Measuring Health Workforce Inequalities From a Census

6–8 September 2010
World Health Organization, Geneva

Report of the technical workshop
1. INTRODUCTION

The effective and equitable provision of essential health services depends to a large degree on the availability, distribution and performance of human resources for health (HRH). Many low- and middle-income countries face acute shortages and maldistribution of skilled health workers, impeding the likelihood of meeting health systems objectives and attaining national and international health and development goals. Despite increasing interest in equity in health care access and the pathways by which inequities in health outcomes arise and are perpetuated or exacerbated, the global evidence base to inform policy decision-making on maldistribution in the supply, composition and deployment of the health workforce remains weak.¹

Some of the priorities and challenges identified for improving the evidence base on HRH inequalities at the national, regional and international levels include:

- building capacity among health ministries and other stakeholders in data collection, analysis, synthesis and use for HRH monitoring;
- optimizing dissemination and use of standard statistical data sources – notably, population censuses and surveys;
- standardization of methods and classifications used in HRH data analysis and dissemination for enhancing comparability within and across countries and over time.

On 6–8 September 2010, a technical workshop was held at the World Health Organization (WHO) in Geneva, Switzerland. The objectives were to build knowledge and skills in use of data for measuring health workforce inequalities, in particular use of population census microdata; promote sustainable use of standard statistical sources for ongoing monitoring; and support evidence-informed dialogue to support HRH planning and policy decisions.

The workshop brought together 26 analysts and experts including representatives of the ministry of health and of the central statistics bureau from eight countries — Costa Rica, Ghana, Jordan, Malaysia, Peru, Senegal, South Africa and the Philippines — as well as from the World Health Organization (headquarters and regional offices), the Integrated Public Use Microdata Series (IPUMS)-International project at the University of Minnesota, and other stakeholder agencies including national and regional HRH observatories (see Annex A). The event was organized by the WHO Department of Human Resources for Health in collaboration IPUMS-International, and with financial support from the United States Agency for International Development (USAID).

2. Framework and methods

Through a series of presentations, discussions and work sessions, participants arrived at a better understanding of methods for measuring health workforce inequalities and the policy implications of HRH inequalities research. The analytical framework used built on the strategies and approaches for measuring and monitoring HRH outlined in the *Handbook on monitoring and evaluation of human resources for health*, jointly published by WHO, the World Bank and USAID (Figure 1).

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Representatives from participating countries analysed data on health workers drawing on census sample extracts from their own countries as compiled through the IPUMS-International project (Figure 2). The use of common definitions and classifications for labour statistics helped enhance comparability of results (Figure 3).

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**Figure 2**

*Integrated Public Use Microdata Series International*

**Goals**
1. Preserve census microdata and documentation
2. Integrate microdata and metadata
3. Disseminate—without cost—extracts of census samples to bona-fide researchers worldwide (subject to conditions of use to protect statistical confidentiality).

**Dissemination and usage**
as of June 2010:
- 55 countries — 159 censuses —
- 59,170 extracts — 586,643 variables

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**Figure 3**

*Classifying health workers: value of the International Standard Classification of Occupations*

- **What is ISCO?** A system for classifying and aggregating occupational information obtained by means of administrative records, population censuses and other statistical surveys.
- **Uses a hierarchical structure of occupational titles and codes,** essentially reflecting the distinction of subgroups of the workforce according to assumed differences in skill level and skill specialization required to fulfill the tasks and duties of jobs.
- **Offers guidelines on how health workers** can be classified into detailed groups:
  - "health professionals" — "health associate professionals"
  - "personal care workers" — "health service managers" — others...
- **Serves as a model to facilitate communication about health occupations → enhance comparability of HRH data** within & across countries and over time.

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Three standard indices of inequality – the Gini coefficient, the Theil $L$ index and the Theil $T$ index – were reviewed and their calculation for measuring inequalities in the geographical distribution of the health workforce illustrated using the Stata statistical software package (Figure 4).

Presentations by the country teams focused on results of the inequalities research and the interpretation to inform HRH policy and practice in their national context. Special attention was paid to investigating the different sources of workforce inequality, and highlighting areas characterized by an absence of health workers (e.g. where there were no doctors or nurses in a given geographical unit). Illustrative examples of the country findings are presented in Figures 5 and 6.

Figure 4

**Measuring health workforce inequalities: objectives, methods, applications**

- **Why measure HRH inequalities?**
  - Areas with higher health worker density should be better able to serve the health service needs of the population than areas with lower health worker density

- **Learning objectives**
  - Measure inequalities in the distribution of health workers in countries and account for the sources of the inequalities to inform policy makers
  - Understand the methods to measure HRH inequalities with application to case studies

- **Selected methods for measuring inequality**
  - Gini coefficient
  - Theil $L$
  - Theil $T$

- **Application**
  - Stata statistical software package (macros: "ineqdec","TCID" — commands to calculate inequality indices)

**Figure 5**

**Distribution of counties by density of doctors,**

**Costa Rica, 2000 census sample**

- Total number of doctors = 4890
- Distribution: 25% in rural counties (range 0-150), 80% in urban counties (range 20-940) — interpretation: some urban counties have many more doctors, while there are rural counties with no doctors.
- Selected inequality indices: Gini = 0.49 national; 0.38 rural; 0.40 urban — interpretation: urban areas experience higher inequality (concentration) in distribution of doctors compared to rural areas.

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3. Areas of consensus

By the end of the three-day event, consensus was reached among the workshop participants on the next steps for better use of data and evidence for understanding and addressing HRH distribution challenges in countries. Identified strategies focused on three key areas: (i) planning for data collection; (ii) improving data use; and (iii) strengthening national leadership and fostering a culture of evidence-informed decision making. The recommendations centred on the census but were recognized as applicable to all types of data relevant to HRH monitoring and analysis (e.g. labour force surveys, health surveys, administrative records).

The main priorities and lessons learnt included the following:

(i) Planning for data collection:

- There should be one systematic schedule for all types of data collection in the country
- Requires involvement of all key stakeholders (e.g. census bureau, ministry of health, ministry of education, ministry of finance, development partners) from the initial planning stages
- Consensus is needed among stakeholders on the various data collection instruments (e.g. which questions/indicators to include in the census versus other types of sources)
- Awareness needs to be raised among decision makers on data collection activities.

(ii) Improving data use:

- Transparent methods and protocols need to be established for data quality control, data sharing and timely updating
- Disaggregated data and metadata should be made accessible for public/research use within and across countries
- Data collection and management systems need to be strengthened from both the technical perspective (e.g. upgrading to new hardware/software technologies) and the human perspective (e.g. building capacity in appropriate use of data, application of the latest research methods)
- Enhancing comparability of data available from different sources (e.g. use of common templates and definitions, including standard statistical classifications) will enable better use.
(iii) Strengthening leadership and governance in data analysis and use to support decision making:

- Mechanisms should be established/strengthened for sharing of results, experiences and best practices in data use for HRH measurement, monitoring and benchmarking
- Coordination and linkages are needed across government agencies as well as non-government stakeholders (e.g. public/private partnerships for data collection and management)
- Requires political will (e.g. dedicated budget line for data collection, dissemination and analysis) and accountability (demonstrated utility of the data and evidence).

4. **Next steps**

Country teams agreed to put actions in place as follow-up to the workshop. These included:

- Commitments for ongoing technical cooperation among ministries of health and central statistical agencies
- Replication of the methods for measuring health workforce inequalities disseminated during the workshop applied to other HRH data sources available in countries (e.g. the complete national dataset from the previous and/or current census round, administrative data sources of the ministry of health)
- Dissemination of results of new inequalities research for expanding the global knowledge base and sharing of lessons learnt and policy uses, such as through scientific publications, national and regional HRH observatories, international research/statistical conferences and other fora
- Country-led organization of additional technical workshops and related activities, involving more countries and partners within and across regions.

With regard to the last point, invited representatives from the Brazil observatory network engaged in co-organizing another technical workshop in Latin America the following year with support from the Brazilian Ministry of Health. Given the WHO’s priority focus on improving health and health systems performance in Africa, this region was also identified as a potential location for a future workshop.
ANNEX A
LIST OF PARTICIPANTS

BRAZIL:
Dr Cristiana Carvalho
Consultant/Researcher
Observatory in Human Resources for Health
Universidade Federal de Minas Gerais
Belo Horizonte, Minas Gerais

COSTA RICA:
Dr Manuel Ignacio Salom Echeverria
Director, Centro de Desarrollo Estratégico e Información en Salud y Seguridad Social
Caja Costarricense de Seguro Social
San José

Ms Jacqueline Castillo Rivas
Chief, Estadistica
Caja Costarricense de Seguro Social
San José

GHANA:
Mrs Jacqueline Anum
Senior Programmer
Data Management and Analysis Unit
Ghana Statistical Service
Accra

Dr Kwesi Asabir
Deputy Director
Human Resource for Health Development
Ministry of Health
Accra

JORDAN:
Dr Sami Ibrahim Al-Halimi
Administrative Director
Ministry of Health
Amman

Dr Zeinab Al-Dabbagh
Director, Household Surveys
Department of Statistics
Amman

MALAYSIA:
Ms Nor Azlyn Ezura Hasmin
Statistician
Department of Statistics Malaysia
Putrajaya

Mr Saudagar Singh Kernail Singh
Deputy Undersecretary, Training Management
Ministry of Health
Putrajaya

PERU:
Dr Maria Zoraida Cuzco Ruiz
Strategic Planning
General Direction of Health Human Resources
Ministry of Health
Lima

Mrs Prudencia Teodomira Javier Rimey
Economist, Technical Direction of Demography and Social Indicators
Instituto Nacional de Estadística e Informática
Lima

PHILIPPINES:
Dr Kenneth G. Ronquillo
Director IV
Health Human Resource Development Bureau
Department of Health
Manila

Mrs Aurora Reolalas
Chief, Vital Statistics Division
Civil Registration Department
National Statistics Office
Quezon City
**SENEGAL:**

Dr Gallo Ba  
Human Resources Director  
Ministry of Health  
Dakar  

Mrs Oumy Diagne Ndiaye  
Statistician/Demographer  
Chief of Vital Registration and Demographic Projection Bureau, Census Division  
National Agency of Statistics and Demography  
Dakar

**SOUTH AFRICA:**

Ms Malerato Mosiane  
Statistician, Labour Statistics  
Statistics South Africa  
Pretoria

Ms Carol Nuga Deliwe  
Cluster Manager  
Human Resources Policy Research and Planning  
Department of Health  
Ministry of Health  
Pretoria

**UNITED STATES OF AMERICA:**

Professor Robert McCaa  
IPUMS-International  
Minnesota Population Center  
University of Minnesota  
Minneapolis, Minnesota

**WHO REGIONAL OFFICES:**

Dr Adam Ahmat  
Technical Officer, Human Resources for Health  
Africa Health Workforce Observatory  
WHO Regional Office for Africa  
Brazzaville, Republic of Congo

Ms Allison Annette Foster  
Regional Advisor, HRH Policy and Planning  
Human Resources Development  
Pan American Health Organization / WHO  
Regional Office for the Americas  
Washington, DC, USA
WORKSHOP ADMINISTRATION SUPPORT:

Ms Chrystelle Lainé
Secretary
Department of Human Resources for Health
World Health Organization
Geneva, Switzerland

Ms Sara Perazzi
Intern
Department of Human Resources for Health
World Health Organization
Geneva, Switzerland

Ms Marina Morici
Intern
Department of Human Resources for Health
World Health Organization
Geneva, Switzerland

UNABLE TO ATTEND:

Dr Walid Abubaker
Technical Officer, Human Resources Development
WHO Regional Office for the Eastern Mediterranean
Cairo, Egypt

Dra Celia Regina Pierantoni
Professor, Social Medicine Institute
University of State Rio de Janeiro
Rio de Janeiro, Brazil

Dr Estelle E. Quain
Team Leader, Health Systems Strengthening Office of HIV/AIDS
United States Agency for International Development
Washington, DC, USA