## Investigación original / Original research

# Equity in health and health care in Peru, 2004–2008

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#### **ABSTRACT**

**Objective.** This study evaluates whether recent positive economic trends and pro-poor health policies have resulted in more health equity and explores key factors that explain such change.

**Methods.** This study focuses on the evolution of measures of health status (self-reported morbidity) and use of health care services obtained from the 2004 and 2008 rounds of the Peruvian National Household Survey (Encuesta Nacional de Hogares). It concentrates on health inequalities associated with socioeconomic status and uses interquintile differences (gradient), concentration indices with and without needs-based adjustments, and decomposition analysis.

**Results.** Findings show a low level of inequality in measures of health status, with a slightly pro-poor inequality in self-reported health problems and a slightly pro-rich inequality in self-reported chronic illness. Inequity in the use of curative services declined significantly between 2004 and 2008, while inequity in the use of preventive services increased slightly. Use of hospital and dental services remained unchanged during the same period.

Conclusions. Limitations of self-reported morbidity measures probably underestimate the results of health inequalities across socioeconomic groups. Improved equity in the use of curative health services can be explained by a number of positive factors that occurred concurrently during the analysis—namely, increased mean household income, reduced economic inequality, the Juntos conditional cash transfer program, and gradual expansion of public health insurance, Seguro Integral de Salud (SIS). Given that SIS expansion is the main public policy for promoting health equity in Peru, it is crucial that future steps in expansion come with a strategy to isolate its contribution to health equity improvements from that of other positive socioeconomic trends.

Key words

Health inequalities; health insurance; Peru.

According to the latest population census, in 2007 the population of Peru reached 28.2 million, with a growth rate that decreased from 2% between 1981 and 1993 to 1.6% between 1993 and 2007 and

with 76% of the population already living in urban areas. By 2004, the beginning of the period of analysis, Peru's per capita gross domestic product was US\$ 2 559 and was categorized by the World Bank as a lower-middle-income country (1). But the beginning of the 21st century represents one of the greatest periods of economic growth in the history of Peru, led by exports and domestic demand (mainly

due to an increase in private investment), which strengthened its public finances and attracted foreign investment (2). The average gross domestic product growth rate reached 6.8% between 2002 and 2008. Although the growth rate fell to 0.9% in 2009 because of the world economic crisis, it recovered quickly as it grew 8.8% in 2010, one of the highest growth rates in Latin America that year.

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This economic growth came with increased employment and reduced poverty. In 2004, 48.6% of the population was living in poverty, with 17.1% in extreme poverty. These rates dropped to 36.2% and 12.6%, respectively, by 2008. Although socioeconomic inequality, as measured by the Gini coefficient of household per capita expenditures, also decreased during the period (3), rural-urban differences remain strikingly high, as more than 60% of the rural population remain poor.

Health services in Peru are provided to the population through a network of facilities from the public and private sectors (4). Public sector services include those of the Ministry of Health (Ministerio de Salud, MINSA), Social Health Insurance (El Seguro Social de Salud, EsSALUD), and the armed and police forces. Private sector services include those provided by private clinics, medical offices, and to a much lesser extent nongovernmental organizations and providers of traditional and unconventional medicine.

Health expenditures in Peru increased slightly between 1995 and 2005, from 4.5% to 4.9% of gross domestic product (5). However, per capita purchasing power in health services did not improve because of a similar increase in the health care and health maintenance price index. The public share of health expenditures increased from 25.2% to 30.7%, as it channeled the contribution through EsSalud, private insurance companies, and Health Services Entities (Entidades Prestadoras de Salud, EPS), from 29% to 35.1%. In turn, the contribution of out-of-pocket household expenditures decreased from 45.8% to 34.2%.

Three important processes related to public health have taken place in the country since the late 1990s: decentralization of the provision of public health services through regionalization, creation and expansion of public health insurance (Seguro Integral de Salud, SIS), and recent legislation instituting universal health insurance.

The public health system, led by MINSA, operates at three levels: national, regional, and local. The provision of health care services has largely been transferred to regions as part of the decentralization process initiated in 2003. The regional government health offices (Dirección Regional de Salud, DIRESA)

are politically and administratively autonomous and are responsible for providing primary, secondary, and tertiary health care services. The main funding source is still the treasury, although contributions of regional budgets have been increasing. MINSA maintains a key regulatory role.

With SIS, health insurance enrollment increased from 36.8% to 54.1% of the population between 2004 and 2008. SIS is comprehensive public health insurance managed and financed by MINSA to expand health services for the poor. In practice, it provides health services mainly for women and children under the age of 18, although the intention is to gradually expand these services to the entire adult population. Formal employees and their families are covered by EsSalud, which is financed by payroll contributions; until 1996, it was known as the Peruvian Social Security Institute (Instituto Peruano de Seguridad Social, IPSS). EsSalud provides most of its health services through its own network of facilities, including primary, secondary, and tertiary care. Formal employees have the right to complement EsSalud services by allocating a small fraction of their contributions to accredited private health service providers (EPS). In practice, EPS facilities have focused on primary care, allowing workers and their families to avoid waiting lines, while EsSalud facilities remain the main source of secondary and tertiary care. The Peruvian system allows the public sector to provide special insurance arrangements to some of its employees, such as teachers and the armed forces. The most important one is the health subsystem associated with the Armed Forces and the National Police, which provide health care to their members, direct relatives, and workers through their own health facilities. These facilities are financed mainly by public treasury funds and to a lesser extent by member copayments.

The Universal Health Insurance Law of April 2009 aims to eventually provide universal health insurance coverage to the entire Peruvian population through three basic mechanisms: contributive insurance (via payroll-based contributions and private payments), subsidized insurance for the poor (paid with public funds), and semicontributive insurance that combines private and public con-

tributions to cover informal and small business workers. The latter two are managed by SIS.

Peru has historically had high levels of poverty and socioeconomic inequality, including health inequalities. However, recent positive economic trends have started to show sizable reductions in poverty rates and socioeconomic inequality. At the same time, health policies aimed at universal health insurance have been gradually implemented. This study seeks to evaluate whether such positive socioeconomic trends have also resulted in more health equity and explore key factors that explain such change.

#### **MATERIALS AND METHODS**

This descriptive study is based on health and socioeconomic status indicators available in the National Household Survey (Encuesta Nacional de Hogares, ENAHO) in 2004 and 2008. The previous study looking at inequalities in the use of health services in Peru dates back to 1998 (4, 6). However, changes in the questionnaire, especially in the period of reference for reports of illness events and utilization of health care services, between that year and 2003 did not allow for constructing a comparable series based on the following years of ENAHO. It is a nationally representative survey that is applied continuously throughout the year every year and measures extensive numbers of dimensions of wellbeing of families in Peru. Every year, a cross-sectional sample is interviewed; the sample size reached 20 866 dwellings in 2004 and 22 640 in 2008. The questionnaire is answered by each member of the household except children under age 5 and those who are not present at any of the visits made by the surveyors. Table 1 presents key characteristics for the sample in each year, showing no major differences.

This study focuses on self-reported morbidity and health service utilization of adults (18 years or older). Self-reported morbidity indicators include illness and accidents associated with the use of health services in the previous four weeks and diagnosis of a chronic condition. Health service utilization is analyzed with variables representing curative visits associated with an illness or accident, dental care visits, preventive

TABLE 1. Sample sociodemographic characteristics, Peru, 2004 and 2008

Variable		n, %
variable	2004	2008
Age (years)		
18–34	43.4	43.4
35–44	19.6	19.6
45–64	25.8	25.8
65–74	7.2	7.2
≥ 75	4.0	4.0
Gender (male)	49.0	48.3
Language learned in childhood		
Quechua	18.8	18.3
Aymara	2.4	2.6
Other native language	0.8	0.6
Spanish	76.8	78.2
Other (foreign language)	1.1	0.2
Education		
No education	8.7	7.7
Primary	30.0	28.3
Secondary	37.6	37.3
High school or more	23.6	26.6
Activity status		
Employed	71.8	74.3
Unemployed	6.3	4.7
Other	21.8	21.0
With health insurance	25.6	43.7
Marital status		
Married	37.4	35.0
Single	28.7	27.3
Separated/divorced	6.6	7.7
Widowed	6.0	5.9
Other	21.3	24.1
Household size	438.7	411.2
Type of place of residence		
Urban	69.1	69.1
Rural	30.9	30.9
Geographic region		
Lima metropolitan	32.2	32.0
Urban coast	18.2	18.1
Rural coast	5.0	4.9
Urban highland	12.9	13.1
Rural highland	20.1	20.1
Urban jungle	5.8	5.9
Rural jungle	5.9	5.9

care visits, and hospitalization. Table 2 provides specific definitions of the variables used.

With regard to utilization of curative services, individuals who did not report an illness or accident in the four weeks before the survey were not asked about their use of related health services. However, they were asked about their use of hospitalization services over the past year and dental and preventive health services in the three months before the survey. All these variables are used here as indicators of access to health services, considering that their utilization is likely differentiated by the health risks associated with them as well as their costs.

The main variable used to identify socioeconomic status (SES) is per capita household expenditure, which is the

TABLE 2. Description of health status, health care utilization, and standard of living variables, Peru, 2004 and 2008

Variable	Description				
Health status					
Self-assessment of any illness or accident	Categorical: in past 4 weeks, did you have any: symptoms or discomfort (cough, headache, fever, nausea); illness (e.g., flu, colitis); relapse of chronic illness; accident; no disease symptoms, relapse, or accident (accept one or more alternatives). 1 if yes to any alternative.				
Self-assessment of any chronic illness	Categorical: do you have any chronic illness (e.g., arthritis, hypertension, asthma, rheumatism, diabetes, tuberculosis, HIV, high cholesterol)? 1 if yes to any alternative.				
Health care utilization					
Any curative visit	Categorical: where do you go to ask about this illness, symptoms or discomfort (description in health status), or accident (accept one or more alternatives)? 1 if Posta de Salud MINSA, Centro de Salud MINSA, Centro o Puesto de Salud MINSA CLAS, Posta. Policlinico EsSALUD, Hospital MINSA, Hospital EsSALUD, Hospital de la Fuerzas Armadas or Policia Nacional, private doctor's office, private clinic, and doctor visit at patient's home were included. Options excluded: pharmacy or drugstore, house of traditional healer, other, or did not search for care.				
Any hospitalization	In past 12 months have you been hospitalized? 1 if yes.				
Any dentist visit	Categorical: in past 4 weeks did you receive dental and related services? 1 if yes.				
Any preventive doctor visit	Categorical: in past 3 months, have you consulted about disease prevention? 1 if yes.				
Standard of living Income	Continuous: household income per equivalent adult.				

MINSA: Ministerio de Salud, CLAS: Comunidad Local de Administración de Salud, EsSALUD: El Seguro Social de Salud.

most common indicator in economics to identify SES (7). Health inequalities by SES are measured with the concentration index (CI) and the horizontal inequity index (HI). The CI is based on distribution of the corresponding health variable along the SES distribution. In the extreme case of equality (CI = 0), the value of the health variable is the same for all SES groups; in the extreme case of inequality (CI = 1 or -1), it concentrates on the poorest or richest individuals. The HI is obtained by standardizing the health variables by need differences across SES (8). The analysis of determinants of health inequalities is based on a regression analysis as described in the methodologic article in this issue. The regression allows for a decomposition of the CI or HI of any health variable by estimating the contribution of each explanatory variable included in the regression model. The contribution of each explanatory variable is the product of the CI or HI of that variable and the elasticity of the CI or HI of the health variable with respect to the explanatory variable.4

#### RESULTS

#### Self-reported illness or accident

More than half of Peruvian adults selfreported an illness or accident in the four weeks before the 2004 and 2008 ENAHO surveys (Table 3). A small increase in self-reported illness from 2004 to 2008 can be explained by a number of factors. Increased awareness due to improved access to health care may be an explanatory factor, although an empirical test of such a hypothesis is beyond the scope of this paper. Self-reported illness or accident shows a classic U-shaped distribution over the life cycle, indicating a greater presence of illness in the first years of life that diminishes during youth and slowly increases in adulthood and old age. Self-reported illness by region also shows an increase in reporting for all regions: metropolitan Lima, other urban regions, and rural regions.

The number of self-reported illness or accident events is higher in the poorest quintile than in the richest quintile for both years, with the difference becoming slightly less pro-poor in 2008, in the sense that individuals in the poorest quintile augmented their illness or accident reports more than the rich (Table

<sup>&</sup>lt;sup>4</sup> Elasticity is the proportional change in the CI of the health variable with respect to a 1% change in the explanatory variable.

TABLE 3. Mean and quintile distributions for health and health care utilization variables, Peru, 2004 and 2008

Variable	Year	Mean percent	Poorest 20%	2nd poorest 20%	Middle	2nd richest 20%	Richest 20%
Health status							
Self-assessed illness or	2004	53.4	58.8	54.9	52.6	52.7	49.0
accident	2008	59.1	66.5	60.9	59.5	55.9	54.1
	Difference	5.8 <sup>a</sup>	7.8 <sup>a</sup>	5.9 <sup>a</sup>	6.9 <sup>a</sup>	3.2 <sup>a</sup>	5.1 <sup>a</sup>
Self-assessed chronic illness	2004	23.6	20.9	20.7	21.9	24.7	28.9
	2008	30.9	27.2	27.6	30.1	32.1	36.6
	Difference	7.3 <sup>a</sup>	6.3 <sup>a</sup>	7.0 <sup>a</sup>	8.2 <sup>a</sup>	7.4 <sup>a</sup>	7.6 <sup>a</sup>
Health care utilization							
Any curative visit	2004	14.7	7.6	11.6	14.1	17.1	21.2
	2008	16.7	13.1	14.5	15.9	18.3	21.3
	Difference	2.1a	5.4 <sup>a</sup>	2.9 <sup>a</sup>	1.8ª	1.2 <sup>a</sup>	0.0
Any hospitalization	2004	5.3	2.5	5.0	5.2	6.5	6.5
	2008	5.7	3.0	4.8	6.2	6.5	7.6
	Difference	0.5 <sup>a</sup>	0.5 <sup>a</sup>	-0.1a	1.0 <sup>a</sup>	-0.1a	1.1 <sup>a</sup>
Any dentist visit	2004	8.8	3.0	5.7	8.1	10.5	15.3
	2008	10.4	3.5	6.3	9.2	13.0	18.4
	Difference	1.6 <sup>a</sup>	0.5 <sup>a</sup>	0.6a	1.2 <sup>a</sup>	2.5a	3.1a
Any preventive doctor visit	2004	10.4	8.4	10.6	12.2	10.8	9.6
	2008	16.2	13.4	16.3	16.3	16.6	18.2
	Difference	5.9 <sup>a</sup>	5.0 <sup>a</sup>	5.8ª	4.1 <sup>a</sup>	5.8 <sup>a</sup>	8.6ª

<sup>&</sup>lt;sup>a</sup> Significant difference (P < 0.05).

TABLE 4. Concentration and horizontal inequality indices for health care utilization variables, Peru, 2004 and 2008

	2004		2008		Difference 2008–2004	
Variable	CI	HI	CI	HI	CI	HI
Self-assessed illness or accident	0.0341a	-0.0348a	-0.0415a	-0.0414a	-0.0756a	-0.0066
Self-assessed chronic illness	0.0709a	0.0724a	0.0629a	0.0674a	-0.0080	-0.0050
Any curative visit	0.1830a	0.2171a	0.1000a	0.1422a	-0.0830a	-0.0750a
Any hospitalization	0.1445 <sup>a</sup>	0.1443a	0.1528a	0.1515a	0.0083	0.0073
Any dentist visits	0.2793a	0.2801a	0.2927a	0.2914a	0.0134	0.0113
Any preventive doctor consultation	0.0190 <sup>a</sup>	0.0118	0.0471a	0.0411a	0.0281	0.0293a

CI: concentration index, HI: horizontal inequality index.

3). This fact is reflected in a CI that changes significantly from 0.034 to a negative value of –0.041 (Table 4). Self-reported chronic illness presents a different pattern across the SES distribution, as it is higher for the richest quintiles of household expenditure in 2004 and 2008, which may be because people need better access to health care to have these conditions diagnosed.

#### Health care utilization

Not surprisingly, health care utilization is clearly pro-rich, but it is interesting to see that the use of curative visits showed a decreasing trend in such bias. Table 3 shows that the use of curative visits for the poorest quintile increased 5.4 percentage points (from

7.6% in 2004 to 13.1% in 2008) during the period, while the increase for the second-richest quintile was only 1.2 percentage points. Although curative visits were still biased toward the wealthy, as the CI and HI show positive values, the HI for this variable decreased during the period from 0.22 to 0.14, indicating a considerable drop in horizontal inequity (Table 4).5 Preventive visits also showed increased pro-rich inequality by 2008, although the initial levels of the CI and HI indicated almost no bias by 2004. On the other hand, the inequality measures for hospitalization and dental care were almost constant during the period of analysis, as differences are not statistically different from zero.

Decomposition analysis was used to explain the inequities found in health care utilization by estimating the contribution of each determinant to the standardized dependent variable. A limitation of this approach is that corresponding coefficients cannot be estimated accurately unless there are controls for potential endogeneity. Still, the results provide a working hypothesis for a more rigorous analysis, which is outside the scope of this study.

This study first focuses the analysis on curative visits as it is the only variable for which a statistically significant reduction in inequality and inequity between 2004 and 2008 was observed. Decomposition analysis of inequities in curative health care visits (HI) in 2004 showed two main contributors: household expenditure and health insurance (Figure 1). In 2008, both variables continued to be main contributors but with a much smaller relative contribution for access to health insurance. The study further investigated the contribution of each variable to inequality in curative heath care visits.6 It was found that neither the CI nor the elasticity of household expenditure changed substantially over the period of analysis. With regard to health insurance, the contribution of this variable to inequity in curative visits declined considerably in 2008. This positive change can be explained by the reduction in the inequality in health insurance, observed by the considerable decrease in CI for health insurance from 0.41 in 2004 to 0.09 in 2008, which is consistent with the pro-poor bias of the expansion of SIS.

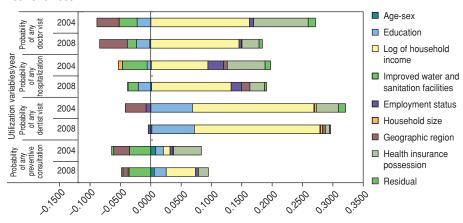
The SIS policy was initially implemented to improve financial protection in health and improve access to health care, in particular primary care services, for the poorest and most vulnerable groups in the country—namely, mothers and children less than 5 years old. As the decade progressed, other vulnerable groups of adults were incorporated as beneficiaries, but it is not clear whether proper budget adjustments were made. There have been increasing reports of mechanisms to limit access of these adults to curative and preventive

<sup>&</sup>lt;sup>a</sup> Significant CI and HI values and differences (P < 0.05).

<sup>&</sup>lt;sup>5</sup> Supplementary material shows the corresponding concentration curves.

<sup>&</sup>lt;sup>6</sup> Results are not shown here because of space limits but are available from the authors upon request.

FIGURE 1. Decomposition of horizontal inequality index for health care utilization variables, Peru, 2004 and 2008



services. Nevertheless, although methodologic limitations do not allow for determining whether a causal relationship exists, it remains a plausible hypothesis that deserves further attention.

Analysis of preventive care services, which have a pro-rich distribution, although to a lesser degree than dental and hospitalization services, shows that in 2004 the main contributors to inequity were, in order of magnitude: health insurance, household expenditure, and education. In 2008, these variables remained the main contributors but their level of contribution in terms of magnitude changed to household expenditure, education, and health insurance, respectively. The decomposition of hospitalization, despite the large residual contribution, shows an interesting pattern between 2004 and 2008. In 2004, ignoring the residual, health insurance was the top contributor to inequity, whereas in 2008 household expenditure was the largest contributor. With regard to dental care, in 2004, the main variables that explain inequity were, in order of magnitude, household expenditure, education level, and health insurance. However, this case is not the same in 2008, when inequity is explained mainly by household expenditure and education and not by health insurance. This result is puzzling considering that SIS does not cover dental care.

#### DISCUSSION

The empirical evidence reviewed in this study shows a substantial reduction in horizontal inequity for curative visits in Peru between 2004 and 2008. Most curative visits were nonspecialized and occurred at the primary care level. Utilization of these services has risen significantly in the poorest quintile, with the rate of curative care for those aged 18 years or older in the poorest quintile rising from 8% in 2004 to 13% in 2008. No change was observed for the wealthiest quintile during the same period (21.2% in 2004 and 21.3% in 2008).

This decreasing inequity of curative services in Peru is not observed in use of the other health services analyzed here. The persistence of highly pro-rich patterns for other health services, such as dental care and hospitalization and, to a much lesser extent, preventive services, is of concern. Although this study did not show causality between expansion of the affiliation to SIS and reduced inequity in curative visits through the decomposition analysis, the discussion focuses on the implications for that policy. In particular, and as mentioned previously, expansion of the SIS has focused on curative care for poor adults at the primary care level, but there were restrictions to access to specialized care (dental, hospitalization) and preventive services for these adults. These restrictions are consistent with patterns of use found for more specialized care, as inequity for these types of care for adults did not change significantly during the analysis period, while inequity in curative visits decreased considerably. It is important to remember the limitations of the decomposition analysis to establish causal relationships, so the possibility that the observed decline in inequity could be related to reductions in poverty and economic inequality observed during the period or to expansion of other public programs such as Juntos,

a cash transfer program conditional on school attendance and maternal and child health care, cannot be rejected. Still, it can be argued that pro-health equity policy adjustments need to take into account the association identified here. In particular, gradual implementation of the universal health care insurance law in the country's poorest regions offers an opportunity to validate the results obtained in this study through the use of rigorous impact evaluation approaches. Such a strategy would enable learning about what works best and in which environments.

Designing a universal health insurance system is a complicated process and success depends, among other things, on organizational and financial arrangements in which the health authority can effectively carry out its leadership role. It also depends on establishing a practical incentive structure for the agents involved, including doctors and other health care professionals, public and private care institutions, and the regional governments' health offices. The experience of other nations in the region—those whose efforts to democratize access to health services predate the Peruvian experience—should provide valuable lessons. It is especially important that access to health services continues to expand in order to eliminate, or at least minimize, out-of-pocket expenditures by the poorest citizens, particularly in cases of prolonged and costly treatments. Nonetheless, adopting explicit rights in the universal health care law that establishes "minimal guaranteed conditions extended to all of the country's residents" with regard to access, quality, opportunity, and financial protection offers an important challenge that should not be ignored. Expanding access should come together with improvements in the quality of health services—for example, by reducing waiting times for consultations or adopting a culturally sensitive and more inclusive approach to providing health care services to specific groups in the population.

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#### **RESUMEN**

Objetivo. Evaluar la evolución del nivel de equidad en la salud en Perú e identificar los factores clave que explican los cambios.Métodos. Se evaluó la evolución del estado de salud (morbilidad autoinformada)

### Equidad en la salud y la atención sanitaria en Perú, 2004–2008

*Métodos.* Se evaluó la evolución del estado de salud (morbilidad autoinformada) y la utilización de los servicios de atención sanitaria según los datos recogidos en la Encuesta Nacional de Hogares de 2004 y de 2008. Se analizaron las desigualdades en salud con respecto a la situación socioeconómica y se calcularon las diferencias entre los quintiles (gradientes) y los índices de concentración (con y sin ajustes) basados en las necesidades de servicios, y se aplicó el análisis de descomposición.

**Resultados.** Se observó un nivel bajo de desigualdad en el estado de salud, con una leve desigualdad a favor de las personas de menos ingresos en los problemas de salud y a favor de las personas de mayores ingresos en las enfermedades crónicas, según los autoinformes. La inequidad en la utilización de los servicios curativos descendió significativamente entre el 2004 y el 2008, mientras la inequidad en la utilización de los servicios preventivos aumentó ligeramente. No se observaron cambios en el uso de servicios hospitalarios y odontológicos durante el mismo período.

Conclusiones. Las limitaciones de las medidas de morbilidad autoinformadas probablemente ocasionan una subestimación de las desigualdades en salud en todos los grupos socioeconómicos. La mejor equidad en la utilización de los servicios de salud curativos puede deberse a varios factores positivos que tuvieron lugar en el período analizado, como el aumento del ingreso promedio por hogar, la menor desigualdad económica, el programa Juntos de transferencia de dinero condicionada a la asistencia escolar y la atención sanitaria maternoinfantil, y la ampliación gradual del Seguro Integral de Salud (SIS). Puesto que la ampliación del SIS es la política pública dirigida a promover la equidad en la salud en Perú, es crucial que sus próximas etapas incluyan estrategias para aislar su contribución a las mejoras en la equidad sanitaria de las generadas por otras tendencias socioeconómicas positivas.

#### Palabras clave

Desigualdades en la salud; seguro de salud; Perú.