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The Human Resources for Health Crisis in Zambia

An Outcome of Health Worker Entry, Exit, and Performance within the National Labor Health Market

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Acronyms and Abbreviations

ART	Antiretroviral therapy
CBoH	Central Board of Health
CHAZ	Churches Health Association of Zambia
CTC	Confidential testing and counseling
DHMT	District health management team
DHS	Demographic and Health Survey
GRZ	Government of the Republic of Zambia
HFC	Health Facility Census
HRH	Human resources for health
IMF	International Monetary Fund
MDG	Millennium Development Goals
MoFNP	Ministry of Finance and National Planning
MoH	Ministry of Health
NGO	Nongovernmental organization
OECD	Organisation for Economic Co-operation and Development
PEPFAR	President's Emergency Plan for AIDS Relief
PETS	Public Expenditure Tracking Survey
PMTCT	Prevention of mother-to-child transmission
PSMD	Public sector management division
VCT	Voluntary counseling and testing
WHO	World Health Organization

Executive Summary

Despite reporting some health gains since the 1990s, health outcomes remain poor in Zambia and it will be very challenging to achieve the health-related MDGs by 2015. The country has made considerable progress towards achieving MDG 4 (reduce child mortality), but under-five mortality remains high, at 119 per 1,000 live births in 2007, above the Africa region's average. The main causes of illnesses and deaths in children under five years old in Zambia are preventable and/or treatable with low-cost and effective interventions. With regard to MDG 5 (improve maternal health), the maternal mortality ratio (MMR) may have declined in recent years; however, it would need to drop another 45 percent, from its current level of 591 per 100,000 live births, to reach the MDG target of a 75 percent reduction. The proportion of births attended by a skilled birth attendant, one of the most effective interventions to reduce MMR, has remained virtually constant for almost two decades. Furthermore, infection and parasitic diseases are by far the largest causes of mortality in Zambia, with half of all mortalities attributable to HIV/AIDS, but also more easily treated illnesses like malaria and diarrheal diseases.

The Government of Zambia recognizes that both the improvement of child and maternal health and the reduction in mortality from HIV/AIDS and malaria require better access to an appropriate number of well-performing health workers, or human resources for health (HRH). So far, the government has demonstrated strong commitment to addressing the country's HRH challenges, which is well reflected in Zambia's Poverty Reduction Strategy Paper (PRSP), The Fifth National Development Plan 2006–2010 (GRZ 2006), the 2006–2010 National Health Strategic Plan (NHSP), and more specifically, in the 2006–2010 Human Resources for Health Strategic Plan (HRHSP) and the second HRHSP (2011 onwards) that is currently under development (MoH 2005a; MoH 2005b).

This report compiles recent evidence on the Zambian health labor market and provides some baseline information on HRH to help the government address its HRH challenges. Rather than focusing on making policy recommendations, the report is designed to be a source book to benefit and fuel discussions related to HRH in Zambia. Most of the data presented in the report covers the period 2005–08. The report analyzes the national health labor market to better understand the available evidence related to the stock, distribution, and performance of HRH in Zambia (that is, the HRH outcomes). It aims to explain those HRH outcomes by mapping, assessing, and analyzing pre-service education and labor market dynamics, that is, the flow of health workers into, within, and out of the health labor market, as well as the core factors influencing these dynamics.

The report finds that HRH stock in Zambia is low and indicators fall below national and international benchmarks. Stock is low particularly when compared to other countries in the developing world. Counting public and private sectors, as well as clinical and nonclinical cadres, Zambia has 1.05 health workers for every 1,000 people, which is less than Benin (1.11), Rwanda (1.22), Ghana (1.93), and India (1.95).

Moreover, only a little over half of the existing HRH stock in Zambia are clinical cadres. Of all clinical cadres, more than 60 percent are nurses, whereas the share of doctors is just over 7 percent. When set against international benchmarks, such as the recommended 2.3 health workers per 1,000 population, Zambia's health worker numbers fall short of achieving the MDGs. Set against national benchmarks (the so called "establishment" in the public sector) the number of health workers is also highly inadequate.

The number of doctors in Zambia is only 42 percent of the approved establishment, the number of nurses 46 percent, and the number of midwives 48 percent.

The low number of health workers in Zambia can in part be explained by low levels of inflow of health workers into the health labor market. Low production of health workers, particularly of higher-level cadres, is a significant supply problem linked to capacity limitations of health training institutions. Zambia produces around 50–60 medical doctors a year, which is low when compared to such countries as Rwanda (97), Tanzania (200), Ghana (265), or Ethiopia (481). Some funded vacancies are not filled in Zambia, potentially pointing to extremely low production levels. In 2007, for instance, the Ministry of Health (MoH) managed to fill only 1,400 of approximately 1,700 funded positions in the budgetary timeframe. At the same time, the inability to fill funded vacancies also seems to be linked to highly centralized management of HRH. Which factor plays the larger role will need to be assessed further. Another issue is that even if health worker production were scaled up, it is not clear whether the "established" public sector vacancies would be funded, which means that the absorption capacity for an increased supply of graduates is not fully known. Indeed, in 2008 close to 40 percent of the established posts were not funded. And the not-for-profit and for-profit private sectors in Zambia remain small (see discussion below) and at present unlikely to absorb a large number of health workers.

Aside from low levels of inflow, labor market exit, particularly of doctors, is another prime factor for low numbers of health workers in Zambia, and is primarily attributed to outmigration (due in part to dissatisfaction with low pay and, until recently, aggressive recruitment strategies). Data by Clemens and Pettersson (2006) found that the fraction of Zambian-trained doctors working abroad was close to 60 percent, staggering next to an average of 28 percent for all Sub-Saharan African countries combined. Aside from outmigration, premature death due to HIV/AIDS is also considerable in Zambia.

In terms of sectoral distribution of HRH, the report finds that the overwhelming majority of health workers in Zambia work in the public sector (close to 80 percent in 2006) although the private sector is growing. The not-for-profit sector employs little less than 20 percent of HRH, whereas the for-profit sector is extremely small, at less than 1 percent. Health workers are attracted to higher salaries in the private sector. The for-profit sector is underdeveloped and current regulations make it difficult to open a private practice.

The geographic distribution of health workers, particularly of higher-level cadres, is highly uneven and biased towards urban, more prosperous areas. Health workers, particularly doctors, are extremely unevenly distributed in Zambia, particularly when benchmarking against international standards. Whereas Livingstone for example is home to 2.7 health workers per 1,000 population, a district like Chilubi is only home to 0.13 per 1,000. Higher-level cadres are predominantly concentrated in urban districts, something that cannot always be said about mid- or lower-level cadres (a larger proportion of health officers, for example, are located in rural areas). On the whole, perhaps not surprisingly given that a large proportion of the poor live in rural areas, there is a strong pro-rich gradient in the geographic distribution of human resources in Zambia.

The disproportionate urban concentration, particularly of higher-level cadres, can be explained by low levels of inflow into, and high levels of exit out of, the rural labor market. A study found that in rural health centers, out of 688 staff in 2006, 69 were "in-

coming" (10.0 percent) while 148 were "outgoing" (21.5 percent). It would seem that the stock of rural health center workers is not being replenished quickly enough. Anecdotal evidence suggests that in addition to low overall production of HRH at the country level, low inflow specifically into rural areas occurs because of various perceived unfavorable monetary and nonmonetary factors (their relative importance requires future research attention). The rural incentive scheme may have improved desirability to work in a rural area for some cadres in recent years. At the same time, facility managers in rural areas may not possess the negotiating skills required to attract centralized funding to fill vacancies. Rural facilities are dependent on a centrally allocated and negotiated budget to attract and hire health workers. Finally, high rates of exit out of the rural labor market are also to blame for the maldistribution of HRH, largely occurring because of dissatisfaction, primarily of higher-level cadres, with nonmonetary factors and compensation (living and working conditions). Picazo (2008) found that too much work, bad facility management, and a lack of fulfillment (do not enjoy work) were reasons more prominently voiced by health workers in rural health centers than in urban health centers.

Regarding health worker performance, data suggests that absenteeism in Zambia is high. Inadequate monitoring and accountability mechanisms, as well as coping mechanisms such as dual practice, may be attributed to these high levels of absenteeism. Absenteeism is particularly high among higher-level cadres, in the public sector, and in urban areas. A 2007 census found that 45.2 percent of doctors, 25.5 percent of medical assistants, and 22.9 percent of nurses meant to be on duty at the time of data collection were not at their posts. Inadequate management and accountability structures, including ineffective performance appraisal and non-merit-based promotion, may help explain high rates of absenteeism in Zambia. Management and accountability weaknesses may be linked to how HRH decision making is distributed and concentrated at the central level, rendering facilities unable to effectively carry out management functions. Furthermore, absenteeism may be explained by the so called "coping mechanism" of health workers to earn extra income through dual practice. One study found that 43 percent of staff interviewed in Lusaka, 30 percent in Kabwe, and 25 percent in Mumbwa reported earning extra income from another job.

Another key performance issue identified to be problematic in Zambia is health worker competence. Weaknesses here are linked to training capacity, working conditions, skills substitutions, and job satisfaction/motivation. Competency on delivery of key interventions such as antenatal care is low. Zambia lags behind the average of its neighbors in the provision of four of six main components of antenatal care, including detecting informed signs of pregnancy, measuring weight and height and blood pressure of patients, and taking urine and blood samples. Weaknesses in pre-service and in-service training may in part explain weakness with competence. Anecdotal evidence suggests that the absence of teaching staff linked to low compensation, as well as inadequate training of existing staff, inadequate tools and equipment, and outdated curricula, all contribute to competency issues. In-service training is also perceived to be unevenly provided, uncoordinated, and too often shaped by donor preferences. Long working hours and high workloads attributed to increased attention to scaling-up service response to communicable diseases (particularly HIV/AIDS) is also perceived to affect competence levels, leading to exhaustion and burnout and less attention being paid to services unrelated to HIV/AIDS, tuberculosis, malaria, and so forth. In addition, few

health workers surveyed in several cities in Zambia agreed that they had enough equipment and supplies to adequately carry out their tasks. Finally, the job satisfaction of health workers, and their motivation—their "willingness to exert and maintain an effort toward organizational goals"—may also be linked to competency issues. Evidence from a representative survey shows that while 44 percent of HRH report satisfaction with their job, 43 percent report dissatisfaction and 12 percent are indifferent. Staff dissatisfaction stems mainly from stressful workloads (42 percent) and low salaries (34 percent). Only 7 percent reported bad facility management while 17 percent cited "other reasons."

The report finds that the dynamics of labor market entry and exit (determining stock and distribution) and performance of HRH are influenced by four overarching factors: (1) inefficient management arrangements and highly centralized decision making on HRH; (2) inadequate training capacity leading to low production of skilled workers; (3) inadequate work environment and conditions of service—including *perceptions* of low remuneration; and (4) morbidity and mortality related to HIV/AIDS.

A closer assessment of each of these factors reveals that management on HRH is indeed highly centralized (after a brief and failed experiment with decentralization during the late 1990s), and evidence confirms that some aspects of management performance on HRH may be weak (such as monitoring and salary management). Pre-service education capacity, moreover, was also found to be poor in terms of physical, technical, and organizational capacity. In terms of work environment and conditions of service, closer analyses revealed that monetary compensation in the public sector is not as low as sometimes suggested when allowances are taken into account (although still lower than in the private sector). When benchmarking salaries and allowances against the average gross national income in Zambia as well as regional benchmarks doctors, remuneration compares relatively well in Zambia.

A detailed assessment on nonmonetary factors beyond those discussed throughout this report is not available. Finally, HIV/AIDS constitutes a real problem in Zambia, and the country is one of only a handful that suffers simultaneously from HIV/AIDS and HRH crises.

At the macro level, the report deems inadequate fiscal space to be an important parameter to the current HRH challenges. All of the factors discussed above and which influence labor market dynamics depend on adequate financing. The report finds that the budget allocated to the health sector (10 percent of `national budget) is below the Abuja target. About a third of all government spending for the health sector in 2007 came from donor funding. Donor funding is largely earmarked, restricting the actual budget for HRH. The wage bill (budget for personal emoluments) has actually declined over time largely due to this earmarking of donors funding.

Finally, this report examines the issue of access and equity of HRH. It finds that even if health workers are available, in either urban or rural areas, and performing adequately, the wealthy in Zambia have better access to services than the poor. This situation is found in most if not all other countries. The report finds that as far as access to health workers is concerned, the poor generally loose out. It also reveals that even if health workers are available, wealthier segments of the population often continue to have better access to health workers than poorer segments. Wealthier women have the highest probability of receiving any antenatal care. There is an even steeper pro-rich gradient in delivery attendance in Zambia. In contrast to antenatal care, there is little varia-

tion across socioeconomic quintiles among those seeking medical treatment for children with diarrhea or cough/fever. The poor are slightly more likely to be visited by a health worker and receive certain services during visits. The factors linked to these variations in use of services remain to be examined (they could be linked to expense, fear of receiving care from an individual belonging to a higher social stratum, or different gender, and so forth). Either way, they should be taken into consideration when planning to improve access for the poor to health care services and providers.

CHAPTER 1

Context and Introduction

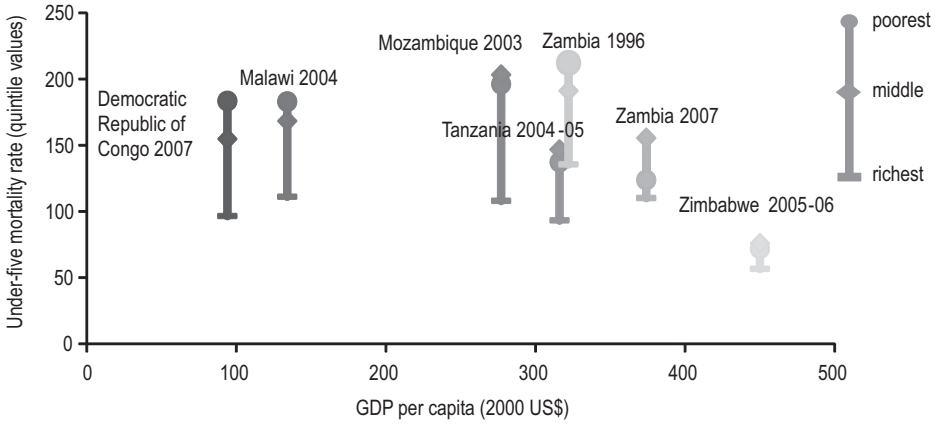
Health Outcomes Overview

Zambia has recorded considerable gains in health outcomes from the base of 1990. The under-five mortality rate dropped 38 percent between 1992 and 2007, with an average annual reduction of 2.3 percent.[1] And maternal mortality fell by 31 percent between 1996 and 2007, with an average annual reduction of 2.6 percent (figure 1.1).[2]

Still key health outcomes, such as the under-five mortality rate at 119 per 1,000 live births, are concerning. The main causes of illness and death for children under five years old in Zambia are preventable and/or treatable with known, simple, low-cost and effective interventions. The perinatal mortality rate in Zambia is 38 deaths per 1,000 pregnancies. WHO estimates that 20 percent of under-five deaths are caused by perinatal circumstances,[3] mostly linked to poor conditions at birth. The next four major causes of under-five deaths (pneumonia, malaria, diarrhea, and HIV/AIDS) account for another 65 percent.

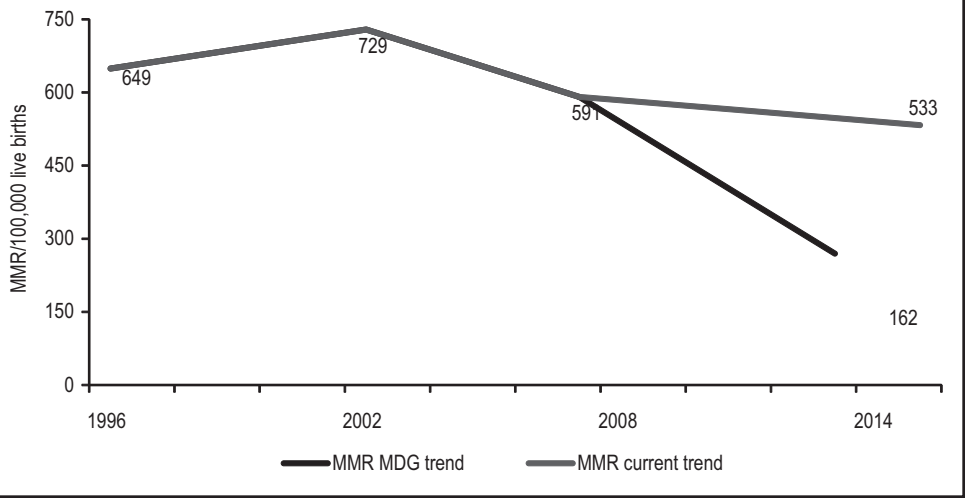
The maternal mortality ratio at 591 per 100,000 live births is also high (figure 1.2). Skilled birth attendance is the single most important intervention to prevent maternal mortality. In Zambia, however, the proportion of births attended by a skilled birth attendant has remained virtually constant in recent years at 51 in 1992, 47 in 1996, 43 in 2002, and 47 in 2007.[4] The slight rise of 3.6 percent between 2002 and 2007 appears inadequate to explain the reduction in maternal mortality.

Figure 1.1. Under-five mortality rate: gaps between and within countries



Source: DHS data for under-five mortality; World Development Indicators data for GDP per capita.

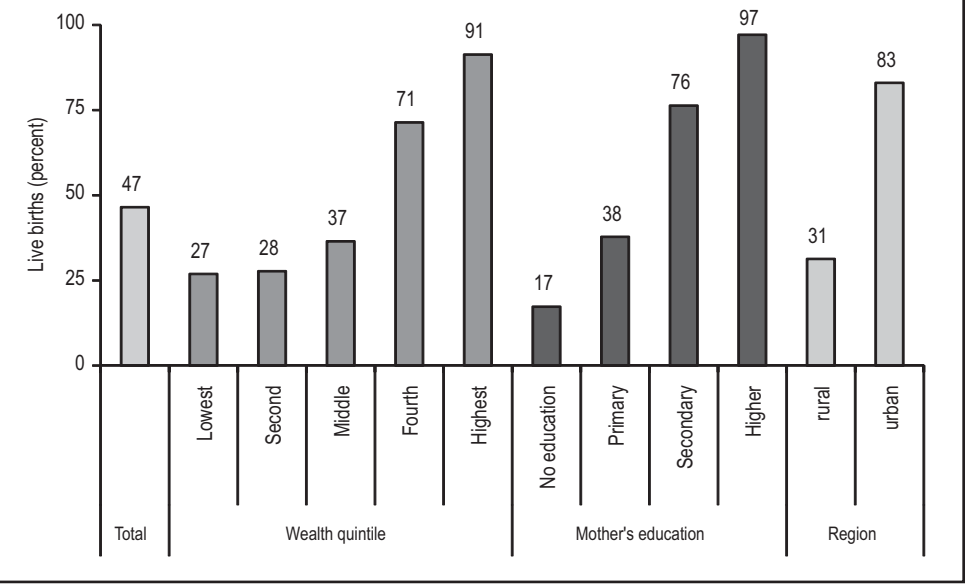
Figure 1.2. Current and projected trends in maternal mortality



Source: Zambia DHS 1996, 2002, and 2007.

The likelihood of delivering in the presence of a skilled provider is much higher for women in urban areas than in rural areas. As figure 1.3 shows, there are wide geographical variations in the provision of assistance at delivery in 2007. For example, in Lusaka and Copperbelt, over three-quarters of the births are overseen by a skilled provider (77.5 and 75.3 percent, respectively), while in North Western province just 29.4 percent of

Figure 1.3. Medically trained assistance during delivery by background and region (2007)



Source: Zambia DHS 2007.

the births are attended by a skilled provider. In addition, there is a clear correlation between income, the education of the mother and the likelihood of professionally attended deliveries. While 17 percent of mothers with no education seek professional assistance during childbirth, that share rises to 38 percent and 76 percent among mothers with primary and secondary education, respectively. There are similar inequalities across income groups: 27 percent of the poorest mothers compared with 91 percent of the best-off received medical assistance during delivery. (This will be discussed in greater detail in chapter 6.)

Infectious and parasitic diseases are by far the largest causes of mortality in Zambia, with half of all deaths attributable to HIV/AIDS, malaria, and diarrheal diseases. Zambia has an HIV prevalence rate of 14.3 percent.[5] The recent 2010 country status report (World Bank 2010) found that the goal of universal access to treatment for HIV and AIDS by 2010 is not achieved. A recent report (UNGASS 2010) documented national coverage of 69 percent for adult antiretroviral treatment (ART) and 62 percent for children ART. This represents a substantial increase from previous national coverage rates of 26 percent in 2002 and 46 percent in 2007. Sustaining this progress entails attainment of universal coverage is not a long way away. And treatment indicators for malaria have been stagnant until the last two years. According to the 2007 Zambia Demographic and Health Survey (DHS), the proportion of children under 5 with fever who were treated with appropriate anti-malarial drugs fell from 52 percent in 2002 to 38 percent in 2007.

HRH in Context

The government of Zambia recognizes that the improvement of child and maternal health, and the reduction in mortality from HIV/AIDS and Malaria requires that its citizens have access to an appropriate number of well performing health workers. The national HRH strategy (HRH Strategic Plan 2006–2010) argues that one of the major obstacles for Zambia to improve its service delivery and achieve the Millennium Development Goals related to child and maternal health and combating priority diseases including HIV/AIDS and malaria is the shortage of human resources for health. As this report will show, the stock of health workers (both public and private) is indeed low and far below recommended benchmarks (see chapter 2). Moreover, the distribution of health workers, particularly of medical doctors is heavily skewed toward urban areas, and is disproportionately affecting the poor (see chapter 4). And finally, performance of health workers, despite data limitations, is also found to be sub-par (see chapter 5).

So far, the government has demonstrated strong commitment to addressing the country's HRH crisis. This commitment is well-reflected in Zambia's Poverty Reduction Strategy Paper (PRSP), The Fifth National Development Plan 2006–2010 (GRZ 2006), the 2006–2010 National Health Strategic Plan (NHSP), and more specifically, in the 2006–2010 Human Resources for Health Strategic Plan (HRHSP) and the second HRHSP (2011 onward) that is currently under development (ZMoH 2005a, 2005b). The upcoming 2011 HRHSP envisages a comprehensive response to Zambia's HRH crisis and aims to ensure an adequate and equitable distribution of an appropriately skilled and motivated health workforce through effective HRH planning, increased health worker production, improved health worker productivity, and stronger HRH management and governance structures (MoH 2005b).

Efforts to improve HRH in Zambia are made in a context where HRH management structures are highly centralized, the private sector is relatively small, and the fiscal space for HRH is limited. As this report will show, decision-making on public sector HRH is almost the exclusive role of the central government, with the sub-central level (districts or facilities) unable to hire and fire specific health workers as they deem fit (see chapter 7). In addition, the private sector, although growing in recent years, continues to be extremely small and unable to compensate for the insufficient number and performance of heath workers in the public sector (see chapter 3). HRH policies and programs moreover have to be designed in a context of limited fiscal space on HRH. Although fiscal space on health until recently was considered to be substantial, a significant proportion of it consists of donor contributions tied to specific non-HRH expenditures (see chapter 8). On the whole, such a context may make any rapid improvements on HRH particularly challenging.

Objective of the Report

The report aims to be a diagnostic analysis of the health labor market in Zambia. Rather than emphasizing and focusing on policy recommendations, the report is designed to be a source book to benefit and fuel discussions on HRH in Zambia. Until now, the full story of the consequences and causes of health workers entering, performing in, and leaving the labor market has not been told comprehensively in Zambia. Available evidence and discussion focus on piecemeal analyses of different aspects of the health labor market. Not a single report or book has reviewed the HRH picture in its entirety. That has made it impossible to obtain a full picture on labor market outcomes and dynamics and difficult to prioritize one problem over another and develop targeted interventions to correct labor market imbalances.

The report addresses this knowledge gap by consolidating all the evidence currently available on HRH to paint a coherent and comprehensive picture of the health labor market in Zambia. It not only provides an up-to-date assessment and understanding of HRH in Zambia, but also identifies and highlights practical levers that can help policymakers improve the functioning of the Zambian labor market toward better availability and performance of HRH. Some of the data and findings of the report have already informed HRH discussions, including the development of the HRH chapter in the 2010 Country Status Report on Health in Zambia, as well as a Policy Note on HRH. Currently the report provides the evidence base for integrating HRH into the next health planning cycle, including the 2011–2015 National Health Strategic Plan and the second Human Resources for Health Strategic Plan (the current strategy, 2006–2010 is coming to an end in January).

Using a Labor Market Angle to Analyze HRH

This report uses a labor market angle to analyze and try to understand the picture related to the stock, distribution, and performance of HRH in Zambia (HRH outcomes). It aims to explain HRH outcomes by mapping, assessing, and analyzing the flow of health worker into, within, and out of pre-service education and the HRH labor market.

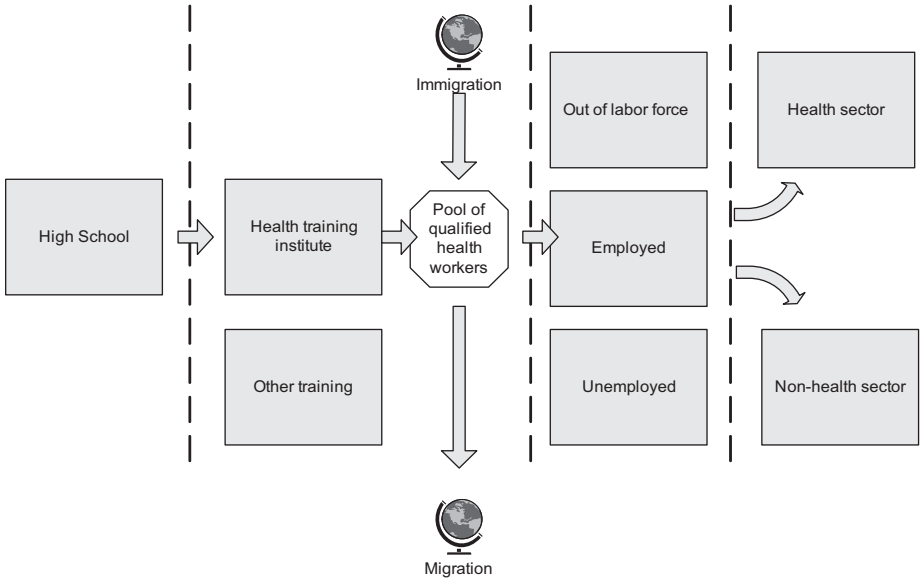
The movement into, within, and out of health training and labor market institutions is determined by a number of supply-side factors (for example, the number of willing

individuals to enter into training institutions and the health labor market), and demand-side factors (for example, the number of training and labor market institutions willing to admit students and employ labor). Figure 1.4 illustrates the flow of health workers from high school into health training institutions and into the labor market (as well as the potential flow into avenues other than the national health sector).

Both pre-service and labor market dynamics (and thus demand- and supply-side behavior) in a free labor market environment are influenced by monetary and nonmonetary compensation. Adequate monetary compensation (such as salaries and allowances) and/or nonmonetary compensation (such as career opportunities and working and living conditions) affect both the willingness of individuals to join a medical school of health facility (their supply-side behavior), as well as the willingness and ability of training institutions or health employers to admit or employ individuals (their demand-side behavior).

At the same time, health labor markets in Africa (including Zambia as indicated earlier) are seldom fully free, and special considerations need to be given to governments who "forcefully" intervene (and often flawed) into the health labor market (for example, through government directives, rules, and regulations). Government intervention through decrees or policies may direct individual behavior, rendering individuals unable to make choices. Any analysis of the health labor market of countries in Africa thus needs to pay particular attention to the extent to which there are interventions in the market (other than monetary and nonmonetary compensation) that forcefully impact labor market supply of, and demand for, individuals.

Figure 1.4. The flow of individuals into the health labor market



Source: Adapted from Vujicic and others (2004).

Methods and Limitations to Analysis

The method of analysis used by the authors of this report is to consolidate data and information on HRH. Most of the data presented in the report covers the period 2005–2008. Key data and documents from which this report draws include:

- Institutionalized data on HRH collected by the GRZ (HRH database in MoH, payroll).
- The grey literature on HRH in Zambia (various authors).
- GRZ/Ministry of Health (MoH)/JICA Health Facility Census (HFC) Data 2006.
- Herbst, H. C., and D. Gijsbrechts. 2007. Comprehensive and Accurate Data on Stock, Profiles, and Distribution of HRH in Zambia: Analysis of the Health Facility Survey Data: Summary Findings Sheet, World Bank
- Picazo, O. F. 2008. "Struggling and coping to serve: The Zambian health workforce as depicted in the public expenditure tracking and quality of service delivery survey (2006)." HRH working paper, Washington, DC.
- Ferrinho, P., S. Siziya, F. Goma, and F. Ferrinho. 2008. "Alternative health workforce skill mix In Africa: Evidence and lessons from Zambia," HRH Working Paper, World Bank, Washington, DC.
- Working in Health: chapter 3: case study for Zambia (Vujicic, Ohiri, and Sparkes 2009).
- Clinton Foundation, 2008(The Government of the Republic of Zambia): National Training Operational Plan 2008: *Field Assessments, Analysis and Training Institution Scale-up Plans, Draft Report, 2008*

A number of limitations to this type of multiple source analysis need to be considered.

What constitutes a "health worker" varies across studies and countries, making cross-country and study comparisons difficult. The World Health Organization (WHO) defines a health worker as an individual "whose job it is to protect and improve the health of their communities" (WHO 2006). Such a broad definition includes several categories of workers, including paid and unpaid health workers, private and public health workers, and formal and informal health workers, as well as a caregiver who takes care of her/his sick children at home. Without a universal definition, it is often not clear who is included in the numbers of health workers in studies on HRH. Given data availability restrictions (see sections below), this report will focus on those individuals who are paid for their services, primarily human resources in the formal, public, and private health sector, unless otherwise indicated.

Within the subset of health workers who are paid for their services, categorization into clinical and nonclinical service providers varies according to data source, further complicating comparison. In some studies and references, HRH refers solely to providers directly engaged in delivering health services (clinical or direct service providers). In other cases, HRH includes nonhealth cadres or indirect service providers, including personnel directly engaged in providing management, administration, and support services in addition to those directly engaged in providing health services. Further complicating the picture are variations in how cadres are grouped. In some studies, for example, laboratory technicians are seen as clinical service providers, while in others they are classified as indirect or nonclinical providers. Of those paid for their services, clinical providers as defined by the government, rather than nonclinical providers (management

staff, nonclinical support staff such as gardeners), are the focus in this report, unless otherwise indicated.

There are also variations across studies and data sources in umbrella categories created for the multitude of nonstandardized health worker cadre terminologies. As in other African countries that have developed their own typologies to classify cadres, Zambia's terminology is complex and unique. While many analytical studies group the cadres into umbrella cadres, such groupings are not standardized and the groupings are not consistent. For example, the term laboratory workers may include a number of different cadres, including laboratory scientists and laboratory technicians, while in another study it includes only laboratory scientists. The rest may be labeled "lab technicians." In many countries, including in some studies in Zambia, the term "nurse" is an umbrella term encompassing both registered and enrolled nurses.

The quality of underlying baseline health worker data used for this study also varies greatly by source and study. Although this document makes an effort to use the best available data—and point out obvious quality constraints—variations in quality still remain. The authors have, however, made an effort to draw heavily on analytical and research studies with sound methodologies. Underlying many of these studies are public sector data collected by the government or associations, some of better quality than others. Data quality can be compromised at any stage of the data collection, documentation, and analytical process. It often depends on adequate capacity at the central and regional level to enter, update, and forward data (including sufficient decision-making and accountability structures to foster conditions for reporting fresh data).

In addition, variations in data collection methodology also reflect different data outcomes. Some of the total workforce numbers provided may show health workers registered at the *facility level*, others may reflect health workers actually present at the facility level (through headcounts for example), and others may only show health workers registered at the *national level* or on government payroll. Some studies may have obtained HRH data and information from national censuses, others though facility surveys, national payroll records, or registration lists. Data collected by different sources on the same category of health worker may diverge, as shown in table 1.1. (The General Nursing Council data list every nurse registered, whether working in the health labor

Table 1.1. An example of differences between MoH data on nurses working in the public sector and nurses registered with the General Nursing Council

Title	Government[a]	General Nursing Council[b]	Difference
Public health nurse	18	73	55
Registered midwife	347	2,542	2,195
Registered nurse	1,273	5,675	4,402
Registered psychiatry nurse	20	313	293
Registered theater nurse	57	411	354
Registered/enrolled ophthalmic nurse	2	12	10
Enrolled midwife	1,754	3,479	1,725
Enrolled nurse	5,205	9,442	4,237
Enrolled theater nurse	36	94	58

Source: Ferrinho and others 2008.
a. As of March 2008.
b. Between January 2004 and April 30, 2008.

market or not, whereas the government data reflects only those nurses on payroll.) On the whole, data from different sources often diverge, and both cross-country and intra-country and study comparisons should be interpreted with caution.

Finally, although data and information on HRH and the labor market has grown, some gaps remain, particularly for recent data and information on incentives shaping health worker behavior in the health labor market (including the for-profit private sector and the informal sector). Further, although Zambia has made great strides in addressing HRH data constraints, much of the information and data obtained and used in this report focuses on 2005–2008. Almost no data was available for previous years, so trend analyses could not be conducted. This report thus focuses on the HRH situation over 2005–2008 and does not discuss data and evidence before or after.

Organization of the Report

The report maps and analyzes information specific to the HRH outcomes, HRH stock (chapter 2), distribution by sector (chapter 3), geographical distribution (chapter 4), and performance (chapter 5). The diagnosis examines the extent or market freedom, motivations and incentives that explain health worker entry into, performance in, and exit from both pre-service education environments and the health labor market. Recognizing equity of HRH service provision as a key to achieving the MDGs, the report also analyzes some equity implications of observed labor market outcomes (chapter 6). Finally, the report discusses in greater detail some underlying factors that influence labor market dynamics (chapter 7), followed by an assessment of the underlying fiscal environment for HRH (chapter 8).

Notes

1. Zambia DHS 2007.
2. Report on the Costing of the National Health Strategic Plan 2006–2010.
3. Perinatal death is defined as loss of life after seven full months of gestation (stillbirth) and, among live births, within the first seven days of life (early neonatal death).
4. Zambia DHS 1992, 1997, 2002, 2007.
5. Zambia DHS 2007.

CHAPTER 2

HRH Stock

This chapter presents some information available on HRH numbers and densities, mostly up to 2008. It discusses the "needs based" implications of the picture that emerges on HRH stock and offers explanations of what causes the picture.

Summary of main findings

- The stock is low, particularly compared with other African countries.
- Of the overall stock, actual clinical cadres are only a little over half.
- Of all clinical cadres, more than 60 percent are nurses, while the share of doctors is just over 7 percent.
- Set against national and international benchmarks, the proportion of health workers in the population is highly inadequate.
- The low stock can in part be explained by low production due to the capacity constraints of health training institutions.
- A small number of funded established vacancies are not filled in time, which could reflect low production or inefficient centralized HRH management.
- Even if health worker production could be scaled up, most of the established vacancies are not funded and so could not absorb increased production output (facilities cannot use alternative funding to hire health workers).
- Labor market exit, particularly of doctors, is another prime factor for the low stock in Zambia and is primarily attributed to outmigration (due to dissatisfaction with low pay and until recently aggressive recruitment strategies) and premature death (due to HIV/AIDS).

Stock and Profiles of HRH

Compared with neighboring Sub-Saharan African countries, the aggregate number of Zambia's health workforce is low in both number and density (even when comparing Zambia's combined public and private workforce with only the public workforce of other Sub-Saharan African countries). Table 2.1 shows that Zambia's health workforce, as counted in the 2006 Health Facility Census (HFC), is low in both number and density when compared with other countries. Of the countries listed, only Benin and Rwanda are lower in number, and only Côte d'Ivoire is lower in density.

Of the health personnel employed at health facilities, slightly more than half can be classified as direct or clinical health service providers. According to the most recent HFC in 2006,[1] 20,544 individuals (not counting dentistry cadres) are employed in public and private sector facilities (table 2.2). Of these, only 12,219 (59.5 percent) can be classified as direct health service providers (Herbst and Gijsbrechts 2007). Of the remaining 40.5 percent of health personnel, 155 (0.75 percent) are dentistry professionals while 8,170 (39.75 percent) are health management and support workers or nonclinical workers (Herbst and Gijsbrechts 2007).

Table 2.1. Stock and density of human resources for health (clinical including dentistry and nonclinical cadres)

Country	HRH	HRH (all cadres) per 1,000 people
India	2,297,233 (public)	1.95 (2006)
Thailand	193,577 (public)	3.0 (2006)
Ghana	46,040 (public)	1.93 (2009)
Côte d'Ivoire	19,784 (public)	0.96 (2007)
Zambia	20,544 (public and private)	1.05 (2007)
Rwanda	13,133 (public)	1.22 (2008)
Benin	9,323 (public)	1.11 (2007)

Source: Ghana MoH Integrated Payroll and Personnel Database 2009; Rwanda CSR-Health 2009/MoH Clinton Foundation 2008; Côte d'Ivoire CSR-Health 2010; Zambia CSR-Health 2009; 5. Benin CSR-Health 2009; Thailand Medical Council 2006; India Medical and Dental Council, India Medical Council, India Pharmacy Council, Government of India Bulletin on Rural Health Statistics in India, Department of AYUSH.

Table 2.2. Slightly more than half of human resources for health work in clinical health-specific cadres (public and private sector)

Clinical health-specific cadre (main focus of report)	Dentistry cadres	Nonclinical health cadre
Doctor Clinical officer Nurse/midwife (registered/enrolled) Nutritionist Physiotherapist Hygienist Environmental health worker Pharmacist Orthopedic technician Radiography technician Lab technician Pharmacy technician Other technician Other medical cadre	Dental surgeon Dentist Dental therapist Dental assistant	Counselor Social worker Nonhealth staff Administration
Total: 12,219 (59.5 percent)	Total: 155 (0.75 percent)	Total: 8,170 (39.75 percent)

Source: Herbst and Gijsbrechts 2007.

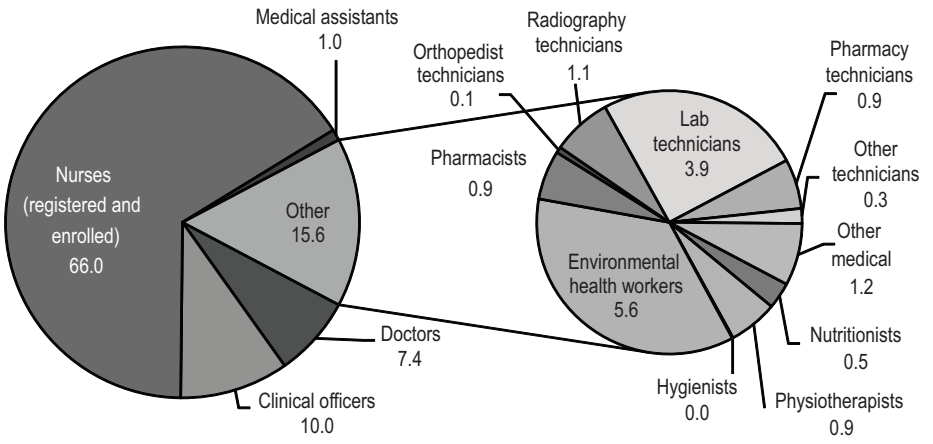
Of the clinical cadres, nurses represent the largest share of cadres in Zambia (registered and enrolled), followed by clinical officers (a unique cadre with skill sets between a nurse and a doctor established in 1936 to provide services—including later ART—at primary care level), and then doctors (table 2.3). Doctors (surgeons, specialists, and general practitioners) represent only 7.4 percent of these direct service providers, while 66 percent are registered and enrolled nurses (figure 2.1).

Table 2.3. Number of clinical workers by cadre (public and private sector)

Cadre	Number of health workers
Doctor	908
Clinical officer	1,217
Nurse (registered and enrolled)	8,068
Medical assistant	125
Nutritionist	62
Physiotherapist	114
Hygienist	2
Environmental health worker	679
Pharmacist	115
Orthopedist technician	14
Radiography technician	139
Lab technician	480
Pharmacy technician	116
Other technician	35
Other medical	145
Total	12,219

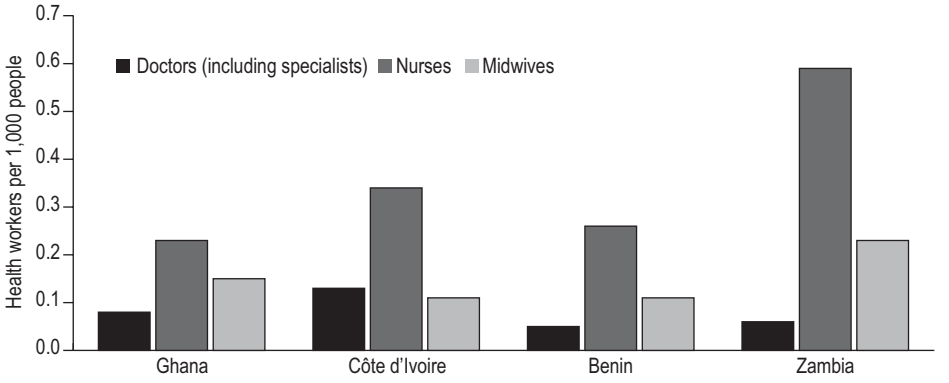
Source: Herbst and Gijsbrechts 2007.
a. 2005 population (11,683,704).

Figure 2.1. The largest percentage of health workers are nurses (rounded)



Source: Herbst and Gijsbrechts 2007.

Figure 2.2. Density (per 1,000 people) of doctors, nurses, and midwives across select Sub-Saharan African countries

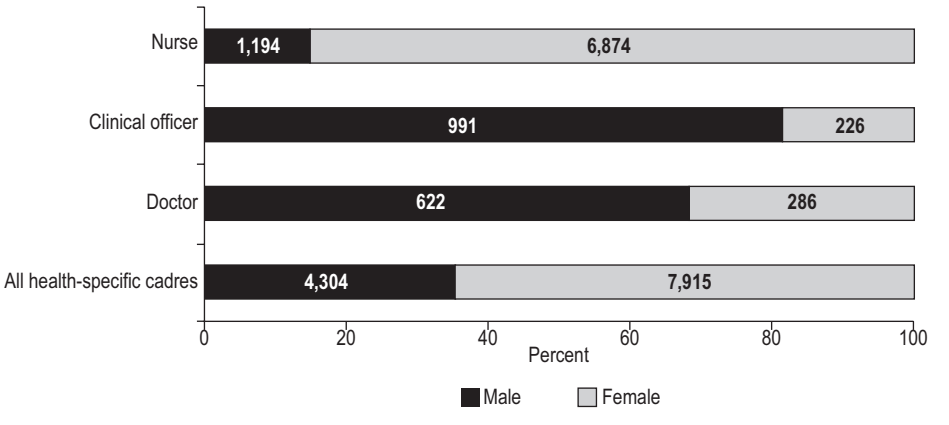


Source: Country Status Reports, World Bank 2010.

Compared with other countries, Zambia's proportion of nurses and midwives to its population is high, although its doctor-to-population density is extremely low (figure 2.2). Zambia has close to twice as many nurses (registered and enrolled) per 1,000 people as Benin, Côte d'Ivoire, and Ghana. However, only Benin has fewer doctors per 1,000 people than Zambia, and Côte d'Ivoire has more than twice Zambia's number of doctors per 1,000 people.

Whereas nurses tend to be female, medical doctors and clinical officers tend to be male. Most health workers in Zambia are women, though there is significant variation by cadre (figure 2.3). The 2006 HFC finds that most (64.7 percent) workers in health-specific clinical cadres (not counting nonhealth and dentistry cadres) are women. Slightly more than 80 percent of clinical officers in Zambia are men, and 85.2 percent of nurses/midwives are women (Herbst and Gijsbrechts 2007).

Figure 2.3. Gender divide among health workers (public and private)



Source: Herbst and Gijsbrechts 2007.

Expatriates and volunteers make up a significant proportion of HRH in Zambia. A 2006 survey found that hospitals have become highly dependent on expatriates: as many as 50 percent of hospitals have an expatriate doctor, 25 percent have an expatriate nurse, and 14 percent have other expatriate staff. Some 3 percent of rural health centers and 10 percent of urban health centers also report having expatriate personnel. Volunteers are less common in hospitals, but they dominate in health centers: 32 percent of rural health centers and 48 percent of urban health centers rely on volunteers, half of whom work full time (Picazo 2008).

Most expatriate health workers are from other African countries, but some come from Asia, Europe, and beyond. Table 2.4 shows that in 2005, most expatriate doctors emigrated from the Democratic Republic of Congo, Rwanda, Nigeria, the former Soviet Union, and other parts of Asia (Koot and Martineau 2005). The Government of the Netherlands used to appoint Dutch doctors to work in Zambia but discovered it was less expensive to pay a retention allowance to local doctors, a scheme it launched in 2003 (ZMoH 2009). Zambia also had temporary bilateral agreements with China, Cuba, and Nigeria. Doctors from China are employed under local conditions of service in Zambia, while the Nigerian government pays travel costs, salaries, and allowances to Nigerian doctors working in Zambia (ZMoH 2009).

Needs-Based Perspective

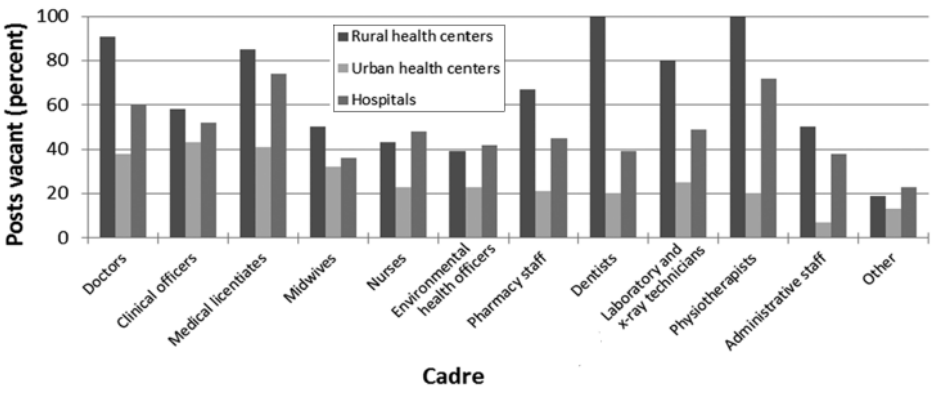
In 2006 the number of government-employed health workers remained consistently below the required number of government-set health worker posts in public health facilities. In the public sector, the number and type of posts that the MoH deems necessary to fill is determined by what is called the Recommended establishment, which constitutes the approved number of health workers by the MoH. The approved number of workers is not financed posts, just a normative target for appropriate number of "needed" health workers. In 2006 the establishment was set at 51,414 posts, based on population growth

Table 2.4. Doctors in public hospitals (not private), by nationality

	Country of origin										
Facility	Zambia	Democratic Republic of Congo	Rwanda	Nigeria	Other African country	East Europe	Former Soviet Union	Asia	Other	Training	Total
District hospitals	88	28	7	7	0	6	4	3	19	0	162
Provincial hospitals	33	23	1	6	2	2	26	10	6	3	112
Central hospitals	217	61	0	3	6	3	45	25	1	0	361
Lusaka urban health centers	19	1	0	0	3	0	4	4	0	0	31
Nonclinical functions	34	0	0	0	0	1	0	0	2	0	37
Total	391	113	8	16	11	12	79	42	28	3	703

Source: Koot and Martineau 2005.
Note: These figures come from a different data source and year than those in the tables above, which come from the 2006 HFC; any comparison should be made with caution.

Figure 2.4. Vacancy rates (against 2006 establishment) in health facilities, by cadre (public sector only)

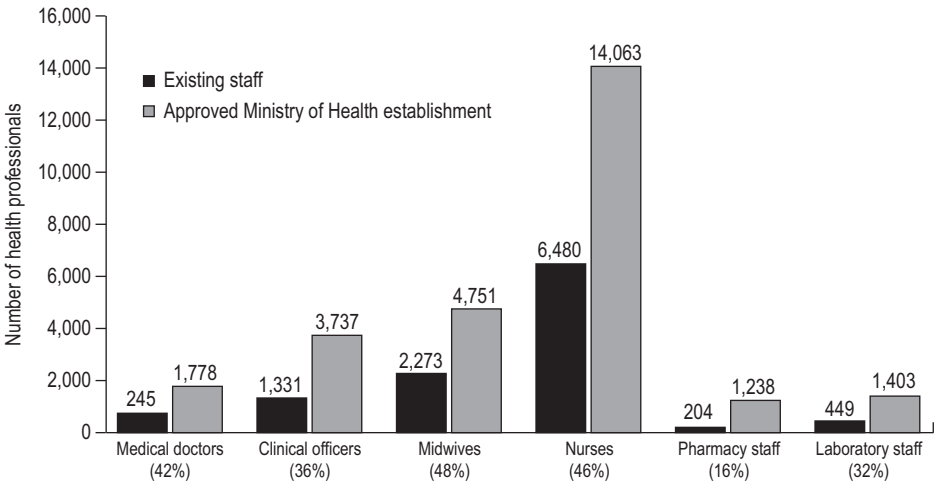


Source: Picazo 2008.
Note: These data are from a representative survey and are not universal.

projections. In a representative survey, Picazo (2008) found that in 2006 the percentage of vacant established posts against the 2006 establishment was 33.6 percent overall. All key established posts left vacant involved professional staff (figure 2.4).

Following the new establishments[2] set for health worker cadres in 2008, the number of human resources for health in 2008 was still well below that "required" by the government for public health facilities. Public sector staffing levels are significantly below the fixed facility staff established by the MoH. Figure 2.5 shows the approved staff establishment from 2008 and compares them with the actual number of staff.

Figure 2.5. Number of health professionals and vacancy rates against 2008 establishment



Source: ZMoH 2009.

The aggregate health worker-to-population ratio is far below the benchmark that the WHO as identified as the minimum number of health workers to reach the health MDGs. While the appropriate health worker-to-population ratio usually depends on a country's economy and health care management system, the WHO suggests a benchmark of at least 2.28 health workers (defined as doctors, nurses, and enrolled and registered midwives) per 1,000 people to provide the minimum public health and essential clinical interventions (WHO 2006). The WHO also (Scheffler 2008) suggests a ratio of 0.55 physicians and 1.73 nurses per 1,000 people to achieve the MDGs. Even when including all other health-related cadres, Zambia is far below these recommendations, at 1.05 (table 2.5). The 2007 HFC found 0.1 physicians and 0.7 nurses per 1,000 people in Zambia, also well below the suggested benchmark.

Table 2.5. Health workers per 1,000 people against international benchmarks

Cadre	Health workers per 1,000 people[a]	Benchmark to achieve MDGs (per 1,000 people)
Doctor	**0.0777**	**0.55 (Scheffler et al, 2008)**
Clinical officer	0.1042	
Nurse (registered and enrolled)	**0.6905**	**1.73 (Scheffler et al, 2008)**
Medical assistant	0.0107	
Nutritionist	0.0053	
Physiotherapist	0.0098	
Hygienist	0.0002	
Environmental health worker	0.0581	
Pharmacist	0.0098	
Orthopedist technician	0.0012	
Radiography technician	0.0119	
Lab technician	0.0411	
Pharmacy technician	0.0099	
Other technician	0.0030	
Other medical	0.0124	
Total	**1.0458**	**2.28 (WHO/JLI) including doctors, nurses, and midwives only**

Source: Herbst and Gijsbrechts 2007.
a. 2005 population (11,683,704).

Studies have also suggested that the current stock of health workers cannot sustain the efforts necessary to provide universal treatment of HIV/AIDS. With only about 25 percent of those in need receiving antiretroviral therapy (ART) in 2006 (ZMoH 2006), and in light of recent policy calling for universal access to such therapy, projections of needs suggest that Zambia would be facing a severe shortage of health personnel (Chankova and Sulzbach 2006). For example, a 2005 study estimated that the projected deficiency doctors required to meet the 2008 Global Fund for AIDS, Tuberculosis, and Malaria (Global Fund) targets for ART, VCT, and PMTCT, while maintaining the current level for other health care services, would be 32 percent (table 2.6). The deficiency of nurses would be 11 percent and of laboratory technicians more than 65 percent (Kombe and others 2005).[3]

Table 2.6. Projected human resource gap (2005)

	Number of staff				
Staff type	(A): Needed for Global Fund ART, VCT, and PMTCT	(B): Required to maintain 2003 per capita staff levels	(C) = (A) + (B): Projected need	(D): Total available (projected)	(E) = (D) − (C): Human resources gap
Doctors	88	866	954	653	−301
Nurses	742	8,230	8,972	7,959	−1,013
Lab technicians	897	332	1,229	422	−807
Pharmacists	126	69	195	141	−54

Source: Kombe and others 2005.
Note: ART: Antiretroviral therapy; VCT: Voluntary counseling and testing; PMTCT: Prevention of mother-to-child transmission.

Donor funding to scale up AIDS treatment has increased but has not led to increasing the number of HRH. Koot and Martineau (2005) have argued that project funds provided by the Global Fund or by the Heavily-Indebted Poor Countries Initiative cannot be appropriately absorbed by the numbers of health workers recorded in recent years. Health care delivery is inadequate and, due to inefficient staffing, an increase in health-related funding will not necessarily lead to better health outcomes (Fortier 2008).[4] AIDS monies may in this case lead to more available money for the same limited pool of HRH, leading to pressures on wages but not necessarily more services.

Explaining the Low Stock

The HRH stock can be the result of a variety of elements linked to the production of health workers (pre-service education), the subsequent entry of graduates into the health labor market, and the rate at which health workers leave the health labor market.

Low labor production

Zambia's output of doctors—about 50 to 60 per year (Schatz 2008)—is among the lowest in the region (table 2.7). This production is well below the target of 100, as set out in the National Health Strategic Plan. Only war-torn countries such as Liberia and Sierra Leone produce fewer medical graduates than Zambia.

Table 2.8 shows that in 2003, Zambia produced 540 nurses, 20 pharmacists, and 38 laboratory technicians (Kombe and others 2005). To place this in relation to other countries in Sub-Saharan Africa, Ghana produces around 4,427 nurses a year but Rwanda only around 55.

Despite a sufficiently large pool of secondary school graduates with adequate science and math backgrounds, only 10–20 percent of qualified candidates enter health training programs in Zambia (Clinton Foundation 2008). Unfortunately, no information exists on the supply-side behavior of secondary school graduates in Zambia. Furthermore, research on the factors that determine secondary school graduates' willingness to enter medical studies and become health workers is inexistent and is required.

Table 2.7. Output of medical schools in Sub-Saharan Africa (select cases)

Country	Approximate annual number of medical graduates	Annual production of doctors per million people
Liberia	15	na
Sierra Leone	25	na
Zambia	**50–60**	**na**
Benin	78	10
Rwanda	97	na
Tanzania	200	5
Kenya (HRH book info)	200	6
Ghana (Pre IN study)	264	12
Democratic Republic of Congo	450	7
Ethiopia (EGOV 2007)	481	7
South Africa*	1,125	23
Nigeria	2,125	14
Sudan*	1,350	33
United States	15,000	na

Source: For the countries in which no study was available to describe the number of medical schools graduates, the WHO and the South Africa directory of medical schools (www.iime.org/database/index.htm) were used and the following assumptions were made: Because the directory had not been updated since 2004 we assumed that the number of medical schools increased by one in each country. In Sub-Saharan Africa, an average output from one medical school (not new) is around 90 graduates. For South Africa and Nigeria, a higher output per school—125 graduates—is considered. And since Tanzania is known for its very low production (both abroad and on-site) the average number of graduates per school is assumed to be 40. Thus, the number of schools with this average was multiplied to estimate the number of graduates. With these assumptions, it is possible that the number of medical graduates in these countries was overestimated.

Table 2.8. Health sector human resources in Zambia (2003)

Cadre	Working in public sector	Annual graduates
Doctors	756	49
Nurses	**7,251**	**540**
Pharmacists	61	20
Lab technicians	292	38
Total	8,360	693

Source: Kombe and others 2005.

Physical capacity (infrastructure) to absorb and enroll qualified secondary school graduates (particularly into medical school) is low. Zambia has few health training institutions and most detrimentally it has only one medical school. There are five technical colleges to train support staff and a number of nursing schools.

Capacity at existing training institutions is also low and further restricts enrollment. The annual enrollment at the nursing school of the University Teaching Hospital is only 75 students (Kombe and others 2005). Enrollment at the medical school had increased to 80 students per year by 2005, an improvement over previous years but still very low

(Koot and Martineau 2005). Low enrollment is explained largely by the underfunding of existing training institutions which has resulted in poor facilities, vacant teaching positions, and inadequate equipment and materials. The failure of recent efforts to increase enrollment at Chainama Hills College of Health Sciences,[5] for instance, was attributed to poor infrastructure (there was no lecture theater or library) and a lack of student accommodations.. Management was forced to return to the original, lower enrollment level. The results were fewer graduates and deteriorating quality of training (Ferrinho and others 2008; Clinton Foundation 2008).

Low enrollment is compounded by high student dropout rates. It is estimated that in 2004 the rate of attrition for doctor and nurse training programs was 30 percent and 20–25 percent for other health professional training programs (Ferrinho and others 2008). Student attrition in Zambia is especially high—up to 70 percent drop out of medical school (Clinton Foundation 2008). Although concrete evidence is required to understand the reason behind high dropout rates, one contributing factor may be the high HIV/AIDS rate (around 17 percent of adults live with HIV/AIDS), which is affecting students, teachers and their families alike.

Low labor market entry

The low numbers of HRH produced is in some countries are compounded by the fact that not all health graduates enter the national health labor market after graduating. The number of health graduates entering professions other than the national health labor market after graduation in Zambia is not known. In some other countries, such as in Benin, 12–17 percent of graduates are lost after graduating; that is, they have not joined the national public or private health labor market, reflecting either opportunities to work in other countries or sectors or an inability to find a job (to be absorbed) after graduation.

There are indications that funded public sector posts are not always filled in time, preventing health worker entry into the labor market. In part this may occur because of low levels of health worker production discussed above (more research would be required to consider this as a possibility). At the same time however, this may be more of an issue related to ineffective centralized management of HRH. A study by Vujicic and others (2009) argues that this occurs due to heavily centralized and inefficient recruitment and deployment procedures which cause long delays in recruitment. Indeed, filling recently vacated funded posts requires central approval from the Public Sector Management Division (PSMD), often resulting in even further delays. In 2007, for instance, the MoH filled only 1,400 of approximately 1,700 funded positions in the budgetary timeframe. Despite the obvious need for additional health workers, funding for 300 unfilled positions had to be returned to the Ministry of Finance.[6] Centralization thus of recruitment and deployment may be a significant problem restricting labor market entry.

There are some indications that in Zambia, a lower number of funded than established posts means that even if the number of health workers graduating from training institutions would be adequate, not all graduates can be absorbed into the health labor market and fill established vacancies. The Zambian government-funded health sector is allocated a lump sum to hire health workers following an MoH request based on estimated human resource needs. Previously under the Central Board of Health (CBOH) and greater decentralization (discussed throughout this report and examined in greater detail in part VII), health facilities could hire health workers on a provisional basis with

the expectation that they would be absorbed by the public service. This process has since changed, and recruitment can now occur only for already funded positions, the number of which being often below the announced number of vacancy establishments. Indeed, in 2008 close to 40 percent of the established posts were not funded (table 2.9; Vujicic and others 2009). Automatic absorption of graduates into the private health labor market moreover is not expected (although is a possibility) given the relatively small and underdeveloped private sector (See discussion on profit and not-for-profit private sector below).

Table 2.9. A significant percentage of desired posts are not funded in Zambia

Established posts (2006–2008)	Funded posts (2008)	Percentage of established posts not funded (2008)
51,000	30,883 (26,523 in 2007)	38.234

Source: Adapted from Vujicic and others (2009).

Interestingly, what seems to be a misconception is that a recruitment ban under structural adjustment negatively affected labor market entry. The study by Vujicic and others did find that the decline in the number of health workers on the MoH payroll between 2003 and 2006 was due largely to the wage-and-hiring ceiling set by international financial institutions in response to excessive public spending. But the same study however also found that the recruitment ban however complemented decentralization efforts under which district health management teams (DHMTs) and hospital management teams were responsible for recruiting health workers using other funding to pay for salaries, such as basket funds and user fees. Hence, although the number of health workers on MoH payroll declined, numbers of recruitments simultaneously increased funded by alternative sources. Indeed, when more health workers were put on the government payroll in 2006, after a partial lifting of the recruitment ban, most of the added staff had already been recruited and deployed by the DHMTs and hospital management teams (using alternative funding) to address shortages existing prior to 2006. Consequently, the recruitment ban may have affected the tenure of national health labor market workers from 2003 to 2006 (for example, until the ban was lifted, staff members recruited during that period were put on limited duration contracts rather than on the regular payroll [CHESSORE and Wemos 2008]). Still, no evidence exists that this ceiling limited labor market demand or that it increased unemployment among health workers or affected service delivery.

High labor market exit

There are indications that exit out of the national public health labor market primarily of doctors may also be considerable. Although data in Zambia exist only on the number of health workers exiting the public health labor market, limited opportunities in the private health sector (see discussion on size of for-profit and not-for-profit private sector below) means public sector attrition likely reflects attrition out of the health labor market altogether (rather than public to private transfer). Attrition among public sector health personnel has increased in recent years, particularly among doctors and nurses, at a rate of 5.4 percent. Doctors have an attrition rate of 9.8 percent, nurses have a rate of 5.3 percent, and pharmacists, 4.6 percent (table 2.10; Kombe and others 2005).

Table 2.10. Public sector attrition rate of select cadres

Cadre	Public sector annual attrition rate (percent)
Doctors	9.8
Nurses	5.3
Pharmacists	4.6
Lab technicians	3.5
Average	5.4

Source: Kombe and others 2005.

Staff turnover in both public and private facilities is also high, reflecting both intrasectoral transfers and departures from the health labor market altogether. In a representative sample of health facilities during a one-year period, more health workers left public health facilities than joined (table 2.11; Picazo 2008). Transfers (public-public) accounted for much of the staff turnover. But this disparity could also be due to staff departure from the Zambian health labor market, migration abroad, death, or retirement.

Table 2.11. Public sector staff turnover (2008)

Staff	Number
Joining a facility	368
Leaving a facility	380
Aggregate loss	12

Source: Picazo 2008.

Anecdotal evidence suggests that one explanation for observed public sector attrition and turnover is outmigration. One study of attrition in three districts found that emigration from Chama District accounted for a 38 percent loss in health workers between 2002 and 2006 (CHESSORE and Wemos 2008). Of the eight health staff who emigrated from Chingola DHMT, all were midwives (seven registered and one enrolled) and all went to the United Kingdom. As a result, Chingola saw the number of registered midwives decline from 15 in early 2002 to 7 at the end of 2005 (in an establishment of 24; CHESSORE and Wemos 2008).

The proportion of Zambian-trained health workers working in countries abroad is well above the average for African countries. One study estimated that the number of doctors trained in Zambia and practicing in the United States and Canada in 2002/2003 equaled 11 percent of those trained and working in Zambia (Hagopian and others 2004). In 2008 *The Lancet* reported that half of practicing Zambian doctors have emigrated to other African countries or to countries such as Australia, the United Kingdom, or the United States (Schatz 2008). Data by Clemens and Pettersson (2006) confirmed this and found that the fraction of Zambian trained doctors working abroad was close to 60 percent, staggering next to an average of 28 percent for Sub-Saharan Africa. Nurses also have left the country by the hundreds. The World Health Report also found that many Zambian nurses and midwives work in OECD countries—as much as five percent of the home workforce (table 2.12; WHO 2006).

Table 2.12. Estimated number of Zambian-born doctors working abroad in a developed country circa 2000

	Sending country		
	Zambia	Africa	Sub-Saharan Africa
Domestic*	670	280,808	96,405
United Kingdom	465	15,258	13,350
United States	130	12,813	8,558
France	0	23,494	4,199
Canada	40	3,715	2,800
Australia	39	2,140	1,596
Portugal	3	3,859	3,847
Spain	0	1,096	173
Belgium	3	1,107	696
South Africa	203	1,459	1,434
Total abroad	883	64,941	36,653
Percent	57	19	28

Source: Clemens and Pettersson 2006.
Note: The figures reflect destination-country census data to estimate the number of African-born doctors and professional nurses working abroad in a developed country circa 2000 and to compare the estimate with the stocks of these workers in each country of origin.

The migration of Zambian physicians to OECD countries has more than doubled in the last two decades. One study (Bhargava and Docquier 2006) found that the number of doctors from Zambia moving to 16 OECD countries increased by about 75 percent from 65 in 1991 to 114 in 2004. The departure of physicians as a share of the total number of physicians in Zambia increased from 9.1 percent in 1991 to 13.7 percent in 2004. This means that Zambia is one of 17 countries in Sub-Saharan Africa that lost more than 10 percent of its physicians to migration to the OECD (Bhargava and Docquier 2006).[7]

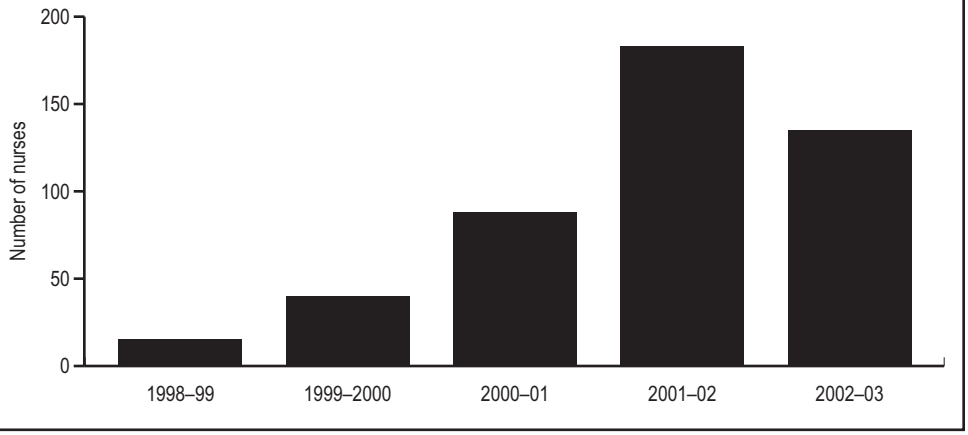
Explanations of the motivation of health workers to migrate abroad center largely on low relative pay to receiving countries. One study argued that doctors' low salaries and "unsatisfactory conditions" combined to drive "550 of 600 doctors who graduated between 1997 to 2000 to emigrate in search of more prosperous opportunities" (Schrecker and Labonte 2004; Vujicic and others 2004). Another study (Fortier 2008) found that low pay leads to migration and to feelings of frustration and discouragement among health workers. Dental surgeons at the Lusaka Dental School note that they are unable to afford a vehicle with monthly salaries of less than US$1,000. Dentists working abroad earn more than five times that amount. Schatz (2008) quoted health workers as saying that many Zambian nurses live in "shanty" compounds and earn approximately US$300 per month, but after only a few months of work at a London nursing home, a nurse can afford to buy a car. Thus, better living and working conditions attract health workers to the West. More evidence is needed to determine the role and relation of other factors including family pressures, inadequate management, poor facilities, lack of postgraduate training opportunities, and work-related health risks such as HIV/AIDS and tuberculosis that undoubtedly play a role alongside low relative salaries.

Demand for Zambian health workers in developed countries is substantial. Wages for African health workers are lower than for domestic health workers in those countries and a large unmet demand exists (Vujicic and others 2004). An aging population in Europe and the West will only increase this demand and recruitment drive. Staff shortages, particularly in nursing, in many developed countries are so significant—and are expected to grow so quickly—that domestic training institutions may be incapable of remedying the situation (Vujicic and others 2004).

To meet demand, some governments until very recently resorted to aggressive recruiting or "poaching" of health workers from Zambia (Fortier 2008). Despite some efforts to persuade countries such as Canada and the United Kingdom to stop active recruitment, Zambian nurses until a few years ago could easily get jobs abroad (Schatz 2008). Figure 2.6 shows recruitment of Zambian nurses to the United Kingdom from 1998 to 2003. Fortier (2008) also reported the director of the Kitwe Central Hospital as stating that applications for medical practice in Canada circulated throughout the hospital.. The director explained that immigration and accreditation requirements in Canada had been relaxed and thus more doctors were applying to work abroad. The more recent literature recognizes that the aggressive recruitment, particularly by the United Kingdom, may be a falling trend (Hamada and others 2009). At the same time the figures up to 2005 that depict this decline in registrations with the United Kingdom General Nursing Council may only reflect part of the picture, many of the losses may be to jobs in care homes for which registration may not be needed.

In addition to outmigration, premature death of health workers is a major cause of attrition and thus diminished stock. A situational analysis that used survey data from the MoH Human Resources Information System to assess the major reasons for health staff attrition found that premature death is one of the main contributors to attrition (Chankova and Sulzbach 2006). In the Choma District Hospital, the premature death of health workers accounted for 40 percent and 67 percent of all attrition between 2002 and 2006, respectively (CHESSORE and Wemos 2008). Estimates of premature deaths of health workers in Zambia are indeed extremely high, even when compared with other

Figure 2.6. Zambian nurses recruited by the United Kingdom (1998–2003)



Source: Kombe and others 2005.

Table 2.13. Estimates of premature mortality in selected countries in the WHO Africa region

	Crude death rate per 1,000 active health workers	
Country	**Physicians**	**Nurses and midwives**
Central African Republic	25	21
Democratic Republic of Congo	23	19
Côte d'Ivoire	25	22
Ethiopia	23	20
Kenya	23	23
Liberia	24	20
Madagascar	21	20
Rwanda	25	19
Sierra Leone	26	22
Tanzania	24	22
Uganda	26	22
Zambia	**28**	**22**
Zimbabwe	28	24
Total	24	21

Source: Kinfu and others 2006.

countries in the region. Of 13 African countries, Zimbabwe and Zambia together have the highest crude death rate of doctors per 1,000 active workers and the third highest crude death rate of nurses and midwives (table 2.13). Because Zambia produces only 50 to 60 doctors per 1,000 people annually, the crude death rate of roughly 28 per 1,000 cripples the country's capacity to expand its health labor market.

HIV/AIDS is the leading cause of premature death among health workers in Zambia and is responsible for high mortality rates throughout the country. An early landmark study on mortality among female nurses at two hospitals between 1980 and 1991 showed that the observed increase in mortality was due largely to HIV infection. The mortality rate of nurses in the hospitals increased from 2 per 1,000 between 1980 and 1985 to 7.4 per 1,000 between 1986 and 1988 to 267 per 1,000 between 1989 and 1991. (Note, however, that this was before ART were made available to the general population.) The World Bank (1997) estimated that a country with a stable HIV prevalence of 20 percent would experience an annual loss of between 2.1 percent and 4.4 percent of the health sector workforce due to death from AIDS.

The loss of health workers from HIV/AIDS varies not only by province and facility but also by cadre, with clinical officers and nurses more affected than doctors. For doctors, mortality is not the most common reason for attrition. But it is for clinical officers and nurses. In the 12-month period ending in October 2003, deaths made up a significant proportion of all "terminations" (20 percent in Lusaka, 33 percent in Kasama, and 26 percent at the University Teaching Hospital). Death rates were 0.4 percent for doctors, 2.8 percent for clinical officers, and 3.5 percent for nurses working at the study sites. On average, clinical officers die with 57 percent of their expected career term remaining, and nurses die halfway through their normal career term. The current output of clinical officers would have to increase by 80 percent to offset observed AIDS mortality, and that of graduating nurses would have to grow by 50 percent (Feeley and others 2004).[8]

Finally, attrition from the health labor market can also be attributed to retirement, which in Zambia comes relatively early. The retirement age for health workers in Zambia, as in most Sub-Saharan African countries, is 55 years. A study of attrition in health facilities in three districts found that retirement in Chingola District accounted for 30 percent of all attrition between 2002 and 2006 (CHESSORE and Wemos 2008). Retiring health workers are often still in good health, highly skilled, and able to perform their duties well with little supervision (Anyangwe and Mtonga 2007).

Table 2.14. Observed deaths and average age at death for cases (2000–03) and compared cases (2003)

		Lusaka District Health Management Team		University Teaching Hospital		Kasama		All sites	
Cadre		Cases	Compared	Cases	Compared	Cases	Compared	Cases	Compared
Doctors	Number	1	5	7	13	3	4	11	22
	Average age	47.8	42.6	38.4	37.7	45.2	47.9	41.1	40.7
Clinical officers	Number	12	30	8	21	2	3	22	54
	Average age	31.9	36.2	40.8	38.2	39.4	39.0	35.8	37.1
Nurses	Number	41	73	15	26	19	41	75	140
	Average age	38.8	39.4	36.6	39.1	36.6	39.1	37.8	39.2
All groups	Number	54	108	30	60	24	48	108	216
	Average age	37.3	38.5	38.1	38.5	38.3	39.9	37.7	38.8

Source: Authors' calculations.

Notes

1. The 2006 HFC (funded by JICA) obtained universal information on the health workforce in Zambia, working in public, not-for-profit private, and some for-profit private facilities. Herbst and Gijsbrechts (2007) cleaned and analyzed the data and provide some early indicators on stock and distribution for the MoH. The information in this report will use the HFC data, unless otherwise indicated.
2. Future revisions of the establishment may want to consider whether facility norms comprise an appropriate measure of need in light of utilization patterns and fiscal constraints. It is not the role of this report to do so here.
3. The relevance of this after 2008 is debatable, given that the country put 257,031 people on ART as of September 2009.
4. Since corruption in the MoH was discovered in May 2009, funding has decreased and the Global Fund is not currently disbursing to the sector.
5. A. C. Bowa, Director of Training, personal communication, May 6, 2008.
6. Key informant interview with the Human Resources Department of the Zambian Ministry of Health. April 10, 2008.
7. These data do not capture the potentially high migration rate to non-OECD countries, such as Botswana and South Africa.
8. That said, it is likely that mortality rates are lower today than in the studies quoted above, which were drafted when antiretroviral therapy (ART) was not available to the extent that it is today. As of September 2009, 257,000 of Zambia's 1.2 million people living with HIV/AIDS were receiving ART (USAID 2010).

CHAPTER 3

Public/Private Sector Distribution

This section presents some of the information available on HRH distribution across the public and private sectors, followed by possible explanations for the picture that emerges. In discussing the private sector, this section reflects only formal private sector (for-profit and not-for-profit) practice and excludes health workers informally self-employed or engaging in dual practice (discussed in later sections).

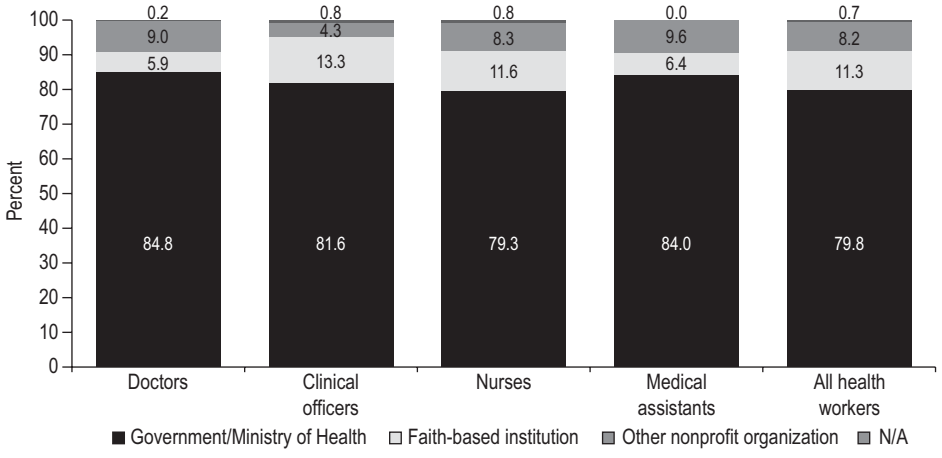
Summary of main findings

- Close to 80 percent of health workers in Zambia (in 2006) were in the public sector.
- The not-for-profit sector employs less than 20 percent of HRH, and the for-profit sector is extremely small, at less than 1 percent.
- Health workers are attracted to higher salaries in the private sector.
- The for-profit sector is underdeveloped largely due to regulations making it difficult to open a private practice.

Distribution by Sector

Nearly 80 percent of health workers counted in the 2006 HFC in Zambia officially work in public health facilities, with relatively few working in the private sector, largely for not-for-profit organizations (figure 3.1). Health workers are fairly evenly distributed

Figure 3.1. Distribution of health workers, by facility ownership



Source: Herbst and Gijsbrechts 2007.

across health facilities owned by both faith-based and other not-for-profit organizations. Note that 46 percent of pharmacy technicians work in the private sector, the largest proportion of any cadre (Herbst and Gijsbrechts 2007). The number of HRH who work in the formal for-profit private sector is reported to be small in Zambia and is partly captured in the "N/A" category. A more detailed and comprehensive survey on the for-profit private sector in Zambia has yet to be carried out.

Explaining Public/Private Sector Distribution

Though small compared with the public sector, the private sector (both for-profit and not-for-profit) has grown in recent years. With economic liberalization and a deteriorating public system, the private sector has grown steadily. For example, while Lusaka had no more than 10 private practices in the early 1980s, there currently are about 200, including some medium-sized hospitals. Since the international commitment to fight HIV/AIDS in Africa, private/public partnerships have also developed, creating lucrative job opportunities for doctors and nurses working with nongovernmental organizations (NGOs) and foreign aid agencies(Ferrinho and others 2008).

Paralleling private sector growth, anecdotal evidence suggests that more health workers are moving from the public to the private sector. The Director of Human Resources and Administration at the MoH says that the private sector is a major source of drainage of health workers out of the public sector, particularly laboratory personnel, pharmacists, and doctors.[1] Over the past two years there has been more "internal migration" to NGOs and the private sector than "external migration" (Unknown 2008: A Problem Statement).

Due to public sector bonding requirements, most health worker graduates entering the private labor market have worked in the public sector for some time. Medical school graduates are initially required to work in the public sector. Graduates of the University of Zambia School of Medicine, for example, are committed to an 18-month internship in one of the country's few large public health facilities. They can choose to work in another sector once their contract is completed, and private sector health facilities are an increasingly common destination. Further, as noted above, the bonding system does not always work in practice, and many people think that some health workers can avoid its requirements.

Health workers entering the private labor market are usually attracted by the generous benefits which are unavailable in the public sector, including better-equipped facilities. While health workers' actual preferences have yet to be evaluated, an article in *The Lancet* (Schatz 2008) reports that many health workers "would rather work for NGOs and other organizations that are offering better pay." As private providers funded by global initiatives offer higher salaries and better working conditions than the public sector, competition for staff will likely increase. New private sector jobs can keep health workers in Zambia, but could also drain the public health system if the government decides to subsidize the education of doctors whose services do not reach the very people the government intends to assist, including the poor.

Despite the growth of the private sector in recent years, jobs are still few and the private sector's capacity to absorb health workers remains limited. There are exceptions,

however, including the mining sector and the Churches Health Association of Zambia (CHAZ),[2] which have existed for decades. But in general, private sector participation in Zambian health service delivery has been modest compared with that of other African countries. Of the 1,563 health facilities currently registered in Zambia, only 92 are run by the nonmission private sector (table 3.1; Ferrinho and others 2008).

Table 3.1. Summary of number of public, private, and mission health facilities

Facility	Government	Private	Mission	Total	Beds	Cots
Level 3 hospitals	5	0	0	5	2,532	417
Level 2 hospitals	13	5	3	21	4,204	827
Level 1 hospitals	39	4	29	72	6,016	859
Rural health centers	930	22	77	1,029	9,224	559
Urban health centers	206	53	6	265	1,814	300
Health posts	161	8	2	171	198	11
Total	1,354	92	117	1,563	23,988	2,973

Source: ZMoH 2008b.

One potential reason for the lack of growth in the for-profit private sector is national legislation, hampering private sector practice. National, general nursing, and pharmacy guidelines all make it difficult for individuals to establish private sector practices (box 3.1).

Box 3.1. Legislation hampering private sector practice

National guidelines: The scope of practice for public sector nurses, midwives, and clinical officers has been liberalized and improved, reflecting their central role in public health facilities. While these health cadres operate independently in public clinics, the more stringent requirements for private facilities discourage them from opening their own practices. Unlike in the public sector, all private clinics and consulting rooms require a license from the Medical Council of Zambia and must be directly supervised by a registered physician. Nurses, midwives, medical licentiates, and clinical officers may not own or run a clinic unless a physician supervises it, and the scarcity of physicians and cost of hiring physician-supervisors make it difficult for these health professionals to own and operate private primary health care clinics.

General nursing guidelines: Although the General Nursing Council of Zambia issued guidelines for nursing homes and agencies, they do not specify whether a nurse or midwife can operate an independent primary care clinic. Likely because the guidelines are silent about this issue, there are no nurse-operated clinics licensed under these regulations.

Pharmacy guidelines: In public health facilities, nurses, medical licentiates, and clinical officers are authorized to prescribe essential drugs to be dispensed at the treatment facility or private pharmacies. However, pharmacy regulations appear to bar pharmacists from filling prescriptions written by the same cadres in the private sector, creating an additional barrier to private practice.

Source: USAID 2007.

Notes

1. Ms. Musonda, Director HRH Administration, MoH, personal communication, May 8, 2008.
2. CHAZ is an umbrella Christian NGO that represents 135 member institutions (hospitals at various levels, rural health centers, and community-based initiatives). CHAZ complements government efforts in health care delivery. The MoH provides trained HRH, pays salaries, and funds operations. CHAZ also provides infrastructure and expatriate HRH and manages operations through member institutions in accordance with government standards (Mr. Stenford Zulu, Director HRH, CHAZ, personal communication May 7, 2008). CHAZ provides 30 percent of services nationally and 50 percent in rural areas (Churches Health Association of Zambia 2005).

CHAPTER 4

Geographical Distribution

Health workers in Zambia are distributed across geographical divisions such as provinces, districts, and rural/urban areas. This section presents some existing evidence on the distribution of HRH, discusses needs-based and equity concerns, and offers possible explanations for the picture on distribution.

Summary of main findings

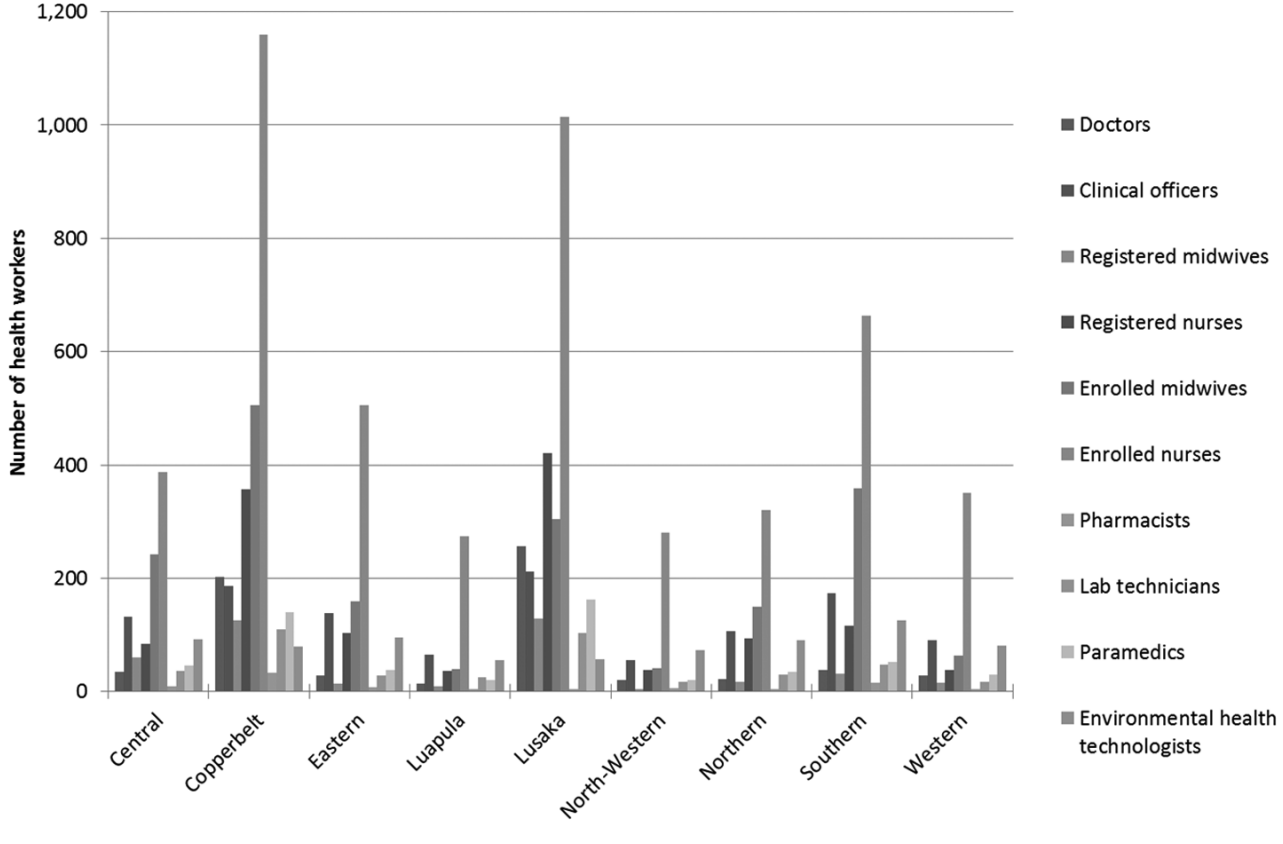
- Health workers, particularly doctors, are unevenly distributed across Zambia's districts.
- Higher cadres, particularly doctors, are concentrated in urban districts, something that cannot always be said about lower cadres.
- There is a strong pro-rich gradient in the geographic distribution of human resources.
- The disproportionate urban concentration of higher cadres can be explained by low inflows into the rural labor market, because of unfavorable monetary but particularly nonmonetary compensation.
- Facility managers in rural areas may not possess the negotiating skills to attract centralized funding to fill vacancies.
- High rates of exit from the rural labor market are also to blame for the maldistribution of HRH, largely because of dissatisfaction primarily of higher cadres with nonmonetary factors (living and working conditions).

Provincial and District Distribution (by Number)

Health workers are unevenly distributed across provinces. Some provinces have nearly five times more health workers than others (Ferrinho and others 2008). Lusaka and Copperbelt provinces have by far the most health workers and Luapula and North-Western provinces have the fewest (figure 4.1).

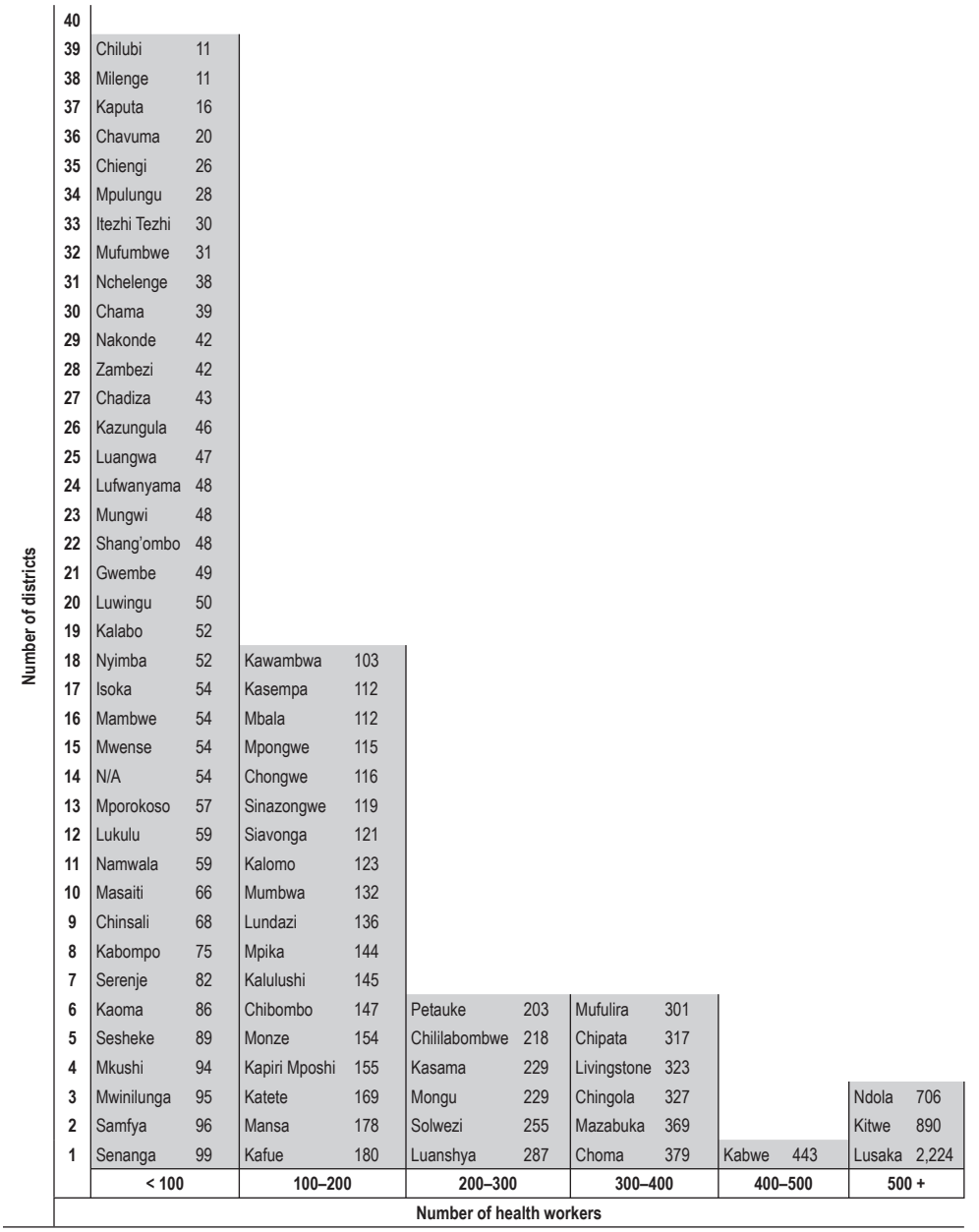
Uneven health worker distribution is even more pronounced across districts than across provinces. Analysis of data from the 2006 Health Facility Census (HFC) reveals distribution to range from 11 health workers in Chilubi to 2,224 in Lusaka (figure 4.2). More than half the districts have fewer than 100 health workers, with districts such as Milenge, Chilubi, Kaputa, and Chavuma having no more than 20. Only 10 districts have more than 300 health workers, and roughly 35 percent are found in only 4 of the 61 districts (Kabwe, Ndola, Kitwe, and Lusaka), which collectively have almost 4,300 health workers (Herbst and Gijsbrechts 2007).

Figure 4.1. Distribution of human resources (public sector only) for health in 2005, by province (individuals employed at health facilities)



Source: Ferrinho and others 2008.

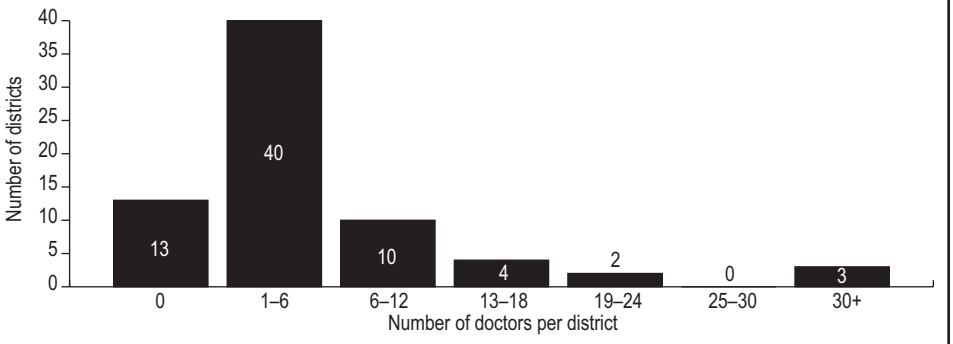
Figure 4.2. Distribution of all health workers, by district (public and private)



Source: Herbst and Gijsbrechts 2007.

The distribution of doctors across districts is particularly uneven. According to the HFC, 13 of 72 districts do not even have one doctor and an additional 40 districts have fewer than 6 (figure 4.3). Lusaka is home to nearly half of all doctors in the country (428 of 908). Besides Lusaka, only two other districts have more than 30 doctors: Ndola with 97 and Kitwe with 85 (Herbst and Gijsbrechts 2007).

Figure 4.3. Distribution of doctors, by district (public and private)

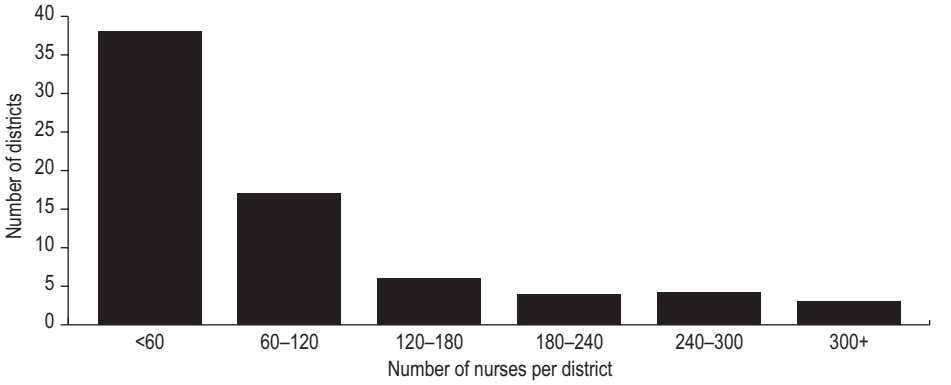


Source: Herbst and Gijsbrechts 2007.

The distribution of enrolled and registered nurses across districts is just as uneven, with two districts having fewer than 10 nurses and midwives and three having more than 300 (figure 4.4; HFC 2006). Milenge and Chilubi have only six and eight nurses/midwives, respectively. At the other end are Ndola, Kitwe, and Lusaka, having 462, 625, and 1,383 nurses/midwives, respectively. Though not as extreme as the distribution of doctors, Lusaka alone has more than 17 percent of all registered nurses in Zambia. The majority of districts, 38 out of 72, have fewer than 60 nurses (Herbst and Gijsbrechts 2007).

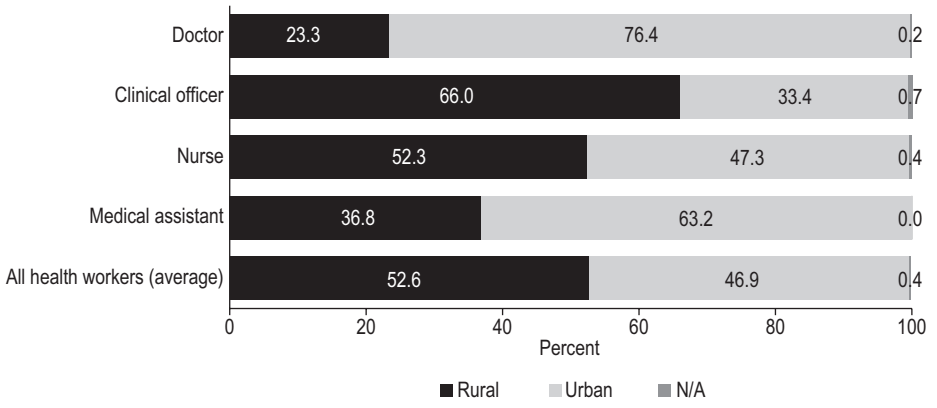
Although the majority of all health workers in Zambia work in rural areas, doctors are predominantly found in urban areas. As 2006 HFC data shows, for all health-specific cadres in Zambia, 52.6 percent of health workers work in districts considered to be rural, while 76.4 percent of doctors work in districts considered to be urban (figure 4.5; Herbst and Gijsbrechts 2007).

Figure 4.4. Distribution of nurses (enrolled and registered), by district (public and private)



Source: Herbst and Gijsbrechts 2007.

Figure 4.5. Distribution of health workers, by urban/rural divisions (public and private)



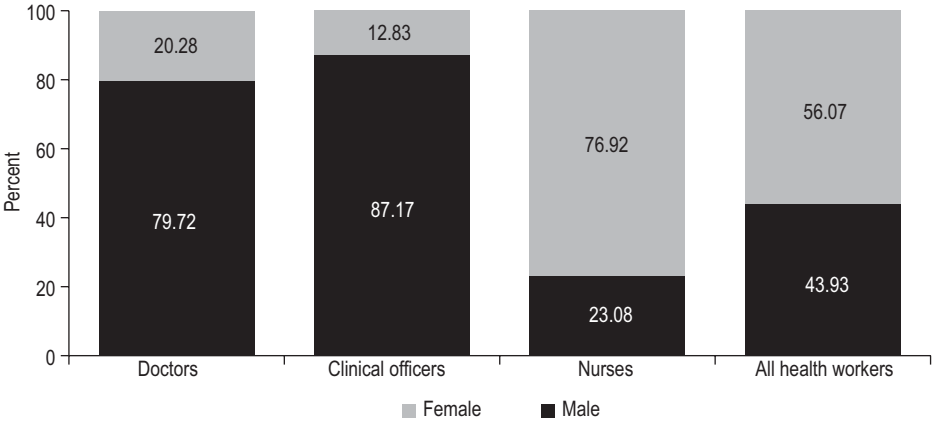
Source: Herbst and Gijsbrechts 2007.

A significantly larger proportion of all health workers in urban districts are female than in rural districts. Indeed, although females account for the majority of all health workers in both rural and urban districts, they are significantly more represented in urban districts. Figures 4.6 and 4.7 show that this also applies to specific cadres: in rural districts, a smaller proportion of doctors, clinical officers, and nurses are female.

Needs-based Perspective

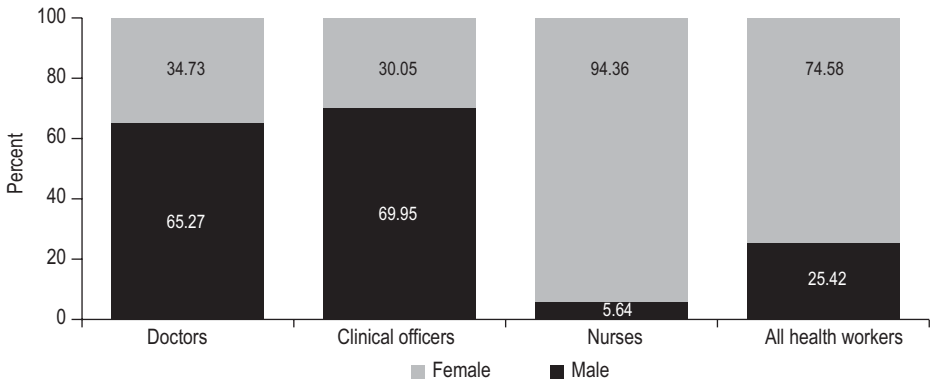
Compared with the current establishment (nonfunded), rural districts also have higher vacancy rates (filled positions of the establishment) than urban districts. Only around

Figure 4.6. Gender distribution in rural districts (public and private)



Source: Herbst and Gijsbrechts 2007.

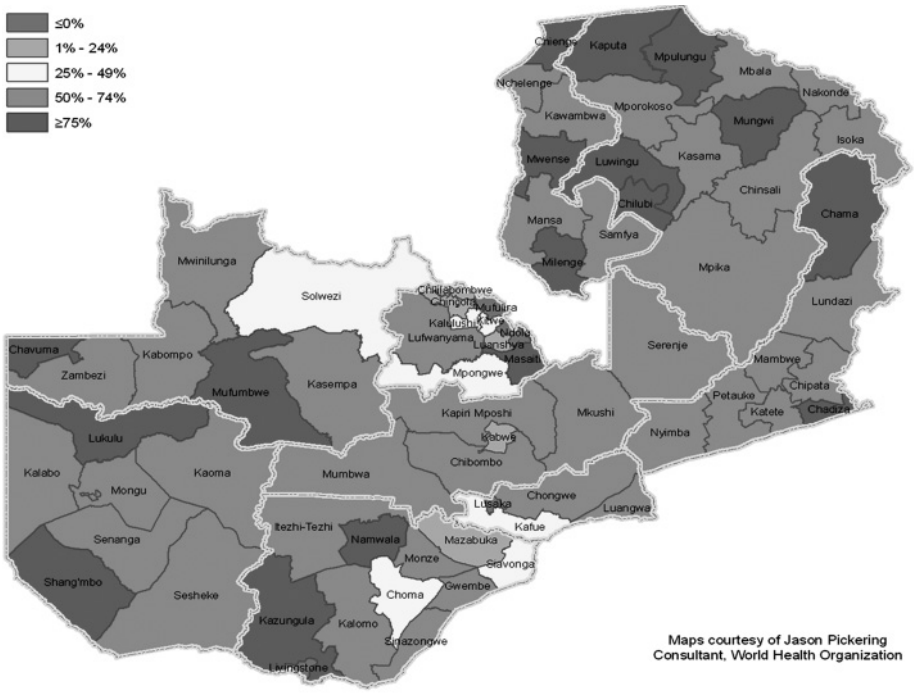
Figure 4.7. Gender distribution in urban districts (public and private)



Source: Herbst and Gijsbrechts 2007.

seven districts have less than 24 percent vacancy rates. Figure 4.8 shows by district the rate of posts filled in relation to the establishment (which is not necessarily funded). In some peripheral districts up to 75 percent of positions are vacant; urban areas along railway lines are more privileged and better staffed.

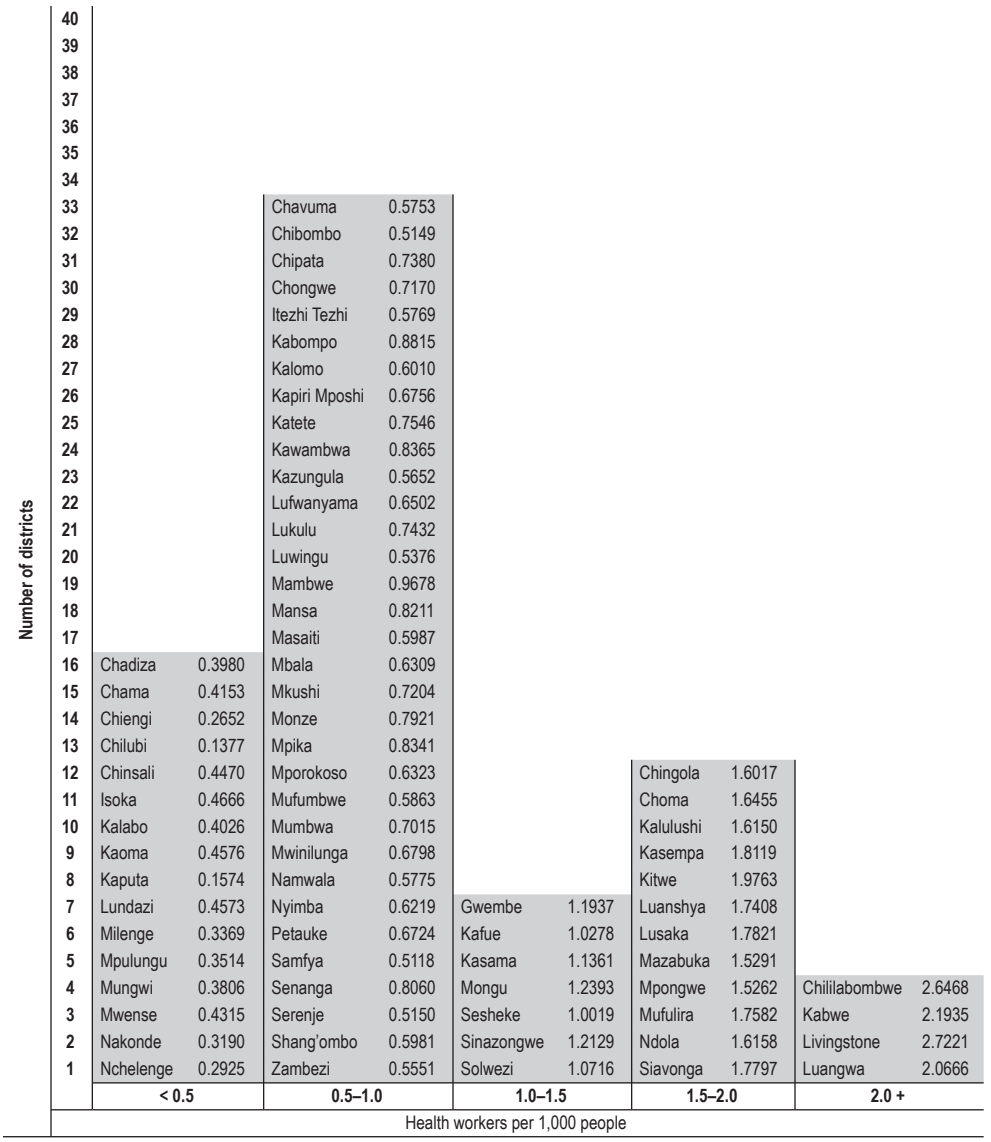
Figure 4.8. Districts by current to optimal vacancy rate for all health care workers



Source: WHO 200X.
Note: These data come from a different data source than the 2006 HFC data, and comparisons should thus be made with caution.

When using the WHO/JLI benchmark, only two districts meet the WHO/JLI HRH to population benchmark to meet the Millennium Development Goals (MDGs). The WHO suggests a minimum of 2.28 health workers—including doctors, nurses, and midwives—per 1,000 people is needed to address maternal and child health-related MDGs (WHO 2006). The 2006 HFC data indicate that sixteen districts have fewer than 0.5 health workers per 1,000 people, and only four districts (Luangwa, Kabwe, Chililabombwe, and Livingstone) have more than 2 (figure 4.9) Of these four districts, only Chililabombwe and Livingstone have a ratio above 2.5. Note that this WHO figure is based on the more selective health worker group cited above (Herbst and Gijsbrechts 2007).

Figure 4.9. Distribution of health workers per 1,000 people, by district (public and private)



Source: Herbst and Gijsbrechts 2007.

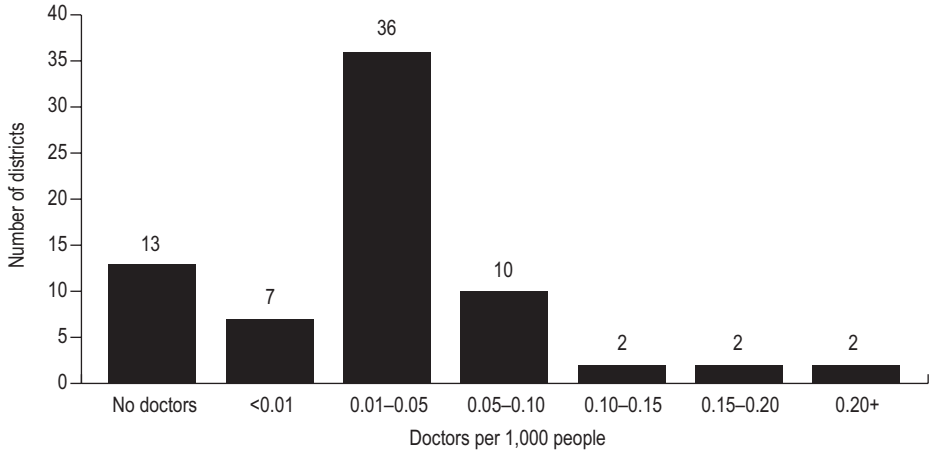
No districts in Zambia meet the minimum benchmark of doctors to population to reach 80 percent coverage of live births. Dissecting the WHO benchmark (2.28 health workers per 1,000 people) into its components of DD and NMD, Scheffler and others (2009) found that to achieve the required DD to reach 80 percent coverage of live births by a skilled attendant, the benchmark would be 0.55 doctors per 1,000 people (ranging from 0.41 to 0.61 based on a 95 percent confidence interval). The number of doctors per 1,000 people is inconsistent across districts, from less than 0.01 in 20 districts to 0.34 in Lusaka. According to 2006 HFC data, only six districts have 0.10 or more doctors per 1,000 people and only two have more than 0.20 (figure 4.10): Ndola with 0.22 and Lusaka with 0.34, still far from the WHO benchmark.

The distribution is slightly better for nurse midwives, yet rural districts face severe deficiencies. The picture on nurses and midwives is different, as almost a third of districts are close to meeting the benchmark of nurses/midwives per 1,000 people. Again, Scheffler and others (2009) found that to reach 80 percent coverage of live births by a skilled attendant, the benchmark would be 1.73. This benchmark includes nurses, midwives, and auxiliary midwives only. In Zambia, only 2 districts have a ratio of more than 1.5 nurses/midwives per 1,000 people, with the majority of districts home to less than 0.5 nurses/midwives per 1,000 people (figure 4.11; Herbst and Gijsbrechts 2007). It is those districts considered to be more urban than rural that reflect the highest densities.

Equity Concerns

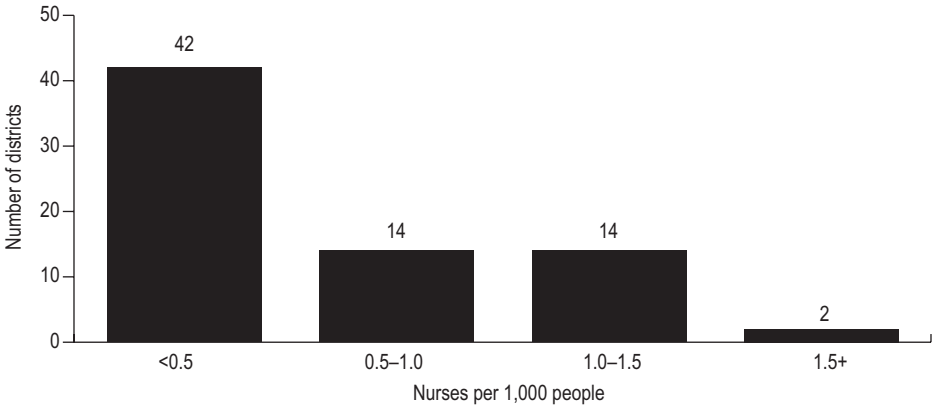
There is a strong pro-rich gradient in the geographic distribution of human resources. Figure 4.12 presents results from an analysis of data on the number of health workers per 1,000 people and the poverty headcount ratio[1] at the district level.[2] The lines represent relationships estimated from linear regressions in which the numbers of health workers, by cadre, were regressed on the poverty headcount ratio at the district level.[3] Because the percentage of people living in poverty decreases along the x-axis, the posi-

Figure 4.10. Distribution of doctors per 1,000 people, by district (public and private)



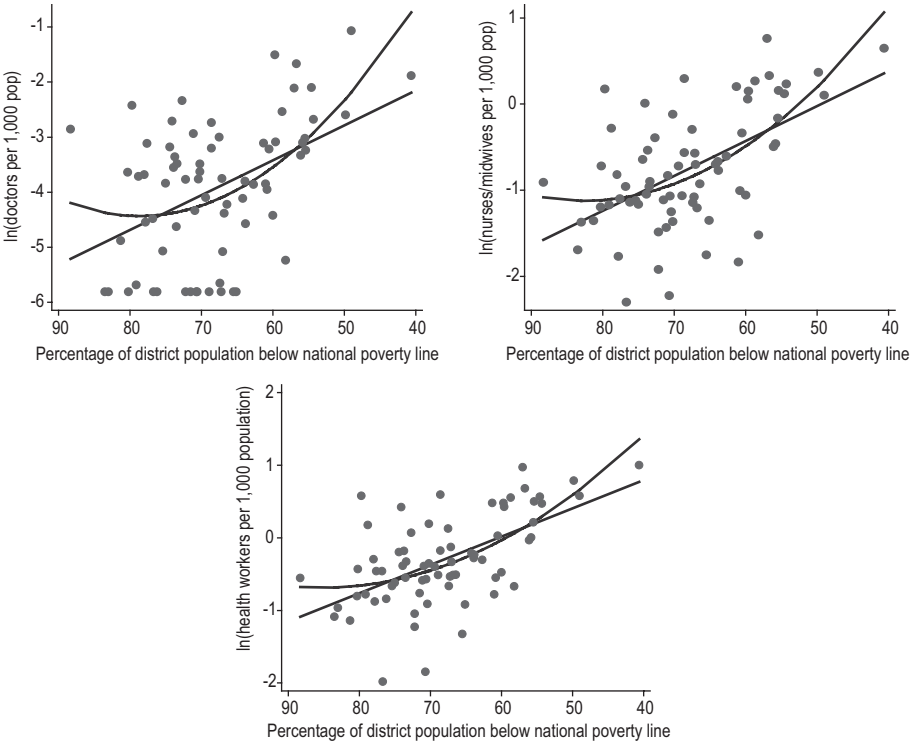
Source: Herbst and Gijsbrechts 2007.

Figure 4.11. Distribution of nurses/midwives per 1,000 people, by district (public and private)



Source: Herbst and Gijsbrechts 2007.

Figure 4.12. Socioeconomic distribution of health workers



Source: Authors' calculations.
Note: Each dot represents a district. The x-axis shows the percentage of the district population living below the poverty line. It goes from high (the poorest district) on the left to low (the wealthiest district) on the right.

tive slopes of the linear regression lines indicate pro-rich gradients similar across health worker cadres. Specifically, estimates from the linear regression without quadratic term (the straight lines) suggest that each percentage reduction in the number of people living in poverty in a given district is associated with a 6.3 percent, 4.2 percent, and 3.9 percent increase in doctors, nurses/midwives, and all health workers combined, respectively.[4] The gradient of estimated coefficients suggests that the degree of socioeconomic inequality in the geographical distribution of human resources increases with the level of health worker training.[5]

Explaining the Uneven Geographical Distribution

This analysis shows that the general inequitable rural/urban distribution of health workers in Zambia may be explained by (1) low entry of graduates, or transfer of health workers, into rural areas and (2) high exit from rural health facilities. Both possibilities are examined below. The potential role of pre-service education for distribution of health workers (whether rural backgrounds for example are favored in the student selection process) is not discussed here due to lack of evidence.

Low rural labor market entry

Fewer health workers in Zambia enter rural employment posts than urban posts. Entry can refer to both graduates taking up a new posting and experienced health workers transferring and entering into a new post. A national representative facility-level survey by Picazo (2008) found that in 2006, rural health centers recorded far fewer workers joining than did urban health centers and hospitals (table 4.1).

Table 4.1. Staff joining health facilities versus total staff (2006)

Staff	Rural health centers	Urban health centers	Hospitals	All
Total	688	1,756	1,442	3,886
Joining facility	69	166	133	368

Source: Picazo 2008.

On the supply side, low rural labor market entry is explained largely by the fact that rural employment posts are deemed less desirable to a large segment of the health workforce. Anecdotal evidence suggests that some health workers (particularly doctors) avoid the rural labor market due to unfavorable monetary and nonmonetary compensation. Anecdotal report by Ferrinho and others (2008) listed the following potential factors that made rural positions unattractive:

- Highly qualified staff feel intellectually and socially isolated in rural communities.
- Low standards of accommodation.
- Poor infrastructure, including electricity and telephones.
- Limited transportation.
- No professional support or staff development.
- Inadequate educational facilities for children. The professional skills required of them may not match their training.

The 2003 Rural Health Worker Retention Scheme may have increased the desirability to work in rural areas. The Dutch government initially financed the scheme by redirecting into the plan funds previously used to pay expatriate Dutch doctors to work in Zambia. Today the scheme is fully funded by the MoH. The scheme improves the overall pay package and conditions of health workers in designated rural districts (Anyangwe and Mtonga 2007). Doctors for example get monthly allowances, a one-time housing payment, a car loan (after six months), and other work-related incentives in exchange for three years of service at a rural facility. While rural conditions of service generally remain less desirable than those in urban areas, the willingness of health workers to work in rural areas seems to have increased in recent years due to this program. To date, there has been no formal evaluation of the program, but a study evaluating its effectiveness is in planning.[6]

The disproportionate entry of health workers into urban areas may also be a result of different negotiating powers of facilities to guarantee and fill funded posts (which is linked to the highly centralized decision making on recruitment and deployment). According to rural facility managers, despite a brief period of decentralized hiring at the district level, district-designated hospitals and district health management teams (DHMTs) today depend completely on the central MoH to identify rural staffing needs and to recruit and deploy health workers. From the perspective of a district-designated hospital or DHMT, the MoH criteria to deploy newly graduated staff are not transparent: recruitment and deployment seem to depend mainly on the particular district-designated hospital's skill in pressuring the MoH to obtain new postings. This negotiating power differs across districts and contributes to the disparity between health workers and vacancies. For example, a study of health facilities in three districts found that Chingola recruited staff more successfully in 2005 and 2006 compared with a few years earlier—after a more active human resources manager asked the MoH for help (CHESSORE and Wemos 2008). On the whole then, centralized decision making related to recruitment and deployment once again is a critical issue fostering disparities across districts.

Closely related, the inability of rural districts to use locally generated resources such as user fees to hire health workers could also explain the disproportionately low entry of health personnel into the rural market. In urban facilities, user fees have risen and a more effective fee collection mechanism has been put in place, resulting in more contracted daily employees. A study by CHESSORE and Wemos (2008) finds that the rural districts of Choma and Chingola have been adversely affected by the order to stop charging user fees in rural health facilities, resulting in a significant drop in district revenues and making it difficult for them to meet statutory obligations (figure 4.13). While user fees have been abolished in rural health facilities, several urban facilities continue to charge them. Hence, the abolition of user fees is expected to further diminish the income of the DHMTs and hence their capacity to support health service delivery in rural areas (CHESSORE and Wemos 2008).

Rural labor market exit

Although supporting data are limited, significantly high exit rates of workers from the rural health labor market (sometimes into urban labor markets) may also explain the largely urban distribution. An analysis by Huddart and others (2004) found significant differences in urban and rural attrition rates, with net staff losses in rural areas (Eastern,

Luapula, Northern, and Western provinces) and net staff gains in urban areas (Copperbelt and Lusaka provinces; Huddart and others 2004).

Similarly, Picazo found that the proportion of health workers leaving health centers during a year is larger than the proportion joining health centers, and that this is particularly extreme in rural health centers. Indeed, the study found that in rural health centers, out of 688 staff in 2006, 69 were "incoming" (10.0 percent) while 148 were "outgoing" (table 4.2; 21.5 percent). It would seem that the stock of rural health center workers is not being replenished quickly enough. In urban health centers, out of 1,756 staff, 166 were "incoming" (9.4 percent) while 172 were "outgoing" (9.8 percent). While HRH exit could reflect attrition through emigration, death, or retirement, it could also be due to a transfer from a rural to an urban facility. Indeed, as pointed out earlier, the 2008 Public Expenditure Tracking Survey (PETS) found that health workers left health facilities primarily to transfer to another one and that such requests are more common in rural areas than in urban areas.

Table 4.2. Departing and incoming staff in rural and urban health centers in 2006

	Rural health center	Urban health center
Total staff	688	1,756
Number of staff who joined the facility	69	166
Number of staff who left the facility	148	172

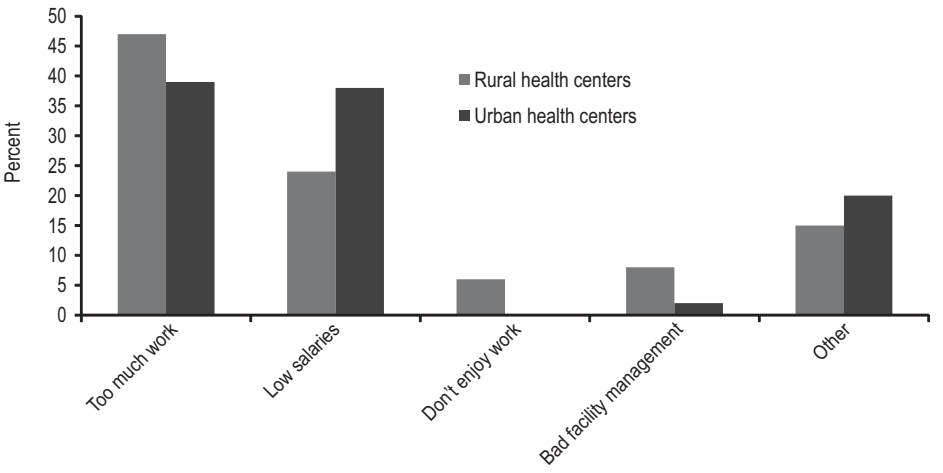
Source: Picazo 2008.

High levels of dissatisfaction with both monetary and nonmonetary factors of some workers in rural facilities may be a key reason for rural labor market exit. Workers in the largely rural Chingola and Chama districts mention several factors that affect their job satisfaction, such as working environment (poor ventilation in service rooms), lack of equipment, (such as laboratory instruments), lack of accommodation, long commutes, isolation, bad roads and transportation, and poor hospital management (CHESSORE and Wemos 2008). Picazo (2008) found that too much work, bad facility management and a lack of fulfillment (do not enjoy work) were reasons more prominently voiced by health workers in rural health centers than in urban health centers (figure 4.13). Interestingly, fewer health workers in rural facilities listed low salaries as a factor for dissatisfaction than in urban facilities.

Higher-level cadres tend to be less satisfied with rural jobs than lower-level workers. Picazo (2008) found that job dissatisfaction among health workers in rural health facilities may not be as general as some expect. Further, CHESSORE and Wemos (2008) found that some health staff, particularly in Chama and Choma districts, prefer working in rural areas because doing so allows them to make extra money in agriculture and livestock.

Exit from the rural labor market can sometimes be explained by recruitment processes that create false expectations (linked to highly inefficient centralized recruitment and deployment). Internal job advertisements typically do not specify where the job is or what type of facility it is in, often misleading applicants and resulting in dissatisfaction and exit shortly after posting. A recent study noted that once the MoH receives the Treasury's authority to recruit for the coming year, it advertises for cadres to create a pool of health workers to fill the funded positions. But because these positions are not matched

Figure 4.13. Dissatisfaction rates among health center staff, by reason



Source: Picazo 2008.

to specific vacancies—that is, because deployment occurs after recruitment—candidates do not know where they will be deployed when they apply and must be willing to work anywhere in the country. Reports suggest that health workers posted to remote areas have sometimes stayed for only six months (Vujicic and others 2008).

Notes

1. The poverty headcount ratio is the proportion of the population living below the national poverty line. The national poverty line is 90,248.36 kwacha per month, expressed in real terms; that is, after adjusting for spatial variation in the cost of basic needs.
2. The inventory of human resources was done in 2006 and the poverty estimates date to 2002–03. The population figures are from 2006 but correspond to projections based on the 2000 Census of Population and Housing. This analysis could be repeated with newer figures as they become available.
3. Logarithmic transformation was used to normalize the distribution of the dependent variable and to reduce the influence of outlier values. Though a square root transformation was considered because some districts had no doctors, a better normalization was achieved though logarithmic transformation and the replacement of zeros by a minimal value. Figure 4.12 displays regression lines corresponding to both a linear (straight line) and a quadratic (curved line) regression, which includes the squared poverty headcount ratio as an explanatory variable. For the linear regressions, the R-squared values were 0.21, 0.30, and 0.34 for the plot relating to doctors, nurses, and all health workers combined, respectively.
4. Note that all estimated slope coefficients are highly statistically significant ($p<0.001$).
5. The analysis was repeated with and without one significant outlier, the Luangwa district in the province of Lusaka. While Luangwa has the highest poverty ratio at 0.916 (95 percent confidence interval: 0.896–0.937), it ranks high in the categories of health workers per population (out of the 72 districts, it ranks ninth in doctors per 1,000 people, fifth in nurses/midwives per 1,000, and fourth in all health workers per 1,000). The results of the analysis without the Luangwa district did not differ substantially from those that included it.
6. As of March 2010 there were 860 members in the scheme: 6 medical specialists, 139 medical officers, 44 medical licentiates, 40 clinical officers, 203 tutors/lecturers, and 309 enrolled nurses and enrolled midwives (Campbell 2010).

CHAPTER 5

HRH Performance

Health worker performance can be measured by indicators related to availability, competence, productivity, and responsiveness. Evidence and information on each of these areas is sparse (except for evidence on availability/absenteeism) and future research is required to better understand correlates and determinants of health worker performance in Zambia. This section presents the available evidence related to some aspects of health worker performance, followed by an explanation of the picture that emerges. The section reveals that more evidence exists on explanatory factors for performance deficiencies than actual indictors illustrating deficiencies. (The actual evidence on performance deficiencies discussed below, particularly related to competence, responsiveness, and productivity, is more limited than the evidence on factors that may potentially negatively affect these indicators.)

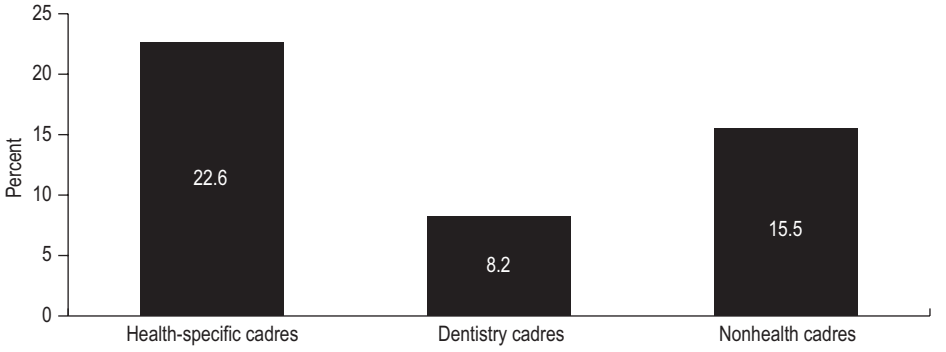
Summary of main findings

- The limited evidence on HRH performance outcomes reveals concerns about the availability, competence, and productivity of HRH.
- Weaknesses in pre-service and in-service training (due to a lack of training capacity) are major contributing factors and explain issues with competence.
- Inadequate management and accountability structures, including ineffective performance appraisal and promotion not based on merit (due to centralized decision making), may explain absenteeism.
- Adverse working conditions marked by high workloads (in part due to HIV/AIDS) may explain low productivity, responsiveness, and competence.
- Coping mechanisms such as dual practice may also explain low competence and high absenteeism.
- HIV/AIDS prevalence is another factor that explains high absenteeism and inadequate competence and productivity (in part because there is no workplace policy or adequate protection for staff).
- Lack of motivation and satisfaction among health workers (particularly with nonmonetary factors) may explain low productivity and responsiveness and other performance problems.

Health Worker Performance

Absenteeism among health workers in Zambia appears to be higher for health-specific, clinical cadres than for nonhealth, nonclinical cadres. Picazo (2008) found that on average 9.6 percent of staff members were not present in their respective health facilities during the time the survey team visited (this figure combines authorized and unauthorized absence). Clinical staff had the highest rates of absenteeism whereas administrative and other staff members exhibited far lower rates of absenteeism (Picazo 2008).[1] Whereas

Figure 5.1. Absenteeism among health-specific, dentistry, and nonhealth cadres

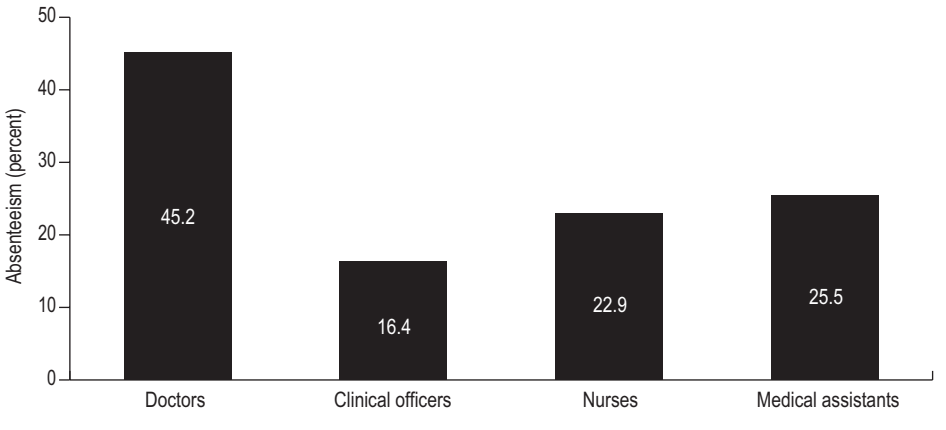


Source: Herbst and Gijsbrechts 2007.
Note: Absenteeism was calculated by collecting facility level data of all health workers meant to be "on duty" at time of facility visit, and comparing this with an actual headcount of health workers present.

this may be considered a fairly low rate (in Uganda for example absenteeism rates at the facility level were measured to be close to 50 percent), analysis of the HFC data (Herbst and Gijsbrechts 2008) reveals that on average 22.6 percent of the health-specific workers on the duty list were not counted at the time of the census (unauthorized absence). The number for the dentistry cadres was 8.2 percent and 15.5 percent of the non-health-related cadres were absent as well (figure 5.1).

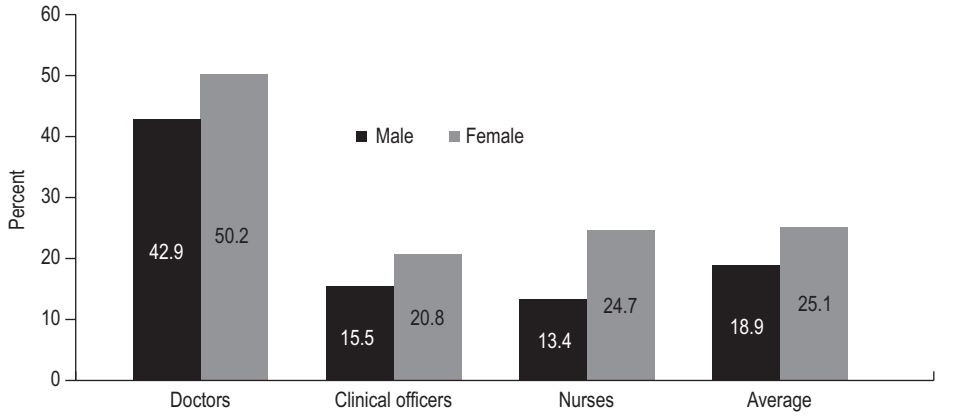
The 2006 HFC data analysis also indicates that higher-level cadres, such as doctors, tend to be absent more frequently than lower-level health-specific cadres. Figure 5.2 shows the percentage of health workers on the duty list but not counted in the HFC data. Notably, doctors exhibited the highest level, with around 45 percent on the duty list but not counted (Herbst and Gijsbrechts 2007). Again, this finding was largely confirmed by

Figure 5.2. Absenteeism, by cadre



Source: Herbst and Gijsbrechts 2007.

Figure 5.3. Absenteeism, by cadre and gender



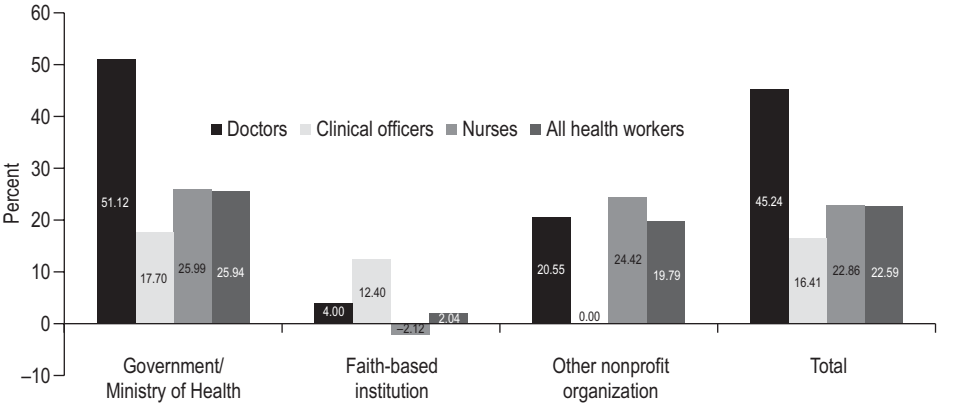
Source: Herbst and Gijsbrechts 2007.

the PETS (Picazo 2008), which found that 31.0 percent of the doctors were not on site the day of the survey, as were 20.1 percent of clinical officers and medical licentiates, 13.8 percent of midwives and nurses, and 14.1 percent of other clinical staff. This pattern is typical and has been found in many other countries in Sub-Saharan Africa.

Interestingly, females are more absent than males. The 2006 HFC data also shows higher absenteeism among female health workers than among males (figure 5.3). For nurses, the difference is particularly acute: absenteeism among female nurses is almost double that of male nurses (Herbst and Gijsbrechts 2007). It would be reasonable to speculate that this may reflect the additional caring roles that female nurses have.

Absenteeism is highest in health facilities owned by the government (figure 5.4). The highest average absenteeism among health workers, 25.6 percent, was found in facilities owned by the MoH, followed by those owned by NGOs (19.8 percent), and finally by

Figure 5.4. Absenteeism, by facility owner

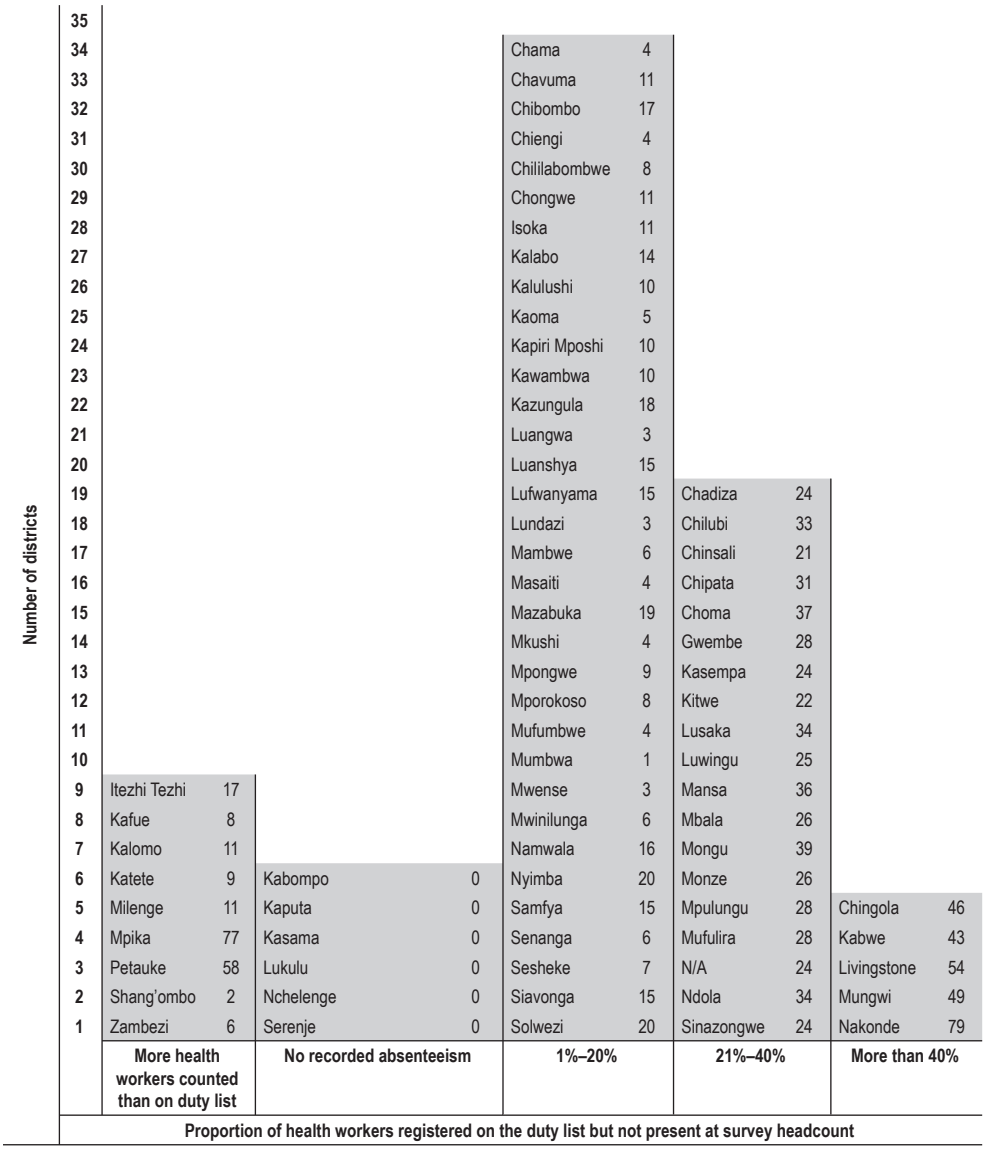


Source: Herbst and Gijsbrechts 2007.
Note: A "-" indicates that more health workers were counted than were on the duty list.

faith-based organizations (2 percent). Absenteeism in MoH facilities is most pronounced among doctors, at 51.2 percent (compared with 20.5 percent in NGO facilities; Herbst and Gijsbrechts 2007).

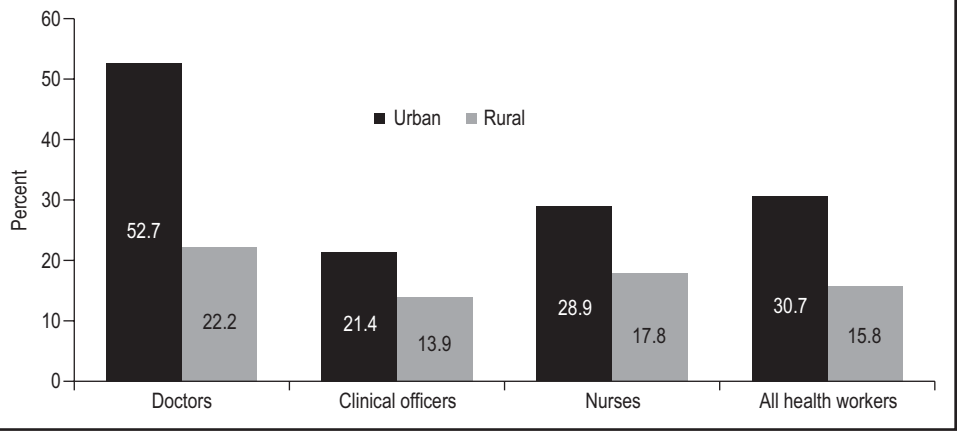
Absenteeism varies greatly across districts and is higher in urban areas. The 2006 HFC analysis also shows that while few districts had no record of absenteeism, five had an absentee rate of more than 40 percent (figure 5.5). Urban facilities have a higher rate of absenteeism than facilities in rural areas: 30.7 percent versus 15.8 percent, respectively (figure 5.6). This was also found by the PETS (Picazo 2008), which revealed that 7.5 per-

Figure 5.5. Absenteeism, by district



Source: Herbst and Gijsbrechts 2007.
Note: Values in red indicate that more health workers were counted than were on the duty list.

Figure 5.6. Absenteeism, by urban/rural division and cadre



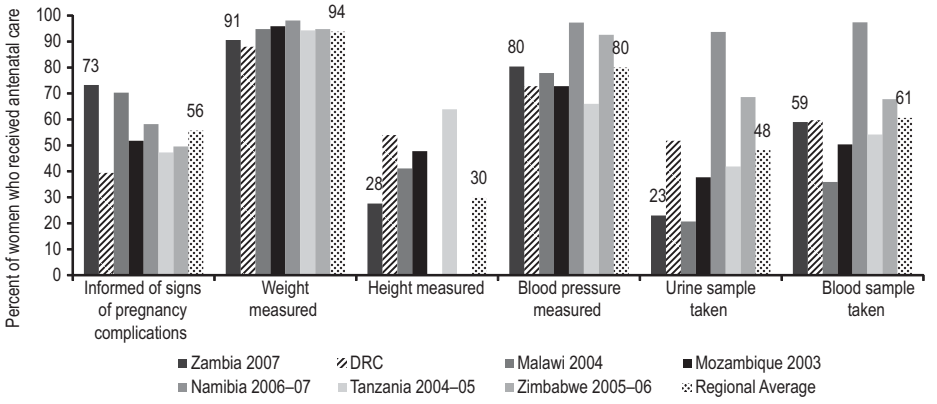
Source: Herbst and Gijsbrechts 2007.

cent of staff members in rural health centers, 12.8 percent of staff members in urban health centers, and 6.7 percent of staff in urban hospitals were not present in the health facility when surveyed. The 2006 HFC data shows that absenteeism for doctors in urban areas was particularly high (52.7 percent), more than doubling that in rural areas (22.2 percent).

Health worker competence is often found to be below standards. One group of managers at a rural mission hospital stated: "[w]e know that we are far from the quality level, and especially concerning very important topics like maternal and child health we are far behind. We are also concerned with nutrition and delivery of service, we have to improve" (Ferrinho and others 2008). For example, a quality assurance project investigating the effect of job aids on health worker compliance with Integrated Management of Childhood Illness guidelines found significant inadequacies in meeting international standards. The study found that the pooled performance in assessing conditions across eight categories—danger signs, coughing or breathing difficulty, diarrhea, fever, ear problems, malnutrition or anemia, immunization or Vitamin A status, and feeding—was only 64 percent (without a job aid). The study also found that correct antibiotic and antimalarial medicine were prescribed only about 68 percent of the time (with or without a job aid) and in some cases, percentages fell to 11 percent when prescribing medicine for coughing or breathing difficulty (Edward-Raj and Phiri 2002).

The recent Country Assessment of Zambia (2010) confirmed some problems with competence and found that the country lags behind its neighbors in quality of antenatal care. One key factor for maternal and child health, aside from health worker availability, is the quality of health worker visits. Pregnancy complications are the leading cause of maternal and child morbidity and mortality, and as such it is important that during their antenatal care visits woman are informed of the danger signs that could indicate problems and are monitored for complications. Even though most pregnant woman had at least one antenatal care visit, the quality of care as measured by the various components of antenatal care is lacking in some important areas. For example, only 23 percent of women had a urine sample taken. On the whole, Zambia lags behind the average of its neighbors in the provision of four of six main components of antenatal care (figure 5.7).

Figure 5.7. Quality of antenatal care



Source: DHS 2007; World Bank 2010.

Low HRH productivity may also be an issue in Zambia. A study of a sample of Zambian hospitals found that they operate at 67 percent technical efficiency. It found further that inefficiencies were no more pronounced in government hospitals than in those owned by private NGO and faith-based organizations, suggesting widespread inefficiencies in both the public and private sectors (Masiye 2007). Furthermore, according to the PETS, MoH staff members' self-reported late arrivals in the month preceding the survey was 37 percent among rural health center staff, 47 percent among urban health center staff, and 47 percent among hospital staff, yielding 43 percent overall. The average number of days late the previous month was three for rural health center staff, four for urban health center staff, and three for hospital staff, yielding four days late overall (Picazo 2008).

Explaining Performance Outcomes

Many performance problems can be explained by capacity weaknesses and health worker coping mechanisms in complex and adverse environments (Ferrinho, Omar, Fernandes, Blaise, Bugalho, and Lerberghe 2004; Ferrinho and Van Lerberghe 2002; Serneels 2005). Performance problems can be linked to:

- Weaknesses in pre-service and in-service training (explaining issues with competence).
- Inadequate management and accountability structures including an effective performance appraisal and merit based promotion (explaining absenteeism).
- Unfavorable working environments such as high workload (explaining problems of productivity, responsiveness, and competence).
- Coping mechanisms such as dual practice, coping with lack of skills sets (explaining competence and absenteeism problems).
- HIV/AIDS (also explaining high rates of absenteeism and inadequate competence and productivity).
- Lack of motivation and satisfaction (explaining productivity, responsiveness, and other performance problems).

Each of these factors will be discussed below.

Pre-service education and training

The minimum quality standards at many training institutions are inadequate. Adherence to these standards varies greatly among schools, with many students unable to meet them. Further, significant investment in teaching staff and infrastructure was found necessary to ensure compliance with these standards, and about half of the total US$60 million investment in scale-up is needed to help schools meet them (ZMoH 2006).

The absence of qualified teachers has weakened pre-service education. The shortage of teaching staff in health training institutions limits the MoH's ability to train graduate nurses to the standards in the National Health Strategic Plan 2006–2010 (Tropical Health and Education Trust and ZMoH 2007). Chankova and Sulzbach (2006) found that high turnover and the inadequate number of teachers hindered the mentorship and coaching elements of pre-service training. Shortages in tutors and clinical instructors shift focus from clinical practice to medical theory, thus undermining the standard of health education.

The teacher shortage is said to be linked to poor compensation compared with that of clinical positions. The director of the University of Zambia School of Medicine says that health care professionals prefer to work for the MoH than to teach because professors receive lower compensation. Tutors at the Ndola School of Nursing stress that lower incentives for tutors, as compared with nurse practitioners, negatively affect tutor recruitment. Nurse tutors, who both practice and teach, complained of being paid less than their counterparts who only practice. Surgeons practicing and teaching dentistry say they are not compensated for their educational services (Fortier 2008).

Teaching quality is inadequate in part because of insufficient teacher training. For example, the HIV/AIDS-related education of faculty, tutors, and clinical instructors in antiretroviral therapy (ART), confidential testing and counseling (CTC), and preventing mother-to-child transmission (PMTCT) is inadequate, and most respondents are not confident teaching the material (Chankova and Sulzbach 2006).

Inadequate investment in teaching tools and equipment may worsen pre-service education. Teaching equipment and tools are limited in many training institutions, which can affect teacher quality. One study found that some teaching equipment and materials, particularly reference books and audio-visual materials on ART, CTC, and PMTCT, are in short supply. The same study found that the primary teaching methods were teacher-centered and did not encourage critical thinking. To address this problem-based learning—an interactive and student-centered method of teaching—was being piloted in five schools (Chankova and Sulzbach 2006).

Furthermore, the curricula remain Western oriented and may be at odds with the local context and needs. Zambian medical education currently relies on the traditional medical education model with an emphasis on the biomedical and hospital-centered models. But the traditional model does not meet the health needs of individuals and communities and often produces "single disease warriors," technically skilled and competent practitioners who have little understanding and knowledge of population health, health systems, and health determinants. The model has also led to much spending on specialties that only modestly benefit public health. Indeed, much health-related training in Zambia is theoretical and clinical, producing cadres lacking essential skills and knowledge in public health and management (Ferrinho and others 2008).

In-service training and career development

Selective donor preferences may also contribute to poor clinical in-service training interventions. Although clearly important also, in-service training initiatives focus more on HIV/AIDS while leaving key non-HIV/AIDS-related training unfunded. One study found that between January 2006 and January 2007, 22 percent of health staff interviewed had trained in HIV testing, 23 percent in HIV counseling, 19 percent in ART, and 9 percent in PMTCT. By comparison, 14 percent had trained in child health, 3 percent in maternal health, and 4 percent in family planning. Respondents reported that the Global HIV/AIDS Initiatives were important in funding HIV/AIDS-related training and staff incentives for it (Global HIV/AIDS Initiatives Network 2008). Though HIV/AIDS is clearly a concern, other important health-related skills may also need attention.

Despite recent efforts to address problems in clinical in-service training, these interventions do not appear to be integrated or coordinated. To alleviate the critical shortage of skills needed at the lowest levels of health service delivery (at health posts and health centers), an integrated, competence-based training program designed to train all frontline health cadres in basic competencies health care was developed and tested in 2001 and introduced in 2002.

Each district and hospital management team determines its own in-service training priorities and funds them from its service grants. While the MoH organizes training programs and instructs provinces and districts to implement them, usually with funding from cooperative partners, the process is not coordinated. Training activities are frequently not discussed in advance with the target district, for example, and thus are not included in the district action plans, often leading to uncoordinated training interventions and unplanned staff absences from workshops. The MoH developed a national in-service training coordination system and implementation plan for 2005 to 2009 to address some of these issues.

Performance management and accountability

Inefficient performance is sometimes attributed to inadequate accountability structures and a lack of performance management. Performance management is the process of "measuring, monitoring, and enhancing the performance of staff, as a contributor to the overall organizational performance" (Martinez 2003). This includes holding staff accountable for their actions. Performance management and accountability are closely associated with health worker performance.

Performance management, particularly dismissal of employers, is largely ineffective because it remains highly centralized. Minor problems are dealt with in-house or locally while more serious issues such as dismissals are referred to higher authorities. Discipline for more serious aspects is the responsibility of the employer through district or hospital committees and professional bodies (for example, the General Nursing Council for nurses). CHESSORE and Wemos (2008), however, argued that the DHMTs are powerless because of centralized authorities. Masiye (2007) claimed that the firing of poorly performing health workers (as with the hiring of exceptionally good health workers) is not up to the districts and ultimately up to the MoH and the Public Sector Management Division (PSMD), which reviews and acts on requests forwarded to them by the districts (ZMoH 2009). Centralized management of HRH—discussed in more detail in chapter 7—is once again seen as an impediment to improving the performance of existing health workers.

Adverse working conditions

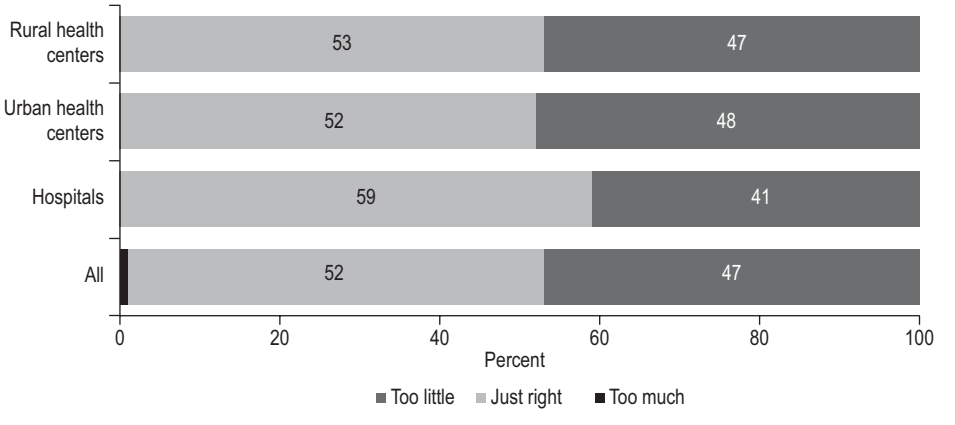
Heavy workload is often considered to contribute to diminished performance by causing rushed treatment, long waiting times, or preventing patients from receiving care at all. Sometimes, excessive workloads prevent health workers from offering HIV/AIDS counseling and other services in which they have been trained (CRHCS 2004).

Many health managers address high workloads by asking staff to work more hours or to work during leave days. They may ask medical officers, medical licentiates, clinical officers, and nurses to work double shifts (12 hours without a break) or recall staff for the next shift after only a short rest. It is also common for health workers to work during leave days. Those who do not take annual leave often accumulate too much of it and risk losing leave credits (though the government has not decided on the capping of accumulated leave credits).

While working more hours or working on leave days is attractive to some since it provides extra income, it may adversely affect their performance through exhaustion and eventually burnout. For hospital nurses, an extra shift pays ZK40,000 (about US$10). While this may seem an attractive arrangement for both health manager and health worker, it is not a sustainable solution (CHESSORE and Wemos 2008). In the PETS, though 91 percent of staff reported a fixed work schedule, 47 percent reported working longer hours than appropriate under this schedule (figure 5.8).

Evidence suggests that Zambian health workers may have an unsustainable workload, thus delivering on the scaling up of critical interventions at the expense of others. A USAID study (2004) found that in 10 hospitals, facilities were using an average of 1.4 full-time equivalent doctors on ART services (a total of 8.2 at all facilities treating 3,800 ART patients). Doctors at the University Training Hospital, the largest facility, treated 43 patients per day, while counselors saw 40 patients per day, far above the average. This data suggests that University Training Hospital staff spend less time treating or counseling each patient than any of the other facilities and were thus seriously overloaded (Kombe and others 2005). Ngulube (2006) shows that as ART is scaled up, routine immunization coverage declines. The few available health workers cannot manage and carry out both tasks effectively.

Figure 5.8. Staff perception of number of hours worked



Source: Picazo 2008.

Heavy workloads are most often attributed to communicable diseases and increased attention to scaling up service response. The number of people in Zambia treated for HIV/AIDS has risen dramatically in recent years (table 5.1). The increase in external funding to treat HIV/AIDS, malaria, and tuberculosis more heavily burdens health workers who must now implement newly funded projects in addition to carrying out their regular responsibilities. In Lusaka, a survey found that 76.5 percent of workers provide HIV/AIDS services in addition to other services. Corresponding percentages in Kabwe and Mumbwa were 60.6 percent and 69.4 percent, respectively. Also, almost all workers (99 percent) were involved in providing non-HIV/AIDS services. Key informants have observed that the Global HIV/AIDS Initiatives have negatively influenced staffing levels and workloads by increasing HIV/AIDS services, augmenting at the same time the demand on staff (Global HIV/AIDS Initiatives Network 2008).

Table 5.1. The number of people undergoing antiretroviral therapy is rising

Year	People receiving antiretroviral therapy
2003	3,000
2004	24,000
2005	50,000
2006	75,000
2007	118,000
2009	257,000

Source: Global HIV/AIDS Initiatives Network 2008; USAID 2010.

Heavy workloads may also stem from inadequate health facility management. High absenteeism, tardiness, and extended sick leave affect the staff members who must work extra hours to compensate. Staff members can also opt for further training, and sometimes two or more members from the same facility take study leave simultaneously, crippling the facility's capacity to manage its workload. Given Picazo's findings (2008), this suggests that human resources are not managed effectively at the facility level.

Inadequate equipment and supplies

Inadequate medical resources and supplies is another factor negatively affecting key performance variables. One study found that many health workers complain of poor equipment, supplies, and materials (table 5.2). The funding of and investment in public health facilities is poor. When the purchaser and provider function of the MoH was disconnected in 2004 (that is, Zambia's experiment with decentralizing key HRH functions and other functions), the additional resources obtained from grants and other revenue

Table 5.2. Few health workers believe they have access to adequate equipment (percent)

	Lusaka (*n* = 69)			Kabwe (*n* = 71)			Mumbwa (*n* = 35)		
Issue	A	D	U	A	D	U	A	D	U
In the last 12 months, you have had the equipment, supplies and materials to carry out the job properly	43	3	54	27	4	69	51	6	43

Source: Global HIV/AIDS Initiatives Network 2008.
Note: A=Agree; D=Disagree; U=Undecided.

are said to have led to, among other things, less investment in operations and infrastructure (Vujicic and others 2008).

The lack of medical supplies and equipment is also attributed to poor administration and management at the facility level. Financial and resources management of facilities includes ordering drugs, supplies, and equipment. But due to capacity constraints, supplies and equipment are often not ordered. Facilities and HRH are managed by clinicians with little or no management training, and there are few qualified management cadres in the health system today (Vujicic and others 2008).

Coping mechanisms

As a coping behavior to earn extra income, many health workers hold multiple jobs, particularly in urban facilities. One study found that 43 percent of staff interviewed in Lusaka, 30 percent in Kabwe, and 25 percent in Mumbwa reported earning extra income from another job (Global HIV/AIDS Initiatives Network 2008). The PETS found that about 5 percent of staff members were engaged in dual medical or health practices in the health facility itself. While this percentage is quite low, the amount of time devoted to these unofficial activities is concerning and is most likely correlated to the high absenteeism rates reported in previous sections. This problem is particularly acute in urban health centers where health professionals devote as many as five hours for private practice, presumably outside official hours. The equivalent for private practice in the facility is one hour in rural health centers and two hours in hospitals (Picazo 2008). Dual practice is also undertaken outside the facility by about 18 percent of health staff, occupying significant time across facilities: on average, staff members engage in such practices for 7 hours in rural health centers, 12 hours in urban health centers, and 7 hours in hospitals.

As many as 31 percent of health staff in Lusaka and 51 percent in Kabwe have admitted involvement in trading to supplement their income (Global HIV/AIDS Initiatives Network 2008). The income-augmenting activities of staff members include those both inside and outside the health labor market (table 5.3).

Table 5.3. Income-augmenting activities, by staff (percent)

Income-augmenting activities	Rural health center	Urban health center	Hospital	All
Medical or health practice inside the health facility but outside office hours	3 (1)	7 (5)	5 (2)	5 (3)
Medical or health practice outside health facility	12 (7)	21 (12)	24 (7)	18 (9)
Nonmedical, nonhealth activity inside health facility	6 (6)	25 (7)	0 (0)	11 (6)
Agricultural work	41	32	45	39
Commercial or small-scale trade	18	37	35	29
Teaching	9	15	6	10
Other activities	7	4	19	9

Source: Global HIV/AIDS Initiatives Network 2008.
Note: Numbers in parentheses are the average number of hours devoted to the activity.

The "coping practice" of lower-level health workers filling needed clinical skills gaps may also hurt performance. In light of high levels of attrition or lack of some health cadres altogether, there is some evidence that clinical skills are delegated to lower-level

cadres with little experience or formal training. In a Mumbwa facility, the only available staff member was a clerk who was screening, diagnosing, prescribing, and administering treatment. Furthermore, at sites already understaffed, the scale up of ART, VCT, and PMTCT services has created even greater demands on staff (Global HIV/AIDS Initiatives Network 2008). Focus group discussions with nursing staff in rural health centers also have highlighted performance-related problems due to staff shortages. One registered nurse reported, "[w]hen having too much work because of insufficient health workers, it is delegated mostly to the cleaners who do chores such as damp dusting, making beds, weighing of babies and mothers in MCH, taking temperatures, and measuring other vital signs with no training other than on-the-job" (Ferrinho and others 2008). Because of persistent staff shortages, certain health facilities reported using unqualified contracted health workers for activities such as screening patients, performing examinations, taking X-rays, and dispensing drugs. Further, few health facilities in rural areas have clinical officers, and job descriptions are rarely adhered to so enrolled nurses often perform clinical duties for which they are not trained. Chama District does not even have enrolled nurses in all its rural health centers: eight health facilities in the northern part of the district are run by unqualified contracted daily employees (CHESSORE and Wemos 2008).

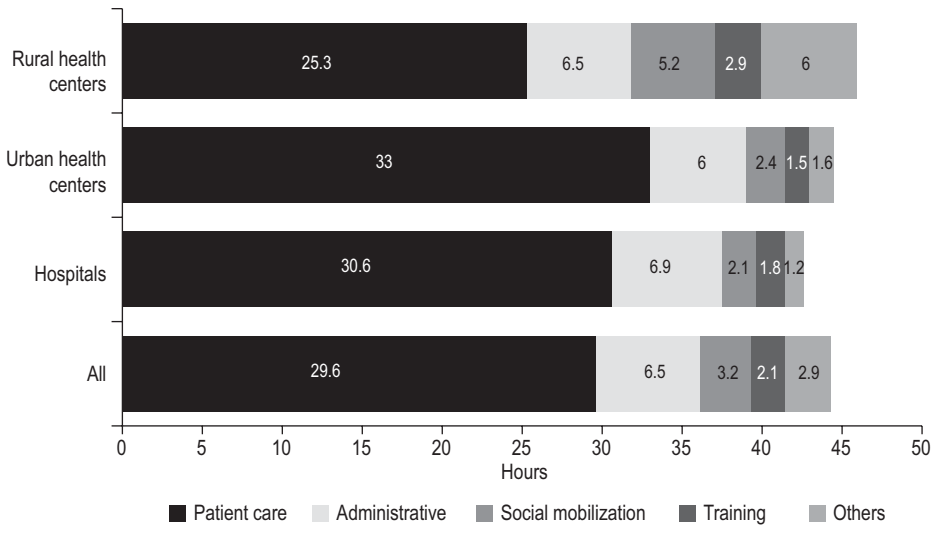
Furthermore, high turnover rates (observed previously) also affect health worker performance by leading to the loss of "institutional memory" and skills that health workers take with them when leaving a facility (although this is not always said about migration).[2] Evidence on staff turnover, particularly in rural health facilities not only raises concerns not only about staff availability, but also about a new staff member's ability to adjust to the new workplace (Picazo 2008). And though some argue that "brain drain" may be good for health worker performance as skills acquired abroad may be brought back, health workers usually do not return. Fortier (2008) noted that at the University Training Hospital in Lusaka, most health workers given the opportunity to further their education abroad do not return to practice. Those who do return quickly become discouraged by the substandard technology and incentives, creating a deficit in both department staffing levels and knowledge-sharing opportunities.

Finally, coping with the lack of nonclinical providers, particularly in rural areas, eats into the time spent on clinical practice. The PETS (2008) shows that a significant number of health worker hours are spent on activities other than patient care (without workload being increased—for example, the overall number of hours spent working is adequate). For all health facilities the time spent by staff on direct patient care is compromised by other tasks. Disaggregating facilities by rural-urban shows that health workers in rural facilities in particularly are bogged down by activities other than patient care (particularly administrative activities). Indeed, in rural health centers, health workers dedicate only 25.3 percent of their time to patient care, close to a working day less than in urban health centers (33 hours) and significantly less than in hospitals (figure 5.9; 30.6 hours). The finding points to a potentially low level of nonclinical administrative staff in rural areas (combined with a low number of clinical workers).

HIV/AIDS

The health workforce in Zambia has not been spared HIV/AIDS. In 2008, 17.1 percent of adults in Zambia were living with HIV/AIDS.[3] As in the broader community, health workers are susceptible to HIV mainly through sexual contact. As mentioned previously, before the introduction of the ART program countrywide, the health sector was

Figure 5.9. Average number of hours worked per week, by task



Source: Picazo 2008.

losing a significant number of staff and staff dependents to AIDS-related morbidity and mortality. Illness of health workers or their dependents negatively affects performance and is often reflected in greater absenteeism, late starts, or lowered responsiveness and productivity. The PETS by Picazo (2008) found that 17 percent of health workers reported tardiness caused by tending to sick relatives likely afflicted with HIV/AIDS.

There is evidence that HIV/AIDS is a cause of high levels of absenteeism in some facilities. One study evaluating the cost of HIV/AIDS on health service delivery found that in the year prior to death or retirement, workers with AIDS took an average of 42 days of leave and recorded an average of 20 days of sick leave. In the year prior to data collection, by comparison, a healthy worker took an average of 14 days of leave and took no sick leave, a difference of 28 days, or about 10.8 percent of the 260 working days per year, before holiday allowance. In the penultimate year of employment, individuals took an average of 36 days of leave. This compares with 14 days taken by the comparators in the year prior to data collection and 34 days in the year preceding that. This small difference in leave taken in the second to last year of employment (two days) suggests that HIV/AIDS-related morbidity does not lead to a major increase in absenteeism until the last 365 days of service. The observations are also consistent with the researchers' concerns that some sick leave goes unrecorded and that the volume of AIDS-related illnesses measured may be understated (Feeley and others 2004).

Some suggest that one reason for the high rate of HIV/AIDS, particularly in the public sector, is that no adequate HIV/AIDS workplace policy exists. Compared with the commitments of NGOs and larger private sector organizations, the public sector, and in particular the MoH, lags in implementing a comprehensive HIV/AIDS workplace policy and program. Staff sensitization, awareness creation, possibilities for post-exposure prophylaxis, and a comprehensive ART program specifically for employees are poorly developed and structured. Containing HIV/AIDS in the health workforce thus requires greater effort.

Another reason for high rates of HIV/AIDS may be the lack of protection available to health staff. All health workers are exposed to infections through accidental injuries from sharp objects while on duty. Focus group discussions have found that "[s]ometimes you are forced to handle patients without gloves even in conditions where you see this is needed to protect yourself. But because you can't send them away, so you are forced to do that" (Ferrinho and others 2008).

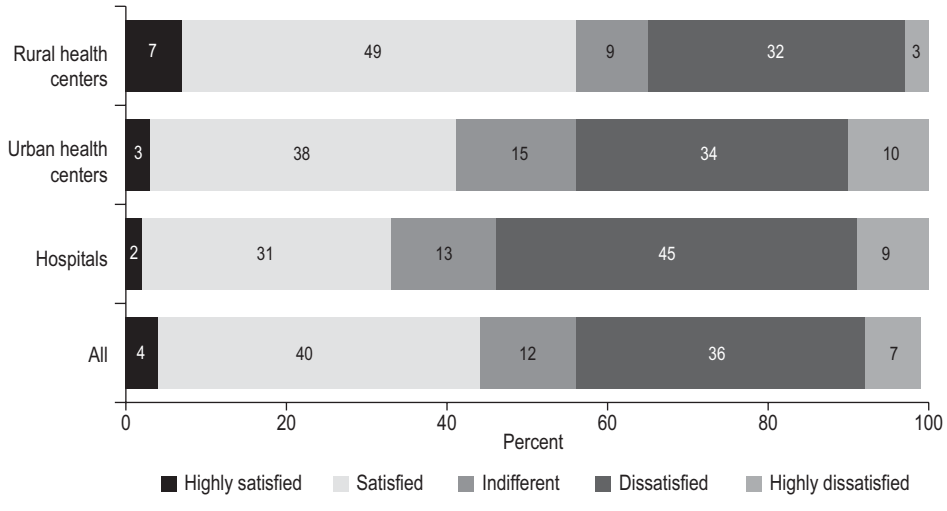
Motivation to perform

The motivation of health workers, defined as the "willingness to exert and maintain an effort toward organizational goals" (Franco and others 2002) is often linked to job satisfaction, which in turn affects motivation and performance. Many of the factors discussed above (for example, career development, performance management, workload, equipment, and supplies), aside from having a direct impact on health worker performance, may also affect health worker motivation to perform.

There is evidence that a large number of Zambian health workers are dissatisfied with their jobs. The PETS reports that roughly half of the staff members surveyed do not feel fully satisfied. While 44 percent report satisfaction, 43 percent report dissatisfaction and 12 percent are indifferent (figure 5.10). Satisfaction appears highest among rural health center staff (49 percent satisfied and 7 percent highly satisfied) while the rate of dissatisfaction appears highest among hospital staff (45 percent dissatisfied and 9 percent highly dissatisfied; Picazo 2008).

Of those dissatisfied with their jobs, even fewer are actually motivated to perform. A study of HIV/AIDS and HRH reported that staff motivation is generally lower than job satisfaction (table 5.4; Global HIV/AIDS Initiatives Network 2008). While this study was based on a sample population of health workers, results suggest that motivation among staff could be low across the board.

Figure 5.10. Staff satisfaction, by facility



Source: Picazo 2008.

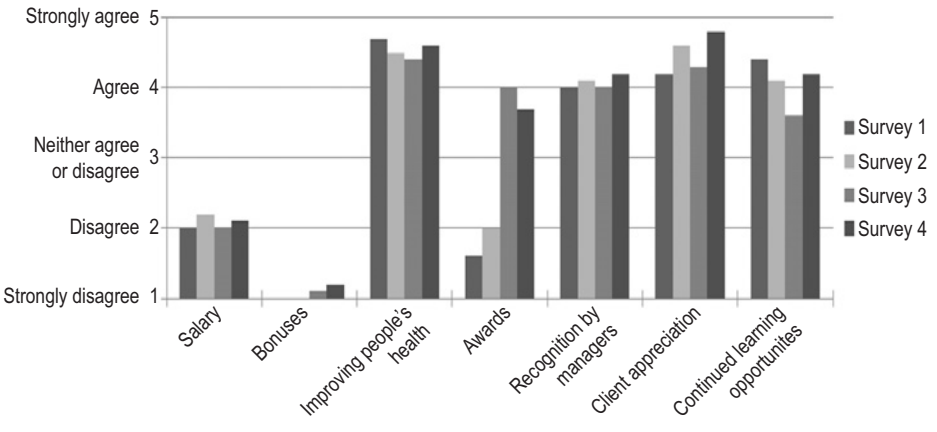
Table 5.4. Staff motivation and job satisfaction: Service providers' perspective (percent)

	Lusaka (*n* = 69)			Kabwe (*n* = 71)			Mumbwa (*n* = 35)		
Issue	**A**	**D**	**U**	**A**	**D**	**U**	**A**	**D**	**U**
Motivation is generally high among staff delivering non-HIV services	30	22	48	18	4	78	23	11	66
Teamwork is generally good among other service delivery staff	39	12	12	87	3	10	76	12	12
Training is sufficient to perform the job well	71	9	20	60	4	36	74	0	26
Incentives have improved at this facility in the last 12 months	17	15	68	20	10	70	20	17	63
In the last 12 months, the workload at this facility has become more manageable	22	13	65	34	0	46	46	11	13
Overall, you are satisfied with your job	51	16	33	63	3	34	60	9	31

Source: Global HIV/AIDS Initiatives Network 2008.
Note: A=Agree; D=Disagree; U=Undecided.

A combination of monetary and nonmonetary factors are the most cited reasons for low staff motivation. The 2006 PETS (Picazo 2008) found that staff dissatisfaction stems mainly from stressful workloads (42 percent) and low salaries (34 percent). Only 7 percent reported bad facility management while 17 percent cited "other reasons." Focus group discussions (Ferrinho and others 2008) with nursing staff in rural health centers found that "most of us get our salaries from Lusaka; and they should re-introduce rural hardship allowance" (withdrawn 2 months ago due to re-categorization of Luangwa Boma as not being rural). A lack of adequate transportation and housing are also demotivating staff in Zambia. Nurses argued that "if we could have transport to be taken there, that can be motivating enough, and just for staff, build more houses, accommodation is a big problem in rural areas." A survey on staff motivation in Luangwa (Furth 2006) found that monetary compensation (salary and bonuses) does little to motivate health workers. Conversely, aspects relating to performance management, continued learning, and improving peoples' health are all deemed to be important motivators (figure 5.11).

Figure 5.11. Factors affecting staff motivation in Luangwa



Source: Furth 2006.

Donor-funded remuneration of select health workers may be demotivating to more qualified health workers receiving lower MoH salaries. For example, NGOs funded by the President's Emergency Plan for AIDS Relief (PEPFAR), such as Family Health International: Zambia Prevention, Care and Treatment, have given data clerks a far higher salary package than that paid by the MoH to nurses. This is often discouraging to registered nurses working in ART as they are often paid about half that of data clerks with only a secondary school certificate (Global HIV/AIDS Initiatives Network 2008).

Finally, poor working conditions such as rundown facilities and inadequate equipment and supplies can also be demoralizing. Schatz (2008) reported on one midwife who explained how conditions at aged-care facilities and an often-decrepit University Teaching Hospital drain morale. Protective clothing is in short supply, and nurses are forced to use the traditional Zambian *chitenge* cloth that pregnant women use to catch fluids.

Notes

1. Absenteeism here was defined broadly as any staff not physically available on the day of the survey.
2. It is often argued that returning migrants are able to enrich the knowledge and skill base on their return and that migration increases human capital investments.
3. http://www.census.gov/ipc/hiv/zambia08.pdf.

CHAPTER 6

Equity in Health Service Provision

The following equity-based perspective examines how health service provision is distributed across socioeconomic levels. There is significant distinction between the availability of health workers (discussed above) and use of the services that they offer: even if workers are present in areas inhabited primarily by poor people, there are many reasons why those poor people might not use them. Health providers may be more prone to serve the rich than the poor. Further, poor people might fear contemptuous treatment by service providers belonging to a higher social stratum or different gender. Health worker performance may be seen to be inadequate, making it important to go beyond availability of HRH and look at use at well.

For use, the most relevant available data are from household surveys that include information about the type of health providers visited by different economic groups of people for different types of problems. The most widely available of these, and the ones to be used here, have been undertaken under the auspices of the Demographic and Health Survey (DHS) program, which has sponsored surveys typically covering 5,000–30,000 households, sometimes many more, in more than 75 low- and middle-income countries.[1] This section analyzes data from the 2007 DHS. It focuses on the socioeconomic distribution of antenatal care and delivery care services. Analysis of data from the 2002 DHS focuses on the medical treatment of children's diarrhea and fever/cough and health worker visits.

Summary of main findings

- Wealthier women have the highest probability of seeing any health worker for antenatal care.
- There is an even steeper pro-rich gradient in delivery attendance in Zambia.
- There is little variation across socioeconomic quintiles among those seeking medical treatment for children with diarrhea or cough/fever.
- The poor are slightly more likely to be visited by a health worker and receive certain services during visits.

Provision of Antenatal Care

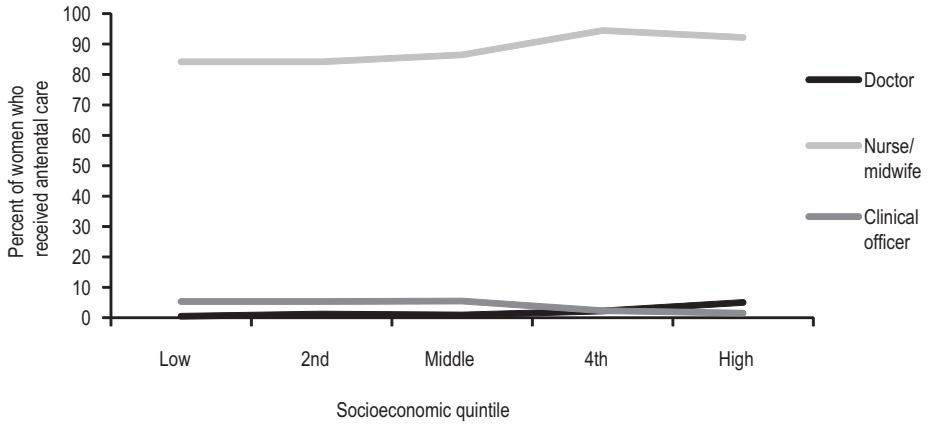
Women from the wealthiest quintiles have the highest probability of seeing a health worker for antenatal care. Table 6.1 and figure 6.1 break down the responses to the question "Did you see anyone for antenatal care for this pregnancy?" by type of health worker and socioeconomic quintile. Overall, 87.4 percent of the women who received antenatal care during their latest pregnancy were seen by a nurse or a midwife, while 4.5 percent received antenatal care from a clinical officer. Doctors and traditional birth at-

Table 6.1. Provision of antenatal care, by type of health worker and socioeconomic quintile (percent)

	Wealth quintile					
Type of health worker	Low	2nd	Middle	4th	High	Average[a]
Doctor	0.5	1.2	0.9	2.2	5.0	1.8
Nurse/midwife	84.2	84.2	86.5	94.5	92.2	87.4
Clinical officer	5.3	5.3	5.5	2.3	1.5	4.5
Traditional birth attendant	4.1	4.9	3.2	0.6	0.0	2.7
Other	2.7	2.1	1.5	0.0	0.0	1.3
No one	3.2	3.3	2.3	0.3	1.3	2.1

Source: 2007 DHS.
Note: Quintiles were derived using the methodology introduced by Filmer and Pritchett (1999, 2001)
a. The figures in this column do not add up to 100 percent as a woman may have visited more than one type of health worker for antenatal care.

Figure 6.1. Socioeconomic differences in the provision of antenatal care



Source: 2007 DHS.

tendants played a minor role in the provision of antenatal care, providing care to only 1.8 percent and 2.7 percent of the women, respectively. There is a pro-rich gradient in seeing a health worker: the proportion of women who did not see anyone for antenatal care was highest at 3.3 percent and 3.2 percent in the second poorest and poorest quintiles, respectively, and only 0.3 percent among the fourth quintile. Note that a larger share of the highest quintile do not see any health workers for antenatal care (1.3 percent) than in the fourth quintile (0.3 percent).[2]

Delivery Attendance

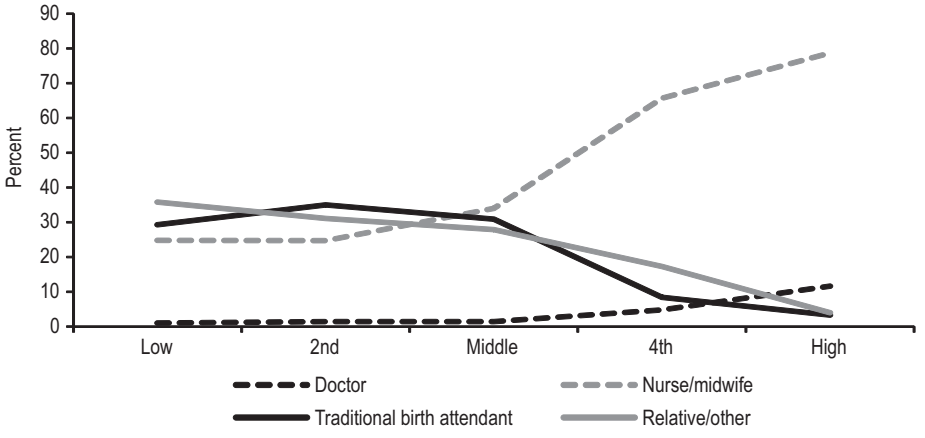
Compared with antenatal care, there is a steeper pro-rich gradient in delivery attendance. Table 6.2 and figure 6.2 present findings on delivery attendance for the last birth. According to table 6.2, 41.9 percent of the women were assisted by a nurse or a midwife and 25.2 percent were assisted by a relative or someone else, while traditional birth at-

Table 6.2. Delivery attendance, by type of health worker and socioeconomic quintile (percent)

	Wealth quintiles					
Type of health worker	Low	2nd	Middle	4th	High	Average
Doctor	1.0	1.4	1.4	4.8	11.6	3.3
Nurse/midwife	24.8	24.7	34.0	65.7	78.7	41.9
Clinical officer	1.1	1.1	1.0	0.9	1.0	1.2
Traditional birth attendant	29.3	35.0	30.9	8.4	3.3	23.3
Relative/other	35.8	31.1	27.9	17.3	4.0	25.2
No one	7.6	5.7	4.6	2.7	1.0	4.7

Source: 2002 DHS.
Note: Quintiles were derived using the methodology introduced by Filmer and Pritchett (1999, 2001).

Figure 6.2. Socioeconomic differences in delivery attendance



Source: 2007 DHS.

tendants provided assistance to 23.3 percent of the women and doctors to only 3.3 percent.[3] The pro-rich gradient in the proportion of women assisted by a nurse or midwife is now much steeper. For doctors, on the other hand, the shape of the curve for delivery attendance is similar to that for the provision of antenatal care. The activity of traditional birth attendants tends to be concentrated among women in the three lowest quintiles. Deliveries assisted by a family member or someone else are most common among the poor, though the share of women receiving this assistance has decreased dramatically across all wealth quintiles since 2001/02 (from 36.4 in the 2001/02 DHS to 25.2 percent in the 2007 DHS).

Medical Treatment of Children with Diarrhea or Cough/fever

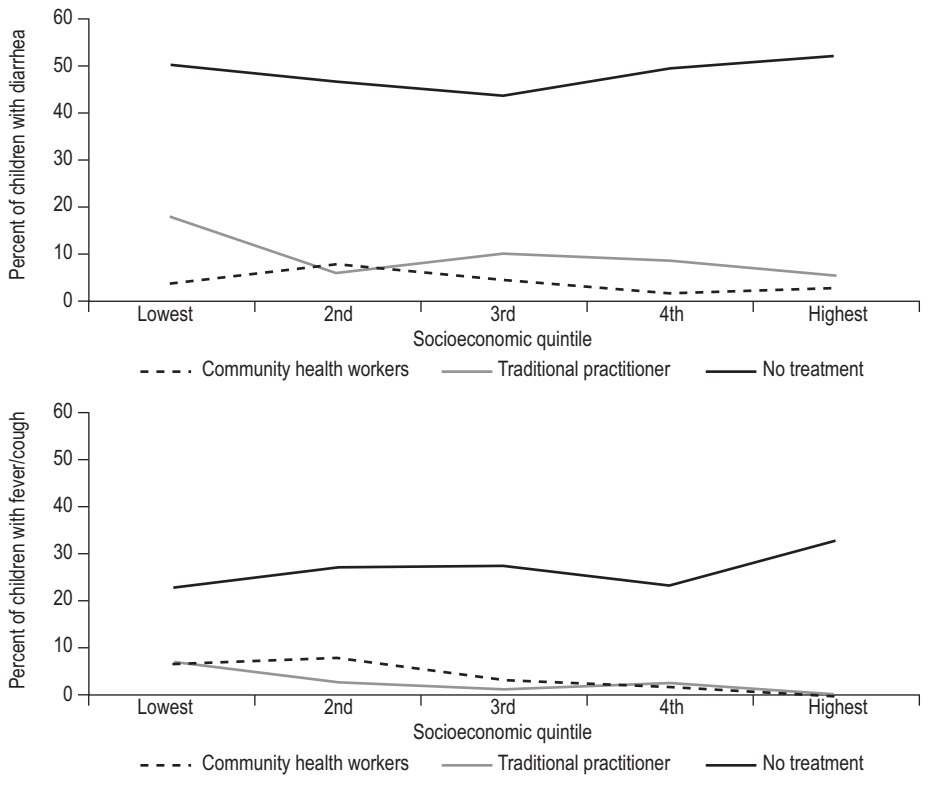
Analyzing 2002 DHS data found that in contrast to antenatal care, there is little variation across socioeconomic quintiles among those seeking medical treatment for certain child illnesses. Table 6.3 and figure 6.3 show the proportion of mothers who sought treatment—compared with those who did not—from community-based agents or traditional

Table 6.3. Medical treatment of diarrhea and fever/cough, by type of health worker and socioeconomic quintile (percent)

	Wealth quintiles											
Type of health worker	Lowest		2nd		3rd		4th		Highest		Average[a]	
Treatment of child's diarrhea												
Community health worker	3.1	(1.5)	7.0	(2.3)	3.9	(1.6)	0.8	(0.8)	2.1	(2.1)	3.6	(0.8)
Traditional practitioner	17.0	(3.7)	5.4	(1.9)	9.5	(2.7)	7.8	(2.8)	4.5	(2.9)	9.4	(1.4)
No treatment	49.7	(2.9)	46.6	(3.6)	43.3	(3.5)	49.2	(5.0)	51.7	(5.9)	47.7	(1.9)
Treatment of child's fever/cough												
Community health worker	6.4	(1.8)	7.6	(1.9)	3.0	(1.0)	1.9	(0.9)	0.0	0.0	3.9	(0.7)
Traditional practitioner	7.1	(2.0)	2.9	(1.0)	1.3	(0.8)	2.5	(1.1)	0.0	0.0	2.9	(0.6)
No treatment	23.1	(2.2)	27.5	(2.6)	27.8	(2.7)	23.7	(2.3)	33.1	(4.1)	26.7	(1.3)

Source: DHS 2002.
Note: Standard errors are in parentheses. Quintiles were derived using the methodology introduced by Filmer and Pritchett (1999, 2001).
a. The figures in this column do not add up to 100 percent, as a woman may have visited more than one type of health worker for antenatal care.

Figure 6.3. Socioeconomic differences in the medical treatment of diarrhea and fever/cough



Source: DHS 2002.
Note: Error bars reflect 95 percent confidence intervals.

practitioners for their youngest children if that child had suffered from diarrhea or from fever/cough in the two weeks prior to the DHS. The proportion of women not seeking treatment is higher for diarrhea than for fever/cough and is also within the top quintile in both cases. Though there is fairly little variation across socioeconomic quintiles, traditional practitioners are more likely to attend to children from households in the bottom quintile for both health problems. For community health workers, the proportion of women seeking their care seems to peak in the second quintile for both conditions.

Health Worker Visits

The poor are slightly more likely to be visited by a health worker and receive certain services during visits. Table 6.4 shows the percentage of mothers who reported that household members were visited by a health worker in the 12 months preceding the DHS. On average, almost 10 percent of households had been visited, with a modest gradient favoring the poorest quintile. Respondents were also asked to indicate the types of goods and services they had received from the visiting health worker, including contraceptives, oral rehydration salt, chlorine, anti-malarial medication, mosquito nets, Vitamin A, baby weighing, child immunization, or the providing of information, education, or counseling. While no clear correlations emerged among most of these services and socioeconomic statuses, a clear pro-poor gradient was found for immunizations: in the poorest quintile, 42.7 percent of the households visited by a health worker reported having had a member immunized by the health worker; in the wealthiest quintile, the figure is 15.7 percent.

Table 6.4. Household visits by a health worker in last 12 months, by socioeconomic quintile (percent)

Wealth quintiles											
Lowest		2nd		Middle		4th		Highest		Average	
12.4	(1.4)	11.8	(1.2)	10.7	(1.0)	8.9	(0.9)	6.0	(0.8)	9.8	(0.6)

Source: 2002 DHS.
Note: Standard errors are in parentheses. Quintiles were derived using the methodology introduced by Filmer and Pritchett (1999, 2001).

Notes

1. For more on the DHS, see www.measuredhs.com.
2. This pattern diverges from the 2001/02 DHS data where 0.6 percent of women in the highest quintile and 3.1 percent of women in the second highest (fourth) quintile did not see anyone for antenatal care. Thus, for antenatal care, the 2007 data divert from the 2001/02 data as wealth is not directly correlated with access to health workers in the latest DHS.
3. Compared with the 2001/02 DHS data, a larger share of women are now assisted by traditional birth attendance (from 11.7 percent in 2001/02 to 23.35 in 2007); a smaller share of women are assisted by a nurse/midwife (from 44 percent in 2001/02 to 41.9 percent in 2007) and relative/friend (from 36.4 in 2001/02 to 25.2 percent in 2007).

CHAPTER 7

Core Factors Affecting Labor Market Dynamics

This report has suggested that the dynamics of entry and exit and performance of HRH within the health labor market are affected primarily by:

- Inefficient management arrangements and highly centralized decision making on HRH.
- Inadequate training capacity leading to low production of skilled workers.
- Inadequate work environment and conditions of service—including perceptions of low remuneration.
- HIV/AIDS related mortality and morbidity.

This section reflects on and discusses each of these areas in greater detail.

Summary of main findings

- Management of HRH is highly centralized (after an experiment with decentralization), and evidence confirms that some aspects of management performance may be weak.
- Pre-service education capacity—physical, technical, and organizational—is extremely weak. Zambia has only one medical school.
- Monetary compensation in the public sector is not as low as sometimes suggested. After benchmarking salaries and allowances against the average gross national income in Zambia, doctors do very well.
- A detailed assessment of nonmonetary factors, beyond those discussed in the report, is not available.
- HIV/AIDS is a real problem in Zambia, one of a handful of countries that suffers simultaneously from an HIV/AIDS crisis and an HRH crisis.

Centralized HRH Management Capacity

This report has shown that labor market dynamics and performance in the public sector, time and again, are negatively influenced by highly centralized and inefficient HRH management. Ineffective and inefficient management procedures linked to centralized HRH decision making was thus one key contributing factor shown to explain the low stock, inequitable distribution, and inadequate performance. This section assesses the extent and story of the centralized decision making on HRH and the capacity at the central level to govern and manage it.

From decentralization to centralization

Until fairly recently, Zambia had been experimenting with decentralized HRH management and more autonomous health facilities. Following the decentralization reforms that began in 1992, Zambia established the Central Board of Health (CBoH) and provincial and district-level health boards (DHBs) in 1995. As a result, the MoH was split into two entities to separate its provider functions from its purchasing functions. The MoH was to be reformed into a lean body that retained its roles in policymaking, legislation, donor coordination, budgeting, resource mobilization, advocacy, and oversight of the CBoH. The CBoH carried out its provision function through the coordination and regulation of health boards at the district level, including human resource management. The health boards (which were appointed by, and served at the discretion of, the Minister of Health) were also responsible for managing hospitals and providing health services (Vujicic and others 2008).

The initial plan was that eventually all health staff, apart from those retained by the MoH, would be de-linked from central civil service and work directly for the health boards under a special statute, allowing facilities to manage their own staff and the CBoH to provide salaries and conditions more consistent with the local labor market without being constrained by wider public service statutes. But because of union protests and a change of ministers at a key stage of the process, a complete split never happened. Instead, a compromise was reached allowing workers to be retained as MoH public servants but be directly managed by the health boards (Vujicic and others 2008).

District health management teams prepared annual plans and budgets derived from community and health center data aggregated and approved by the district health boards and then submitted to the CBoH for further approval. The funds were allocated to the boards as block grants (not earmarked) and as basket funds earmarked for important programs, such as HIV/AIDS treatment. The block grants were also used to hire temporary staff. But key stakeholders alleged that some staff members received full salaries from both the CBoH and the MoH. So between 2002 and 2004, the government trimmed its public service staff. Having gained some financial autonomy derived from the 1992 health reforms, many hospitals and districts compensated for this staffing freeze by employing health workers directly using funds from the operational budget, grants, and user fees (Vujicic and others 2008).[1]

But in 2006—due to poor coordination, fiscal constraints, and union problems—the government abolished the health boards to regain control of HRH management. The MoH then re-established government conditions of service and has since begun moving its employees back onto the government payroll (Vujicic and others 2008). HRH decision making is once again highly centralized. Policy and planning, management, administration, and development are all managed by the MoH (table 7.1).

MoH HQ HRH management performance

Staff profiles and personnel in the MoH seem to be more heavily skewed toward HRH operational management and administration than HRH policy and planning. A recent paper by the Department for International Development argued that the challenge for MoH headquarters over the years has been the skewed balance between the routine personnel administrative management function and the broader mandate of HRH policy and strategic planning. Staff profiles and operations weighed more heavily toward the

Table 7.1. Selected Ministry of Health responsibilities in human resources for health management

Policy and planning	Management and administration	Educational development
• Policies and policy manual preparation; • Evidence-based planning; • Assessments and use of evidence; and • Information management systems.	• **Performance:** Job descriptions, supportive supervision, performance evaluations. • **Personnel:** Job classification, recruitment, hiring, transfers and promotions, compensation, benefits, incentive plans, disciplinary and grievance procedures, policy manual writing, staff association interaction, regulatory compliance assurance (inclusive of private sector), accreditation. • **Budget:** Management of the human resources budget accounting function.	• Provision of training related to staff requirements; • Planning of continuing education to strengthen leadership and management; • Liaison with educational establishments to ensure their courses meet HRH requirements; and • Procurement of short- or medium-term professionals.

Source: Authors.

former at the time of the report and this still appears to be the case. There is insufficient technical expertise in the short- and medium-term to support staff capacity development or for the development of appropriate tools, methodologies, and processes to support policy planning and development. There is also a reluctance to change, be innovative, or to accept new methods of doing things (ZMoH 2009). Efforts will thus have to continue toward the acquisition and retention of the requisite capacities for HRH policy formulation and strategic management.

Continued emphasis on operational management and administration may discourage effective policy and planning. A lack of emphasis on policy and planning may explain, in part, why a fully integrated human resources management information system is still lacking. The Joint Learning Initiative (2004) stresses that a health information system should use human resources management to document health outcomes, including mortality, morbidity, disease, and health status; health system performance, including service availability, quality, use, and coverage; health infrastructure, including drugs, equipment, and human and financial resources; and workforce increments, including attrition and labor market outcomes. Tracking this information encourages proper policy development and implementation aimed at corrective strategies in areas such as emigration (Fortier 2008). But such a system does not yet exist in Zambia. For the private sector, the relevant laws and regulations remain largely outdated. And despite some improvement, private sector governance and management may not always be adequate. The policy, legislative, and programmatic frameworks for promoting public and private sector growth and HRH initiatives are weak and in some cases ill-defined.

Despite limited evidence, there are indications that management of HRH administration is also inadequate, despite its increased emphasis. A better recruitment, placement, induction, wage, and payroll system, and a better supervisory and performance management system, could make management and administration far more efficient. (ZMoH 2009). Indeed, the report has shown that the recruitment process, for example, administered and managed by the MoH, is highly inefficient. Recruitment into new positions now occurs only after budgetary allocations. These allocations are not entirely predictable, are time-bound by the fiscal year, and depend on the Ministry of Finance and National Planning (MoFNP), which only releases funds four months after the Minis-

Box 7.1. Filling a vacant post

First, the outgoing incumbent's information must be removed from the payroll by a clerk in the district office on the payroll management and establishment control system. This system is currently centralized and located in the public sector management division (PSMD).

A request to fill the vacancy is made by the relevant facility to the district office, which passes the details to the provincial office, which in turn reports them to the Director of Human Resources and Administration at the MoH. Avoiding delays requires action from both the district and provincial human resources clerks.

The director reviews the requests and passes them to the chief human resources manager. Both the existence and funding of the post are then verified. A letter is prepared for the MoH to send to the public sector for the PSMD, requesting permission to fill the vacancy. The director supports only three human resources officers and may handle up to 900 of these requests a year, so delays are not uncommon.

The PSMD checks that the vacancy has been cleared on the payroll management and establishment control system. This process applies to all ministries; hence delays of up to several months may occur from the huge workload. Once the vacancy has been cleared, the PSMD grants the MoH approval in writing to fill the vacancy.

Source: Authors

try of Treasury has approved them (Vujicic and others 2008). Box 7.1 describes the rules for confirming a vacancy in an existing post and getting permission to fill it.

And there are also indications that public sector salaries are poorly managed and administered. Salary payment is often late. In the 2006 PETS (Picazo 2008) just over one-fifth (21.9 percent) of staff received their salaries on time, while most (78.1 percent) experienced delays of about a month. Among the reasons cited for nonpayment or delays in payment are "systemic delays" (cited by 29 percent of staff who experienced delays) and "other reasons" (cited by 49 percent). Other staff members (15.5 percent) reported receiving an amount less than their net payable salary with no explanation and without their consent. The remaining salary is averaged at ZK189,015, with amounts proportional to the level of the facility (rural health centers and hospitals have salaries missing at ZK72,444 and ZK244,278, respectively) (Picazo 2008).

Managing health worker education in Zambia requires extensive coordination among training institutions. Training and development of health professionals is sponsored by three ministries: the MoH for training certificate and diploma-level cadres; the Ministry of Education for degree-level courses at the University of Zambia School of Medicine; and the Ministry of Science and Technology via the Evelyn Hone College for vocational training and technology, which offers diploma-level courses supervised by the School of Medicine. Training medical students is managed by both the Ministry of Education and the MoH. The Ministry of Education selects the students and funds their education. These ministries and the University of Zambia also work with the Examinations Council of Zambia, the Technical Education, Vocational and Entrepreneurship Training Authority, and other professional councils to develop and certify training programs.

Perhaps thus not surprisingly, there are indications that management of educational development at the MoH could also be improved. At the MoH, one human resources development officer is responsible for training. Any plans for improving health worker education must be discussed and agreed on with the other line ministries. This is a bureaucratic nightmare. Moreover, the MoH and professional councils do not regularly monitor enrollment, dropouts, or graduation rates from health training institutions (ZMoH 2004; Ferrinho and others 2008).

Training Institution Capacity

The report has shown that inadequate capacity of health training institutions in Zambia is a major impediment to ensuring a sufficient flow of health workers into the health labor market, as well as ensuring competency levels are adequate. One key factor explaining the low stock and inadequate performance of health workers was found to be the lack of adequate capacity of training institutions to produce a sufficient number of competent health workers. This section summarizes and further assesses some of the key constraints on health training institution capacity in Zambia. A more comprehensive assessment is needed to analyze the bottlenecks in health worker production and performance in more detail.

Training capacity has been expanding for nurses but not for medical doctors. The physical capacity of training institutions, while improving, remains inadequate. Although Zambia has only one medical school, operated by the MoH, the number of training institutions for other cadres is slowly increasing, particularly in the private sector (table 7.2). Moreover, the number of non-CHAZ private-sector training institutions is also increasing. For example, while the private sector was barely involved in pre-service training until recently, the high unmet demand for nurses led to the establishment of about ten nurse training schools by 2008. More such schools are planned over the next few years, which will complement public sector nurse education and training. But it is unlikely that these additional schools will be able to meet short-term demand.

One major problem is student accommodation, which remains inadequate in most training institutions. Most schools have overcrowded, unsafe, and unhealthy living conditions. Hostels are rundown and in need of basic repairs. In many schools, the number of students housed far exceeds the capacity of student hostel blocks, with up to five students sleeping in a room built for two. In one instance, some 20 young women were found sleeping in a student lounge, while at other sites students have been forced to sleep on clinic beds for lack of other accommodations. While classrooms, libraries, kitchens, dining halls, and other infrastructure differ in quality across schools, these facilities remain inadequate in most, and most schools do not have enough space for teaching, practicals, studying, and dining (ZMoH 2008a).

Finally, technical and organizational capacities remain inadequate in most training institutions. Instructors are in short supply, and schools report challenges in recruiting and retaining dedicated teaching staff. Rural training schools have a particularly difficult time attracting and retaining faculty. Moreover current resources are scarce and outdated: most schools are in desperate need of textbooks, computers, Internet access, teaching materials, and updated laboratories (ZMoH 2008a).

Table 7.2. Public and Churches Health Association of Zambia-sector training institutions

Province	District	Training unit	Cadres trained	Supervisory ministry
Copperbelt	Kitwe	Kitwe schools of nursing & midwifery	RN RM	MoH
	Mufulira	Mufulira schools of nursing & midwifery	RN RM	MoH
	Ndola	Ndola college of biomedical sciences Ndola schools of nursing and midwifery	Laboratory technologist RN RM	MoH MoH
	Chingola	Nchanga North school of midwifery (2008*)	RM	MoH
	Luanshya	Roan school of midwifery (2008*)	RM	MoH
Central	Kabwe	Kabwe schools of nursing & midwifery	RN RM	MoH
Eastern	Chipata	Chipata school of nursing Mwami school of nursing & midwifery	RN RM (2008*) RN	MoH CHAZ
	Katete	St Francis school of nursing	RM EN	CHAZ
Luapula	Nchelenge	St Paul's ZEN school of nursing	EN	CHAZ
	Mansa	Mansa ZEN school of nursing	EN	MoH
Northern	Kasama	Kasama school of nursing	RN RM	MoH
	Mpika	Chilonga nursing school	RN RM	CHAZ
Southern	Choma	Macha ZEN school of nursing	EN	CHAZ
	Livingstone	Livingstone school of nursing Biomedical school	RN Lab technologist	MoH MoH
	Mazabuka	Chikankata ZEN/ZEM schools of nursing & midwifery	EN EM	 CHAZ
	Monze	Monze ZEN/ZEMschools of nursing and midwifery	EN EM	 CHAZ
Western	Mongu	Lewanika ZEN school of nursing	EN	MoH
North-Western	Solwezi	Solwezi ZEN schools Mukinge ZEN school of nursing	EN EN	MoH CHAZ
	Kasempa	Kalene school of nursing (2008*)	RM	CHAZ
Lusaka	Lusaka	Chainama Hills college of health sciences	M licenciates CO general CO psychiatry EH technology R Mental health nurse Counsellors Laboratory technologist (continuing education)	 MoH
		UTH schools of nursing & midewifery	RN RM R theatre N	 MoH
		Dental training school	Dental therapist Dental technologist	 MoH
		Faculty of medicine	BSc Med Sur MoH MMed Paeds MMed Int Med MMed Surgery MMed Orthopaedics MMed O&G MPH BSc Physiotherapy BSc Laboratory BSc Pharmacy BSc Nursing	
		School of anaesthesia	CO (anaesthesia)	MoH
		Evelyne Hone College	Radiography Physiotherapy Laboratory Pharmacy E H technologist	 Ministry of Science, Technology and Vocational Training

Source: Phiri and others 2008.
*Evaluated in January 2008 to identify conditions needing attention to initiate midwifery training (Phiri and others 2008).

Conditions of Service (Monetary and Nonmonetary Compensation)

This report has linked various "conditions of service," both monetary and nonmonetary compensation, available and provided to health workers to labor market outcomes. Throughout the report, the perception of low monetary and monetary compensation is seen to have influenced entry and exit of health workers in and out of the labor market, as well as their performance within the health labor market.

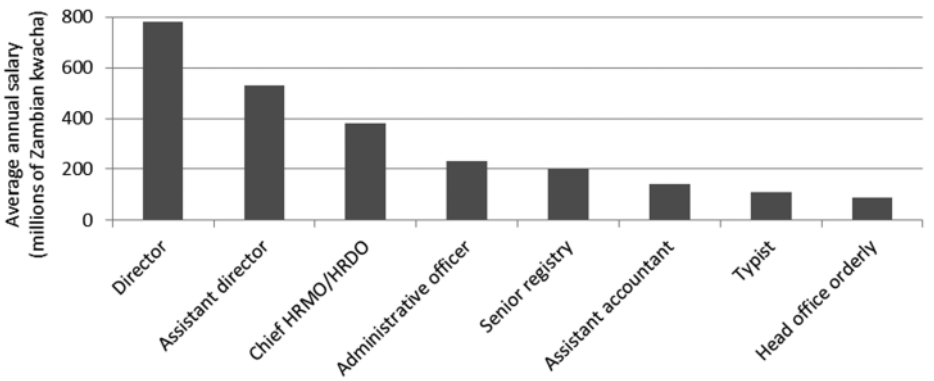
Indeed, monetary compensation perceived as inadequate affects labor market dynamics and hence outcomes. Monetary compensation includes direct compensation in the form of salaries, rural hardship allowances, or other monetary benefits obtained through supplementary income schemes; and indirect compensation, including housing, scholarships, children's schooling, childcare allowances, health insurance benefits, loan repayment schemes, and travel subsidies. Perceived low monetary compensation levels are a major reason for outmigration (thus affecting stock), a major reason for low rural labor market entry, and one, although not primary, reason for high rural exit levels (thus affecting distribution). In addition, the level of monetary compensation was linked to dual practice and was a contributor, albeit by far not the most important one, to low satisfaction and motivation to perform (and hence affected performance).

Moreover, nonmonetary compensation perceived as inadequate also negatively affects labor market dynamics and thus outcomes. Nonmonetary compensation is often defined to include career-related compensation (professional development opportunities, training, and job security), compensation to improve working conditions (better management, flexibility, and supplies), and family and lifestyle compensation (such as increased vacation time and housing near the health facility). No evidence was provided on monetary compensation negatively affecting stock.[2] Low perceived nonmonetary compensation on the other hand was used to explain inequitable distribution by reducing rural labor market entry (because of a lack of available and low standard housing and poor infrastructure and supplies, as well as inadequate professional development opportunities) and increasing high rural labor market exit rates (because of bad facility management, lack of accommodation, long commutes, lack of equipment, among other things). Finally, perceived nonmonetary compensation negatively affects performance indicators (because of insufficient in-service training, inadequate facility performance management and accountability, inadequate equipment and supplies), all of which directly impacted performance indicators, as well as the motivation to perform.

The following section assesses further monetary and nonmonetary compensation available to health workers in Zambia. Much of the emphasis in this section is on monetary compensation. Future research needs to focus more on nonmonetary compensation.

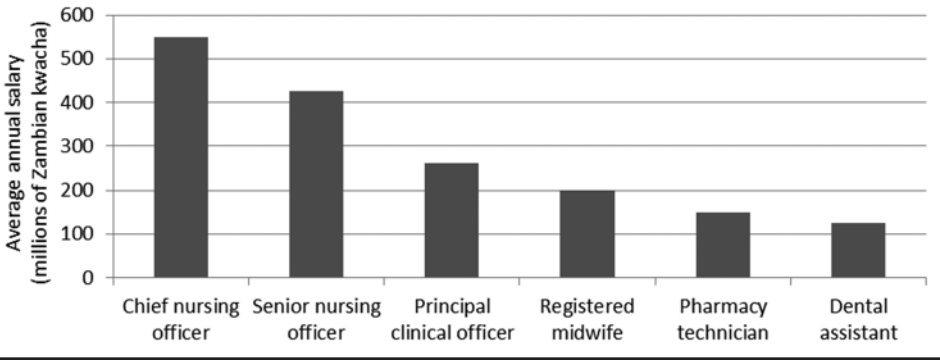
While most staff on the government payroll are placed according to job and grade on a single pay scale used across the public service, remuneration of health workers is based on separate (slightly higher) pay scales that exist only in the health sector. Public servants outside of the health sector are paid according to the General Salary Scale. In the health sector, there are three pay scales relevant to workers: (i) the General Salary Scale, which applies to the nonclinical managers and administrative staff; (ii) the Medical Salary Scale, which applies to all medical workers excluding medical doctors and pharmacists; and (iii) the Medical Doctor Salary Scale, which applies to medical doctors and pharmacists (figures 7.1–7.3).

Figure 7.1. General salary scale as of April 1, 2007



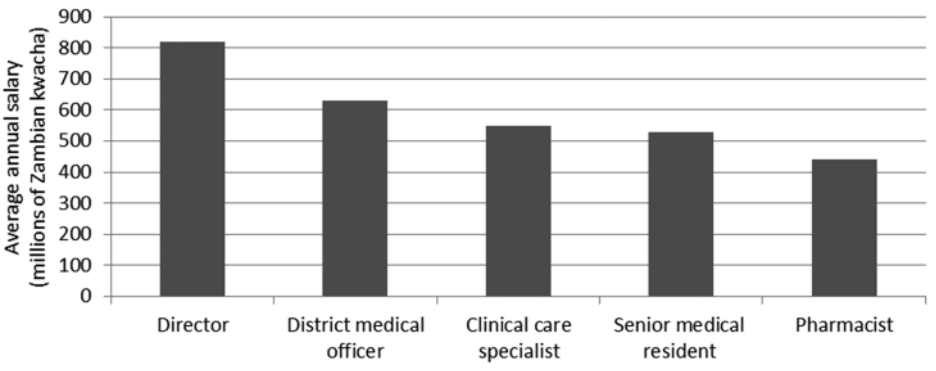
Source: Office of the President, Public Service Management Division, Secretariat, Republic of Zambia, Public Service Management Division Circular No. B.4 and B.5, April 11, 2007.
Note: HRMO: Human Resources Management Office; HRDO: Human Resources Development Organisation.

Figure 7.2. Medical salary scale as of April 1, 2007



Source: Office of the President, Public Service Management Division, Secretariat, Republic of Zambia, Public Service Management Division Circular No. B.5, April 11, 2007.

Figure 7.3. Medical doctor annual salary scale as of April 1, 2007



Source: Office of the President, Public Service Management Division, Secretariat, Republic of Zambia, Public Service Management Division Circular No. B.5, April 11, 2007.

Salaries (without allowances discussed below) are generally lower in the public sector than in the private sector. A 2004 study found that despite salary increases over the years, public sector pay fell in value between 1975 and 2000 by between 85 and 90 percent. Table 7.3 shows a comparison of government, NGO, and private-sector salary levels in 2004 for selected staff categories, not including additional allowances and benefits (Koot and Martineau 2005). It shows that private doctors' salaries were more than double those of government doctors; midwives' salaries were almost a third higher; and laboratory technicians' salaries were more than three times those in government. NGOs paid between 23 percent and 46 percent more than the government. The study also showed that the private sector used incentive payments of as much as 52 percent of a yearly salary for one group of private-sector doctors (McCoy and others 2008).

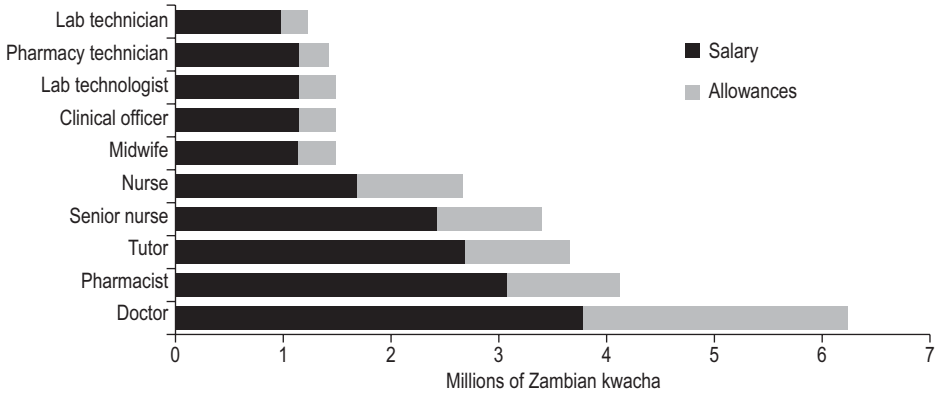
Table 7.3. Average annual salaries paid, by service provider type (dollars), not including allowances

Health worker	Government	Nongovernmental organization	Private sector
Doctor	7,525	9,240	17,050
Clinical officer	1,915	3,400	Not applicable
Midwife	1,900	Not applicable	2,500
Nurse	1,865	2,295	Not applicable
Lab technician	1,915	2,800	6,350

Source: Huddart and others 2004; McCoy and others 2008.

What the picture on salaries does not reflect is that allowances make up a significant proportion of the overall earnings of government staff. There are various allowances that apply to all public servants, such as subsistence allowance, uniform upkeep, transport/baggage repatriation, settling-in, and rural/hardship allowances. Recruitment and retention allowances are paid to all graduate public servants regardless of location. These allowances often represent a high proportion of pre-tax remuneration. As shown in figure 7.4, allowances in 2005 accounted for 39 percent of a doctor's and 35 percent of a senior nurse's monthly package. The number of these allowances tends to decline with the level

Figure 7.4. Composite monthly salaries and allowances of clinical/professional health workers (2005)



Source: Picazo 2008.

of the health worker, although each type of allowance is applied uniformly across levels, except for housing and recruitment and retention allowances.

Allowances are captured as "other emoluments" and are not part of the personal emoluments paid by the MoFNP, as they are specific to the sector and individual circumstances. For example, the on-call allowance is paid based on the number of times the doctor was on call and this is determined retrospectively. Some allowances are also donor-financed, such as those under the Zambian Health Worker Retention Scheme. The scheme was initially only for medical doctors in Category C and D districts and the first contracts ran from 2003–04 for a fixed period of three years. During that period the monthly allowances paid under the scheme amounted to about US$600–700 per doctor (appendix C; Vujicic and others 2008).

When benchmarking the salaries (and allowances) of health workers against the average gross national income in Zambia, doctors and nurses earn considerably well. Indeed, when taking into account salaries and allowances, doctors in Zambia earn 40 times the gross national income (GNI) per capita and nurses and midwives 9.6. This ratio for doctors is significantly higher than in Ghana, where doctors are generally known to be well paid, even prior to the salary raise in 2006 (when allowances were calculated together with salaries). Nurses and midwives in Burkina Faso on the other hand, which is more representative of other Sub-Saharan African countries, earn close to half the GNI per capita ratio of nurses and midwives in Zambia (McCoy and others 2008). The relatively high monetary remuneration of health workers may explain why salaries and remuneration were not shown to be primary factors in moving labor market dynamics. It is interesting that when put into relation of the GNI, Zambia competes not with the norm in Sub-Saharan Africa, but with Ghana and even Nigeria, both considered to pay health workers fairly well (table 7.4).

Finally, as in most Sub-Saharan African countries, *non*monetary compensation at most health facilities in Zambia is likely an issue, particularly in rural areas. Physical infrastructure, accommodation, transport, medical equipment, medical supplies and drugs, communication, and access to further professional training all have serious short-

Table 7.4. Salary to GNI per capita ratios: Ghana, Burkina Faso, Zambia, and Nigeria

	Ghana (US$) 2005	Burkina Faso (US$ 2006)	Zambia (US$ 2005)	Nigeria (US$ 2001)
Annual pay				
Doctor	14,616	—	17,208	—
Midwife	5,580	2,873 (male) 2,443 (female)	4,128	5,760
Nurse	4,896	2,454 (registered) 1,871 (certified)	4,128	5,097
Ratio of salary to GNI per capita				
Doctor	32.5	—	40	—
Midwife	12.4	6.7/5.7	9.6	11.1
Nurse	10.9	5.7/4.4	9.6	9.8
GNI per person	450	430	430	520

Source: McCoy and others 2008.
Note: GNI = gross national income. Figures include all monetary allowances, including income from per diems and local fee revenue, but exclude other private income and nonmonetary benefits.

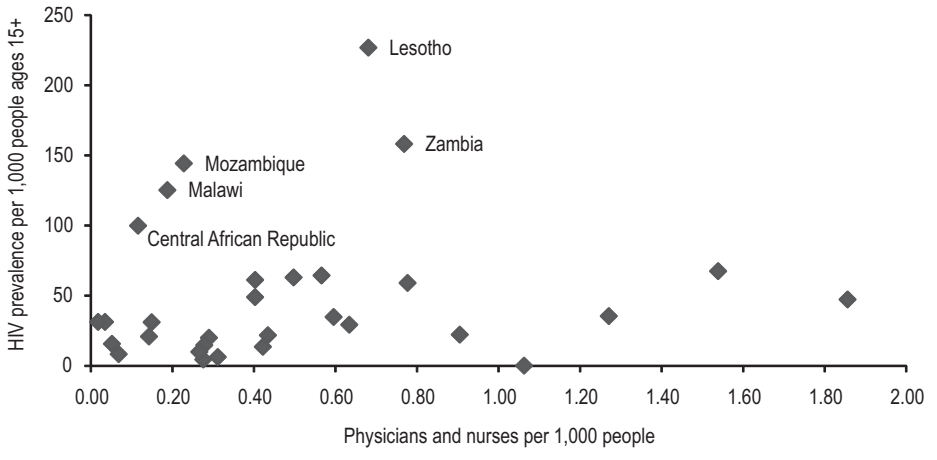
falls. Of course this problem is not specific to Zambia. Beyond facility infrastructure, housing, roads, employment opportunities, and education all remain poor in much of rural Sub-Saharan Africa (Unknown 2008: A Problem Statement). More information and surveys are required to accurately map the current status in Zambia with regards to nonmonetary compensation factors.

HIV/AIDS

The report has indicated that HIV/AIDS in Zambia may be affecting labor market outcomes in Zambia. Although insufficient evidence exists to claim HIV/AIDS greatly contributes to the HRH crisis in Zambia (more research in this area is required), the report did suggest that HIV/AIDS may negatively affect stock primarily by contributing to labor market exit through premature death of health workers. In addition, HIV/AIDS is listed as a major impediment to performance—it increases complex workload, and contributes to absenteeism of staff and productivity.

As indicated throughout the report, Zambia is indeed heavily affected by the HIV/AIDS crisis, and is only one of a few in Sub-Saharan Africa that suffers from both an HRH *and* an HIV/AIDS crisis. Figure 7.5 plots the number of doctors and nurses against HIV/AIDS prevalence in persons aged 15 or older across all African countries for which both statistics are available. The figure identifies Zambia to be one of 5 countries in Sub-Saharan Africa with both human resources for health crisis (as defined by the WHO) and an adult HIV/Aids prevalence rate greater than 10 percent.

Figure 7.5. Countries experiencing simultaneous human resources for health and HIV/AIDS crises in Sub-Saharan Africa



Source: Authors' calculations based on WHO and World Bank data.

Notes

1. User fees were, however, abolished in rural areas in 2006 (Moszynski 2006), causing serious problems for health facilities relying on these funds to supplement their staff.
2. A study to examine the key reasons of outmigration in Zambia is urgently needed.

CHAPTER 8

Available Financing for HRH

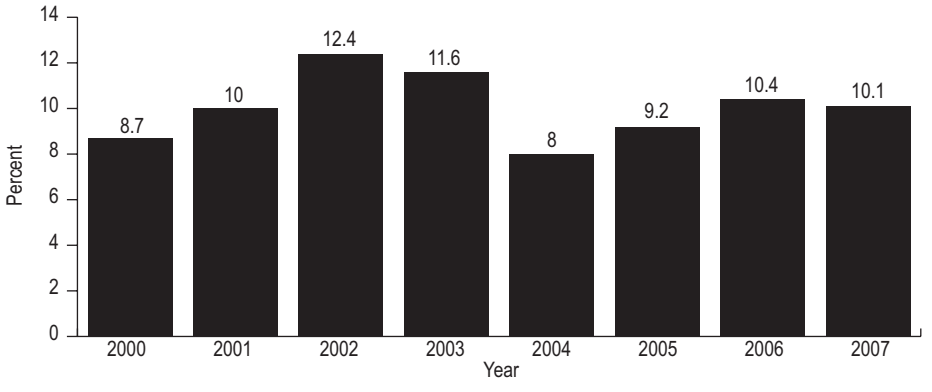
Adequate fiscal space is an important parameter without which overcoming the human resources for health crisis is not possible. All of the factors discussed above and that influence labor market dynamics depend on adequate fiscal space. This section assesses the existing picture on fiscal space.

Summary of main findings

- The budget allocated to the health sector is below the Abuja target.
- Much of the health budget in Zambia comes from donor funding.
- Donor funding is largely earmarked, restricting the actual budget for HRH.
- The wage bill (budget for personal emoluments) has declined over time (largely due to this earmarking of donors funding).

The national budget allocated to health in Zambia is below the Abuja target. As the fifth National Development Plan and the latest Medium-Term Expenditure Framework outline, health, education, and water and sanitation are public spending priorities (ZMoFNP 2007). Yet in 2006, the MoH expressed significant concerns about Zambia's prospects for meeting global commitments such as the 2015 Abuja target.[1] During fiscal years 2006 and 2007, about 10 percent of the national budget was allocated to the health sector, fairly consistent with figures from the previous six years but still far from the Abuja target (figure 8.1).

Figure 8.1. Health allocations as share of the national budget



Source: HIV/AIDS aid effectiveness study.

Table 8.1. Health budget expenditure categories (2007)

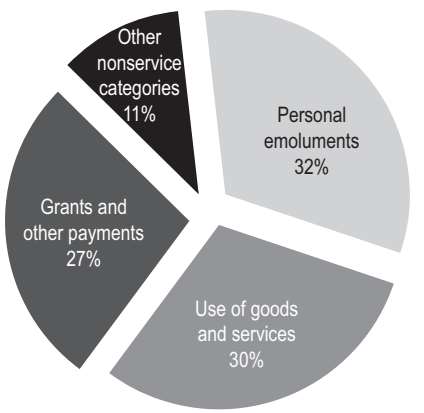
Expenditure	GRZ (68.1 percent)	Donors (31.9 percent)
Capacity building	2,255,835,009	711,303,988
District health systems management	21,077,624,177	35,017,111,200
Drugs and medical supplies	82,321,678,996	57,786,908,256
General administration	47,611,874,607	0
Health service delivery	96,735,465,901	245,332,422,038
Health systems management	43,702,721,552	38,945,335,240
Infrastructure development	96,037,820,665	0
Personal emoluments	392,298,985,876	0
Support to institutions	41,886,139,932	2,782,080,000
Training of health workers	6,249,999,997	7,536,399,998
Total	830,178,146,712	388,111,560,720

Source: CHESSORE 2007.

The overall government budget allocated to the health sector covers various expenditure categories and is supplemented by donor funding. Table 8.1 shows that about a third of all government spending for the health sector in 2007 came from donor funding. Personal emoluments, reflecting the "wage bill," represent the largest chunk of the expenditure categories. Of the 2007 MoH budget, close to one-third (32 percent) is earmarked for personal emoluments, 30 percent for goods and services, 27 percent for grants and other payments, and 11 percent for nonservice categories (figure 8.2).

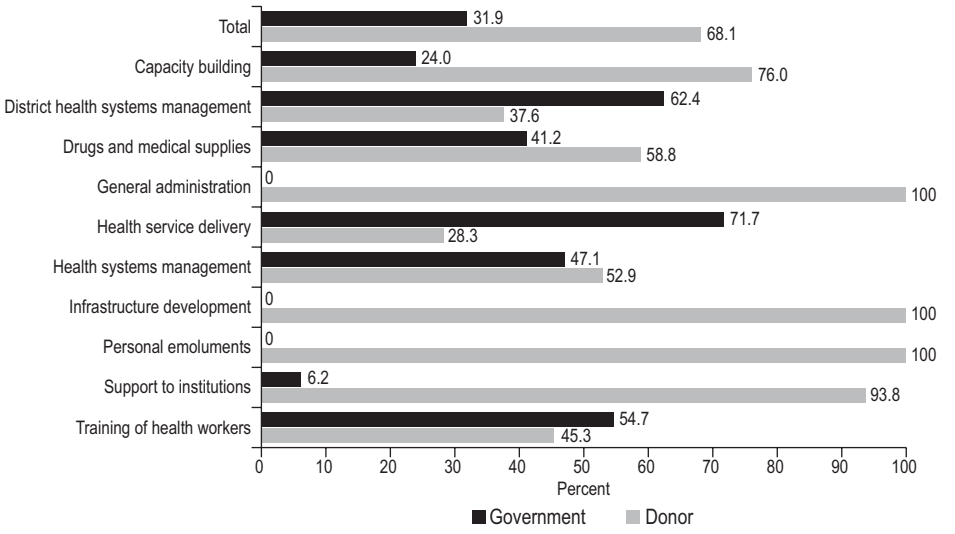
Much of Zambia's international funding is earmarked for specific health activities rather than to strengthen health systems. The health sector has received much financial support from the World Bank, the Global Fund, PEPFAR, and other bilateral sources to fight HIV/AIDS, malaria, and tuberculosis, and support has gone primarily to expand ART, VCT, PMTCT, and treatments to control opportunistic infections. Figure 8.3 shows that donors invested more than the MoH in health worker training, health service delivery, and district health systems management. No donor funding went to infrastructure development, general administration costs, or personal emoluments. Funding allocated to training may also be detrimental because it pulls staff away from frontline activities. Because most of these funds are not available to recruit and retain health workers, the MoH's power to address many aspects of its HRH crisis is limited (Office of the U.S. Global AIDS Coordinator 2004; Global Fund 2003; Kombe and others 2005).

Figure 8.2. Distribution of budgeted funds for the Ministry of Health (2007)



Source: CHESSORE 2007.

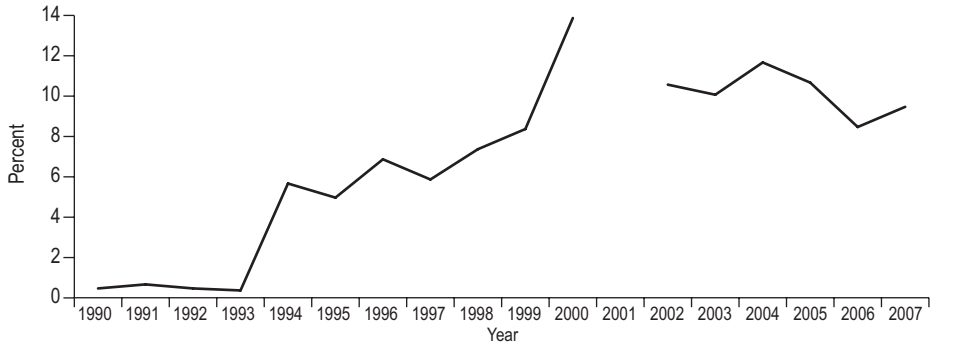
Figure 8.3. Source and allocation of Ministry of Health funds



Source: CHESSORE 2007.

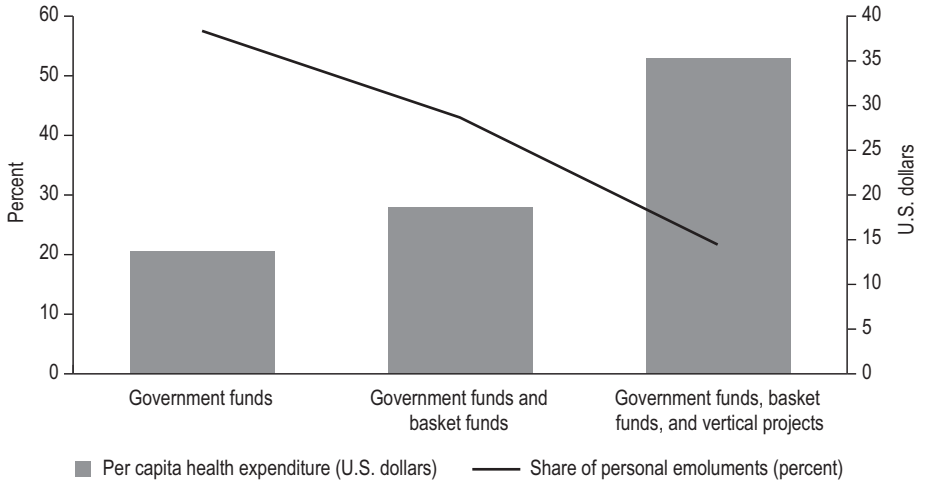
As a share of the overall public wage bill, the budget for personal emoluments (the wage bill) increased from the 1990s to 2001 and has since remained stable at about 10 percent. An increasing share of the overall wage bill was allocated to the health sector from 1992 to 2000. Following fiscal controls in 2001, the relative allocation to health decreased. Since then the health wage bill has remained at roughly 10 percent of the overall wage bill (figure 8.4). Several factors contributed to this stabling out in the health wage

Figure 8.4. Health bill as a share of public sector wage bill (1990–2007)



Source: World Bank (2001, 2008) from Vujicic and others (2008).
Note: Data are unavailable for 2001. Health expenditure includes GRZ funding and the basket funds various donors provide. But it does not include overall donor funding. When donor funding is included, the proportion of health expenditure dedicated to wages falls because most of the donor funding is used to fund service delivery and nonwage expenditures. For instance, in 2006, if just GRZ funding is considered, 57 percent of health expenditure is dedicated to personal emoluments. But if all donor funding is taken into account, including vertical funds and basket funds, the ratio falls to 22 percent. The GRZ has discretion over donors' basket funding, so it is included in this graph.

Figure 8.5. Per capita health expenditures and share of personal emoluments (2006)



Source: Eriksson 2006.

bill. First, some grant-aided institutions initially put on the MoH payroll were subsequently delinked. These institutions' staff receive salaries in block grants rather than under the wage bill. Second, in 2006 when the CBoH was dissolved, staff were brought back to the civil service with less generous benefits, also contributing to the reduction in the health wage bill.

Earmarking of donor funding explains why as a share of total health expenditure, the proportion going toward personal emoluments has actually declined over time. Figure 8.5 shows that as total per capita health expenditures increase with the addition of more funding into the health system, the proportion of personnel expenditure to total health expenditures declines. In short, it is the inability of the basket funds and vertical financing to formally[2] finance personnel expenditure that causes "so much money chasing so few workers." To change this situation, more flexible mechanisms for channeling additional external resources to support HRH are needed.

Box 8.1. Wage bill ceilings

Budget caps and wage bill conditionality are features of many poverty reduction and growth facility programs in Sub-Saharan Africa. It is often argued that many Sub-Saharan African countries are prevented in the short term from expanding their budgets to allow them to hire more health workers or to accept grants for health care expansion by budget ceilings required under International Monetary Fund (IMF) and World Bank inflation-reduction and deficit-reduction targets. The IMF's "imposed" budget ceilings and wage bill conditionalities have also been blamed for low wage bills and the low numbers of health workers hired in some countries.

(Box continues on next page)

Box 8.1 (continued)

But in Zambia, between 2000 and 2004 the public sector wage bill was expanded. And in 2002 a hiring freeze was introduced to contain the wage bill, although doctors and nurses were excluded, favoring the health sector. MoH data indicated that the health sector's share of the public sector wage bill had declined significantly, suggesting that this legislative favoritism did not translate to practice. Also, some of this decline could have resulted from the CBoH hiring additional staff from its block grants during decentralization, thus insulating the health sector from the wage bill ceilings and the ensuing hiring freezes. So the accounting methodology may not have captured wage bill and staffing increases under this decentralized structure.[3] And while this decentralization may have funneled more money into salaries than MoH data indicate, it may also have come at the expense of essential health services (Vujicic and others 2008).

The public service salary scale review approved by the Zambian cabinet in 2002 led to fewer salary grades and hence to a decompression of salaries. The resulting higher allowances and increases were not anticipated and resulted in overruns to the 2003 budget.[4] In reaction, another hiring freeze was put in place, and the IMF introduced measures to keep the wage bill within the agreed limit of 8 percent of GDP (Vujicic and others 2008).

Source: Authors.

Notes

1. The Abuja target requires Sub-Saharan African countries to increase their health spending to 15 percent of total public spending by 2015.
2. Anecdotal evidence indicates that vertical funds are being used by health facilities to incentivize health workers at the district level.
3. Key informant interview with the PSMD cabinet office, Government of Zambia, April 7, 2008.
4. Key informant interview with former PSMD.

Appendixes

Appendix A. Economics of Health Labor Markets in Sub-Saharan Africa

Supply

The supply of health workers is measured by the stock of health workers willing to enter the health labor market; that is, the number of individuals with the necessary qualifications able and willing to work in the health sector, not the number of individuals actually working in this sector or the number of individuals qualified to do so.

Demand

HRH demand refers to the actual demand for health worker service by governments, health facilities, and/or individuals (employers). Demand is sometimes said to be determined less by "what is required or needed by a particular health service or health output" and rather by social, political, and economic factors beyond the needs of the population (Vujicic 2007).[1] By definition, labor market demand is determined by the existence, willingness, and ability of an employer to hire health workers. Some argue that HRH planning in countries has failed largely because it has focused only on determining the needs-based HRH level—what "ought to be." HRH planning has ignored the actual behavior of those individuals and institutions who hire health care professionals.

Market intervention and restrictions: the impact on supply and demand

Health labor markets in Sub-Saharan Africa impose many restrictions affecting the supply-side and demand-side behavior of health workers. What influences market behavior varies among countries. And factors such as quotas, training costs, professional regulation, licensure examination, and educational requirements are involved in each case. In some countries, health workers may be subjected to compulsory government service (Fields 2008) or may be unable to work in another country because they cannot obtain exit visas.

For demand, the health labor market model assumes employers can operate in the most advantageous fashion. Health facilities are often compelled to operate in locations with a less favorable balance of productivity and cost. Further, although this model assumes that health facilities should have an optimal number of health workers to meet facility goals, in the not-for-profit health sector the aim is to cover as many people as possible while in the for-profit sector it is to maximize profit. Many times, markers of quality are not integrated in the optimal skill mix.

Notes

1. http://www3.interscience.wiley.com/cgi-bin/fulltext/112652606/PDFSTART.

Appendix B. Ministry of Health Staff Levels against Approved Establishment (2004 and 2008)

Cadre	Approved establishment 2004	Staff in post 2004	Difference	Approved establishment 2008	Staff in post 2008	Difference
Doctors	2,300	646	1,654	1,778	745	1,033
Nurses	16,732	6,096	10,636	14,053	6,980	7,073
Midwives	5,600	2,273	3,327	4,751	2,775	1,976
Clinical officers	4,000	1,161	2,839	3,737	2,657	1,080
Medical licentiates				547	79	468
Pharmacy staff	162	108	54	1,238	693	545
Laboratory staff	1,560	417	1,143	1,403	697	706
Environmental health workers	1,640	803	837	2,555	1,276	1,279
Teaching staff				422	237	185
Dental staff	633	56	577			
Physiotherapist staff	300	86	214			
Radiography staff	233	142	91	732	327	405
Other paramedical staff	6,000	320	5,680	1,379	485	894
Nutritionist	200	65	135			
Administrative staff				7,769	3,952	3,817
Support staff	10,000	11,003	−1,003	11,040	8,250	2,790
Total	49,360	23,176	26,184	51,404	29,153	22,251

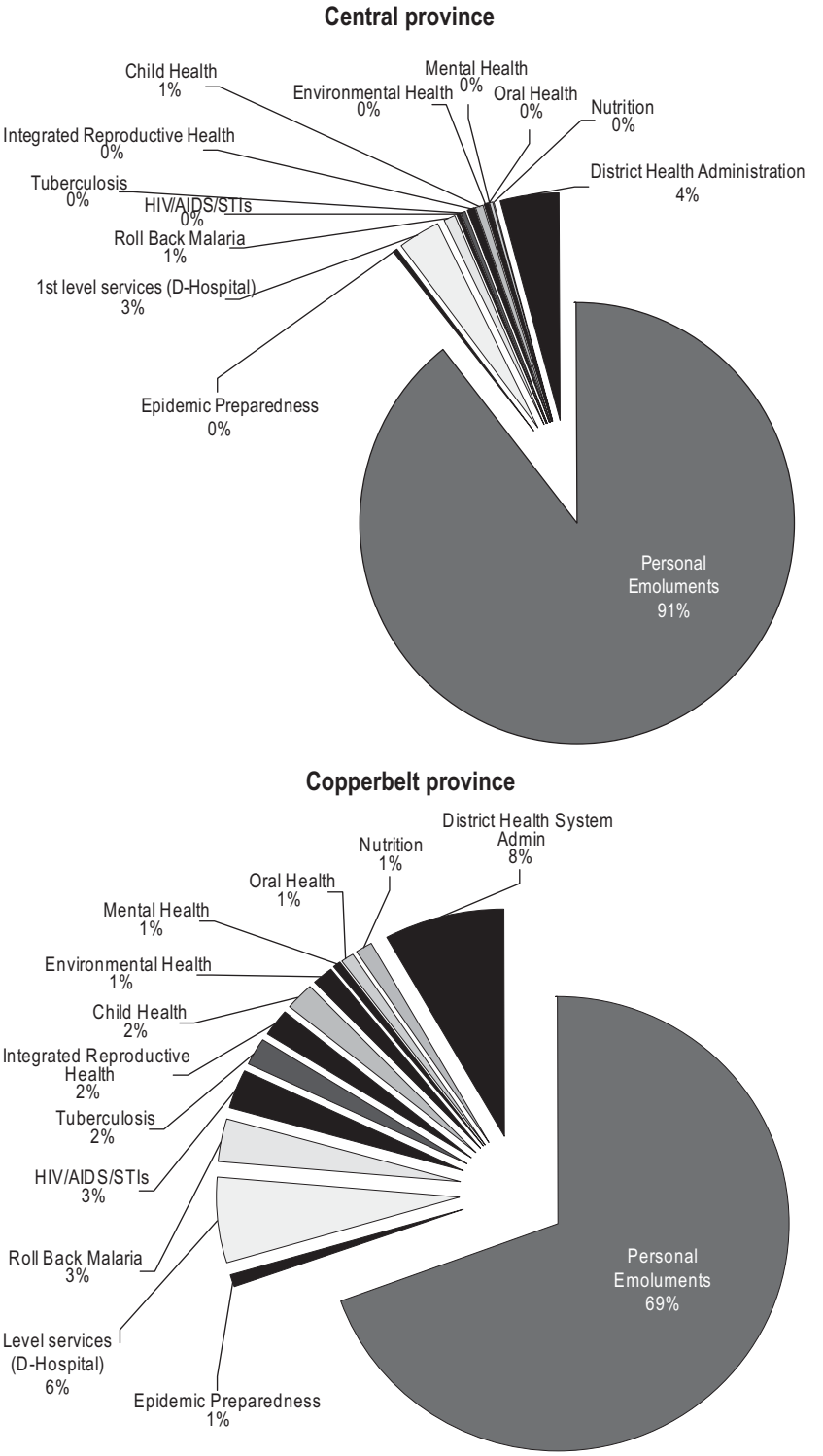
Source: Director of Human Resources, Ministry of Health, Government of Zambia, April 2008.

Appendix C. Composite Pre-tax Government Monthly Pay of Sample of Health Professionals (2005)

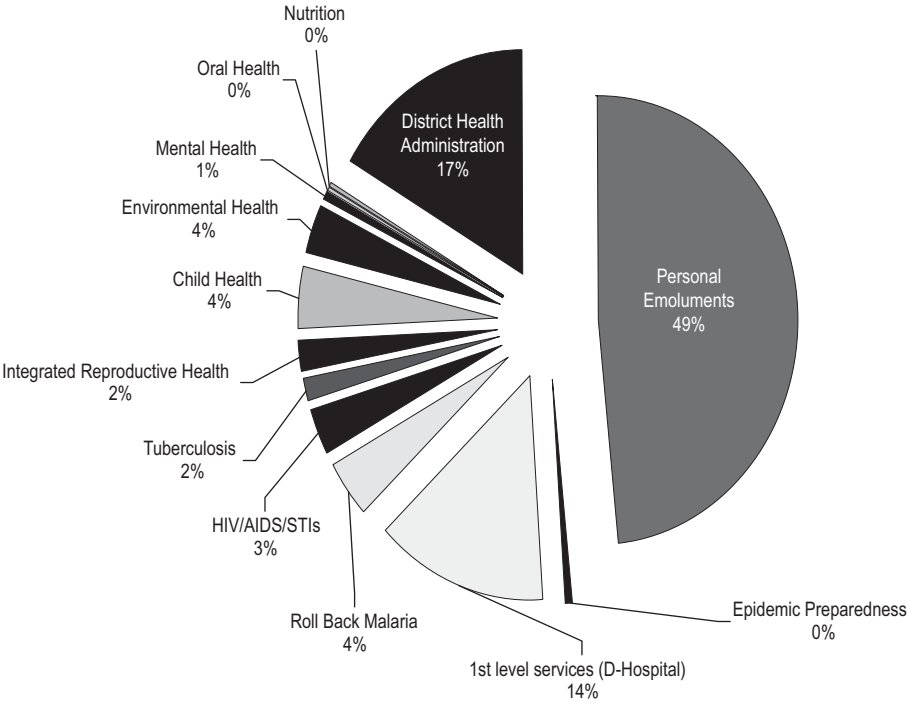
Cadre	Gross monthly salary	Recruitment and retention	Commuted overtime	Commuted night duty	Uniform upkeep	Housing allowance	On-call	Total (kwacha)	Total (dollars)	Allowance (percent)
Doctor	3,778,438	755,688	—	—	—	500,000	1,200,000	6,234,126	1,453	39
Pharmacist	3,072,188	614,438	—	—	35,000	400,000	—	4,121,626	960	25
Lab scientist	2,687,500	537,500	—	—	35,000	400,000	—	3,660,000	853	27
Tutor	2,429,500	485,900	—	—	35,000	450,000	—	3,400,400	792	29
Senior nurse & paramedic	1,683,230	336,646	40,000	30,000	35,000	450,000	—	2,574,876	600	35
Nurse	1,141,770	—	40,000	30,000	35,000	250,000	—	1,496,770	349	24
Midwife	1,141,770	—	40,000	30,000	35,000	250,000	—	1,496,770	349	24
Clinical officer	1,141,770	—	40,000	30,000	35,000	250,000	—	1,496,770	349	24
Lab technologist	1,141,770	—	40,000	30,000	35,000	250,000	—	1,496,770	349	24
Pharmacy technician	1,141,770	—	—	—	35,000	250,000	—	1,426,770	332	20
Lab technician	981,354	—	40,000	30,000	35,000	150,000	—	1,236,354	288	21

Source: ZMoH 2005.
Note: This is the most recent data available giving the allowances payable by cadre. Some are based on Cabinet Office Circular 19 of 2003 and some have subsequently been updated; exchange rate: US$1 = 4,292 Zambian kwacha (October 2005).

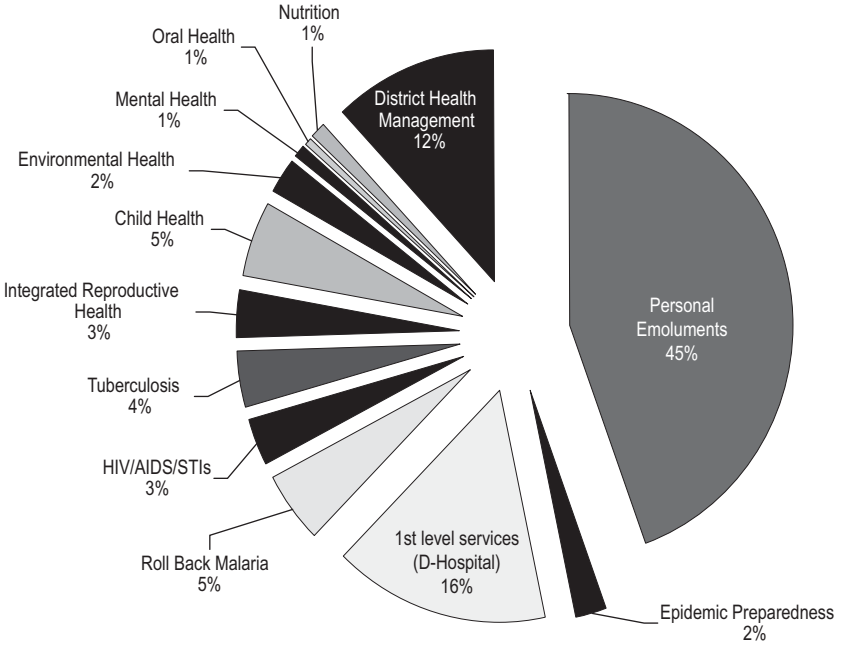
Appendix D. Budget Allocations to District Health Management Teams in Select Provinces (Chessore 2007)

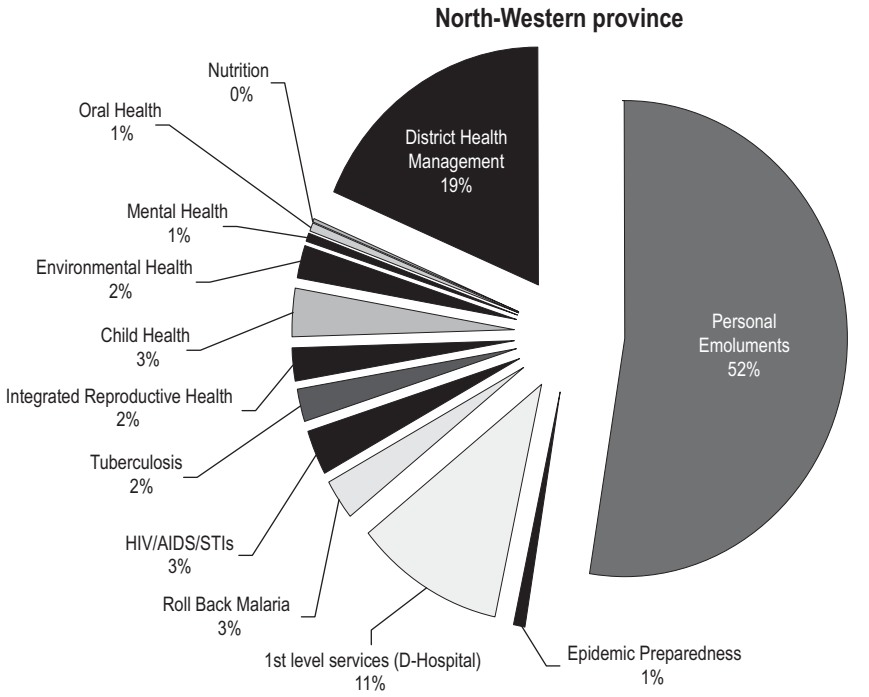


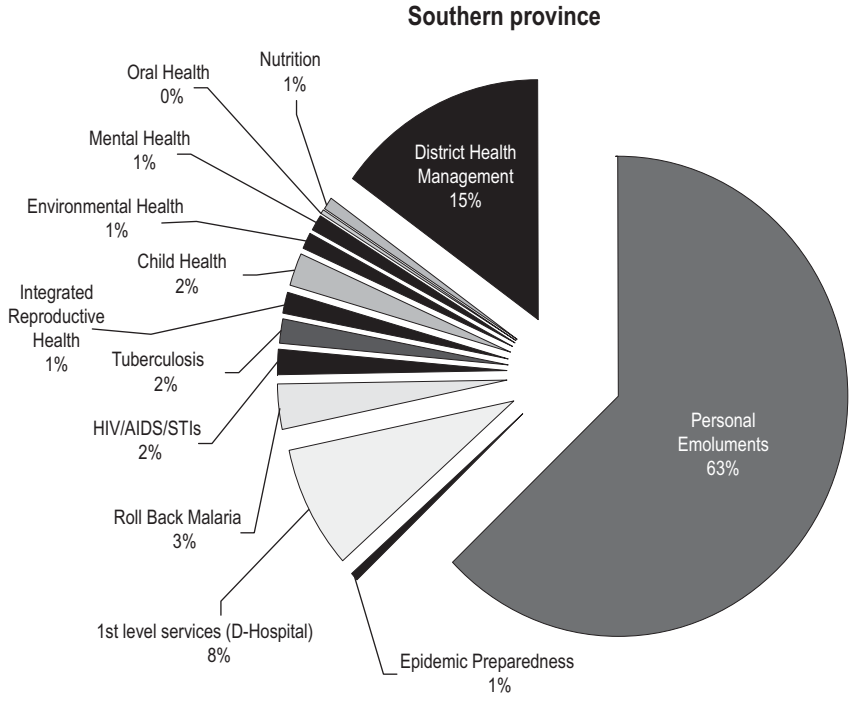
Eastern province



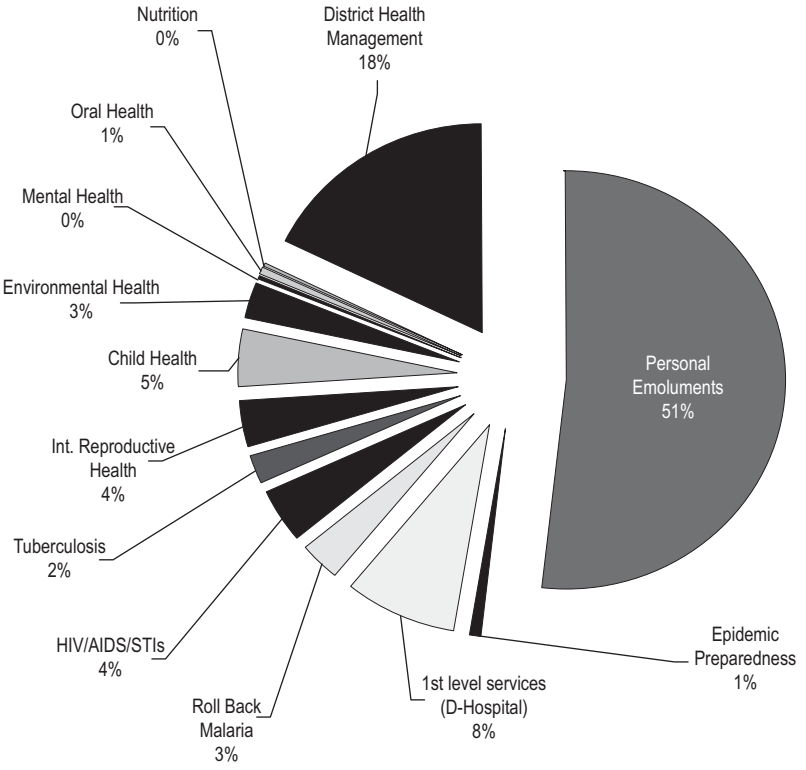
Northern province




North-Western province
Nutrition 0%
Oral Health 1%
District Health Management 19%
Mental Health 1%
Environmental Health 2%
Child Health 3%
Integrated Reproductive Health 2%
Tuberculosis 2%
HIV/AIDS/STIs 3%
Roll Back Malaria 3%
1st level services (D-Hospital) 11%
Epidemic Preparedness 1%
Personal Emoluments 52%


Southern province
Oral Health 0%
Nutrition 1%
Mental Health 1%
District Health Management 15%
Environmental Health 1%
Child Health 2%
Integrated Reproductive Health 1%
Tuberculosis 2%
HIV/AIDS/STIs 2%
Roll Back Malaria 3%
1st level services (D-Hospital) 8%
Epidemic Preparedness 1%
Personal Emoluments 63%

Western province



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Despite reporting some health gains since the 1990s, health outcomes remain poor in Zambia and it will be very challenging to achieve the health-related Millennium Development Goals by 2015. The Government of Zambia recognizes that the improvement of child and maternal health and the reduction in mortality from HIV/AIDs and malaria require better access to an appropriate number of well-performing health workers or human resources for health (HRH). This paper compiles recent evidence on the Zambian health labor market and provides some baseline information on HRH to support the government address its HRH challenges. In addition, the paper analyzes the available evidence on the national health labor market to better understand the number, distribution, and performance of HRH in Zambia. The paper also explains HRH outcomes by mapping, assessing, and analyzing pre-service education and labor market dynamics and well as the core factors influencing these dynamics.

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