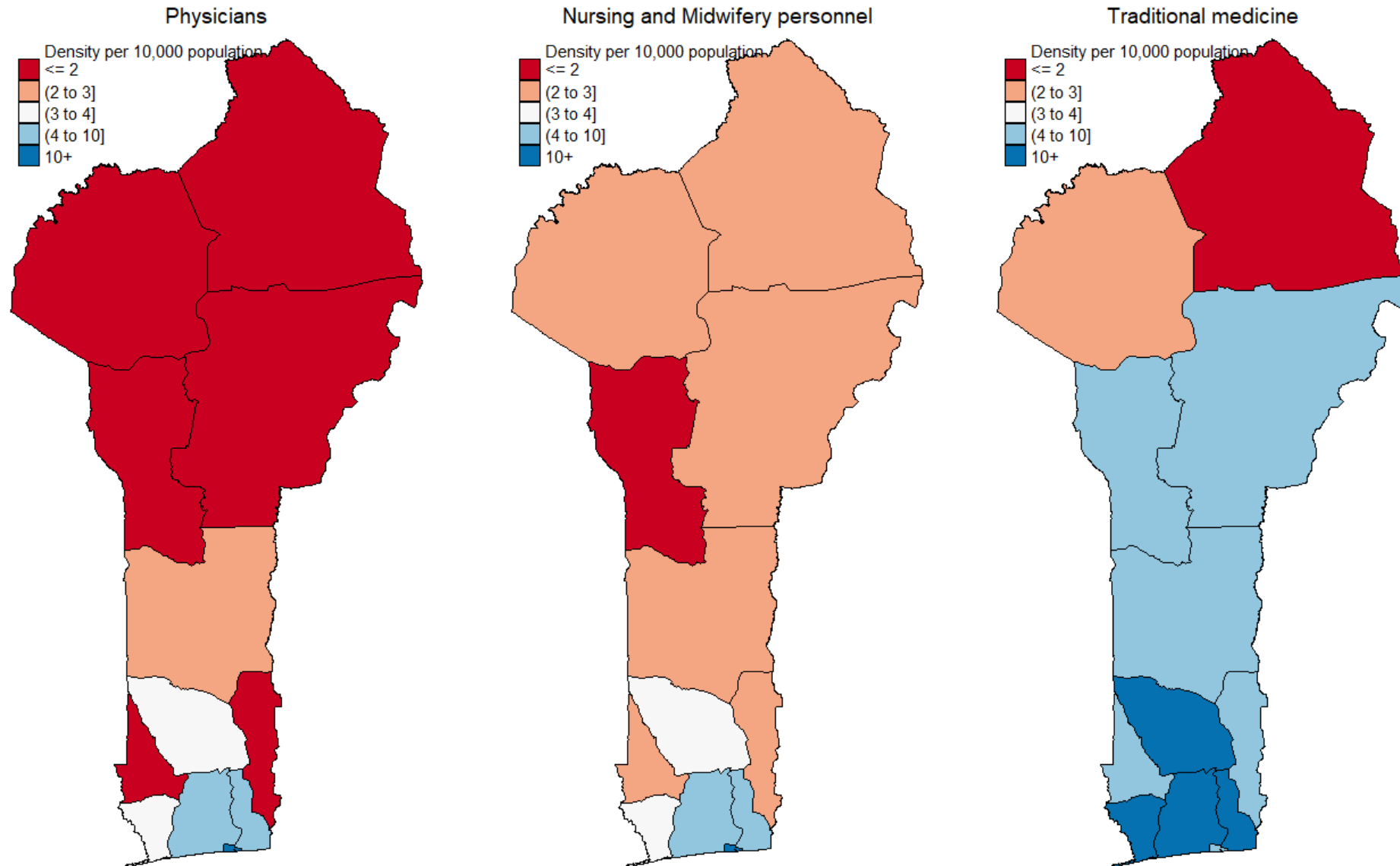
Nursing personnel\*

XII Recenseamento Geral do Brasil. Censo Demográfico 2010, sample size 20,635,472



\* Professionals and associates

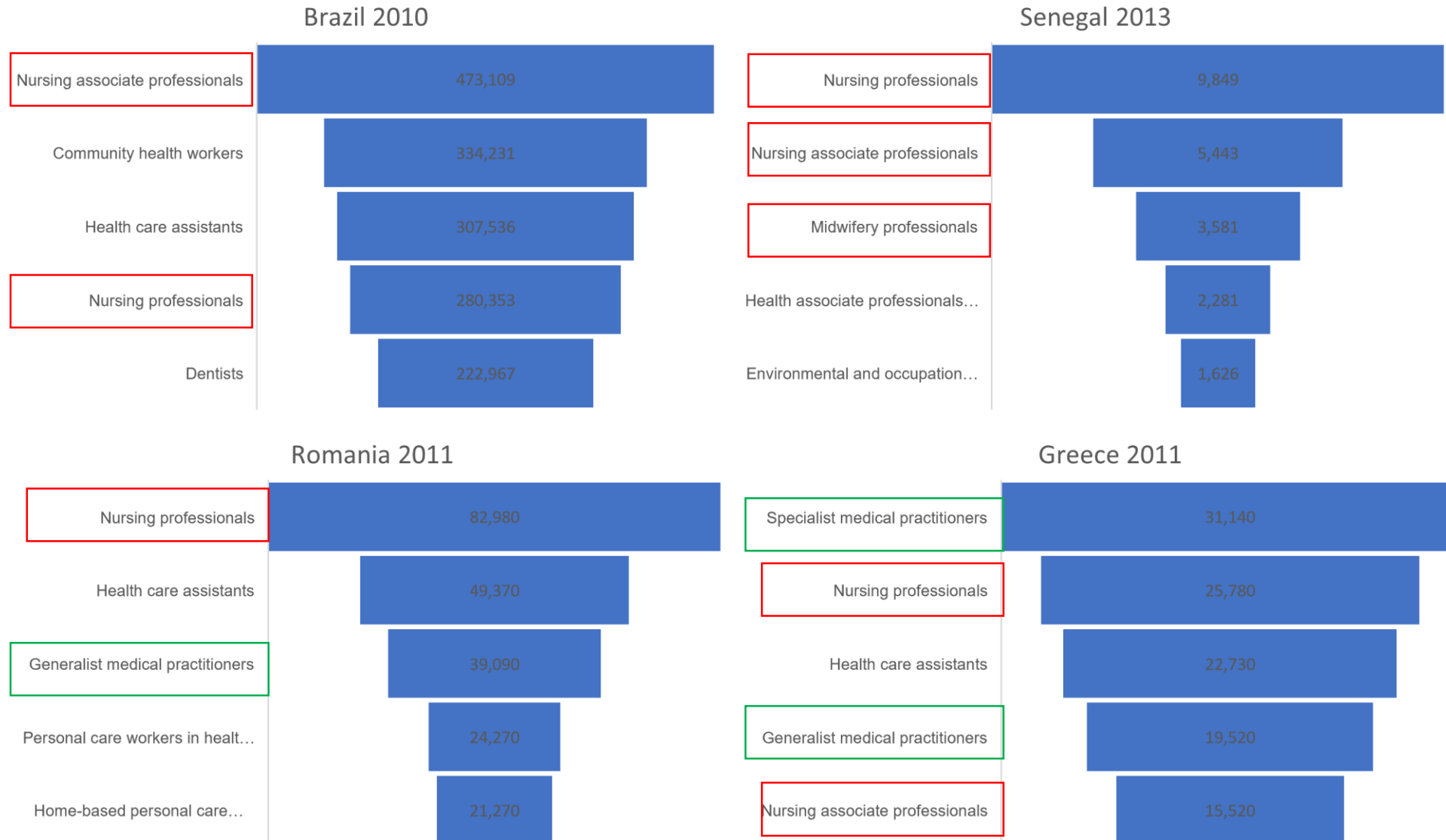
# Census – subnational densities of selected occupation in Benin 2013



# Use of census data

## Top 5 health occupations for selected countries

Nursing and midwifery  
Medical doctors  
personnel



# Use of indicators

- Example of a global analysis
- On gender equity
- Women form **70% of workers** in the health and social sector



## Gender equity in the health workforce: Analysis of 104 countries

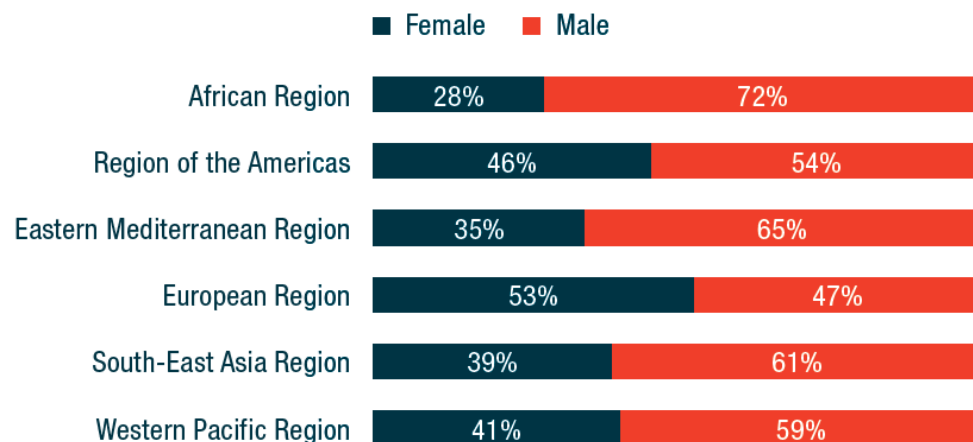
Mathieu Boniol, Michelle Mclsaac, Lihui Xu, Tana Wuliji, Khassoum Diallo, Jim Campbell

Health Workforce Working paper 1

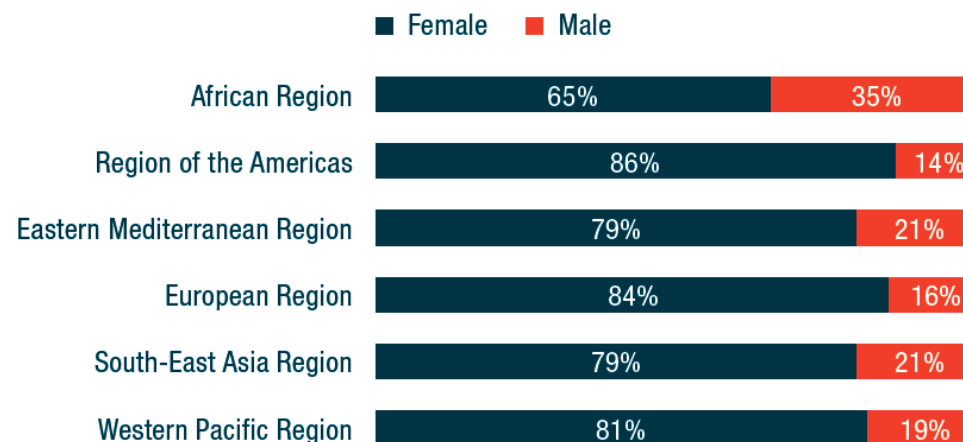
March 2019



### Physicians: percentage of female and male



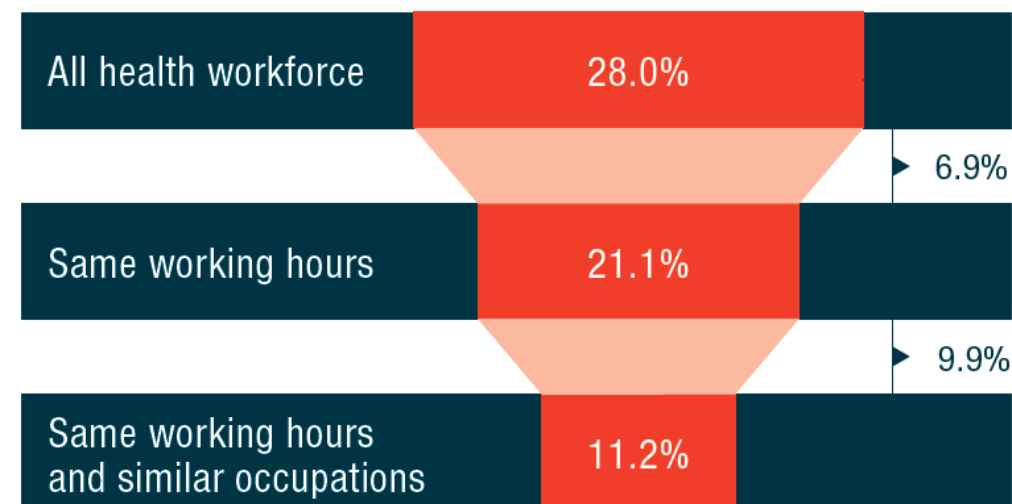
### Nurses: percentage of female and male



Source: Data from NHWA for 91 countries for physician data and 61 countries for nursing data.

- Women's representation in the most highly paid health occupations has been **improving steadily since 2000**.
- Women are **less likely** than men **to be in full-time employment**

### Gender pay gap among health workers as a percentage of men's wages



Source: Data from LFS.

# Triangulation

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# Alignment of NHWA and PAHO Plan of Action

Indicators for the PAHO plan of Action 2019-23	NHWA indicators/proxies
1.1.1	Module 9
1.1.2	09-01
1.2.1	09-02
1.2.2	09-03
1.2.3	Module 10 - 10-05, 10-06-10-07
1.3.1	7-01
1.3.2	No proxy 1-06
2.1.1	No - Proxy Module 8 and 7-07
2.1.2	No, Proxy Modules 6 and 7 - 6-06 and 7-07
2.1.3	Module 1 - 1-01 and 1-02
2.2.1	No, proxy Module 8 - 8-03 and 8-05
2.3.1	No, proxy Module 8 - 9-05
2.3.2	No proxy Module 8
3.1.1	9-04 - 9-05 - 3-03 - 3-06
3.1.2	3-08 - 3-09
3.2.1	3-02 - 3-01
3.2.2	module 3 - 3-03 - 3-04 - 3-05 - 3-06
3.3.1	9-04 and Module 8
3.3.2	No
3.3.3	No

# Global reporting and NHWA

## SDG 3

### *Indicator 3.c.1: Health worker density and distribution*

## GSHRH Global Milestones' indicators

Milestones 2020: 6/7 milestone indicators from NHWA

e.g. Health workforce registries to track **stock, distribution, flows, demand, supply, capacity and remuneration**

Milestones 2030: 4/6 milestone indicators from NHWA

e.g. Density of health workers per 1000 population by cadre and by subnational level distribution

## Working for health and growth: investing in the health workforce (ComHEEG)

Recommendation 10: Data, information and accountability (harmonization, analysis, strengthened evidence)

Action C: Advance health labour market data, analysis and tracking in all countries

## Other reporting:

The WHO Global Code of Practice on the International Recruitment of Health Personnel

State of the World's Nursing and State of the World's Midwifery

**Country needs are the primary driver for the data collection**



# SDG Indicator 3.c.1: Health worker density and distribution

- ***Meta-data definition***

Though, traditionally, this indicator has been estimated using 2 measurements: density of physicians, and density of nursing and midwifery personnel. **In the context of the SDG agenda, the dataset is expanded to physicians, nursing personnel, midwifery personnel, dentistry personnel and pharmaceutical personnel.** The dataset is planned to progressively move to cover all health cadres.

- ***Spanish (Google translate).***

Aunque, tradicionalmente, este indicador se ha estimado utilizando 2 mediciones: densidad de médicos y densidad de personal de enfermería y partería. **En el contexto de la agenda de los ODS, el conjunto de datos se amplía a médicos, personal de enfermería, personal de partería, personal de odontología y personal farmacéutico.** Se planea que el conjunto de datos se mueva progresivamente para cubrir todos los cuadros de salud.

# Key messages

- Countries in the driving seat,
- Define monitoring of indicators according to priorities based on needs and specifics objectives. -> progressive implementation,
- Multi-sectoral approach,
- Several data sources: including outside health,
- Triangulation is key for data quality.

# Group exercise - instructions

Group work: Assess HWF data availability in your countries, quality, gaps and limitations

- Objectives:

- Assess HRHIS strength, weaknesses, opportunities and threats (SWOT analysis) including
- Identify HWF data sources and stakeholders

- Five groups with chairman and rapporteur

# Analysis of main strength, weaknesses, opportunities and threats (SWOT analysis) of HRHIS

<u>Strengths</u>	<u>Weaknesses</u>
<u>Opportunities</u>	<u>Threats</u>

# Data sources

- Identify different sources for data across the spectrum of health labour market framework, including:
  - HWF stock and distribution indicators
  - HWF education and production indicators
  - HWF financing and remuneration indicators
  - Health labour market flows e.g. entries, exits, migration indicators

# Data sources and stakeholders

Data/indicator	Source	Key stakeholder