

ANALYSIS OF THE HEALTH CARE LABOR MARKET IN PERU

DISCUSSION PAPER

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Health, Nutrition, and Population (HNP) Discussion Paper

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Health, Nutrition, and Population (HNP) Discussion Paper

Analysis of the Health Care Labor Market in Peru

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Abstract: This report aims to provide an updated analysis of labor market trends for the health workforce in Peru, focusing on the basic health team—physician, nurse, and midwife—and other health professionals related to current priorities. Peru has been labeled as a country with a shortage of health professionals (that is, with less than 25 professionals per 10,000 inhabitants), and although the most recent numbers indicate that the situation has improved, the shortages are bound to become more acute as the country aims to achieve Universal Health Coverage. We found that the country trains both in public and private universities a large number of professionals, but that the majority of trained professionals do not then go on to work for the public sector. This dynamic had not been described before and challenges current assumptions of human resources needs and availability. There is very little reliable data on numbers, type and work conditions for human resources working outside the public sector, including the social security insurance health system (EsSalud), other health insurance providers, and the private sector, and as a result no detailed information can be obtained about the distribution of health professionals outside the public sector. For policy purposes, it is necessary to improve the quality and integration of HRH information across the sector.

Keywords: Human Resources in Health

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ACRONYMS AND ABBREVIATIONS

ANR	<i>Asamblea Nacional de Rectores</i> / National Assembly of Rectors
ASPEFAM	<i>Asociación Peruana de Facultades de Medicina</i> / Peruvian Association of Medical Schools
UHC	Universal Health Coverage
CAS	<i>Contrato Administrativo de Servicios</i> / Administrative Contract for Services (a temporary employment agreement to work in the public sector)
CONAREME	<i>Comité Nacional de Residentado Médico</i> / National Committee of Medical Residency
CONEAU	<i>Comisión Nacional de Evaluación y Acreditación Universitaria</i> / National Council of University Evaluation, Accreditation and Certification
DGGDRRH	<i>Dirección General de Gestión del Desarrollo de Recursos Humanos</i> / General Director's Office for Management of Human Resources Development
DIGEMIN	<i>Dirección General de Migraciones y Naturalización</i> / Bureau of Immigration and Naturalization
DIRESA	<i>Dirección Regional de Salud</i> / Regional Health Directorate
EsSalud	<i>Seguro Social de Salud del Perú</i> / Social Health Insurance of Peru
FFAA	<i>Fuerzas Armadas de la República del Perú</i> / The Peruvian Military Forces
FONCODES	<i>Fondo de Cooperación para el Desarrollo Social</i> / Social Compensation and Development Fund
HIV/AIDS	Human Immunodeficiency Virus / Acquired Immunodeficiency Syndrome
HRH	Human Resources for Health
INEI	<i>Instituto Nacional de Estadística e Informática</i> / National Institute of Statistics and Informatics
MINSA	<i>Ministerio de Salud</i> / Ministry of Health
NCD	Noncommunicable Disease
PAHO	Pan-American Health Organization
PARSALUD	<i>Programa de Apoyo a la Reforma del Sector Salud</i> / Program to support health sector reform
PEAS	<i>Plan Esencial de Aseguramiento en Salud</i> / Health Insurance Essential Plan
PNP	<i>Policía Nacional del Perú</i> / Peruvian National Police
SERUMS	<i>Servicio Rural y Urbano Marginal de Salud</i> / Rural and Urban Marginal Health Service
SIS	<i>Seguro Integral de Salud</i> / Comprehensive Health Insurance Scheme
SISOL	<i>Sistema Metropolitano de la Solidaridad</i> / Metropolitan Solidarity System
SNP	<i>Servicios no Personales</i> / Non-personal Services (a temporary employment agreement to work in the public sector; it has been replaced by CAS)
UHC	Universal Health Coverage
WHO	World Health Organization

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EXECUTIVE SUMMARY

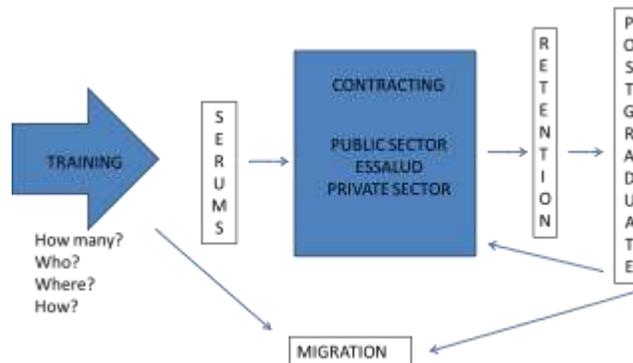
This report aims to provide an updated analysis of labor market trends for the health workforce in Peru, focusing on the basic health team—physician, nurse, and midwife—other professionals related to health priorities—specifically nutritionists, psychologists, pharmaceutical chemists, dentists, and medical technologists—as well as main medical specialists—anesthesiologists, family and community doctors, general surgeons, internists, obstetricians/gynecologists, and pediatricians. Moreover, the study reviews and synthesizes the existing peer-reviewed and grey literature on human resources for health (HRH) in Peru and provides guidance on potential policy interventions and management changes focused on these professions that may improve the current situation of human resources for health in the country.

The study's main limitation is that it is focused mainly on public employees, that is, those hired by the Ministry of Health (MINSA) and the regional governments. The information (for instance, the number, type, and distribution of professionals) of human resources working in the social security health insurance (EsSalud) and the private subsector is limited to current data held by the MINSA's National Observatory on Human Resources for Health, which is provided voluntarily and not necessarily on a regular basis. Lack of information on current salary levels and how these compare across subsectors, as well as unemployment rates for these professionals are other limitations of this study.

We used three main strategies for data analysis: (1) Reviewing documents, reports, or academic literature published by MINSA, other national and international organizations, or published by research groups in scientific journals; (2) using data from primary sources without merging them with other data; and (3) merging and/or combining data from different sources. Unfortunately, we were unable to obtain reliable primary data for our migration and retention analyses.

This study is organized according to a conceptual framework that seeks to represent specific characteristics of the flow of human resources for health through the Peruvian labor market (Figure 1.1). The report is organized in six sections, each one of which corresponds to one component of the framework: training of health professionals, transition of graduates to the labor market, contracting, migration, retention, and postgraduate training.

Figure 1.1 Conceptual Framework of the Study



Source: MINSA, DGGDRRHH 2014.

TRAINING OF HEALTH PROFESSIONALS

We analyzed the current state of supply and demand for training of health professionals, and the number of graduates. Overall, there is a high interest in, and demand for, training at a professional level for careers that form the basic health team, and more than 70 percent of this training¹ is supplied by private universities.

We also reviewed the competency profiles of trained professionals as evidenced by: (a) the curricula of the medical, nursing, and midwifery training programs with the highest number of students; (b) the standards prepared by the National Council of University Evaluation, Accreditation and Certification (CONEAU) that are used to accredit education programs for these professions; (c) the competency profiles developed by the respective professional associations for the purpose of certifying graduates. These curricula and profiles were compared to the prioritized competency profiles of primary care physicians, nurses, and midwives prepared by MINSA. The objective was to determine whether the current training programs prepare professionals to work at the primary care level—as defined by the MINSA competency profile. Results showed a clear disparity between the profiles of health professionals at the training/graduate stage and the one required by MINSA at the primary care level, which is the main employer of health professionals in the country. In particular, physicians and nurses appear to lack preparation to work at the primary care level.

Furthermore, we find that MINSA's profiles for professionals in the basic health team lack skills related to prevention, health promotion, and management. For example, MINSA's competency profile for nurses only requires them to provide adult care in the case of tuberculosis and HIV/AIDS, while the full burden of preventing and treating NCDs is assigned to physicians. MINSA's approach to NCDs at the primary care level may result in a lack of appropriate attention to the prevention and treatment of people with early symptoms of NCDs who need to implement lifestyle changes (diet, exercise) to prevent progression of the disease.

CONEAU is the institution responsible for accrediting training programs and certifying professionals, and it has established a process to regulate and guarantee the quality of university education. However, the accreditation process has advanced slowly: as of July 2013, 45 universities had registered for accreditation 234 training programs for the professions (physicians, nurses, midwives, nutritionists, psychologists, pharmaceutical chemists, dentists, and medical technologists) included in this report, but only 2 of these programs had completed the accreditation process.

TRANSITION OF GRADUATES TO THE LABOR MARKET

In the second section of the report, we review data on the transition of graduates to the labor market via the Rural and Urban Marginal Health Service (*Servicio Rural y Urbano Marginal en Salud*—SERUMS). SERUMS is one of the strategies used by MINSA to increase coverage of primary health care professionals in rural and marginal areas, and is a requirement for those health professionals who would like to work in the public sector. The vast majority of health professionals who enroll in SERUMS spend a year working at the primary care level in rural or urban-marginal areas.

We reviewed data on the number of SERUMS positions, applicants' profiles (that is, the university they graduated from), number of graduates who take up SERUMS positions, number of those completing SERUMS who start to work for the public sector in subsequent year, and the conditions of their employment.

1. Measured by the average number of entrants.

For most professions included in this study, except for physicians, a significant number of graduates do not take up a SERUMS position. This finding indicates that currently the labor market of human resources for health in Peru offers other job opportunities that do not require previous SERUMS experience. After completion of SERUMS, only 25 percent of professionals are incorporated into (hired by) the public sector the subsequent year. Furthermore, those who do join the public sector after completing SERUMS do so mainly under temporary employment agreements. Considering the data reviewed, we conclude that the market offers other job opportunities to these professionals that are more attractive than SERUMS and public sector employment.

CONTRACTING OF HEALTH PROFESSIONALS IN THE PUBLIC SECTOR

In this section we present the distribution of health professionals within the public sector at a national level, and provide information on the contracting modalities used within this subsector. The information on HRH working outside the public sector (contracted by either MINSA or the regional governments) is incomplete and therefore it was not possible to review contracting of health professionals in the labor market outside of the public sector or make any comparisons. The public sector has at least 10 contract modalities or labor conditions; we presume there is a great variability in salaries though we had no access to data of salary levels for this study. Even though salary may not be the only factor shaping workers' decisions about a job position, such salary variability is probably an obstacle in attracting and retaining high-quality and motivated professionals to the public sector.

We also estimate the number of health professionals that the public sector needs to provide services compared to the number of professionals in the current health workforce, the time needed to reduce the health workforce gap in the public sector, and the measures that may be adopted to accelerate that process.² We find that in a scenario in which the number of professionals incorporated into the system is doubled, the gap of physicians required by MINSA³ could be closed by 2020; alternatively, if the absorption rate stays at the current level, such a gap would be closed by 2027. The respective numbers for nurses, at the absorption rates described, would be 2019 and 2024. For midwives, our calculations show that the gap may be resolved by 2017 with the current hiring rate. It is worth mentioning that these calculations are based on relatively simplistic assumptions and do not control for the increased need of HRH related to population increases or an increase of the elderly population, natural attrition, or workforce turnover and retirement for instance.

MIGRATION

We examined published information on migration of Peruvian health professionals, as well as health professions students' intentions to migrate abroad. Data from the university census carried out in 2010 showed that a majority of students reported that they intended to migrate to practice their profession (78 percent of medical students, 67 percent of nursing students, and 60 percent of midwifery students). Other

2. The gaps are based on the actual demand of medical procedures of the Essential Health Insurance Plan (*Plan Esencial de Aseguramiento en Salud—PEAS*), as well as other administrative and training activities that are part of the labor duties of these professionals at the primary care level.

3 This gap is estimated by quantifying the difference between the need for and the availability of human resources for health care services. The need for human resources is estimated using an estimate of the time required to provide the medical services of the Essential Health Insurance Plan (*Plan Esencial de Aseguramiento en Salud—PEAS*) as well as other health care activities not considered in PEAS, and management and training activities that are part of job duties in the primary care level. The unit that is used to calculate the human resource gap for health care services of the primary care level is the health micro-network.

reports show that many professionals, particularly physicians and nurses, do indeed migrate, and the loss for the country, especially of professionals trained by public universities, is high. This section highlights the need for improved information on migration flows of Peruvian health professionals to gain an understanding of the migration situation and design policies to respond to it.

RETENTION

In this section, we summarize and discuss the few available studies on incentives to attract and retain health professionals. These studies show that very few physicians expect or aspire to work at the community level or in rural areas. Furthermore, many have already migrated to larger urban areas to pursue their studies. A discrete choice experiment of job preferences related to remaining in working placements located in rural Ayacucho highlights the significance of incentive packages, and how they can change according to profession, years of experience, and gender. Data collected by MINSA's Quality Office show that the majority of health workers consider their job environment could be improved, which could be an indicator of job satisfaction. However, the available information for analysis is limited, since there are no labor force surveys, for instance, or more information about salaries and benefits in other subsectors.

POSTGRADUATE TRAINING

We describe the supply and demand for specialized physician training focused on specialties related to health priorities: anesthesiology, family and community medicine, general surgery, internal medicine, obstetrics and gynecology, and pediatrics. Furthermore, we present the distribution of those specialists per level of care and department, and analyze the demand for specialists' training and their integration into the public sector workforce once they have completed their residency.

We find a high demand for training in these priority medical specialties. In 2013, more than 43 percent of physicians beginning their residencies were associated with them. We find that the distribution of specialists between the different levels⁴ of health establishments is relatively appropriate as it responds to requirements established by MINSA; however, geographic distribution is extremely unbalanced with more than half of the specialists being located in Lima.

The National Committee of Medical Residency (CONAREME), which regulates medical specialist training in Peru has developed competency profiles for each specialty. We examined the profiles of priority specialties to determine the extent of priority or approach given to the primary care level. We find that only the gynecology and obstetrics, and the family and community medicine specialties, give some priority to primary or community care. Although, primary care training might not be expected for general surgeons, internists and anesthesiologists, as they would not be expected to perform necessarily at primary care levels, it could be expected that some consideration would be included in pediatricians' training, given that they might be providing care at primary care level.

The analysis of the resident training dynamics and of the incorporation of specialists into the public sector shows that only 10 percent of specialists start working for the public sector in the first two years after completing their residencies, indicating that a significant number of specialized human resources are not

4. Health establishments are categorized according to the level of care that they can provide—from the least complex to the most complex.

used in the public sector. Unfortunately, little is known about where these specialists choose to work, how many migrate (from/to where), or how to attract a larger number of them to work in the public sector.

RECOMMENDATIONS

Our recommendations can be grouped in four areas: (i) the relevance of skills of health professionals; (ii) contracting, compensation, and retention policies to improve absorption and retention of health professionals in the public sector; (iii) the quality of information on HRH; and (iv) research to inform the policies for implementation.

Relevance of skills of health professionals

- We recommend that MINSA's General Director's Office for Management of Human Resources Development (Dirección General de Gestión del Desarrollo de Recursos Humanos—DGGDRRH) work with public and private universities to review existing training programs and develop new programs focused on training professionals to work specifically at the primary care level. Programs could look beyond the currently available programs and include shorter, more community-oriented courses. If these shorter courses are associated with a high likelihood of employment after completion, they may be well received in a market with a high demand for training. Considering that private institutions currently provide the majority of training in the health professions, they would play an essential role in the development of new training programs. In addition, it would be important to offer these courses in the local regions close to student residences, as students from rural areas may be more likely to enroll and work in their region of origin.
- The accreditation process for training programs will need to be made more agile if it is to guarantee training quality. We recommend a more detailed assessment of CONEAU's processes to understand the difficulties and propose steps that could speed up the certification process.
- Professional associations are already playing a role in certifying professionals; however, this process does not add value or improve a professional's employment opportunities in the labor market, and it is unclear whether it includes any assessment of skills. The certification process should be widened to include an assessment of skills that would guarantee professional quality and improve job opportunities.
- MINSA's profiles for the basic health team would need to be updated to adjust responsibilities for caring for NCDs and adult conditions. Nurses need to assume a larger role in the prevention and management of chronic conditions. Furthermore, other skills such as administrative management, and public health prevention and promotion need to be considered within these profiles.

Contracting, compensation, and retention policies within realistic budgetary scenarios

- In terms of contracting, the public sector relies on a multitude of contract regimes, which seem to be paired with wide divergences in salary. We recommend that MINSA take a global look at contractual regimes and payment schemes and strategically review compensation mechanisms.
- The SERUMS program has been successful at ensuring the presence of health professionals in rural and remote areas; however, it is not accompanied by a mechanism to retain these professionals in the public sector. We recommend that SERUMS be complemented with a retention strategy, based on a more complete assessment that includes studies that explore the job aspirations and expectations of new graduates. Post-SERUMS professionals signaled their interest in working for the public sector by enrolling in SERUMS—the public sector should capitalize on this knowledge in its attempts to hire and retain professionals.

Quality of information on HRH

- There is a fragmentation in the information systems between MINSA, EsSalud, the other health insurance providers and the private sector, and as a result, no comprehensive information can be

obtained about the distribution of health professionals by subsector. For policy purposes, it is necessary to improve the quality and integration of HRH information both in the public sector and outside of it. To achieve this, there is a need for strategic alliances with entities that routinely collect data on human resources in these subsectors, such as EsSalud, private insurance providers, professional associations, and corporations managing clinics and private hospitals. The challenge would be to create a relationship in which there is common interest in sharing this information. Such information will strengthen subsequent studies on the employment market of HRH as it provides a more complete vision of the entire sector.

- In regards to migration, there are still many unanswered questions. For instance, there is little information on how many professionals leave the country to work, how many continue studying, how many come back, and when. There are outstanding questions as to when more aggressive retention strategies should be applied, for example, before or after SERUMS, before or after the residency? To be able to answer some of these questions, MINSA will need to work with the Bureau of Immigration and Naturalization (DIGEMIN) to improve the quality of information on health professional migration.

Research to inform the policies for implementation

- Professional incorporation into the public sector will require the development of contractual, incentive, and retention packages that are based on better understanding of health professionals' aspirations, expectations, and needs. Studies on new graduates, those who complete their SERUMS, current public sector workers, other subsectors workers, and unemployed health professionals may provide information on job expectations, relative options in the market, and salary and social benefit expectations, which we were not able to analyze in this study. Some methodologies that may be used include surveys, discrete choice studies, and focus groups, among others.
- In our analysis of the dynamics of medical specialist training and absorption of specialists by the public sector, we find that absorption by the public sector is minimal, at approximately 10 percent. It would be important to research the flow of medical specialists within the market and understand what happens with them, where they end up working, and why. Moreover, we need to understand how MINSA can manage to attract and retain more specialists within its budgetary limitations.

LIMITATIONS

This study has several main limitations:

- The discussion of human resources in health that is presented in this report focuses on the public sector, and this limitation was mainly driven by availability of data. At the same time, the discussion on human resources in health should be framed within a broader discussion on the role of the public sector in health service delivery, and the role of other providers including EsSalud, the other insurance/provisions institutions like the Metropolitan Solidarity System (*Sistema Metropolitano de la Solidaridad*—SISOL) and the private sector providers.
- Even within the public sector, our analysis is limited by availability of data in several areas.

INTRODUCTION

JUSTIFICATION

In 2011, Japan celebrated the 50th anniversary of its own achievement of Universal Health Coverage (UHC). On this occasion, the government of Japan and the World Bank conceived the idea of undertaking a multicountry study to share country experiences from countries at different stages of adopting and implementing UHC strategies, including Japan itself. This led to the formation of the Japan-World Bank Partnership Program for Universal Health Coverage. A total of 11 countries participated in the study, including Bangladesh, Brazil, Ethiopia, France, Ghana, Indonesia, Peru, Thailand, Turkey, and Vietnam. (Ikegami et al. 2014) This report is a background report to the Peru Country Summary Report that was prepared by the World Bank. This study also is part of the implementation of a September 2013 Memorandum of Understanding between the Peruvian Ministry of Health and the World Bank, which outlines a program of cooperation and technical assistance between the two institutions.

The Peruvian government has started implementing Supreme Resolution No. 001-2013-SA, and it has proposed a series of guidelines and reform mechanisms for the health sector (July 2013).⁵ Of particular importance among these are the following: strengthening the health public sector, encouragement of health promotion actions; protection of individuals and families by extending the current insurance coverage until universality is achieved; upgrading of health professionals' work conditions to support proper conditions for their development and for carrying out their duties; improving regulation of and access to quality medicines; and improving the use of health resources, reducing household out-of-pocket expenses, and increasing public funding for health.

Therefore, this study aims to meet the objectives of the Japan-World Bank Partnership Program for Universal Health Coverage, as well as MINSA's needs, within the context of the abovementioned reform. This study was carried out in collaboration with the General Director's Office for Management of Human Resources Development (Dirección General de Gestión del Desarrollo de Recursos Humanos—DGGDRRH) of MINSA, PARSALUD, and the World Bank.

OBJECTIVES

The objectives of this report are the following:

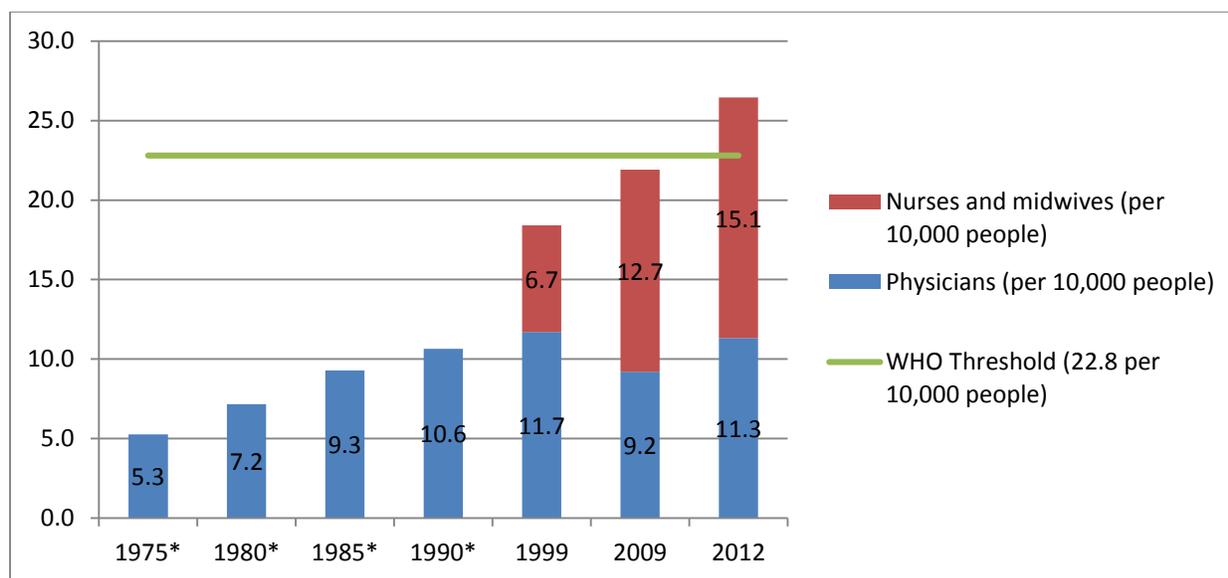
- Analyze recent trends of the health labor market in Peru for the basic health team professionals (physician, nurse, and midwife) and other professionals related to health priorities, specifically nutritionists, psychologists, pharmaceutical chemists, dentists, and medical technologists, as well as how they impact the UHC strategy implementation in the country.
- Review and synthesize existing literature on the health workforce situation in Peru to provide context to the labor market analysis.
- Provide guidance on potential political interventions and management changes focused on these professions, which may improve the current situation of human resources for health in the country.

5... <http://www.minsa.gob.pe/portada/Especiales/2013/reforma/documentos/documentoreforma11122013.pdf>.

BACKGROUND AND CONCEPTUAL FRAMEWORK

Achieving the goal of UHC requires an expansion of benefits and coverage that generally requires an investment in the health workforce. Countries that embark upon UHC face increasing pressures to ensure that there are sufficient health workers to respond to the growing demand for appropriate and effective health services. The WHO estimates that a health workforce density of 22.8 skilled health professionals per 10,000 people is the lower level needed to achieve relatively high coverage for essential health interventions. (WHO 2006) According to the World Development Indicators, the number of doctors, nurses and midwives in Peru has increased in recent years to reach 26.5 per 10,000 people in 2012, from 18.4 in 1999, mainly due to an increase in the number of nurses and midwives (Figure 1.2). So while the density of skilled health professionals may no longer be at critical levels according to the WHO definition, it is low compared to other countries that have achieved UHC or are close to achieving it. For example, Japan and France have 63.3 and 126.6 skilled health professionals per 10,000 people respectively, while Brazil has 81.4 and Turkey has 41.1 (Maeda et al. 2014).

Figure 1.2 Number of Doctors, Nurses, and Midwives in Peru, 1975–2012



Source: World Development Indicators (WDI), 2014.

*The WDI do not contain data on nurses and midwives for 1970–90.

Human resources for health in Peru include all professionals and workers of the sector, including administrative staff, as well as physicians in training in a clinical specialty (known as residents), who are hired during their training period (usually three years), and professionals working in the Rural and Urban Marginal Internship Program (*Servicio Rural Y Urbano Marginal de Salud*—SERUMS). This study focuses on the basic health team professionals (physician, nurse, and midwife) and other professionals related to the priorities outlined by MINSA during the preparing of this report, specifically dentists, nutritionists, psychologists, pharmaceutical chemists, and medical technologists. At the postgraduate level we also included those specialties that are related to the health priorities—that is, anesthesiology, family and community medicine, general surgery, internal medicine, gynecology and obstetrics, and pediatrics.

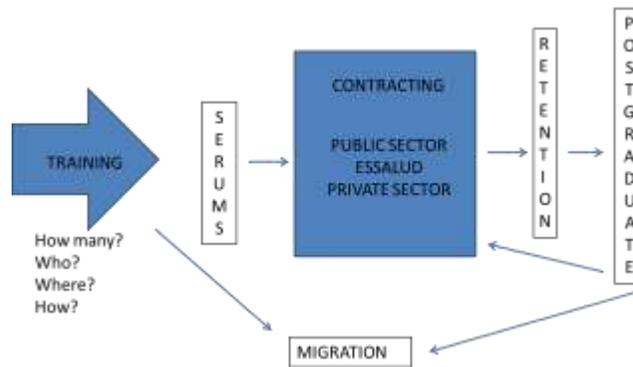
The Peruvian health sector is divided into five distinct groups of service providers: (a) The public subsector, which includes the Ministry of Health (Ministerio de Salud—MINSA) and the regional governments; (b) Social Health Insurance (EsSalud); (c) the Armed Forces and National Police health service; (d) the Metropolitan Solidarity System (*Sistema Metropolitano de la Solidaridad*—SISOL), which provides services within the Lima metropolitan area; and (e) the private subsector.⁶ Due to lack of availability of data, this study focuses mostly on the public subsector.

The labor market is the economic environment in which the supply of labor—formed by the population’s ability and willingness to work certain numbers of hours in particular paid activities—and demand for labor—constituted by job opportunities—interact. The supply is the workforce that is available, whereas the demand is formed by employers looking for workers. The degree of balance between these two factors determines the market conditions at a given time.

This study evaluates the current labor market conditions and trends for human resources in health (HRH) in Peru. This study is organized according to a conceptual framework that seeks to represent specific dynamics of the Peruvian labor market for the health sector (Figure 1.3). The important flows of Human Resources in Peru include the following: Professionals are initially trained in public and private universities. After training, graduates transition to the labor market; if they are interested in working for the public sector or (in the case of physicians in specialist training)—they must complete the SERUMS internship program. After the SERUMS, transition of graduates into the public sector can happen through various contracting regimes, but graduates are also able to work in other sectors (social security insurance, private sector, etc.). At the same time, the Peruvian health labor market is characterized by high rates of out-migration and difficulties in retaining employees in rural and remote locations. Following the outlined dynamics, the report has been organized in six sections, each corresponding to a specific part of the framework: training, transition of graduates to the labor market (SERUMS), health labor contracting in the public sector, migration, retention, and postgraduate studies (that is, specialist training for physicians).

6. By and large, the arrangement of service providers mirrors financing arrangements: The public sector is financed by general taxation resources from the Ministry of Finance and by resources from the Comprehensive Health Insurance Scheme (Seguro Integral de Salud—SIS). EsSalud is an integrated entity that insures and provides services to mostly formal sector workers using its own providers, financed by payroll taxes. The Armed Forces and National Police health service have their own financing and service provision network. Finally the Metropolitan Solidarity System is a public-private partnership that provides care on a out-of-pocket fee-for-service basis, albeit at affordable rates. There are various relatively limited arrangements between the service provision networks to finance and provide services across networks.

Figure 1.3 Conceptual Framework of the Study



Source: MINSA, DGGDRRHH 2014.

METHODOLOGY

This study is focused mainly on public workers who work in the service delivery networks managed by MINSA and the regional governments. A significant limitation for this study is that the information on human resources working for EsSalud, other service providers, and the private subsector is limited only to the current data held by the MINSA's National Observatory for Human Resources for Health. Another limitation is the lack of information on salaries⁷ and levels of unemployment.⁸

This study used existing data and information from different sources, which are listed in annex 1. Three strategies were used for data analysis: (1) Reviewing documents, reports, or academic literature published by MINSA, other national and international organizations or scientific journals; (2) Using data from primary sources, that is, without mixing them with other data; and (3) Combining and handling data from different sources. Each section specifies the data and information sources. Data and information from primary sources in the Migration and Retention sections are limited so the analysis is mainly a summary of already published information.

7. This data was not included in the databases that MINSA shared with the group carrying out the study.

8. To the knowledge of the group there were no recent, publicly available labor market surveys that could have informed this component.

1. TRAINING OF HEALTH PROFESSIONALS

In this section we analyze the current state of supply and demand of training for the health professions and the number of graduates. We also analyze the profile of the basic health team professionals currently in the market, through (a) an analysis of the curricula of training programs for members of the basic health team (physicians, nurses, and midwives) in those universities with the largest number of students, according to the 2010 University Census; (b) an analysis of competency profiles prepared by professional associations for the certification of professionals; and (c) an analysis of the standard used by the National Council of University Evaluation, Accreditation and Certification (CONEAU) to accredit education programs for these professions. These profiles were then compared to the prioritized competency profiles of primary care physicians, nurses, and midwives prepared by MINSA to determine whether the current market offers the professional profile most needed by MINSA.

DATA SOURCES

The data and information sources used for this section are the following:

- National Council of University Evaluation and Accreditation (Comisión Nacional de Evaluación y Acreditación Universitaria—CONEAU): Progress of training programs' accreditation, and authorization of professional associations to certify them.
- National Assembly of Rectors (Asamblea Nacional de Rectores—ANR): Information on how many students apply, enroll, and graduate from health training programs.
- Professional associations: Competency profiles used to certify professionals.
- National Institute of Statistics and Informatics (Instituto Nacional de Estadística e Informática—INEI): 2010 National University Census.
- Public and private universities: Training programs' curricula of the basic health team (physicians, nurses, and midwives) from universities that train at least 4 percent of the student population belonging to these professions, according to the 2010 University Census.
- MINSA: Prioritized competency profiles of primary care physicians, nurses, and midwives.

SUPPLY OF HEALTH TRAINING PROGRAMS

Peru has a wide array of health training programs at the university level, both public and private. Out of the 100 universities that participated in the 2010 University Census, 78 offered training programs in the professions covered by this report: medicine, nursing, midwifery, nutrition, psychology, pharmaceutical chemistry, dentistry, and medical technology. The 2010 census included 33 medical schools and 58 nursing training programs, whereas in 1960 there were only 3 medical schools and 8 nursing schools (MINSA 2011), which shows a rapid growth in the supply of training. The programs are provided by both public and private universities, though the latter offer a larger number of programs and take in more students. Of those universities with a larger number of medical students (defined in this report as 4 percent or more of registered students in accordance with the 2010 University Census), seven were private universities (with 11,214 registered students) and two were public universities (with 1,767 students). For nursing and midwifery, the universities with a larger number of registered students were all private, five for nursing and four for midwifery. The training programs of these universities are summarized in annex 2, and are discussed in more detail below.

The National Council of University Evaluation and Accreditation (CONEAU) is responsible for registering and accrediting university education in Peru. CONEAU data show that, as of July 2013, 45 universities had

registered 234 training programs for the professions covered by this report (see annex 3 for the list of universities that have registered programs). The number of programs is particularly high because universities that have several campuses register the programs by campus rather than in a centralized manner. For instance, Alas Peruanas University registered its nursing program 14 times since it is offered in 14 different campuses. Table 1.1 shows the number of universities with registered training programs, the total number of registered training programs (counting all campuses), the number of training programs that have started the accreditation process, and the number that have completed it. As of November 2013, only two undergraduate health training programs had been accredited by CONEAU: dentistry at the Universidad Peruana Cayetano Heredia, and nursing at the Universidad Católica Los Angeles de Chimbote. As is clear from Table 1.1, there is a large pending agenda in terms of accreditation of training programs. Based on the information collected for this study, it is not possible to comment specifically on possible hurdles in the accreditation process. However, the apparent need to accredit training programs separately by campus appears to be a requirement that may cause delays without providing clear benefits.

Table 1.1 Registration and Accreditation of Health Training Programs with CONEAU

Program	Number of universities with registered training programs	Total number of registered training programs (counting all campuses)	Accreditation process initiated (number of training programs)	Accreditation process completed (number of training programs)
Medicine	21	22	17	0
Nursing	35	58	47	1
Midwifery	18	25	17	0
Dentistry	22	37	27	1
Nutrition	10	10	9	0
Psychology	20	38	32	0
Pharmaceutical chemistry	10	13	10	0
Medical technology	7	31	27	0

Source: *Progress in training programs accreditation processes, July 2013* (<http://aca-evaluamos.blogspot.com/>).

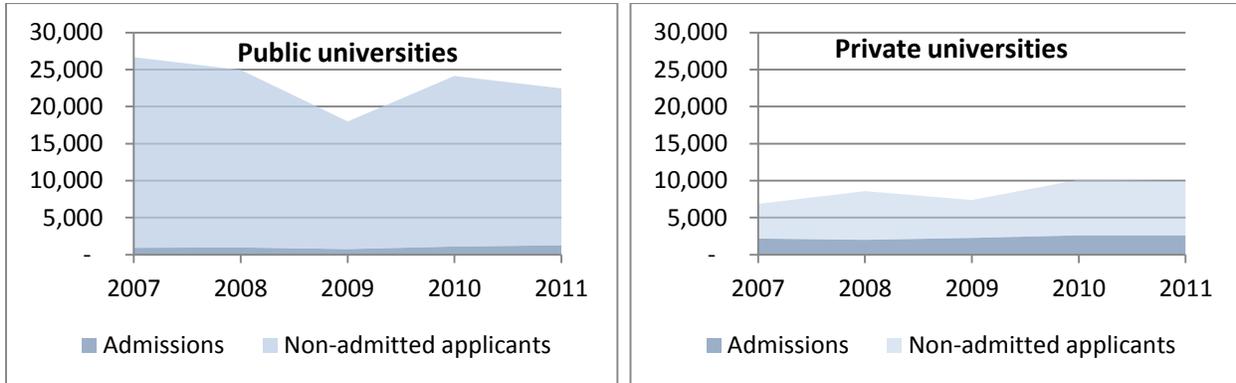
APPLICATIONS AND ADMISSIONS TO TRAINING PROGRAMS

Overall, there appears to be a large interest from potential students in health training programs, and the number of applicants vastly exceeds the number of admissions. Figure 1.4 presents applications and admissions to professional training in the areas of medicine and nursing. According to the information provided by the National Assembly of Rectors (Asamblea Nacional de Rectores—ANR), in recent years approximately 20 percent of applicants to nursing programs at public universities ended up entering the programs, whereas for private universities the admission rate is close to 90 percent. In medical training, 5 percent of applicants to public universities entered the programs, whereas 26 percent of those applying to private institutions were admitted⁹ (Figure 1.4 and Figure 1.5). Similar gaps between the supply and

9. Applicants to several programs would be counted for each program to which they apply. However, applications are done separately to each university, with separate admission exams, and there is no information as to extent to which applicant pools overlap.

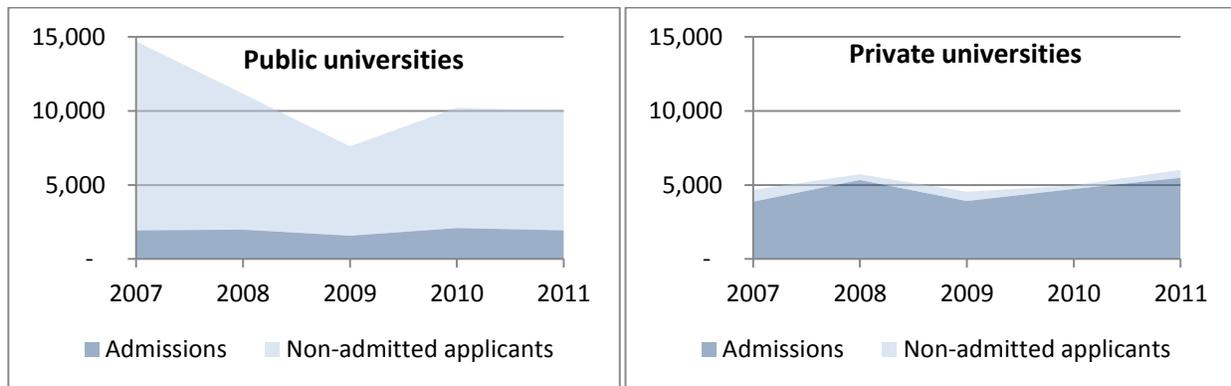
demand of professional training can be observed in other health-related professions; in those areas as well, there are similar difference between public and private universities (Table 1.2).

Figure 1.4 Medical Training Supply and Demand, Public vs. Private Universities, 2007–11



Source: National Assembly of Rectors (ANR) 2007–11. Authors' calculations.

Figure 1.5 Nursing Training Supply and Demand, Public vs. Private Universities



Source: National Assembly of Rectors (ANR) 2007–11. Authors' calculations.

Table 1.2 Demand and Supply of Training in Midwifery, Dentistry, Nutrition, Psychology, Dentistry, Pharmacy and Biochemistry, and Medical Technology

Profession	Candidates / Admissions	2007	2008	2009	2010	2011	Average
Midwifery	Applicants Public Universities	3,663	2,753	2,618	3,191	3,612	3,167
	Admissions Public Universities	637	663	509	815	730	671
	Ratio	0.17	0.24	0.19	0.26	0.20	0.21
	Applicants Private Universities	1,811	2,507	2,035	2,281	2,742	2,275
	Admissions Private Universities	1,604	2,231	1,943	2,187	2,418	2,077
	Ratio	0.89	0.89	0.95	0.96	0.88	0.91
Profession	Candidates / Admissions	2007	2008	2009	2010	2011	Average
Dentistry	Applicants Public Universities	6,074	5,591	3,686	5,256	5,177	5,157
	Admissions Public Universities	587	602	492	673	665	604
	Ratio	0.10	0.11	0.13	0.13	0.13	0.12
	Applicants Private Universities	4,788	6,377	5,127	5,671	5,966	5,586
	Admissions Private Universities	3,865	5,472	4,829	4,921	4,791	4,776
	Ratio	0.81	0.86	0.94	0.87	0.80	0.86
Profession	Candidates / Admissions	2007	2008	2009	2010	2011	Average
Nutrition and Food Science	Applicants Public Universities	2,125	2,036	905	1,612	1,615	1,659
	Admissions Public Universities	332	442	260	403	400	367
	Ratio	0.16	0.22	0.29	0.25	0.25	0.23
	Applicants Private Universities	417	320	209	224	381	310
	Admissions Private Universities	279	308	197	220	329	267
	Ratio	0.67	0.96	0.94	0.98	0.86	0.88
Profession	Candidates / Admissions	2007	2008	2009	2010	2011	Average
Psychology	Applicants Public Universities	5,307	4,491	2,255	4,531	4,259	4,169
	Admissions Public Universities	448	594	232	717	406	479
	Ratio	0.08	0.13	0.10	0.16	0.10	0.11
	Applicants Private Universities	5,533	6,949	6,891	8,076	9,969	7,484
	Admissions Private Universities	4,456	5,917	5,646	7,953	8,149	6,424
	Ratio	0.81	0.85	0.82	0.98	0.82	0.86
Profession	Candidates / Admissions	2007	2008	2009	2010	2011	Average
Pharmacy and Biochemistry	Applicants Public Universities	3,779	3,263	2,620	2,837	2,759	3,052
	Admissions Public Universities	396	603	577	568	629	555
	Ratio	0.10	0.18	0.22	0.20	0.23	0.19
	Applicants Private Universities	1,008	1,341	980	1,827	2,328	1,497
	Admissions Private Universities	975	1,300	1,002	1,785	2,112	1,435
	Ratio	0.97	0.97	1.02	0.98	0.91	0.97
Profession	Candidates / Admissions	2007	2008	2009	2010	2011	Average
Medical Technology	Applicants Public Universities	1,475	2,122	1,610	2,179	2,313	1,940
	Admissions Public Universities	223	393	223	370	319	306
	Ratio	0.15	0.19	0.14	0.17	0.14	0.16
	Applicants Private Universities	1,171	1,479	1,747	1,677	2,513	1,717
	Admissions Private Universities	1,087	1,465	1,802	1,852	2,497	1,741
	Ratio	0.93	0.99	1.03	1.10	0.99	1.01

Source: National Assembly of Rectors (ANR) 2007–11. Authors' calculations.

GRADUATES FROM HEALTH TRAINING PROGRAMS AND CERTIFICATION

To estimate the number of entrants into the health labor market, we estimated the graduation rates for training in the health professions within the established time period of training (for example, seven years for physicians and five years for nurses and midwives). Using data on the number of applicants, entrants, and graduates during 2007–11, we estimate that in this period an average of 6,579 students per year entered nursing training, whereas in that same period, the average yearly number of graduates was 2,814. Likewise, in medical training we observe an average of 3,353 entrants per year, whereas the annual average number of graduates was 1,784 (Table 1.3). Overall, of those students admitted to medical and

nursing schools, an estimated 43 percent and 53 percent, respectively, actually graduated within the established training period.

Before graduates are allowed to exercise their professions, they must be certified by their respective professional associations, which are themselves authorized by CONEAU. All professional associations related to the professions analyzed in this report are authorized to issue certifications.¹⁰

Table 1.3 Number of Graduates by Profession, 2007–11

Profession	Graduates	2007	2008	2009	2010	2011	Total
Medicine	Public Universities	551	819	720	881	751	3,722
	Private Universities	693	844	938	1,462	1,260	5,197
	Total	1,244	1,663	1,658	2,343	2,011	8,919
Nursing	Public Universities	1,039	1,472	1,298	1,732	1,480	7,021
	Private Universities	972	1,206	1,101	1,774	1,997	7,050
	Total	2,011	2,678	2,399	3,506	3,477	14,071
Midwifery	Public Universities	271	413	303	557	392	1,936
	Private Universities	689	495	445	589	683	2,901
	Total	960	908	748	1,146	1,075	4,837
Dentistry	Public Universities	221	440	307	288	332	1,588
	Private Universities	665	1,142	921	1,311	1,650	5,689
	Total	886	1,582	1,228	1,599	1,982	7,277
Nutrition and Food Science	Public Universities	105	171	132	199	158	765
	Private Universities	27	38	18	46	46	175
	Total	132	209	150	245	204	940
Psychology	Public Universities	139	267	276	362	311	1,355
	Private Universities	779	861	874	1,448	1,828	5,790
	Total	918	1,128	1,150	1,810	2,139	7,145
Pharmacy and Biochemistry	Public Universities	202	310	247	394	396	1,549
	Private Universities	206	304	110	322	445	1,387
	Total	408	614	357	716	841	2,936
Medical Technology	Public Universities	76	182	289	253	307	1,107
	Private Universities	38	94	115	145	254	646
	Total	114	276	404	398	561	1,753

Sources: National Assembly of Rectors (ANR) 2007–11. Authors' calculations.

COMPARISON BETWEEN TRAINING CURRICULA, PROFESSIONAL ASSOCIATION PROFILES, CONEAU'S STANDARD NUMBER 25, AND MINSA PROFILES

In this section, we aim to determine whether health professionals entering the labor market upon completion of their training have the necessary competency profile to function at the primary care level. We analyze the curricula of universities that enrolled at least 4 percent of medicine, nursing, and midwifery students, according to the 2010 University Census. We then compare the curricula to the profiles created by professional associations for the purpose of certifying graduates so they can exercise their professions,

10. Data on the number of professionals who do not seek certification was not available to be included in this study.

and to the standards prepared by CONEAU to accredit the training programs for these professions. Accreditation of training programs consists of assessment on 98 standards (CONEAU 2010). To make the analysis easier, this study focused on standard no. 25, which is used to assess the curricula. The curricula, professional association profiles, and CONEAU's standard No. 25 were then assessed against the profiles developed by MINSA for the basic health team at the primary care level. Annex 4 presents the profiles prepared by MINSA, those prepared by professional associations, and CONEAU standard no. 25.

Physicians

Our analysis suggests that medical training programs recognize the importance of the primary care level since they include it in their graduates' profile and offer community/public health courses and community health externships. The training programs of the Santa Maria Catholic University and Antenor Orrego Private University are exceptions, since they mainly have a clinical approach and offer no community externships. Nevertheless, none of the curricula we analyzed are specifically oriented toward the primary care level. For instance, the number of credits related to primary care-related courses and community externships varies from 4 to 11, out of a total (average) of 298 credits required to graduate, which evidences a relatively low priority afforded to this care level in the analyzed curricula.

We then compare the prioritized competency profile of the primary care physician prepared by MINSA, the profile prepared by the Peruvian Medical Association, and Standard no. 25 of CONEAU (table A4.1, annex 4). The profile prepared by the Peruvian Medical Association includes management, critical data assessment, and public health/prevention skills. It also makes clear that physicians are responsible for planning, directing, and assessing health teams' work. This type of skill is strikingly absent from the MINSA profile. However, an important area specified in MINSA's profile is the treatment of people suffering from depression, alcoholism, or violence. This shows an acknowledgment of the high prevalence of these conditions (Prince et al. 2007) and the importance of providing services for them at the primary care level. The profile of the Peruvian Medical Association does not include specific mental health-related skills. Regarding disease coverage, it is worth highlighting that in MINSA's profile for physicians puts them in charge of addressing the entire burden of care for noncommunicable diseases (NCDs), while the nurse profile does not include any skills related to these diseases. Standard no. 25 includes knowledge of primary care, public health, and health management—all relevant for the profile required by MINSA. However, this is only one of eight requirements, and the other requirements are related to developing professionals who work in other care levels as well. Considering the curricula and profiles that we analyzed, we conclude that professionals that enter the labor market will not be specifically prepared to work at the primary care level.

Nurses

Our analysis of the nursing training curricula shows that some of them have more of a community-based approach than others, though none has a predominantly community-based approach (annex 2, table A2.1) The curriculum of San Juan Bautista University stands out because it emphasizes community care in its profile; it also includes community-based courses and a community internship program. The curricula of Los Angeles de Chimbote University, the only one accredited by CONEAU, also stands out: it requires the approval of 322 credits for graduation, as compared to an average 220-credit requirement in other universities.

We then compare the competency profile for primary care nurses prepared by MINSA, the profile prepared by the Peruvian Nursing Association, and CONEAU's standard no. 25, which is used to accredit nurse training programs (annex 4, table A4.2). MINSA's profile focuses mainly on medical care for infants and children; for adults, nurses' duties are linked specifically to TB and HIV-related care. An important finding is that MINSA's profile has a purely clinical care-oriented approach, which does not include management,

prevention/promotion, and evaluation skills, which are in fact included in the Peruvian Nursing Association's profile. By contrast, the profile of the Peruvian Nursing Association is more general, which makes sense given that it is used to certify nurses who also work in the secondary and tertiary care levels. At the same time, the PNS profile does include management, activity planning, evaluation, and prevention and promotion skills, which are key at the primary care level. CONEAU's standard no. 25 presents a list of the subjects that the curricula should include for the training program to be accredited, but none of the subjects on this list is directly related to community health or to the primary care level. In addition, there is no other standard requiring, for instance, an internship at this level. This analysis shows that while CONEAU does not require that training programs include community health–related knowledge and/or internships, in reality most of the curricula analyzed do include them. However, as is the case with physicians, the graduate nurses entering the labor market will not be specifically prepared to work at the primary care level.

Midwives

Our analysis of midwifery curricula shows that Los Angeles de Chimbote University and San Martín de Porres University have courses focused on community health; however, these universities do not include a community health rotation (table A2.2, annex 2). Alas Peruanas University, on the other hand, does have community rotations. While it is beyond this study's scope to comment on the implications of this difference, it is worth mentioning that CONEAU does not have a standard to guide this aspect of training programs.

We then compare the prioritized competency profile of the primary care midwife prepared by MINSA, the profile prepared by the Peruvian Midwifery Association, and CONEAU's standard no. 25, which is used to accredit midwifery training programs (annex 4, table A4.3). These three profiles are very similar, except that the Midwifery Association's profile includes reproductive health–related skills with a community-level approach, as well as planning and implementation of promotion and prevention activities, while MINSA's profile does not include this type of preventive activity. Standard no. 25 of CONEAU presents a list of subjects that need to be included in the curricula, including public health and community midwifery, which are both relevant for the primary care level. Overall, we conclude that the curricula, as well as the Midwifery Association and CONEAU standards include community health skills, which contrasts with the medicine and nursing training programs.

DISCUSSION

Overall, we find that there is a high supply and demand for training in health-related professions in Peru. CONEAU has initiated regulation and accreditation so as to guarantee training quality; however, this process is slow and is far from being completed; therefore it is difficult to objectively assess the quality of available training. However, we cannot immediately conclude that lack of accreditation means low quality, as some institutions have nationally and internationally recognized training programs that have trained capable and effective professionals for decades. For the purpose of our analysis of the labor market for health professionals, what is important is the existing commitment to training regulation and to guaranteeing a minimum standard, which we think is necessary because it could eventually be reflected in the type of graduates from these programs and in the quality of human resources in health. However, this is a long-term goal and much remains to be done in the short and medium run.

The profiles created by MINSA are specific for the primary care level, which should fill 70 to 80 percent of the population's health service needs, and therefore these positions are key for the government to meet its UHC commitment. Nevertheless, we find that the university curricula, professional association profiles, and CONEAU's standard no. 25 to accredit training programs are all such that professionals entering the labor market are not necessarily or specifically trained to work at the primary care level. Therefore, there is a low

likelihood that MINSA would be able to get the number and type of professionals it needs to work at the primary care level.

Professional associations could play a role in certifying professionals; however, it is not clear whether certification also includes an assessment of professionals' skills, since traditionally the associations have required registration and membership fee collection, rather than competency assessment. However, the existence of the profiles represents an opportunity to integrate professional associations to HRH management.

For MINSA and regional governments to find primary care-trained professionals in the market, it is necessary to create programs specifically focused on training professionals to work at this level, and simultaneously work with professional associations to specifically certify these professionals. MINSA and regional governments, as the largest employers, have the opportunity to work with training institutions, which, for the most part, are private.

Finally, we find significant gaps in MINSA's profiles for professionals in the basic health team: specifically (i) the profiles lack skills related to prevention, promotion, and management; (ii) MINSA's profile for nurses only includes a limited number of skills related to adult care (only two related to tuberculosis and HIV/AIDS), and profiles assign the full burden of preventing and treating NCDs to physicians. Internationally, a discussion is ongoing around the need to widen the nonclinical services that are provided by health staff (WHO 2010). Yet MINSA's clinical approach to NCDs may result in a lack of appropriate attention at the primary care level for people with early symptoms of NCDs who need to implement lifestyle changes (diet, exercise) to prevent progression of the disease.

2. TRANSITION OF GRADUATES TO THE LABOR MARKET

In this section we analyze the dynamics of integration of recent graduates into the labor market. In particular, we analyze the availability of Rural and Urban-Marginal Internship (SERUMS) positions, SERUMS professionals' university of origin, the number of graduated professionals taking up SERUMS positions, the number of SERUMS graduates who join the public sector, and the conditions of their employment.

SOURCES OF DATA

The sources of information for this section are the following:

- MINSA:
 - a. Database of the National Observatory on Human Resources for Health
 - b. Database of SERUMS (2007–13), including information of applicants' university of origin
- ANR: Information about the number of graduates from health training programs

THE RURAL AND URBAN-MARGINAL INTERNSHIP PROGRAM

One of the strategies used by MINSA to increase coverage of primary health care professionals is the Rural and Urban-Marginal Internship Program (*Servicio Rural y Urbano Marginal en Salud*— SERUMS). This internship is a requirement for those health professionals who would like to work in the public sector, and for physicians who would like to go on to specialist training. Health professionals who enroll in SERUMS spend a year working at the primary care level in rural or urban-marginal areas. In 2009, the SERUMS

system started using the Poverty Map prepared by the Social Compensation and Development Fund (FONCODES) to prioritize the poorest districts for SERUMS positions (MINSA 2011). There has also been a significant increase in the number of available positions: Table 1.4 presents the number of positions by source of financing in the years 2007 to 2013.

Table 1.4 Number of SERUMS Positions by Year (2007–13) and Source of Financing

Source of Financing	2007	2008	2009	2010	2011	2012	2013
EsSalud	489	584	603	601	598	610	617
MINSA	3,185	3,766	4,749	4,696	5,471	5,698	5,387
Private sector	41	55	75	73	43	46	65
Juntos program	701						
Other	234	182	210	335	335	302	315
Total	4,650	4,587	5,637	5,705	6,447	6,656	6,384

Sources: MINSA, DGGDRRHH 2007–13. Authors' calculations.

Currently it is mandatory that all SERUMS take place at the primary or secondary care level. The regional governments are in charge of deciding the localities and establishments, with advice from DGGDRRHH. Data from 2011 show that this strategy has been effective at increasing the presence of health professionals in the most remote and disadvantaged locations. For instance, in 2008 among the poorest 800 districts in the country, only 53 percent had at least one SERUMS physician; by 2011 this had increased to 89. Furthermore, in the three poorest regions of Peru, the presence of physicians increased significantly to 95 percent of the districts in Ayacucho, 97 percent in Apurimac, and 95 percent in Huancavelica (MINSA 2011).

THE TRANSITION BETWEEN UNIVERSITIES AND THE SERUMS PROGRAM

Even though SERUMS is a requirement to work in the public sector, not all graduates of university training programs apply immediately. Table 1.5 shows estimations on the number of graduates in 2010 and 2011, and SERUMS positions taken in 2011 and 2012, respectively. For physicians, the number of SERUMS tracks closely the number of graduates from the previous year, though we observe that in some years graduates appear to delay the take-up of a SERUM, which can result in a higher number of SERUMs in subsequent years. For example, 2,011 professionals graduated from medical school in 2011, but the number of SERUMS positions taken up in 2012 was 2,496. For all other health-related professions, the number of professionals taking up a SERUMS position is lower than the number of graduates in the previous year, which may indicate an oversupply of graduates, a limited number of SERUMS positions for these professions, or alternative job opportunities.¹¹

11. The data obtained do not allow us to distinguish those professions where there might be a lack of applicants to SERUMS from those professions where there might be a lack of SERUMS positions.

Table 1.5 Number of Graduated Health Professionals and Number of SERUM Entrants

Profession	2010 Graduates	2011 SERUMS	2011 Graduates	2012 SERUMS
Medicine	2,343	2,182	2,011	2,496
Nursing	3,506	1,918	3,477	1,983
Midwifery	1,146	967	1,075	862
Dentistry	1,599	556	1,982	455
Nutrition and food science	245	131	204	127
Psychology	1,810	275	2,139	285
Pharmacy and biochemistry	716	127	841	125
Medical technology	398	93	561	110
Total	11,763	6,249	12,290	6,443

Source: ANR, and MINSA, DGGDRRHH 2010–12. Authors' calculations.

According to information provided by MINSA, in 2013 the number of SERUMS applicants across all professions had increased 62 percent compared to 2008 (Table 1.6). In addition, the distribution of universities of origin has substantially changed in that period: in 2008 the San Marcos National University and San Martin de Porres Private University provided the largest number of applicants; in 2013 Inca Garcilaso de la Vega Private University and Alas Peruanas University (private) had overtaken them in terms of the number of SERUM applicants.

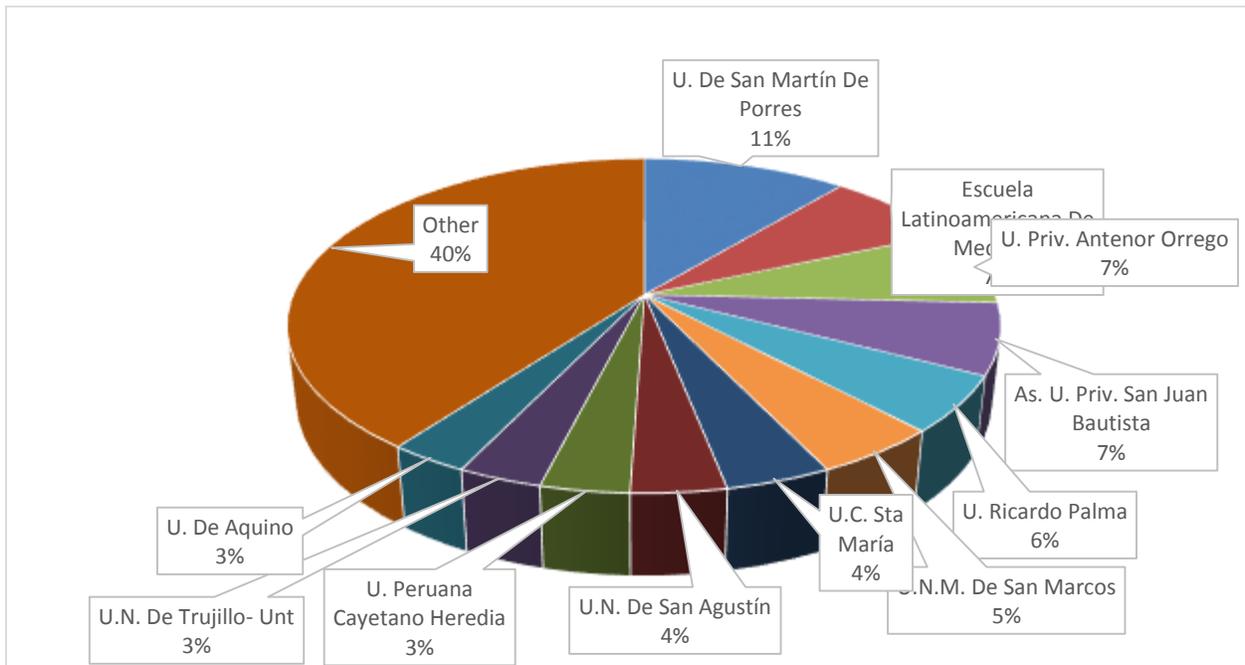
Table 1.6 SERUM Applicants, All Professions, per University of Origin, 2008–13

University	2008 (%)	2009 (%)	2010 (%)	2011 (%)	2012 (%)	2013 (%)
U.P. Inca Garcilaso De La Vega	5	7	8	10	12	10
U. Alas Peruanas	1	2	4	4	5	
U. De San Martin De Porres	8	9	8	8	7	6
U.N. Federico Villarreal	5	5	6	4	5	4
U.N. Mayor De San Marcos	8	7	6	5	4	4
U.N. De Trujillo	2	3	4	3	3	3
Asociación U. Privada San Juan Bautista	1	1	2	2	3	3
U. Los Ángeles De Chimbote	2	2	3	2	3	3
U.N. San Luis Gonzaga—Ica	5	4	3	3	2	3
U. P. César Vallejo	2	2	2	3	3	3
U. Peruana Cayetano Heredia	3	3	3	3	2	3
U. Peruana Los Andes	5	4	4	4	3	2
U. Católica Santa Maria	4	4	4	3	4	2
U. Norbert Wiener	3	2	2	2	2	2
U. Andina Del Cuzco	3	4	3	2	1	2
U.N. De San Agustin	4	4	3	3	3	2
U.N. Daniel Alcides Carrion	3	3	2	2	1	1
U.N. De San Antonio De Abad Del Cusco	2	2	1	2	1	1
Other universities	35	34	32	37	36	38
Number of applicants (Total)	9,570	12,326	16,217	13,716	14,182	15,539

Sources: MINSA, DGGDRRHH 2008–13. Authors' calculations.

For the medical profession, the following medical schools provided the largest share of SERUMS applicants in 2013: San Martin de Porres Private University (11 percent), Latin-American School of Medicine (7 percent), Antenor Orrego Private University (7 percent), and San Juan Bautista Private University (7 percent). The Latin-American School of Medicine is a Cuban institution that trains students from many Latin American countries, who then return to their countries, and thus has started to provide a representative percentage of SERUMS applicants (Figure 1.6).

Figure 1.6 SERUMS Applicants from Medical Schools per University of Origin, 2013



Sources: MINSA, DGGDRRHH 2013. Authors' calculations.

For nursing training programs, the distribution of universities is more even. Inca Garcilaso de la Vega Private University and Alas Peruanas Private University lead in the number of SERUMS applicants, with 7 percent of applicants each (Table 1.7).

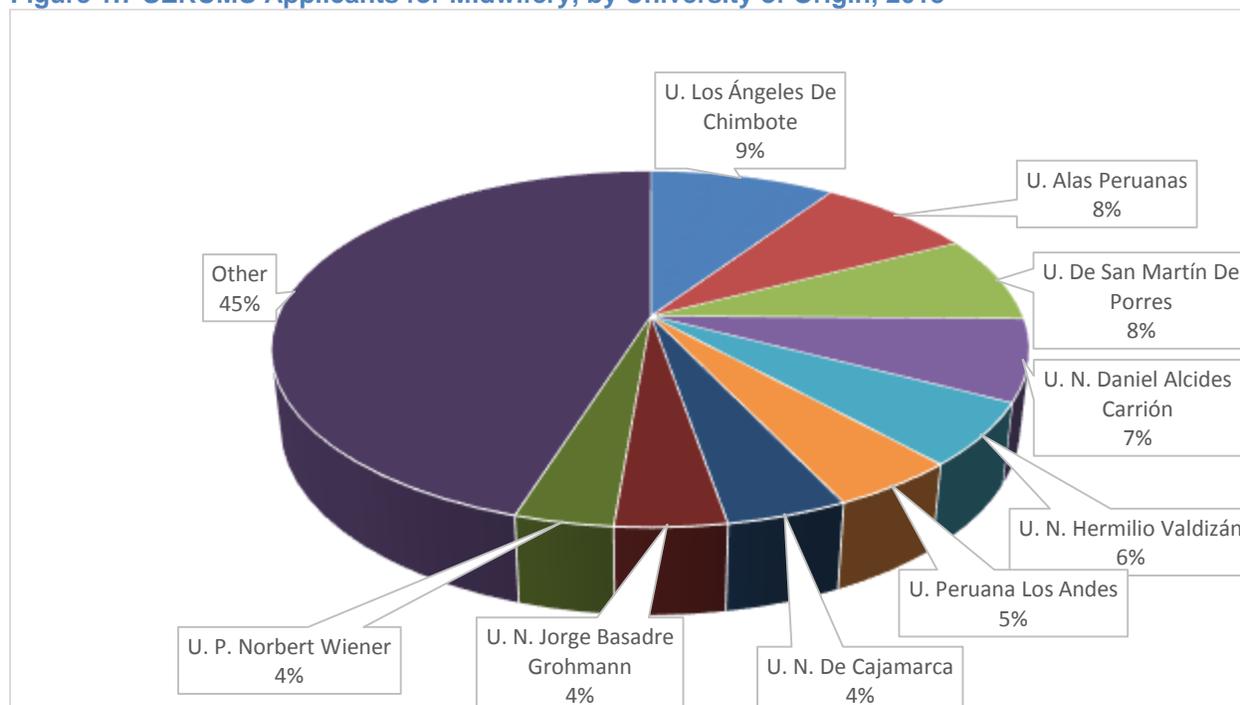
Table 1.7 Nursing SERUMS Applicants per University of Origin, 2013

University	Number of SERUMS applicants	Percent of total (%)
U. Inca Garcilaso De La Vega	308	7
U. Alas Peruanas	307	7
Asociación U. Privada San Juan Bautista	248	6
U. Los Ángeles De Chimbote	173	4
U. Andina Néstor Cáceres Velásquez	170	4
U. N. De Trujillo- Unt	158	4
U. N. Del Callao	140	3
U. P. San Pedro	132	3
U. N. De Cajamarca	126	3
U. N. San Luis Gonzaga De Ica	114	3
U.C. Sto Toribio De Mogrovejo	112	3
U. Andina Del Cusco	108	3
U. De San Martín De Porres	103	2
Others	1.931	47
TOTAL	4.130	100

Sources: MINSA, DGGDRRHH 2013. Authors' calculations.

For the midwifery profession, a university located in a region, Los Angeles de Chimbote University, has the largest number of SERUMS applicants (9 percent), followed by Alas Peruanas University (8 percent), and San Martin de Porres Private University (8 percent) (Figure 1.7).

Figure 1.7 SERUMS Applicants for Midwifery, by University of Origin, 2013



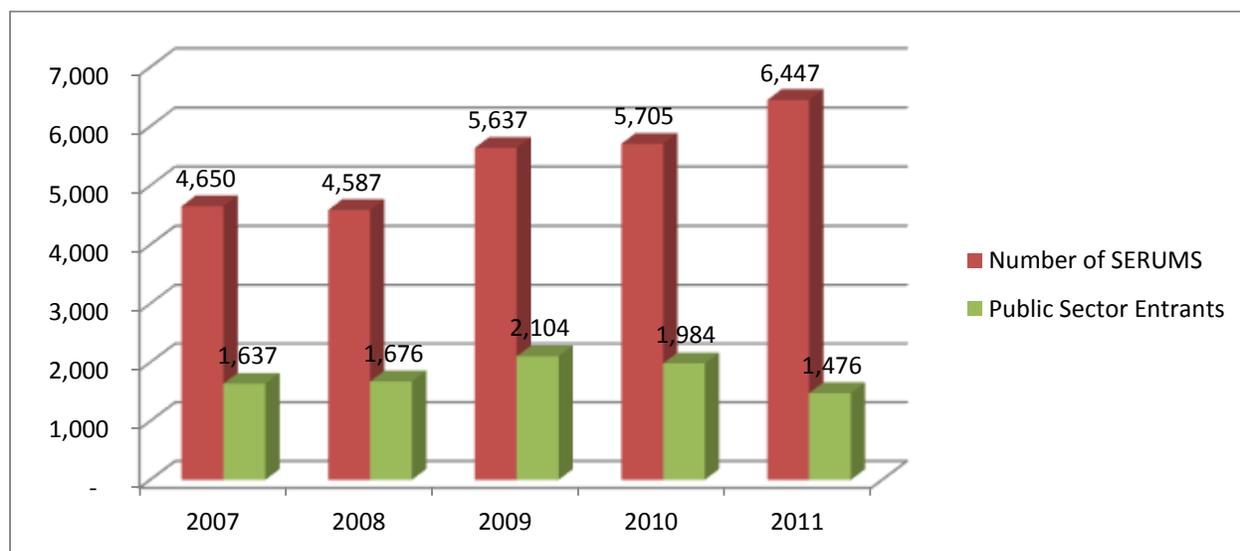
Sources: MINSA, DGGDRRHH 2013. Authors' calculations.

THE TRANSITION FROM SERUMS TO THE PUBLIC SECTOR HEALTH LABOR MARKET

In this section, we analyze the transition of SERUMS graduates to the public sector, by using MINSA-provided information on professionals who took up a SERUMS position between 2007 and 2012, as well as professionals who were working in the public sector as of September 2013.¹² Figure 1.8 shows that most SERUMS graduates do not enter the public sector health labor market after completing the SERUMS. The gap represents professionals who went to work in EsSalud, in the private sector or independently, those who are underemployed or unemployed, and those who migrated. So even though the SERUMS program has proved effective at increasing the presence of health professionals in rural and remote areas, participation in SERUMS is not necessarily the immediate preceding step to gaining employment in the public sector. Finally those who do join the public sector after completing SERUMS do so mainly under a temporary agreement (Table 1.10). We also observe that 10 percent of SERUMS graduates enter the system as residents (see section 6).

12. Note that health professionals currently in SERUMS (that is, in the 2012-II and 2013-I cohorts) are considered a part of the current workforce, and therefore it is not possible to analyze their transition to the public sector health labor market.

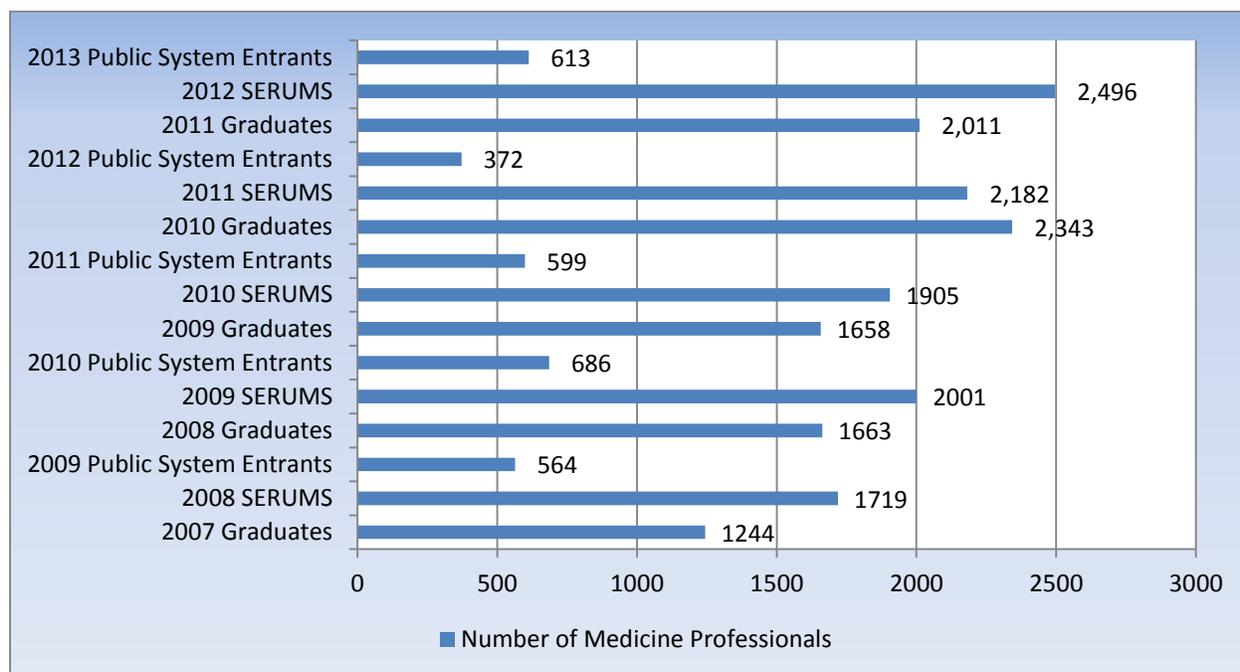
Figure 1.8 Health Professionals Join the Public Sector after Completing SERUMS



Sources: MINSA, DGGDRRHH 2013. Authors' calculations.

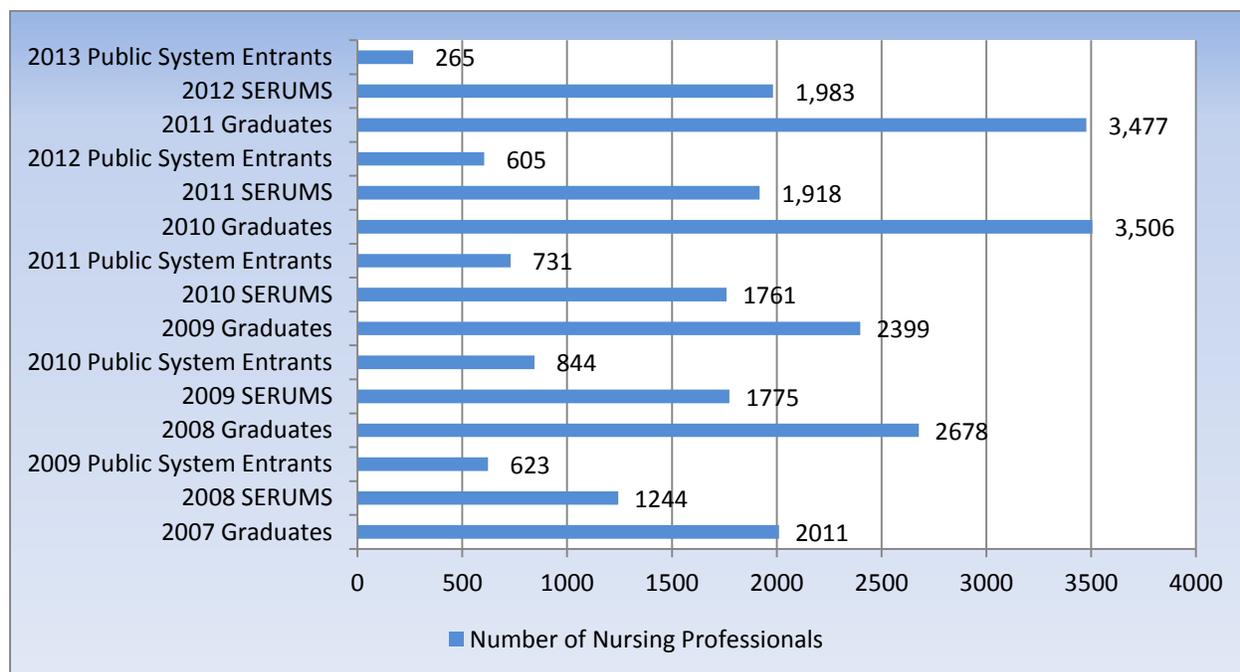
Furthermore, it is possible to identify the dynamics of different professions in terms of entering the public sector. Figure 1.9 to Figure 1.16 illustrate the number of graduated professionals each year, the number of people taking up SERUMS positions, and the number of these who join the public sector in the following year. For those joining the health sector we were able to carry out an individual match from the SERUMS database to the database of the National Observatory on Human Resources for Health. It is worth highlighting that in the case of physicians in recent years (Figure 1.9), the number of people taking up SERUMS positions is higher than the number of graduated professionals; this is possible because graduates do not necessarily apply to SERUMS immediately upon graduation from their training programs. For all professions other than physicians, there are a significant number of graduates who do not take up SERUMS positions, and many of those who do, do not necessarily join the public sector workforce.

Figure 1.9 Dynamics of Training, SERUMS, and Entry into the Public System for Physicians



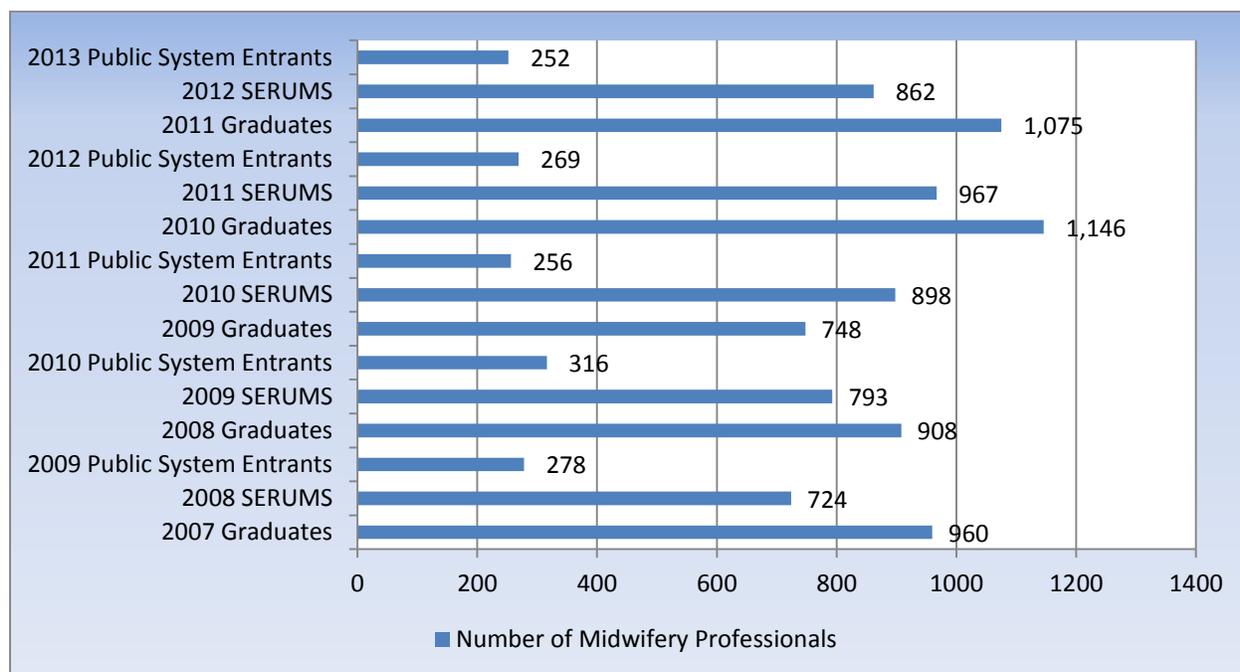
Sources: National Assembly of Rectors (ANR); and MINSA, DGGDRRHH 2007–13. Authors' calculations.

Figure 1.10 Dynamics of Training, SERUMS, and Entry into the System for Nurses



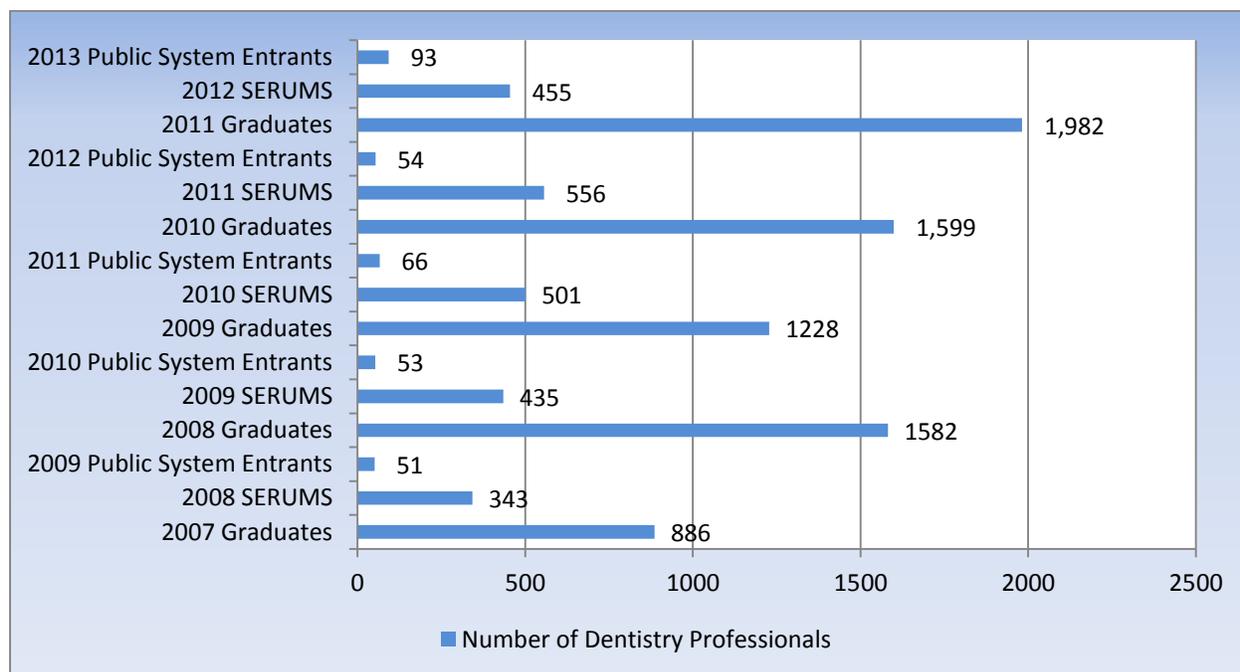
Sources: National Assembly of Rectors (ANR); and MINSA, DGGDRRHH 2007–13. Authors' calculations.

Figure 1.11 Dynamics of Training, SERUMS, and Entry into the System for Midwives



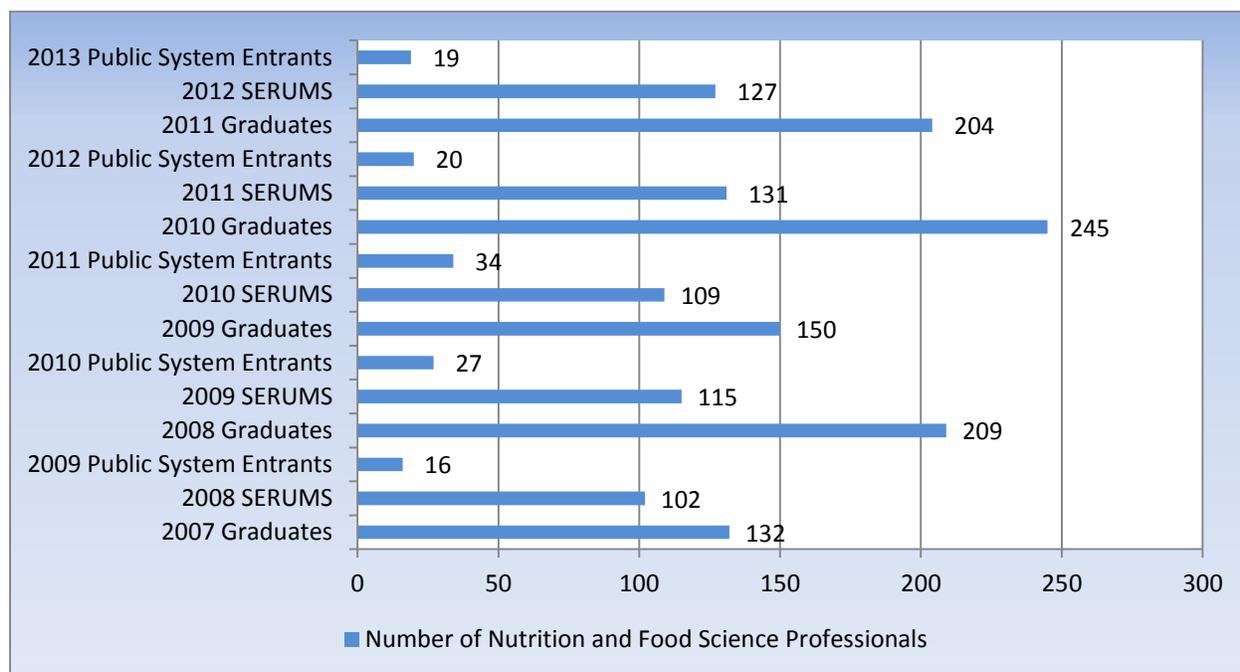
Sources: National Assembly of Rectors (ANR); and MINSA, DGGDRRHH 2007–13. Authors' calculations.

Figure 1.12 Dynamics of Training, SERUMS, and Entry into the System for Dentists



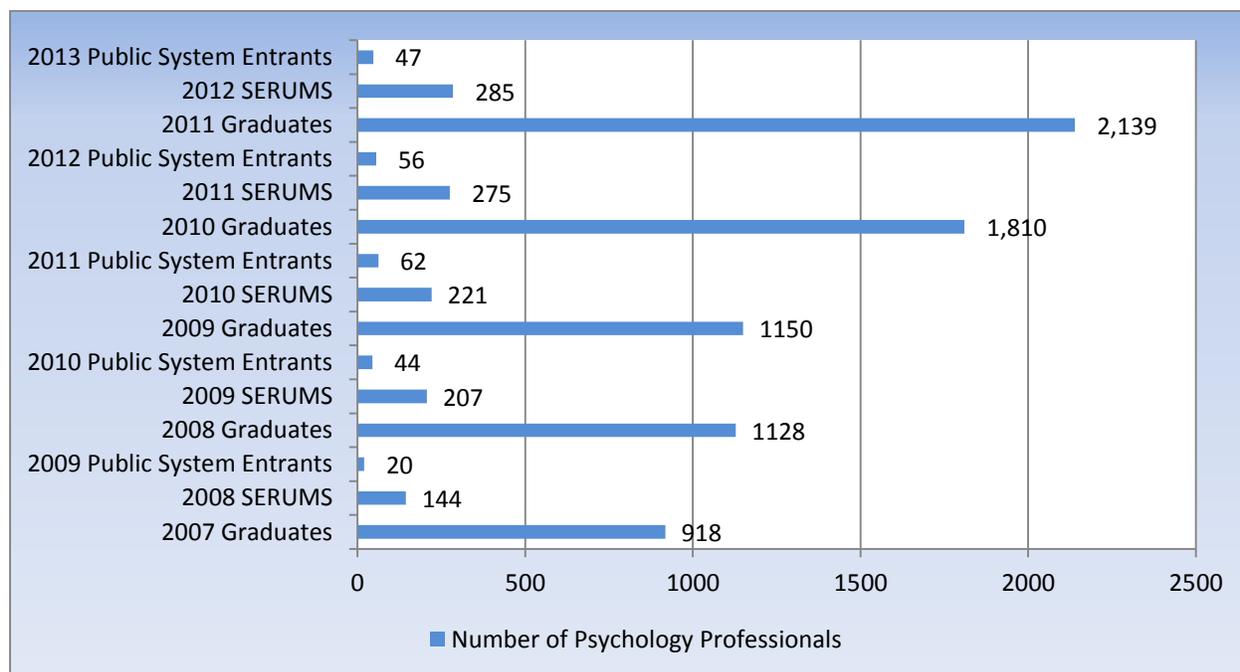
Sources: National Assembly of Rectors (ANR); and MINSA, DGGDRRHH 2007–13. Authors' calculations.

Figure 1.13 Dynamics of Training, SERUMS, and Entry into the System for Nutritionists



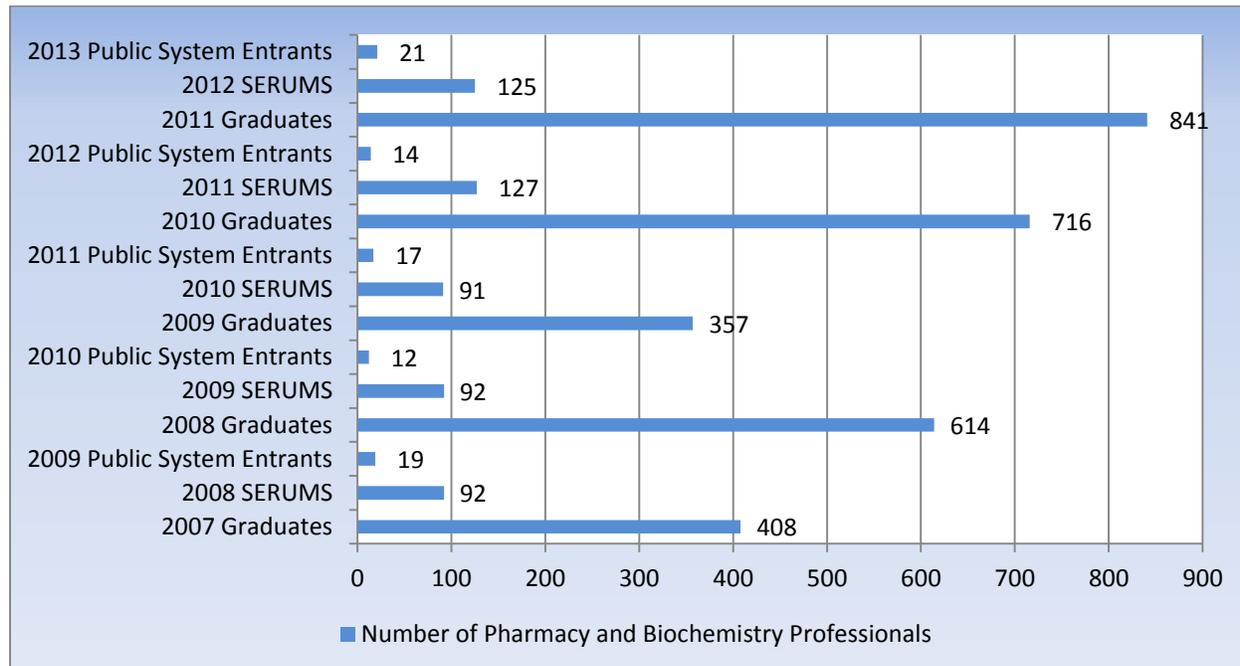
Sources: National Assembly of Rectors (ANR); and MINSA, DGGDRRHH 2007–13. Authors' calculations.

Figure 1.14 Dynamics of Training, SERUMS, and Entry into the System for Psychologists



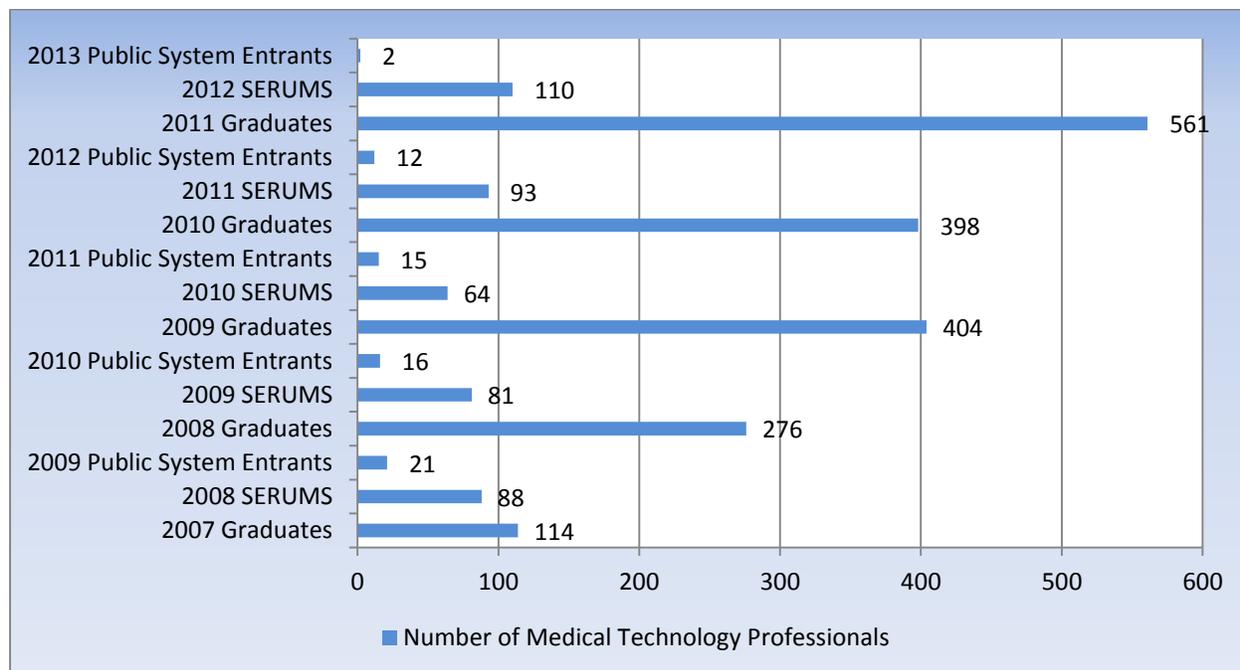
Sources: National Assembly of Rectors (ANR); and MINSA, DGGDRRHH 2007–13. Authors' calculations.

Figure 1.15 Dynamics of Training, SERUMS, and Entry into the System for Pharmacists and Biochemists



Sources: National Assembly of Rectors (ANR); and MINSA, DGGDRRHH 2007–13. Authors' calculations.

Figure 1.16 Dynamics of Training, SERUMS, and Entry into the System for Medical Technologists



Sources: National Assembly of Rectors (ANR); and MINSA, DGGDRRHH 2007–13. Authors' calculations.

Table 1.8 Type of Contract for Public Sector Employees Who Completed SERUMS in 2007–11

Contract type	Number of workers	Share of total (%)
CAS	6,802	76.89
Resident	883	9.98
Contract type 276	531	6.00
Payroll	272	3.07
Third party	134	1.51
Contract type 728	127	1.44
Not specified	87	0.98
Municipal contract	7	0.08
Redeployed	3	0.03
Total	8,846	100

Sources: MINSA, DGGDRRHH 2013. Authors' calculations.

DISCUSSION

The results presented in the last section show that for the health professions included in the study, except for medicine, there are a significant number of graduates who decide not to take up a SERUMS position—a prerequisite for work in the public sector and for ongoing specialist training in the case of physicians. This may indicate that the labor market is offering opportunities for which SERUMS is not a requirement. There is also an increase in the number of graduates from private universities—for example, Inca Garcilaso de la Vega Private University and Alas Peruanas University—who take up SERUMS positions, whereas the number of graduates from public universities, for example, San Marcos National University, has been steadily decreasing. Finally, the public sector fails to absorb the majority of professionals completing SERUMS, and the vast majority of those graduates who are hired into the public sector, work under temporary contracts. This analysis indicated that the deficit of health professionals in the public sector is not due to the lack of trained professionals in the market, but instead to the inability of the public sector to absorb them.

The government has relied on SERUMS as a strategy to ensure human resources for health in rural and remote areas, and evidence shows that this has been a successful strategy. However, given that the insertion level of SERUMS graduates into the public sector is rather low, and that most of those who do get inserted, do so under temporary agreements (

Table 1.8), we conclude that SERUMS and public sector employment do not compete with other job opportunities provided by the market to these professionals.¹³ Therefore, it is necessary to develop deployment policies that go beyond SERUMS and make sure that MINSA and regional governments have access to the necessary budget to attract and retain health professionals in the public sector. To develop these retention policies it is necessary to conduct a more complete assessment, including studies with new graduates to explore and acquire a deeper understanding of their employment aspirations and expectations, and job features that they appreciate the most, and to contrast this with a market assessment and an exploration of the other opportunities that are available to these new graduates. In addition, it is necessary to investigate the reasons why many professionals who complete SERUMS do not pursue their profession in the public sector, despite being qualified to do so. It would be critical to understand what could make the public sector an attractive or feasible job option for some graduates once they complete their SERUMS, and what measures could be implemented to attract and retain these professionals, for example flexibility to extend and renew SERUMS contracts and not have gaps in between contracts.

3. CONTRACTING OF HEALTH PROFESSIONALS IN THE PUBLIC SECTOR

In this section we analyze how the public sector contracts health professionals, how these professionals are distributed within the sector, and which contract regimes are used. Furthermore, we evaluate the time required to close the health workforce gap and the measures that may be adopted to speed up this process.

DATA SOURCES

We reviewed the literature and analyzed the following data:

- MINSA:
 - Database of the National Observatory on Human Resources for Health
 - Calculation of health workforce gaps, using a methodology updated to 2013
- ANR: Information of how many people graduate from professional health training programs
- INEI: Population projection nationwide as of June 2013

DISTRIBUTION OF HEALTH PROFESSIONALS BY SUBSECTOR

Information on health professionals working within the different subsectors of the health care system is shown in Table 1.9. Data on human resources working in the public sector is much more accessible and complete than that available for other subsectors. Even though the National Observatory on Human Resources for Health is in charge of collecting information from all subsectors, this is not complete enough to allow analysis beyond the overall numbers that are presented in Table 1.9. This in itself points to a major challenge for HRH policies in Peru: there is no information system that provides a complete picture of human resources across the subsectors, and as a result, no comprehensive information can be obtained about the distribution of health professionals.

13. With the available data, it is difficult to distinguish whether the lack of absorption is due to lack of openings to work in the public sector, or lack of applicants to available positions.

Table 1.9 Distribution of Health Professionals by Health System Subsector

Profession	MINSA and regional governments	EsSalud	Police (PNP) and military (FFAA)	SISOL ¹⁴	Private sector	Total
Physician	18,220	9,210	1,901	749	3,589	33,669
Nurse	20,939	9,515	2,140	206	691	33,491
Midwife	10,032	1,178	189	59	75	11,533
Dentist	2,610	778	461	18	604	4,471
Nutritionist	933	318*	40	17	29	1,337
Psychologist	1,320	283*	328	18	70	2,019
Pharmaceutical chemist	1,385	372*	86	1	46	1,890
Medical technologist	1,512	2,033	227	4	163	3,939
Total	56,951	23,687	5,372	1,072	5,267	92,349
%	61.7	25.6	5.8	1.2	5.7	

Source: MINSA, DGGDRRHH, 2013, except items marked with * for which source is http://www.essalud.gob.pe/transparencia/pdf/informacion/clasificador_cargos_2t_2013.pdf.

CONTRACT REGIMES TO HIRE HEALTH HUMAN RESOURCES IN THE PUBLIC SECTOR

Health professionals in the public sector are hired under many different contractual regimes, leading to a wide variation in salary levels and benefits. Workers hired under permanent contracts, as described by Legislative Decree 276, may receive up to twice the salary of those under temporary contracts, such as the Administrative Contract for Services (*Contrato Administrativo de Servicios*—CAS). The salary differences are especially large for physicians; for other professional categories, although there are differences, these are smaller (MINSA 2011). The CAS was created in 2008 with the intention of improving the hiring system, suppressing Non-personal Services Agreements (*Servicios No Personales*—SNP), a previous type of temporary contract, and establishing a contract that has a specific term, schedule, job description, provides social benefits through EsSalud, and contributes to the pension system. Since the creation of CAS, all SNP employees became CAS employees; however, the temporary character of the CAS still leads to instability in employment (MINSA 2011).

Table 1.10 presents information on HRH currently working in the public sector and their contract regimes. Overall, 53 percent of human resources have permanent appointments; 32 percent work under temporary CAS agreements; and 11 percent are working in a SERUMS position. SERUMS positions are more prevalent in predominantly rural regions such as Huánuco, Huancavelica, Pasco, and Tumbes, where they account for approximately 25 percent of health professionals (data not shown).

14. Metropolitan Solidarity System (Sistema Metropolitano de la Solidaridad).

Table 1.10 Human Resources for Health per Contract Regime Nationwide (Public Sector Only)

Contractual regime	Health professionals		Health technicians		Health assistants		Total	
	#	%	#	%	#	%	#	%
Payroll	28,388	47	24,510	61	2,464	71	55,362	53
CAS	20,008	33	12,489	31	775	22	33,272	32
SERUMS 2013 – I	5,387	9	—	0	—	0	5,387	5
Contract type 276	2,391	4	1,478	4	127	4	3,996	4
Contract type 728	566	1	882	2	3	0	1,451	1
Resident	1,450	2	—	0	—	0	1,450	1
SERUMS 2012 – II	1,421	2	—	0	—	0	1,421	1
Third party	682	1	400	1	58	2	1,140	1
Redeployed	564	1	321	1	28	1	913	1
Not specified	123	0	63	0	1	0	187	0
Municipal contract	19	0	121	0	2	0	142	0
Total	60,999	100	40,264	100	3,458	100	104,721	100

Source: MINSA, DGGDRRH 2013.

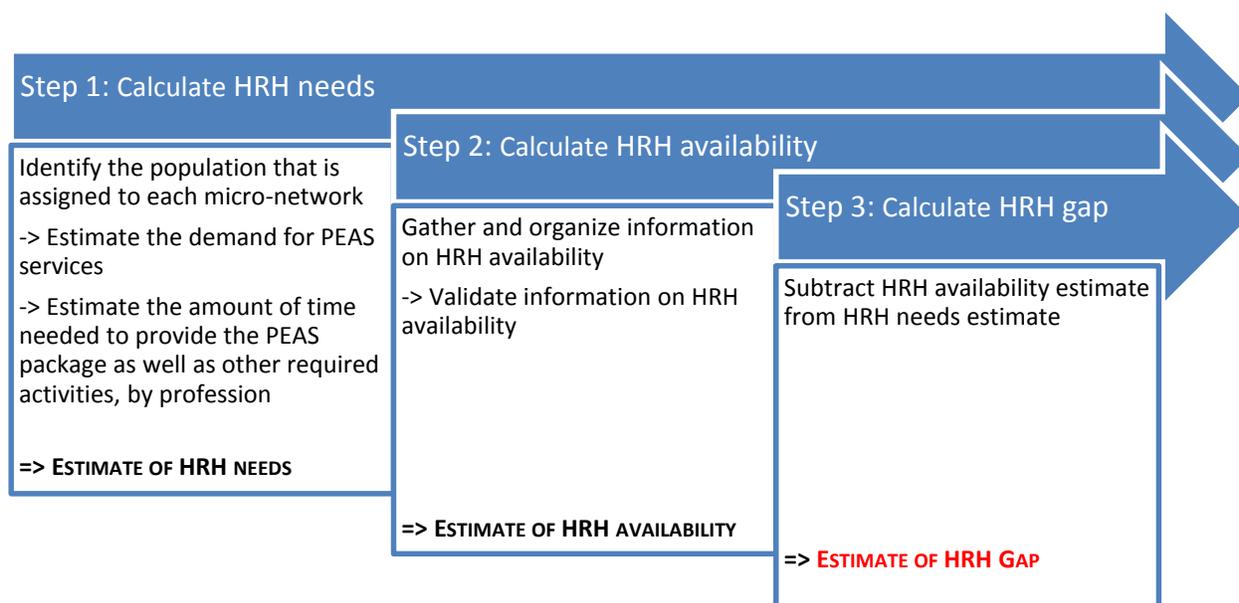
When one compares health professionals working in the public sector with those working in EsSalud, the difference is even larger especially for professionals who are not physicians: public employees receiving up to S/. 19,000 less in salaries and benefits per year (MINSA 2011). In 2006, Webb and Valencia estimated that physicians' salaries in the public sector fell by 75 percent in real value between 1976 and 2004 (from S/. 7,974 in 1976, to S/. 1,919 in 2004, adjusted to the 2001 value of nuevos soles).

Finally, we encountered some anecdotal evidence that suggests that many physicians are engaged in dual practice between the public and private sectors—however, we could not find any information or data on this topic so we are unable to verify the extent to which this happens.

THE HEALTH WORKFORCE GAP IN MINSA AND REGIONAL GOVERNMENTS' HEALTH CARE ESTABLISHMENTS—2013

We reestimated the health workforce gaps for basic health team professionals (physicians, nurses, and midwives), using a methodology developed by MINSA to quantify the difference between the need for and the availability of human resources for health care services. The need for human resources is estimated using an estimate of the time required to provide the medical services of the Essential Health Insurance Plan (*Plan Esencial de Aseguramiento en Salud*—PEAS) as well as other health care activities not considered in PEAS, and management and training activities that are part of job duties in the primary care level. The unit that is used to calculate the human resource gap for health care services of the primary care level is health micro-network. The methodology is summarized in Figure 1.17.

Figure 1.17 Methodology Used to Calculate Health Workforce Gaps



Source: Authors' calculations.

We calculated that in 2013 Peru has a deficit of 11,779 physicians, 8,780 nurses, 4,950 midwives, and 27,515 dentists (annex 5). On the positive side though, the gap for some human resources has been closed in a number of regions. The deficit for dentists is not surprising, since the number of dentists entering the system is minimal. Compared with 2009, we observe a significant increase in the gap for physicians (30 percent) and for dentists (26 percent), whereas the gap for nurses and midwives remained constant.

We use this gap information, together with INEI's population growth projections, and projections on the number of health professionals to assess in how much time the estimated gaps could potentially be filled, depending on the absorption rate of graduates into the public sector. Using the information available from the ANR, we first calculate the ratio of graduates to the number of entrants five years earlier¹⁵ (Table 1.11) After applying the calculated ratio to the number of students entering public and private universities from 2008 to 2011, it is possible to project number of graduates from those universities for the period 2012 to 2015.¹⁶ Table 1.12 summarizes these results.

15. In this case, we made the calculation for five years of study, since the available information corresponds to such period of time. It is worth indicating, however, that medical training lasts seven years.

16. It is worth specifying that as of the date of this report, the National Assembly of Rectors only had information for the 2007–11 period. Thus, we will work with the projection for 2012.

Table 1.11 Number of Graduates and Ratio of Graduates/ Entrants

Profession	Type of University	Number of Graduates					Graduates to admissions ratio (5 years)
		2007	2008	2009	2010	2011	
Medicine	Public	551	819	720	881	751	0.79
	Private	693	844	938	1,462	1,260	0.58
	Total	1,244	1,663	1,658	2,343	2,011	0.64
Nursing	Public	1,039	1,472	1,298	1,732	1,480	0.76
	Private	972	1,206	1,101	1,774	1,997	0.52
	Total	2,011	2,678	2,399	3,506	3,477	0.60
Midwifery	Public	271	413	303	557	392	0.62
	Private	689	495	445	589	683	0.43
	Total	960	908	748	1,146	1,075	0.48
Dentistry	Public	221	440	307	288	332	0.57
	Private	665	1,142	921	1,311	1,650	0.43
	Total	886	1,582	1,228	1,599	1,982	0.45
Nutrition and Food Science	Public	105	171	132	199	158	0.48
	Private	27	38	18	46	46	0.16
	Total	132	209	150	245	204	0.33
Psychology	Public	139	267	276	362	311	0.69
	Private	779	861	874	1,448	1,828	0.41
	Total	918	1,128	1,150	1,810	2,139	0.44
Pharmacy and Biochemistry	Public	202	310	247	394	396	1.00
	Private	206	304	110	322	445	0.46
	Total	408	614	357	716	841	0.61
Medical Technology	Public	76	182	289	253	307	1.38
	Private	38	94	115	145	254	0.23
	Total	114	276	404	398	561	0.43

Source: National Assembly of Rectors (ANR) 2013.

Table 1.12 Projections of the Number of Graduated Professionals 2012–15

Profession	Type of University	Projected Number of Graduates			
		2012	2013	2014	2015
Medicine	Public	776	605	867	1,005
	Private	1,166	1,322	1,523	1,527
	Total	1,942	1,927	2,390	2,531
Nursing	Public	1,518	1,204	1,594	1,481
	Private	2,752	2,020	2,446	2,833
	Total	4,270	3,224	4,041	4,314
Midwifery	Public	408	313	502	449
	Private	950	827	931	1,030
	Total	1,358	1,141	1,433	1,479
Dentistry	Public	340	278	381	376
	Private	2,336	2,062	2,101	2,045
	Total	2,677	2,340	2,481	2,421
Nutrition and Food Science	Public	210	124	192	190
	Private	51	32	36	54
	Total	261	156	228	245
Psychology	Public	412	161	498	282
	Private	2,427	2,316	3,263	3,343
	Total	2,840	2,477	3,760	3,625
Pharmacy and Biochemistry	Public	396	396	396	396
	Private	445	445	445	445
	Total	841	841	841	841
Medical Technology	Public	307	307	307	307
	Private	254	254	254	254
	Total	561	561	561	561

Source: Authors' calculations.

Furthermore, using information on the dynamics of professionals and their entry into SERUMS, as presented in Figure 1.9 to Figure 1.16, it is possible to calculate an average ratio (percentage) of those who take up a SERUMS position and of those who stay in the system. Using this ratio, it is possible to project the number of professionals who would enter SERUMS and then the public sector (Table 1.13 and Table 1.14).

Table 1.13 Projection of the Number of Professionals Entering SERUMS

Profession	2013	2014	2015	2016
Medicine	2,291	2,274	2,820	2,987
Nursing	2,690	2,031	2,546	2,718
Midwifery	1,209	1,015	1,275	1,316
Dentistry	883	772	819	799
Nutrition and food science	167	100	146	157
Psychology	454	396	602	580
Pharmacy and biochemistry	227	197	263	303
Medical technology	292	240	311	337

Source: Authors' calculations.

Table 1.14 Projection of the Number of Professionals Entering the Public Health System

Profession	2014	2015	2016	2017
Medicine	641	637	790	836
Nursing	995	751	942	1,006
Midwifery	399	335	421	434
Dentistry	124	108	115	112
Nutrition and food science	33	20	29	31
Psychology	91	79	120	116
Pharmacy and biochemistry	36	31	42	48
Medical technology	47	38	50	54

Source: Authors' calculations.

PROJECTION OF THE HEALTH WORKFORCE GAP

Finally, we calculated a projection of the health workforce gap for 2013–40 (annex 6, table A6.1). For this projection, we assumed that, starting in 2016, the number of professionals taking up SERUMS positions would stay constant and be equal to the projections for that year. It is worth mentioning that even though we expect an increase in the number of new professionals, we should also consider that every year a certain number quit, so we are using a conservative assumption that the number of additional entries into SERUMS meets the number of those who complete or quit SERUMS. Furthermore, we assume that the ratio of professionals who keep working in the public system also remains constant. Under those assumptions, we estimated that the gap of physicians would be closed in 2027, the gap of nurses in 2024, and the gap of midwives in 2017. By contrast, the gap of dentists would not be closed in the indicated term, which is to be expected because of the low ratio of dentists entering the public system through SERUMS (annex 6, table A6.1).

We also carried out a simulation with different scenarios, in which we varied the percentage of professionals who join the public sector after completing SERUMS and calculated the year in which the gap would be closed (Table 1.15). Increasing the rate of absorption into the public system by 10 percent would reduce the time to close the gap by no more than three years. By doubling the rate of absorption (100 percent increase), it would be possible to close the gaps between 2016 and 2020.

Table 1.15 Summary of Gap Closure Simulations

Higher system absorption rate scenarios		Physicians	Nurses	Midwives	Psychologists	Dentists
Starting condition: 0%	Ratios	0.28	0.37	0.33	0.2	0.14
	Year gap closes	2027	2024	2017	2045	>2050
Scenario 1: +10%	Ratios	0.31	0.41	0.36	0.22	0.15
	Year gap closes	2025	2023	2017	2042	2049
Scenario 2: +20%	Ratios	0.34	0.44	0.40	0.24	0.17
	Year gap closes	2024	2023	2017	2040	2046
Scenario 3: +30%	Ratios	0.36	0.48	0.44	0.26	0.18
	Year gap closes	2024	2022	2017	2038	2043
Scenario 4: +40%	Ratios	0.39	0.52	0.46	0.28	0.20
	Year gap closes	2023	2021	2016	2036	2039
Scenario 5: +50%	Ratios	0.42	0.56	0.50	0.30	0.21
	Year gap closes	2022	2021	2016	2035	2039
Scenario 6: +100%	Ratios	0.56	0.74	0.66	0.40	0.28
	Year gap closes	2020	2019	2016	2030	2033

Source: Authors' calculations.

DISCUSSION

MINSA and the regional governments are the largest employers of the health sector in Peru, and this gives them substantial weight in influencing the health labor market. On the other hand, there is only limited available information on human resources working outside the public sector (MINSA and regional governments). The little comparative information available indicates that public sector salaries are lower than those offered by other subsectors such as EsSalud. In addition, the public sector relies on a large number of contract regimes for hiring HRH, which is associated with large discrepancies in terms of salary. In addition, most new hires into the public sector are done on the basis of temporary CAS contracts. Although it has been proven that salary is not the only factor considered by workers in employment decisions, these salary differences and temporary employment conditions are an obstacle to attracting high-quality, motivated employees to the public sector.

The Peruvian government is promoting basic health teams—physician, nurse, midwife—as the basis for primary care services and as a means to guarantee universal health coverage. In practice, however, filling those positions is not straightforward. Our analysis shows that a significant number of graduates do not take up SERUMS positions and thus do not join the public sector and that this is in part related to the lack of labor stability and the lower salaries offered in the public sector.

Our projections show that if the government were able to double the absorption of physicians into the public system after their SERUMS internship, it would close the gap by 2020, seven years earlier than if the absorption ratio remains constant; for nurses it might be 2019 versus 2024. Regarding midwives, the

calculations show that the gap might be closed in 2017 with the current absorption ratios. This type of information is important in developing incentive policies to increase the level of human resource absorption into the public sector.

4. MIGRATION

In this section, we analyze migration patterns of health professionals.

DATA SOURCES

Unfortunately, we were unable to obtain records of migratory flows of health professionals into and out of Peru. The following are the data and information sources used in this section:

- Publications related to human resources for health in Peru and the region found by searching in Google Scholar (<http://scholar.google.com/>) and PubMed (<http://www.ncbi.nlm.nih.gov/pubmed>)
- 2010 National University Census

STUDENTS' INTENTION TO MIGRATE

Given that there is no accurate information about actual flows of migration to other countries, we have to rely on other sources of information. There are two studies that look at students' desire to migrate. The 2010 University Census asked students about their desire to migrate to another country after finishing professional studies. Table 1.16 shows the responses for health professionals. The intention to migrate is highest among medical students (78 percent) and is significantly higher than in 2008 according to Mayta-Tristán (Mayta-Tristán, 2008). In this previous study, medical interns at San Marcos National University were asked about their intention to migrate for work reasons. The results showed that 38.1 percent of interns had the intention to migrate, and of these, 70 percent planned to migrate to Europe and 23 percent to North America. The main reason was better economic prospects, and students were more likely to intend to migrate if they had an extracurricular rotation, or if they had presented at least one scientific paper at a student congress. This difference between the two studies in the intention to migrate may be due to the fact that the census sample included private as well as public university students, while the Mayta-Tristán study was limited to one public university.

Table 1.16 Plans to Migrate Abroad after Graduation, 2010 University Census

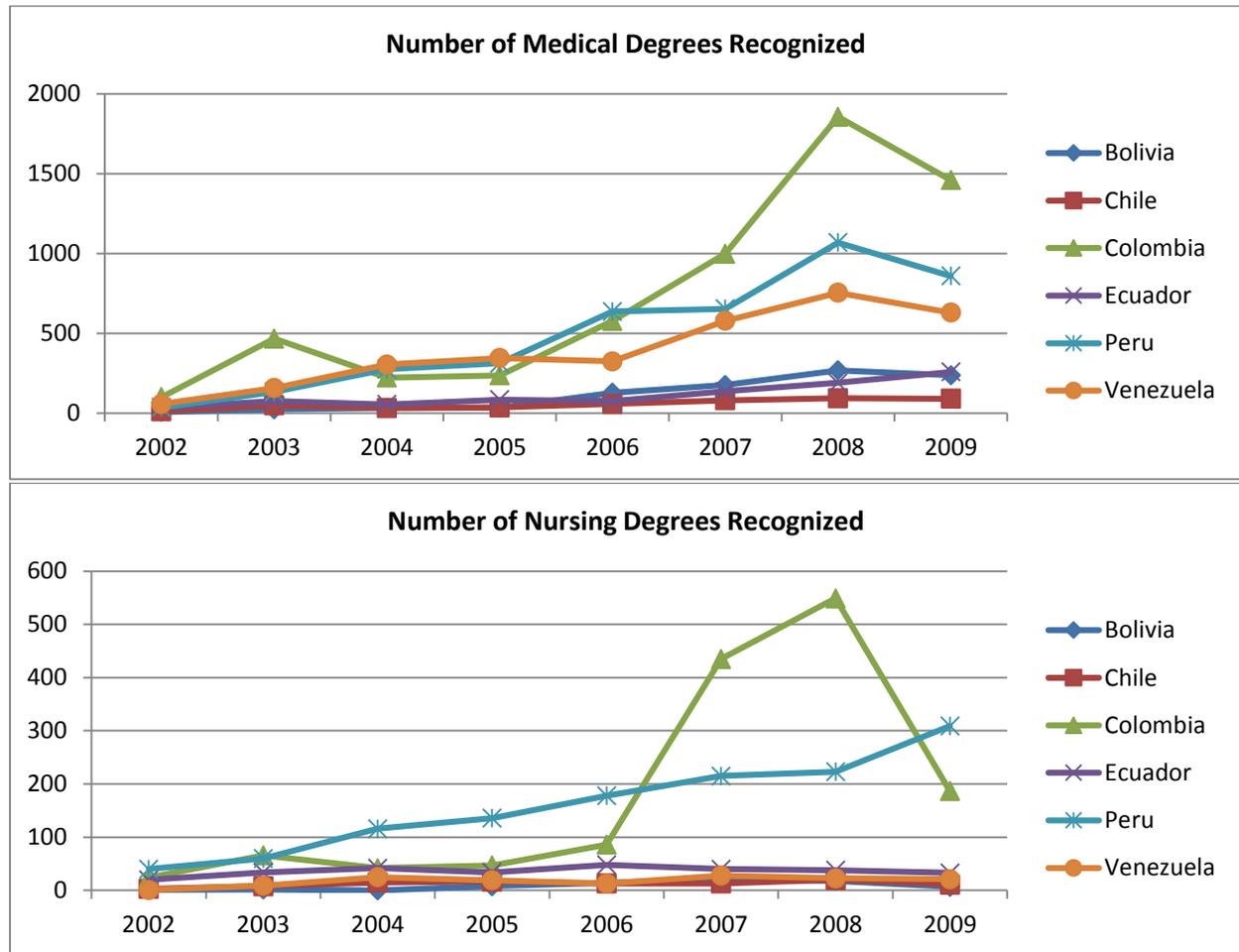
Profession	Number of students surveyed	Respondents planning to migrate after graduation (%)
Medicine	21,333	78
Nursing	31,879	67
Midwifery	11,643	60
Dentistry	21,770	69
Nutrition and food science	3,254	64
Psychology	24,413	60
Pharmacy and biochemistry	7,963	65
Medical technology	6,537	66
Biology	7,801	74

Source: National Institute of Statistics and Informatics (INEI) 2010.

A 2013 report published by the Pan-American Health Organization (PAHO), “Migration of Qualified Health Professionals, Financial Impact, Recognition of Diplomas: Challenges and Perspective in Andean Countries”, documents that Peru has the highest number of migrating physicians and nurses in the region, losing an average 588 physicians and 881 nurses annually, thereby accounting for 44.7 percent of doctor and nurse migrations in the region. The outflow of Peruvian nurses is particularly alarming, since they represent 68.1 percent of the total nurse migration of the region. The PAHO report estimated that the cost of this migration would be between 13.3 and 25.7 percent of the total value of exports, depending on whether the professionals were trained in private or public universities. The report concluded that human resources’ migration costs are significant for the region and have an impact on the amount and quality of local supply.

Two publications study the migration of Peruvian physicians (Bernardini-Zambrini et al. 2011) and of physicians and nurses of the Andean region, to Spain in particular (Álvarez Velasco 2012), using migration data provided by Spanish authorities. Both studies report that Peru contributes a significant and progressively increasing number of professionals to the Spanish health system. Figure 1.18 was adapted from Álvarez Velasco (2012) and shows an increase in the number of official recognitions of physicians and nurses’ degrees from the region. The Bernardini-Zambrini report, on the other hand, finds that two out of every five Peruvian physicians who migrated to Spain chose a family medicine position.

Figure 1.18 Number of Medical and Nursing Degrees Recognized in Spain, by Country of Origin of the Migrant



Source: Álvarez Velasco 2012; Spain, Ministry of Education, General Sub-Director's Office for Degrees and Qualification Recognition 2012.

DISCUSSION

We conclude that there is a high intention to migrate among students in the health professions, and that many professionals eventually fulfill their intention, especially physicians and nurses, from whom we had more information. The losses for the country, particularly if those professionals were trained in public universities, are high. Overall, it would be helpful to have more information on migratory flows of health professionals into and out of Peru.

5. RETENTION

In order to develop incentive policies to attract and retain health employees, it is essential to have first-hand information on employee preferences and motivations. However, obtaining such information is not straightforward. Very few studies survey preferences and motivations directly, and those that do cannot necessarily be generalized outside of the original sample, that is, to other geographical areas, to people trained in other professions, or to other phases in their careers (new graduates vs. more experienced personnel). In this section we summarize the results of the available studies and present recent information from MINSA's Quality Office on employee satisfaction.

DATA SOURCES

The data and information sources used in this section are the following:

- MINSA's Quality Office—survey on internal user satisfaction
- Publications related to human resources for health in Peru and the region, found by searching in Google Scholar (<http://scholar.google.com/>) and PubMed (<http://www.ncbi.nlm.nih.gov/pubmed>)

HUMAN RESOURCES FOR HEALTH ASPIRATIONS, EXPECTATIONS, AND NEEDS

A study about the current situation and professional perspectives of medical students in nine Latin American countries (Mayta-Tristán et al. 2010) found that 37 percent of them study in a place other than where they were born, whereas 82 percent plan to work in hospitals, and only 2.3 percent in health care centers. 47.6 percent agree that the average salary received by physicians in their countries is insufficient. Among Peruvian students, 47.7 percent intend to migrate to practice their profession, and only Colombia and El Salvador have larger percentages. Another study in Peru surveyed physicians who were undergoing the Peruvian Medical Association registration process ($n=782$) on job projections, and found that 7.0 percent planned to work in the interior of the country and only 0.5 percent in rural areas. This intention was positively related to having both parents living outside of Lima, knowing Quechua, and having done their internship outside of Lima (Mayta-Tristán et al. 2011).

Three publications report the results of a discrete choice experiment conducted with physicians, nurses, and midwives working in Ayacucho. Different job packages were presented to them, with different combinations of salaries and benefits, to understand what conditions would encourage them to choose to continue to work in a rural area. For nurses and midwives, the likelihood of choosing an urban position was almost 15 times higher than for choosing a rural position. The top reasons to choose a rural job included a salary increase, an assignment to a “better” type of health center, and scholarships to continue their professional training. Increasing the number of years to secure a permanent contract appeared to be a disincentive for both rural and urban jobs. Simulations showed that a package that includes a 75 percent increase in salary and more scholarships for specialization could increase the percentage of nurses and midwives accepting a rural job from 36.4 to 60.0 percent (Huicho et al. 2012a). On the other hand, physicians were five times more likely to choose an urban position than a job in a rural community. A salary increase and bonus points for specialization would serve as incentives to choose a rural area, whereas an increase in the number of years required to secure a permanent position would be a disincentive. Being male and currently employed at a hospital considerably reduces the likelihood of accepting a rural job. Simulations showed that a package with a salary increase of 75 percent, permanent contract after two years in the rural area, and bonus points for specialization would increase the percentage of physicians accepting a rural job from 21 to 77 percent. A package with a 50 percent salary increase, plus bonus points for

specialization would also increase the probability of physicians accepting a rural job from 21 to 52 percent (Miranda et al. 2012). A qualitative study that was conducted as a part of this experiment identified that the job conditions of many health professionals were hard, and that there is no systematic incentive strategy for attracting and retaining employees in rural areas. The main incentives requested by the employees included—besides the abovementioned—more contractual stability and labor benefits, infrastructure enhancement, equipment and supplies for health professionals, training opportunities, better housing, better food, and better care and recognition (Huicho et al. 2012b).

Bobbio and Ramos (2010) surveyed the job satisfaction of physicians, nurses, midwives, and nursing technicians in the Dos de Mayo National Hospital. They show that 22.7 percent of physicians, 26.2 percent of nurses and midwives, and 49.4 percent of nursing technicians were satisfied with their jobs. The multivariate analysis shows that for physicians, factors associated with job satisfaction included the hygiene and tidiness of the job environment, and satisfaction with department heads; for nurses and midwives, the factors were appropriate workload, and proper promotion opportunities; and finally for nursing technicians, these factors were satisfaction with their monthly salary and satisfaction with job supervision.

HEALTH FACILITY EMPLOYEE SATISFACTION

MINSa makes use of a continuous survey to assess the organizational climate of health centers, which we were able to access for this study. The survey assesses the internal users' (that is, health facility employees) satisfaction. The survey has 28 questions in which the users have to respond on a 1 to 4 point scale, with 4 being the "healthiest" score. Thus, the overall score that can be obtained varies from 28 to 112. If the overall score is more than 84, the organizational climate is labeled as "healthy"; between 56 and 84, the climate is considered to need improvement, while if the score is lower than 56, the organizational climate is labeled as unhealthy (MINSa 2013).

In accordance with the results obtained in the last surveys conducted in 2011 to 2013, none of the health care centers show an unhealthy environment. However, the largest number of health care centers have a score between 56 and 84 (to be improved), and less than 10 percent show a healthy climate (Table 1.17). Even though it is true that in health care centers where the organizational climate needs to be improved, the average score is not too low (over 70); it is still important to highlight that the number of organizations that lack a healthy environment is high—almost comprising the 90.5 percent of surveyed institutions during this period.

Table 1.17 Results of Organizational Climate Survey (2011–13)

Organizational climate	Number of health care centers (2011)	Average score	Number of health care centers (2012)	Average score	Number of health care centers (2013)	Average score
Unhealthy			0	n.a.	0	n.a.
To be improved	42	73.1	155	74.7	63	73.3
Healthy	0	n.a.	21	88.7	6	86.8
Total	42	73.1	176	76.4	69	74.5

Source: Health Quality Office, MINSa 2013.

Note: n.a. = not applicable.

DISCUSSION

The 2011 study by Mayta-Tristán et al. indicate that very few physicians expect or aspire to work at the community level or in rural areas. Besides, many have already migrated for study reasons. The discrete choice experiment in Ayacucho highlights the significance of incentives to retain health professionals working in rural areas. Information about organizational climate shows that for the majority of health employees there is a need to improve their working environment. This may be an indicator of labor satisfaction. Nevertheless, the available information for analysis in this section is limited, and more studies are necessary to better understand what incentives are needed to attract and retain health professionals to the primary care level within the public sector.

6. POSTGRADUATE TRAINING: MEDICAL SPECIALTIES

In this section, we look into the organization, supply and demand of postgraduate training for medical specialties. We analyze the distribution of specialists within the system and the dynamics of incorporating these specialists into the public sector.

DATA SOURCES

The data sources used in this section are the following:

- MINSA: Database of the National Observatory of Human Resources for Health
- CONAREME:
 - Profiles to recognize priority specialists: <http://www.conareme.org.pe/>
 - Entrants to Medical Residency from 2009–10 and 2013, per specialty
- Publications related to human resources for health in Peru and the region, found by using Google Scholar (<http://scholar.google.com/>) and PubMed (<http://www.ncbi.nlm.nih.gov/pubmed>)

ORGANIZATION OF POSTGRADUATE TRAINING FOR MEDICAL SPECIALTIES

The admission process to medical residency is managed by medical schools and financed by the MINSA. To apply for admission, applicants must be physicians, belong to the Peruvian Medical Association, be accredited by the medical association to practice medicine, and have completed a SERUMS. Applicants can only apply to one medical school, and the selection process is conducted annually and simultaneously for each medical residency program. The admission exam is prepared by the Peruvian Association of Medical Schools (ASPEFAM, <http://aspefam.org.pe/>), application is by clinical, surgical, or subspecialty area; and positions are allocated in strict order of results among the approved applicants.

Herrera-Añazco et al. (2012) note that universities play a smaller role during medical residencies, as training is the responsibility of the teaching hospitals. Some teaching hospitals do not include scientific and academic activities in their training program, while others do but often do not conduct the corresponding activities due to the fact that residents are needed to fill in for the lack of assistant specialist doctors. Galán-Rodas et al. surveyed 416 physicians that applied to a residency program and found that this was not the first application for more than half of these applicants. Among those interviewed, 67.5 percent favored a single national exam, while 39.2 percent preferred a separate selection process by specialization. Moreover, 78.1 percent disagreed with MINSA's proposal of implementing additional mandatory time of service in the medical residency in the less developed regions of the country.

This section describes the supply and demand for medical specialist training focused on the specializations linked to health priorities: internal medicine, pediatrics, surgery, anesthesiology, gynecology, and midwifery, and family and community medicine. Additionally, it describes the distribution of these specialists within the public sector and analyzes the training and absorption dynamics of the public sector.

POSTGRADUATE TRAINING OF MEDICAL SPECIALTIES: SUPPLY AND DEMAND

The number of available openings for training of medical specialists is mostly limited by the capacity of teaching hospitals and health centers, while the number of candidates depends on the number of graduated physicians who have completed SERUMS (since this is a requirement to access the medical residency) and their interest in pursuing a specialization. According to CONAREME, 2,036 physicians entered the medical residency in 2013, with 1,968 admitted for specialization and 68 for sub-specialization. Table 1.18 shows the number of candidates that applied for admission as well as the number of actual admissions. The lowest admissions-to-candidates ratio can be found in general surgery and pediatrics, where the demand is high and only about 30 percent of applicants get a resident position. Also, the data for family and community medicine show the number of applicants is lower than the number of entrants, which results from a DGGDRRHH strategy to increase the number of positions for residents.

Table 1.18 Number of Entrants to Priority Specialties

Specialization	Candidates 2013	Admissions 2013	Admissions to candidates ratio
Anesthesiology	281	143	0.51
Family and community medicine	112	149	1.33
General surgery	383	116	0.30
Gynecology and obstetrics	463	164	0.35
Internal medicine	125	103	0.82
Pediatrics	558	178	0.32
Total (for these specializations)	776	853	1.10

Source: CONAREME 2013.

CONAREME determines the minimum training standards for priority specialties, including anesthesiology, pediatrics, gynecology and obstetrics, internal medicine, general surgery, and family and community medicine. Annex 7 presents a summary of these standards. We examined the standards to determine whether they included developing competencies related to the primary care level, since health facilities at level I-2 and above can include a physician with a specialty, and health facilities at level I-4 and above should have a specialist.¹⁷ The CONAREME standards show that the only specialties with community care-oriented skills are gynecology and obstetrics, and family and community medicine.

17. Primary health facilities are labeled level I-1 to I-4, secondary facilities are labeled II-1, II-2, and II-E (specialist secondary level facility), and tertiary level facilities are labeled III-1, III-2, and III-E.

DISTRIBUTION OF MEDICAL SPECIALISTS WITHIN THE SYSTEM

In November 2012, MINSA estimated that there were 7,048 specialists in the public health sector, of which 4,063 or 57.6 percent were concentrated in Lima (MINSA 2012). Among the 4,069 medical specialists in the 6 priority areas, 53 percent were concentrated in Lima. Table 1.19 shows the unbalanced distribution of priority medical specialists by department.

Table 1.19: Distribution of Priority Medical Specialists by Department

Department	Anesthesiology	Family and community medicine	General surgery	Gynecology and obstetrics	Internal medicine	Pediatrics	Total
Amazonas	6	1	6	7	1	6	27
Ancash	7	1	22	28	11	26	95
Apurimac	4	6	6	6	5	6	33
Arequipa	29	5	45	36	33	48	196
Ayacucho	8	2	6	14	5	7	42
Cajamarca	5	1	15	16	4	12	53
Callao	38	5	44	65	40	69	261
Cusco	16	0	24	30	17	24	111
Huancavelica	6	0	6	4	4	5	25
Huánuco	12	0	6	21	5	10	54
Ica	33	1	39	44	32	47	196
Junín	13	0	25	22	9	13	82
Libertad	41	1	46	68	36	60	252
Lambayeque	14	1	23	21	10	20	89
Lima	312	24	316	554	302	640	2148
Loreto	8	0	6	14	9	12	49
Madre De Dios	2	1	1	2	0	2	8
Moquegua	3	2	5	5	1	5	21
Pasco	6	0	12	14	4	8	44
Piura	14	2	13	32	6	25	92
Puno	8	2	11	27	5	13	66
San Martín	4	1	7	10	2	5	29
Tacna	8	0	11	14	8	12	53
Tumbes	2	2	7	4	4	5	24
Ucayali	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total	601	58	708	1066	557	1,089	4,079

Source: MINSA, DGGDRRH 2013.

Note: n.a.= not applicable.

We also analyze the distribution of priority medical professionals by health establishment category. Table 1.20 shows that there some specialists at primary levels I-3 and I-4, particularly for gynecology and obstetrics and pediatrics; however, they are mostly concentrated at the secondary and tertiary care levels. The table also shows that there are only a few ($n=58$) specialists in family and community medicine within the system, even at the primary care level.

Table 1.20 Distribution of Priority Medical Specialists according to Health Establishment Category

Category	Anesthesiology	Family and community medicine	General surgery	Gynecology and obstetrics	Internal medicine	Pediatrics	Total
I-1	1	0	0	1	0	0	2
I-2	4	1	3	5	4	6	23
I-3	8	12	13	28	10	27	98
I-4	9	15	14	57	9	33	137
II-1	94	7	118	171	65	107	562
II-2	122	7	202	265	115	213	924
II-E	1	1	1	0	1	0	4
III-1	264	9	307	412	331	486	1,809
III-2	87	0	28	106	6	203	430
III-E	9	0	14	13	4	6	46
Decentralized health directorates	0	3	1	3	1	3	11
MINSA	2	0	1	2	4	2	11
Other administrative entities	0	3	6	3	7	3	22
Grand total	601	58	708	1,066	557	1,089	4,079

Source: MINSA, DGGDRRH 2013.

DEFICIT OF MEDICAL SPECIALISTS

The deficit of specialists in Peru is not new, but it has become more salient within the context of universal health coverage—which has increased the demand for health services and for infrastructure and equipment—and given the high rate of migration of physicians. In 2011 Zevallos et al. analyzed the need for medical specialists based on two methodologies: the required number of specialists according to the categorization standard of health establishments, and the number required according to the epidemiological and demographical profile of the population. The difference between the calculated need and the number of practicing specialists defined the gap of medical specialists. According to the categorization standard, there was a total need for 11,176 medical specialists, and according to the epidemiological and demographical profile the need was 11,738. The number of specialists in the public sector at that time was 6,074; thus the estimated gaps nationwide are similar with both methods. The gap is largest in gynecology and obstetrics, pediatrics, internal medicine, and general surgery.

RESIDENT TRAINING DYNAMICS AND INCORPORATION INTO THE PUBLIC SECTOR

To analyze the dynamics of medical specialist training and incorporation into the system, we looked at information on physicians entering residency in 2009 and 2010, who would complete their residency in 2012 and 2013. These individuals were compared to those who currently work in the public sector. We find that only 9.9 percent of the total specialists who completed their specialties in the last two years currently work for the public sector. The highest absorption percentage is for general surgeons, followed by pediatricians and anesthesiologists. It is telling that out of the 75 residents who entered the family and community medicine specialty in 2009 and 2010, only one specialist currently works in the public sector (Table 1.21).

Table 1.21 Absorption of 2009/10 Medical Residents in the Public Sector, 2013

Specialization	Admissions to residency			MINSA employees			Absorption (%)
	2010	2009	Total	2010	2009	Total	
Anesthesiology	87	72	159	5	23	28	17.6
Family and community medicine	42	33	75	1		1	1.3
General surgery	78	65	143	8	20	28	19.6
Gynecology and obstetrics	117	87	204	4	16	20	9.8
Internal medicine	78	59	137	5	11	16	11.7
Pediatrics	118	88	206	15	22	37	18.0
Overall total	1,156	924	2,080	58	148	206	9.9

Sources: CONAREME; and MINSA, DGGDRRHH 2013. Authors' calculations.

DISCUSSION

This section shows that there is a high demand for training for priority medical specialties. In 2013 more than 43 percent of total residents were associated with those specialties. The competency profiles prepared by CONAREME show that only the programs in gynecology and obstetrics, and family and community medicine give attention to the primary care level. The number of family and community medicine residencies has increased considerably, yet their current number within the system is low ($n=58$), and absorption of new graduates of this specialty into the public system seems virtually inexistent. On the other hand, although the distribution of specialists according to the health facility level appears appropriate, the geographical distribution is extremely unbalanced; more than half the specialists are concentrated in Lima, and there is still a significant deficit within the system.

The resident training and specialist absorption dynamics show that a great number of professionals do not start working for the public sector in the first two years after finishing their residency. This indicates a significant loss of specialized human resources and training investment. This analysis is based on two relatively recent years, however, and information on entrants in former years may better inform these dynamics. If in fact this low absorption of specialists into the system is confirmed, it would be important to study where these specialists work, how often they migrate, and how to attract a larger number of them to work within the public sector.

CONCLUSIONS

In this report, we used existing data and information, so the strength of the results and conclusions reached depend on the quality of the corresponding data. The sections with better data are training of health professionals, transition of graduates to the labor market, contracting of health professionals, and postgraduate training. The migration and retention sections mainly summarize previous publications.

The Training section shows that there is a high demand for training in the basic health team professions and other professions related to health in Peru, and that most of the training supply is provided by private universities. Even though there is a commitment to standardize training and assure its quality, the process—managed by CONEAU—has been slow and still needs work. It is hard to objectively discuss the present quality of training in Peru, so long as this process fails to make additional progress.

The comparison of MINSA's competency profile for the basic health team in the primary care level and the professional profiles in the market highlights that basic health team graduates are not specifically prepared to work in the primary care level. Therefore, there is a low likelihood that MINSA would find the type and number of professionals it requires to work in the primary care level. For MINSA and the regional governments to find the professional profile for primary care level in the market, it is necessary to create training programs focused specifically on training professionals to work at this level and—at the same time—work with professional associations to certify these professionals. There is an opportunity for MINSA and the regional governments—as the majority employers—to work with training institutions, most of which are private, to influence the content of the training and the certification process.

In the analysis of the SERUMS program, we observed that for most of the professions included in the study, except for medicine, take-up of SERUMS is lower than the actual number of graduates. There are a significant number of graduates who choose not to participate in SERUMS, which is an indicator that the labor market is offering other opportunities that do not insist on SERUMS as a prerequisite. Furthermore, the analysis shows that the public sector fails to absorb the majority of professionals completing SERUMS, which indicates that the deficit of health professionals in the public sector is not due to the lack of professionals in the market, but rather to the fact that there is no mechanism complementing SERUMS to enable incorporation of these professionals into the public sector, and possibly because there are other more attractive employment opportunities in the market. Though there is evidence that SERUMS has been effective at assuring the presence of human resources in rural and remote areas, the question arises of how to retain those professionals who complete SERUMS. In other words, what retention policies and budgetary changes must be implemented to assure the incorporation of more professionals into the public sector?

These training dynamics followed by SERUMS and the low number of graduated professionals joining the public sector show that the health professional gap in the system is not a result of a lack of trained professionals, but of the low level of absorption into the public sector. We used projections of training and incorporation into the system to simulate the amount of time necessary to fill MINSA's estimated gaps. Calculations show that if we double the number of professionals joining the system, the gap for physicians might be filled by 2020, seven years earlier than if we were to continue at the present absorption rate; for nurses it would be five years earlier (2019 vs. 2024). Regarding midwives, the calculations show the gap might be closed in 2017 with the current absorption rates. This type of information is significant for developing incentive policies to increase the absorption level of human resources into the public sector.

Intention to migrate among health professions students is high, and many professionals currently fulfill such intentions. However, it is necessary to improve the quality of available information on migratory flows from Peru to develop a more robust analysis.

To improve the incorporation of health professionals into the public sector, it is necessary to explore and understand their aspirations, expectations, and needs—not only of new graduates but also the more experienced professionals—since their motivations would be different. Available data are still insufficient to develop effective incentive packages.

Resident training and specialist absorption dynamics presented in section 6 are based on only two years of data. Analyses show that the vast majority of specialists do not start working for the public sector in the first two years after completing their residencies, indicating a significant loss of specialized human resources and training investment, which is financed entirely by the government. It is necessary to conduct a more detailed study to understand what happens with those specialists—where do they end up working, and how many of them migrate—in order to develop effective retention policies.

It is noteworthy that the lack of information on health professionals who work outside the public sector (MINSA and regional governments), on prevailing salary levels and on unemployment among health workers are the most significant limitations for this study.

RECOMMENDATIONS

Our recommendations can be grouped in four areas: (i) the relevance of skills of health professionals; (ii) contracting, compensation, and retention policies to improve absorption and retention of health professionals in the public sector; (iii) the quality of information on HRH; and (iv) research to inform the policies for implementation.

Relevance of skills of health professionals

- We recommend that MINSA's General Director's Office for Management of Human Resources Development (Dirección General de Gestión del Desarrollo de Recursos Humanos—DGGDRRHH) work with public and private universities to review existing training programs and develop new programs focused on training professionals to work specifically at the primary care level. Programs could look beyond the currently available programs and include shorter, more community-oriented courses. If these shorter courses are associated with a high likelihood of employment after completion, they may be well received in a market with a high demand for training. Considering that private institutions currently provide the majority of training in the health professions, they would play an essential role in the development of new training programs. In addition, it would be important to offer these courses in the regions, as students from rural areas may be more likely to enroll and work in their region of origin.
- The accreditation process for training programs will need to be made more agile if it is to guarantee training quality. We recommend a more detailed assessment of CONEAU's processes to understand the difficulties and propose steps that could speed up the certification process.
- Professional associations are already playing a role in certifying professionals; however, this process does not add value or improve a professional's employment opportunities in the labor market, and it is unclear whether it includes any assessment of skills. The certification process should be widened to include an assessment of skills that would guarantee professional quality and improve job opportunities.
- MINSA's profiles for the basic health team would need to be updated to adjust responsibilities for caring for NCDs and adult conditions. Nurses need to assume a larger role in the prevention and management

of chronic conditions. Furthermore, other skills such as administrative management, and public health prevention and promotion need to be considered within these profiles.

Contracting, compensation, and retention policies within realistic budgetary scenarios

- In terms of contracting, the public sector relies on a multitude of contract regimes, which seem to be paired with wide divergences in salary. We recommend that MINSA take a global look at contractual regimes and payment schemes and strategically review compensation mechanisms.
- The SERUMS program has been successful at ensuring the presence of health professionals in rural and remote areas; however, it is not accompanied by a mechanism to retain these professionals in the public sector. We recommend that SERUMS be complemented with a retention strategy, based on a more complete assessment that includes studies that explore the job aspirations and expectations of new graduates. Post-SERUMS professionals signaled their interest in working for the public sector by enrolling in SERUMS—the public sector should capitalize on this knowledge in its attempts to hire and retain professionals.

Quality of information on HRH

- There is a fragmentation in the information systems between MINSA, EsSalud, the other health insurance providers and the private sector, and as a result, no comprehensive information can be obtained about the distribution of health professionals by subsector. For policy purposes, it is necessary to improve the quality and integration of HRH information both in the public sector and outside of it. To achieve this, there is a need for strategic alliances with entities that routinely collect data on human resources in these subsectors, such as EsSalud, private insurance providers, professional associations, and corporations managing clinics and private hospitals. The challenge would be to create a relationship in which there is common interest in sharing this information. Such information will strengthen subsequent studies on the employment market of HRH as it provides a more complete vision of the entire sector.
- In regards to migration, there are still many unanswered questions. For instance, there is little information on how many professionals leave the country to work, how many continue studying, how many come back, and when. There are outstanding questions as to when more aggressive retention strategies should be applied, for example, before or after SERUMS, before or after the residency? To be able to answer some of these questions, MINSA will need to work with the Bureau of Immigration and Naturalization (DIGEMIN) to improve the quality of information on health professional migration.

Research to inform the policies for implementation

- Professional incorporation into the public sector will require the development of contractual, incentive, and retention packages that are based on better understanding of health professionals' aspirations, expectations, and needs. Studies on new graduates, those who complete their SERUMS, current public sector workers, other subsectors workers, and unemployed health professionals may provide information on job expectations, relative options in the market, and salary and social benefit expectations, which we were not able to analyze in this study. Some methodologies that may be used include surveys, discrete choice studies, and focus groups, among others.
- In our analysis of the dynamics of medical specialist training and absorption of specialists by the public sector, we find that absorption by the public sector is minimal, at approximately 10 percent. It would be important to research the flow of medical specialists within the market and understand what happens with them, where they end up working, and why. Moreover, we need to understand how MINSA can manage to attract and retain more specialists within its budgetary limitations.

LIMITATIONS

This study has several main limitations:

- The discussion of human resources in health that is presented in this report focuses on the public sector, and this limitation was mainly driven by availability of data. At the same time, the discussion on human resources in health should be framed within a broader discussion on the role of the public sector in health service delivery, and the role of other providers including EsSalud, the other insurance/provisions institutions like the Metropolitan Solidarity System (*Sistema Metropolitano de la Solidaridad*—SISOL) and the private sector providers.
- Even within the public sector, our analysis is limited by availability of data in several areas.

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ANNEXES

ANNEX 1: DATA AND INFORMATION SOURCES USED IN THIS REPORT

Source	Provided information	Report section	Methodology
General Director's Office for Human Resources Development Management, Ministry of Health	<ul style="list-style-type: none"> • Profiles of the basic health team (physicians, nurses, midwives, nursing technicians) for the primary care level • List of medical specialists linked to health priorities: internal medicine, surgery, Obgyn, pediatrics, anesthesiology, and family medicine • Publications of the National Human Resources for Health Observatory • National Human Resources for Health Observatory database (2007, 2009, 2010, 2012)—or National System of Information on Human Resources for Health (INFORHUS - http://minsa-drupal.tmp.vis-hosting.com/app/inforhus/). • SERUMS database (2007–13) 	1, 2, 3, 6	<ul style="list-style-type: none"> • Reviewing the literature • Use of primary sources • Combination of data and sources
Quality Office, Ministry of Health	<ul style="list-style-type: none"> • Survey of internal users' satisfaction 	5	<ul style="list-style-type: none"> • Use of primary sources
National Council of University Evaluation, Accreditation and Certification (CONEAU)	<ul style="list-style-type: none"> • Progress made in accreditation processes of health training programs. Last progress published July 7, 2013 (http://aca-evaluamos.blogspot.com/) • Progress in certification of health professionals through professional associations (http://www.coneau.gob.pe/certificacion/proceso-de-certificacion/entidades-certificadoras-autorizadas.html) 	1	<ul style="list-style-type: none"> • Use of primary sources
National Institute of Statistics and Informatics (INEI)	<ul style="list-style-type: none"> • 2010 National University Census (CENAUN) • Projection of inhabitants nationwide for June 2013 	1, 2, 3, 4	<ul style="list-style-type: none"> • Use of primary sources • Combination of data and sources
National Assembly of Rectors (ANR)	<ul style="list-style-type: none"> • Data related to the number of students applying, entering, and graduating from the following university professions: medicine, nursing, obstetrics, nutrition, dentistry, psychology, pharmaceutical chemistry, and medical technology (2007–11) 	1, 2, 3	<ul style="list-style-type: none"> • Use of primary sources • Combination of data and sources
Professional associations	<ul style="list-style-type: none"> • Profiles created to certify professionals: <ul style="list-style-type: none"> ○ Peruvian Medical Association* (http://www.cmp.org.pe/) ○ Peruvian Nursing Association (http://www.cep.org.pe/) ○ Peruvian Midwifery Association (http://www.colegiodeobstetrasdelperu.org/portal/index.php) 	1	<ul style="list-style-type: none"> • Use of primary sources
National Committee of Medical Residency (CONAREME)	<ul style="list-style-type: none"> • Profiles to recognize priority specialists: http://www.conareme.org.pe/ • Medical residency entrants for 2009–10, by specialty 	6	<ul style="list-style-type: none"> • Use of primary sources • Combination of data and sources
Public and private universities	<ul style="list-style-type: none"> • Curricula of the basic health team training programs (physicians, nurses, and midwives) of universities with at least 4 percent of the student population of these professions, according to the 2010 University Census 	1	<ul style="list-style-type: none"> • Use of primary sources
Scientific journals, reports, and other publications	<ul style="list-style-type: none"> • Publications related to human resources for health in Peru and the region via Google Scholar (http://scholar.google.com/) and PubMed (http://www.ncbi.nlm.nih.gov/pubmed) searches 	1, 2, 3, 4, 5, 6	<ul style="list-style-type: none"> • Reviewing the literature

*We had access to the professional associations' profiles through their websites in November 2013, except for those marked with *, which were accessed by other means.

ANNEX 2: CURRICULA OF TRAINING PROGRAMS OF UNIVERSITIES WITH 4 PERCENT OR MORE NUMBER OF STUDENTS IN THE BASIC HEALTH TEAM PROFESSIONS

Table 2A.1 Nursing Curricula

University	San Pedro Private University (Chimbote)	San Juan Bautista Private University	Alas Peruanas University	Los Ángeles de Chimbote Catholic University
What is the profile?	Profile focused on prevention and health promotion. With skills in community care of individual, family, and community in relation to existing risk factors in the natural environment, and research skills	Profile focused on medical care. With skills for the development of prevention and health promotion programs in the community. Also project management and research.	Profile focused on medical care. With skills for the development of prevention and health promotion programs in the community. Also project and research development, planning, and management.	Profile focused on medical care. With skills for the development of prevention and health promotion programs in the community. Also with a strong approach on project and research development, planning, and management.
Is there a primary care approach?	There is a focus on primary care. It includes relevant courses starting from the first semesters.	There is a focus on primary care. It includes relevant courses starting from the first semesters.	There is a focus on primary care. It includes relevant courses starting from the first semesters.	There is a focus on primary care. It includes relevant courses starting from the first semesters.
Courses prior to the internship	In the 2nd year: (1) Community Disease I (4 cr.) In the 4th year: (2) Community Disease II (7 cr.)	In the 1st year: (1) Community Health (6 cr.)	In the 2nd year: (1) Nursing for Family and Community Health Care (4 cr.)	In the 3rd year: (1) Nursing Care for Family Health (4 cr.) In the 4th year: (2) Nursing Care for Community health (7 cr.)
Total credits	11 credits	6 credits	4 credits	11 credits
Community internship	Not specified	Marginal Urban and Rural Internship (22 credits) (6 months)	Not specified	(1) Family and Community Health I (6 credits) (2) Family and Community Health II (6 credits)
Total credits	n.a.	22 credits	n.a.	12 credits

University	San Pedro Private University (Chimbote)	San Juan Bautista Private University	Alas Peruanas University	Los Ángeles de Chimbote Catholic University
Health management	In the 2nd year: (1) Nursing care management (4 credits)	In the 4th year: (1) Health Management (10 credits)	In the 4th year: (1) Economics applied to health (4 credits). (2) Administration, Health Management and Nursing (6 credits).	In the 3rd year: (1) Marketing Techniques (2 credits) In the 4th year: (2) Health Nursing Management (3 credits) (3) Projects and Budgets (2 credits) (4) Nursing Management (4 credits) (5) Logistic Administration (2 credits)
Credits	4 credits	10 credits	10 credits	13 credits
Research	In the 1st year: (1) Bio-statistics (3 cr.) In the 2nd year: (2) Epidemiology (4 cr.); (3) Research Methodology (3 cr.) In the 4th year: (4) Nursing Research I (3 cr.); (5) Nursing Research II (3 cr.)	In the 1st year: (1) Statistics and Demographics (3 cr.) In the 2nd year: (2) Basic Epidemiology (2 cr.) In the 3rd year: (3) Research Methodology (3 cr.) In the 4th year: (4) Research Project Preparation (3 cr.); (5) Implementing Research Projects (3 cr.)	In the 2nd year: (1) Statistics (3 cr.) In the 3rd year: (2) Bio-statistics (3 cr.); (3) Research Methodology (3 cr.); (4) Epidemiology (4 cr.); (5) Preparation of Research Projects (5 cr.) In the 4th year: (6) Research Project Implementation (5 cr.)	In the 1st year: (1) Statistics (4 cr.) In the 2nd year: (2) Nursing Epidemiology (3 cr.); (3) Bio-statistics (4 cr.) In the 3rd year: (4) Thesis I (3 cr.); (5) Qualitative Research (2 cr.); (6) Thesis II (3 cr.) In the 4th year: (7) Thesis III (3 cr.); (8) Thesis IV (3 cr.)
Credits	16 credits	14 credits	23 credits	25 credits
<i>Sources:</i> Public and private universities. Authors' calculations.				
<i>Note:</i> One additional university has over 4 percent of nursing students (Néstor Cáceres Andean University); however, the authors were unable to obtain a copy of the curricula; n.a. = not applicable.				

Table 2A.2: Midwifery Curricula

	San Martín de Porres University	Alas Peruanas University	Los Angeles de Chimbote Catholic University
What is the profile?	Profile focused on maternal care (prenatal, intranatal and postnatal). Skills in community health, health management, and research	Maternal care approach (prenatal, intranatal and postnatal). With skills for project development in the community and research.	Maternal care approach (prenatal, intranatal, and postnatal). Skills for community health, health management, and research.
Primary care approach?	There is a primary care approach. Courses from the first year	There is a primary care approach. Rural internship, one-semester long.	There is a primary care approach. Courses from the first years
Courses prior to the internship and externship	In the first year: (1) Public Health (3 credits) In the 2nd year: (2) Community Obstetrics (4 credits)	None	In 2nd year: (1) Community Obstetrics I (3 credits). In the 3rd year: (2) Community Obstetrics II (4 credits). In the 5th year: (3) Community Externship (4 credits).
Total credits	7 credits	0 credits	11 credits
Type of internship	In the 4th year (IX semester): (1) Internship I (10 credits). In the 5th year: (2) Internship II (20 credits); (3) Internship III (20 credits).	You have a 3-semester-internship. The first semester is a community internship, with 2 modules of 20 (credits): (1) Community projection activities and expanded program of immunizations (primary care level); (2) administrative and primary care-level activities	In the 5th year: (1) Hospital Internship (12 credits)
Total credits	50 credits	20 credits	12 credits
Health management	In the 3rd year: (1) Health Administration and Management I (3 credits). In the 4th year: (2) Health Administration and Management II (2 credits).	In the 3rd year: (1) Management and Marketing (4 credits)	In the 4th year: (1) Entrepreneurial Leadership (2 credits) In the 5th year: (2) Public investment Projects (2 credits); (3) Marketing Techniques (2 credits); (4) Labor Law (2 credits).
Credits	5 credits	4 credits	8 credits

	San Martín de Porres University	Alas Peruanas University	Los Angeles de Chimbote Catholic University
Research	In the 1st year: (1) Bio-statistics (3 credits); (2) Epidemiology (4 credits) In the 2nd year: (3) Research I (3 credits) In the 3rd year: (4) Research II (3 credits) In the 4th year: (5) Research III (3 credits)	In the 1st year: (1) Bio-statistics (3 credits). In the 2nd year: (2) Epidemiology (3 credits) In the 3rd year: (3) Research Methodology (3 credits); (4) Writing and Dissertation (2 credits); (5) Thesis Seminar (2 credits) In the 4th year: (6) Thesis Development (2 credits)	In the 1st year: (1) Statistics (4 credits). In the 2nd year: (2) Bio-statistics (4 credits). In the 3rd year: (3) Thesis I (3 credits) In the 4th year: (4) Thesis II (3 credits); (5) Thesis III (3 credits) In the 5th year: (6) Thesis IV (3 credits)
Credits	16 credits	15 credits	20 credits
Total credits to receive degree	240 credits	Nonspecified	234 credits
<i>Sources:</i> Public and private universities. Authors' calculations.			
<i>Note:</i> One additional university has over 4 percent of nursing students (Néstor Cáceres Andean University); however, the authors were unable to obtain a copy of the curricula.			

ANNEX 3: UNIVERSITIES THAT HAVE REGISTERED TRAINING PROGRAMS FOR HEALTH PROFESSIONALS WITH CONEAU

Table 3A.1 Universities That Have Registered Training Programs for Health Professionals With CONEAU

No.	NAME OF UNIVERSITY
1	ASOCIACION UNIVERSIDAD PRIVADA SAN JUAN BAUTISTA
2	UNIVERSIDAD ALAS PERUANAS
3	UNIVERSIDAD ANDINA DEL CUSCO
4	UNIVERSIDAD ANDINA NESTOR CACERES VELASQUEZ
5	UNIVERSIDAD CATOLICA DE SANTA MARIA
6	UNIVERSIDAD CATOLICA DE TRUJILLO
7	UNIVERSIDAD CATOLICA LOS ANGELES DE CHIMBOTE
8	UNIVERSIDAD CATOLICA SAN PABLO
9	UNIVERSIDAD CATOLICA SANTO TORIBIO DE MOGROVEJO
10	UNIVERSIDAD CIENTIFICA DEL SUR
11	UNIVERSIDAD FEMENINA DEL SAGRADO CORAZON
12	UNIVERSIDAD JOSE CARLOS MARIATEGUI
13	UNIVERSIDAD NACIONAL AGRARIA LA MOLINA
14	UNIVERSIDAD NACIONAL DANIEL ALCIDES CARRION
15	UNIVERSIDAD NACIONAL DE CAJAMARCA
16	UNIVERSIDAD NACIONAL DE HUANCABELICA
17	UNIVERSIDAD NACIONAL DE LA AMAZONIA PERUANA
18	UNIVERSIDAD NACIONAL DE PIURA
19	UNIVERSIDAD NACIONAL DE SAN MARTIN
20	UNIVERSIDAD NACIONAL DE TRUJILLO
21	UNIVERSIDAD NACIONAL DE TUMBES
22	UNIVERSIDAD NACIONAL DE UCAYALI
23	UNIVERSIDAD NACIONAL DEL SANTA
24	UNIVERSIDAD NACIONAL DEL ALTIPLANO
25	UNIVERSIDAD NACIONAL DEL CALLAO
26	UNIVERSIDAD NACIONAL DEL CENTRO DEL PERU
27	UNIVERSIDAD NACIONAL FEDERICO VILLARREAL
28	UNIVERSIDAD NACIONAL HERMILIO VALDIZAN
29	UNIVERSIDAD NACIONAL JOSE FAUSTINO SANCHEZ CARRION
30	UNIVERSIDAD NACIONAL MAYOR DE SAN MARCOS
31	UNIVERSIDAD NACIONAL PEDRO RUIZ GALLO
32	UNIVERSIDAD NACIONAL SAN LUIS GONZAGA
33	UNIVERSIDAD NACIONAL SANTIAGO ANTUNEZ DE MAYOLO
34	UNIVERSIDAD PERUANA CAYETANO HEREDIA

No.	NAME OF UNIVERSITY
35	UNIVERSIDAD PERUANA DE CIENCIAS APLICADAS
36	UNIVERSIDAD PERUANA LOS ANDES
37	UNIVERSIDAD PERUANA UNION
38	UNIVERSIDAD PRIVADA ANTENOR ORREGO
39	UNIVERSIDAD PRIVADA CESAR VALLEJO
40	UNIVERSIDAD PRIVADA DE TACNA
41	UNIVERSIDAD PRIVADA NORBERT WIENER
42	UNIVERSIDAD PRIVADA SAN IGNACIO DE LOYOLA
43	UNIVERSIDAD PRIVADA SAN PEDRO
44	UNIVERSIDAD RICARDO PALMA
45	UNIVERSIDAD SEÑOR DE SIPAN

Sources: CONEAU, July 2013 (<http://aca-evaluamos.blogspot.com/>). Authors' calculations.

ANNEX 4: COMPARISON OF COMPETENCY PROFILES

Table 4A.1: Comparison of MINSA’s Official Profile for Primary Care–Level Physicians with the Profile Made by the Peruvian Medical Association and Standard No. 25 of CONEAU to Accredite Medical Training Programs

No.	Prioritized competency profile of the primary care level surgeon prepared by MINSA	Profile prepared by the Peruvian Medical Association	Standard No. 25 of CONEAU
1	HEALTH CARE SKILLS		The curricula shall include:
1.1	Prenatal care during first consultation, prioritizing in the third quarter, pursuant the current regulations.	He/she manages the basic principles of reasoning and clinic diagnosis pursuant the current regulations.	Contents of anatomy, histology, embryology, biochemistry, genetics, physiology, microbiology, parasitology and immunology, pathology, pharmacology and therapeutic base, preventive medicine.
1.2	Taking care of noncomplicated horizontal delivery with appropriate intercultural attention pursuant the regulations into force.	He/she takes care of the healthy newborn, pursuant the regulations into force.	Training in basic sciences, lab practices, or other opportunities for direct application of the scientific method, safe observation of biomedical phenomenon, and critical data analysis.
1.3	Taking care of women in the puerperal period, within two hours and up to the 24 hours after delivery, pursuant the regulations into force.	He/she provides medical care for healthy children and adolescents, pursuant the regulations into force.	Preclinical and clinical training of all organic systems, including significant ethical and bio-ethical aspects, prevention aspects, acute and chronic diseases, rehabilitation, and terminal care.
1.4	Taking care of sexual and reproductive health issues in adolescents, pursuant the regulations into force.	He/she comprehensively manages prevailing noncommunicable diseases of children and adolescents, the more prevailing are the priority, pursuant the regulations into force.	Experience in primary care, epidemiology, public health, and health management.
1.5	Taking care of women for quarterly injectable contraception, pursuant the regulations into force.	He/she comprehensively manages prevailing infections of children and adolescents, pursuant the regulations into force.	Clinical experiences in family medicine, internal medicine, obstetrics and gynecology, pediatrics, psychiatry, and surgery.
1.6	Taking care of women for prevention and detection of cervical and breast cancer, pursuant the regulations into force.	Conducting the prenatal control of the low risk expectant mother, deriving opportunities when required, pursuant the regulations into force.	Having experiences both with hospitalized and nonhospitalized patients.
1.7	Immediate care for the full-term newborn, pursuant the regulations into force.	Taking care of normal delivery and immediate puerperium, pursuant the regulations into force.	Available training opportunities in multidisciplinary areas, such as emergency care, geriatrics and disciplines to help

No.	Prioritized competency profile of the primary care level surgeon prepared by MINSA	Profile prepared by the Peruvian Medical Association	Standard No. 25 of CONEAU
			diagnosing, such as radiology and clinical pathology.
1.8	Taking care of children with acute respiratory infection, obstructive bronchitis syndrome and asthma, pursuant the regulations into force.	Initial care of labor complications and immediate puerperium and its early reference, pursuant the regulations into force.	Specific training in communication skills, with patients, relatives, colleagues, and other health professionals.
1.9	Taking care of children with acute diarrheal disease, pursuant the regulations into force.	Taking care of noncomplicated gynecologists-obstetrics infections, pursuant the regulations into force.	
1.10	Taking care of children with anemia, pursuant the regulations into force.	He/she manages adults' noncommunicable diseases with emphasis in the more prevailing ones, pursuant the regulations into force.	
1.11	Taking care of children with chronic malnutrition, pursuant the regulations into force.	He/she prescribes commonly used drugs according to their instructions, interactions, and adverse side effects.	
1.12	Taking care of children with parasitic diseases, pursuant the regulations into force.	He/she provides initial care to the politraumatized patient pursuant regulations into force.	
1.13	Taking care of smear positive respiratory symptoms, pursuant the regulations into force.	Initial care of the surgical acute abdomen and its referral, pursuant the regulations into force.	
1.14	Taking care of people with sexually transmitted infections, HIV/AIDS, pursuant the regulations into force.	He/she early identifies more frequent surgical diseases for timely referral.	
1.15	Taking care of people with depression/violence/alcoholism issues, pursuant the regulations into force.	He/she conducts emergency and low complexity surgical procedures.	
1.16	Taking care of people with diabetes mellitus, pursuant the regulations into force.		
1.17	Taking care of people with high blood pressure, pursuant the regulations into force.		
1.18	Taking care of people with obesity issues, pursuant the regulations into force.		
2	MANAGEMENT SKILLS		
		He/she conducts an analysis of the health situation within his/her scope.	
		He/she prepares operational plans based on his/her analysis.	

No.	Prioritized competency profile of the primary care level surgeon prepared by MINSA	Profile prepared by the Peruvian Medical Association	Standard No. 25 of CONEAU
		<p>He/she organizes health-team work and the work with social actors of his/her scope.</p> <p>He/she directs health-team work.</p> <p>He/she assesses that the prepared plan is met.</p>	
3	ASSESSMENT AND INVESTIGATION SKILLS	<p>He/she prepares and reports the results of health investigation projects.</p> <p>He/she critically evaluates the results of investigations to improve his/her professional practice.</p>	
4	PROMOTION AND PREVENTION SKILLS	<p>He/she implements health-related training and advising activities prioritizing the more prevailing health problems.</p> <p>He/she conducts comprehensive clinical analysis on people with no symptoms to identify risk factors, early detection of health problems, and health certification, pursuant the regulations into force.</p>	

Sources: MINSA, Peruvian Medical Association, CONEAU. Authors' calculations, 2014.

Table 4A.2 Comparison of Competency Standards and CONEAU Standard for Nursing

No.	Prioritized competency profile of the primary care level nurse prepared by MINSA	Profile prepared by the Peruvian Nursing Association	Standard No. 25 of CONEAU
1	<p>Providing immediate nursing care to full-term newborns in the delivery room, pursuant the regulations into force.</p> <p>Providing nursing care to newborns in the joint sojourn, pursuant the regulations into force.</p> <p>Assessing growth and development of children less than one-year old, pursuant the regulations into force.</p> <p>Providing nursing care to children with acute respiratory infection, acute obstructive bronchitis syndrome, and asthma, pursuant the regulations into force.</p> <p>Providing nursing care for children with acute diarrheal diagnosed, pursuant the regulations into force.</p> <p>Providing nursing care to children diagnosed with anemia, pursuant the regulations into force.</p>	<p>Assessing growth and development of newborns, children, and adolescents, pursuant the regulations into force</p> <ul style="list-style-type: none"> • Assessing the bio-psycho-social status of newborns, children, or adolescents, detecting risks or harms, pursuant the regulations into force • Planning nursing care for newborns, children, or adolescents, pursuant the regulations into force • Implementing and assessing plan-related actions, as well as early stimulation-related actions with newborns and children, pursuant the regulations into force • Educating and informing the mother or the person accompanying the newborn, child, or adolescent, based on the care plan and documenting this under the established format, pursuant the regulations into force. 	<p>The plan shall include:</p> <ul style="list-style-type: none"> • Discipline epistemology. • Care technologies. • Adult and elderly nursing. • Mental health nursing. • Nursing in maternal and childcare. • Nursing in child and adolescent care. • Women health care. • Family and community nursing. • Nursing research. • Nursing education. • Management of hospital and community nursing services. • Biological sciences. • Microbiology and parasitology. • Nutrition and diet therapy. • Pharmacology. • Anatomy. • Physiology. • Sociology. • Anthropology. • Psychology. • Philosophy. • Ethics. • Professional ethics.
2	<p>Providing nursing care to people infected with pulmonary TB under medical treatment, pursuant the regulations into force.</p> <p>Providing nursing care to people with STD-HIV/AIDS, pursuant the regulations into force.</p>	<p>Providing comprehensive care to healthy or sick people considering life stages, applying guidelines and protocols of care and the regulations into force</p> <ul style="list-style-type: none"> • Preparing the nursing care plan, based on prioritized needs or problems of healthy or sick people, considering protective factors, risk factors, and intercultural factors. • Managing nursing care with the health tem, based in institutional regulations and quality indicators • Implementing and assessing the nursing care plan, based on scientific evidence, guidelines, care protocols, institutional regulations, and quality indicators 	
3	<p>Developing specific prevention actions by life stages, prioritizing children less than five-year old through safe vaccination, pursuant the regulations into force.</p>	<p>Managing the national immunization strategy, pursuant the regulations into force and quality indicators</p> <ul style="list-style-type: none"> • Preparing the vaccination plan in its jurisdictional scope, pursuant the regulations into force • Administering the vaccine in accordance to the vaccination calendar into force and the regulations of the immunization national strategy and quality indicators • Assessing the health immunization strategy of the local scope applying quality indicators 	

Sources: MINSA, Peruvian Nursing Association, CONEAU. Authors' calculations, 2014.

Table 4A.3 Comparison of Competency Standards and CONEAU Standard for Midwifery

No.	Prioritized competency profile of the primary care level midwife prepared by MINSA	Profile prepared by the Peruvian Midwifery Association	Standard No. 25 of CONEAU
1	Providing monitoring prenatal care, pursuant the regulations into force.	Taking care of the expectant mother and the child to be born, pursuant the regulations into force.	The curricula includes the following aspects: <ul style="list-style-type: none"> • Human Anatomy. • Anthropology. • Bio-statistics. • Cell and Molecular Biology. • Obstetric Minor Surgery and Instrumentation. • Health Education. • Embryology and Genetics. • Intercurrent Diseases in Midwifery. • Epidemiology. • Ethics and Professional Ethics. • Pharmacology. • Human Physiology. • Physiopathology. • Health Management. • Gynecology. • Histology. • Clinical Laboratory. • Legal Medicine. • Microbiology and Parasitology. • Neonatology. • Nutrition and Dietetics. • Midwifery. • Integrative Midwifery. • Community Midwifery. • Pediatrics and Childcare. • Comprehensive Preparation for Labor and Delivery. • Development Psychology. • Chemistry, Biochemistry. • Public Health. • Sexual and Reproductive Health. • General and Obstetric Semiology. • Clinical Midwifery/Obstetric Care Techniques. • Obstetric Therapeutics.
2	Taking care of noncomplicated horizontal delivery, with appropriate intercultural attention, pursuant the regulations into force.	Conducting the labor and delivery process, in its different stages, with appropriate intercultural attention, pursuant the regulations into force.	
3	Taking care of women in the puerperal period within two and up to 24 hours after delivery, pursuant the regulations into force.	Taking care of women and partner and their demands and needs for birth control, pursuant the regulations into force.	
4	Taking care of adolescents in sexual and reproductive health–related issues, pursuant the regulations into force.	Implementing community actions to address sexual and reproductive health needs, pursuant the regulations into force.	
5	Taking care of women using quarterly injectable hormonal contraception, pursuant the regulations into force.	Planning activities of sexual and reproductive health organizations and services, pursuant the regulations into force.	
6	Taking care of women for prevention and detection of cervical and breast cancer, pursuant the regulations into force.		

Sources: MINSA, Peruvian Midwifery Association, and CONEAU. Authors' calculations, 2014.

ANNEX 5: HUMAN RESOURCES IN HEALTH GAP IN THE PUBLIC SECTOR (2013)

Table 5A.1 Estimate of the Human Resource in Health Gap in Public Sector Establishments (MINSA and Regional Governments), 2013

Region	Needs assessment							Availability							Gap (Need - Availability)						
	Phys.	Nurse	Midw.	Dent.	Nutr.	Psych.	Tech.	Phys.	Nurse	Midw.	Dent.	Nutr.	Psych.	Tech.	Phys.	Nurse	Midw.	Dent.	Nutr.	Psych.	Tech.
	279	314	127	114	44	79	117	157	210	204	40	2	14	29	122	104	-77	74	42	65	88
ANCASH	726	812	301	269	67	187	218	233	313	259	51	5	5	1	493	499	42	218	62	182	217
APURIMAC	291	109	123	109	28	77	91	256	544	270	124	21	37	28	35	-435	-147	-15	7	40	63
AREQUIPA	742	826	308	264	65	182	206	420	551	373	140	28	37	61	322	275	-65	124	37	145	145
AYACUCHO	451	501	186	162	36	113	128	225	596	360	97	1	24	73	226	-95	-174	65	35	89	55
CAJAMARCA	860	949	357	316	80	221	257	388	738	466	67	8	16	54	472	211	-109	249	72	205	203
CUSCO	844	944	342	299	60	200	210	385	646	422	121	16	32	81	459	298	-80	178	44	168	129
HUANUCO	637	706	261	229	43	155	162	214	438	285	43	13	22	1	423	268	-24	186	30	133	161
HUANCAVELICA	357	397	149	133	33	90	109	273	454	329	97	14	41	34	84	-57	-180	36	19	49	75
ICA	367	412	148	130	26	87	87	205	180	106	73	12	20	8	162	232	42	57	14	67	79
JUNIN	779	871	319	276	53	186	195	323	614	373	78	3	13	3	456	257	-54	198	50	173	192
LA LIBERTAD	852	947	348	308	71	210	233	352	398	362	45	22	7	25	500	549	-14	263	49	203	208
LAMBAYEQUE	591	661	245	213	41	140	149	249	321	273	49	18	53	49	342	340	-28	164	23	87	100
LIMA REGION	491	551	203	179	47	125	143	334	292	236	96	23	26	1	157	259	-33	83	24	99	142
LORETO	642	711	263	226	49	155	172	174	225	221	56	0	8	20	468	486	42	170	49	147	152
MADRE DE DIOS	75	83	32	30	10	20	26	80	80	67	22	0	12	0	-5	3	-35	8	10	8	26
MOQUEGUA	104	116	43	38	8	24	28	85	130	76	40	11	22	3	19	-14	-33	-2	-3	2	25
PASCO	152	169	65	57	15	39	49	109	142	119	31	4	17	8	43	27	-54	26	11	22	41
PIURA	996	1,114	398	346	59	228	224	449	460	462	85	8	33	6	547	654	-64	261	51	195	218
PUNO	894	995	375	325	78	222	260	406	679	320	79	25	6	32	488	316	55	246	53	216	228
SAN MARTIN	393	449	163	154	53	116	135	205	212	260	43	2	15	2	188	237	-97	111	51	101	133
TACNA	213	238	88	77	16	51	55	126	201	138	43	8	16	8	87	37	-50	34	8	35	47

Region	Needs assessment							Availability							Gap (Need - Availability)						
	Phys.	Nurse	Midw.	Dent.	Nutr.	Psych.	Tech.	Phys.	Nurse	Midw.	Dent.	Nutr.	Psych.	Tech.	Phys.	Nurse	Midw.	Dent.	Nutr.	Psych.	Tech.
TUMBES	106	119	42	37	7	25	25	90	82	65	18	5	9	2	16	37	-23	19	2	16	23
UCAYALI	307	343	126	110	24	72	79	106	166	135	29	6	11	16	201	177	-9	81	18	61	63
CALLAO	496	552	199	175	28	114	114	197	119	109	61	15	36	8	299	433	90	114	13	78	106
LIMA EAST SIDE	1,498	1,668	601	523	79	340	319	355	249	254	133	31	30	5	1,143	1,419	347	390	48	310	314
LIMA SOUTH SIDE	1,536	1,710	617	537	84	349	330	415	232	265	119	26	40	5	1,121	1,478	352	418	58	309	325
LIMA METRO	2,117	2,360	855	744	109	485	452	542	309	272	160	28	69	9	1,575	2,051	583	584	81	416	443
	17,796	19,627	7,284	6,380	1,313	4,292	4,573	7,353	9,581	7,081	2,040	355	671	572	10,448	10,647	1,553	4,357	961	3,621	4,001

Sources: Ministry of Health and authors' calculations, 2014.

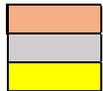
Note: The gap has been calculated as the difference between human resources need and availability, in which the difference results being negative (excess of job supply) has not considered the total sum, because it distorts the real gap calculation. This methodology is similar to the one applied by the Ministry of Health, when calculating the gap by Healthcare Center.

ANNEX 6: PROJECTIONS OF THE HUMAN RESOURCES IN HEALTH GAP IN THE PUBLIC SECTOR, 2013–50

Table 6A.1 Projection of the Human Resources in Health Gap in the Public Sector (MINSA and Regional Governments), 2013–50

YEAR	NEW ENTRANTS TO THE HEALTH PROFESSIONS WORKFORCE							HEALTH HUMAN RESOURCE GAP						
	Physician	Nurse	Midwife	Dentist	Nutritionist	Psychologist	Medical Technologist	Physician	Nurse	Midwife	Dentist	Nutritionist	Psychologist	Medical Technologist
2013								10,448		1,553		961	3,621	4,001
2014					33	91	47	9,807		1,154		928	3,530	3,954
2015					20	79	38	9,170		819		908	3,451	3,916
2016					29	120	50	8,380		398		878	3,331	3,866
2017					31	116	54	7,544		-36		847	3,215	3,812
2018					31	116	54	6,707		-470		816	3,099	3,758
2019					31	116	54	5,871		-905		784	2,983	3,704
2020					31	116	54	5,035		-1,339		753	2,867	3,650
2021					31	116	54	4,198		-1,773		722	2,751	3,596
2022					31	116	54	3,362		-2,208		691	2,635	3,542
2023					31	116	54	2,525		-2,642		659	2,519	3,488
2024					31	116	54	1,689		-3,076		628	2,403	3,434
2025					31	116	54	853	-	-3,511		597	2,287	3,380
2026					31	116	54	16	-	-3,945		565	2,171	3,326
2027					31	116	54	-820	-	-4,379		534	2,055	3,272
2028					31	116	54	-1,657	-	-4,814		503	1,939	3,218
2029					31	116	54	-2,493	-	-5,248		471	1,823	3,164
2030					31	116	54	-3,329	-	-5,682		440	1,707	3,110
2031					31	116	54	-4,166	-	-6,117		409	1,591	3,056
2032					31	116	54	-5,002	-	-6,551		377	1,475	3,002
2033					31	116	54	-5,839	-	-6,985		346	1,359	2,948
2034					31	116	54	-6,675	-	-7,420		315	1,243	2,894
2035					31	116	54	-7,511	-	-7,854		284	1,127	2,840
2036					31	116	54	-8,348	-	-8,288		252	1,011	2,786
2037					31	116	54	-9,184	-	-8,723		221	895	2,732
2038					31	116	54	-10,021	-	-9,157		190	779	2,678
2039					31	116	54	-10,857	-	-9,591		158	663	2,624
2040					31	116	54	-11,693	-	-10,026		127	547	2,570
2041					31	116	54	-12,530	-	-10,460		96	431	2,516
2042					31	116	54	-13,366	-	-10,894		64	315	2,462
2043					31	116	54	-14,203	-	-11,329		33	199	2,408
2044					31	116	54	-15,039	-	-11,763		2	83	2,354
2045					31	116	54	-15,875	-	-12,197		-30	-33	2,300

YEAR	NEW ENTRANTS TO THE HEALTH PROFESSIONS WORKFORCE							HEALTH HUMAN RESOURCE GAP						
	Physician	Nurse	Midwife	Dentist	Nutritionist	Psychologist	Medical Technologist	Physician	Nurse	Midwife	Dentist	Nutritionist	Psychologist	Medical Technologist
2046					31	116	54	-16,712	-	-12,632		-61	-149	2,246
2047					31	116	54	-17,548	-	-13,066		-92	-265	2,192
2048					31	116	54	-18,385	-	-13,501		-124	-381	2,138
2049					31	116	54	-19,221	-	-13,935		-155	-497	2,084
2050					31	116	54	-20,057	-	-14,369		-186	-613	2,030



Year gap closes at present absorption

Year gap closes at 50 percent higher absorption rate

Year gap closes at 100 percent higher absorption rate

ANNEX 7: CONAREME STANDARD No. 25

Table 7A.1 Minimum Training Standards For Priority Medical Specialists, as Prepared by CONAREME

Profile (summary)	ANESTHESIOLOGY	FAMILY MEDICINE AND COMMUNITY HEALTH	GENERAL SURGERY	GYNECOLOGY AND OBSTETRICS	INTERNAL MEDICINE	PEDIATRICS
HEALTH CARE	<p>(1) Diagnosing the health status of patients who will be subject of surgical diagnosis procedures, treatment, and prognosis.</p> <p>(2) Preparing equipment and medicines that will be used during anesthetic act, for all types of surgery.</p> <p>(3) Preventing, diagnosing, and providing appropriate solutions for all anesthesia-related complications that may arise.</p> <p>(4) Taking care of the patient for as long as necessary in the immediate postsurgery stage.</p> <p>(5) Assuring patient discharge from the Recovery Unit, under the minimum safety standards according to the scales used in such unit.</p> <p>(6) Directing the CPR team.</p>	<p>(1) Developing health promotion and protection activities; activities for preventing medical-surgical and mental health diseases of a higher prevalence in the country.</p> <p>(2) Promoting nutrition: prioritizing children, expecting mothers, and elderly.</p> <p>(3) Providing comprehensive care considering that most relevant diseases determining factors need to be modified by actions with a bio-psycho-social approach targeting the individual, family, community, and environment.</p> <p>(4) Diagnosing and treating the patient and his/her family with acute and chronic diseases, of a higher prevalence in different life stages, in areas of medicine, surgery, gynecology-obstetrics, pediatrics, and psychiatry (mental health).</p>	<p>(1) Solving medical and surgical problems with high mortality rates due to its prevalence rates.</p> <p>(2) Conducting elective and emergency abdomen and digestive tract surgery, and optionally the more frequent emergencies in other specialties.</p>	<p>(1) Conducting healthy women controls; as well as diagnosing and treating gynecologic-obstetric pathologies. Thus, using clinical and updated diagnosis assistance procedures.</p>	<p>(1) Knowledge, skills, and competencies on pathology diagnosis, care, management, and treatment related to adult health care</p>	<p>(1) Knowledge, skills, and competencies on prevention, care, and comprehensive management of child's health</p>

Profile (summary)	ANESTHESIOLOGY	FAMILY MEDICINE AND COMMUNITY HEALTH	GENERAL SURGERY	GYNECOLOGY AND OBSTETRICS	INTERNAL MEDICINE	PEDIATRICS
SOCIAL PROJECTION	<p>(1) Planning, implementing, and assessing health actions at the community level.</p> <p>(2) Participating or organizing health campaigns at the community level.</p>	<p>(1) Permanently promoting programming, executing and assessing as a team health promotion actions targeting the individual, family, community, and the environment, working with the organized community and its health agents. (2) Developing intersectoral and interinstitutional actions to control health risks, promoting healthy environments and practices. (3) Coordinating health actions with local organizations of civil society. (4) Participating in emergency situation and disaster solutions, coordinating with the local committee of civil defense.</p>	<p>(1) Participating in several stages of child health promotion programs, at a local, regional, and national level. (2) Participating or organizing specialty-related health campaigns.</p>	<p>(1) Participating in reproductive health promotion and maintenance, including those related to ethics policies and legal regulations into force. (2) Developing reproductive disorder prevention, including mammary pathology and interrelated diseases.</p>	<p>(1) Participating in the several stages of child promotion programs at a local, regional, or national level. (2) Participating in the design, organization, and execution of health campaigns contributing to adult mortality reduction.</p>	<p>(1) Participating in the several stages of child health promotion programs at a local, regional, and national level. (2) Participating or organizing health campaigns contributing to reducing child mortality.</p>

This report aims to provide an updated analysis of labor market trends for the health workforce in Peru, focusing on the basic health team—physician, nurse, and midwife—and other health professionals related to current priorities. Peru has been labeled as a country with a shortage of health professionals (that is, with less than 25 professionals per 10,000 inhabitants), and although the most recent numbers indicate that the situation has improved, the shortages are bound to become more acute as the country aims to achieve Universal Health Coverage. We found that the country trains both in public and private universities a large number of professionals, but that the majority of trained professionals do not then go on to work for the public sector. This dynamic had not been described before and challenges current assumptions of human resources needs and availability. There is very little reliable data on numbers, type and work conditions for human resources working outside the public sector, including the social security insurance health system (EsSalud), other health insurance providers, and the private sector, and as a result no detailed information can be obtained about the distribution of health professionals outside the public sector. For policy purposes, it is necessary to improve the quality and integration of HRH information across the sector.

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