

# **Equity of access to Chile's priority health services package: overcoming the inverse care law?**

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## **Declaration**

Where other people's work has been used (either from a printed source, internet or other source) this has been carefully acknowledged and referenced in accordance with department requirements.

This thesis: "Equity of access to Chile's priority health services package: overcoming the inverse care law?" is my own work.

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## List of Abbreviations

ARI	acute respiratory infection
BGI	Comprehensive Management Report
CASEN	Socioeconomic Characterisation Survey
COPD	chronic obstructive pulmonary disease
DALYS	disability adjusted life years
DIPRES	National Budget Office
DPT	diphtheria, poliomyelitis and tetanus vaccine
DRG	diagnosis related groups
EMPA	adult medical preventive exam
FAP	fee-for-service payment mechanism
FONASA	National Health Fund
GDP	gross domestic product
GES	Explicit Health Guarantees Regime
GIS	geographic information system
GNI	gross national income
INE	National Statistics Institute
MMR	measles, mumps and rubella vaccine
NGO	non governmental organisations
PHSP	priority health services package
PPP	purchasing power parity
PPV	Valued Payment Programme
PPI	Institutional Services Programme
PYLL	potential years of life lost
SEREMI	Ministerial Regional Secretaries
SIGGES	GES health management and information system
SINIM	National Municipal Information System
SUR	standardised utilisation rate
TB	tuberculosis
VAT	Value Added Tax

## Abstract

While many low and middle-income countries have implemented a package of priority health services (PHSP), there is little evidence regarding their consequences on equity. Taking the case of Chile, this study aims to analyse equity of utilisation and access to a recently implemented PHSP, the Explicit Health Guarantees Regime (GES).

Drawing on Gilson's framework, we examined equity of utilisation using individual and ecological data. Access was addressed as a three-dimensional concept: availability, affordability and acceptability. The study also aimed analysing unintended consequences on services not included in the package.

Our results suggest a pro-poor pattern of utilisation at an individual and ecological level. Wealthier beneficiaries have underutilised GES services and opted out the package. Disadvantaged groups have not been significantly empowered, as shown by their lack of information about the package and complaint mechanisms. We found inequities in male utilisation and age exclusions.

We observed a significant strengthening of the public sector, expressed in increasing availability of financial resources. However, demand-side aspects have been neglected and uninsured and poorer populations are experiencing a greater burden of out-of-pocket expenses and significant information gaps, respectively. Vaccination coverage and TB control have shown signs of deterioration.

Although our results indicate that it is possible to overcome the inverse care law, there is a need to expand the range of benefits of the GES package, introduce demand-side incentives and improve knowledge and complaint mechanisms among disadvantaged groups.

**Keywords:** equity of access, utilisation, inverse care law, health services package, Chile.

# 1. Introduction

Following the 1993 *World Development Report*, many low and middle-income countries have developed and implemented a package of priority health services. This priority health services package (PHSP) was conceived as a strategy to reduce the burden of disease and reallocate resources to cost-effective programs, thus shifting the expenditure from tertiary care to highly cost-effective primary care interventions. The implementation of the PHSP had the potential to avert 24% of the burden of disease in low income countries and 11% in middle income countries (1).

The World Bank encouraged and assisted developing countries to set priorities based on burden of disease, to develop a PHSP and finally start the implementation process (2). As early as 1998, 24 low and middle-income countries have already undertaken burden of disease studies, with many finally implementing a national PHSP (2).

In spite of the magnitude and wide-ranging implications of a PHSP for health systems and status of populations, there is little evidence documenting neither its impact on technical and allocative efficiency or the consequences on equity, except for the notable exceptions of Colombia (3,4), Bangladesh (5,6) and Mexico (7,8). Of particular concern is the equity of access to health care, given its primary role in obtaining equitable health outcomes, especially in low-income settings (9).

Taking the case of Chile, this study aims to expand this experience and analyse the equity of utilisation and access to a recently implemented PHSP, the Regime of Explicit Health Guarantees (GES) package. It addresses equity of utilisation from both an individual and ecological level, while access was examined as three dimensions -availability, affordability and acceptability- by drawing in Gilson's framework (10). In addition, the study aims to assess unintended consequences on other diseases not included in the package.

The importance of this study is twofold: first, it represents one of the first attempts to analyse Chile's GES package from an equity perspective; and, second, it will provide valuable lessons for other countries planning to implement similar packages in their respective countries. Equally, this study will prove useful to Chilean and Latin American policy-makers, as well as researchers and decision-makers interested in equity of health care.

## 2. Rationale for a PHSP and possible consequences on equity

A priority health services package can be defined as *a limited set of priority health interventions, with synergistic characteristics, selected to achieve particular health or social objectives* (author's elaboration based on (11)). Such interventions have, therefore, four characteristics: limited in number; reinforce or complement each other; represent priorities and pursue societal objectives.

The premise is clear - providing health services to meet all population needs is a goal impossible to achieve (12). Therefore, governments should define priorities to attain maximum health gains at the lower cost possible. The prioritisation process has two phases: first, to examine the burden of disease - number of years of life lost due to premature mortality and disability - captured in the concept of disability-adjusted life years (DALYs); second, to select a limited number of interventions that provide highest health gains at the lowest cost (also known as cost-effectiveness) (1,13).

The aforementioned health and social objectives can be of different kinds. Governments might be interested in preventing market failures for services considered as public goods or as having positive externalities, or preventing citizens to fall into poverty due to catastrophic illnesses (14). In summary, it can seek to achieve eight objectives (14-16):

- a) Improve equity in health and in health care
- b) Reduce burden of disease
- c) Reduce public expenditure in health care
- d) Improve technical and allocative efficiency
- e) Reduce poverty and ameliorate the impact of catastrophic illnesses
- f) Ensure explicitness in priority setting and increase accountability
- g) Increase risk-pooling, control moral hazard and adverse selection
- h) Foster private insurance competition

In addition to objective (a), many of these eight objectives can have positive effects on equity. Given that poor and disadvantaged groups tend to have a higher burden of disease, health interventions intended to reduce the burden of disease will naturally target the poor and reduce health disparities (17,18). Therefore, achieving objective (b) might contribute to improve equity in health. Equally, positive consequences of improving technical and allocative efficiency can release resources to expand access to health care, increasing the range of services available to disadvantaged populations as well as improving affordability of health services (15). An improvement in availability and quality of services provided might also increase acceptability of health services to the population (10).

The link between poverty and catastrophic events has been well documented in the literature (19,20). Poor households, particularly in low income countries, are particularly prone to fall into poverty due to medical expenses. Reducing its impact (e) will have evident positive effects in tackling health inequalities.

A PHSP could also increase transparency and accountability (f) for local health authorities, acting as an equity benchmark tool (15). It can act as a bottom-up approach: the existence of defined entitlements can empower disadvantaged groups and give them voice to claim for their rights (21). On the other hand, it can help as a top-down approach, providing regional or district decision-makers tools to correct historic geographical disparities in resource allocation. The definition of minimum standards could also enhance private sector regulation, by improving the asymmetry of information between insurance and patient (22). As a result, it might increase or at least standardise the quality of care provided by the private sector (23).

Conversely, the burden of disease approach and design of a PHSP does not consider any explicit equity mechanism. Murray and Lopez have emphasised the “strong egalitarian flavour” of treating like outcomes like, irrespective of who receives the benefits (17,18). However, there is a current concern whether the benefits of the implementation of the PHSP will be equally distributed among social groups or, in turn, wealthier populations will benefit greatly despite lower levels of need (24,25). This phenomenon is known as the inverse care law, proposed than Tudor-Hart more than 35 years ago (26).

Despite being originally described in the British context, the existence of a mismatch between need and health services utilisation seems to be present everywhere. It has been described for developed and developing countries (26-28) as well as for basic health interventions or more complex ones (29-31).

Three mechanisms can explain its operation in the context of a PHSP. First, at a geographical level, there is an unequal distribution of management capacity and quality of skill-mix in different sub-national units, such as regions, districts and municipalities (32). Better resourced sub-national units might thus be able to implement the PHSP more effectively, contributing to the creation of inequalities in health and health care.

Second, at a population level, substantial average improvements can be attained even if disadvantaged groups are left behind. Reaching isolated rural areas or poor urban settlements might require substantial rearrangements of distribution of resources, health facilities and workers and, therefore, could be more politically feasible to maintain the *status quo* (24,25,15).

Third, at an individual level, the predominant supply-side nature of the reform might neglect other relevant demand-side aspects that determine health seeking behaviour by disadvantaged populations. Demand side barriers, such as education and information, costs for consumers and health beliefs (33), often exceed supply-side barriers. Such barriers exist even in developed countries with universal access to health care, emphasising the fact that universal access is not the only prerequisite to improve equity (34).

### **3. Chile's Priority Health Services Package: genesis, design and policy process**

#### **Country Profile**

Chile, a long and narrow country in the outskirts of South America, has experienced a sustained economic and social development in the past decades. Chile is a commonly cited case study because of its long standing economic growth, macroeconomic stability and trade openness (35,36). Currently, Chile's GNI per capita is US\$12590 (PPP int \$), being the second richest country in Latin America after Argentina (37). Chile has 16.6 million inhabitants in 2008, of which 50.4% are women and 87% live in urban areas (38,39).

Notably, Chile's outstanding economic development has also been accompanied by social development. In fact, the Human Development Index has steadily risen for the past three decades, witnessing a decline in relative poverty from 38.7 to 13.7% (1990-2006) and increasing rates of educational attainment, the latest being 95.7% of adult literacy rate (40, 41). In terms of health, the country is undergoing an advance epidemiological transition, with low population growth (1.2%) and high life expectancy (42,43). Since 1950s, a health policy centred in child and maternal health as well as communicable diseases has yielded outstanding results. As a result, infant mortality decreased dramatically from 119.5 to 8.7 deaths per 1000 live births between 1960 and 2007 (44). Moreover, life expectancy increased from 59 to 78 years from 1960s to 2006. This is comparable with countries like Denmark, Finland and United States, although achieved with a fourth of their total expenditure in health (42). Chile's per capita total expenditure in health is \$688 (PPP int \$) and it represents 5.4% of GDP in 2005. Public expenditure in health contributed with 51.4% of available resources for health (42).

High coverage of basic services is a consequence of the development of a rich network of public providers after the creation of the Chilean National Health System in 1952 (45). Nowadays, there are 183 hospitals (primary, secondary and tertiary care) and 1759 primary health centres distributed along the country (46,47).

#### **Evolution of the Chilean health system: building up a counter-reform**

During 1980s, Chile experienced a radical health sector reforms under Pinochet's dictatorship (48). This market-oriented reform consisted of three central elements to enhance the role of private sector, foster competition and improve efficiency: the creation of a two-tiered health insurance, decentralisation and changes in provider payment methods (49). Together with these elements, the reform introduced several incentives to boost the private sector and reduced dramatically public health expenditure (50-52).

The main feature of the reform was the creation of a mixed insurance system. Formal workers are compelled to contribute with a 7% of their taxable revenue to either social health insurance or private insurance, while informal workers were given the option of voluntary affiliation. The state subsidised indigents and disabled unable to work (53,54).

Social health insurance, administered by the National Health Fund (FONASA), groups its beneficiaries in four categories on a sliding scale: A, B, C and D. Category A covers indigents and disabled unable to work. Unemployed and public servants are categorized as B, while formal and informal workers are tagged as B, C or D according to their taxable income. FONASA A beneficiaries are only allowed to use public health facilities, free of charge. FONASA B, C and D are allowed to use public facilities as well as accessing the private sector through a voucher system (*free choice modality*). Primary and emergency care are free of charge, whereas secondary and tertiary care have co-payments of 0, 10 and 20% for groups B, C and D, respectively (54,55).

Private health insurance is administered by private-for-profit companies (ISAPRES). Their affiliates negotiate their insurance policy on a yearly basis based on their payroll contributions (7%), risk<sup>1</sup> and premiums (56). The policy stipulates the degree of coverage (e.g. 40% of costs of hospitalisation) irrespective of the disease. Given that ISAPRES affiliates are not entitled to use public services, each ISAPRE must contract out services with private providers, which range from individual private clinics to large corporations or hospitals (57). Box 1 outlines briefly other elements of Chile's 1980s health sector reform.

**Box 1.** Main features of 1980s health sector reform in Chile.

- **Decentralisation.** A decentralisation process started in 1982. It consisted in transferring administration of primary care to the municipal level as well as secondary and tertiary care to 27 Health Services, smaller administrative units that acted as executive branches of the Ministry of Health (58). By 1989, municipalities were responsible for 90% of primary care, with Health Services controlling the remaining 10% (59). Municipalities were entitled to allocate own resources to primary care, yet to prevent inequalities between poorer and wealthier municipalities, the reform introduced a Municipal Compensation Fund (48,60).
- **Change in payment methods.** Until 1978, all levels of care received a fixed budget from the Ministry of Health. The reforms introduced a fee-for-service mechanism (FAP), producing a rapid cost-escalation and a subsequent definition of a ceiling in 1983. FAP was never a strong incentive because the reimbursement only covered 75% of real costs (61), forcing hospitals to massive indebtedness with their providers (57,59).
- **Private sector incentives.** The reform included several incentives: (a) mandatory contributions increased from 4 to 7% during the first six years of reform, (b) employers could add an extra 2% of contributions, tax-free, (c) the state relieved the provision of maternity subsidies, and (d) ISAPRES benefited from poor regulation, practising free cream skimming of higher risk enrollees. (62,63,50).
- **Public expenditure in health.** Public expenditure was sharpened drastically. Health expenditure reduced from 17.5 to 6.9% of social spending. Public health centres experienced a deterioration of infrastructure as well as a reduction of wages and number of health workers (51,52).

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1 ISAPRES are only allowed to use age and sex as a proxy of risk.

These neoliberal policies were successful in boosting private sector. The number of enrollees increased steadily over the 1980s, reaching its peak in 1997 (64). Lack of regulation permitted ISAPRES to practise cream skimming freely. Therefore, those affiliates with low payroll contributions, unable to afford higher premiums or with higher risk of costly conditions (e.g. pregnancies or hospitalisations), were forced to migrate to the public sector. Consequently, FONASA affiliates were poorer, older and sicker (51,65).

In 1989, the elected president Patricio Aylwin encountered a chronically underfunded public sector, facing a profound deterioration of the physical infrastructure of health services and a rapid decline in health workers wages (52,57). The fee-for-service mechanism previously introduced generated a escalation of costs, leaving most hospitals and primary care centres indebted with their providers or running with constant deficits (57,66).

Aided by international multilateral agencies, 1990s governments focused on strengthening the public sector. Investments in infrastructure and equipment rose more than five times as well as health workers wages that quadruplicated from 1990 to 2004 (52). Furthermore, health authorities modified payment mechanisms and introduced a mix of diagnosis-related groups (DRG) with fee-for-services (Valued Payment Programme (PPV)) and a capitated scheme for primary care. Historic global budget for hospitals remained under the Institutional Services Programme (PPI) (67).

Nevertheless, by the end of the decade it became clear that 1990s reforms did nothing to tackle health inequalities and in fact the gap was widening (52). These inequalities were found in three dimensions: health outcomes, access to health care and equity of financing.

- **Health Outcomes.** Despite overall positive improvements, the gap in infant mortality and life expectancy among educational groups stagnated or even increased. This gap was also evident when comparing geographical units, such as municipalities and Health Services (68). Mortality causes showed significant disparities and, compared to women with university education, uneducated ones experienced markedly higher mortality rates for cardiovascular diseases (i.e. myocardial infarction and stroke), cancer (gallbladder, stomach, cervical and liver cancer) and other diseases like diabetes, HIV/AIDS, hepatic cirrhosis, homicides and suicides and dementia. Inequalities existed for men for the same causes, but the gap was somewhat smaller. A notorious exception was homicides and suicides (69).
- **Access to health care.** There was a perception of great inequalities in access, yet the evidence is less robust. Sapelli (70) found no differences in utilisation of primary care between income groups, although the Ministry of Health has estimated a shortfall of 23% when comparing real with projected utilisation rates for primary care. Regarding secondary care, the shortfall increases up to 200% for certain medical specialities, primarily otorhinolaryngology, ophthalmology, internal medicine and orthopaedics (71).

Arteaga described significant geographical variations (up to 6 times) in specialised consults and elective surgery between Health Services (60). In mental health, higher prevalence of mental disorders was associated with lower consultation rates in public sector patients (72). Longer waiting times and waiting lists in the public sector also

highlighted the existence of inequalities between public and private enrollees (73-76).

- **Health financing.** Evidence showed an unequal distribution of resources between private and public sectors. Albeit only covering 22% of population, the private sector spent 43% of health resources (56). Moreover, out-of-pocket expenditure remained high (49% of total health expenditure) and was found to be highly inequitable (69). This was reflected in the analysis of the World Development Report 2000, which ranked Chile 168 out of 191 countries in the concept of fairness of financial contribution (77).

Despite consensus to modify some key features of 1980s health system, it was not until 1999 when Ricardo Lagos, candidate and future president, set the need of a new reform<sup>2</sup> in the health policy agenda (78).

## Chile's new health reform in 2000

In the year 2000 the government appointed a Health Reform Commission<sup>3</sup>. The commission defined five objectives of the reform: (a) ensure equitable access to health care, by guaranteeing provision of services based on need, not on ability to pay; (b) reorient resources to interventions with greater impact on the changing burden of disease; (c) strengthen regulation of both public and private sector; (d) emphasise prevention and promotion of health as well as primary and ambulatory care; and (e) organise health services delivery, through an explicit set of financing and delivery conditions (79).

The commission proposed a set of four laws to accomplish its objectives. The core of the reform was the introduction of a package of prioritised health services. This package, called the Regime of Explicit Health Guarantees (GES)<sup>4</sup>, includes four guarantees (79,80). First, access, which grants FONASA and ISAPRES beneficiaries access to health services at different complexity levels. Second, waiting times, that guarantees a maximum time limit to receive care. Third, quality, which entitles beneficiaries to services that comply with clinical protocols and providers that underwent an accreditation process. Fourth, financial protection, that ensures a cap to out-of-pocket expenditures in order to protect households of impoverishment due to medical expenses (81,80). Box 2 summarises the four central aspects of the reform.

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2 The word “reform” was carefully avoided during the first two governments, in the understanding that their mission was to serve only as a transitional period (78).

3 The commission of representatives of the Ministry of Finance, Labour and Presidency and chaired by the Ministry of Health

4 The original name of the package was “Plan of Explicit Guarantees with Universal Access (AUGE)”. In Spanish the word “auge” means improvement and it was coined as a symbol of the positive consequences that the reform would bring to people. Yet after the hectic period of debate between 2002 and 2005, the word transformed into a negative trademark and the government replaced it by a more neutral one.

## Box 2. Main aspects of health sector reform in 2000

- **Priority health services package.** A set of health services that represent priorities in terms of burden of disease, equity and public's opinion. It covers universal access for all phases of ill health and is comprised of four guarantees: access, waiting times, quality and financial protection. The cost of the package was estimated in \$50.000 Chilean pesos (US\$ 100<sup>5</sup>)(82).
- **Sanitary Authority law.** The law splits stewardship from provision roles. It divides the Ministry of Health in two subsecretaries: Public Health and Healthcare Network. The former is responsible for stewardship and provision of public health goods<sup>6</sup>, whilst the latter focuses on provision of health services (77,83). Thirteen Ministerial Regional Secretaries (SEREMI) relieved Health Services of stewardship functions (83) and would also be responsible of provision of public goods.
- **Financing law.** Established mechanisms to finance the reform. Under the new scheme, formal workers contributions would be pooled into a single fund. This resources would serve to finance the package whereas the public health component, given its public goods nature, would be financed entirely with tax revenues (84,85).
- **Patient's Rights and Duties law.** This law grants patients the right to be informed about the diagnosis, prognosis, risks and financing alternatives as well as to decide the best course of action. It establishes three set of rights: confidentiality of medical information; company of relatives during hospitalisation and procedures and social participation, empowering patients to complaint and ask in case of doubts (86).

The formulation of the package as guarantees is rooted in the conceptualisation of health as a human right (87,88). Therefore, every citizen, regardless of their “age, gender, insurance status, income, ethnicity and sexual orientation” (79, p.10), is entitled to access the package. These guarantees are not only universal, but consider a holistic approach of the ill health process by covering all natural phases of disease (79). Nonetheless, it should be noted that the GES package is restricted only to FONASA and ISAPRES affiliates, thus excluding the Armed Forces and uninsured populations (81).

GES health services are delivered by different providers. FONASA affiliates can access GES health services only in the public sector. The voucher system (*free choice modality*) is not included in the package. ISAPRES, in turn, contracted out certain GES providers, which not necessarily coincide with the existing network of providers (89,90). In most cases, ISAPRES privileged large corporations and private hospitals, rarely including individual providers (91).

FONASA beneficiaries access the package from primary or emergency care automatically. In turn, ISAPRES affiliates must go to their ISAPRE office with a referral from their physician. The ISAPRE then assigns a provider in the GES network (89). Affiliates that do not follow this process or seek care with other providers are not entitled to the benefits of the package. The GES law also introduced health promotion obligations for ISAPRES, by granting access to a preventive medical exam (*Adult Preventive Medical Exam* or EMPA). Moreover, it

5 Calculated in 2002 dollars according to the year average published by Chilean Central Bank.

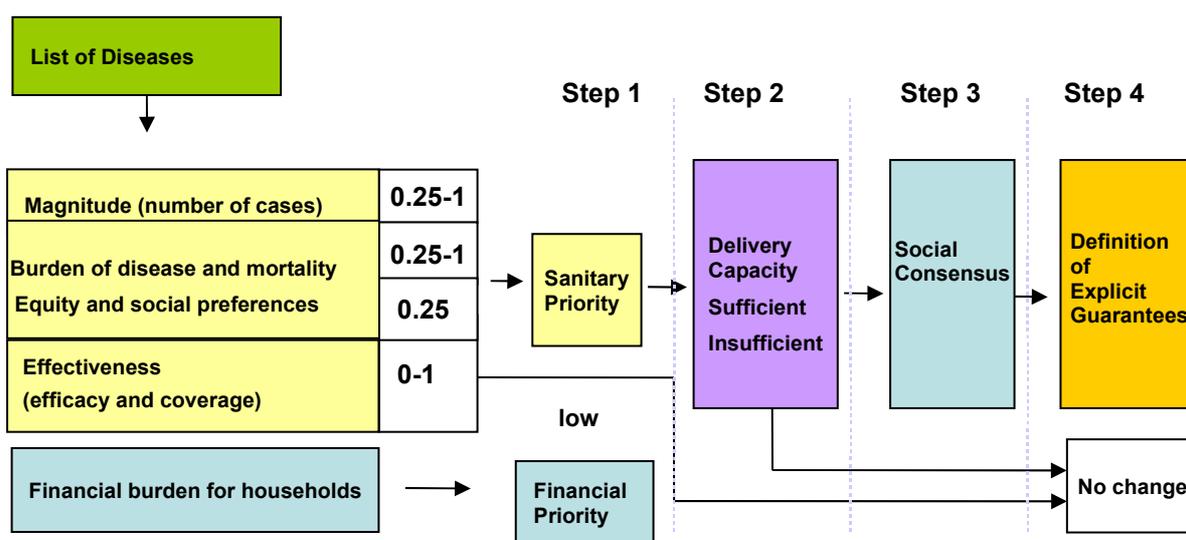
6 Public health goods, in this regard, are goods with high positive externalities or considered public goods, or those goods which fulfil non-excludable and non-rivalry properties (87)

established a GES Advisory Council, whose primary task would be to evaluate the addition of new conditions as well as revising the existing package, which guarantees must be reconsidered every three years (81).

## Design of the Explicit Guarantees Regime

During its first year, the commission decided to embrace the idea of a priority health services package, following a series of strategic steps undertaken by the Ministry of Health during the 1990s (78). The development process of the package resembles the one proposed by the World Bank (1,13), but its particular influence in the reform remains unclear<sup>7</sup>.

The package was defined in four steps, employing the prioritisation algorithm outlined in Figure 1. The first step consisted of a priority scoring system with six categories: magnitude (number of cases), burden of disease, mortality, equity, patient's preferences and effectiveness. For the first three categories, diseases were ranked according to their magnitude (number of cases), mortality and burden of disease and arranged into four groups. A value of 1, 0.75, 0.5 and 0.25 was assigned for every group. Diseases without an estimated burden of disease received 0.25 points (82,92).



**Figure 1.** Prioritisation algorithm to select diseases to be included in the GES package  
Source: Adapted from (81).

<sup>7</sup> Lenz (78) argues that key stakeholders in the National Health Fund and Ministry of Health pushed the idea of a PHSP. Conversely, Sepulveda-Alvarez points out to strong links between the Financing Ministry and the World Bank (61).

Equity was defined as those diseases with mortality gaps within socio-economic groups and received 0.25 points. The commission did not consider access or financing inequities. A fifth category, social preferences, assigned 0.25 points to those diseases identified as priorities by patients. Patients gave greater priority to cancer and palliative care, HIV/AIDS and diabetes, while identified childhood and old age as groups in greater need of social protection (93). For the last category, effectiveness, the commission undertook a “qualitative identification of effectiveness and efficacy” (82, p.25) and assigned diseases a value between 0 and 1.

The result of the algorithm was three types of diseases with different priority: low, intermediate and high (82, p.25). Nevertheless, it is worth noting that all diseases listed were finally included, regardless of its priority.

Those conditions without effective interventions would not be included in the package, thus excluding four diseases: lung cancer, glaucoma, liver cirrhosis and Alzheimer's disease. However, it is unclear how this decision was made. Three of them were not part of the cost-effectiveness studies performed in 1999 and a fourth (glaucoma) showed greater cost-effectiveness than surgical treatment of prostate hyperplasia, but only the latter was included (93,94).

Equally, only those diseases for which there was a sufficient capacity of provision would be added (82, p.24). A second step was thus to evaluate the health service delivery capacity in the country. Combining public and private sector capacity, FONASA found that the combined delivery capacity was insufficient in 15 out of 60 diseases analysed, particularly in certain medical specialities, orthopaedics, ophthalmology and mental health (82, p.26). The commission, however, did not exclude them, but suggested to restrict the guarantees to a certain age range (i.e. over 65 years old) or severity (e.g. only severe cases) (82, pp.27-29).

A third step, “social consensus”, was never formalised and there is no further mention of it in the report. Finally, a fourth step consisted in the definition of appropriate guarantees of access, waiting times, quality and financial protection for 56 selected diseases. Against the aims of the reform, the package did not include all phases of ill health process. As shown in Appendix I, available preventive measures were excluded, together with diagnosis for 19 diseases, for which only treatment was guaranteed. (82).

It is noteworthy that those diseases included in the package are by no means the only conditions for which both public and private sector would provide services. As pointed out by Michelle Bachelet, Chile's current president, “All health needs will remain covered, but these prioritised ones will have guarantees” (95).

The final package consisted of 56 health conditions, covering 73% of burden of disease and 50% of hospital admissions (96). The package covers mostly non-communicable diseases with the exception of children ARI, ambulatory pneumonia in the elderly and HIV/AIDS. Non-communicable diseases include cardiovascular diseases, cancer and palliative care, mental health, chronic respiratory and degenerative disorders. A number of orthopaedical and ophthalmological conditions that require surgery as well as acute conditions needing emergency care were also included. Moreover, the package covers some congenital and chronic childhood diseases including cystic fibrosis, haemophilia and asthma as well as anaesthesia during delivery (82). The full list of diseases included in the GES package and

their respective guarantees can be found in Appendix I.

## **Drifting apart: a period of tense negotiations**

Before its official release, the four laws proposed by the Health Reform Commission leaked to the media and immediately sparked an intense debate. The heated debate focused in two aspects of the reform: its financing mechanisms and the GES package itself. On one hand, right-wing political parties and Christian democrats saw the creation of a Universal Solidarity Fund as a threat to the interests of middle and upper class insurance enrollees (78).

On the other, medical doctors perceived the GES package as a reduction of the concept of universal access to a set of minimal standards and a way of shrinking the role of the public sector (97). Well-off populations would have access for all health conditions by purchasing additional coverage, thus “institutionalising inequity”(97, p.5). Of particular concern was the consequences of the package on those diseases which were not prioritised: medical doctors feared that non-GES patients would be left behind (78).

The Ministry of Health only sought for “social consensus” after the reform was already designed, more aiming to negotiate with different stakeholders than encouraging real participation. In fact, even those responsible for the future execution of the reform, namely, Health Services and SEREMIs were excluded (78). During 2002 the population witnessed a debate between different stakeholders, yet never understood much about its implications. An informational campaign organised by the government was matched with an escalation of protests and strikes from medical doctors (78).

As a result, two modifications emerged from the political battleground. First, the Solidarity Fund was rejected as a financing mechanism and finally it was agreed to increase the Value Added Tax (VAT) from 18 to 19%. Its revenue would finance the reform as well as a new conditional cash transfer programme, *Chile Solidario* (78) In addition; a maternity fund was created with 0.6% of payroll contributions, freeing tax-funded resources (98). Second, policy-makers created a compensation fund for ISAPRES. This fund, administered by the Health Superintendency, adjusts the premiums for age and sex, thus compensating ISAPRES with more women and elders (99,100).

Even though the initial sentiment of the reform was not fully accomplished, given the lack of profound modifications in a segmented two-tiered health system, the core of the reform passed the drifting phase completely untouched. The Explicit Guarantees Regime was made law in August 2004.

The reform began its implementation process silently, away from the heated tone that characterised its negotiation process (78). The official start was in July 2005 with 25 diseases. During 2006 and 2007, 15 and 16 health conditions were added, totalling 56 diseases (82, pp. 29-38). The government has committed to a target of 80 diseases in 2010 (101), although which diseases will be finally included is a mystery.

For 2008, the Ministry of Health is piloting seven new guarantees: Gaucher's disease, Parkinson's disease, adult epilepsy and asthma, abdominal wall hernias, juvenile rheumatoid arthritis and secondary prevention of end-stage renal disease (101). However, it is not clear how these diseases were selected. Three of these diseases do not appear in previous policy documents and there is no evidence of its burden of disease or cost-effectiveness of its treatment.

## 4. Problem Statement, Objectives, Methodology

### Problem Statement

Equity in health and health care has gained a central place in Chile's health policy agenda during the last decade. This can be sensed in the significant attention that equity has received in the Chilean academic literature as well as its recurrent mention in government policy documents. During the first years of 2000s, Chile joined the International Forum on Common Access to Health Care Services and the Global Equity Gauge Alliance (102,103), manifesting the need to ensure equitable and universal access to health care. In the same vein, there are sound indications to ascertain that, of eight possible objectives, equity is the main policy goal pursued with Chile's health reform, particularly with the GES package (104-106,95).

Therefore, it is somewhat surprising that policy-makers assigned the lowest possible value to equity (82) as well as the absence of explicit mechanisms to ensure that the benefits of the package would be equally distributed. One explanation is that the GES package itself is an equity mechanism, and its inclusion as “entitlements” or “guarantees” would empower worst-off populations enough to compensate prevailing inequalities of access. The reform also includes safeguards to prevent households from catastrophic events and mechanisms to decrease cream-skimming practices (the Solidarity Compensation Fund for ISAPRES) (100). The weak inclusion of other policy actors, such as health workers and the public, discussed in previous chapters, reinforces the possibility that Chilean policy-makers judged a significant increase in the supply of health services as to be powerful enough to overcome other demand-side barriers. In other words: “if you build it, they will come”<sup>8</sup>.

Another possible explanation is that equity of access was conceived as part of the implementation process. Again, the character of “universal” and “guarantees” would provide the Ministry of Health with attributions to demand certain performance from health services, acting as a benchmark tool (87). Moreover, the government planned a massive communicational campaign to make sure that every citizen was aware of the existence of the package (78).

However, there are reasons to believe that the inverse care law might operate in the implementation of the GES package. First, at a geographical level, it is likely that more skilled policy-makers and health workers tend to concentrate in bigger cities. This is illustrated by the fact that many jobs remain vacant in health services responsible for poorer communities (107).

Second, at a population and individual level, the existence of a well-developed network of primary care providers might contribute to reach isolated rural communities, reducing transport and other indirect costs. Improvements in drugs and exams availability might reduce out-of-pocket expenses in such items in the private sector. However, poor patients might still face significant barriers for utilisation of secondary and tertiary care. One of the consequences of Chile's “crazy geography”<sup>9</sup> is the contrast between widespread populations

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8 Popular phrase from the film *Field of Dreams* (1989).

9 Expression coined by Benjamin Subercaseaux in its book “Chile or a crazy geography”.

along the country versus concentrated specialised resources in regional capitals, forcing patients to travel distances that can be as high as 700 kms. Hence, it could be expected that access will not be equal for secondary and tertiary care services.

A third reason is that, as Arteaga points out, the government projected the demand for health services based on existing utilisation patterns and did not carried out need-based adjustments. Therefore, inequalities in health services delivery might still prevail (71).

## **Objectives**

### **General Objective**

To analyse the equity of utilisation and access to the Chilean priority health services package.

### **Specific Objectives**

- To describe utilisation of the priority health services package by different social groups (e.g. socio-economic status, education, gender).
- To analyse the availability, affordability and acceptability of health services included in the priority health services package.
- To examine whether the implementation of the package has had negative consequences on utilisation or access of those diseases not included in the package.

## **Methods and Materials**

### **Analytical framework for equity of access**

**Access.** This study uses the analytical framework described by Gilson and Schneider (10). In this framework, access is understood as a multi-dimensional concept, therefore avoiding the use of utilisation as a proxy for equity of access (102). Access is defined as the “degree of fit between the health system and those it serves” and it is conceptualised as a product of the interaction of supply and demand side elements. Three of these elements are central to the concept of access: (a) availability, which refers to the existence of services in the right place and time; (b) affordability, or whether patients are able to afford the costs of health care; and (c) acceptability, the community social and cultural perception of the services provided by the health system. Box 3 contains more detailed definitions for these concepts.

### **Box 3.** Central elements of Gilson's access framework.

- Availability includes the presence of infrastructure, equipment and human resources which provide health services of a varied type, in sufficient quantity and of acceptable quality (108,10). Services must also be located in the right place, closer to where most health needs are; and provided in the right time, with appointment systems and opening hours that correspond community needs (109).
- Affordability comprises a wide range of costs that patients might face when seeking health care. This includes official or unofficial payments at the point of service (user fees<sup>10</sup> or under the table); transport costs; out-of-pocket payments for drugs and exams; and opportunity costs (110). Given that affordability refers to ability but also willingness to pay, patient's perceptions of the severity and magnitude of the disease affect significantly the interplay between supply and demand side factors (111).
- Acceptability has three key elements: patient's and providers fit of health beliefs; degree of engagement, dialogue and empowerment of patients and providers; and organisational arrangements of the health system (10). In shaping the expectations that patients have from providers and health systems, the role of trust is crucial (112). Trust acts as a facilitator as well as a product of the communication process, ensuring that information barriers are successfully overcome (113). In contrast to other theoretical frameworks that consider access as a merely supply side concept (114), this framework encompasses demand side barriers and enriches its explanatory power by including an often neglected patient's perspective (115).

While access refers to the opportunity or freedom to use health services, utilisation of health services represents usage itself. Utilisation is, thus, realised access (109,10). Indeed, patients can exercise differently their freedom, depending on their particular preferences and it is possible that two patients with equal health needs and freedom of access use services differently (116). This is not necessary "unfair", unless it represents unequal underlying patterns of health seeking behaviour (e.g. determined by education or amount of information) (102).

**Equity.** Equity of access can be defined as "equal access to equal need" (117). As opposed to the concept of equality, which states differences between social groups, equity is primarily a normative concept (24). It highlights those differences between social groups that are "unnecessary and avoidable, but in addition, unfair and unjust" (118). In this regard, horizontal equity refers to patients with same needs receiving equal access, whilst vertical equity points out to different access for patients with different needs (119). Therefore, inequities arise from those differences related to other factors than need, such as differences in income, education or ethnicity (29,120). The term inequality will be employed when it is not possible to account for need, as a merely descriptive concept.

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<sup>10</sup> Here we consider user fees as a subtype of out-of-pocket payments for health services. Patients might also face out-of-pocket payments for drugs and medical exams.

## Data Sources

This study is a cross-sectional study that combines an individual and ecological analysis. It also draws secondary data gathered from routine sources of information and official government reports.

**Individual analysis.** The individual analysis uses data from the National Socioeconomic Characterisation Survey (CASEN) conducted in 2006 by the Chilean Ministry of Planning. In some cases, data from older series (1985-2003) were analysed.

The CASEN household survey has a sample of 268.873 individuals (73.720 households), providing reliable information on a national, regional and municipal scale. The survey design consists of a two-stage geographical cluster sampling. In the first stage, groups of households (segments) were randomly selected, with probability proportional to size. The second stage uses a systematic with equal probability procedure to selected individual households. The survey included households from 330 municipalities (out of 346), excluding 13 municipalities in the southernmost part of Chile, two islands in the Pacific Ocean and one in the Andean highlands (121,122). CASEN defines household as a group of people living under the same roof and having a common food budget. Data collection was carried out by trained interviewers who visit every household during November and December 2006 (122). The interviewers asked the presence of every household member older than 18 years and read a questionnaire out loud. Due to higher refusal rates among wealthier households, the survey considers a rate of replacement, although the methodological report does not elaborate upon this (122).

In 2006, CASEN incorporated questions about utilisation, perceived quality and waiting times of ten diseases included in GES: hypertension; diabetes; ARI for children under 5 years old; breast, cervix and testicular cancer; myocardial infarction; chronic renal insufficiency; pacemaker and oral health for children under six years old. However, it is not possible to distinguish which disease caused the utilisation or which complexity level of services was utilised (123).

**Ecological analysis.** Ecological analysis uses data from the GES Health Management and Information System (SIGGES) from July 2005 to June 2008. SIGGES is a national web-based information system, administrated by FONASA, which registers every patient in the public system that has utilised the GES package. After formal approval from FONASA, the author received a large database that included individual information of several variables: age, sex, municipality of residence, health centre owner of the case and GES health condition. The system registers the last place where the patient received care as the “owner” of the case. This can be a primary, secondary or tertiary health centre.

SIGGES administrators pointed out that the place of residence registered is unreliable. They advised to consider the address of the health centre, which in the case of primary care most likely matches the place of residence. In the case of secondary and tertiary care this parameter is not useful and municipality of residence was thus employed.

Individual data was aggregated into municipal data and matched with average municipal per

capita income and potential years of life lost (PYLL). Municipal income was calculated with CASEN survey information. PYLL were calculated with the average of municipal mortality indicators, disaggregated by sex and age groups between 2002 and 2005. This allows reducing yearly variation in mortality, which is particularly significant for smaller municipalities.

**Official Sources.** The study incorporates data from routine sources of information, such as the Department of Information and Statistics of the Ministry of Health (DEIS), National Municipal Information System (SINIM), FONASA, Health Superintendency and the National Institute of Statistics (INE). In addition, financial and management data was obtained from the Budget Bill and the Comprehensive Management Report (BGI) that several government offices submit to the National Budget Office in the Minister of Finance (DIPRES).

## **Search Strategy**

For developing this thesis, the author searched Pubmed (1966-2008), Cochrane Library, World Bank Library, Scielo and Google Scholar using the following keywords: essential health services package (and variants), explicit health benefits, health benefit basket, basic health services, equity of access, equity of utilisation, health care access, priority setting in health care, explicit rationing, Chile.

In addition, several journals were hand searched<sup>11</sup>. For Chilean articles, the search included the websites of the Ministry of Health, Health Superintendency, FONASA, National Congress Library and National Budget Office. The author sought for relevant references in published documents and whenever impossible to find, the authors were contacted.

## **Statistics**

This study used Stata 10 for all computations and graphs. OpenOffice Calc was employed for tables design.

## **Individual Analysis**

**Sample considerations.** The importance of accounting for survey design was been greatly emphasised in the literature (124-126). To take into consideration the complex sample design, results are adjusted for probability weights, clustered sampling design and stratification. The CASEN survey variables *seg* (cluster), *expr* (pweight) and *estrato* (strata) were employed when using complex survey commands in Stata 10 (127).

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<sup>11</sup>Health Policy and Planning (2004-2008), Health Policy (2007-2008), International Journal of Health Services (2006-2008), Chilean Journal of Obstetrics and Gynecology (2005-2008), Chilean Journal of Pediatrics (2005-2008), Chilean Journal of Surgery (2005-2008), Chilean Journal of Medicine (1998-2008), Chilean Journal of Public Health (2004-2007), Social Medical Notes (2004-2007).

**Dependent variables.** In the first model, the dependent variable was based on two questions from CASEN (128). The first question asks “Have you sought health care for any of this ten conditions” (see above). Respondents were further asked “Was it covered by the GES plan?”. The second question was coded as a binary response “Yes” (1) and “No” (0). Those respondents who answered “I don't know” were considered missing values. The variable does not include those who answered “I don't know” in the first question, although it is likely that many of them were covered. The second model used the question “Which health insurance do you belong to?” and coded “None” (1) and other responses (0). Again, the answer “I don't know” was not included in the calculations.

**Independent variables.** Independent variables are age, sex, quintiles of income, years of education, occupation, ethnicity and long-standing disability. No data or “I don't know” answers were counted as missing values. Numerical variables were transformed into categorical ones in all cases. Age was coded in four groups: 0-18, 19-40, 41-64 and more than 65 years old. Sex (Male 0; female 1), ethnicity (Yes 1, No 0) and occupation (Yes 1, No 0) were coded as dummy variables. Long-standing disability is considered as a proxy of need. Income is used as a proxy of living standards and considers only those monies earned by the household, excluding state subsidies (autonomous income).

In the case of “Years of education”, the variable created by the survey considers only cases older than 15 years, reporting more than 60.000 missing values. In such case, the highest number of educational years in the family was given to those missing value cases. Respondents younger than 15 years which were alone at the time of the survey were considered as missing values.

**Logistic regression models.** The study includes two logistic regression models fitted with Stata 10 that used CASEN questions with binary outcomes as dependent variables. To build the model, an univariate analysis was carried out (“unadjusted” results in Table 3 and 6). Variables with a p-value higher than 0.20 were left out of the multivariate analysis. In the case of variables with a high degree of collinearity, (i.e education and occupation), the author selected one of them based on the results of the univariate analysis. In both cases occupation was excluded, because of collinearity and p-value greater than 0.2 in the second model. The model controls for sex, age and need (long-standing disability) as confounding factors and sample design issues, as mentioned before.

Post-estimations analyses were performed to assess the degree of fit of the logistic regression model by using the *svylogitgof* command developed by Archer and Lemeshow (129,130). Both models fit well, with a p-value of 0.9 and 0.08.

### **Ecological Analysis**

**Standardisation.** The measure of utilisation for each municipality is an indirectly standardised utilisation rate (SUR) for sex, age and need. As outlined in Box 4, age standardisation process was cumbersome, forcing us to a number of adjustments. Following O'Donnell *et al* guidelines (126), an indirect standardisation was done, using municipal PYLL as a proxy of need.

**Box 4. Age and need standardisation procedure.**

- **Age and sex standardisation.** The rate was calculated by dividing observed GES cases by the expected number of cases for each municipality, taking into account the age and sex structure (131). The expected count was calculated as:

$$SUR = \frac{O_j}{E_j} \qquad E_j = \sum_{j=1}^k n_j r_j$$

where  $r$  is the total number of cases for each stratum divided by the total number of FONASA beneficiaries for each stratum and  $n$  is the population of FONASA beneficiaries for stratum for each municipality. The stratum ( $j$ ) was computed using seven age groups: 0-4, 5-9, 10-19, 20-44, 45-64, 65-80 and over 80, for each sex and municipality (131).

- **Adjustment procedure.** Lack of disaggregated data (by age and municipality) for all years forced us to introduce an adjustment procedure to calculate  $n$ . Population groups by municipality were available only for 2004, but GES cases are from July 2005 to June 2008. To match both the year and the fact that GES cases are from three years, the number of people in each stratum was multiplied by the municipal population growth (i.e  $N_{05}/N_{04}$ ) and the proportion of those inhabitants that belonged to FONASA ( $b$ ) for the years indicated in the equation<sup>12</sup>. In the case of  $r$ , the total number of FONASA beneficiaries is also comprised of three years (2005-2007).

$$n_j = n_{j04} * \frac{N_{j05}}{N_{j04}} * b_{j06} + n_{j04} * \frac{N_{j06}}{N_{j04}} * b_{j06} + n_{j04} * \frac{N_{j07}}{N_{j04}} * b_{j07} \qquad r_j = B_{05-07} * G_{05-08}$$

Furthermore, the number of children less than one year old was not available in the Ministry of Health data. The total number of cases was then subtracted to the municipal population estimates from SINIM, but in ten cases data did not match. Those cases were excluded from calculations as well as four newly created municipalities for which no data was available.

- **Need standardisation.** Age standardised values were standardised by need following O'Donnell *et al* guidelines (126). The average PYLL for 2002-2005 (the latest information available) was used as a proxy of need, calculated with a limit of 80 years old (132). The standardised values for SUR were computed after fitting a simple lineal regression SUR and PYLL and using the formula (126):

$$y_i^{IS} = y_i - y_i^p + \overline{y_i^p}$$

where  $y^p$  is the predicted value obtained after the regression for every municipality ( $i$ ). Therefore, the observed SUR was subtracted its predicted value and summed the mean of predicted values.

<sup>12</sup> The proportion of beneficiaries affiliated to FONASA was only available for 2006 and 2007. The calculations for 2005 included information for 2006.

**Concentration curve and index.** A concentration curve plots the cumulative share of income against the cumulative share of a health variable, SURs in this case. A line of 45 degrees (line of equality) represents an equal utilisation by rich and poor municipalities. If the line lies above the diagonal, utilisation is concentrated among poorer municipalities. Conversely, a line lying below the line of equality represents a higher concentration among wealthier municipalities (133).

The concentration index is a quantitative measure derived from the concentration curve. It is equivalent to twice the area between the line of equality and the concentration curve. By convention, a positive concentration index means that health utilisation is concentrated among richer municipalities, whereas a negative value points out to a greater concentration by poorer municipalities. This study assesses the concentration index by using the formula proposed by Wagstaff *et al* in (134-126) and Stata module *concindexi* developed by Bassirou (136).

In addition, dominance, or the degree to which one curve predominates over the other, was estimated using Stata module *dominance* developed by O'Donnell *et al* (126). If both curves do not cross, then one dominates the other. In turn, curves are non-dominant if they cross at some point. This judgement can be made through two tests, one stricter than the other; this study will only use the stricter one to ensure reliability of the results (126).

## 5. Findings

### Utilisation of GES health services

#### By gender, age and FONASA category

Table 1 shows the utilisation rates per 100 beneficiaries for both FONASA and ISAPRES affiliates. Two findings emerge from the examination of Table 1. First, the total number of registered cases has increased steadily every year; yet an analysis per every year separately reveals a drastic fall in utilisation rates among FONASA users for the first group of diseases that started in 2005. This can be explained by a reduction in utilisation rates for hypertension and type I and II diabetes, which more than halved in two years. This trend was not observed for ISAPRES enrolees. After excluding those diseases, the tendency seems to experience a quick uptake in the first year, followed by stagnation. One explanation is an initial uptake of prevalent cases, followed only by incoming incident cases. The important fall in the case of hypertension and diabetes could, however, reflect that other factors are interplaying.

Second, ISAPRES affiliates have underutilised GES health services. From 2005 to 2007, they never exceed 6.3% of GES services, despite of covering more than 18% of beneficiaries entitled to GES benefits.

**Table 1.** Utilisation of the GES package (per 100 beneficiaries) between 2005 and 2007

	2005		2006		2007	
	FONASA	ISAPRES	FONASA	ISAPRES	FONASA	ISAPRES
2005 <sup>a</sup>	11.89	1.77	9.23	2.6	7.9	2.08
Hypertension, DM1 and DM2	8.65	1.21	4.22	1.55	3	1
2005 without HTA and DM	3.24	0.57	5.01	1.06	4.91	1.08
2006 <sup>b</sup>			2.36	0.73	3.99	1.07
2007 <sup>c</sup>					2.51	0.28
Total (thousands)	1322618	47169	1329924	89401	1691388	95383
%	96.56	3.44	93.7	6.3	94.66	5.34
N° of enrolees (mill)	11.12	2.66	11.48	2.68	11.74	2.78
% <sup>d</sup>	80.7	19.3	81.07	18.93	80.85	19.15

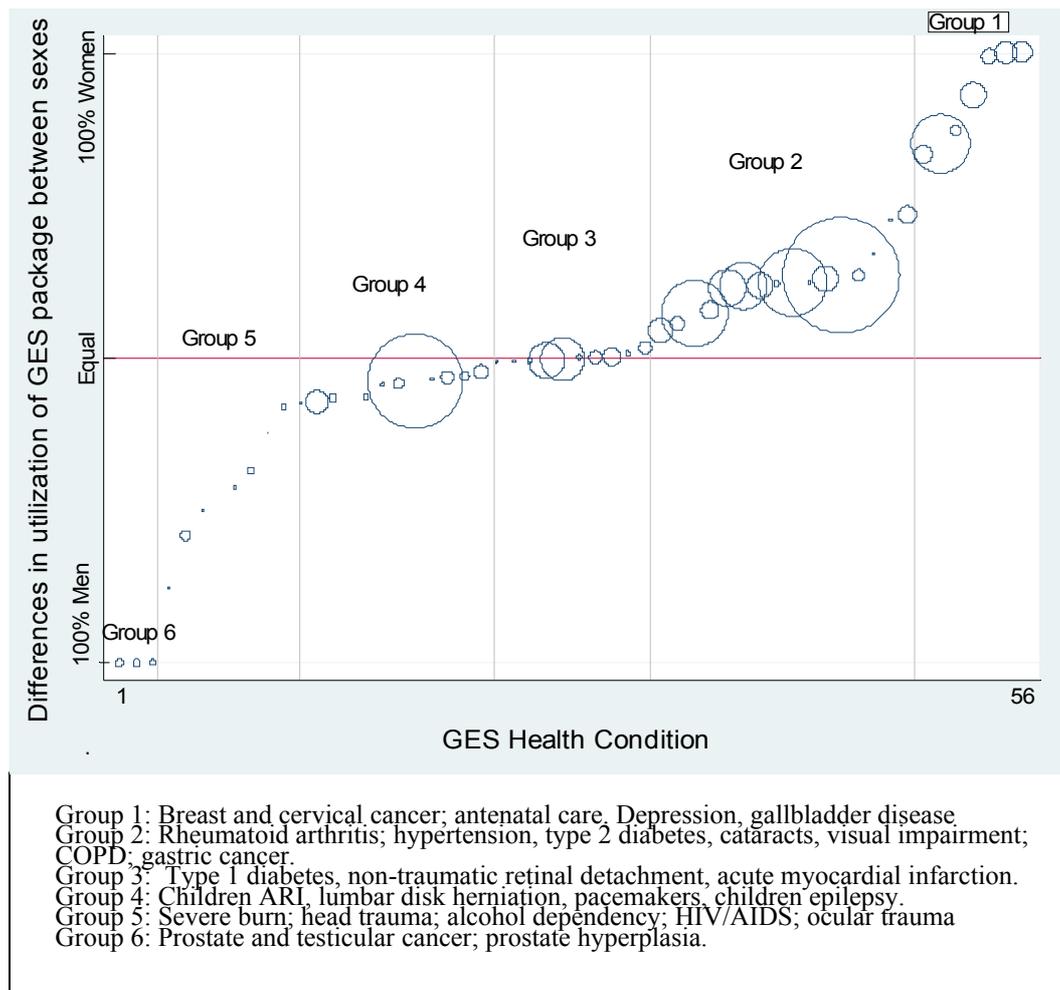
Corresponds to a. 25 diseases, b. 15 diseases, c. 16 diseases

d. Considering that only FONASA and ISAPRES affiliates are entitled to GES benefits

Source: Author's elaboration based on (46)

A further analysis of the utilisation of GES health services is only available for patients enrolled in FONASA. By July 2008, 5.32 million patients have been registered in SIGGES as GES users. There is a clear female predominance in utilisation of GES services (60.8%). After excluding those diseases that are gender exclusive (e.g. breast cancer), the pattern persists: 59.7 versus 40.3%.

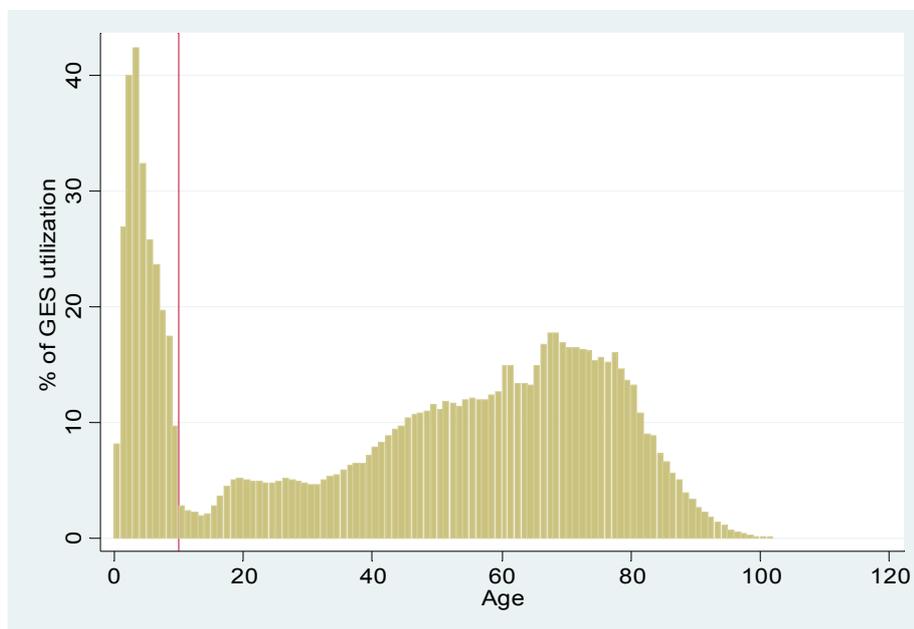
Figure 2 shows the gender differences in utilisation of all GES conditions ranked by women predominance. The red line represents zero differences and as we move towards the right, women's utilisation increases; circle sizes are proportional to number of cases. Groups 1 depicts diseases either exclusive for women or with high female predominance, as cholecistectomies or depression. Group 2 concentrates a majority of GES cases and represents a cluster of moderate female predominance, mostly composed of primary care diseases: hypertension, type 2 diabetes, community-acquired pneumonia in the elderly, adult oral care, among others. Group 3 shows GES health services that have been equally utilised, such pain relief for cancer, children oral care, acute myocardial infarction.



**Figure 2.** Sex differences in utilisation of GES health services (n= 5.32 mill)

Group 4 indicates diseases with male predominance, like children lower ARI or epilepsy, lumbar disk herniation or pacemakers. Higher predominance was observed in Group 5, which groups mostly severe accidents and injuries, alcohol and drug dependency and HIV/AIDS. Finally, Group 6 depicts diseases with exclusive male predominance: testicular and prostate diseases.

Examining the utilisation of GES services by age, as presented in Figure 3, reveals a clear bimodal curve. The first mode reaches its peak at 4 years, but ranges from 0-10 years. The second ranges from 40 to 80 years old, with its peak at 65 years. In fact, children from 0-10 years concentrate 24.9% of GES utilisation. More than half GES users are to be found between 40 and 80 years old, mostly skewed in the range of 60 to 80 (32.4%).



**Figure 3.** GES health services utilisation by age groups. (n= 5,232,886)

In the case of GES utilisation by categories of FONASA (Table 2), FONASA B users have a markedly higher utilisation rates than other groups, together with older GES users. While FONASA A users show utilisation rates closer to the average, FONASA C and D have clearly underutilised GES health services. Despite representing 17% of FONASA beneficiaries, have only utilised 13% of GES services.

**Table 2.** Utilisation of GES services by category of FONASA

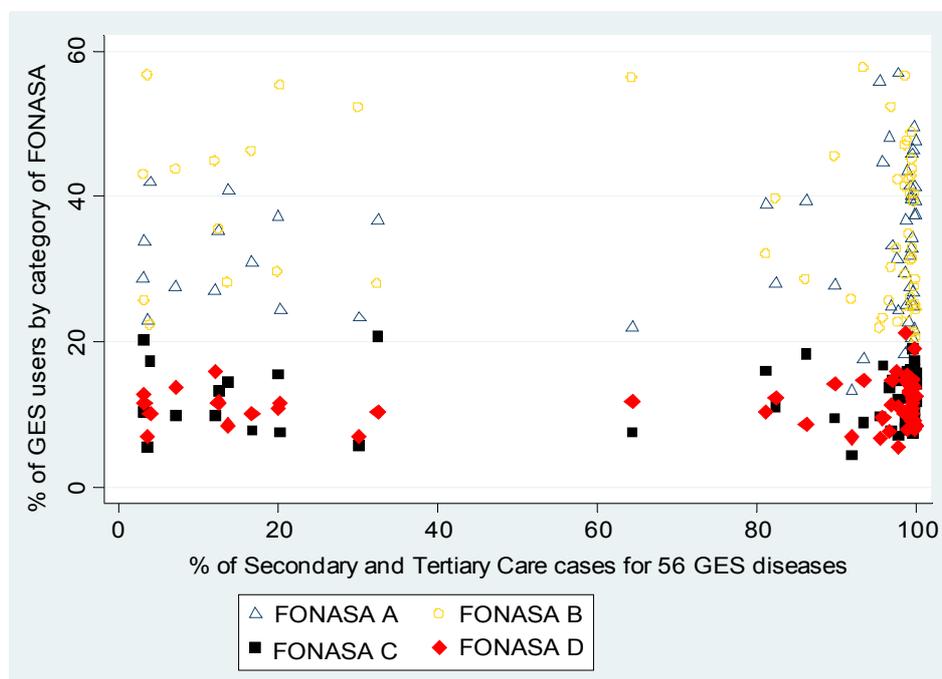
FONASA Category	GES users			FONASA enrolees		Utilisation rate <sup>1</sup>
	N°	%	Age (avg)	N°	%	
A	1708372	34.8	37.63	3939400	34.3	43.4
B	1943794	39.5	53.82	3571271	31.1	54.4
C	657442	13.4	34.84	1955056	17.0	33.6
D	607060	12.4	46.24	2013657	17.5	30.1
Total	4916668	100	44.72	11479384	100	42.8

Source: Author elaboration based on SIGGES and (65)

1. Rate per 100 affiliates

One might postulate that the existence of a voucher system (*free choice modality*) might lead FONASA C and D beneficiaries to reserve the utilisation of public sector services for emergencies or catastrophic events.

Figure 4 examines this possibility by ranking GES diseases according to the percentage of cases belonging to a secondary or tertiary health centre. FONASA A and B (triangles and circles) predominate in all health conditions, even those with higher concentration of specialised services. FONASA C and D (squares and diamonds) never exceed 25% of cases.



**Figure 4.** Rank of GES diseases by percentage (%) of secondary and tertiary care cases against categories of FONASA.

### By different social groups

Analysing utilisation of GES services by category of FONASA already provides some hints about who has benefited from the GES package. To address this question, there are two other possible sources of information: individual level from CASEN survey and ecological aggregated data from SIGGES.

**Individual level.** On an individual level, CASEN survey was used to fit a logistic regression model, taking into account sampling design. CASEN respondents were asked whether they sought care for ten conditions including in the GES package (without mentioning it) and, in a second question, the interviewer asked whether it was covered by the GES package. Only 49% of patients referred to be covered by the package, whereas 23% did not know if they were covered.

Even though it is likely that most respondents who answer “I don't know” were indeed covered, it is not possible to ascertain that in all cases, particularly for ISAPRE and FONASA C and D enrolees. Therefore, the dependent variable considers this group as missing values and coded respondents who were covered (n=7.366) as 1 and as 0 those who were not covered (n=3297). The model includes income, education, place of residence and ethnicity as

independent variables. The results were controlled by age, sex and need (long-standing disability).

Table 3 shows the results of the logistic regression model. In univariate (unadjusted) model, the odds of being covered by GES package are significantly higher for all quintiles of income, compared to the richest quintile. The odds ratio are higher for the poorest group (OR 3.47), followed by the middle income (OR 2.86).

**Table 3.** Logistic regression model to identify predictors of positive coverage of GES package (n= 10663).

Category	% covered	Adjusted		Unadjusted			
		OR	CI (95%)	OR	CI (95%)		
<i>Quintile of Income<sup>a</sup></i>							
Richest	8.2	1	reference		1		
Fourth Quintile	11.5	1.1	0.84	1.45	***1.82	1.41	2.34
Middle	15.4	**1.47	1.11	1.95	***2.86	2.22	3.69
Second Quintile	14.8	1.24	0.95	1.62	***2.74	2.13	3.52
Poorest	14.3	*1.39	1.02	1.9	***3.47	2.66	4.53
<i>Insurance</i>							
Private (ISAPRE/Armed Forces)	3.9	1	reference		1		
None	0.9	1.33	0.69	2.56	1.41	0.75	2.65
FONASA A	24.8	***7.57	5.65	10.14	***8.95	6.88	11.66
FONASA B	23.6	***5.33	4.06	6.99	***6.11	4.7	7.93
FONASA C	5.6	***3.12	2.15	4.53	***3.48	2.41	5.03
FONASA D	5.8	***3.34	2.46	4.69	***3.7	2.7	5.11
<i>Place of Residence<sup>a</sup></i>							
Urban	57.5	1	reference				
Rural	6.75	1.06	0.9	1.26	***0.73	0.63	0.85
<i>Age<sup>a</sup></i>							
0 to 18 years	5.61	1			1		
19 to 40 years	6.25	1.34	0.75	2.4	0.95	0.68	1.32
41 to 64 years	30.6	*1.76	1.01	3.09	**1.41	1.07	1.85
More than 65 years	21.8	1.59	0.93	2.74	***1.54	1.17	2.03
<i>Years of Education</i>							
More than 13 years	2	1	reference		1		
8 to 12 years	2.7	1.12	0.6	2.09	***2.42	1.43	4.08
1 to 8 years	56.2	0.64	0.34	1.21	***1.95	1.32	2.87
None	3.4	0.65	0.31	1.34	***3.02	1.86	4.89
<i>Sex<sup>a</sup></i>							
Female	40.3	0.87	0.75	1.01	1.09	0.95	1.25
<i>Discapacity (proxy of need)</i>							
Yes	14.8	1.13	0.93	1.37	***1.37	1.14	1.64
<i>Ethnicity<sup>a</sup></i>							
Yes	3.24	1.25	0.89	1.76	*1.48	1.06	2.05

Source: Author elaboration based on CASEN 2006.

P <0.001 \*\*\* p<0.01 \*\* p<0.05 \*

Goodness of fit: F-adjusted test statistic = 0.461; p-value 0.9

a. N =10625-10663 b. N=10493

Public health insurance is strongly associated with GES coverage, with a clear gradient between FONASA A enrollees (OR 8.95) to C (OR 3.48); group D have odds slightly higher than category C (OR 3.7). Compared to highly educated groups, other educational groups have significantly more probability of being covered by GES package. The odds are higher for groups without education (OR 3.02), followed by the group with 8 to 12 years of education (OR 2.42). Respondents that belong to an ethnic group had also more probability of GES coverage, although its statistical association is weaker. Age groups between 40 and 64 and older than 65 were significantly associated with being covered by GES, whereas in the case of place of residence, the association was inverse: rural patients have lower odds of GES coverage than urban counterparts (OR 0.73). Reporting a disability<sup>13</sup> was also associated with being covered by GES package (OR 1.37).

After adjusting for sex, age and need (long-standing disability), the multivariate analysis reveals an attenuation of most significant correlations observed in the univariate analysis. However, the gradient observed for public insurance categories remains intact. Groups belonging to the middle and poorest quintiles of income have significantly higher odds of being covered by GES (OR 1.47 and 1.39), as well as respondents between 41 and 64 years old (OR 1.76).

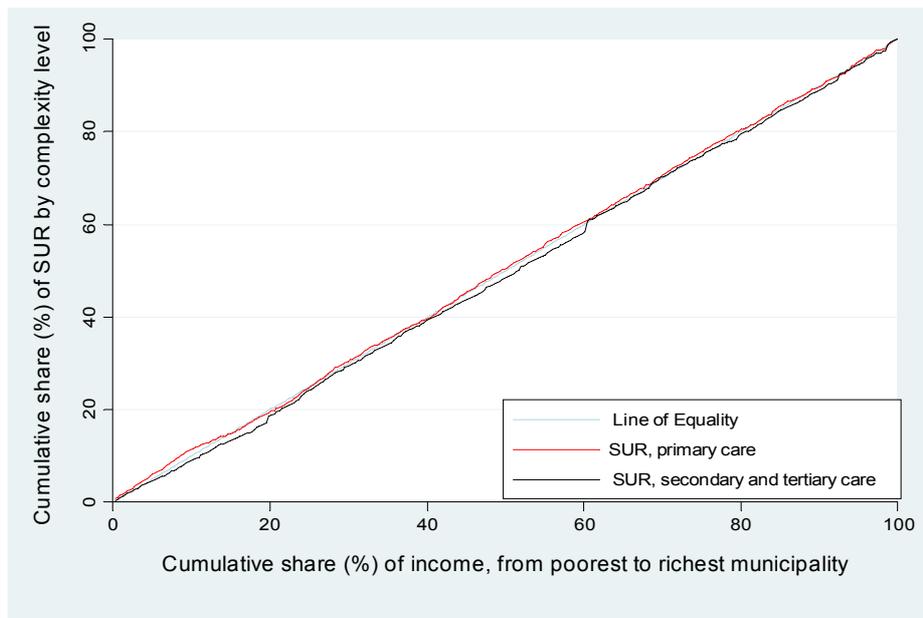
**Ecological level.** The ecological analysis uses aggregated municipal data. Municipal data was indirectly standardised by age and matched with municipal average per capita income. A concentration curve was constructed using such information.

First, municipalities are ranked from the “poorest” to the “richest” (126,137). The cumulative proportions of income are plotted against the cumulative proportion of age and sex-standardised GES utilisation rates (SUR) for primary and secondary/tertiary care, by municipality. If every municipality, regardless of its income, has the same level of utilisation, the concentration curve would be a 45° degrees line (line of equality). A line lies below the line of equality (reflecting a positive value in the concentration index) when services are concentrated among the rich. Conversely, a line lying above the diagonal (negative concentration index) means that poor municipalities concentrate GES services utilisation (126,134).

Figure 5 shows the concentration curve of SURs for primary and secondary/tertiary care cases. Both lines lie very close to the line of equality, reflecting a very equal share of GES benefits by different municipalities. The concentration index of primary care SUR is -0.006 (SE 0.015) and 0.015 (SE 0.020) for secondary and tertiary care.

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<sup>13</sup> It should be noted that this is not the same as FONASA A. Category A considers only disabled beneficiaries that are legally unable to work. CASEN respondents who reported a disability might or might not be able to work and, therefore, can be affiliated to FONASA (any category) or ISAPRES.



**Figure 5** . Concentration curve of standardised and non-standardised GES utilisation rates by municipality (n = 321)

The results of the dominance tests are presented in Table 4. Given that both curves overlap with the line of equality, they are non-dominant over it. However, both lines significantly dominate over the distribution of income, reflecting that GES utilisation is less concentrated in the rich than the distribution of income. In fact, income is remarkably concentrated among the rich, with the poorest quintile (20%) of income having only 11% of income. Both curves do not dominate each other, a finding explained by a great degree of overlap between both curves.

**Table 4.** Dominance tests for need and non-need standardised GES utilisation rates concentration curves by municipality (n = 321)

Income Quintiles	Cumulative share of (%)		Income
	SUR Primary care	SUR Secondary/Tertiary care	
Poorest	19.45	17.45	10.5
Second	39.55	36.89	24.08
Middle	60.56	57.39	40.72
Fourth	80.5	77.98	62.01
Richest	100	100	100
Dominance over 45°	No	No	
Dominance over income	Yes	Yes	
Dominance over each other	No	No	

Source: Author's elaboration based on SIGGES.

## Barriers for utilisation

Inasmuch as this analysis provides insights about utilisation of GES health services, it does not address those patients that, despite suffering one of the GES diseases, did not benefit from the package.

Surprisingly, only 49% of CASEN respondents who reported seeking care for the listed health conditions were covered by the GES package (Table 5). Likewise, 23% answered not knowing whether it was covered. When examining disaggregated results by income quintiles, there is a clear pro-poor gradient: 52.4% of the poorest quintile was covered, compared to only 40.4% in the richest group. It is noteworthy the high levels of respondents who do not know whether they have utilised the benefits of the package, which is greater in poorer populations. Equally, great information divides are seen when respondents are asked for reasons of not being covered. Again, the most prevalent reason is lack of information, showing a similar gradient along income classes.

**Table 5.** GES package coverage and reasons not to, by quintiles of income (n= 3297)

		Poorest 40%	Richest 40%	FONASA A	FONASA B	FONASA C	FONASA D	ISAPRE	Total
<b>Covered by GES programme?</b>	Yes	51.75	43.41	55	54	46	49	32	49.43
	No	20.5	40.05	15	22	33	33	62	27.51
	Don't know	27.74	16.53	30	24	21	18	6.5	23.06
		100	100	100	100	100	100	100	100
<b>Why not</b>									
	Chose another physician	9.16	24.55	7.3	16	14	30	32	18.22
	Decided not to wait for the appointment	5.85	7.94	5.9	8.6	7.9	7.2	5.4	7.35
	Considered it lower quality	0.6	1.68	0.48	0.96	1.4	0.68	2.8	1.19
	Did not know it was covered	52.52	31.87	55	44	48	34	23	39.64
	Not included in the age range	4.54	2.48	4.6	4.3	6.5	3.7	1.1	3.76
	Doctor recommended not to use GES	0.44	0.98	0.56	0.69	0.96	0.34	1.1	0.72
	Other / No data	26.88	30.5	26.6	25.6	21.3	25	35.1	29.12
		100	100	100	100	100	100	100	100

Source: Author's elaboration based on CASEN 2006.

Overall, 27.5% of respondents decided to opt out of the package because they have preferred another physician, decided not to wait for an appointment or perceived it as lower quality. There is also a clear income and insurance gradient in this decision. ISAPRE affiliates (40.2%) and higher socioeconomic groups (34,2%) have opted out of benefits, compared to only 13.7% of FONASA A enrollees and 15.6% of poorer quintiles. Interestingly, FONASA D patients have similar response rates than ISAPRE ones and FONASA C respond almost equally than FONASA B affiliates.

Those patients who were excluded because of age or by physician's advice represent a small proportion of answers (3.7% and 0.73%). However, if we consider that the package has been utilised by more than 5.2 millions of users so far, it can be extrapolated that 172.000 patients have been excluded from the programme because of age ranges and 32.900 whose physician advised not to be part of it. In this regard, it is worth noting that most patients excluded because of age belong to FONASA A and B and the poorest two quintiles.

## Equity of access to health services

### Availability

**Insurance Enrolment.** A first step to analyse availability of health services is to investigate who is not entitled for GES health services. The GES package explicitly benefits only those beneficiaries enrolled in either FONASA or ISAPRE. Beneficiaries of Armed Forces health system and the uninsured are not entitled to benefits from GES package. Using CASEN data from 1990-2006, it becomes clear that uninsured populations remained relatively constant during the 1990s, with an average of 10.7% (min 8, max 12.3%). In the next decade, this number has decreased from 9.2% in 2000 to 5% in 2006.

A weighted logistic regression model was fitted to examine which populations remain uncovered by health insurance. The dependent variable is lack of insurance. Quintiles of income, age, education and place of residence (urban or rural) were used as independent variables. The unadjusted and adjusted results of the model are outlined in Table 6.

**Table 6.** Logistic regression of respondents to identify predictors of lack of insurance (n= 265264).

Category	Adjusted			Unadjusted		
	OR	CI (95%)		OR	CI (95%)	
<i>Income Quintiles</i>						
Poorest	1			1		
Second	1.04	0.89	1.21	1.11	0.96	1.29
Middle	***1.31	1.12	1.52	**1.43	1.24	1.66
Fourth	***1.63	1.41	1.88	***1.86	1.62	2.13
Richest	***1.79	1.53	2.11	***2.12	1.82	2.46
<i>Age</i>						
Less than 18 years	1			1		
19 to 40 years	***1.78	1.56	2.03	***2.4	2.19	2.64
41 to 64 years	**1.40	1.23	1.6	***1.86	1.69	2.05
More than 65 years	***0.47	0.39	0.58	***0.56	0.47	0.67
<i>Years of education</i>						
Uneducated	1			1		
1 to 8 years	1.21	0.95	1.54	***2.29	1.81	2.9
9 to 12 years	0.82	0.61	1.1	0.99	0.75	1.29
More than 13 years	0.81	0.58	1.12	1.22	0.9	1.64
<i>Sex</i>						
Female	***0.61	0.57	0.65	***0.6	0.57	0.64
<i>Place of Residence</i>						
Urban	1.11	1	1.22	***1.27	1.16	1.4
<i>Discapacity</i>						
Yes	***0.69	0.58	0.82	***0.55	0.69	0.97

Source: Author's elaboration based on CASEN 2006

P <0.001 \*\*\* p<0.01 \*\* p<0.05 \*

In the unadjusted model, there is a remarkable association between higher income, male sex, younger age and urban residence. The odds of being uninsured was significantly greater for wealthier respondents, with a gradient ranging from the richest (OR 2.12) to middle income (OR 1.43). In the case of age, the odds are higher for adults between 19 and 40 years (OR 2.29) and notably lower for the elderly (OR 0.56). Living in urban areas and having from 1 to 8 years of education were also significantly associated with lack of insurance (OR 1.27 and 2.29), whilst being female and reporting a disability showed lower odds (OR 0.6 and 0.55).

In the multivariate model, the association between education and place of residence attenuates, yet income, age, sex and reported disability maintain stronger predictors of lack of insurance.

**Financial Resources.** The first six rows in Table 7 represent the main sources of funds for health in the public sector. Three sources are pooled by FONASA: direct fiscal contributions; payroll contributions and co-payments (*free choice modality*). The other two (public goods and investment<sup>14</sup>) are administered by each subsecretary in the Ministry of Health. On the other hand, the latter rows describe the capital outflow to Health Services. A first pool of resources goes to primary care by a capitated payment method. Secondly, the Valued Services Programme (PPV) allocates funds to primary, secondary and tertiary care, whilst secondary and tertiary cares receive funds from a historic global budget, or Institutional Services Programme (PPI). Lastly, funds are allocated to private providers through a voucher system (*free choice modality*). The GES package is one of the PPV services.

**Table 7.** Financial Resources available in the public sector 2002-2008. U\$ per capita.

	2002-2004	2005	2006	2007	2008	Diff 2008- avg % <sup>5</sup>
<b>Inflow</b>						
FONASA Fiscal	111.5	136.3	151.9	171.6	191.9	72.1
FONASA Contributions	106.6	115.3	132.7	150.9	167.7	57.3
FONASA free choice modality	23.7	22.1	22.0	21.9	22.7	1.4
Public Goods			17.9 <sup>(3)</sup>	21.3	22.7	
Infrastructure Investment	5.3	8.4	8.7	19.4	24.5	365.1
<b>Outflow</b>						
Primary Care	40.9	54.6	61.7	73.7	83.6	104.2
FONASA PPV	59.3	74.0	93.1	110.1	117.4	97.9
FONASA PPI	80.7	84.3	90.9	95.6	110.3	36.7
FONASA Beneficiaries	10.6	11.12	11.48	11.74	12.02 <sup>1</sup>	

Source: Author's calculations based on Annual Budget Report 2002-2008 of the Ministry of Health and FONASA (138,139)

1. Author calculation based on projections

2. Based on average U\$ during 2008 (U\$1 = 461.52 Chilean pesos)

3. Information not available before 2006.

5. Comparison between 2008 and 2002-2004 average

<sup>14</sup> Public goods and infrastructure investments are funds coming directly from fiscal sources to the Public Health and Healthcare Network subsecretaries, which administer the funds.

Availability of financial resources in the public sector has increased for all items. This tendency is observed even before the beginning of the reform which is consistent with the efforts to overcome 1980s heritage. Fiscal resources increased at a rate of 10% per year from 2002 to 2004; whilst the contributions increased by 6% yearly, a greater increase in proportion to the raise in beneficiaries. This reflects the enrolment of wealthier beneficiaries.

The beginning of the reform in 2005 coincides with a sharp raise in fiscal resources. This includes FONASA funds as well as public goods and infrastructure investments, which flow directly into the subsecretaries. Even after adjusting by the number of beneficiaries, resources for infrastructure have increased by 365%, followed by a net increase of 72.1% of direct fiscal contribution to FONASA.

In terms of expenditure, primary care and PPV (that finances the GES package) have experienced the greatest increase. Even the historic budget (PPI), that finances non-GES services in hospitals, has improved. This widespread increase in public expenditure possibly reflects a wider aim to strengthen the public health system, rather than simply implement the GES package.

**Quality of GES health services.** GES users have a positive overall perception of quality of GES services and waiting times (Table 8). Quality of services has a better evaluation than waiting times, with 77.6% compared to 64.5%. Equally, those respondents who consider quality of waiting times as bad or very bad almost double the responses for quality of services (16.7 versus 8.7%).

**Table 8.** Perceived quality of GES services and waiting times, 2006 (n= 10663).

<b>What do you think of the quality of care?</b>							
	Poorest 40%	Richest 40%	FONASA A	FONASA B	FONASA C-D	ISAPRE	Total
Very Good	18.09	23.21	19.17	19.17	21.91	25.16	20.24
Good	58.41	56.4	56.74	58.87	54.22	60.32	57.36
Regular	14.24	11.93	14.95	13.99	13.83	6.26	13.72
Bad	7.84	6.36	7.8	6.38	8.4	3.33	7.03
Very Bad	1.41	2.09	1.34	1.59	1.64	4.92	1.66
Total	100	100	100	100	100	100	100
<b>What do you think of the waiting times?</b>							
	Poorest 40%	Richest 40%	FONASA A	FONASA B	FONASA C-D	ISAPRE	Total
Very Good	14.66	19.9	15.27	15.45	17.98	26.13	16.68
Good	47.91	49.5	46.3	49.14	46.6	53.03	47.86
Regular	19.78	15.06	20.06	19.67	18.68	8.76	18.79
Bad	12.53	10.26	12.8	11.93	11.82	5.09	11.79
Very Bad	5.12	5.28	5.57	3.82	4.92	6.99	4.88
Total	100	100	100	100	100	100	100

Source: Author's elaboration based on CASEN 2006

There are also differences according to socioeconomic status and type of insurance. Poor patients tend to give lower evaluations than wealthier ones in both quality and waiting times. FONASA A and B are less positive in their evaluations of quality of services compared to ISAPRES, with a striking difference of 77 versus 85.5%. Because FONASA A and B evaluations are skewed to the answer “regular”, there are no differences in the perception of GES services as “bad” or “very bad”: 8 and 8.3% (FONASA A v ISAPRES). Notably, is the group of FONASA C-D patients which provided the lowest evaluation of all (with 10% of bad or very bad grade).

In the case of waiting times, FONASA A patients have the worst evaluation with 61.6% considering them good or very good and 18.4% providing negative evaluations. ISAPRE patients are again providing more positive evaluations (79.2% good or very good), with 12% of bad grades. In spite of overall positive results, an average of 16.7% of respondents considering waiting times as bad or very bad deserves further attention.

## **Acceptability**

CASEN survey does not include questions regarding health services acceptability. This section draws on several polls carried out by the Health Superintendency to describe the acceptability dimension of access.

**Information and Knowledge.** Knowledge about the existence and characteristics of the GES programme is generally low. In 2004, 30.7% of respondents declared not knowing anything about the reform, a number that decreases to 15.5% by 2005 (140). By 2006, only 29% of respondents could mention all four guarantees (access, waiting times, quality and financial protection). Access was the most often quoted (141). Knowledge is higher among ISAPRES users and wealthier populations (141,140). In addition, only 52% were aware of the inclusion of preventive exams in the GES; this knowledge is lower among the elderly and poorer groups (141). Of them, 81% describe them as lack of information about the benefits and 45% point out that physicians do not advice to use the GES plan, since it is considered more cumbersome (141).

Several polls within GES users have revealed an increase of those respondents who declare knowing about the programme and their respective health providers (64 to 88%), yet these numbers decrease when respondents are asked about other guarantees, such as waiting times and financial protection, particularly among FONASA users (142,143). In the case of ISAPRE users, 67% of them consider their physician as the primary source of information, a proportion that decreases to 33% among FONASA affiliates. In their case, they are receiving information directly from FONASA or through mass media channels (142).

**Protection.** The sense of feeling protected by the health system, among overall population, reaches only 50% and did not increase between 2005 and 2006. It is lower among FONASA, young users and lower socioeconomic groups (141). When compared to the GES programme, patients feel more protected in 39% of cases, although 45% consider that the implementation of GES have not improved access to a better health. Lack of improvement is highly perceived

among ISAPRE users, younger and richer segments (141).

**Satisfaction and Perception of the health system.** Compared to evaluations of 5.4 (out of 7) for the health system in general, the degree of satisfaction is higher among GES users. The average grade was 6 and 71% of users qualified the humanity of health services as excellent. 75% of respondents considered the infrastructure and equipment of the health centre as excellent, a perception that is higher among FONASA users (81 versus 74%) (141).

Among FONASA patients, 42% noticed that GES services were faster, better and more caring than non-GES services. ISAPRES patients pointed out to quality, waiting times and costs as the greatest improvements (141). Another study found also high levels of satisfaction, but its degree was decreasing among FONASA users (89 to 82%) and increasing for ISAPRES (81 to 91%) (142).

**Accountability.** Even though every affiliate is entitled to four guarantees (access, waiting times, quality and financial protection) included in the package, users refer a very low level of knowledge about complaint mechanisms (18%). This is lower among FONASA users (15 versus 31%), although both groups describe higher rates of complaints if necessary (142). In fact, the number of complaints has been extremely low: 120 in 2007 and 21 in 2006 (46).

## **Affordability**

Because CASEN survey does not include questions about the amount of out-of-pocket expenditures and the latest Out of Pocket Expenditure survey was carried out in 2005, it is not possible to properly assess the impact of the reform in reducing inequities in out of pocket expenses. Nonetheless, CASEN respondents are asked whether they have utilised several health services and if they have paid for such services.

Figure 6 outlines a time series analysis (CASEN 2000, 2003 and 2006) of those patients who reported paying 100% of user fees with out of pocket payments. For all years, significant inequalities are observed regardless of insurance status, yet they are particularly high for those who are uninsured. Uninsured groups seek a majority of health care through out-of-pocket payments, ranging from 40 to 73%. Nevertheless, it is noteworthy that these patients are not entitled to any health care and should thus utilise health care with 100% of out-of-pocket payments.



**Figure 6.** Percentage of respondents of CASEN surveys reporting 100% out-of-pocket expenses for selected health services, by type of health insurance.

Dental care services are the ones with highest inequalities. The proportion of out-of-pocket payments increases along FONASA categories, with FONASA D patients affording the same proportion (almost 40%) with out-of-pocket expenses as ISAPRES. FONASA A patients have the lowest proportion, reflecting either a sufficient coverage of public services or an inability to pay for such services in the private sector. Notably, these inequalities have decreased over the years for FONASA B, C and D patients, particularly between 2000 and 2003.

Such differences are much lower for general and specialised consults, and also tend to distribute more evenly along FONASA groups. However, they have increased over the years for patients enrolled in ISAPRES and Armed Forces health systems. The proportion of out-of-pocket expenses has remained constant for FONASA patients, with the exception of a slight increase for primary care and a reduction for specialised consults. Out-of-pocket payments for x-rays and ultrasounds have decreased for FONASA C and D groups and nowadays distribute relatively equal among FONASA categories and ISAPRES. For patients in the Armed Forces, it has raised from 11 to 17% between 2003 and 2006. In fact, patients enrolled in army forces health systems have also experienced a constant raise for general and specialised care, pointing out the existence of gaps in health service provision.

## Deterioration of Non-GES healthcare?

A primary concern of health workers during the phase of design of the GES package was the exclusion of those patients without GES conditions or outside defined ages ranges (97). Addressing consequences on non-GES conditions is difficult and the evidence, scarce. Nevertheless, there are three indications that support a deterioration of non-GES health services.

First, waiting lists have increased for conditions not included in the GES package. Between 2000 and 2005, surgical waiting lists decreased 4.6 times, yet the gap increased for some diseases not included in the package. The number of patients waiting for hernia surgery increased from 1500 to 3900, whilst patients needing hip replacement younger than 65 years increased from 275 to 385. In turn, the list for patients with the same diagnosis but older than 65 years old decreased from 926 to 0. Notwithstanding, waiting list decreased also for cardiac surgery (4290 to 1190) -a disease not included in GES-, and for cholecystectomies. The latter was included in 2006 guarantees, thus we are possibly observing an effect of the pilot programme (144).

Second, Gonzalez (145) has evaluated the impact of GES guarantee for end stage renal failure patients. He shows that introducing a group of prioritised patients and increasing the number of controls for these patients collapsed the whole system and increase waiting lists for both GES and non-GES patients. However, this impact was greater for non-GES patients, whose waiting times increased from 2.3 to 5.9 weeks (145).

Third, vaccination coverage and TB treatment, both considered among the most remarkable achievements of Chile's public health in the past 50 years, have experienced a subtle yet alarming decline (42). Between 2000 and 2006, MMR vaccine coverage decreased from 97 to 91%, while DPT has not recovered after a decline from 95 to 91% between 1990 and 2000, reaching 94% in 2006. HiB3 just recovered its level from 1990 (94%), after a fall in 3% in 2000 (42). In the same line, TB treatment success has reduced from 82 to 78%, falling under 1990s level and increasing the distance with 85% target set by WHO (146).

## 6. Discussion

### Main Results

#### Utilisation of GES health services

Three main messages emerge from the analysis of GES utilisation. First, utilisation of health services has greatly taken place in the public sector, particularly among populations with greater health needs, namely lower socioeconomic groups (FONASA A and B and lower income enrolees), children and the elderly. Conversely, wealthier enrolees have underutilised GES health services. This holds true for ISAPRES affiliates as well as FONASA C and D beneficiaries. This pro-poor pattern cannot be explained by differences in need or demographic composition in that it persists after controlling for such confounders in the logistic regression model. Equally, the ecological analysis showed equal utilisation rates for both primary and secondary care, regardless of municipal wealth.

While these results can be explained by a greater empowerment of disadvantaged groups, the great lack of knowledge among poorer beneficiaries signals that they were not particularly empowered by the GES package. A more likely explanation is that wealthier beneficiaries (either FONASA D or ISAPRES) have explicitly opted out GES benefits. Our results strongly support this idea, considering that more than one third of FONASA D and ISAPRES enrolees renounced their benefits. In this regard, it is notable that lower utilisation rates persist even for those conditions that took place mostly in secondary and tertiary care, a result that deserves further examination.

Why would wealthier beneficiaries opt out the GES package? Considering that in FONASA, GES services are only offered from public providers, FONASA C and D beneficiaries might have preferred the private sector instead. In the case of ISAPRES, one could argue that ISAPRES have created barriers by establishing a cumbersome process to use the GES package and limiting the range of GES providers. However, it is unclear what motivations might ISAPRES have to limit utilisation of the GES package. One explanation could be that providing GES services is less or at least equally profitable for ISAPRES than other services. Moreover, all ISAPRES have adopted similar policies, thus there is no competition to provide services in a swifter way. Another alternative is that the reform did not introduce incentives to enhance GES services provision.

Looking only at utilisation patterns is, however, misleading. Behind pro-poor utilisation patterns, there is a surprisingly low reported coverage of GES benefits. Only 49% of CASEN respondents reported to be covered by GES when suffered any of the mentioned conditions and 23% referred not to know whether they were covered. This reflects a widespread lack of information about the package, particularly among poor beneficiaries, who reported higher rates of information gaps. Moreover, this could also represent a poor commitment from health workers to spread the benefits of the GES package. Even though reported advice from physicians to renounce the benefits has been low, health workers' indifference could take the form of an omission, rather than an active campaign against the GES package.

A third remarkable finding is the existence of gender inequities in GES services utilisation. In many cases, this corresponds with prevalence patterns in the population. Published studies reveal, for example, a higher prevalence of depression (147), gallbladder diseases (148,149) and rheumatoid arthritis among Chilean women (150) as well as higher prevalences of traumatic events (151), schizophrenia and alcohol dependency in Chilean men (147).

However, in some others, women have shown greater patterns of utilisation in spite of lower prevalence rates. This is the case of prevalent primary care conditions, such as hypertension (152), diabetes (152), community-acquired pneumonia in the elderly (153,154) and COPD (152), as well as gastric cancer (155,156). This represents inequities in utilisation of GES health services.

### **Equity of Access to GES health services**

The analysis of equity of access reveals interesting results. First, there has been a remarkable reduction in the number of uninsured populations since 1990s. Nowadays, uninsured groups are more likely to be young men with basic education, living in urban areas and belonging to richer socioeconomic groups; there is notably an inverse relation with need. Given that formal sector workers must be enrolled in insurance, this group corresponds to informal workers. Informal workers are allowed to voluntary affiliation, yet considering that their health status is good, they might not see the need for such expense.

Second, the reform has coincided with a striking increase in availability of public resources. This spirit probably responds more to a wider aim to strengthen public sector than just to ensure GES implementation, as resources have increased for all items and not only the Valued Payments Programme (PPV) that finances GES health services. Most notably, funds have been allocated to infrastructure development in all levels of care. Equally, resources for primary care have doubled since 2005, experiencing an even greater increase than funds for the GES package.

Third, and albeit the study is far from providing a complete picture of acceptability of Chile's health system, our results highlight the existence of information gaps that favour wealthier groups and ISAPRES beneficiaries. Wealthier beneficiaries also enjoy greater levels of protection and satisfaction with the health system. The GES package has improved this situation, with FONASA respondents declaring higher levels of satisfaction and 42% noticing faster, better and more caring services. Nonetheless, a pro-rich trend persists, with FONASA beneficiaries providing lower evaluations, particularly in the case of waiting times.

Fourth, affordability of health services (GES and non-GES) -measured as the proportion of patients reporting 100% of out-of-pocket expenses- also show variations by insurance type. Despite of having less health needs, uninsured populations are nevertheless experiencing greater inequalities, bearing with most of healthcare with out-of-pocket expenses. It is noteworthy that, since theoretically this rate should be as high as 100%, our results suggest that uninsured groups are misusing public or private insurance services. For example, it is common practice to use relatives or friends vouchers or, at the point of service, to negotiate with the health worker to be tagged as insured. Both facts emphasise the importance of

actively expanding the social security network to include these groups.

The Armed forces health system has been completely neglected in Chile's academic literature and its perception as a comprehensive health system contrasts with our results that show the existence of high and raising inequalities. Another somewhat unexpected result is the finding of lower levels of inequalities among FONASA beneficiaries and its improvement in the case of FONASA C and D. Inequalities among ISAPRE enrollees have increased (primary and specialised care) or stagnated in the remaining health services examined.

### **Deterioration of non-GES healthcare**

Our results indicate that curative services have predominated over preventive ones and that some key public health services, such as vaccination coverage or TB treatment, have deteriorated. The need for strengthening preventive services covered by the GES package has been reiterated several times by the experts in the GES Advisory Council, but their position clashed with the Ministry of Health goal to include 80 diseases by 2010 (157), stressing both the relative powerlessness of the council and the existence of a political agenda in the Ministry of Health.

Moreover, the results of this study suggest the existence of violations of the horizontal equity principle, manifested in the exclusion of patients with different age, yet similar levels of need. This was observed in the case of hip replacement waiting lists and in the extrapolated 172000 CASEN respondents that referred to be excluded of GES package because of their age.

### **Limitations**

The results presented in the previous section suffer a number of limitations. The first limitation arises from SIGGES database. Because it only provides information from the public sector, it is not possible to assess utilisation by the private sector. Moreover, FONASA affiliates might not be representative of the income distribution within each municipality, since they are markedly poorer. Matching municipal income with SIGGES users inevitably tends to overestimate the average income of those GES users, which is impossible to know.

Another problem is its reliability. SIGGES administrators have pointed out that place of residence was not reliable, but we were forced to use it the case of secondary and tertiary care. A recent audit performed by the General Treasury's Office has also questioned the validity of SIGGES information (158).

Secondly, CASEN survey did not include 13 small municipalities for which it was not possible to estimate their income (122). Those municipalities were excluded when constructing the concentration curves. Thirdly, most of our results use data from 2006, thus it might be premature to draw final conclusions and this study should be regarded as

preliminary.

A fourth and final issue is the existence of several information gaps. For instance, it was not possible to address the number of new health centres or health workers. The results presented from acceptability are mostly from small telephonic surveys, reducing its explanatory power. Moreover, our analysis of affordability considers only out-of-pocket payments, yet other direct and indirect costs could not be examined. Perhaps a more serious issue is that, mostly due to space limitations, we did not carry out a detailed geographical analysis or examined diseases separately.

## **Comparison with previous studies**

### **Design**

While Chilean policy-makers were forced to make a number of assumptions and poorly informed decisions regarding cost-effectiveness of some diseases as well as limiting the benefits to certain age ranges, severe cases and for some stages of disease, other countries have experienced similar shortcomings.

Designers of the PHSP in Colombia acknowledge that many assumptions were taken from a similar report from Mexico, coupled with a great reliance on experts' opinions. During the negotiation process, the Social Security Institute (a key stakeholder) refused the package and forced the inclusion of almost all health conditions previously covered by social insurance. The report states that, after this impasse, a new study was not done and “technical expertise gave way to political pressure compromising the fundamental premises of the original package”(159). A same situation was observed in Mexico: Laurell (160) notes that after the introduction of a first evidence-based package, new added interventions are not properly justified.

Financial constraints forced Colombia to define two different packages, with different entitlements for poor and rich enrolees, expecting to match the benefits by 2002 (161). The subsidised package, for poor populations, only included essential clinical services, some chronic diseases and injuries, few surgeries and catastrophic events (159), whereas the contributive package, for formal workers, includes a much wider range of clinical health services. To this date, both packages have not been equalised and the subsidised package only covers 70% of health services of the contributive one (162,163). Mexico had to exclude important conditions, such as breast cancer treatment and screening and renal dialysis, despite recognising breast cancer as among the major killers of women (164). After the financial crisis in 2001, Argentina was forced to reduce the size of the package and increase co-payments from 40 to 60% (165). Co-payments were decreased by 2005 to 30%<sup>15</sup>, but the range of services has not recovered (166). There is also uncertainty about its sustainability, given that drugs are financed partly with loans from the Inter-American Development Bank (166).

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15 TB treatment, some oncology drugs and insulin were offered for free (166)

What is remarkable in Latin American countries is the depart from the five clusters of health conditions<sup>16</sup> proposed by the World Bank and the inclusion of a broader basket of health benefits. In this regard, Latin American PHSPs resemble attempts in many European and Asian countries to define explicit health benefit packages (167-169), as an effort of explicit rationing services covered by social security and cap health expenditures (170).

Compared to other packages, the Chilean GES package stands out because of the limited number of health conditions included. Mexico's package comprises 337 interventions (164), whilst the packages in Colombia and Argentina specify the type of services, such as “surgical treatment for cancer”, instead of including diseases (171,172). While a restricted package could be cheaper and easier to monitor at a regional and municipal level, its main risk is to act as a wedge of prioritised services that implicitly rations delivery of non-prioritised services. These patients might face similar challenges than uninsured groups in the experience of Mexico, Colombia and Argentina.

### **Utilisation of PHSP health services**

International experience also shows a tendency towards pro-poor utilisation, although some inequities persist. Ensor (5) has examined the preliminary evidence from Bangladesh. Their results suggest a pro-poor utilisation patterns for primary care, a trend that reverted for secondary and tertiary care.

An opposite trend was noted by Cespedes *et al* (4) in Colombia. After adjusting for age, sex and need, hospitalisation rates for those populations covered by the package (both contributive and subsidised schemes) were higher for poorer groups, yet showed lower utilisation rates for ambulatory services. Concentration curves for hospitalisation and ambulatory services (PHSP and non-PHSP covered groups) lied very close to the line of equality, indicating that utilisation was equal among income groups (4).

When comparing utilisation by affiliation to subsidised and contributive schemes, Ruiz (3) found higher utilisation of ambulatory and hospital services by contributive beneficiaries; similar results were described in one Colombian district (173). In addition, utilisation favours the poor, children, women and the elderly within the subsidised group (174). Therefore, even though those populations covered by the PHSP experience pro-poor or equal utilisation rates, there are differences between contributive and subsidised groups, reflecting that subsidised groups might represent a third category of entitlements, lying between the uninsured and those affiliated to contributive schemes.

In their assessment of Mexico's reform, Gakidou *et al* (7) reported a similar trend. They observed higher utilisation of services by those affiliated to *Seguro Popular* -voluntary health insurance that contained a PHSP-, yet this was lower than social security enrolees<sup>17</sup>. Bleich (175) has also reported higher probability of receiving hypertension treatment for *Seguro Popular* enrolees compared to the uninsured. At an ecological level, municipalities with higher enrolment of *Seguro Popular* showed higher hospitalisation rates. The authors also

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16 Prenatal and delivery care, family planning, management of sick child, treatment of tuberculosis and treatment of STDs.

17 This is a social health insurance that covers formal workers in Mexico.

observed improvements in the coverage of maternal and child health interventions, PAP smear, mammography and hypertension treatment. This raise was greater in the poorest two deciles, while other deciles showed little or no improvement. Again, while the reform had positive effects on utilisation, particularly among the poor, *Seguro Popular* enrolees appear to belong to a third category of entitlements, better than the uninsured yet worse than social security enrolees.

## **Equity of Access to health services**

Insurance coverage increased after the reforms in Mexico and Colombia. After five years of implementation, the number of enrolees in Mexico's *Seguro Popular* has raised steadily and covers 21 million Mexicans (176,7). Nevertheless, similar positive results were achieved in Colombia in the first five years, yet enrolment rates stagnated and even decreased. Until today, 44% of the population in Colombia is not covered by social insurance (177,163). Mexico might be at a similar risk: the state only subsidises payroll contributions of the poorest quintile, but contributions might prevent second and third quintiles from affiliation (160). Equally, enrolment tends to benefit lower income populations in the experience of Mexico and Colombia. In the latter, inequalities in insurance coverage decreased by half (concentration index decreased from 0.34 to 0.17), yet still persist (4).

When it comes to availability of financial resources, evidence is mixed. Public health spending in Bangladesh did not increase, but authors observed a shift from primary care to those services included in the package (5). In turn, the Colombian reform produced a sharp increase in total expenditure in health, from 2.7% in 1990 to 8.6% of GDP in 1999, yet stagnated in subsequent years (162). However, as a result of its design based on managed competition, it was not accompanied by a strengthening of the public sector and the first decade of the reform witnessed the closure of eight university hospitals and an overall deterioration of public infrastructure (178,179,161). Argentina experienced a raise of total health expenditure, yet as a consequence of private expenditure, whilst social health insurance resources (covering the PHSP) stagnated (166). Meanwhile, social security in Mexico increased slightly the first years, but declined later on (7). Chile is therefore an outstanding exception, particularly in its effort to strengthen the public sector.

In terms of affordability, uninsured populations experienced the greatest burden of out-of-pocket expenditure in Colombia (3) and Mexico (180). In both countries, studies show a greater degree of protection against out-of-pocket expenditure and catastrophic events among those covered by the PHSP (3,7,181), yet there are substantial differences. Beneficiaries of *Seguro Popular* in Mexico lie in between the uninsured and affiliates of other social health insurance schemes (7), but in Colombia, subsidised beneficiaries report lower out-of-pocket expenditures than contributive affiliates (3). Notably, Ruiz *et al* noted remarkably higher out-of-pocket expenses for services not covered by the package for both subsidised and contributive enrolees (3). Likewise, 44% of subsidised enrolees who did not seek health care when needed (30%) quoted lack of money as a primary reason. This relation inverts for contributive beneficiaries (182,183). Again its evident the existence of three degrees of entitlements.

## **Implementation process and unintended consequences**

Following the neoliberal doctrine (12,184,14), middle income countries in Latin America decided to exclude public health goods from the PHSP package and segment its delivery. This is not the case of low income countries, such as Bangladesh or Afghanistan, which included them in the package (6,185).

The effect of the package on public health goods delivery has been best described in Colombia. On a longer time span, Colombia has also witnessed a drop in vaccination coverage: the proportion of children fully vaccinated decreased from 83 to 66% (182). Tuberculosis control also experienced a decline, the number of reported cases and contact identification decreased and the incidence of TB has risen since 1997 (186); likewise, other studies have shown a deterioration in malaria control (187,188). Most commentators have signalled the fragmentation of health services delivery as responsible for this decline (186,187).

## 7. Conclusions: Overcoming the inverse care law?

While many low and middle income countries are currently undertaking efforts to ensure universal and equitable access to health care (189), available evidence suggests that overcoming the inverse care law does not occur as a spontaneous and natural corollary after achieving universal health care. A recent systematic review supports this idea and indicates the persistence of systematic and unnecessary differences in access to secondary and tertiary care in developed countries (34). Amidst this quite pessimistic context: Could PHSPs overcome this pervasive trend?

Our study addressed this question by drawing on Gilson's framework of access and utilisation. In this regard, overcoming the inverse care law can be understood as a process of tackling barriers of availability, affordability and acceptability that could finally result in an equal utilisation of health services included in the PHSP.

The evidence presented in this study shows that Chile's PHSP has greatly taken place in the public sector and benefited the poor, children and the elderly. We only found gender inequities, with men showing less utilisation rates for certain primary care conditions. However, our results indicate that a pro-poor utilisation was a result of a substantial opting out of wealthier beneficiaries rather than a consequence of empowerment of disadvantaged groups, who showed little knowledge about the package and complaint mechanisms.

Furthermore, it is worth asking which services were equally utilised. At an ecological level, our results indicate that both primary and secondary/tertiary services have been equally utilised. The experience of other countries indicates that populations covered by the PHSP experience greater utilisation than uninsured groups, yet lower than those who are also entitled to the PHSP but could afford other services. Therefore, instead of expanding utilisation of services, it seems to create a third category of entitlements, lying in a middle ground between those fully entitled and those not entitled. The Chilean GES package, due to its restricted number of conditions, has a risk to act as a wedge that prioritise some health conditions over others, creating also a third group of patients that are not entitled to the GES package and might also face worsening conditions of health services delivery. This study, however, did not properly examine this issue and further studies are needed.

What stands out from our results is that the GES package has defined two explicit spheres of exclusion. It has offered the benefits to the package only to those affiliates of FONASA and ISAPRES and, secondly, it has defined exclusions based on age, severity and phase of ill health. These exclusions enhance the creation of inequities between patients with the same degree of need. Therefore, the universal and holistic character of the package was not realised due to this self-created barriers.

When it comes to equity of access, our results highlight the strong supply side nature of the GES package. The implementation of Chile's GES package represents a remarkable effort to strengthen the public sector and improve availability of resources. These efforts to ensure greater availability of public sector resources stand out with the experience of other countries

and represent one of the major achievements of the GES package. This has also resulted in a decreasing number of uninsured groups, shortening the gap to achieve universal coverage. Colombia and Mexico experienced a similar improvement, although its stagnation is a cautionary tale of its sustainability.

Chile's GES package has also included safeguards to ameliorate catastrophic events, yet the analysis of affordability did not show substantial improvements and stressed the higher burden than the uninsured and Armed Forces beneficiaries are experiencing in terms of out-of-pocket expenses. In this regard, FONASA affiliates experienced a greater degree of equality in terms of affordability. The experience of other countries poses a word of caution. Even though populations covered by the PHSP showed higher financial protection, they experienced a significant burden for those diseases not included in the package. Whether the same has occurred in Chile is an area for further research.

However, other demand-side issues, particularly acceptability, have been neglected. Our results indicate a widespread lack of knowledge, which was greater among lower socioeconomic groups. On the other hand, the GES package has improved significantly their levels of satisfaction with the health system, compared to wealthier beneficiaries who are still very critical. This highlights the need to introduce demand-side mechanisms.

Lastly, there is worrisome evidence that the implementation of a PHSP might hamper provision of basic health services, such as vaccinations, treatment of tuberculosis and vector control. Our results indicate that this might also be happening in Chile, although the evidence is still preliminary.

All in all, this study suggests that Chile's GES package has overcome the inverse care law in many aspects of utilisation and access. While the explanation might not be rooted in the expected benefits on disadvantaged groups, ensuring its sustainability must surely rely on an active effort to tackle barriers faced by those in greatest need. In the short term, it is necessary to increase the benefits of the GES package in terms of coverage, eliminate self-imposed age barriers and strengthen preventive measures for the diseases already included in the package. Efforts should concentrate on demand-side issues, such as improving knowledge and accountability mechanisms as well as introducing incentives to reach disadvantaged groups. In the longer run, there is a need to strengthen the public sector as a whole, in order to prevent the creation of a three-tiered system.

## 8. Recommendations

### For policy-makers

Following the results of the study, several recommendations are proposed for Chilean policy-makers.

- **Expansion of guarantees.** Our results indicate an obvious need to tackle inequities created as unintended consequences of the package. To be truly universal and holistic, the GES package should expand its benefits in both spheres. One is of coverage, and thus Armed Forces and the uninsured should also be entitled to receive GES health services. The other is to finally eliminate existing age and stages of disease exclusions. Access guarantees should include all ages and phases of ill health, including preventive health services. The Ministry of Health has a unique window of opportunity, given the uncertainty of which diseases would complete the package and the support from the GES Advisory Council. Council members and physicians holding positions in Congress are key stakeholders to build consensus upon.
- **Demand-side incentives.** To ensure sustainability of the pro-poor patterns suggested by the study, FONASA and the Ministry of Health should introduce demand-side mechanisms. Our recommendation is to link the benefits of the GES package with the conditional transfer programme *Chile Solidario*, which has already installed an operational platform to effectively reach disadvantaged groups. An alternative (or complement) is to utilise vouchers to target vulnerable groups and thus expand utilisation of selected services (e.g. preventive medical exams). This voucher could involve health centres from other municipalities, introducing quasi-market mechanisms. Likewise, men should receive special priority for those diseases that have been underutilised. Workers might be experiencing greater barriers in availability of health services (particularly opening hours). A voucher that allows them to utilise GES in different primary health centres is likely to improve aforementioned inequities.
- **Private sector regulation.** As our results indicate, private insurance enrollees are opting out the package. ISAPRES have created barriers by selecting mostly large private organisations and introducing a cumbersome process to join the GES package. The Health Superintendency is responsible to oversight these barriers and tackle them. As in the public sector, it should create a registry system that activates GES as soon as the physician diagnoses a GES condition. The network of private GES providers needs to be expanded.
- **Acceptability.** Our results indicate a significant lack of information and possibly communicational campaigns organised by the Ministry of Health and FONASA were only partially successful and failed to reach vulnerable groups effectively. Possibly mass media campaigns, while successful at encouraging mothers to vaccinate their children, cannot convey more complex messages, as in the case of GES. A feasible alternative is to include GES education and knowledge in the performance indicators that serve as incentives for primary care providers. Another option is to create a

simple method (a sticker for example) that will tell GES users their exact guarantees.

- **Monitoring and evaluation process.** SIGGES has several flaws that needs to be improved. In this regard, it is recommended to implement a unified information system, administered by the Health Superintendency. SIGGES should be improved or definitively replaced given its limitations. However, most problems arise from physicians and primary care administrators, who fill the forms incompletely or wrongly. A normal appointment consists of 10 minutes per patient and the amount of forms to be filled is excessive. Registry process should be simplified and delegate it mostly to administrators, keeping physician's responsibility as small as possible. Again, a sticker with every patient's information, as it has been implemented in many emergency departments could be a useful solution to save time.
- **Simplify complaint mechanisms.** The actual mechanism is not empowering patients to complain when their guarantees have been unfulfilled. FONASA and the Health Superintendency should simplify this process, making its activation automatic and not patient-driven. Thus, it is the health system that should contact the patient to inform that the guarantee has been unfulfilled and explain compensation mechanisms.
- **Strengthening public sector.** The efforts to strengthen the public sector have been successful and the amount of resources has steadily increased. However, the reform failed to introduce major reforms in its two-tiered segmented nature, the root of all evil according to many scholars. We would argue that this will not change until the Chilean elite become part of FONASA. While this might be a slow and progressive process, the government should lead this change. As a first step, we recommend FONASA to start an active enrolment of young low risk wealthy beneficiaries based on the principle of solidarity. Allegedly, the public sector might not offer better benefits than the private, yet for low risk enrolees this should not be a problem. The vast and powerful network of faith-based local NGOs are key stakeholders and could provide the first members of this process that, if successful, could represent the most remarkable initiative to achieve equity in health and health care in Chile.

## For further research

This study has identified several evidence gaps that deserve further examination, which can be summarised in four research areas.

- **Equity of utilisation.** Our study does not provide evidence to address geographical inequities in utilisation. The use of geographical information systems (GIS) might contribute to understand patterns of unequal geographical distribution, following previous efforts in Chile by Icaza *et al* (190) and Rojas (191), but that have not been carried out for health service utilisation.

Another interesting research question is examining equity of utilisation but disaggregated by each (or groups) of GES diseases. This will contribute to understand

whether the inverse care law operates in the case of GES package. Our results address utilisation disaggregated by primary or secondary care, but an analysis of all diseases separately might shed light about inequities in a more specific way, thus facilitating actions to tackle them. Because the use of concentration curves might not be adequate for multiple diseases, another summary measure is needed. For example, the horizontal inequity index developed by Van Doorslaer and colleagues (192,193) has proved useful to examine cross-country differences and could be computed with SIGGES data.

- **Equity of Access.** Research about health workers availability is a need urgent yet difficult to meet. Many reasons account for this knowledge gap, including lack of a national registry, scattered sources of information and multiple jobs in public and private sector. Roman (194,195) has expand this knowledge on physicians and Gonzalez (196) has looked at health workers graduating from university, but how their distribute between public and private sector is unknown. Even less knowledge exists in the attitudes and practices of physicians and other health workers towards the GES package and how this has influenced patients' acceptability and treatment. In terms of affordability, it is necessary to explore further the degree of financial protection and out-of-pocket expenditures that GES users are undertaking. Moreover, other indirect costs should be investigated, such as transport and opportunity costs. Lastly, the study evidenced a major gap of acceptability of GES health services. The information available was scattered, with small samples sizes and mostly telephonic.

Gilson's framework proved useful and increased the explanatory power of using either utilisation as a proxy of access or access without taking into account utilisation. Therefore, the research community is encouraged to use both dimensions together, but also to develop methodological tools to present results more synthetically.

- **Non-GES healthcare.** The need to expand knowledge of the effects of the GES package in non-GES conditions is clear. Looking at regular sources of information, like hospital admissions, or analyse waiting times for non-GES conditions as done by Gonzalez (145) could be a reasonable start. However, this will not be enough to understand how the GES package has changed providers incentives and practices. To address this incentives interplay, the analysis of routine sources is not enough and qualitative primary research is needed.
- **Private sector.** Despite the growing importance of private sector in health services delivery in Chile, little is known about quality of providers and how they distribute within geographical areas and health services. Physicians are subjected to a range of incentives from pharmaceutical companies and payment mechanisms (both FONASA and ISAPRES vouchers). Yet, evidence about this is scarce. The effects of incentives on physicians' practices and how they could interplay with equity of utilisation and access of GES and non-GES services needs further exploration.

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# Appendix I

**Table 1.** Health conditions included in the GES package and its access and waiting times guarantees.

Disease	Phase of medical treatment (days)						
	Prevention	Diagnosis Primary Care	Diagnosis Specialty <sup>a</sup>	Confirmation <sup>a</sup>	Treatment	Follow-up <sup>b</sup>	Specialty Consult <sup>c</sup>
<b>Cardiovascular</b>							
End-stage chronic renal insufficiency					7—21		
Primary arterial hypertension (>15 years)		45			24 hours		90
Type 2 diabetes <sup>b</sup>		45			24 hours		90
Acute myocardial infarction		30 mins			30 mins		
Pacemakers (>15 years)			30		30	15	
Stroke (>15 years)				72	24 hours	10	
Type 1 diabetes		3			24 hours		
Preventive Medical Exam	Immediate						
<b>Cancer</b>							
Childhood cancer			14—37		24 hours		
Cervical cancer			30	30	20 to 30	30	
Breast cancer			30	30			
Adult testicular cancer			60	included	15	30	
Adult lymphoma			65	included	10—25	30	
Pain relief for advanced cancer and terminal care					5		
Cholecystectomy (symptomatic 35—49 years)				60	90		
Gastric cancer (>15 years)			45	30	30	30	
Prostate cancer (>15 years)					180	45	
Prostate hyperplasia needing surgery					180		
Adult Leukaemia			21		72 hours	14	
<b>Traumatology</b>							
Hip arthrosis needing prosthesis					240	40	
Scoliosis needing surgery					365	10	
Use of orthosis (>65 years)					20—90		
Mild or moderate knee or hip artrosis (>55 years)					24 hours		120
Lumbar disk herniation					45	30	
Rheumatoid arthritis					Immediate		
<b>Mental Health/Neurology</b>							
Epilepsy susceptible to treatment in primary care (<15 years)					20		
Schizophrenia			20		Immediate		
Depression (>15 years)					Immediate	30	
Alcohol and drugs dependency (<20 years)					30		
CNS tumors and cysts			15		30	Depend	
<b>Ophtalmology/ENT</b>							
Cataracts (>15 years)			180		180		
Vision impairment (>65 years)			180		30		
Strabismus (<9 years)				90	30—90	30	
Diabetic retinopathy				90	60		

Ocular trauma		12 hours		60 hours	
Bilateral hypoacusia needing earphones (>65 years)				45	
<b>Respiratory diseases</b>					
Upper and lower ARI (<5 years)				Immediate	
Community-acquired pneumonia susceptible to ambulatory care (>65 years)	48 hours			Immediate	
Severe and moderate asthma (<15 years)			20	Immediate	30
COPD (ambulatory treatment)			30	Immediate	45
<b>Infectious diseases</b>					
HIV/AIDS				7	
<b>Child and Maternal Health</b>					
Congenital cardiopathy needing surgery	Depends on age			48 hours	
Integral oral care (6 years)				90	
Prematurity	Depends			Depends	
Cleft lip and palate		15		90-547	
Spinal dysraphia		12 hrs to 90 days		72 hrs to 60 days	
Neonatal respiratory distress syndrome				Immediate	
Haemophilia		7		Immediate	
Cystic fibrosis				Immediate	
Antenatal care and anaesthesia during delivery				Immediate	
<b>Emergency Care</b>					
Severe burn				72 hours	15
Subarachnoid bleeding due to aneurismal rupture		24 hours		24 hours	30
Politrauma with/without medullar lesion		Immediate			
Severe or moderate head trauma		12		24 hours	
<b>Oral Health</b>					
Adult oral care (60 years)				90	
Odontological emergency care				Immediate	

- a. Diagnosis Specialty is an evaluation with an specialist. Confirmation refers to a medical exam to confirm the diagnosis  
b. Follow-up by an specialist after a medical or surgical procedure  
c. Appointment with an specialist after referral from primary care.