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Understanding health inequalities in the 21st century: the case of UHC in Peru

by

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Abstract

Health is a universal right, nevertheless, not all people have the same opportunities to fully enjoy it without facing financial difficulties. Universal Health Coverage has the potential to break the health-poverty trap, supporting people with the opportunity of building a healthy structure, essential for a sustainable human and economic development. This paper explores how individual characteristics matter for taking part in Universal Health Coverage in Peru for years 2009 and 2018. Two National Household Surveys and different probit models were used for estimating a) the likelihood of being enrolled in a health insurance b) the likelihood of being enrolled in SIS or EsSalud c) the likelihood of receiving full financial coverage of health services expenses by the health insurance and d) the likelihood of perceiving certain barrier as the reason for not using health facilities when facing a health event. Overall, results suggest in most cases the marginal effect of a vulnerable characteristic on the likelihood of the outcomes of interest has reduced over the years. Nevertheless, there are still health inequities and inequalities concerning participation in UHC in Peru.

Keywords: Universal Health Coverage, public health, health insurance, development, health-poverty trap, probit model.

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1. INTRODUCTION

Health is the base of progress. It determines general well-functioning. Health has an impact on the occurrence of actions and the quality of those actions. Hence, it has a tremendous role in human and economic development.

It seems naive to expect progress without having a foundation on which to build on. And yet, not all individuals have the same opportunity to constitute and maintain such an essential asset. According to a monitoring report of the World Health Organization (2019), at least half of the population in the world was not covered by essential health services in 2017.

In line with Deaton (2013), human progress can lead to inequality. In many great improvements in our history, the gains have not favored all people: some advanced and others were left behind. Individual progress without health is harder.

What is more, health is a human right (UDHR, 1948). All people have the right to have the opportunity of being healthy beyond economic, social, cultural, and political characteristics (Rubenson, 2002). Then, Universal Health Coverage (UHC) was born to help people to fully enjoy their right to health.

The purpose of UHC is to allow all people access to the health services they need without suffering financial difficulties. So, for instance, this instrument goes against people getting sick and dying because they are too poor to receive treatment, or because they are too far from a health facility (Ghebreyesus, 2017). Also, UHC goes against people crossing the poverty line because of the expenses of health services.

UHC has the potential to balance the conditions under which a person begins the race to progress, making it fairer. This is, UHC is a tool for reducing inequalities of opportunities, those that are not the result of individual efforts but the result of circumstances that are exogenous to a person.

Health inequalities generally leave the poor in a disadvantaged position. Research recognizes the vicious cycle between poverty and health, which translates into a health-poverty trap, which is difficult to get out of once inside. As illustrated by Wagstaff (2002), certain characteristics of the poor lead to poor health outcomes, which leads to reduced income -because of loss of productivity and low general performance-, which could lead to higher economic barriers for access to high-quality health services, which in turn can reinforce any initial health inequality. UHC could help people to escape this trap, which

is not only positive for the individual wellbeing but also for the economic growth and development of the country.

Furthermore, one of the 2030 Sustainable Development Goals (SDG) adopted by the General Assembly of the United Nations in 2015 is to “ensure healthy lives and promote well-being for all at all ages” (United Nations, 2015). Likewise, achieving UHC is one of the targets within that goal.

Since the beginning of the new century, many countries have adopted UHC as an objective for national policy (Reich, Harris, Ikegami, Maeda, Cashin, Araujo, Takemi & Evans, 2016). Currently, most developed countries manage to cover the totality of their population for at least basic primary health (Paris, Hewlett, Aaraaen, Alexa & Simon, 2016). However, some other countries are in earlier stages toward the road of universality. Some countries have started implementing UHC policies and programs, gains have been achieved in the process, but are still facing coverage gaps in different dimensions of UHC: who is covered, what services are covered, financial protection (Reich et al. 2016). The case of Peru falls in this category of countries.

Peru is a country in South America, with a growing population of around 33 million people and a GDP per capita of 15.400 US\$. The GDP of Peru has experienced positive annual growth since 2000, positioning the country in the group of upper-middle-income economies (World Development Indicators, 2020). Also, Peru has decreased poverty rates (Headcount ratio), from 17,2% in 2001 to 2,6% in 2018. In addition, inequality has also decreased in the last two decades. The Gini index in 2002 was 53,6 and declined to 42,8 in 2018 (WDI, 2020).

Regarding health progress, life expectancy in Peru has increased by 6 years from levels in 2000, being in 2018 76,5 years (WDI, 2020). Also, Peru has made progress regarding levels of chronic malnutrition, infant mortality rate, maternal mortality ratio, among other health outcomes indicators (Vermeersch, Medici & Narvaez, 2014).

In 2009 Peru created the Law of Universal Health Insurance, a framework that follows the objectives of UHC. Moreover, Peru aims to reach full UHC by 2021 (OECD, 2017). However, despite major improvements in the last decades, by 2017 still a third part of the population of Peru recognizes not being cover by any type of health insurance, private or public (PAHO, 2017).

Furthermore, Peru presents health disparities among groups of the population in terms of health status, the supply of medical resources, access to services, and the quality of those services (OECD, 2017). Besides, Peru counts with one of the lowest Current

Health Expenditure as a percentage of GDP (5%) in the region, being 8% the average in Latin American and the Caribbean. This contrasts with the 12,5% average among the OECD country members (WDI, 2020). Likewise, Peru is one of the few countries in the region with a critical shortage of human health capital (Vermeersch, Medici & Narvaez, 2014). In addition, by 2017, 28% of Current Health Expenditure in Peru came from out-of-the-pocket expenditures, which doubles OECD averages for this indicator (WDI, 2020). This scenario suggests challenges for meeting the goal of UHC in Peru.

Looking progress *on average* includes the winners and the losers of an outcome. Here, there is an interest to break the average and consider how does the identity of the individual matter for being part of one side or the other. This is, *who* is more or less likely to be part of the progress in UHC in Peru, and to what extent the most vulnerable groups are increasing their chances to be included in the profit-sharing of this instrument over the years.

According to Lenhardt and Samman (2015), the overlap of group disparities can create extreme forms of exclusions in societies. The impact of a certain circumstance could affect in different magnitudes on different groups. In our case, intersecting inequalities could change the chances to access to health.

In front of this framework, several questions arose: Does who we are matter for the chances to fully enjoy the benefits of Universal Health Coverage? How does it matter being extremely poor or extremely rich in the chances of being enrolled in health insurance? How does it matter being young or senior in the type of insurance we have? How relevant is being a woman or a man for a very poor person or a very rich person in terms of health coverage? How does it matter being enrolled in one public health insurance or the other for the chances of enjoying financial protection? Is this fair?

To integrate these doubts, this paper approaches the following research question: How individual characteristics matter for taking part in Universal Health Coverage in Peru? This is addressed through the analysis of four dimensions: a) the likelihood of being enrolled in a health insurance b) the likelihood of being enrolled in one public health insurer or the other c) the likelihood of receiving full financial coverage of health services expenses by the health insurance d) the likelihood of perceiving a certain barrier as the reason for not using health facilities when facing a health event.

Assessing outcomes through group characteristics allows more specific identification of who is facing vulnerabilities. This thesis adds to the understanding of health inequalities that came because of gaps in Universal Health Coverage in Peru.

2. THEORETICAL FRAMEWORK

2.1. Health and Development

Health is one of the main pillars of human and economic development. According to Sachs (2001), economic output depends on institutions and policies on one side and factor inputs on the other side: technology, enterprise capital, and human capital. Moreover, health, together with education, is the basis that structure human capital (Schultz, 1961; Becker, 1993).

Research has approached the relationship between health and development through different pathways. On one side, health has an impact on economic growth through productivity (e.g. Wolf, 1967; Thomas & Strauss, 1998; Bloom, Canning, Kotschy, Klaus & Schünemann, 2018). Good health increases production by improving the quality and the quantity of the workforce in the labor market. A healthy population can enhance physical and mental capabilities that allow a better general performance. In this sense, an unhealthy population leads to a lack of economic efficiency by losing avoidable premature deaths in productive years and by not fully exploiting the functional potential of a healthy person (emotionally, physically, and intellectually).

In addition, there is a part of the literature that focuses on health influencing development through education. Some research (e.g. Ehrlich & Lui, 1991; Bloom & Canning, 2000) argue healthier people -with higher life expectancy- have higher incentives to invest in education and physical capital due to the outlook of enjoying the return on investments for longer periods. Besides, health is a major element in the return on education. Poor health could reduce school attendance and difficult the process of knowledge accumulation and proper cognitive development (Bloom & Canning, 2000). Also, childhood health has an important role in human-capital and physiological development, which matters for performance and income in adult life (Bleakley, 2010). Furthermore, Van Zon and Muysken (2001) recognizes education as one of the keys to economic growth and development, however, the authors argue that to effectively use education and human capital services as contributors for the economy, people need to be alive and healthy. Hence, poor health seems to lead to a waste of productivity, a waste of potential development, and a waste of general well-being in a society.

According to the constitution of the World Health Organization (WHO), entered into force in 1948, health is “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (WHO, 1948). What is more, health

is a human right. The art. 25 (1) of The Universal Declaration of Human Rights (1948) claims that “everyone has a right to a standard of living adequate for the health of himself and his family, including food, clothing, housing, and medical care and necessary social services (...)” (UDHR, 1948). Also, the International Covenant on Economic, Social and Cultural Rights (ICESCR), a United Nations multilateral treaty in 1966, acknowledge the right of everyone “to the enjoyment of the highest attainable standard of physical and mental health” (ICESCR, 1966). Moreover, a general comment from the Office of the High Commissioner for Human Rights (UN) argues that the right to health includes freedoms and entitlements, and the latest one includes the right to a “system of health protection which provides equality of opportunity for people to enjoy the highest attainable level of health” (OHCHR, 2000). So, in a sense, the institutionalized right of health seems like a novelty in history, nevertheless it already has more than 70 years old with us as a society.

The right to health is not the same as the right to be healthy. According to Rubenson (2002), every individual in a society is the beneficiary of the right of health and the states have the obligation to protect and fulfill that right. So, the right to health refers to a person having the opportunity of being healthy beyond economic, social, cultural, and political characteristics through access to health. Within their limitations, governments have the responsibility to manage policies and actions that work in direction of accessible health care to the society as a whole, to meet their health right (Rubenson, 2002).

2.2 Health inequality

When assessing health inequality there are several combinations of research structures to follow. Each study decides to focus on an aspect of health on one side, and a dimension of the population on the other. Gwatkin (2000) illustrates different pathways to address the debate on health inequality.

Mainly, when choosing an aspect of health, the study could go through looking: differences in health status (e.g. Brockerhoff & Hewitt, 2000; Gakidou, Murray & Frenk, 2000; Wagstaff, 2000), differences in the use of health services or differences in health financing (e.g. Makinen, Waters, Rauch, Almagambetova, Bitran, Gilson, McIntyre, Pannarunothai, Prieto, Ubilla, & Ram, 2000; Castro-Leal, Dayton, Demery & Mehra, 2000). Then, the aspect of health chosen is studied according to certain dimensions of the population, this is, ways to categorize individuals. Some of these categories could be by

economic status, by ethnicity, gender, health condition among others (Gwatkin, 2000). Traditionally, assessing health outcomes according to population economic status is one of the preferred approaches in literature (Gwatkin, 2000).

Health inequalities generally leave the poor in a disadvantaged position. Wagstaff (2002) illustrates the vicious cycle of poverty and health, better known as the health-poverty trap. Certain characteristics of the poor (e.g. inadequate service utilization, unhealthy sanitary, and dietary practices) lead to poor health outcomes (e.g. ill-health, malnutrition, high fertility). Then, these poor health outcomes lead to diminished income -because of loss of productivity, wages loss, difficulties in daily general performance-. Next, this reduced income could translate for instance into poor access to high-quality health services, exclusion from the health finance system, weakness in community social norms, which in turn could reinforce any initial underprivileged situation of the poor (Wagstaff, 2002). In the same line, Sachs (2001) points out that some characteristics of the poor increase the susceptibility to diseases: lack of safe housing, sanitation, information about preventative behaviors, distance to health providers. Also, the poor are more vulnerable to health shocks and could be the reason for prolonged impoverishment, because they could be forced to sell productive assets or get into debt to have the economic resources to pay the expenses of a health event (Sachs, 2001).

As claim by Gwatkin (2000), assessing the economic dimension of health inequalities is just one part of the equation. There are other dimensions of the population with a role in health inequalities: inter-groups characteristics like education and occupation, ethnicity, gender, geography, among others. This level of information is relevant to effectively assess health equity.

There is a difference between health equality and health equity. Equity in health refers to reduce or avoid “unfair and unnecessary social gaps in health and health care” (Whitehead, 1990). For some, equity in health translates into all individuals having a minimum level of health and well-being (WHO, 1996). So, if two individuals with similar characteristics (e.g. income, health education) have different health outcomes due to less healthy habits, the inequality in the health status could be answering to differences in social preferences instead of a fundamental inequity (Gwatkin, 2000). Furthermore, it could be the case that health outcomes are getting better but in an inequity way, meaning that the average is increasing but unevenly distributed. Hence, to study health inequalities considering equity, distributional data is needed. Nevertheless, health distributional data just start being available from two decades ago (Gwatkin, 2000).

Distributional data breaks the traditional country averages and gives information about differences between groups inside a country, but before the 2000s there was a scarcity of this type of data in health research. At the time, all health information used to refer to as countries as a whole. Even development targets were established for improvements in indicators considering country averages (Gwatkin, 2000). Wagstaff (2000) remarks about the few data available on health status according to income or consumption within a country by that time.

In the same vein, studying health disparities within groups is a new field especially for the developing world. Gwatkin (2000) mentioned that one of the pioneers working with health distributional research is The World Health Report of 1999 of the WHO, which disentangled national-level averages and created different health indicators for the poor and non-poor for several developing countries. Moreover, the author claims that other two studies contributed to the area by working with household survey data (taking advantage of the novelty of DHS and LSMS data) and evaluating inequalities according to income quintiles within countries (e.g. Wagstaff, 2000; World Bank, 2001) (Gwatkin, 2000).

Furthermore, another concept linked with inequity is the inequality of opportunities. Literature associates the nature of these inequalities with circumstances that are exogenous to a person. Thus, some differences in outcomes exist because of differences in individual efforts and others exist because of differences in factors beyond individual control, like the place of birth, family economic background, ethnicity, gender, among others. Inequalities in outcomes because of different opportunities are considered unfair (Brunori, Ferreira & Peragine, 2013). Hence, health equity looks after eliminating inequalities in opportunities for health.

Additionally, for decades the health inequality debate has been associated with primary health care services. In 1978 the Declaration of Alma-Ata (created in the International Conference on Primary Health Care) acknowledged a gap between the “haves” and the “have-nots” and defend the potential of primary health care for tackle it (Gwatkin, 2000).

Nowadays, primary health care is recognized as a key element for achieving an efficient and sustainable health system. In addition, by having a special focus on health promotion and prevention, primary health care has the potential of not just decrease health inequalities but also increase general healthy life expectancy, save lives and decrease, delay or completely avoid secondary and tertiary services (curative care), which tend to

be more expensive for a country (WHO, 2019). Moreover, a report of the WHO (2008) argues primary health care laid over four key pillars, being Universal Health Coverage one of them.

2.3 Universal Health Coverage

One of the 2030 Sustainable Development Goals (SDG) adopted by the General Assembly of the United Nations in 2015 is to “ensure healthy lives and promote well-being for all at all ages” (United Nations, 2015). Moreover, one of the targets within that goal is achieving universal health coverage. The aim of universal health coverage (UHC) is to allow all people access to the health services they need without suffering financial difficulties.

UHC emphasizes the element of *inclusiveness*: making reference to health for “all” it acknowledges that geographical, socioeconomic, gender, age group, or any other individual circumstance should not act as a barrier for a person obtaining needed health care. Following Ghebreyesus (2017), director-general of the WHO, UHC goes against being poor (unable to pay) or being incapable to access a certain health service (for instance because of distances) becoming the reason behind a person getting sick and dying. Essentially, UHC is about giving the people the opportunity to be healthy and ultimately, is about decreasing health inequalities.

Universal Health Coverage is also an instrument for ensuring the fulfillment of the human right to health. Even this right has been institutionalized in 1948, UHC gained popularity just in the last decade. In 2010, the WHO published a report discussing the path towards UHC (WHO, 2010). This was followed by the approval of the resolution WHA 64.9 of the World Health Assembly in 2011, which urges States to aim for affordable and equitable universal coverage. Then, in 2012 the General Assembly of the United Nations acknowledged UHC as a foundation for global security and advised its inclusion in what is now the Sustainable Development Agenda 2030, established in 2015 (United Nations, 2012). Next, in 2014 members of the Pan American Health Organization (PAHO) approved with unanimity a resolution to apply the Strategy for Universal Access to Health and Universal Health Coverage in the region. In addition, the World Bank has recognized UHC as a key element in the fight against poverty, and specifically in the process of achieving the World Bank Group’s twin goals: “ending extreme poverty and increasing equity and shared prosperity” (The World Bank, 2019). Taking into account

the already mentioned health-poverty trap, Universal Health Coverage seems like a reasonable potential push for breaking this vicious circle.

2.3.1 Dimensions of Universal Health Coverage

There are three core dimensions when analyzing UHC: the proportion of the total population covered, which services are going to be accessible, and what proportion of the total health expenses are going to be covered (financial protection) (Busse, Schreyögg & Gericke, 2007)

The third dimension of UHC is focused on ensuring that the use of health services does not translate into financial difficulties for the user. These financial efforts are measured through catastrophic health expenditures and through impoverishing health expenditures (WHO, 2017). Both are related to the concept of out-of-the-pocket (OOTP) health payments. OOTP health payments are those made when consuming a health care service or product, and when those payments are financed with the household income (including borrowings and savings). Basically, they are all the expenses for health products and services that are not covered or reimbursed from third parties (e.g. insurance, government, social programs). The payments for insurance premiums are not considered an OOTP (WHO, 2017).

Wagstaff and Van Doorslaer (2003) argue catastrophic health expenditures are those out-of-the-pocket health expenditures that exceed a given proportion of income or consumption, generally the 10% or 25% (Wagstaff & Van Doorslaer, 2003).

On the other hand, impoverishing health expenditures are those negatively affecting the standard of living of a household to the extent of pushing it through the poverty line. This occurs when to cover a health event, funds are taken apart from other parts of the household consumption reducing general welfare (WHO, 2017).

2.3.2 UHC: current situation

A report of the WHO (2017) claims by 2015 around 31% to 48% of the global population were covered by the majority of essential health services, implying that at least half of the people of the world did not receive the essential health services they needed. Two years later, the situation did not show significant advances, where between 33% to 49% of the world's population counted with coverage of essential health services (WHO, 2019). According to current trends, the projection for 2030 indicates that between 39%

to 63% of the world's population will be covered by essential health services (WHO, 2019) which jeopardizes the agenda of the SDGs 2030.

Besides, on average, financial adversities faced by people when consuming essential health care is on a rising trend. World's population facing catastrophic health expenditures rose between 2000 and 2015 (WHO, 2019). The number of people with an out-of-the-pocket health expenditure exceeding 10% of their household budget went from 9,4% to 12,7% (930 million people). While the proportion of the worldwide population experiencing out-of-the-pocket health expenditures of more than 25% of their household budget rose from 1,7% to 2,9% (210 million people) (WHO, 2019).

2.3.3 UHC in Latin America

Already in 1967, Wolf argues the region of Latin America having inferior health indicators concerning more advanced economies. By that time, the picture of the health situation in some countries of the region included scarcity and unequal distribution on essential health providers, lack of medical resources -including health workforce-, and insufficient hospital beds. These among other deficiencies that affected the fight against poor health (Wolf, 1967).

According to Dmytraczenko and Almeida (2017), in the last three decades, several countries in Latin America and the Caribbean (LAC) has recognized health as part of the set of individual rights and has promoted policies toward Universal Health Coverage. Nevertheless, inequity in health is still a problem in most of the region. For instance, despite gains on country average indicators in the region, the poor are more likely to experience bad health events but less likely to use essential health services, like preventive health (Dmytraczenko & Almeida, 2017).

Furthermore, policies toward UHC were accompanied by increases in public health expenditure. On average, LAC experienced a rise in health expenditure as a percentage of GDP from 6,6% to 8% between the years 2000 and 2017 (WDI, 2020). Nevertheless, levels are still lower concerning advanced economies. For instance, during the same period, health expenditure as a percentage of GDP grew from 9,3% to 12,5% for OECD country members (WDI, 2020).

Regarding public health expenditure, on average the region increased the domestic general government health expenditure as a percentage of Current Health Expenditure from 45% to 52% between 2005 and 2017, while in the same period the average for

OECD members has moved between 60% and 63% (WDI, 2020). In addition, regarding the out-of-the-pocket expenditure as a percentage of Current Health Expenditure, on average LAC experienced a decrease in the proportion, from 41% in 2002 to 28% in 2017, while the OECD average of this indicator went from 16% to 14% in the same period (WDI, 2020).

2.4 The case of Peru

Peru has one of the lowest Current Health Expenditure as a percentage of GDP of the region, being 5% in 2017. In that year, 63% of Current Health Expenditure came from government health expenditure, which is similar to levels of the OECD. Nevertheless, in 2017 28% of Current Health Expenditure came from out-of-the-pocket expenditures, which doubles OECD averages (WDI, 2020).

Regarding financial protection, according to Dmytraczenko and Almeida (2017), by 2017 in LAC catastrophic health expenses have been decreasing over time for the average population and 40% of the bottom of the income distribution. Nevertheless, Brazil and Peru are the exceptions, where catastrophic health expenses have increased. In addition, the authors argue that Peru and Jamaica are the countries in the region with higher levels of poverty due to impoverishing health expenditures and that Peru has gotten worse concerning out-of-the-pocket expenditures (Dmytraczenko & Almeida, 2017). Moreover, Vermeersch, Medici and Narvaez (2014) show out-of-the-pocket payments are the main source of financing in the health sector in the country.

Concerning universal health coverage, Peru faces challenges by ensuring effective coverage. Peru has experienced a rise in health insurance enrollments which in turn has increased the demand for health services. Nevertheless, the supply side seems to be unprepared to meet these needs (OECD, 2017). On the one hand, investments in hospital and ambulatory infrastructure has been inadequate in the last decades (Vermeersch, Medici & Narvaez, 2014). For instance, Peru has a density of 1,5 hospital beds per 1000 people, in comparison with the average of OECD countries of 4,8 beds per 1000 people.

In addition, Peru is one of the few countries in the region with a critical shortage of human health capital (Vermeersch, Medici & Narvaez, 2014). In 1999, the availability of doctors was 1 per 1000 inhabitants, which represented 70% of the region average (Human Development department, 1999). Despite the increase of this ratio to 1,7 per 1000 people in 2017, it still represents a gap of around 16000 specialists for the country.

In contrast with more advanced countries, the density of physicians per 1000 inhabitants is on average 3,3 (OECD, 2017).

Furthermore, Peru presents health disparities among groups of the population. According to the Human Development Department of the World Bank (1999), by the date, the use of health services in Peru was 4,5 times higher for the 20% group at the top of the income distribution than for the 20% in the bottom. Nowadays disparities continue.

According to a study of the PAHO (2017), in the last decade, health outcomes in Peru have improved, however, there are still high levels of health inequality because of sociodemographic characteristics. These characteristics have an impact on health access and health financial protection. For instance, access to formal health is 1,46 times higher for people in the richest group of the population than for the poorest. Also, the proportion of people facing out-of-the-pocket expenses for a medical consultation is 2,3 times higher for people with no health insurance than for those enrolled in one (PAHO, 2017).

Moreover, there is high contrast in terms of quality and availability of access to basic public services between the natural geographic regions (coast, jungle, and highlands), also between rural and urban areas, being the latest one in a better situation (OECD, 2017). Besides, the already scarce medical staff is unevenly distributed across the country (OECD, 2017). Also, the financial incentives are higher in urban areas and the private sector, as a consequence, a minority of 25% of health professionals work in the public sector (OECD, 2017). Differences in salaries of health workers across health care subsystems also exist (OECD, 2017).

The Health Sector

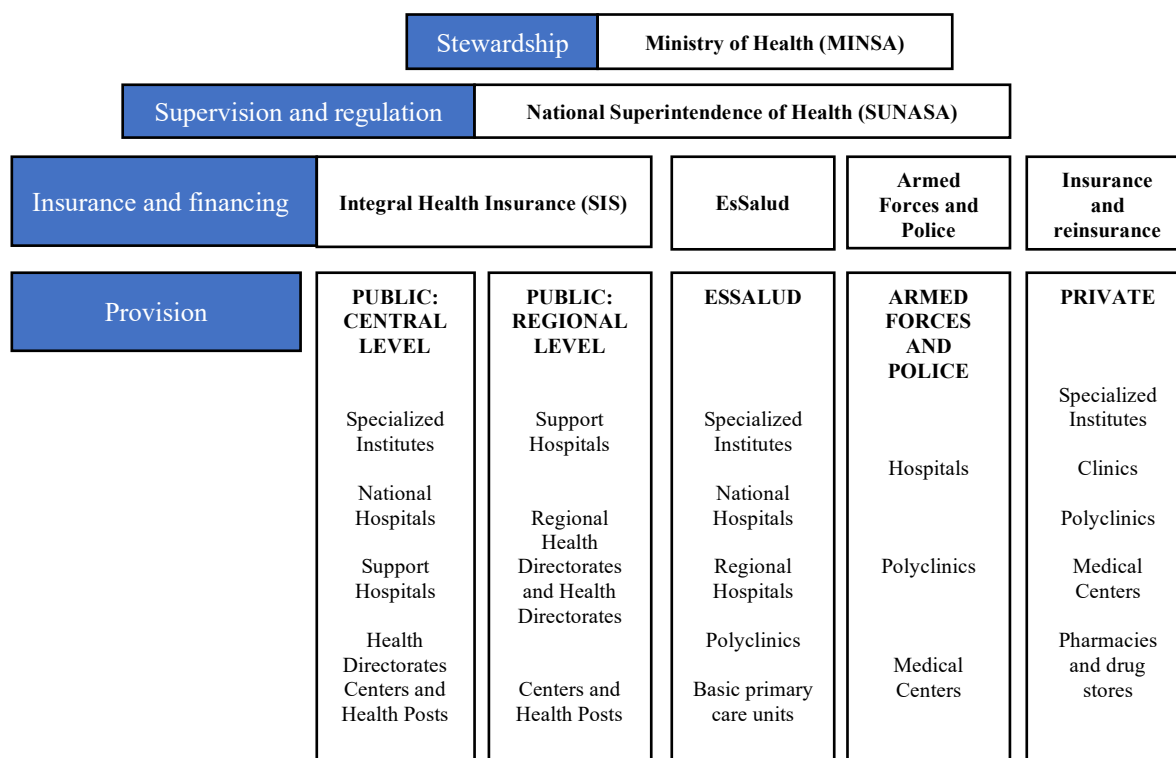
The health sector of Peru is fragmented in various public and private subsectors as follows (Vermeersch, Medici & Narvaez, 2014):

- Supply-side (public):
 - Ministry of Health (MINSa), directorates in Lima, and specialized institutes.
 - Regional governments and regional health directorates.
 - EsSalud, the social security health insurance institution under the Ministry of Labor.
 - Armed forces and police health funds (FFAA/FFPP)
- Supply-side (private): private providers and insurance companies, private medical doctors, suppliers of indigenous medicine.

- Demand-side (public):
 - Comprehensive Health Insurance Scheme (Seguro Integral de Salud (SIS)).
 - EsSalud.
 - Armed forced and police coverage programs.
- Demand-side (private): private insurance programs.

Figure 1 presents an illustrative picture of the organization of the health sector of Peru.

Figure 1. Organization of the Health Sector of Peru.



Source: Adapted from Vermeersch, Medici & Narvaez (2014).

There are some important elements regarding health coverage in Peru in the last decades. Among them, there is the creation of EsSalud in 1999, the creation of SIS in 2002, and the institutionalization of UHC by the creation of the law of Universal Health Insurance in 2009 (Vermeersch, Medici & Narvaez, 2014).

Following National Household Surveys, in Peru, around 95% of the people with health insurance are enrolled in SIS or EsSalud. Moreover, less than 2% of total insured are enrolled in private health insurance.

EsSalud is the social security health insurance institution. This is a contributory health insurance, which is financed by payroll contributions in different magnitude. For

instance, some workers contribute 9% of payroll while other individuals (e.g. rural workers, domestic employees) contribute 3%. Ultimately, EsSalud brings health insurance to formal employees and their families (Vermeersch, Medici & Narvaez, 2014). Independent workers (without an employer) can also be part of EsSalud by paying the corresponding monthly fees.

On the other side, the Comprehensive health insurance SIS (“Seguro Integral de Salud”) was created targeting informal workers and poor people. It is the public health insurance institution and is financed with public treasury funds (Vermeersch, Medici & Narvaez, 2014).

In 2009 the Universal Health Insurance Law (UHI) was created to achieve Universal Health Coverage. The new regulatory framework uses the institutional structures of EsSalud, SIS, MINSA, and regional governments to meet the goal of UHC in Peru. For this, three mechanisms were established (Vermeersch, Medici & Narvaez, 2014):

Type of insurance	Finance by	Managed by
Contributory	Payroll-based contribution, private payments	EsSalud, private, etc.
Subsidized	Fiscal funds	SIS
Semi-contributory	Combination of private payments and public subsidies	SIS

The condition to be enrolled in the subsidized modality of SIS is to be part of a vulnerable group of the population and not having other health insurance. A document or pre-registration in the “Sistema de Focalización del Ministerio de Desarrollo e Inclusión Social (SISFOH)” is needed to be considered as part of a vulnerable group (PAHO, 2017).

The UHI law includes equity as one of its principles and highlights the relevance of providing health services to vulnerable groups in the population (Cetrángolo et. al, 2013). However, it is relevant to mention that the enrolment to the SIS is voluntary instead of mandatory. The semi-contributory mechanism targets workers in informality and small businesses (Vermeersch, Medici & Narvaez, 2014).

Regarding EsSalud, it is necessary to demonstrate a current formal worker condition (with an employee or as an independent) and to have contributed with three consecutive payments or four not consecutive payments in the previous 6 months of using a health service (PAHO, 2017).

Public providers give services to people enrolled in the SIS and to those not enrolled in any health insurance, the latest financed by out-of-the-pocket payments. Moreover, EsSalud provides most health services to its affiliates through its health facilities. The funds for public providers come from the SIS and the Ministry of Economy and Finance (Vermeersch, Medici & Narvaez, 2014).

Recently, Peru has taken efforts to integrate multiple risk pools but currently, the sector still is fragmented (Reich et al. 2016). According to a report of the PAHO (2017), maintaining two parallel public channels (SIS and EsSalud) creates inequalities and inefficiency in access to health, which difficult to meet the goal of universal health coverage.

Following data from National Household Surveys (ENAHO) of Peru, health insurance coverage have been increasing over the years. Most of the growth is seen in enrollments in SIS health insurance rather than in EsSalud, which could give hints about the labor informality and economic situation of the country. Despite gains in coverage in the last decades, by 2017 still, a third part of the population of Peru recognizes to not be cover by any type of health insurance, private or public (PAHO, 2017).

According to a report of the OECD (2017), Peru has explored different initiatives to attract people to enroll in health insurance, especially with the SIS regime, but some of those attempts have been unsuccessful. Effective incentives and efforts are needed to expand the enrollment of people in a health insurer of the country because the alternative is to incur out-of-the-pocket expenditures that go against an efficient UHC (OECD, 2017).

2.5 Intersectionality in Health

Intersectionality is related to breaking averages to have a better understanding of the situation of an individual. When considering intersectionality, the attention goes from country averages, pass by group averages, and focus on the interactions happening in a multidimensional sphere of different groups and categories.

Lenhardt and Samman (2015) identify three concepts of inequality. The first one is vertical inequality, which considered all people in a distribution and ranked them by some outcome (e.g. health, education, income). For instance, the Gini index evaluates income disparities within a given population (Lenhardt & Samman, 2015). Secondly, there is the horizontal inequality, which organizes individuals in groups according to some characteristics. Each set of groups takes part in a category (e.g. spatial location,

ethnicity, gender). Then, measuring horizontal inequalities translates in comparing outcomes between groups of the same category. For instance, assessing the differences in average years of education between people living in rural areas and people living in urban areas. The third one is intersecting inequality. This one also looks at differences in outcomes between groups of people but not just from the same category. Instead, intersecting inequality considers the overlapping individual characteristics of groups from different categories. For instance, comparing the average years of education of a woman living in rural areas and a woman living in urban areas. Here categories as gender and spatial location come together. Then, intersecting inequality is measured by “the difference in the outcomes explained by the various combinations of those overlapping group characteristics” (Lenhardt & Samman, 2015).

The concept of intersecting inequalities relates to equity in the sense that assessing outcomes through group characteristics allows a more specific understanding of who is facing vulnerabilities (Lenhardt & Samman, 2015). Moreover, intersecting inequalities gives information about the performance of different parts of the population besides the societal averages, and how different individual circumstances can increase the barriers in achieving a certain outcome.

Intersectionality could be defined as the “interaction between gender, race, and other categories of social difference in individual lives, social practices, institutional arrangements, and cultural ideologies and the outcomes of these interactions in terms of power” (Davis, 2008, p. 68). Moreover, Kimberlé Crenshaw popularized the term of intersectionality in the 80s. The author argues the interaction of factors -such as gender, race, class among others- shapes individual identities and experiences. These identities could negatively influence individual access to opportunities, situating individuals in a position of vulnerability (Crenshaw, 1989). Then, people from the same group can face exclusion in different degrees. The overlap of group disparities can create extreme forms of exclusions in societies (Lenhardt & Samman, 2015).

As seen in a previous section, different characteristics of the population affect health outcomes (e.g. being poor). In the same vein, part of the existing inequality can be associate with inequality of opportunities, which in turn is connected with exogenous factors or circumstances like gender, race, family background (Brunori, Ferreira & Peragine, 2013). Then, this opens the question about how the combination of those individual characteristics could change the chances to access to health.

2.6 Vulnerable groups in Peru

Vulnerable people are those facing particular difficulties to fully exercise their rights because of their age, gender, physical or mental state, or because of their socio-economic, ethnic, or cultural circumstances (Observatorio Nacional, 2019).

In Peru, the constitutional organization of the Office of Public Defender (“Defensoría del pueblo”), considers women and the elderly as vulnerable groups which require special protection (“Grupos de protección especial”). Peruvian women and elderly people face particular situations that affect their rights to life, equality, and health (Defensoría del pueblo, 2019).

Moreover, the income level still is a determinant in health inequalities in Peru, particularly related to the access and use of health services from the poor concerning the rest of the population (PAHO, 2017). As said above, income conditions health, and health conditions income.

3. METHODOLOGY

3.1 Empirical strategy

This research aims to study how individual characteristics matter for taking part in Universal Health Coverage in Peru in the years 2009 and 2018. “Taking part” includes four dimensions of interest within Universal Health Coverage, this is why the study tackles this question through four analysis: a) likelihood of being enrolled in a health insurance b) likelihood of being enrolled in SIS and EsSalud c) likelihood of receiving full financial coverage of health services expenses by the health insurance d) likelihood of perceiving a certain barrier as the reason for not using health facilities when facing a health event. For simplicity, we could refer as the first stage for the first and second analysis, and as the second stage for the third and fourth analysis.

The objective is to recognize individual identities beyond the group averages and evaluate “who” in the population of Peru is more likely to taking part in Universal Health Care.

We work under the assumption that Universal Health Coverage should increase health equity, allowing all people access to health services needed -besides their circumstances- without suffering from financial difficulties. So, with this approach, there is a major interest in identifying if *those* most likely to take part in UHC include vulnerable groups in Peru or if this instrument is mostly beneficial for the better-off.

By identifying the likelihood of participation in the UHC of most vulnerable ones and contrasting it with more prosperous groups we can evaluate health inequality in terms of access to UHC. Also, it gives us information about which groups could be facing vulnerabilities because of not taking part in UHC. The study focuses on three vulnerable groups in Peru: women, elderly people, and very poor.

This research intends to shed light on who is more likely to be inside and outside the UHC in Peru and what individual characteristics matter the most to benefit the process of targeting development policies regarding health access and coverage.

Going back to the four analysis to tackle the research question, the specific aims behind each of them are the following: a) to illustrate the likelihood of coverage of the vulnerable groups in relation with the better-off groups b) to evaluate who is more likely to be in each type of insurer c) to evaluate different benefits between the two major health insurer in the country d) to evaluate if the type of insurer enrolled in is associated with the lack of use of health services.

For all four analyses, the study considers two years in Peru, to analyze how the situation changes over time.

3.2 Data and variables

3.2.1 Databases

The analyses were made using household surveys from the National Institute of Statistics and Informatics of Peru (INEI).

For the first two analyses, the survey “Encuesta Demográfica y de Salud Familiar (ENDES)” was used, merging modules 64 (RECH0, RECH1, RECH4) and 65. For the third and fourth analyses, the study used the National Household Survey (ENAHO), merging modules 4 and 34.

For all analyses, the years 2009 and 2018 were chosen. The year 2009 because it was the year of creation of the Universal Health Insurance Law in Peru. The year 2018 because it is the latest update of the surveys. The interest is in observing changes in the situation around UHC in Peru between its institutionalization and the present.

3.2.2 Explanatory variables

First stage: first and second analysis

The study included in the explanatory variables individual characteristics from different categories that might affect the likelihood of occurrence of our outcomes of interest. Regarding the first and second analyses of this study, we use the categories: gender, economic status (quintiles), age group, maximum education level attained, residence area, and natural geographic zone. For the third and fourth analysis, we use categories: type of insurance, gender, level of poverty, age group, maximum education level attained, and natural geographic zone.

For the following estimations characteristics from the categories geographical area, level of education, natural geographic zone, and residence area were used as control variables.

For methodological reasons, the better-off groups of each category are the reference value (left outside the model). This is to contrast the most vulnerable groups with the better-off.

For the analysis of the first stage of the study, the explanatory variables of interest are *Women*, which indicates whether the respondent is a woman; *Vpoor*, which takes

value 1 if the respondent belongs to the bottom part of the income distribution; and *Senior*, which takes value 1 if the respondent's age is more than 59 years old.

For these categories, reference values are *Men*, if the respondent is a man; *Vrich*, which correspond to the top quintile of the income distribution; *Youth*, if the respondent is between 18 and 29 years old.

Age groups were created following the life stages according to the Ministry of Health of Peru. Hence, *Adult* is 1 when the respondent is between 30 and 59 years old (*Youth* and *Senior* explained above). The study reduced the sample to youth, adults, and seniors. Individuals under 18 were excluded from the study under the assumption that the probabilities of the outcomes under interest given a person is under 18 is attached to a legal adult. Then including this age group would require a different type of analysis that goes beyond this paper.

Each respondent matches with one of three groups regarding the maximum level of education attained: *Primary*, *Secondary*, *Superior*. The third group refers to professional education (e.g. university, technical degree) and is the reference value in this category.

For the category of residence area, we have the variable *Rural* being 1 when the respondent lives in a rural area and 0 if lives in an urban area. *Jungle*, *Coast*, *Highlands* are part of the category natural geographic zones, being *Lima* the reference value in this category.

Second stage: third and fourth analysis

Regarding the second stage of the study, the explanatory variable of interest is *SIS*, which takes value 1 if the respondent is enrolled in SIS and 0 if they are enrolled in EsSalud. For this stage of the analysis, the database was reduced to just consider individuals enrolled in EsSalud or SIS health insurance. The study focused on these two because they are the ones with higher enrollment participation in both years in Peru (around 95% of the people with health insurance is enrolled in EsSalud or SIS). The rest of the variables are used as controls.

For this database categories gender, age group, natural geographic zones, and education are structured in the same way as in the first database. Nevertheless, due to the lack of this variable in our second database (ENAH0), the residence area is no longer used as a control variable here. Regarding the economic status category, in this database there was no information per quintile, however, each respondent falls into one of three

wealth categories: *Extreme poverty*, *Poverty*, *No poor*. The latest is the one used as a reference in this category for being the relative better-off.

Descriptive tables of variables can be found in the Appendix.

3.3 Dependent variables and economic models

First analysis: the likelihood of being enrolled in a health insurance

For the first analysis, the dependent variable y_{1i} is a binary variable that equals 1 when an individual is enrolled in health insurance and equals 0 if not. Therefore, the following model (1) was used:

$$y_{1i}^* = x_{1i}'\beta + \varepsilon_{1i},$$

$$y_{1i} = 1 \quad \text{if } y_{1i}^* > 0$$

$$y_{1i} = 0 \quad \text{if } y_{1i}^* \leq 0$$

Where y_{1i}^* is a latent variable, x_1 is a vector of individual characteristics, β is a vector of parameters, and ε_1 is a normally distributed error term with zero mean and variance equal to 1. Individuals are indexed by the subscript i . Model (1) was estimated as a probit model by maximum likelihood.

Second analysis: the likelihood of being enrolled in SIS and EsSalud.

For the second analysis, the sample just considers individuals who are enrolled in health insurance. This is if a person is enrolled in health insurance, how likely is that insurance being SIS or EsSalud.

For the case of SIS, the dependent variable y_{2i} is a binary variable that equals 1 when an individual is enrolled in SIS and equals 0 otherwise. The following model (2) was used:

$$y_{2i}^* = x_{2i}'\beta + \varepsilon_{2i},$$

$$y_{2i} = 1 \quad \text{if } y_{2i}^* > 0$$

$$y_{2i} = 0 \quad \text{if } y_{2i}^* \leq 0$$

Similar to model (1), y_{2i}^* is a latent variable, x_2 is a vector of individual characteristics, β is a vector of parameters, and ε_2 is a normally distributed error term with zero mean and variance equal to 1. Individuals are indexed by the subscript i . Again, model (2) was estimated as a probit model by maximum likelihood.

For the case of EsSalud, the dependent variable y_{3i} is a binary variable equal to 1 when an individual is enrolled in Essalud and 0 otherwise. The following model (3) was estimated:

$$y_{3i}^* = x_{3i}'\beta + \varepsilon_{3i},$$

$$y_{3i} = 1 \quad \text{if } y_{3i}^* > 0$$

$$y_{3i} = 0 \quad \text{if } y_{3i}^* \leq 0$$

Where y_{3i}^* is a latent variable, x_3 is a vector of individual characteristics, β is a vector of parameters, and ε_3 is a normally distributed error term with zero mean and variance equal to 1. Individuals are indexed by the subscript i . Model (3) was estimated as a probit model by maximum likelihood.

To consider intersectional inequalities, model (1)(2) and (3) were re-estimated by groups of interest among the categories of gender, economic status, and age group. This is, in the case of the gender category, the models were re-estimated by *women* and by *men*. For economic status and age group categories, the models were re-estimated for the groups in the extremes of each category: for economic status, the analysis was done for people in the poorest 20% (*Vpoor*) and people in the richest 20% of the income distribution (*Vrich*); while for age group, the models were re-estimated by *Youth* group and by *Senior* group.

Third analysis: the likelihood of receiving full financial coverage of health services expenses by the health insurance

As explained above, the third and fourth analysis just considers individuals who are enrolled either in SIS or in EsSalud.

For the third analysis, a dummy variable was created for nine health services or products received by respondents among the last year of the survey. The question was if the respondent has received: a) medical consultation b) medicines c) analysis d) imaging studies e) dental services f) ophthalmologist services g) vaccines h) contraceptives i) hospitalization or surgical intervention, in a certain pace of time (in the last four weeks for *a,b,c,d*; in the last three months for *e,f,g,h*; and in the last year for *i*).

Then, the dependent variable y_{4si} is a dummy variable that takes value 1 if the health service received by an individual was paid by the health insurance and 0 otherwise. Therefore, the following model (4) was used:

$$y_{4si}^* = x_{4si}'\beta + \varepsilon_{4si}, \quad S \in \{a, b, c, d, e, f, g, h, i\}$$

$$\begin{aligned}
y_{4si} &= 1 && \text{if } y_{4si}^* > 0 && S \in \{a, b, c, d, e, f, g, h, i\} \\
y_{4si} &= 0 && \text{if } y_{4si}^* \leq 0 && S \in \{a, b, c, d, e, f, g, h, i\}
\end{aligned}$$

Where y_{4si}^* is a latent variable, x_{4s} is a vector of individual characteristics, β is a vector of parameters, and ε_{4s} is a normally distributed error term with zero mean and variance equal to 1. Subscripts i, s denote for individual i and health service s . Model (4) was estimated as a probit model by maximum likelihood.

Fourth analysis: the likelihood of perceiving a certain barrier as the reason for not using health facilities when facing a health event.

For the fourth analysis, we analyzed subjective barriers for not accessing health services when needed. In our sample, some people are enrolled in health insurance but do not look for services in a health facility when facing a health event (e.g. illness, disease, symptoms, accident). Individuals named a set of reasons behind this behavior. For each of the reported reasons, a dummy variable was created: A) lack of money B) too far away C) response times are low D) no trust in medical staff E) no serious enough to go F) preference for home care G) self-medication H) lack of time I) mistreatment from medical staff. Each respondent could choose one or more reasons.

Then, the dependent variable y_{5ri} is a dummy variable that takes value 1 if a person who faced a health event, has health insurance and did not look for attention in a health service facility named r as a reason and 0 otherwise. Therefore, the following model (5) was used:

$$\begin{aligned}
y_{5ri}^* &= x_{5ri}'\beta + \varepsilon_{5ri}, && r \in \{A, B, C, D, E, F, G, H, I\} \\
y_{5ri} &= 1 && \text{if } y_{5ri}^* > 0 && r \in \{A, B, C, D, E, F, G, H, I\} \\
y_{5ri} &= 0 && \text{if } y_{5ri}^* \leq 0 && r \in \{A, B, C, D, E, F, G, H, I\}
\end{aligned}$$

Where y_{5ri}^* is a latent variable, x_{5r} is a vector of individual characteristics, β is a vector of parameters, and ε_{5r} is a normally distributed error term with zero mean and variance equal to 1. Subscripts i, r denote for individual i and reason r . Model (5) was estimated as a probit model by maximum likelihood.

All four analyses were estimated for the years 2009 and 2018 to contrast the situation over time.

4. RESULTS

4.1 Main results

For interpretive reasons, the values in the results tables refer to the marginal effects corresponding to coefficients from the probit model estimations. Marginal effects estimate how the probability of an outcome changes with a change in the value of a regressor, holding all other variables constant.

In this section, tables will only show the estimated coefficients for the explanatory variables of interest as illustrative support. The complete result tables, with all the variables used in the models and its estimated coefficients, are found in the Appendix section.

First and second analysis:

Table 1 presents results regarding the likelihood of a) being enrolled in health insurance and b) being enrolled in SIS or EsSalud, in Peru in 2009 and 2018.

Table 1. Marginal effects of groups within a category (complete results table in Appendix A1).

Variable	2009			2018		
	(1) HI	(2) SIS	(3) EsSalud	(4) HI	(5) SIS	(6) EsSalud
Women	0.108*** (0.004)	0.089*** (0.008)	-0.042*** (0.006)	0.103*** (0.003)	0.072*** (0.004)	-0.049*** (0.004)
Vpoor	-0.092*** (0.010)	0.702*** (0.007)	-0.532*** (0.006)	0.099*** (0.007)	0.502*** (0.005)	-0.418*** (0.005)
Senior	0.221*** (0.006)	-0.384*** (0.012)	0.353*** (0.012)	0.122*** (0.004)	-0.354*** (0.008)	0.333*** (0.008)
Pseudo R2	0.0473	0.5031	0.3850	0.0403	0.3640	0.3122
Observations	63,958	31,560	31,560	86,052	64,327	64,327

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The dependent variable in columns (1) and (4) is the likelihood of being enrolled in health insurance. In columns (2) and (5), the dependent variable is the likelihood of being enrolled in SIS, and in columns (3) and (6) is the likelihood of being enrolled in EsSalud, for years 2009 and 2018, respectively.

On average and else being equal, in the data of 2009 results of Table 1 show it is more likely for a woman to be enrolled in health insurance than a man, and it is more likely that health insurance to be SIS rather than EsSalud in relation with a man. In 2018 this scenario holds.

This is, the likelihood of being enrolled in health insurance in 2009 is on average 11 percentage points higher for a woman than for a man, else being equal, a situation that remains almost the same in data of 2018, according to estimates of column (4). Then, results show the likelihood of a woman being enrolled in SIS in 2009 is 9 percentage points higher than a man, while in 2018 the marginal effect slightly decreases to 7 percentage points, holding all other variables constant. Moreover, results in column (3) suggest being a woman decreases the likelihood of being enrolled in EsSalud by 4 percentage points in the data of 2009 and by 5 percentage points in 2018, on average, and else being equal.

In addition, marginal effects in Table 1 show in 2009 it is 9 percentage points less likely for a very poor individual to be enrolled in health insurance than for a very rich one, and if a person is enrolled in a health insurer it is 70 percentage points more likely to be enrolled in SIS if the person is very poor than if the person is very rich. Results also show that it is 53 percentage points less likely to be enrolled in EsSalud for a very poor individual concerning a very rich one. Nevertheless, for the first outcome, results for data of 2018 suggest a change. This is, in 2018 it is 10 percentage points more likely for a very poor individual to be enrolled in health insurance than for a very rich one, on average and else being equal. In addition, results show marginal effects of being very poor rather than very rich decreased in 2018 for the outcome SIS and EsSalud, from 70 to 50 percentage points (SIS) and 53 to 42 percentage points (EsSalud).

Regarding the elderly, results for data of 2009 and 2018 suggest it is more likely for a senior to have health insurance than for a young person. Also, it is more likely for a senior to be enrolled in EsSalud than for a young. And, it is less likely to be enrolled in SIS than a young, on average and else being equal.

Results suggest the marginal effect of being a *senior* is higher in 2009 than in 2018, decreasing by 10 percentage points over the study period. This is, on average the likelihood of a senior being enrolled in health insurance is 22 percentage points higher than the likelihood of an individual in youth age group in 2009, while in 2018 this likelihood is 12 percentage points higher for a senior in relation with a young, else being equal.

For the outcomes regarding SIS and EsSalud, results suggest minor changes in the marginal effects of being a *senior* over the years. On average the likelihood of being enrolled in SIS is 38 percentage points lower for a senior than for a young individual in 2009, and 35 percentage points in 2018, *ceteris paribus*. Moreover, in 2009 on average the likelihood of being enrolled in EsSalud is 35 percentage points higher for a senior than for a young else being equal, while in 2018 decreased to 33 percentage points.

Regarding other individual characteristics used as control variables, results suggest that in 2009, on average and else being equal, the likelihood of being enrolled in health insurance is higher among *rural*, educated (*superior*) and *jungle-region* individuals, concerning the reference group among their categories. In data of 2018, the direction of the relation holds while the magnitude of marginal effects of these characteristics decreased.

Furthermore, in 2009 on average the likelihood of being enrolled in the SIS is higher for individuals falling in the groups *rural*, *jungle-region*, and *primary education* than for reference groups, holding constant the other variables. In data of 2018, the situation holds, but marginal effects for *rural* loses statistical significance. Moreover, for data of 2009, the likelihood of being enrolled in EsSalud is on average higher for people living in the *coast* region, in *urban* areas, and with a *superior* level of education than for reference groups in their categories, else being equal. The variable *coast* loses statistical significance in the data of 2018, but the rest holds.

First and second analysis: intersecting inequality

The results of this subsection show how the marginal effects of individual characteristics (gender, economic status, age group) matter in different proportions for different groups.

Gender category: health insurance

Table 2 shows how the marginal effects of *Vpoor* and *senior* dummy variables change when interacting with each group of the category gender. Also, it shows how this gap changes throughout the two study periods. The dependent variable in Table A2 is the likelihood of being enrolled in health insurance.

Regarding the economic status, results in columns (1) and (2) show a negative marginal effect of being very poor for both gender groups, being the impact higher for men than for women. This is, according to data of 2009, results suggest the likelihood of being enrolled in health insurance is on average almost 14 percentage points lower for a

very poor man than for a very rich one, else being equal. While on average the likelihood of the same outcome is 4 percentage points lower for a very poor woman than for a very rich one.

Table 2. Gender. Marginal effects of groups between categories. HI (complete results table in Appendix A2).

	(1)	(2)	(3)	(4)
Year	2009	2009	2018	2018
Women	1	0	1	0
Variable	HI	HI	HI	HI
<i>Vpoor</i>	-0.044*** (0.014)	-0.137*** (0.013)	0.120*** (0.008)	0.069*** (0.011)
<i>Senior</i>	0.138*** (0.009)	0.307*** (0.009)	0.073*** (0.006)	0.179*** (0.006)
Pseudo R2	0.0359	0.0531	0.0331	0.0329
Observations	32,136	31,822	46,035	40,017

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

For data of 2018 the relation changes. Results show positive marginal effects of *Vpoor* for both genders. Also, results in column (3) and (4) shows that now the marginal effect of being very poor is higher for women than for men: on average the likelihood of being enrolled in health insurance is 12 percentage points higher for a very poor woman than for a very rich woman; while the likelihood of the same outcome is 7 percentage points higher for a very poor man than for a very rich man, else being equal.

Regarding age differential impact on gender, results suggest is on average higher for a man than for a woman in both years data. Also, results suggest the marginal effect of *senior* decreases for both gender groups over time.

Results show that in 2009 data the likelihood of being enrolled in health insurance is on average 30 percentage points higher for a senior man than for a young man, while for a woman is on average 14 percentage points higher for one economic group than for the other, else being equal. In 2018, the likelihood of being enrolled in health insurance is 7 percentage points higher for a senior woman than for a young woman and 18 percentage points higher for a senior man than for a young man, on average and else being equal.

Gender category: SIS and EsSalud

In the same vein, Table 3 shows the marginal effects of the variable *Vpoor* and *senior* between gender groups now taking into account the type of health insurance. For columns (1-4) the dependent variable is the likelihood of being enrolled in SIS and for columns (5-8) the dependent variable is the likelihood of being enrolled in EsSalud.

Table 3. Gender. Marginal effects of groups between categories. SIS and EsSalud. (complete results table in Appendix A3).

2018	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	2009	2009	2018	2018	2009	2009	2018	2018
Women	1	0	1	0	1	0	1	0
Variable	SIS	SIS	SIS	SIS	EsSalud	EsSalud	EsSalud	EsSalud
<i>Vpoor</i>	0.654*** (0.009)	0.756*** (0.010)	0.465*** (0.007)	0.542*** (0.009)	-0.523*** (0.008)	-0.539*** (0.010)	-0.399*** (0.007)	-0.432*** (0.009)
Senior	-0.393*** (0.017)	-0.363*** (0.017)	-0.376*** (0.012)	-0.323*** (0.012)	0.354*** (0.017)	0.343*** (0.017)	0.356*** (0.011)	0.304*** (0.012)
Pseudo R2	0.4951	0.5097	0.3617	0.3646	0.3996	0.3686	0.3232	0.2975
Observations	17,435	14,125	36,473	27,854	17,435	14,125	36,473	27,854

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

In the case of SIS, results suggest the marginal effect of being very poor is higher for men than for women for both years. This is, if a person is enrolled in a health insurer, the likelihood of being enrolled in SIS is on average 75 percentage points higher for a very poor man than for a very rich man in 2009, while is 65 percentage points higher for a very poor woman than a very rich woman, else being equal. Columns (3) and (4) show that the marginal effect of being very poor decreases in the data of 2018: from 75 to 46 percentage points for a man and from 65 to 54 percentage points for a woman, on average and holding constant the rest of the variables.

For EsSalud, results in column (5) and (6) shows that the economic status gap is almost null between men and women in both years. In 2009, on average the likelihood of being enrolled in EsSalud is 52 percentage points lower for a very poor woman than a very rich woman, and 54 percentage points lower for a very poor man than a very rich man, on average and else being equal. In 2018, the marginal gap of being very poor decreases remains negative but decreases its magnitude, from 52 to 40 percentage points for a woman and 54 to 43 percentage points for a man.

Moreover, for the marginal effect of being senior, results show that the magnitude is higher for women than for men in both years and both health insurers. For the case of SIS, column (1) shows that the likelihood of being enrolled in SIS in 2009 is on average 39 percentage points lower for a woman in senior years than for a woman in her youth, while is 36 percentage points lower for a senior man than for a young man, else being equal. In 2018, the marginal effect of *senior* slightly decreases to 38 percentage points for women and 32 percentage points for men.

For EsSalud, the marginal effect of being senior is barely the same for men and women in the data of 2009. Column (5) and (6) show the likelihood of being enrolled in EsSalud is 35 percentage points higher for a senior woman than for a young woman and 34 percentage points higher for a senior man than for a young man, on average and holding all other variables constant. For 2018, the marginal effect of *senior* remains the same for women and decreases to 30 percentage points for men.

Economic status category: health insurance

Table 4 shows how the marginal effects of *women* and *senior* variables change when overlapping with the tails of the category economic status: very poor and very rich people. The dependent variable in Table 4 is the likelihood of being enrolled in health insurance.

Table 4. Economic status. Marginal effects of groups between categories. HI. (complete results table in Appendix A4).

	(1)	(2)	(3)	(4)
Year	2009	2009	2018	2018
Econ. Group	VP=1	VR=1	VP=1	VR=1
Variable	HI	HI	HI	HI
Women	0.153*** (0.008)	0.052*** (0.011)	0.108*** (0.005)	0.046*** (0.008)
Senior	0.016 (0.013)	0.400*** (0.010)	0.030*** (0.007)	0.248*** (0.007)
Pseudo R2	0.0335	0.0906	0.0382	0.0633
Observations	14,826	9,159	24,066	11,402

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Firstly, regarding gender differential, results show a positive marginal effect of being a woman for both economic groups, which is higher for very poor individuals in both years. In 2009, the likelihood of being enrolled in health insurance is on average 15

percentage points higher for a very poor woman than for a very poor man, while is on average 5 percentage points higher for a very rich woman than for a very rich man, holding all other variables constant. For 2018, Column (3) shows the marginal effect of being a woman decreases, being on average 11 percentage points more likely to be enrolled in health insurance for a very poor woman than for a very poor man; whereas it remains the same as 2009 for the richest group (5 percentage points).

Moreover, results show age differential is higher for very rich individuals than for very poor ones. Also, column (1) of Table 4 implies the marginal effect of *senior* does not have statistical significance for the poorest group in 2009. In addition, Column (2) suggests the likelihood to be enrolled in health insurance is 40 percentage points higher for a senior and very rich person than for a young and very rich person, on average an else being equal. In 2018, the likelihood of being enrolled in health insurance is on average 3 percentage points higher for a very poor senior person than for a very poor young person, while is on average 25 percentage points higher for a very rich senior person than for a very rich young person, else being equal.

Economic status category: health insurance

Furthermore, Table 5 shows results for the marginal effects of *women* and *senior* characteristics between economic groups considering the type of insurance. For columns (1-4) the dependent variable is the likelihood of being enrolled in SIS and for columns (5-8) the dependent variable is the likelihood of being enrolled in EsSalud.

Table 5. Economic status. Marginal effects of groups between categories. SIS and EsSalud. (complete results table in Appendix A5).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	2009	2009	2018	2018	2009	2009	2018	2018
Econ. Group	VP=1	VR=1	VP=1	VR=1	VP=1	VR=1	VP=1	VR=1
Variable	SIS	SIS	SIS	SIS	EsSalud	EsSalud	EsSalud	EsSalud
Women	-0.001 (0.003)	0.017*** (0.004)	0.013*** (0.003)	0.039*** (0.007)	0.001 (0.003)	0.021** (0.010)	-0.012*** (0.003)	-0.007 (0.010)
Senior	-0.085*** (0.013)	-0.043*** (0.004)	-0.067*** (0.009)	-0.158*** (0.006)	0.085*** (0.014)	0.175*** (0.011)	0.063*** (0.008)	0.232*** (0.009)
Pseudo R2	0.1567	0.1276	0.1290	0.1394	0.1589	0.0497	0.1317	0.0756
Observations	8,557	5,666	20,149	8,509	8,557	5,666	20,149	8,509

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Regarding *women*, results in columns (1,5,8) of Table 5 show a lack of statistical significance. In general, results suggest gender differentials are small for both economic groups. For the case of SIS, results suggest that the likelihood of being enrolled in SIS in 2009 is on average 2 percentage points higher for a very rich woman than for a very rich man, else being equal. In 2018, the likelihood of being enrolled in SIS is 1 percentage point higher for a very poor woman than for a very poor man, while is on average 4 percentage points higher for a very rich woman than for a very rich man, on average and else being equal.

For EsSalud, results in column (6) suggest in 2009 it is on average 2 percentage points more likely for a very rich woman to be enrolled in EsSalud than for a very rich man, else being equal. In addition, results in column (7) suggest it is on average 1 percentage points less likely for a very poor woman to be enrolled in EsSalud in 2018 than for a very poor man, else being equal.

Regarding age group differentials, results in column (1-4) show the likelihood of being enrolled in SIS in lower for seniors than for the young people. Results in columns (5-8) shows a different picture, where the likelihood of being enrolled in EsSalud is higher for a senior than for a young person.

Moreover, in the case of SIS, the negative marginal effect of being senior remains almost the same across time in the very poor group. This is, the likelihood of being enrolled in SIS is on average 9 percentage points lower for a very poor senior than for a very poor young person in 2009 and is on average 7 percentage points lower in 2018, else being equal. On the other hand, the negative marginal effect increases over time for the richest ones. The likelihood of being enrolled in SIS is on average 4 percentage points lower for a very rich senior than for a very rich young individual in 2009 and on average 16 percentage points lower in 2018, holding constant the rest of the variables.

For EsSalud, the marginal effect of *senior* suggests the likelihood of being enrolled in EsSalud in 2009 is on average 9 percentage points higher for a very poor senior than for a very poor young person, while is 18 percentage points for a very rich senior than for a very rich young person, else being equal. Results in column (7) and (8) suggest the marginal effects of being senior decreases for the very poor group in 2018 and increases for the very rich group. This is, the likelihood of being enrolled in EsSalud is on average 6 percentage points higher for a very poor senior than for a very poor young person, whereas it is 23 percentage points higher for a very rich senior than for a very rich young person, else being equal.

Age group category: health insurance

Lastly, results in Tables 6 and 7 illustrate the marginal effects for *women* and *Vpoor* dummy variables when interacting with a young or a senior person, and how the gaps change over time. The dependent variable in Table 6 is the likelihood of being enrolled in health insurance.

Table 6. Age group. Marginal effects of groups between categories. HI. (complete results table in Appendix A6).

	(1)	(2)	(3)	(4)
Year	2009	2009	2018	2018
Age Group	Senior=1	Youth=1	Senior=1	Youth=1
Variable	HI	HI	HI	HI
Women	0.018*	0.163***	0.023***	0.154***
	(0.010)	(0.007)	(0.007)	(0.006)
Vpoor	-0.223***	0.068***	0.032**	0.181***
	(0.023)	(0.018)	(0.016)	(0.012)
Pseudo R2	0.0359	0.0531	0.0219	0.0524
Observations	10,709	19,019	12,359	25,872

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Regarding gender category, results show the marginal effect of being a woman is larger for the youth group and this remains over time. In data of 2009, results show the likelihood of being enrolled in health insurance is on average 2 percentage points higher for a senior woman than for a senior man, else being equal. While on average the likelihood of being enrolled in health insurance is 16 percentage points higher for a young woman than for a young man, else being equal.

For data of 2018, on average the likelihood of being enrolled in health insurance is 2 percentage points for a senior woman than for a senior man; while the likelihood of the same outcome is 15 percentage points higher for a young woman than for a young man, else being equal.

In relation to the marginal effects of economic characteristics, results in data of 2009 show the economic differential is higher for the senior group, while in 2018 is higher for the youth.

This is, in the data of 2009 the likelihood of a senior being enrolled in health insurance is on average 22 percentage points lower for a very poor senior person than for

a very rich senior one, while in 2018 the likelihood of the same outcome is 3 percentage points higher for a very poor senior person than for very rich senior one, else being equal.

Moreover, for the youth, the marginal effect of being very poor increases over time. In 2009, column (2) shows the likelihood of being enrolled in a health insurance is on average 7 percentage points higher for a very poor young person than for a very rich young person, while in 2018 is on average 18 percentage points higher for a very poor young person than for a very rich young one.

Age group category: SIS and EsSalud

Now, Table 7 sheds light on the marginal effects of *women* and *Vpoor* regarding the type of insurance from the age group perspective. For columns (1-4) the dependent variable is the likelihood of being enrolled in SIS and for columns (5-8) the dependent variable is the likelihood of being enrolled in EsSalud.

Table 7. Age group. Marginal effects of groups between categories. SIS and EsSalud. (complete results table in Appendix A7).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	2009	2009	2018	2018	2009	2009	2018	2018
Age Group	Senior=1	Youth=1	Senior=1	Youth=1	Senior=1	Youth=1	Senior=1	Youth=1
Variable	SIS	SIS	SIS	SIS	EsSalud	EsSalud	EsSalud	EsSalud
Women	0.061*** (0.018)	0.104*** (0.012)	0.043*** (0.012)	0.089*** (0.006)	-0.039** (0.015)	-0.056*** (0.010)	-0.025** (0.011)	-0.065*** (0.006)
Vpoor	0.797*** (0.014)	0.447*** (0.014)	0.662*** (0.014)	0.322*** (0.009)	-0.670*** (0.014)	-0.317*** (0.012)	-0.570*** (0.014)	-0.258*** (0.009)
Pseudo R2	0.5202	0.4134	0.4136	0.2375	0.0531	0.2874	0.3552	0.1877
Observations	6,406	7,288	10,190	17,946	6,406	7,288	10,190	17,946

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

For SIS, the marginal effect of being a woman is higher for the youth than for seniors. In 2009, the likelihood of being enrolled in SIS is on average 10 percentage points higher for a young woman than for a young man, while is on average 6 percentage points higher for a senior woman than for a senior man, holding all other variables constant. Furthermore, in 2018, the likelihood of being enrolled in SIS is on average 9 percentage points higher for a young woman than for a young man and is on average 4 percentage points higher for a senior woman than for a senior man, else being equal.

For EsSalud, results show a negative marginal effect for being a woman on the likelihood of being enrolled in EsSalud, which is higher among the youth. In the data of 2009, the likelihood of being enrolled in EsSalud is on average 4 percentage points lower for a senior woman than for a senior man and on average 6 percentage points lower for a young woman than for a young man. In 2018, the negative marginal effect of being a woman changes from 4 to 3 percentage points for senior individuals and remains the same for the youth, else being equal.

Finally, regarding the economic status, results suggest the marginal effect of being in the poorest part of the income distribution is larger for seniors than for young individuals. Also, results suggest the marginal effect of V_{poor} decreases for both age groups over time.

For SIS, results show that the likelihood of being enrolled in SIS is on average 80 percentage points higher for a very poor senior than for a very rich senior individual, while is on average 45 percentage points higher for a very poor young person than for a very rich young person, else being equal. Likewise, the likelihood of being enrolled in SIS in 2018 is on average 66 percentage points higher for a very poor senior than for a very rich senior, and on average 32 percentage points higher for a very poor young person than for a very rich young person, else being equal.

Concerning EsSalud, the marginal effect of being very poor is negative for both age group and is higher for senior people. This is, it is on average 67 percentage points less likely for a very poor senior to be enrolled in EsSalud in 2009 in relation with a very rich senior person, while is on average 32 percentage points lower for a very poor young individual than for a very rich young individual, else being equal. For 2018, for seniors, the likelihood of being enrolled in EsSalud is on average 57 percentage points lower for a very poor individual than for a very rich one, while for the youth, is on average 26 percentage points lower for one group than for the other, holding constant all other variables.

Third analysis: health services financial coverage

Table 8 shows results for the marginal effect of being enrolled in SIS -and not in EsSalud- on the likelihood of enjoying full financial coverage from the health insurance of a particular health service used, holding the rest of the variables constant.

Table 8. Marginal effects of being enrolled in SIS on health service financial coverage. (complete results table in Appendix A8).

Year	2009	2018	2009	2018	2009	2018
Variable	Consultation	Consultation	Medicines	Medicines	Analysis	Analysis
SIS	-0.017 (0.014)	0.012 (0.009)	-0.080*** (0.012)	-0.049*** (0.007)	-0.232*** (0.031)	0.002 (0.017)
Observations	8,932	21,509	12,410	30,315	1,665	3,985

Robust standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Table 8. (Continue)

Year	2009	2018	2009	2018	2009	2018
Variable	Imaging	Imaging	Dental	Dental	Ophtalmo.	Ophtalmo.
SIS	-0.387*** (0.042)	-0.124*** (0.027)	-0.133*** (0.023)	0.120*** (0.015)	-0.220*** (0.034)	-0.052** (0.021)
Observations	792	1,850	2,943	6,449	1,299	2,509

Robust standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Table 8. (Continue)

Year	2009	2018	2009	2018	2009	2018
Variable	Vaccines	Vaccines	Contracep.	Contracep.	Hospit/Surg.	Hospit/Surg.
SIS	0.793*** (0.017)	0.460*** (0.015)	0.558*** (0.024)	0.394*** (0.020)	-0.098*** (0.021)	0.050*** (0.016)
Observations	2,809	6,710	2,924	5,222	2,496	4,477

Robust standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Then, for the case of medical consultation results are not statistically significant in any of the years. For the case of medicines received in the month prior to the survey, in 2009 being enrolled in SIS instead of EsSalud, reduces in 8 percentage points the likelihood of having complete coverage of medicines expenses from SIS, on average and else being equal. This result holds for 2018, but the marginal effect slightly decreases. Moreover, concerning medical analyses, in 2009 on average the likelihood of receiving full coverage by the health insurer is 23 percentage points lower for an individual enrolled in SIS than for one enrolled in EsSalud, else being equal. In 2018, results suggest a major change in the marginal effect of being enrolled in SIS on the probability of receiving full

financial coverage on this service, but it is not statistically significant. For the case of imaging studies made in the last month, the marginal effect of being enrolled in SIS decreases over time but in both cases being in SIS reduces the likelihood of receiving full coverage by the health insurance for this service. This is, in 2009 being in SIS decreases on average 38 percentage points the likelihood of receiving full financial coverage than EsSalud, and 12 percentage points in 2018, else being equal.

Furthermore, for dental services received in the 3 previous months to the survey, results suggest a swap over time: in 2009 being in SIS reduces the likelihood of receiving full financial coverage of the expenses of dental services in 13 percentage points than being in EsSalud, while in 2018 being in SIS increases in 12 percentage points the likelihood of this outcome, on average and holding constant all other variables. For the case of ophthalmological services used in the 3 previous months to the survey, in 2009 being enrolled in SIS decreases the likelihood of full financial coverage of this service in 22 percentage points, concerning being enrolled in EsSalud, whereas in 2018 the marginal effect becomes 5 percentage points lower, else being equal. Moreover, for the case of receiving vaccines in the last three months, in 2009 it is 79 percentage points more likely that an individual enrolled in SIS enjoyed full coverage of the expenses of this service than someone from EsSalud, while in 2018 the gap reduces and the marginal effect is 46 percentage points higher, else being equal.

Additionally, results show on average it is more likely to have full coverage of the expenses of contraceptives received in the last 3 months for individuals enrolled in SIS than enrolled in EsSalud for both years, else being equal. Finally, for the case of receiving hospitalization services or surgery in the last year, results show a change in the direction of marginal effects over time. This is, in 2009, on average it is 10 percentage points less likely to be a beneficiary of full expenses coverage of hospital or surgery if the user is enrolled in SIS rather than in EsSalud, while in 2018 it is 5 percentage points more likely to enjoy this benefit for someone enrolled in SIS than in EsSalud, else being equal.

Fourth analysis: barriers to using health services

Table 9 shows estimates for the marginal effects of individual characteristics on the likelihood of selecting a certain reason as the one behind not looking for services in a health facility when facing a health event, despite being enrolled in health insurance. Here, our interested variable is being enrolled in SIS.

Table 9. Marginal effects of being enrolled in SIS on reasons for not going to a health facility. (complete results table in Appendix A9).

Year	2009	2018	2009	2018	2009	2018
VARIABLES	Lack of money	Lack of money	Too far away	Too far away	Response times are low	Response times are low
SIS	0.087*** (0.008)	0.036*** (0.003)	0.007 (0.006)	0.011*** (0.004)	-0.020*** (0.007)	-0.010* (0.006)
Observations	10,947	26,699	10,947	26,699	10,947	26,699

Robust standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Table 9. (Continue)

	2009	2018	2009	2018	2009	2018
VARIABLES	No trust	No trust	No serious	No serious	Preference for home care	Preference for home care
SIS	-0.017*** (0.006)	0.010*** (0.004)	-0.004 (0.012)	-0.025*** (0.008)	0.032*** (0.009)	0.039*** (0.006)
Observations	10,947	26,699	10,947	26,699	10,947	26,699

Robust standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Table 9. (Continue)

	2009	2018	2009	2018	2009	2018
VARIABLES	Self-medication	Self-medication	Lack of time	Lack of time	Bad attitude	Bad attitude
SIS	-0.069*** (0.011)	-0.036*** (0.007)	-0.023** (0.011)	0.007 (0.006)	0.000 (0.003)	0.006*** (0.002)
Observations	10,947	26,699	10,947	26,699	10,947	26,699

Robust standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

For the data of 2009, results show the higher marginal effects of being enrolled in SIS rather than in EsSalud are related to the reasons “*Lack of money*” and “*Self-medication*”. This is, in 2009 on average someone enrolled in SIS is 9 percentage points more likely to select *lack of money* as the reason for not going to a formal health facility

when needed than someone with EsSalud, else being equal. Then, on average someone with SIS is 7 percentage points less likely to report *self-medication* as a reason for not going to a formal health facility looking for health services when in need than someone with EsSalud insurer, else being equal.

Moreover, information on the database of 2009 is insufficient to show a statistically significant relationship between being in SIS and selecting *too far away, no serious enough to go, or mistreatment from medical staff* as the reasons for not looking for formal health services when facing a health event.

Ultimately, results of 2009 suggest it is more likely for someone enrolled in SIS to select *lack of money* or *preference for home care* as reasons for not going to formal health facilities when needed than someone enrolled in EsSalud, on average and else being equal. Moreover, results for 2009 suggest it is less likely for someone with SIS to name *responses times are low, no trust in medical staff, no serious enough to go, self-medication* or *lack of time* as reasons for not looking for health services than someone in EsSalud, on average and else being equal.

For 2018, results suggest all reasons -but *lack of time*- are statistically significant. Here, *lack of money* is still one of the reasons with higher marginal effect for SIS, along with the *preference for home care*. Nevertheless, the marginal effect regarding *lack of money* decreases to be 4 percentage points more likely for someone with SIS to select this reason than someone with EsSalud.

Furthermore, results of 2018 suggest on average it is more likely that someone enrolled with SIS select *lack of money, too far away, no trust in medical staff* or *preference for home care* as the reasons for not looking for formal health services than someone enrolled in EsSalud, holding constant all other variables. While on average is less likely for someone enrolled in SIS to name *response times are low, no serious enough to go* or *self-medication* as reasons for not going to a health facility when needed in relation to someone with EsSalud, else being equal.

4.2 Discussion

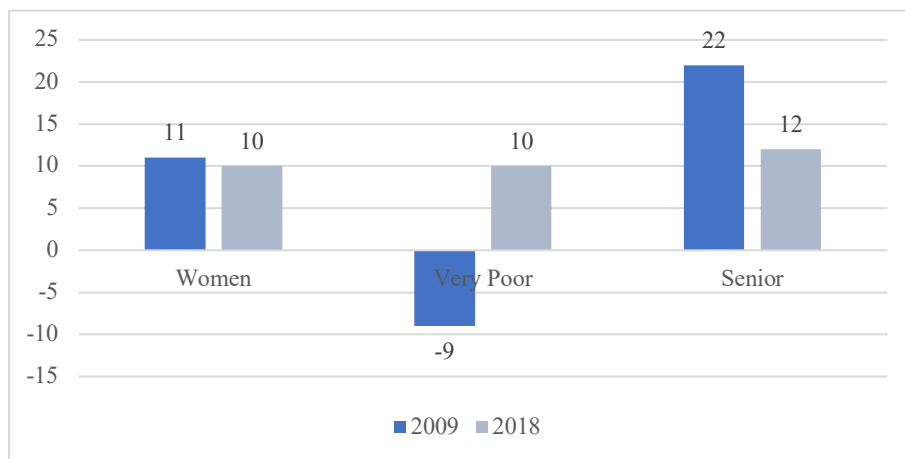
Results suggest individual characteristics matter in different magnitudes for UHC in Peru. Characteristics of a person affect their chances within a group of falling in one or the other side of an outcome.

Individual characteristics and health insurance enrollment

As seen in Figure 2, regarding the likelihood of being enrolled in a health insurance, results show that on average an individual has more chances to be enrolled in health insurance if it is a woman -for both years 2009 and 2018-. Also, a person increases their chances to be part of the group with health insurance if it is a senior -on 2009 and 2018 data-.

Moreover, in the data of 2009 being in the group of very poor people reduces the likelihood of being enrolled in any health insurance in relation to very rich people, but the situation reverses over the years. All these results are on average and holding constant all other variables.

Figure 2. Marginal effects on being enrolled a health insurance (percentage points).

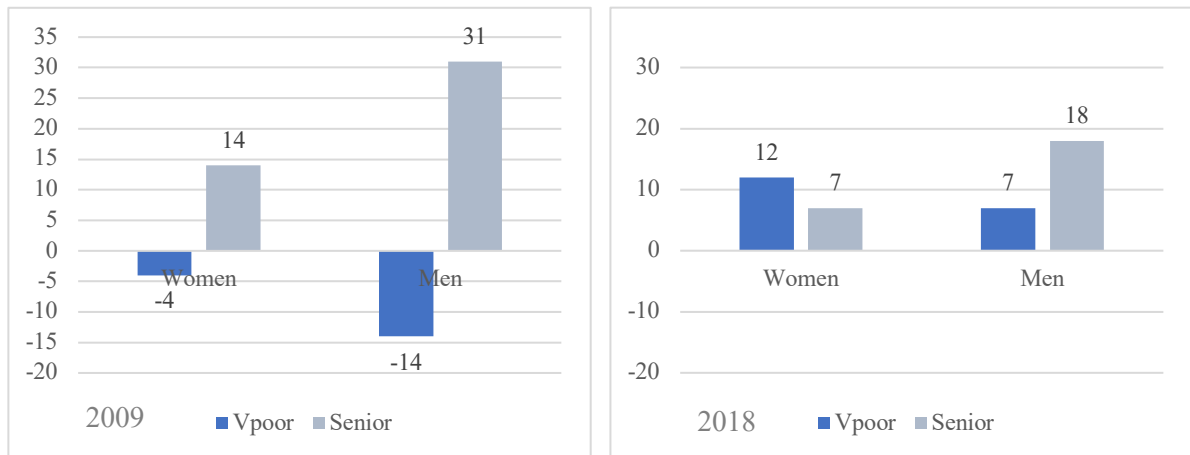


Furthermore, results in Figure 2 suggest among the three categories (gender, economic status and age group) being senior is the feature with the higher marginal effect on the likelihood of being enrolled in health insurance, for both years.

Ultimately, for this outcome, we see the gender gap remains in magnitude over the years and favors women in both cases. The economic status differential remains in magnitude over the years but changes the direction: it used to favor very rich people in 2009, but in 2018 very poor people are in a better position than their counterparts. The age group gap decreased magnitude over the years but keep benefiting seniors in relation with the youth.

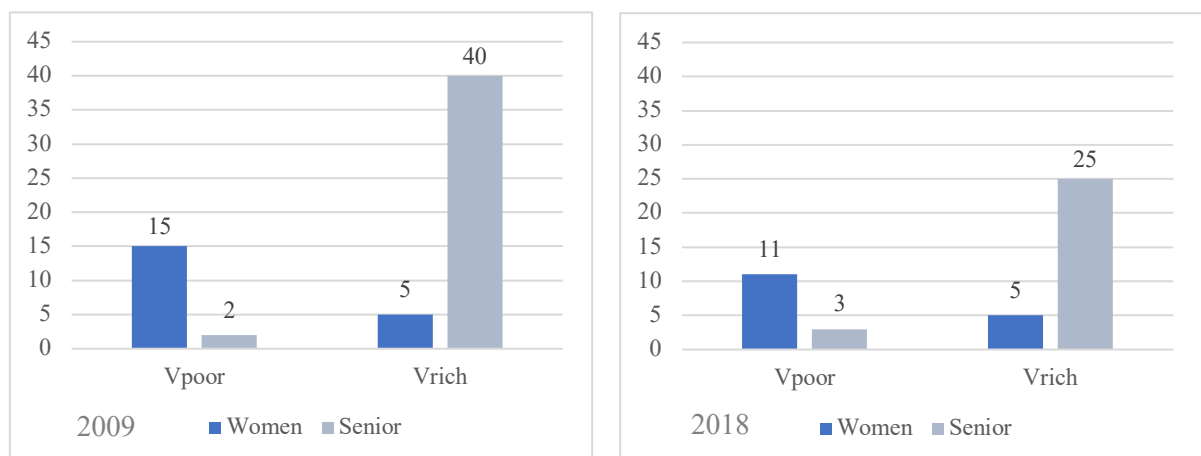
In Figure 3 we see how being very poor and senior affects in different ways the likelihood of women and men. In 2009, being in a vulnerable economic or age group affect in major magnitude the chances of being enrolled in a health insurance for men: having one characteristic or the other matter the most for them.

Figure 3. The marginal effect of economic status and age group on being enrolled in a health insurance (gender) (percentage points).



Moreover, in 2009 being very poor negatively affect the chances of a person being enrolled in health insurance. In 2018 being poor increases the chances for both genders and the gap is higher for women than men. Furthermore, in 2018 being senior gives a major advantage to men than women over the youth to be part of health insurance. The advantage of being senior over young people decreases over time, in other words, the gap reduced for both genders.

Figure 4. The marginal effect of gender and age group on being enrolled in a health insurance (economic status) (percentage points).



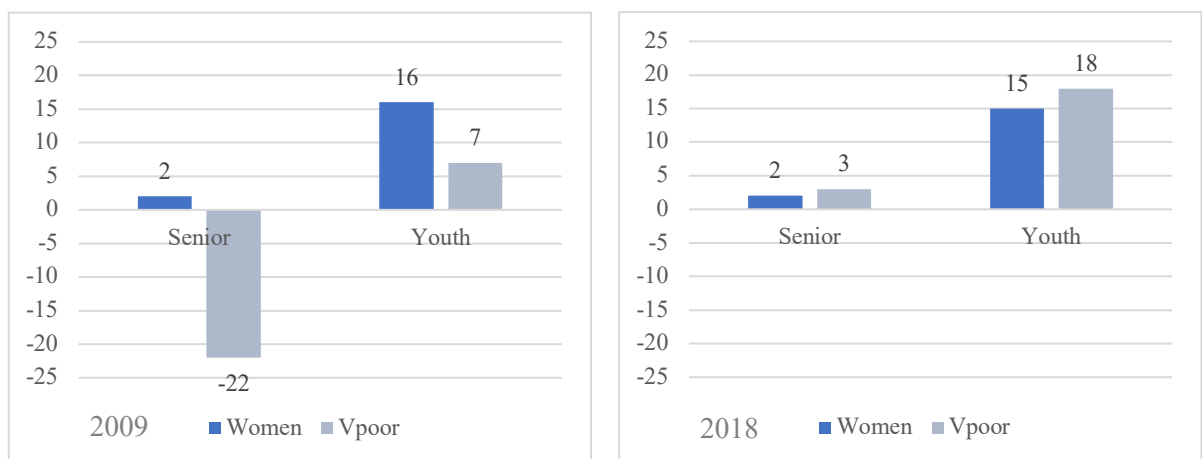
In terms of health insurance enrollment, Figure 4 shows in 2009 gender differential favors more the very poor than the very rich. Age group differential is null for the very poor and greatly matter for the very rich regarding the chances of being enrolled in health insurance. In 2018, again being a woman rather than a man is more

significant in terms of the likelihood of being enrolled in health insurance for very poor people than very rich people, while is the opposite for the characteristic *senior*: the likelihood of enrollment in health insurance is more sensitive to age differential among the very rich group. It makes almost no difference in the chances of the outcome for very poor people.

Regarding the age group category, Figure 5 shows the gender gap has low influence in changing the likelihood of being enrolled in health insurance for seniors in both years, while it is an advantage for the youth. In addition, being very poor and not very rich make big differences in the likelihood for seniors being enrolled in health insurance in 2009. Here we see a positive change for very poor seniors over the years: a very poor senior is in a better position in terms of health insurance participation in 2018 than in 2009, in relation to very rich seniors. This is, the gap between groups has decreased and favors very poor rather than very rich.

For the youth, for both years economic differential favors them regarding the chances of being enrolled in health insurance. The marginal effect of being very poor increases in 2018 for the youth, giving more weight to be very poor or be very rich in the likelihood of being enrolled in health insurance.

Figure 5. The marginal effect of gender and economic status on being enrolled in health insurance (age group) (percentage points).



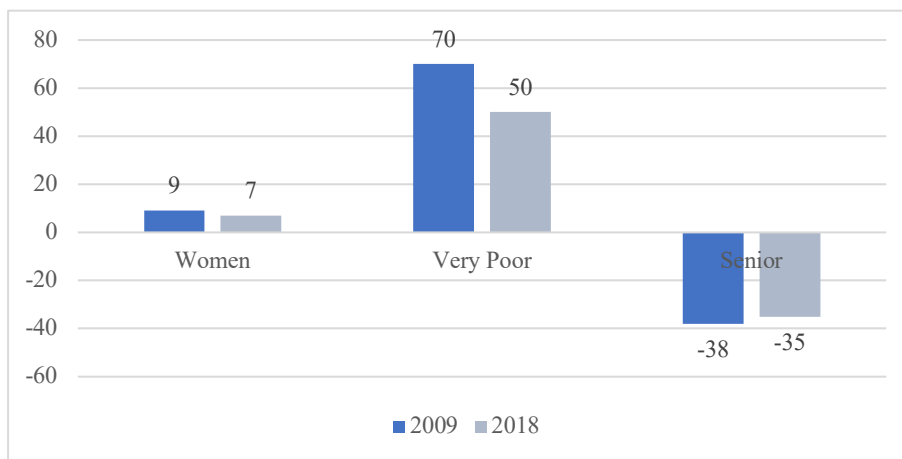
Individual characteristics and type of health insurance: SIS

Figure 6 shows among the three categories, the gap between economic groups affects the most the likelihood of being enrolled in SIS, followed by age group and lastly by the gender gap. The gender differential favor women for both years in a small magnitude. The gap between being very poor and being very rich is decreasing over time

and favors very poor regarding being in SIS. The vulnerable group senior is at a disadvantage in relation to the youth for this outcome. This implies it is less likely for a senior to be enrolled in SIS than a young person.

Ultimately, if a person is enrolled in health insurance it is more likely for women, very poor and young people to be enrolled in SIS than for their counterparts, on average and holding all other variables constant.

Figure 6. Marginal effects on being enrolled in SIS (percentage points).



Now, Figure 7 shows being on one side or the other of the economic and age group category greatly matter for genders on the SIS outcome. Being very poor has major positive impacts on the likelihood of being enrolled in SIS for men than women in both years. Being senior rather than a youth is more negative for women than men in both years for this outcome.

Figure 7. The marginal effect of economic status and age group on being enrolled in SIS (gender) (percentage points).

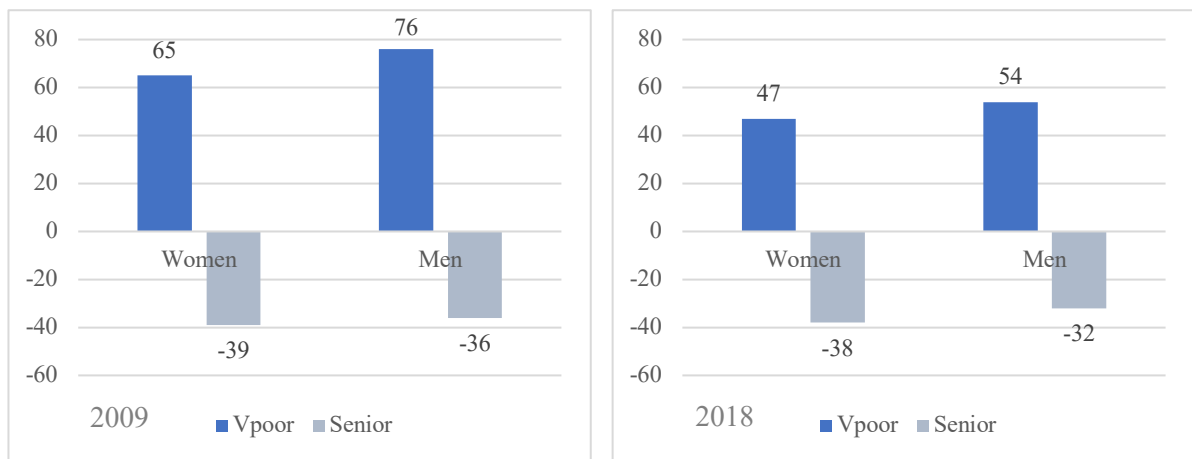


Figure 8 shows being women or men does not have a major influence on the likelihood of being enrolled in SIS in any of the extreme economic groups for both years. On the other hand, concerning the seniority characteristic, there is a change over time. In 2009, being senior is more negative for the senior group than for the rich in relation to the likelihood of being enrolled in SIS, while in 2018 the situation turns around. Being senior or young negatively conditioned more the likelihood of being enrolled in SIS for the very rich than for the very poor.

Figure 8. The marginal effect of gender and age group on being enrolled in SIS (economic status) (percentage points).

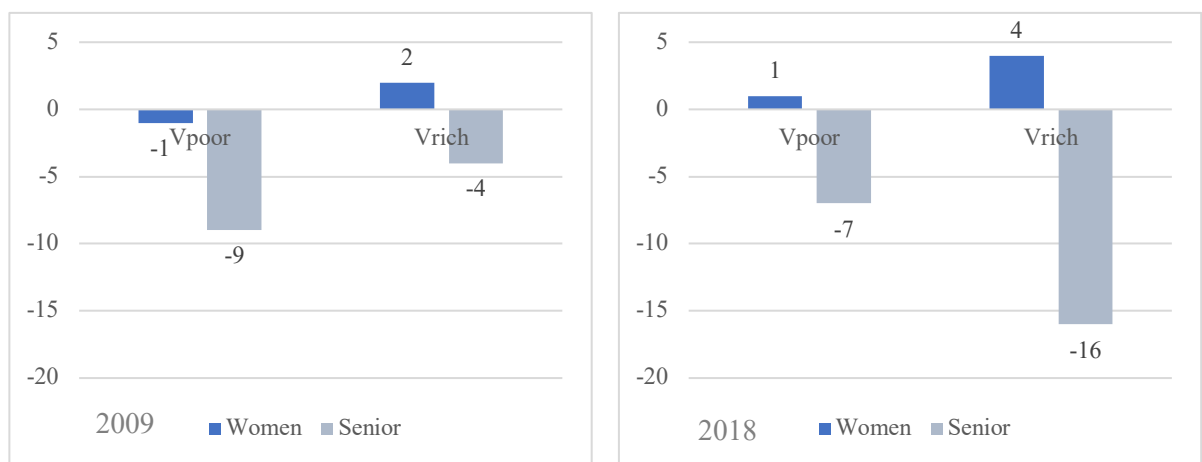
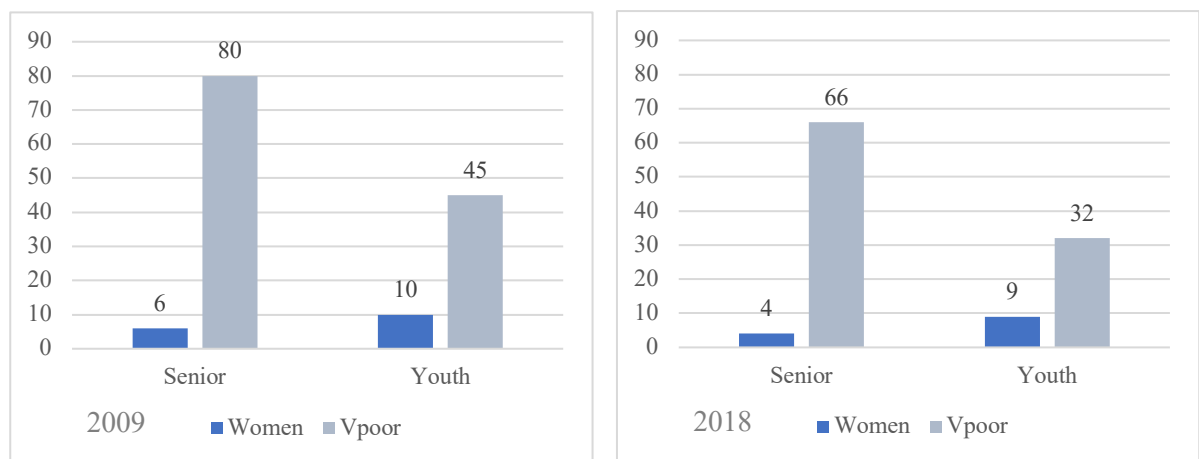


Figure 9. The marginal effect of gender and economic status on being enrolled in SIS (age group) (percentage points).



Focusing on age groups, Figure 9 shows economic characteristics are significantly more important in determining the likelihood of being enrolled in SIS than gender characteristics for both senior and youth groups in data of 2009 and 2018. Gender

differential favor woman in both age groups but favor more woman in the youth. Being very poor instead of very rich increases more the likelihood of being in SIS for seniors than for youth.

Individual characteristics and type of health insurance: EsSalud

Regarding the likelihood of being enrolled in EsSalud if a person is enrolled in health insurance, Figure 10 suggests it is more sensitive in the first place to the economic status differential between the extreme groups, then to age group differentials and in third place to the gender gap. The gap in predicted probabilities of being enrolled in EsSalud between someone very poor and someone very rich decreased 11 percentage points between 2009 and 2018 but is still in favor of the better-off. The gap between a senior and a young person remains almost the same over time, being in favor of seniors concerning the predicted probability of this outcome. The marginal effect of women remains the same over the years, even is small imply the gender differential favors men.

Figure 10. Marginal effects on being enrolled in EsSalud (percentage points).

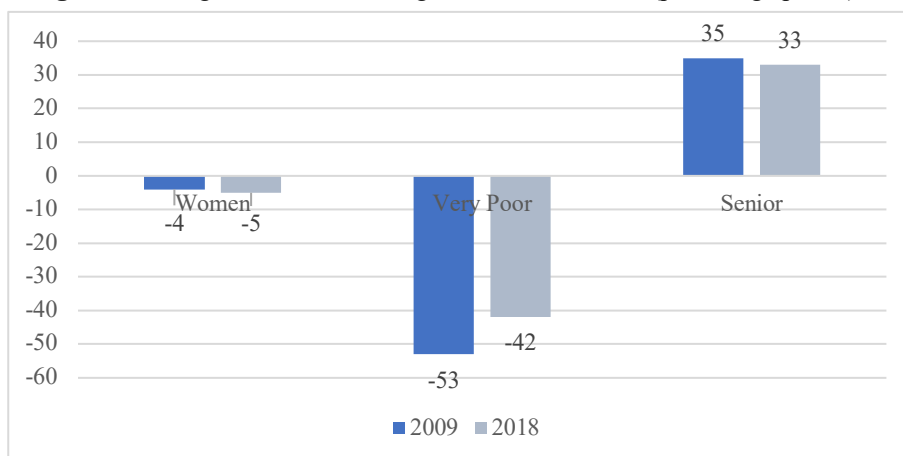


Figure 11 shows how individual characteristics regarding economic status and age group have not largely changed between 2009 and 2018. The gap in the predicted probabilities of being enrolled in EsSalud between a senior and a youth person increases in 2018 for women and decreases for men. The negative impact of being very poor on the outcome decreased more for women than for men over the years, but the gap between economic groups is still remarkable for both genders.

Figure 11. The marginal effect of economic status and age group on being enrolled in EsSalud (gender) (percentage points).

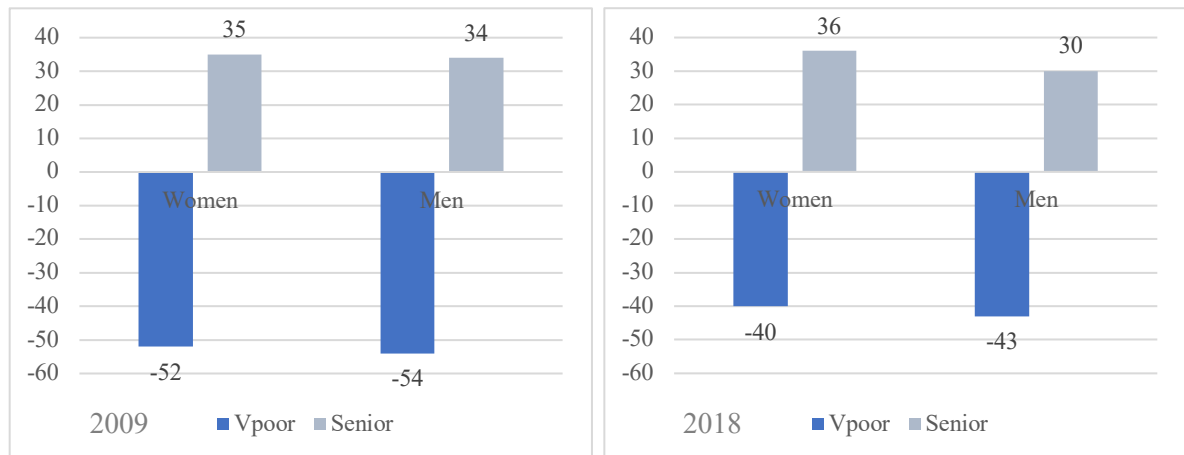
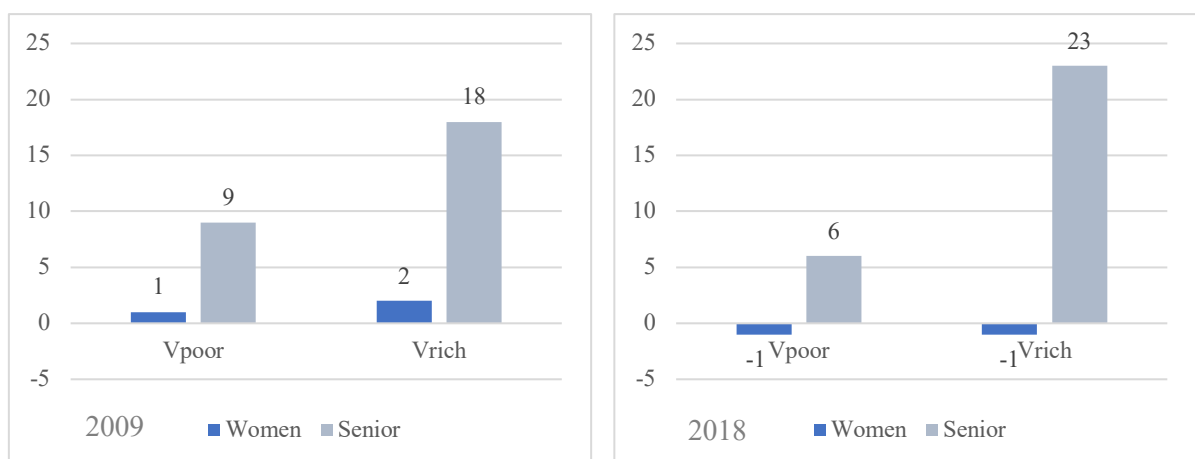


Figure 12 suggests the gap in the predicted probabilities of being enrolled in EsSalud between genders is small for both economic groups and remains small over the years. In addition, Figure 12 shows the marginal effect of being senior favor seniors over the youth for this outcome, and the effect is more relevant for people in the very rich group than for those in the very poor group. The age group gap decreases over the year in the very poor group and increases in the very rich group.

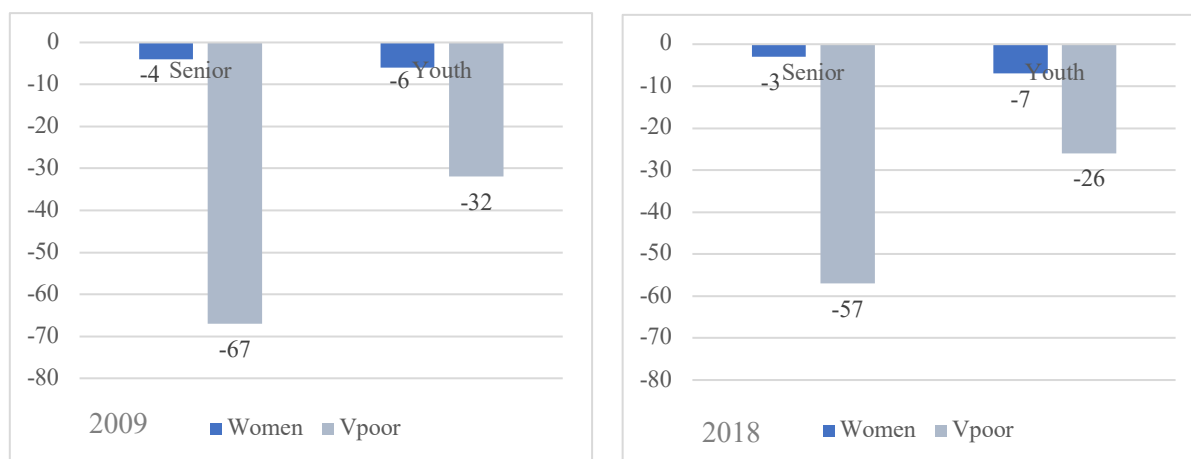
Figure 12. The marginal effect of gender and age group on being enrolled in EsSalud (economic status) (percentage points).



Lastly, Figure 13 shows how the likelihood of being enrolled in EsSalud is more sensitive to economic characteristics than gender characteristics, being the impact of the first higher for the senior group. This is, being very poor rather than very rich matter more for a senior than youth in how does affect their likelihood to be enrolled in EsSalud. The negative marginal effect of being very poor decreases for both age groups over the years

in the same proportion, hence the gap between age group remains. Moreover, gender differential favors men in both age groups and the gap holds over time.

Figure 13. The marginal effect of gender and economic status on being enrolled in EsSalud (age group) (percentage points).



Individual characteristics and full financial coverage

Results in the third analysis suggest being enrolled in SIS matter for taking part in UHC regarding financial coverage of health services with different magnitudes among the service used.

Figure 14 shows in 2009 the likelihood of receiving full financial coverage for medical consultation, medicines, analysis, imaging services, dental services, ophthalmologist services, and hospitalization and surgical intervention is lower for an individual enrolled in SIS than for an individual enrolled in EsSalud. The major gap is in imaging studies and analysis studies. For the case of receiving vaccines and contraceptives, the likelihood of having them with full financial coverage of expenses from the insurer is higher for people enrolled in SIS than in EsSalud.

So, it seems that being enrolled in EsSalud gives an advantage in terms of the probability of receiving full financial coverage of the majority of health services expenses in Figure 14.

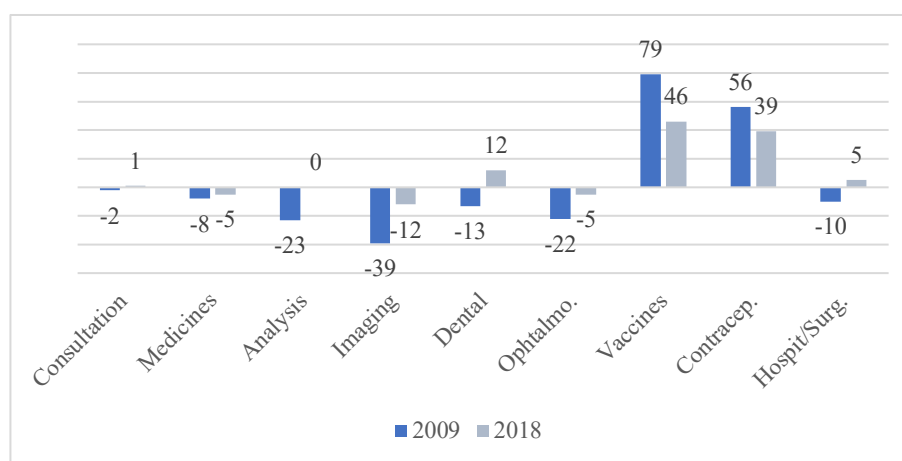
For some individuals, the expenses of health services may not imply a big part of their household budget, but for others could mean crossing the poverty line. If it is the case that people enrolled in SIS face economic difficulties after paying for health services because of a lack of financial coverage, then, Universal Health Coverage is failing.

Despite who is behind the funds (e.g. enterprises, government) used by the public health insurers for offering full coverage of health services, UHC claims financial

protection for all, especially for the most needed. Hence, a negative marginal effect of being enrolled in SIS seems unfair in terms of health equity. The capacity of payment of a poor person is lower than the one of the better off, so under the framework of UHC, if full financial coverage is not equal for all, at least we could expect the probability of receiving full coverage of health services to be higher for those who needed the most because of their circumstances, not the opposite way. In line with the objectives of UHC, we could expect that public health insurers prioritize the full financial coverage of health services expenses for poor people which has relatively lower payment capacity. This to avoid vulnerable people from facing financial difficulties when using the services, to avoid a lack of use of these services because of reduced financial resources (out-of-the-pocket payments), and to work for eliminating inequalities in opportunities to health.

In 2018, the marginal effect of being enrolled in SIS reduces for all services leaving them in a better position than in 2009 regarding financial coverage of health expenses. For vaccines and contraceptives, the gap decreases, but still favor people enrolled in SIS in relation with people enrolled in EsSalud. The picture in 2018 increases health equity.

Figure 14. The marginal effect of being enrolled in SIS on full financial coverage of services used (percentage points).



Individual characteristics and barriers for using health facilities when needed

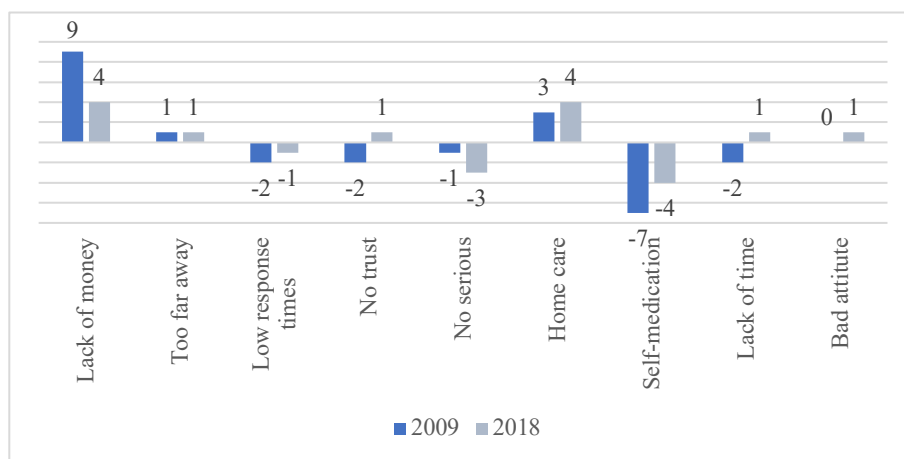
Regarding the fourth analysis, results suggest associations between perceived barriers to using available health services and the individual characteristic regarding the type of health insurance.

Results in Figure 15 shows that being in SIS or in EsSalud matter for the perception of barriers to effectively use health services when needed. Nevertheless, in many of the answers, the gap between one group and the other seems to be small. For instance, results showing a small marginal effect in the likelihood of selecting *response times are low* for someone in SIS suggest no differential treatment for one or another. In that case, people in EsSalud seems to be more affected by this issue, which can be surprising.

Overall, results suggest people in SIS is a worst off situation than people in EsSalud in terms of lack of money, being far away of health facilities, no trust in medical staff, and facing bad attitude in health facilities.

The fact that *lack of money* is still a reason for some people enrolled in SIS cast doubt about the effectiveness of Universal Health Care. Again, we remember that UHC aims to ensure all people needing health services to obtain them without suffering from financial difficulties. Therefore, if a person does not use a health service because of lack of money seems that is still a gap to cover in terms of financial protection. It is more likely to find poor people in SIS, with less capacity to use services and paying for them with out-of-the-pocket resources.

Figure 15. The marginal effect of being enrolled in SIS on the probability of naming a reason for not going to a health facility when needed (percentage points).



Barriers named here could be acting as a bottleneck for individuals taking part effectively in Universal Health Care. Results in this analysis give information about which of these barriers are perceived as more important for individuals in SIS and

EsSalud. This analysis allows us to build specific strategies to tackle these barriers considering the target.

4.3 Limitations

This research leaves apart a very important age group in terms of health development. It is known that health in the early years has major impacts on the performance of a person. However, this study considered that the impact of being part of the age group (0-17) on the likelihood of outcomes of interests could be attached in most of the cases to a legal adult. Therefore, a different model should be specified to address the research question for this age group. Then, it was decided to focus on over 18 years old individuals.

Moreover, ethnic characteristics are important for addressing health inequalities in Peru. Literature considers some ethnic groups faced barriers -like discrimination- in the access and quality of health services, becoming vulnerable groups. However, this variable could not be used in the study because of a lack of information in the Peruvian household surveys of 2009.

Furthermore, this research gives information about how individual characteristics matter for different dimensions of Universal Health Coverage. Nevertheless, it does not cover the reasons behind the composition of the marginal effects of those characteristics.

In addition, it is relevant to consider that a marginal effect is the gap between predicted probabilities of an outcome given a regressor takes one value or the other, but marginal effects do not give information about the predicted probabilities per se. For instance, a marginal effect of 20 percentage points could come from the difference between a predicted probability of 40% for a regressor if takes value 1 and 20% if takes value 0, or the same 20 percentage points could come from a gap between a predicted probability of 80% if regressor takes value 1 and 60% if takes value 0, so on.

In the same vein, changes in a marginal effect over time could be the result of a change in the predicted probability of an outcome for a regressor taking value 1 or a change for the probability when it takes value 0. This is, 20 percentage points could decrease and become a difference of 12 percentage points because for instance the predicted probability of an outcome was 40% if a regressor takes value 1 and 20% if takes value 0 in time 1, and in time 2 the predicted probability is 40% if regressor takes value 1 and 28% if takes value 0, or be 32% if the regressor takes value 1 and 20% if the regressor takes value 0. For practical reasons, this means an inequality can be reduced because the better-off group gets worse and gets closer to the relatively more

disadvantaged group of the population, or an inequality can be decreased because the worst off gets closer to better levels of an outcome, hence the gap between them and the better-off closes.

Then, changes in marginal effect in this research gives information about changes in the gap between predicted probabilities of an outcome for different values in a regressor but do not show which value of the regressor is the responsible behind the change in the gap, neither if the situation is better or worse in absolute terms.

5. CONCLUSIONS

Country average data omits inter-group health inequalities within countries. Assessing to what extent belong to one group or another has an impact on an aspect of health is something relatively new, as evaluating how equitable are the improvement in health outcomes.

Results suggest individual characteristics matter in different magnitudes for UHC in Peru. Characteristics of a person affect their chances within a group of falling in one or the other side of an outcome.

Overall, results suggest in most cases the marginal effect of a vulnerable characteristic on the likelihood of the outcomes of interest has reduced over the years. Nevertheless, there are still health inequities and inequalities concerning participation in UHC in Peru.

On average, it is more likely to find better off people enrolled in EsSalud, people with formal jobs, and better economic stability in relation to people enrolled in SIS. The latter is on average people more vulnerable because of their characteristics (e.g. informal jobs, poor economic status, unemployment).

Moreover, the aim of Universal Health Care is ensuring all people, despite their circumstances to be able to enjoy the right of health, by accessing health services when needed without suffering financial difficulties. Nevertheless, results have shown it is more likely to receive full financial coverage by the health insurer when people are enrolled in EsSalud than in SIS. This suggests a lack of equity because those more prone to face financial difficulties when accessing health services are less likely to obtain financial support than those with higher payment capacity.

If a vulnerable person does not access health services because of socio-economic circumstances, then Universal Health Coverage seems to be failing. A lack of effective coverage by SIS and EsSalud could increase original health status inequalities between the vulnerable ones and the better off, instead of closing the gap of opportunities to health in Peru.

Universal Health Coverage has the potential to help people under vulnerable conditions to break the health-poverty trap. By doing so, UHC gives people the opportunity to overcome external harmful circumstances and focus on progress. For the case of Peru, the path to UHC has evolved over the years, but there are still pending improvements.

Having information about which individual characteristic matters the most on the chances of taking part in different aspects of UHC gives hints about how to allocate efforts to efficiently tackle goals around the topic.

Moreover, measuring which circumstances impact the most to which groups of people helps to the process of building a targeted strategy to improve their likelihood of participating in the benefits of UHC. Then, results in this research contribute to trace an efficient path of action. Giving priority to addressing circumstances with higher impacts on the participation in UHC, could translate into higher and fairer development gains.

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APPENDIX

Table A1. Marginal effects of groups within a category.

Variable	2009			2018		
	(1) HI	(2) SIS	(3) EsSalud	(4) HI	(5) SIS	(6) EsSalud
Women	0.108*** (0.004)	0.089*** (0.008)	-0.042*** (0.006)	0.103*** (0.003)	0.072*** (0.004)	-0.049*** (0.004)
Vpoor	-0.092*** (0.010)	0.702*** (0.007)	-0.532*** (0.006)	0.099*** (0.007)	0.502*** (0.005)	-0.418*** (0.005)
Poor	-0.166*** (0.008)	0.556*** (0.007)	-0.373*** (0.007)	0.015** (0.006)	0.341*** (0.004)	-0.258*** (0.004)
Middle	-0.203*** (0.007)	0.403*** (0.009)	-0.196*** (0.008)	-0.045*** (0.006)	0.247*** (0.005)	-0.164*** (0.005)
Rich	-0.162*** (0.007)	0.262*** (0.011)	-0.059*** (0.010)	-0.051*** (0.006)	0.152*** (0.006)	-0.072*** (0.006)
Senior	0.221*** (0.006)	-0.384*** (0.012)	0.353*** (0.012)	0.122*** (0.004)	-0.354*** (0.008)	0.333*** (0.008)
Adult	0.146*** (0.005)	-0.231*** (0.009)	0.203*** (0.008)	0.068*** (0.003)	-0.195*** (0.005)	0.184*** (0.004)
Rural	0.102*** (0.006)	0.061*** (0.010)	-0.046*** (0.009)	0.020*** (0.005)	-0.006 (0.007)	0.004 (0.007)
Primary	-0.133*** (0.008)	0.477*** (0.014)	-0.295*** (0.011)	-0.034*** (0.005)	0.335*** (0.005)	-0.291*** (0.005)
Secondary	-0.088*** (0.007)	0.287*** (0.015)	-0.123*** (0.010)	-0.039*** (0.004)	0.240*** (0.004)	-0.195*** (0.004)
Coast	0.049*** (0.008)	0.016 (0.015)	0.071*** (0.012)	-0.000 (0.005)	0.013* (0.007)	0.005 (0.006)
Jungle	0.063*** (0.008)	0.066*** (0.016)	0.002 (0.013)	0.023*** (0.005)	0.037*** (0.007)	-0.023*** (0.007)
Highlands	0.049*** (0.008)	0.012 (0.016)	0.057*** (0.012)	0.012** (0.005)	0.031*** (0.007)	-0.008 (0.006)
Pseudo R2	0.0473	0.5031	0.3850	0.0403	0.3640	0.3122
Observations	63,958	31,560	31,560	86,052	64,327	64,327

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A2. Gender. Marginal effects of groups between categories. HI.

Year	(1)	(2)	(3)	(4)
	2009	2009	2018	2018

Women	1	0	1	0
Variable	HI	HI	HI	HI
Vpoor	-0.044*** (0.014)	-0.137*** (0.013)	0.120*** (0.008)	0.069*** (0.011)
Poor	-0.137*** (0.012)	-0.195*** (0.011)	0.037*** (0.007)	-0.019** (0.009)
Middle	-0.192*** (0.010)	-0.215*** (0.010)	-0.024*** (0.007)	-0.073*** (0.009)
Rich	-0.167*** (0.010)	-0.158*** (0.010)	-0.035*** (0.007)	-0.071*** (0.009)
Senior	0.138*** (0.009)	0.307*** (0.009)	0.073*** (0.006)	0.179*** (0.006)
Adult	0.113*** (0.007)	0.177*** (0.007)	0.049*** (0.004)	0.093*** (0.005)
Rural	0.108*** (0.008)	0.096*** (0.008)	0.022*** (0.006)	0.018** (0.008)
Primary	-0.114*** (0.012)	-0.139*** (0.011)	-0.023*** (0.006)	-0.045*** (0.008)
Secondary	-0.071*** (0.011)	-0.090*** (0.009)	-0.010** (0.005)	-0.067*** (0.006)
Coast	0.053*** (0.010)	0.041*** (0.011)	-0.003 (0.006)	0.003 (0.007)
Jungle	0.086*** (0.011)	0.040*** (0.012)	0.023*** (0.007)	0.022*** (0.009)
Highlands	0.057*** (0.011)	0.038*** (0.011)	0.010 (0.006)	0.014* (0.008)
Pseudo R2	0.0359	0.0531	0.0331	0.0329
Observations	32,136	31,822	46,035	40,017

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A3. Gender. Marginal effects of groups between categories. SIS and EsSalud.

2018	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	2009	2009	2018	2018	2009	2009	2018	2018
Women	1	0	1	0	1	0	1	0
Variable	SIS	SIS	SIS	SIS	EsSalud	EsSalud	EsSalud	EsSalud
Vpoor	0.654*** (0.009)	0.756*** (0.010)	0.465*** (0.007)	0.542*** (0.009)	-0.523*** (0.008)	-0.539*** (0.010)	-0.399*** (0.007)	-0.432*** (0.009)
Poor	0.508*** (0.009)	0.612*** (0.013)	0.317*** (0.005)	0.364*** (0.008)	-0.377*** (0.008)	-0.352*** (0.012)	-0.255*** (0.005)	-0.252*** (0.008)
Middle	0.366***	0.442***	0.231***	0.262***	-0.223***	-0.139***	-0.169***	-0.145***

	(0.010)	(0.017)	(0.005)	(0.009)	(0.009)	(0.014)	(0.006)	(0.009)
Rich	0.242***	0.282***	0.142***	0.161***	-0.092***	-0.010	-0.079***	-0.057***
	(0.012)	(0.022)	(0.007)	(0.011)	(0.011)	(0.016)	(0.007)	(0.010)
Senior	-0.393***	-0.363***	-0.376***	-0.323***	0.354***	0.343***	0.356***	0.304***
	(0.017)	(0.017)	(0.012)	(0.012)	(0.017)	(0.017)	(0.011)	(0.012)
Adult	-0.234***	-0.213***	-0.203***	-0.176***	0.203***	0.195***	0.191***	0.171***
	(0.012)	(0.015)	(0.006)	(0.008)	(0.010)	(0.012)	(0.006)	(0.007)
Rural	0.036***	0.087***	-0.010	-0.004	-0.028**	-0.067***	0.007	0.001
	(0.013)	(0.015)	(0.009)	(0.011)	(0.012)	(0.014)	(0.009)	(0.011)
Primary	0.436***	0.530***	0.304***	0.382***	-0.260***	-0.336***	-0.274***	-0.316***
	(0.019)	(0.019)	(0.006)	(0.007)	(0.016)	(0.015)	(0.006)	(0.007)
Secondary	0.258***	0.311***	0.207***	0.286***	-0.107***	-0.147***	-0.181***	-0.216***
	(0.019)	(0.022)	(0.005)	(0.007)	(0.013)	(0.015)	(0.005)	(0.007)
Coast	0.027	-0.004	0.003	0.028***	0.051***	0.096***	0.014*	-0.008
	(0.018)	(0.025)	(0.008)	(0.011)	(0.015)	(0.018)	(0.008)	(0.010)
Jungle	0.064***	0.063**	0.003	0.086***	-0.000	0.006	0.008	-0.065***
	(0.019)	(0.026)	(0.010)	(0.012)	(0.016)	(0.020)	(0.009)	(0.011)
Highlands	0.006	0.019	0.001	0.078***	0.060***	0.052***	0.017**	-0.044***
	(0.019)	(0.025)	(0.009)	(0.011)	(0.015)	(0.019)	(0.008)	(0.010)
Pseudo R2	0.4951	0.5097	0.3617	0.3646	0.3996	0.3686	0.3232	0.2975
Observations	17,435	14,125	36,473	27,854	17,435	14,125	36,473	27,854

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A4. Economic status. Marginal effects of groups between categories. HI.

	(1)	(2)	(3)	(4)
Year	2009	2009	2018	2018
Econ. Group	VP=1	VR=1	VP=1	VR=1
Variable	HI	HI	HI	HI
Women	0.153***	0.052***	0.108***	0.046***
	(0.008)	(0.011)	(0.005)	(0.008)
Senior	0.016	0.400***	0.030***	0.248***
	(0.013)	(0.010)	(0.007)	(0.007)
Adult	0.038***	0.305***	0.025***	0.186***
	(0.010)	(0.012)	(0.006)	(0.010)
Rural	0.119***	-0.038	0.028***	-0.061
	(0.014)	(0.058)	(0.007)	(0.037)
Primary	0.057	-0.343***	0.050***	-0.200***
	(0.053)	(0.020)	(0.010)	(0.023)
Secondary	0.040	-0.124***	0.028***	-0.136***
	(0.052)	(0.011)	(0.009)	(0.011)
Coast	0.017	0.042***	0.012	0.002
	(0.047)	(0.012)	(0.017)	(0.010)
Jungle	0.051	0.035	0.052***	0.034
	(0.046)	(0.022)	(0.015)	(0.022)
Highlands	0.137***	0.006	0.085***	-0.046***

	(0.046)	(0.015)	(0.018)	(0.012)
Pseudo R2	0.0335	0.0906	0.0382	0.0633
Observations	14,826	9,159	24,066	11,402

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A5. Economic status. Marginal effects of groups between categories. SIS and EsSalud.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	2009	2009	2018	2018	2009	2009	2018	2018
Econ. Group	VP=1	VR=1	VP=1	VR=1	VP=1	VR=1	VP=1	VR=1
Variable	SIS	SIS	SIS	SIS	EsSalud	EsSalud	EsSalud	EsSalud
Women	-0.001 (0.003)	0.017*** (0.004)	0.013*** (0.003)	0.039*** (0.007)	0.001 (0.003)	0.021** (0.010)	-0.012*** (0.003)	-0.007 (0.010)
Senior	-0.085*** (0.013)	-0.043*** (0.004)	-0.067*** (0.009)	-0.158*** (0.006)	0.085*** (0.014)	0.175*** (0.011)	0.063*** (0.008)	0.232*** (0.009)
Adult	-0.023*** (0.004)	-0.063*** (0.007)	-0.031*** (0.003)	-0.191*** (0.010)	0.024*** (0.004)	0.164*** (0.014)	0.030*** (0.003)	0.249*** (0.012)
Rural	0.010* (0.006)	0.069* (0.041)	0.016*** (0.004)	0.086** (0.042)	-0.009 (0.005)	0.004 (0.052)	-0.014*** (0.004)	-0.085* (0.050)
Primary	0.412*** (0.059)	0.147*** (0.027)	0.168*** (0.008)	0.393*** (0.028)	-0.411*** (0.059)	-0.008 (0.022)	-0.162*** (0.008)	-0.296*** (0.026)
Secondary	0.039*** (0.005)	0.038*** (0.005)	0.066*** (0.003)	0.210*** (0.012)	-0.038*** (0.005)	-0.019* (0.011)	-0.063*** (0.003)	-0.158*** (0.013)
Coast	-0.009 (0.015)	0.002 (0.005)	0.003 (0.008)	0.014* (0.008)	0.009 (0.015)	0.086*** (0.011)	-0.003 (0.008)	0.025** (0.011)
Jungle	0.008 (0.009)	0.017* (0.011)	0.037*** (0.005)	0.006 (0.021)	-0.008 (0.009)	0.034* (0.019)	-0.036*** (0.005)	0.029 (0.024)
Highlands	0.022 (0.016)	-0.005 (0.006)	0.041*** (0.010)	0.006 (0.010)	-0.022 (0.016)	0.054*** (0.013)	-0.040*** (0.010)	0.058*** (0.012)
Pseudo R2	0.1567	0.1276	0.1290	0.1394	0.1589	0.0497	0.1317	0.0756
Observations	8,557	5,666	20,149	8,509	8,557	5,666	20,149	8,509

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A6. Age group. Marginal effects of groups between categories. HI.

	(1)	(2)	(3)	(4)
Year	2009	2009	2018	2018
Age Group	Senior=1	Youth=1	Senior=1	Youth=1
Variable	HI	HI	HI	HI
Women	0.018* (0.010)	0.163*** (0.007)	0.023*** (0.007)	0.154*** (0.006)
Vpoor	-0.223*** (0.023)	0.068*** (0.018)	0.032** (0.016)	0.181*** (0.012)
Poor	-0.240*** (0.021)	-0.019 (0.015)	-0.050*** (0.015)	0.105*** (0.010)
Middle	-0.253***	-0.098***	-0.071***	0.042***

	(0.020)	(0.013)	(0.015)	(0.010)
Rich	-0.176***	-0.106***	-0.059***	0.006
	(0.019)	(0.013)	(0.014)	(0.011)
Vrich	0.073***	0.095***	-0.031***	0.032***
	(0.014)	(0.010)	(0.012)	(0.009)
Primary	-0.277***	0.049***	-0.082***	0.048***
	(0.023)	(0.016)	(0.011)	(0.011)
Secondary	-0.203***	0.019	-0.123***	0.020***
	(0.031)	(0.012)	(0.015)	(0.007)
Coast	0.060***	0.017	0.009	-0.003
	(0.018)	(0.014)	(0.011)	(0.009)
Jungle	0.048**	0.030*	0.019	0.011
	(0.021)	(0.015)	(0.013)	(0.011)
Highlands	0.094***	-0.024*	0.044***	-0.013
	(0.019)	(0.014)	(0.011)	(0.010)
Pseudo R2	0.0359	0.0531	0.0219	0.0524
Observations	10,709	19,019	12,359	25,872

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A7. Age group. Marginal effects of groups between categories. SIS and EsSalud.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	2009	2009	2018	2018	2009	2009	2018	2018
Age Group	Senior=1	Youth=1	Senior=1	Youth=1	Senior=1	Youth=1	Senior=1	Youth=1
Variable	SIS	SIS	SIS	SIS	EsSalud	EsSalud	EsSalud	EsSalud
Women	0.061***	0.104***	0.043***	0.089***	-0.039**	-0.056***	-0.025**	-0.065***
	(0.018)	(0.012)	(0.012)	(0.006)	(0.015)	(0.010)	(0.011)	(0.006)
Vpoor	0.797***	0.447***	0.662***	0.322***	-0.670***	-0.317***	-0.570***	-0.258***
	(0.014)	(0.014)	(0.014)	(0.009)	(0.014)	(0.012)	(0.014)	(0.009)
Poor	0.598***	0.352***	0.397***	0.221***	-0.451***	-0.228***	-0.307***	-0.160***
	(0.018)	(0.013)	(0.011)	(0.007)	(0.014)	(0.011)	(0.011)	(0.007)
Middle	0.440***	0.218***	0.252***	0.156***	-0.292***	-0.099***	-0.154***	-0.100***
	(0.021)	(0.012)	(0.015)	(0.006)	(0.017)	(0.011)	(0.014)	(0.007)
Rich	0.272***	0.157***	0.147***	0.100***	-0.129***	-0.051***	-0.058***	-0.052***
	(0.031)	(0.012)	(0.018)	(0.007)	(0.023)	(0.013)	(0.016)	(0.008)
Vrich	0.035	0.091***	-0.054**	0.003	-0.029	-0.069***	0.056***	0.001
	(0.023)	(0.015)	(0.022)	(0.010)	(0.022)	(0.013)	(0.021)	(0.010)
Primary	0.468***	0.215***	0.484***	0.135***	-0.191***	-0.104***	-0.385***	-0.113***
	(0.055)	(0.016)	(0.019)	(0.007)	(0.038)	(0.016)	(0.017)	(0.007)
Secondary	0.254***	0.171***	0.290***	0.140***	-0.041	-0.028*	-0.201***	-0.111***
	(0.066)	(0.021)	(0.016)	(0.007)	(0.038)	(0.015)	(0.014)	(0.006)
Coast	-0.073**	0.109***	-0.029	0.033***	0.152***	-0.034**	0.045***	-0.018**

	(0.036)	(0.017)	(0.018)	(0.008)	(0.028)	(0.015)	(0.017)	(0.008)
Jungle	0.083**	0.148***	0.005	0.060***	-0.018	-0.079***	-0.008	-0.049***
	(0.039)	(0.017)	(0.023)	(0.009)	(0.033)	(0.015)	(0.021)	(0.009)
Highlands	0.057	0.123***	-0.038*	0.073***	0.053*	-0.055***	0.058***	-0.057***
	(0.036)	(0.020)	(0.020)	(0.009)	(0.028)	(0.016)	(0.018)	(0.008)
Pseudo R2	0.5202	0.4134	0.4136	0.2375	0.0531	0.2874	0.3552	0.1877
Observations	6,406	7,288	10,190	17,946	6,406	7,288	10,190	17,946

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A8. Marginal effects of being enrolled in SIS on health service financial coverage.

Year	2009	2018	2009	2018	2009	2018
Variable	Consultation	Consultation	Medicines	Medicines	Analysis	Analysis
SIS	-0.017 (0.014)	0.012 (0.009)	-0.080*** (0.012)	-0.049*** (0.007)	-0.232*** (0.031)	0.002 (0.017)
Women	0.048*** (0.011)	0.080*** (0.007)	0.040*** (0.009)	0.053*** (0.006)	-0.046* (0.024)	0.008 (0.015)
Extreme p.	0.228*** (0.017)	0.192*** (0.021)	0.182*** (0.018)	0.106*** (0.021)	0.182*** (0.047)	0.202*** (0.056)
Poverty	0.102*** (0.014)	0.107*** (0.010)	0.074*** (0.012)	0.071*** (0.009)	0.021 (0.038)	0.138*** (0.021)
Senior	0.222*** (0.015)	0.209*** (0.011)	0.185*** (0.016)	0.157*** (0.010)	0.017 (0.041)	0.033 (0.025)
Adult	0.096*** (0.014)	0.084*** (0.010)	0.058*** (0.012)	0.049*** (0.009)	-0.006 (0.034)	0.015 (0.023)
Coast	0.079*** (0.017)	0.035*** (0.012)	0.044*** (0.016)	0.002 (0.010)	0.040 (0.034)	-0.005 (0.021)
Jungle	0.153*** (0.017)	0.094*** (0.012)	0.067*** (0.017)	0.030*** (0.011)	0.128*** (0.034)	0.046** (0.022)
Highlands	0.131*** (0.017)	0.110*** (0.011)	0.103*** (0.016)	0.111*** (0.010)	0.088** (0.034)	0.054*** (0.021)
Primary	0.046*** (0.016)	0.083*** (0.010)	0.056*** (0.014)	0.096*** (0.009)	0.058* (0.034)	0.040** (0.020)
Secondary	0.011 (0.015)	0.052*** (0.009)	0.020 (0.013)	0.066*** (0.008)	0.073** (0.030)	0.048*** (0.018)
Observations	8,932	21,509	12,410	30,315	1,665	3,985

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A8. (Continue)

Year	2009	2018	2009	2018	2009	2018
Variable	Imaging	Imaging	Dental	Dental	Ophtalmo.	Ophtalmo.
SIS	-0.387*** (0.042)	-0.124*** (0.027)	-0.133*** (0.023)	0.120*** (0.015)	-0.220*** (0.034)	-0.052** (0.021)
Women	-0.074* (0.036)	0.033 (0.027)	0.052*** (0.016)	0.100*** (0.010)	0.036 (0.034)	0.049*** (0.018)

	(0.038)	(0.025)	(0.017)	(0.012)	(0.027)	(0.018)
Extreme p.	0.154	0.301**	0.034	0.224***	0.307***	0.112
	(0.127)	(0.146)	(0.052)	(0.062)	(0.110)	(0.178)
Poverty	-0.004	0.141***	0.056*	0.192***	0.145**	0.158***
	(0.069)	(0.051)	(0.030)	(0.023)	(0.069)	(0.053)
Senior	0.052	0.171***	-0.042	-0.044**	0.233***	0.199***
	(0.064)	(0.041)	(0.031)	(0.020)	(0.055)	(0.034)
Adult	0.052	0.100***	-0.032	-0.030*	0.061	0.107***
	(0.054)	(0.038)	(0.022)	(0.015)	(0.045)	(0.030)
Coast	-0.037	0.036	0.171***	0.112***	0.190***	-0.003
	(0.051)	(0.033)	(0.028)	(0.020)	(0.037)	(0.025)
Jungle	0.009	-0.022	0.203***	0.087***	0.137***	-0.075***
	(0.060)	(0.041)	(0.033)	(0.022)	(0.048)	(0.027)
Highlands	-0.006	0.018	0.081***	0.071***	0.127***	-0.006
	(0.054)	(0.034)	(0.027)	(0.020)	(0.041)	(0.026)
Primary	0.014	-0.113***	0.066**	0.103***	0.091**	0.140***
	(0.053)	(0.035)	(0.030)	(0.020)	(0.043)	(0.030)
Secondary	0.044	0.023	0.057***	0.089***	0.074**	0.095***
	(0.046)	(0.031)	(0.022)	(0.015)	(0.036)	(0.024)
Observations	792	1,850	2,943	6,449	1,299	2,509

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A8. (Continue)

Year	2009	2018	2009	2018	2009	2018
Variable	Vaccines	Vaccines	Contracep.	Contracep.	Hospit/Surg.	Hospit/Surg.
SIS	0.793***	0.460***	0.558***	0.394***	-0.098***	0.050***
	(0.017)	(0.015)	(0.024)	(0.020)	(0.021)	(0.016)
Women	0.054**	0.033**	0.460***	0.506***	0.104***	0.049***
	(0.022)	(0.013)	(0.029)	(0.020)	(0.020)	(0.014)
Extreme p.	0.059	0.038	0.138***	0.150***	0.088***	0.160***
	(0.053)	(0.038)	(0.036)	(0.037)	(0.032)	(0.031)
Poverty	0.012	0.030*	0.072***	0.071***	0.002	0.076***
	(0.037)	(0.017)	(0.024)	(0.019)	(0.024)	(0.019)
Senior	0.036	0.032	0.255***	0.102	0.051*	-0.011
	(0.032)	(0.021)	(0.023)	(0.108)	(0.028)	(0.021)
Adult	-0.046*	0.015	0.033	0.047***	0.006	-0.017
	(0.025)	(0.017)	(0.022)	(0.016)	(0.022)	(0.017)
Coast	0.005	-0.035	0.072**	0.080***	-0.029	0.057***
	(0.030)	(0.027)	(0.030)	(0.023)	(0.029)	(0.019)
Jungle	0.032	-0.149***	0.159***	0.069***	-0.030	0.062***
	(0.031)	(0.027)	(0.029)	(0.024)	(0.031)	(0.020)
Highlands	0.019	-0.001	0.142***	0.189***	-0.036	0.063***
	(0.030)	(0.026)	(0.030)	(0.022)	(0.030)	(0.019)
Primary	-0.007	0.082***	0.065**	0.123***	-0.000	0.010
	(0.033)	(0.020)	(0.032)	(0.021)	(0.026)	(0.018)
Secondary	0.012	0.065***	0.000	0.085***	0.039*	0.062***
	(0.025)	(0.017)	(0.026)	(0.018)	(0.023)	(0.015)
Observations	2,809	6,710	2,924	5,222	2,496	4,477

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A9. Marginal effects of being enrolled in SIS on reasons for not going to a health facility.

Year	2009	2018	2009	2018	2009	2018
VARIABLES	Lack of money	Lack of money	Too far away	Too far away	Response times are low	Response times are low
SIS	0.087*** (0.008)	0.036*** (0.003)	0.007 (0.006)	0.011*** (0.004)	-0.020*** (0.007)	-0.010* (0.006)
Women	0.014** (0.006)	0.005** (0.002)	0.007* (0.004)	-0.001 (0.003)	0.016*** (0.005)	0.021*** (0.004)
Extreme p.	0.042*** (0.011)	0.011* (0.007)	0.070*** (0.010)	0.023*** (0.007)	-0.034*** (0.006)	-0.073*** (0.008)
Poverty	0.050*** (0.009)	0.011*** (0.003)	0.023*** (0.006)	0.020*** (0.004)	0.002 (0.006)	-0.025*** (0.005)
Senior	0.049*** (0.012)	0.020*** (0.005)	0.011 (0.007)	0.001 (0.005)	0.005 (0.008)	0.015** (0.008)
Adult	0.025*** (0.008)	0.014*** (0.004)	0.003 (0.006)	-0.010** (0.004)	0.009 (0.006)	0.022*** (0.006)
Coast	-0.000 (0.013)	0.008 (0.005)	-0.003 (0.011)	0.025** (0.010)	0.003 (0.009)	0.029*** (0.009)
Jungle	-0.032*** (0.012)	-0.005 (0.005)	0.036** (0.015)	0.089*** (0.014)	0.004 (0.010)	0.021** (0.009)
Highlands	-0.054*** (0.013)	-0.015*** (0.005)	0.033*** (0.011)	0.095*** (0.010)	0.003 (0.009)	0.047*** (0.008)
Primary	0.100*** (0.012)	0.038*** (0.005)	0.043*** (0.008)	0.058*** (0.006)	0.003 (0.008)	0.008 (0.007)
Secondary	0.073*** (0.014)	0.017*** (0.005)	0.018** (0.009)	0.021*** (0.005)	0.004 (0.007)	0.012* (0.006)
Observations	10,947	26,699	10,947	26,699	10,947	26,699

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A9. (Continue)

	2009	2018	2009	2018	2009	2018
VARIABLES	No trust	No trust	No serious	No serious	Preference for home care	Preference for home care
SIS	-0.017*** (0.006)	0.010*** (0.004)	-0.004 (0.012)	-0.025*** (0.008)	0.032*** (0.009)	0.039*** (0.006)
Women	0.007 (0.004)	-0.002 (0.003)	-0.060*** (0.009)	-0.037*** (0.006)	-0.007 (0.007)	0.011** (0.005)
Extreme p.	-0.004 (0.006)	0.001 (0.007)	-0.047*** (0.015)	0.008 (0.017)	0.060*** (0.012)	0.044*** (0.013)
Poverty	0.000	-0.000	-0.042***	0.001	0.027***	0.030***

	(0.006)	(0.004)	(0.012)	(0.008)	(0.009)	(0.006)
Senior	0.045***	0.034***	-0.114***	-0.114***	0.055***	0.091***
	(0.010)	(0.006)	(0.014)	(0.010)	(0.013)	(0.010)
Adult	0.011*	0.015***	-0.042***	-0.054***	0.034***	0.051***
	(0.006)	(0.004)	(0.012)	(0.009)	(0.009)	(0.007)
Coast	0.075***	0.007	-0.032*	-0.038***	0.055**	0.000
	(0.020)	(0.007)	(0.017)	(0.011)	(0.022)	(0.011)
Jungle	0.081***	0.032***	-0.045**	-0.004	0.085***	0.056***
	(0.022)	(0.009)	(0.018)	(0.012)	(0.023)	(0.013)
Highlands	0.100***	0.068***	-0.084***	-0.098***	0.202***	0.187***
	(0.014)	(0.008)	(0.017)	(0.011)	(0.018)	(0.011)
Primary	0.041***	0.030***	-0.074***	-0.054***	0.049***	0.093***
	(0.008)	(0.005)	(0.015)	(0.010)	(0.012)	(0.008)
Secondary	0.034***	0.010**	-0.026**	-0.020**	0.024**	0.050***
	(0.009)	(0.005)	(0.013)	(0.009)	(0.012)	(0.008)
Observations	10,947	26,699	10,947	26,699	10,947	26,699

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A9. (Continue)

	2009	2018	2009	2018	2009	2018
VARIABLES	Self-medication	Self-medication	Lack of time	Lack of time	Bad attitude	Bad attitude
SIS	-0.069***	-0.036***	-0.023**	0.007	0.000	0.006***
	(0.011)	(0.007)	(0.011)	(0.006)	(0.003)	(0.002)
Women	0.011	0.027***	-0.011	-0.011**	0.005**	0.004***
	(0.008)	(0.005)	(0.008)	(0.005)	(0.002)	(0.002)
Extreme p.	-0.069***	-0.060***	-0.075***	-0.070***	0.018***	-0.004
	(0.011)	(0.012)	(0.011)	(0.010)	(0.006)	(0.003)
Poverty	-0.033***	-0.051***	-0.042***	-0.021***	0.022***	-0.001
	(0.010)	(0.006)	(0.009)	(0.006)	(0.005)	(0.002)
Senior	0.051***	0.087***	-0.084***	-0.073***	0.014**	0.011***
	(0.014)	(0.009)	(0.011)	(0.007)	(0.006)	(0.004)
Adult	0.016	0.025***	-0.003	0.006	0.003	0.006**
	(0.010)	(0.007)	(0.010)	(0.006)	(0.003)	(0.002)
Coast	0.053***	0.007	0.016	0.025***	-0.007*	0.003
	(0.016)	(0.009)	(0.015)	(0.009)	(0.004)	(0.004)
Jungle	0.167***	0.015	-0.065***	-0.036***	-0.006	0.013**
	(0.019)	(0.010)	(0.014)	(0.009)	(0.004)	(0.006)
Highlands	0.033**	-0.086***	0.023	0.042***	0.003	0.021***
	(0.015)	(0.009)	(0.014)	(0.009)	(0.005)	(0.004)
Primary	-0.044***	-0.056***	0.001	-0.027***	-0.004	-0.001
	(0.013)	(0.008)	(0.013)	(0.007)	(0.004)	(0.003)
Secondary	-0.016	-0.040***	0.012	-0.001	-0.003	-0.003
	(0.011)	(0.007)	(0.011)	(0.006)	(0.004)	(0.002)
Observations	10,947	26,699	10,947	26,699	10,947	26,699

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

SUMMARY STATISTICS

Table A10. Summary statistics. First stage 2009.

First stage: for analysis one and two					2009
Variable	Obs.	Mean	S.D.	Min	Max
Youth	63958	0.297	0.457	0	1
Adult	63958	0.535	0.499	0	1
Senior	63958	0.167	0.373	0	1
Men	63958	0.498	0.500	0	1
Women	63958	0.502	0.500	0	1
Urban	63958	0.623	0.485	0	1
Rural	63958	0.377	0.485	0	1
Primary	63958	0.406	0.491	0	1
Secondary	63958	0.486	0.500	0	1
Superior	63958	0.107	0.309	0	1
Coast	63958	0.280	0.449	0	1
Lima	63958	0.101	0.301	0	1
Jungle	63958	0.194	0.395	0	1
Highlands	63958	0.426	0.494	0	1
V.poor	63958	0.232	0.422	0	1
Poor	63958	0.235	0.424	0	1
Middle	63958	0.213	0.409	0	1
Rich	63958	0.177	0.382	0	1
V.rich	63958	0.143	0.350	0	1
Health insurance	63958	0.493	0.500	0	1
SIS	31560	0.567	0.495	0	1
EsSalud	31560	0.391	0.488	0	1

Table A11. Summary statistics. First stage 2018.

First stage: for analysis one and two					2018
Variable	Obs.	Mean	S.D.	Min	Max
Youth	86052	0.301	0.459	0	1
Adult	86052	0.556	0.497	0	1
Senior	86052	0.144	0.351	0	1
Men	86052	0.465	0.499	0	1
Women	86052	0.535	0.499	0	1
Urban	86052	0.693	0.461	0	1
Rural	86052	0.307	0.461	0	1
Primary	86052	0.289	0.454	0	1
Secondary	86052	0.401	0.490	0	1
Superior	86052	0.310	0.462	0	1
Coast	86052	0.304	0.460	0	1
Lima	86052	0.139	0.345	0	1
Jungle	86052	0.182	0.386	0	1
Highlands	86052	0.376	0.484	0	1
V.poor	86052	0.280	0.449	0	1
Poor	86052	0.231	0.421	0	1
Middle	86052	0.194	0.396	0	1

Rich	86052	0.162	0.369	0	1
V.rich	86052	0.133	0.339	0	1
Health insurance	86052	0.748	0.434	0	1
SIS	64327	0.654	0.476	0	1
EsSalud	64327	0.321	0.467	0	1

Table A12. Summary statistics. Second stage 2009. People enrolled in SIS or EsSalud.

Second stage: for analysis three and four					2009
Variable	Obs.	Mean	S.D.	Min	Max
Coast	28514	0.249	0.433	0	1
Highlands	28514	0.421	0.494	0	1
Jungle	28514	0.218	0.413	0	1
Lima	28514	0.112	0.315	0	1
Youth	28514	0.240	0.427	0	1
Adult	28514	0.560	0.496	0	1
Senior	28514	0.200	0.400	0	1
Men	28514	0.440	0.496	0	1
Women	28514	0.560	0.496	0	1
Extreme poor	28514	0.129	0.335	0	1
Poor	28514	0.245	0.430	0	1
No poor	28514	0.626	0.484	0	1
Primary	28514	0.437	0.496	0	1
Secondary	28514	0.312	0.463	0	1
Superior	28514	0.250	0.433	0	1
SIS	28514	0.589	0.492	0	1
EsSalud	28514	0.411	0.492	0	1

Table A13. Summary statistics. Second stage 2018. People enrolled in SIS or EsSalud.

Second stage: for analysis three and four					2018
Variable	Obs.	Mean	S.D.	Min	Max
Coast	64186	0.276	0.447	0	1
Highlands	64186	0.404	0.491	0	1
Jungle	64186	0.205	0.404	0	1
Lima	64186	0.114	0.318	0	1
Youth	64186	0.203	0.402	0	1
Adult	64186	0.536	0.499	0	1
Senior	64186	0.261	0.439	0	1
Men	64186	0.451	0.498	0	1
Women	64186	0.549	0.498	0	1
Extreme poor	64186	0.034	0.181	0	1
Poor	64186	0.174	0.379	0	1
No poor	64186	0.792	0.406	0	1
Primary	64186	0.399	0.490	0	1

Secondary	64186	0.333	0.471	0	1
Superior	64186	0.268	0.443	0	1
SIS	64186	0.658	0.474	0	1
EsSalud	64186	0.342	0.474	0	1

Table A14. Summary statistics. Second stage 2009.

People who used a health service and received full financial coverage (FC) from their health insurance. People enrolled in SIS or EsSalud.

Second stage: for analysis three						2009
Variable	Obs.	Mean	S.D.	Min	Max	
Medical consultation FC	8932	0.607	0.488	0	1	
Medicines FC	12410	0.421	0.494	0	1	
Analysis FC	1665	0.678	0.467	0	1	
Imaging studies FC	792	0.610	0.488	0	1	
Dental services FC	2943	0.316	0.465	0	1	
Ophthalmologist services FC	1299	0.341	0.474	0	1	
Vaccines FC	2809	0.635	0.482	0	1	
Contraceptives FC	2924	0.669	0.471	0	1	
Hospitalization or surgery FC	2496	0.758	0.429	0	1	

Table A15. Summary statistics. Second stage 2018.

People who used a health service and received full financial coverage (FC) from their health insurance. People enrolled in SIS or EsSalud.

Second stage: for analysis three						2018
Variable	Obs.	Mean	S.D.	Min	Max	
Medical consultation FC	21509	0.581	0.493	0	1	
Medicines FC	30315	0.404	0.491	0	1	
Analysis FC	3985	0.737	0.440	0	1	
Imaging studies FC	1850	0.561	0.496	0	1	
Dental services FC	6449	0.349	0.477	0	1	
Ophthalmologist services FC	2509	0.272	0.445	0	1	
Vaccines FC	6710	0.635	0.481	0	1	
Contraceptives FC	5222	0.671	0.470	0	1	
Hospitalization or surgery FC	4477	0.774	0.419	0	1	

Table A16. Second stage. People who used a health service and received full financial coverage from their health insurance (%) 2009.

2009	Total	SIS	EsSalud
Medical consultation FC	5425	57.22	42.78
Medicines FC	5221	55.33	44.67
Analysis FC	1129	32.68	67.32
Imaging studies FC	483	18.43	81.57
Dental services FC	929	32.72	67.28
Ophthalmologist services FC	443	14.22	85.78

Vaccines FC	1783	87.77	12.23
Contraceptives FC	1955	88.95	11.05
Hospitalization or surgery FC	1891	47.65	52.35

Table A17. Second stage. People who used a health service and received full financial coverage from their health insurance (%) 2018.

2018	Total	SIS	EsSalud
Medical consultation FC	12486	66.63	33.37
Medicines FC	12237	64.21	35.79
Analysis FC	2938	55.41	44.59
Imaging studies FC	1038	39.60	60.40
Dental services FC	2251	65.84	34.16
Ophthalmologist services FC	683	34.11	65.89
Vaccines FC	4262	87.54	12.46
Contraceptives FC	3503	89.52	10.48
Hospitalization or surgery FC	3463	63.41	36.59

Table A18. Summary statistics. Second stage. Reasons 2009.

People who faced a health event and did not go to a health facility for health services. People enrolled in SIS or EsSalud.

Second stage: for analysis four						2009
Variable	Obs.	Mean	S.D.	Min	Max	
Lack of money	10947	0.129	0.335	0	1	
Too far away	10947	0.062	0.241	0	1	
Response times are low	10947	0.065	0.246	0	1	
No trust in medical staff	10947	0.062	0.241	0	1	
No serious enough to go	10947	0.323	0.468	0	1	
Preference for home care	10947	0.160	0.367	0	1	
Self-medication	10947	0.200	0.400	0	1	
Lack of time	10947	0.199	0.399	0	1	
Mistreatment from medical staff	10947	0.019	0.138	0	1	

Table A19. Summary statistics. Second stage. Reasons 2018.

People who faced a health event and did not go to a health facility for health services. People enrolled in SIS or EsSalud.

Second stage: for analysis four						2018
Variable	Obs.	Mean	S.D.	Min	Max	
Lack of money	26699	0.047	0.213	0	1	
Too far away	26699	0.069	0.254	0	1	
Response times are low	26699	0.130	0.336	0	1	
No trust in medical staff	26699	0.066	0.249	0	1	
No serious enough to go	26699	0.420	0.494	0	1	
Preference for home care	26699	0.203	0.402	0	1	
Self-medication	26699	0.209	0.407	0	1	

Lack of time	26699	0.173	0.378	0	1
Mistreatment from medical staff	26699	0.020	0.138	0	1

Table A20. Second stage. People who faced a health event and did not go to a health facility for health services (%). 2009.

2009	Total	SIS	EsSalud
Lack of money	1410	86.95	13.05
Too far away	680	86.47	13.53
Response times are low	708	56.50	43.50
No trust in medical staff	679	70.69	29.31
No serious enough to go	3533	59.64	40.36
Preference for home care	1754	81.36	18.64
Self-medication	2192	53.97	46.03
Lack of time	2181	58.37	41.63
Mistreatment from medical staff	213	78.40	21.60

Table A21. Second stage. People who faced a health event and did not go to a health facility for health services (%). 2018.

2018	Total	SIS	EsSalud
Lack of money	1266	90.28	9.72
Too far away	1848	87.72	12.28
Response times are low	3470	69.14	30.86
No trust in medical staff	1766	81.94	18.06
No serious enough to go	11214	67.89	32.11
Preference for home care	5426	83.12	16.88
Self-medication	5581	61.33	38.67
Lack of time	4614	69.29	30.71
Mistreatment from medical staff	521	81.19	18.81

Figure A1. Proportion of people enrolled in health insurance by gender.

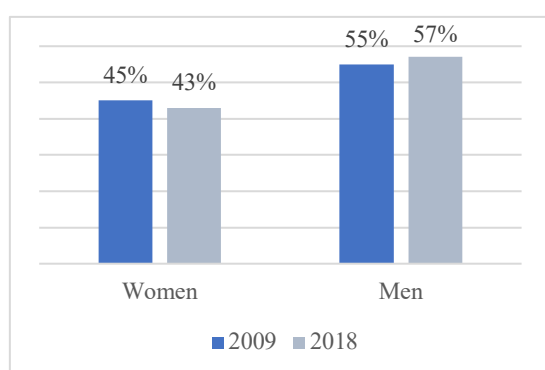


Figure A2. Proportion of people enrolled in health insurance by economic status.

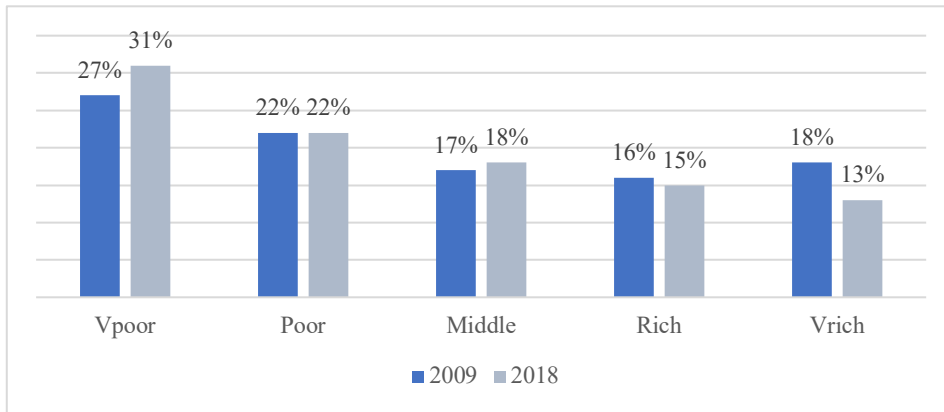


Figure A3. Proportion of people enrolled in health insurance by age group.

