CIPPEC
CENTRO DE IMPLEMENTACIÓN DE POLÍTICAS PÚBLICAS
PARA LA EQUIDAD Y EL CRECIMIENTO

Health Program

EVALUATING A PUBLIC HEALTH INSURANCE. THE CASE OF BUENOS AIRES PROVINCE

June 2009

Daniel Maceira, Ph.D

INDEX

ACKNOWLEDGEMENTS

The author wish to thank Ana María Reynoso, Malena Monteverde, Sofía Olaviaga, Martin Gonzalez Rozada, Aurelia Furnari, Adolfo Sanchez de Leon, Gabriel Ciancio and Rebecca Thornton for their input and their comments in this paper. The authors are fully responsible for the opinions expressed in this document. Correspondence to dmaceira@cippec.org

Overview

Broad speaking, health systems aspire to provide the entire population with broad, equal, and cost-effective access to healthcare services. Differences in income between social groups, especially in developing countries, as well as specific failures in the operation of any health system (externalities, information asymmetry, etc) require the creation of regulatory structures and the intervention of the State in order to resolve them. Both the Health Ministry's system of public healthcare and the system of health insurance through labor organizations (*obras sociales)* are forms of social insurance key to achieving these public policy goals.

In Argentina, the public health system is deeply decentralized and organized mainly at the provincial level, with the exception of some funds and programs controlled by the federal government. Each district authority chooses its health priorities and manages its own provider network. Provinces set the budgets of these authorities based upon past levels of funding, without reference to measures of performance. Due to these inefficiencies, the public health system is the provider of last resort for those without formal health coverage, rather than meeting its goal of providing health care to the entire population.

Over the past few years, Argentina has undergone a severe economic crisis that reduced its capacity to provide social services, associated with the growth of the informal, rising levels of underemployment and unemployment, escalating poverty and substantial changes in the country's development model. This socio-economic context has restricted access to healthcare. In addition, a large proportion of the population has experienced a fall in living standards, with severe consequences for public health. Even though the last few years have seen a slight improvement in public health indicators, great disparities remain among provinces and social groups. The province of Buenos Aires reflects these national trends.

In this context, during the year 2000, one of the responses provided by the Buenos Aires Health Ministry was the creation of a Provincial Public Health Insurance program, aimed at guaranteeing access and ensuring the quality of health services for the population without formal health coverage or the economic resources to afford it.

In this framework, this first chapter intends to describe the context in which the PHIP developed, its background, as well as the different stages it went through (2000-2006). Finally, the chapter exposes a brief description of the PHIP's institutional structure (objectives, organization and operational structure, target population, financial structure, beneficiaries' incorporation system, service package, human resources, evaluation and monitoring, among others).

On the second chapter, resources allocation mechanisms are analysed, involving not only specific funds for the area, but also coparticipation schemes aimed at transferring provincial resources to municipalities. The latter are the ones who have, eventually, the faculty to assign those funds to the development of a sanitary strategy. Furthermore, the

allocation of those funds is analysed considering its relation to people's needs or if, on the contrary, to the characteristics of the supply of physical infrastructure of the services offered among municipalities. In addition, the role of the decentralized mechanism of funds allocation established through a scheme of coparticipation is analysed. Achieving so implies the proposal of a mechanism for testing a set of alternative hypothesis about the ways resources are allocated.

On the last chapter, The Public Health Insurance is reviewed and analysed in terms of focalization and quality of care considering its influences in improving preventive practices by health team members over the covered population. The task is focussed on periods 2004, 2005 and 2006, relying for that on a 1,6 million of consultation database by professional, municipality and type of intervention.

Chapter I:
Context, Origin and Description of the Public Health Insurance Program (PHIP)

Daniel Maceira, Ph.D.[1]

Sofia Olaviaga[2]

1.1 Introduction

In Argentina, the public health system is deeply decentralized and organized mainly at the provincial level, with the exception of some funds and programs controlled by the federal government. Each district authority chooses its health priorities and manages its own provider network. Provinces set the budgets of these authorities based upon past levels of funding, without reference to measures of performance. Due to these inefficiencies, the public health system is the provider of last resort for those without formal health coverage, rather than meeting its goal of providing health care to the entire population.

Over the past few years, Argentina has undergone a severe economic crisis that reduced its capacity to provide social services, associated with the growth of the informal, rising levels of underemployment and unemployment, escalating poverty and substantial changes in the country's development model. This socio-economic context has restricted access to healthcare. In addition, a large proportion of the population has experienced a fall in living standards, with severe consequences for public health. Even though the last few years have seen a slight improvement in public health indicators, great disparities remain among provinces and social groups. The province of Buenos Aires reflects these national trends.

In this context, during the year 2000, one of the responses provided by the Buenos Aires Health Ministry was the creation of a Provincial Public Health Insurance program, aimed at guaranteeing access and ensuring the quality of health services for the population without formal health coverage or the economic resources to afford it.

In this framework, this first chapter intends to describe the context in which the PHIP developed, its background, as well as the different stages it went through (2000-2006). Finally, the chapter exposes a brief description of the PHIP's institutional structure (objectives, organization and operational structure, target population, financial

[1].*PhD in Economics. Director of the Health Policy Department. Center for the Implementation of Public Policy promoting Equity and Growth (CIPPEC). Senior Researcher CEDES/CONICET. Correspondence to dmaceira@cippec.org*

[2] *BA in Political Science, candidate to MA in Social Policy (thesis pending), and Coordinator of the Health Policy Department of the Center for the Implementation of Public Policy promoting Equity and Growth (CIPPEC).*

structure, beneficiaries' incorporation system, service package, human resources, evaluation and monitoring, among others).

On the second chapter, resources allocation mechanisms are analysed, involving not only specific funds for the area, but also coparticipation schemes aimed at transferring provincial resources to municipalities. The latter are the ones who have, eventually, the faculty to assign those funds to the development of a sanitary strategy.

This works looks for analyzing which is the resource allocation mechanism in the provincial health area, evaluating if those resources are associated to people's needs or if, on the contrary, are subjected to the characteristics of the supply of physical infrastructure of the services offered among municipalities.

In addition, the role of the decentralized mechanism of funds allocation established through a scheme of coparticipation is analysed. Achieving so implies the proposal of a mechanism for testing a set of alternative hypothesis about the ways resources are allocated.

On the last chapter, The Public Health Insurance is reviewed and analysed in terms of focalization and quality of care considering its influences in improving preventive practices by health team members over the covered population. The task is focussed on periods 2004, 2005 and 2006, relying for that on a 1,6 million of consultation database by professional, municipality and type of intervention.

1.2 The Province of Buenos Aires in context

The province of Buenos Aires accounts for 307.571 km^2 of Argentina's surface, which makes it the country's largest and most populated province. According to data from the 2001 National Census, this province has a population of 13,818,677 inhabitants (38% of the country's total population), of which 95% live in urban areas. It is currently facing a demographic transition, tending towards an aging population. Life expectancy has progressively increased reaching values of 73,99 years in 2001 (70,02 for men and 78,03 for women), and the annual population growth rate (APGR) continues to decrease, reaching a value of 8,9% for 2001.[3]

Although the province has a population density of 44,5 inhab/km2[2], the population distribution varies significantly within the province. Therefore, some municipalities

The authors are grateful for the comments and contributions of Pedro Kremer and Aurelia Furnari. Special acknowledgments to the authorities of the Buenos Aires Province Public Health Insurance Program on their support and information. The authors are fully responsible for the opinions expressed in this document. Correspondence to dmaceira@cippec.org

[3] *INDEC, National Census 2001*

have over 5.000 inhab/km[2] and others, located in rural areas, show values below 5 inhab/km[4]. In this context, three clearly delineated areas can be identified in the province, each group with relatively homogeneous characteristics: the greater Buenos Aires area, other urban areas and the rest of the municipalities.

Greater Buenos Aires includes the 24 municipalities surrounding Buenos Aires City, the capital district of the country. This area, with a surface of 3.682 km[2] (1,2% of the province's total surface) and more than 9.000.000 inhabitants (approximately 2/3 of the province's total population and 1/4 of the country's total population), represents the country's main urban center.

The second most populated area includes the urban municipalities with economic and cultural relevance, where a sustained population growth can be observed. This group encloses the cities of La Plata, Bahía Blanca, General Pueyrredón, Tandil, Olavarría and the river course San Nicolás - Zárate.

Finally, the third area includes the rest of the municipalities, most of them with rural and semi-rural characteristics, with an aging population structure and very low APGR and population density.

17,6 % of the province's population lives under conditions of structural poverty[5] according to the Unmet Basic Needs (UBN) indicator[6]. However, there is considerable variation in the distribution of poverty within the province: the districts of the third and second urban belt have populations with higher rates of UBN (over 25%); while in the first urban belt, less than 16% of the population lives in this condition.

Also, 48% of the population has no formal health coverage. Of this population, 2.400.000 lives in the worst social and sanitary conditions (child and maternal malnutrition, high mortality rate, infectious diseases, among other social problems) [7].

In addition, the province evidences serious problems of access to healthcare services, frequently caused by geographic, economic and administrative barriers.

The province's primary healthcare level is characterized by varying types of interventions. The beneficiaries of the public healthcare sector usually pass over the first care level and mostly go directly to hospitals. The existence of information gaps and the

---

[4] *Economy Department of the Buenos Aires Province, Statistical Yearbook. 1997*

[5] *INDEC, National Census 2001*

[6] *The Unmet Basic Needs (UBN) index is integrated by the following indicators: (i) Overcrowding: households with more than 3 people per room; (ii) Housing: establishes households with inconvenient housing facilities (based on the house's building materials); (iii) Sanitary conditions: connection to the water supply network and sewerage facilities; Education: households with at least one children in schooling age (six to twelve years) that does not attends to school. Economic dependency: households with high economic dependency rate (four or more people per employed person) and level of education achieved. Households that do not fulfill at least one of these indicators are considered UBN, as well as the people living in it.*

[7] *INDEC, National Census 2001*

poor quality of healthcare services delivered in Primary Healthcare Centers partly explains the high demand for services in public hospitals.

1.3 The Provincial Healthcare System

The Buenos Aires Province's healthcare system is composed of the same three sub-sectors as Argentina's national healthcare system: public, private, and social security. In this context, the provincial government (providing the greater part of the funding), the Municipalities, the National government (providing relatively little funding), the private sector and the healthcare insurances co-exist in providing and financing healthcare services.

Given this structure, the State must:

(i) Align policies and regulations for the healthcare sector;
(ii) provide healthcare services through public establishments with different complexity levels and;
(iii) provide a significant amount of the healthcare expenditure, through the maintenance of public services providers, direct subsidies and specific programs.

The private sector accounts for a significant number of healthcare providers and participates in healthcare financing through prepaid healthcare services. The private contribution to healthcare financing is made through out-of-pocket expenditures and co-payments or direct payments for private consults to professionals, medication purchase and other services.

The Provincial Health Insurance (IOMA), which covers the municipal and provincial public employees, finances and provides healthcare by hiring private services for its affiliates. IOMA has 1.325.297 affiliates, constituting the second largest health insurance program in the country after the INSSJyP (which covers retired people).

According to Argentina's federal structure[8] the Buenos Aires Province, just like the rest of the Argentinean provinces, establishes the healthcare policy for its population, as this is a power not delegated to the national government.

The Province public sub-sector delivers healthcare services through 1.710 public establishments (24% of the public sub-sector's national total), of which 276 (15,7%) have inpatient services (4 national, 68 provincial and 204 municipal)[9].

It counts with 27.487 public beds (35,69% of the public sub sector's national total): 13.305 provincial, 12.077 municipal and 2.105 national. The health insurance sub-sector

[8] *Argentina's National Constitution, (Articles 104 and 67)*
[9] *Statistical Provincial Direction.*

operates mainly by hiring services, maintaining a much smaller provider network of its own.

The province public sub-sector also has 847 diagnosis and treatment centers, which include laboratories, imaging diagnosis, and dialyses, among other specialized services, as well as other 96 medical emergency centers.

1.4 Origins and Stages of the Public Health Insurance Program (PHIP)

During the second half of the 1990's, in the context of reform policies promoted by the National Government and supported by international credit organisms, several Argentinean provinces attempted to develop healthcare insurance policies for the poor.

In 1995, the National Health Ministry began to implement, with a World Bank loan, the Health Sector Reform Program (PRESSAL), which included the Reform Projects for the Health Insurance System and primary healthcare. This program enabled the provinces to receive direct funding from the World Bank through the Provincial Reform Loan (PRL)[10]. In the particular case of health reforms, the loan was attached to the creation of healthcare insurances as a condition for the loan.

In this framework, a debate about the provincial healthcare policies took place, and the provincial public health insurances become one of the main topics discussed. Two different models were presented. One position promoted the creation of a Public Health Insurance based on the administrative structure of the respective Provincial Health Insurances (which covers only public employees); incorporating the population without formal coverage and resources (Salta Province adopted this model). A second model proposed that the Provincial Healthcare Ministry act as the insurance provider and purchase agent for this sector of population, mainly focused on the primary care level (Rio Negro Province adopted this model) (Sánchez de León – Báscolo; 2002: 86).

In the particular case of Buenos Aires, the debate about public health insurances can be tracked back to the year 1998. An extensive discussion of many positions took place within the Provincial Health Ministry. Following Salta's model, IOMA suggested the extension of their coverage to those without formal health coverage. On the other hand, the Healthcare Planning Sub-Secretariat proposed the extension of the Pueblo Program, which consisted of the creation of municipal health insurance through the coordination of the provincial and municipal levels, and the participation of the private and social security sub-sectors.

At the same time, since 1994 the Family and Human Development Provincial Council had been implementing a nutritional program called Plan Vida. This Plan consisted in food delivery and social work, through groups of voluntary community workers (women called *Manzaneras*), each one in charge of 5 or 6 blocks of a municipality. These

[10] *These reforms were executed in Salta, Tucumán, Río Negro, San Juan, Córdoba, Santa Fe and Catamarca (Banco Mundial; 2003: 42).*

workers claimed the province's government must provide them and their families with some kind of health coverage.

As a result of this debate, the Head of the Healthcare Provincial Ministry decided to create the Public Health Insurance Program (PHIP), which was officially announced on October 5, 2000, in the municipalities of Berazategui and Ensenada, where the first 2610 identification cards were distributed to beneficiaries and their families.

During the first phase (2000/2002), the PHIP was associated with Plan Vida, responding to the concrete health coverage demand of *Manzaneras* and their families. In this direction, the healthcare package provided included: a family doctor, a dentist, laboratory analysis, low complexity tests and an agreement signed with the Pharmaceutical College concerning a vademecum of free generic drugs for the beneficiaries.

In December 2002 the PHIP had incorporated 43 of the 134 municipalities of the province, including 84.000 beneficiaries and 261 physicians. As a consequence of the country's 2001 economic, social and institutional crisis, payments to health care providers were suspended and the agreement with the Pharmaceutical College was abandoned, resulting in a great loss of access to prescription drugs. This situation, together with some implementation difficulties the program was already experiencing, made 2002 a year without growth and of rising unpopularity for the program.

In 2003, once the worst of the crisis passed, the PHIP was re-launched, starting its second phase. This period lasted until 2005. During these years the target population was expanded, including not only beneficiaries of the *Más Vida* Plan, but also pregnant women, and children up to 6 years old without formal health coverage.

Besides, a series of changes were incorporated concerning its prior administrative structure. In first place, there was a change in the administrative status of the PHIP within the Provincial Health Ministry. Through a ministerial resolution, the Provincial Executive Unit (PEU) of the PHIP fell directly under the authority of the Healthcare Ministry. This was a result of the Ministry's influence, which provided unconditional political support to the program, placing it as a central intervention within the provincial health policy.

Secondly, an alternative process of centralization/decentralization began by abandoning the previous management model based mainly in health regions. As a result, the central level regained a prominent role in certain functions, mainly the ones associated with the physician selection process and control of PHIP through auditing activities. Also, the local level gained greater relevance, given that municipalities obtained more autonomy regarding the program implementation in their own jurisdictions.

This was a gradual process, strongly supported and promoted by the central administration within the Ministry. The strategy was based on team training, and technical assistance was essential to achieve the institutional strengthening needed in order to accomplish the objectives proposed.

In order to deal with the crisis effects, the provincial government reformulated the *Vida Plan*. It was renamed as *Más Vida Plan* and the three provincial Ministries concerned with this social policy area participated in its design and implementation: Education, Human Development and Health. This involved a major change for the PHIP, expanding its coverage approximately from 40.000 to 800.000 beneficiaries and its service structure from 200 to 900 physicians. In the case of physicians, the change was not only in number, but also in composition of specialties. Given the demographic characteristics of the extended target population, there was an important increase in the number of pediatricians and obstetricians incorporated. Finally, the Program signed an agreement with the National Health and Environment Ministry, allowing the PHIP's physicians to prescribe medicines through the Remediar Program[11], recovering free access to medication for this population.

The PHIP continue to grow, starting a new phase in 2006, in which the coverage was extended to the population of municipalities outside the *Más Vida Plan* and other population groups, such as university students, soccer leagues, among others.

1.5 Institutional Structure of the Public Health Insurance Program (PHIP)

The PHIP was created by the Ministerial Resolution Nº 5278/00, and ratified by the Decree N° 630/01 and the Provincial Law Nº 13.413/06, as the public health coverage for people with residence in Buenos Aires Province and without formal health coverage or the resources to afford a private service.

Complementing the legal framework mentioned above, there are different agreements with Medical and Professional Associations such as the Buenos Aires Province Physicians Federation (FEMEBA), the Greater Buenos Aires Physicians Federation (FEMECON), the Buenos Aires Province Dental Federation (FOPBA), and the Buenos Aires Biochemical Federation (FABA); and also, with the municipalities agreement and the procedural manuals (Family Physicians, Dentistry and Auditing Manuals).

Objectives

The PHIP was conceived with the purpose of improving the health results of Buenos Aires' population, specifically those concerning equity in access for the poor to health promotion and protection, as well as recovery and rehabilitation services. This was planned to be achieved through the incorporation of criteria for efficiency, effectiveness and service.

The PHIP's Objectives are:

[11] *Remediar Program is an initiative financed by the Inter-American Development Bank since 2002 and consists of the free provision of ambulatory medicines to the most vulnerable population through Primary Healthcare Centers (PHC).*

- Increase health system efficiency by eliminating cross-subsidies between subsystems.
- Achieve comprehensive and continuous health monitoring and service delivery for the beneficiary population, at all levels of complexity and in all jurisdictions.
- Reduce morbidity and mortality caused by prevailing pathologies in the target population.
- Increase the beneficiaries' satisfaction with the provincial healthcare system.
- In a period of three years, incorporate into the PHIP 2.400.000 people without formal coverage or economic resources to afford it.
- In a period of three years, reduce the infant mortality rate of Buenos Aires Province to 15 per one thousand.
- In a period of 5 years, reduce by 50% the proportion of pregnant women that give birth without prenatal care.

The PHIP was designed to improve access to health services, provide comprehensive healthcare and improve equity in the healthcare system. In this framework, the first challenge was to seek to guarantee the target population an immediate access to healthcare services and to reorganize the service delivery system. This reorganization required reorienting incentives towards health promotion, prevention and activities that allow early diagnosis and proper treatment. The PHIP intended to accomplish a comprehensive improvement, mainly focusing on effectiveness and healthcare quality, based on a scheme which incorporated the following assumptions:

- An active State: Attending especially to its duties as the system regulator, as an essential health prevention and healthcare agent, and guaranteeing equity between citizens.

- Long term sustainability approach: Implies a political consensus and financial viability to maintain the PHIP, as well as a reasonable incentive system.

- Horizontal programming: The PHIP is an integrated approach that implies a reform of the whole healthcare system. Therefore, it involves vertical programs and the various healthcare levels and sub-sectors.

- Effective decentralization: The PHIP pursues the effective decentralization of primary care interventions that still take place at hospitals (at the secondary level), where they are usually poorly executed. It aims to reduce the distance between beneficiaries and healthcare providers.

- Flexible implementation: Adjustment to diverse realities requires a flexible planning and execution framework.

Organization

The PHIP management is based on the principles of decentralized public management and joint responsibility. The first one implies that both the provincial and municipal governments are responsible for the PHIP's organization, including the adoption of a managerial, administrative and financial structure in order to strengthen its decentralization.

The joint responsibility is complementary to the decentralization, since the PHIP's organization also depends on a scheme of clear distribution of responsibility among the provincial and municipal levels.

In this way, the management of the Insurance is performed by a specific organizational structure.

At the Provincial or Central level, the Provincial Executive Unit (PEU), depending of the Provincial Health Ministry, establishes: (i) the eligibility and categorization criteria for municipalities; (ii) the PHIP's main policies and planning; (iii) the healthcare service package; (iv) and the auditing and control interventions. The PEU has a council integrated by the different medical professional associations and plays a support, assistance and evaluation role.

Besides, each sanitary region has a Regional Executive Unit (REU) that coordinates the family doctors selection process, the articulation between municipalities and services providers, and supervision of the system in general.

At the local level, the Municipal Coordination Units (MCU) are responsible for: (i) identifying and registering the beneficiaries, following the standards set at a central level; (ii) evaluating the need to incorporate own human resources, in addition to those provided by the central level; (iii) providing the municipal funding share for the PHIP, previously negotiated with the central level; (iv) administrating the beneficiaries registration, communicating incorporations, drop outs or other modifications to the central level; (v) and providing beneficiaries with the PHIP's primary healthcare services package.

Beneficiary Population

The selection criteria of the PHIP's beneficiary population includes: population with UBN and without formal healthcare coverage or the economic resources to afford one. This last indicator was defined based on the household income level. In this framework, the estimated beneficiary population rose to 2.400.000. There were no differences in eligibility, based on the kind or severity of illnesses among beneficiaries.

The beneficiaries' incorporation was planned following gradual stages. The first one represents the PHIP launch by October 2000, incorporating approximately 130.000

beneficiaries. Then, the idea was to incorporate approximately between 50.000 and 70.000 beneficiaries per month, achieving the full coverage goal (2.400.000 target beneficiaries) by 2003. The original plan was abruptly interrupted due to the major crisis of 2001, which had a strong political, economic and social impact in the country. In this context, the public health sector was limited to provide and contain an increasing demand, with budget constrains, which exceeded the objectives planned. In this scenario the population under PHIP for 2004 totalized 518.775: 91.063 from the first stage, prior to the 2001 crisis; and 427.712 from the period between 2003 and 2004.

Also, the selection criteria followed different stages during these years. Initially, the target population was the voluntary community workers (*manzaneras*) and their families. Then, on a second stage they include the beneficiaries of the *Vida and Más Plan*. Finally, the population that was not under the mentioned plan but fulfilled the selection criteria would also be incorporated once they were identified by the municipal unit.

As mentioned above, the responsibility for the beneficiary identification and registration relays on the Municipalities, given their clear advantages to perform the task, provided by proximity and awareness of the territory. Municipalities also must inform the central level about modifications in the registered population.

In this context, two priority setting instances were determined:

At the Provincial level:

- An amount of population to be insured by the Municipality was established based on the UBN population estimated for 1998.
- A maximum beneficiary's percentage to be incorporated per municipality, per month, was established.

At the Municipal level:

- Each municipality defined objective criteria for the identification and prioritization of the UBN population (based on socioeconomic indicators, healthcare coverage, epidemiological profile, etc.), that could be easily audited.
- The selection criteria were based on the need to achieve an appropriate ratio between service providers and the population under PHIP and articulate the healthcare network. Therefore the beneficiary's incorporation would follow a step by step dynamic, starting by different geographical areas within each Municipality.

Financial Structure

The Program is financed mainly with resources from the provincial budget. Municipal and provincial resources would complement to pay the physicians services through a capitated system, through different intermediary organizations (Medical and Professional Associations).

Regarding the operative organization, the province would open a special account for the PHIP, divided into different sub-accounts, with the resources for each municipality. Therefore the municipalities' capitas payments would be taken from each sub-account.

The financial relationship between the Municipality and the Province would be stated in an agreement, in which the Municipality would commit to provide their corresponding payments orders. The PHIP's Executive Provincial Unit would issue the payment orders to the intermediary organizations and finally they pay the physicians for the services delivered.

An important aspect of the system would be that each municipality is entitled to define their contribution to the capitas payment. Taking into account the Municipal UNB population proportion, the construction of an index would allow the identification of the most needed municipalities, in order to provide more resource allocation in the poorer ones.

Payments schemes for the different service providers would be established, as well an explicit incentive structure that would promote healthcare promotion and prevention actions.

Operational Structure

The PHIP is mainly based in a Primary Healthcare framework, emphasizing the development of the primary care level as the entrance gate to the system; with nominal responsibility concept for the beneficiary population, an increasing complexity level and the patient's treatment continuity in all the care levels.

In this direction, the services package includes a family doctor, a dentist, laboratory analysis, and drugs provision. At the same time, the system includes a reference and counter reference system with public hospitals for specialists, hospital stay and high complexity.

The family doctor provides medical assistance, programmed and spontaneous, to the beneficiaries under his care, usually population from the neighborhood where his office is located.

The PHIP is articulated at four different levels:

Local level: where services are provided to beneficiaries, including: family doctor, dentists, pharmacies and laboratory analysis.

Municipal level: each municipality under PHIP must create their own Program Municipal Office, in charge of activities regarding beneficiaries' selection and incorporation, their healthcare attention, complains, developing care networks and the coordination with different social programs. The incorporation of municipalities

under the PHIP is voluntary, signing an agreement with the Province Healthcare Ministry.

Regional level: This level depends on the Sanitary Region and it incorporates the head of the provincial health Ministry, the municipalities from the Region and the other health institutions participating. In this level, services providers are hired.

Central level: This level administrates the PHIP through an Executive Unit, responsible for the general management including: programming and planning, budgeting, evaluation and monitoring activities. Also, it is responsible for the outline of the basic healthcare package and the management of contracts and agreements.

Beneficiary's incorporation system

The PHIP's Municipal Unit is responsible for the beneficiaries' incorporation that fulfills the selection criteria. Then, according to their geographical location, each beneficiary (each individual) would be assigned to a family doctor, and would be sent to a preventive consultation.

This first consultation is a necessary condition to become a beneficiary and be incorporated to the system. This information together with the municipal unit documentation would be sent to the regional level, which would authorize the incorporation by sending the same information to the central level, for the final approval and the emission of the credential.

Once approved, the beneficiaries would be able to access coverage including:

- A primary healthcare physician (general or family doctor, each doctor would have up to 1000 beneficiaries).
- An orthodontist taking care of their dental health.
- Laboratory analysis and free drugs according to the first care level vademecum (corresponding to the National Program Remediar).

Professionals under PHIP have to:

- Fulfill minimum standards of provided prevention services, following the protocols approved by the Provincial Healthcare Ministry.
- Fulfill the information requirements established by the PHIP, especially regarding to medical history, and reference and counter reference practices.
- The beneficiaries referred by their PHIP physician to the second or third care level would have access to the public providers' network, according to the availability, and the guidelines and priorities established by that network.
- The reference and counter reference system would favor the continuous and complete attention of the patient through the system.
- The beneficiaries would be able to choose their primary physician and revise their choice twice a year.

Human Resources

Two different models of primary healthcare were presented: one based on the primary care physician and the other based on primary care teams, constituted by a general practitioner, a pediatrician, a nurse and an obstetrician.

During the PHIP's original planning, it was estimated that 2.400 doctors would be needed to provide coverage to the 2.400.000 potential beneficiaries. In this context, the primary care physician was conceived as the responsible for the primary healthcare consultations. Following this premise the General Practitioner should provide medical consultation, spontaneous and scheduled, in an office where the population under his responsibility, no greater than 1000 beneficiaries, have access.

For the constitution of the Primary Care Basic teams the PHIP used an estimation of 5000 people per team, with exception of the obstetrician which would correspond to one every two teams. Therefore 700 teams would be required which would include 1.400 doctors (700 pediatricians and 700 GPs), 700 nurses and 400 obstetricians.

Both the primary care physicians as the teams would be in charge of orienting and containing the demands for healthcare. They would both operate in the same area as their population in charge (individuals or families), either in the municipal healthcare centers or in their own offices, therefore aiming to increase the access to the system by decreasing the geographic barriers. These primary care physicians could be involved in other activities since there was no full time commitment.

The PHIP beneficiaries could choose their Physician, being able to change the selection up to twice in a year. According to the rules established by the PHIP, the Primary Care Physicians in charge of children between 0 to 14 years should be general practitioners or pediatricians. In the same way the beneficiaries of 15 years or more should be under the responsibility of a general practitioner.

The 5th October of year 2000, the Head of the Provincial Health Ministry signed the Medical Services Agreement with the FEMEBA and the FEMECON. Towards the end of 2000 the PHIP had a registered population with 256 primary physicians, 185 dentists and 604 pharmacies participating in the drugs coverage. From mid 2003 the doctors incorporated to the PHIP took part of a selection process where, in addition to the formal requirements, they undertook evaluations concerning their disposition, motivation and capacity for this kind of work. By December 2005 the PHIP had incorporated 913 primary physicians, 141 throughout that same year.
The participation of the service provider in different training activities became an important component of the PHIP. As part of a change and management strategy, a continuous learning process called Permanent On-Service Education (a learning process in the working environment based on the real needs and perspectives of the staff and the system) was launched.

The training depended on an active participation of the practitioners, both with a high level of commitment and motivation. In the same direction, this training tried to achieve a greater quality in working processes, focusing them in the beneficiaries needs.

Auditing activities

The evaluation system consists on three levels: (i) a Local Executive Unit in charge of auditing the Primary Physicians, (ii) a Regional Executive Unit (UER) auditing Municipalities and practitioners that have been contracted through an agreement with the provincial professionals' federations, (iii) and a Central Executive Unit that audits the UER and physicians by special request of the UER.

As for operational goals, a team of Regional Auditing Physicians were selected to report on geographically isolated Sanitary Regions. A normative for those professionals was defined and incorporated to the audit manual already in use. Then, primary care physicians were audited, to evaluate the quality of care provided to the PHIP beneficiaries. This evaluation consisted on a review of medical records using indicators such as: evaluation of the physical exam, diagnosis, requirement of complementary studies, choice of treatment, concordance between diagnosis and treatment and prescriptions written by PHIP physicians through the Remediar Program.

Up to 2005 audits in all where conducted on 1146 physicians. During the same year, 9.525 medical histories where evaluated. An 89.3% of this showed concordance between diagnoses and treatment choice and 89.8% had completed the vaccination scheme recommended for children under 6 years.

At the same time, Clinical Practice Guides (GPC) were designed to provide physicians with conceptual precision and methodological guidance for pathologies with high incidence in PHIP beneficiaries. The GPC objectives are mainly:

- To assist as an aid during assistance and treatment choice.
- To improve the medical care process and quality.
- To provide a reference to all the PHIP primary care physicians, these guides can also be discussed and periodically improved.
- To contribute to the skills and knowledge of practitioners working in primary healthcare.

Lastly the quality control team elaborated a standard medical record to be used by the Public Health Insurance professionals taking into account suggestions made by the primary care physicians. At the same time, a supervisor team for primary care physicians was created. The focus of the supervision program is both on technical aspects and issues such as access, equity, continuity and beneficiaries' satisfaction. The supervisor program was created as an educational intervention in support of a continual

analysis and improvement process, in order to guarantee quality by facilitating the development of human resources and local healthcare organization.

The methodology consists on a structured interview between the Primary Care Physician and the Supervisor. Results up to 2005 show that:

- 93% of the Primary Care Physicians used the census survey as an instrument to recruit patients and follow up on beneficiaries.
- 92% of the Primary Physicians engaged in extramural activities to recruit beneficiaries or patients.
- 92% of the Primary Physicians evaluated working with "manzaneras" as very important or important.
- 83% of the supervisors evaluated the Primary Care Physicians' attitude towards the interview as very good or good.

Chapter: II
Health Expenditures in a Decentralized Context. The Province of Buenos Aires

Daniel Maceira, Ph.D.[12]

2.1 Introduction

Argentina is a federal country with a population of 38 million people distributed in 23 provinces and federal district, Buenos Aires City. The Buenos Aires province lies by the National Capital City, and is the main district in the country, gathering 40% of the national population. Following the national experience, the province has been through a decentralization process that affects both the mechanisms of financing and allocation of resources in the health sector. The decentralization process leaves most resources' management to municipalities' competence, which invests in hospitals, health centres and specific programs.

The goal of this chapter is to have a look at the functioning of these resources allocation mechanisms, which involve not only specific funds for the area, but also coparticipation schemes aimed at transferring provincial resources to municipalities. The latter are the ones who have, eventually, the faculty to assign those funds to the development of a sanitary strategy.

Besides this distribution of roles between municipalities and the province, there are, furthermore, federal resources that are transferred through both, in-kind (medicines, vaccines, milk, condoms, antiretrovirals, etc.) and monetary funds straight to municipalities within the Buenos Aires Province.

This works looks for analyzing which is the resource allocation mechanism in the provincial health area, evaluating if those resources are associated to people's needs or if, on the contrary, are subjected to the characteristics of the supply of physical infrastructure of the services offered among municipalities.

In addition, it will be analysed which is the role of the decentralized mechanism of funds allocation, established through a scheme of coparticipation. Achieving so will imply the proposal of a mechanism for testing a set of alternative hypothesis about the ways resources are allocated.

The next section describes the organization of the provincial public health system as well as its distribution through Sanitary Regions, analyzing some indicators of resource allocation and health needs. After that, a discussion of the financing mechanisms between the three jurisdictions involved is presented, as well as the role developed by

---

[12].*Ph.D in Economics. Director of the Health Policy Department. Center for the Implementation of Public Policy promoting Equity and Growth (CIPPEC). Senior Researcher CEDES/CONICET.* *The author acknowledges the assistance of Ana María Reynoso and Malena Monteverde in the elaboration of this Chapter.* *Correspondence to dmaceira@cippec.org*

the coparticipation scheme, testing different alternatives of national, municipal and provincial behaviour regarding the utilization of health sector resources.

2.2 Socio-economic indicators and resource allocation

Buenos Aires Province counts on 307.571 km² and a population size of 13.827.203 inhabitants. The population is spread along 134 municipalities which are grouped into twelve Sanitary Regions. Figure 2.1 shows, for the complete territory of the province, and for the Buenos Aires urban complex, the location of such municipalities and their division into sanitary Regions.

Figure 2.1
Political Division and Sanitary Regions
Buenos Aires Province and the Great Buenos Aires Urban Complex

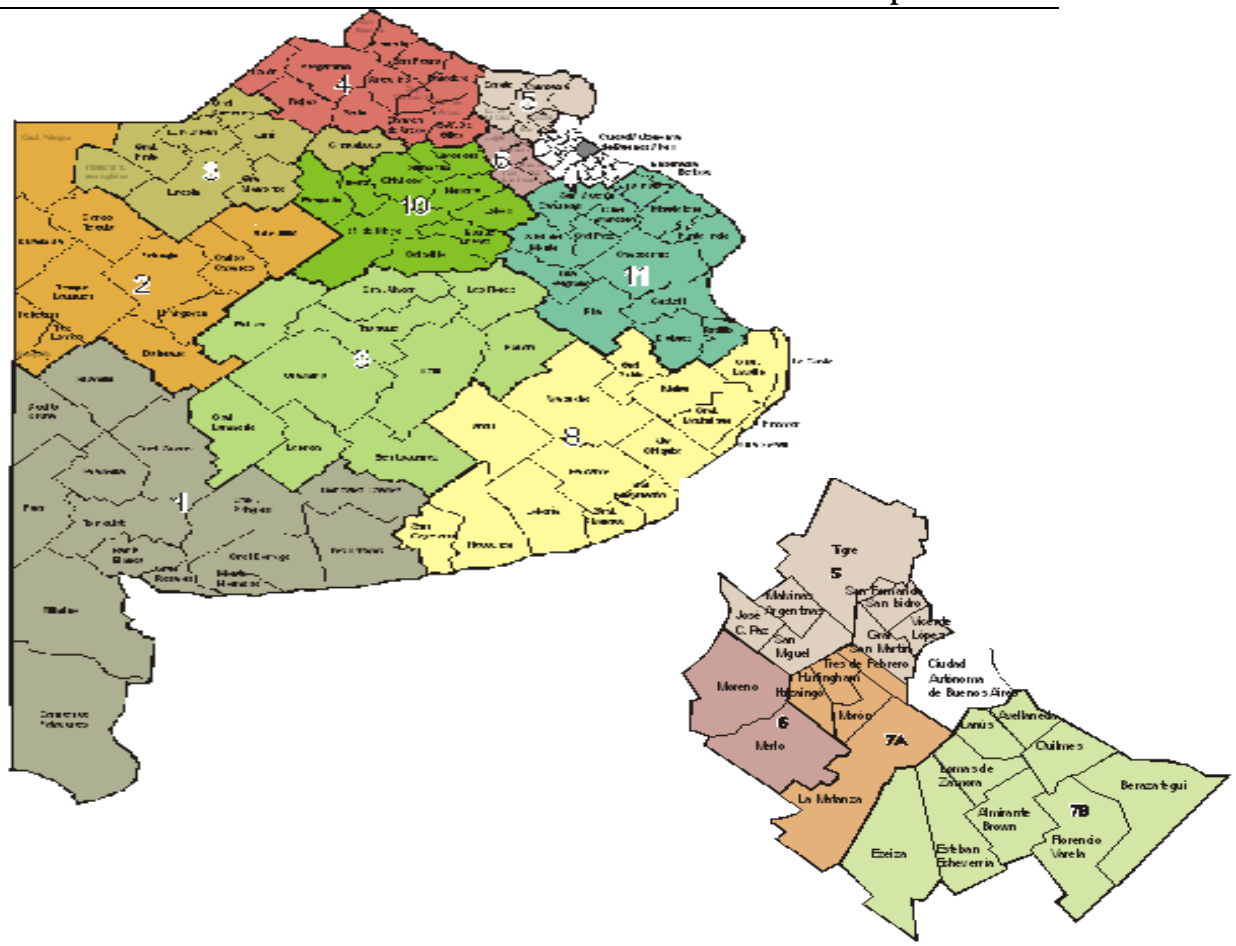


Chart 2.1 shows, by sanitary Region, population – as Published by the 2001 National Census-, as well as traditional indicators of supply, and financing. The latter considers the regional expenditure on health, and aggregate provincial and national transferences to every municipality composing each sanitary Region. Such Figures correspond to 2003 year, the only year for which the consolidated expenditure is available for the three administrative levels.

Chart 2.1
Financing, Needs and Supply indicators of the Buenos Aires Province health system, by Sanitary Region

Region	Financing Indicators, in million $ (2003)			Needs Indicators					Supply Indicators				
	Municipal Expenditure (1)	Health Transfers		Population (2)	% of Population with UBN (2)	Hospital discharges		Infant Mortality Rate (*) (1)	Nº of Beds (1)	Public institutions			Nº of Physicians (1)
		Provincial (1)	National (1)			ARI (1)	Intestinal Infection (1)			Inpatient Institutions (1)	outpatient institutions (1)	Total (1)	
1	61,57	43,15	2,82	627.507	9,02	1.163	468	12,27	2.190	47	138	185	1.316
2	31,85	14,69	1,69	248.482	10,93	774	258	12,28	1.537	35	73	108	542
3	19,27	19,42	1,60	243.411	15,52	811	373	15,17	894	20	59	79	535
4	29,76	40,91	3,38	522.532	12,54	1.817	713	14,73	1.499	20	127	147	925
5	196,31	181,25	31,09	2.814.787	12,35	5.567	874	17,36	3.149	34	282	316	4.069
6	38,16	85,40	43,11	1.068.610	10,05	2.439	540	18,40	4.072	16	112	128	1.737
7A	106,75	136,02	59,92	2.231.501	13,40	4.161	607	13,88	2.060	21	114	135	2.438
7B	117,25	307,17	26,25	3.407.415	16,20	5.309	953	17,44	3.782	27	329	356	4.784
8	73,67	80,06	13,58	1.040.139	11,25	1.855	413	15,55	2.113	37	148	185	1.779
9	41,80	21,34	1,83	296.687	8,99	1.147	377	12,95	1.392	24	85	109	459
10	21,05	27,72	1,49	304.485	11,38	806	166	15,15	946	21	85	106	612
11	41,08	223,89	8,07	1.021.647	17,50	2.010	634	18,85	4.273	38	141	179	3.063
Correlation Index with Municipal Health Expenditure	1	0,41	0,59	0,78	0,04	0,8	0,63	0,04	0,32	0,55	0,66	0,69	0,61
Maximum/minimum ratio	10,19	20,91	40,28	14,00	1,95	7,19	5,74	1,54	4,78	2,94	5,58	4,51	10,42

Notes: (*) Information corresponds to simple average rate of each region

Source: (1) Own, based on the Direction of Sistematic Information of the Buenos Aires Province, Ministry of Health. (2) Own, based on 2001 National Census.

Moreover, the same chart shows typical indicators of health needs, such as percentage of people with Unmet Basic Needs in every Region, infant mortality rate for each geographical area and two indicators: associated to hospital out-patience due to acute respiratory infection (ARI) and intestinal infection on children younger than 4 years old by Region.

Finally, it gives information about the number of beds, public inpatient and outpatient centers, as well as the number of physicians who work in each of the regions. The last two lines show the correlation between resources and each indicator, as well as the inter-Regional gap per indicator.

As chart indicates, dispersion at the population level is extreme. In Region 7B there are approximately 3.400.000 inhabitants while sanitary Region 3 has a population 3 times smaller, corresponding to 243.000 individuals. In terms of resources, as can be observed in the last row of the chart, there is a wide correlation between municipal funds allocated and the population scale, showing a 78% correlation. This Figure is obviously associated to the number ARI and intestinal infections cases, that are related to population scale. Such correlation is similar for the number of outpatient establishments, and for the number of physicians.

In order to correct by the scale factor, Chart 2.2 shows the same variables but expressed, if possible, in indicators every 10.000 inhabitants. It exposes the amounts of money invested by municipality, the province and the nation for 2003, per capita, for every Region and the infrastructure expressed in the same unit.

The distribution is still not homogeneous. Region 3 invests approximately 80 pesos per capita each year, followed by Region 4, that invests almost 57 pesos, while in the opposite extreme, Regions 11 and 10 absorve about 1,50 pesos of municipal investment in the same period. This accounts for a difference of 53 to 1 in the per capita allocation within the province.

Furthermore, provincial transferences have also high variations. Region 11 is the one that receives the most: 219 pesos per capita and by year, while the minimum occurs in Region 2, in the west of the Buenos Aires Province. Except from Region 3, where provincial and municipal expenditures are similar and close to 79 pesos, in the rest of the Regions provincial expenditures rarely exceeds municipal expenditures, implying that the province is the main investor in the health sector.

As far as national expenditure concerns, federal government also shows a wide dispersion in resources allocation, being in this case, of 10 to 1 between the minimum, with 4,5 pesos per capita in the south of the province, corresponding to the Region where it is located Bahia Blanca and the maximum in Region 6 at in the west of Buenos Aires city with 40,34 pesos per capita for year 2003.

The last row of the chart exhibits the simple correlation index between per capita funds and the structure of needs and supply indicators, where the highest correlation is found across the latter, particularly with the total of public establishments, showing an index of 62%, while the smaller correlation occurs for the indicator of outpatient care due to intestinal infections, with 5% correlation.

Chart 2.2

Financing, Needs and Supply indicators of the Buenos Aires Province health system, by population group, by Sanitary Region

Region	Financing Indicators, in million $ (2003)			Needs Indicators					Supply Indicators				
	Municipal Expenditure (1)	Health Transfers		Population (2)	% of Population with UBN (2)	Hospital discahrges		Infant Mortality Rate (*) (1)	Nº of Beds (1)	Public Institutions			Nº of Physicians (1)
		Provincial (1)	Nacional (1)			ARI (1)	Intestinal Infection (1)			Inpatient Institutions (1)	outpatient institutions (1)	Total (1)	
1	1,64	68,76	4,49	627.507	9,02	0,74	0,31	12,27	34,90	0,75	2,20	2,95	20,97
2	2,21	59,13	6,81	248.482	10,93	0,55	0,21	12,28	61,86	1,41	2,94	4,35	21,81
3	79,16	79,77	6,59	243.411	15,52	0,66	0,26	15,17	36,73	0,82	2,42	3,25	21,98
4	56,96	78,29	6,48	522.532	12,54	0,76	0,30	14,73	28,69	0,38	2,43	2,81	17,70
5	3,03	64,39	11,05	2.814.787	12,35	1,29	0,22	17,36	11,19	0,12	1,00	1,12	14,46
6	35,71	79,91	40,34	1.068.610	10,05	0,09	0,03	18,40	38,11	0,15	1,05	1,20	16,25
7A	1,79	60,95	26,85	2.231.501	13,40	0,09	0,01	13,88	9,23	0,09	0,51	0,60	10,93
7B	2,65	90,15	7,70	3.407.415	16,20	0,17	0,03	17,44	11,10	0,08	0,97	1,04	14,04
8	2,57	76,97	13,06	1.040.139	11,25	1,16	0,29	15,55	20,31	0,36	1,42	1,78	17,10
9	1,72	71,93	6,17	296.687	8,99	0,62	0,25	12,95	46,92	0,81	2,86	3,67	15,47
10	1,54	91,04	4,89	304.485	11,38	0,39	0,08	15,15	31,07	0,69	2,79	3,48	20,10
11	1,50	219,14	7,89	1.021.647	17,50	0,55	0,17	18,85	41,82	0,37	1,38	1,75	29,98
Correlation Index with Municipal Health Expenditure	1	-0,56	-0,19	-0,47	-0,15	0,05	0,18	-0,07	0,59		0,5	0,62	0,36
Maximum/minimum ratio	52,93	3,71	8,98	0,07	1,95	14,93	21,73	1,54	6,70	17,78	5,75	7,18	2,74

Notes: (*) Information corresponds to simple average rate of each region

Source: (1) Own, based on the Direction of Sistematic Information of the Buenos Aires Province, Ministry of Health. (2) Own, based on 2001 National Census.

The following tables fulfil this information showing, for the Regional level in chart 2.3 and for the municipal level in chart 2.4, the descriptive statistics for the set of variables considered in former tables, such as mean population, establishments, needs indicators and expenditures, standard deviation between Regions and / or municipalities and minimum and maximum values.

Chart 2.3
Provincial Statistics, Mean and Dispersion - By Region

	VARIABLE	MEAN	DEVIATION	MINIMUM	Region	MAXIMUM	Region
Supply Indicators	Nº of Beds (1)	2.326	1.202	894	3	4.273	11
	Nº Inpatient Centers (1)	28	10	16	6	47	1
	Nº Outpatient Centers (1)	141	82	59	3	329	7B
	Total Public Establishments (1)	169	85	79	3	356	7B
	Nº Physicians (1)	1.855	1.459	459	9	4.784	7B
Needs Indicators	Population (2)	1.152.267	1.079.418	243.411	3	3.407.415	7B
	Infant Mortality Rate (*)	15	2	12	1	19	11
	ARS (1)	2.322	1.735	774	2	5.567	5
	Intestinal Infections (1)	531	237	166	7B	953	10
	% population with UBN (2)	12	3	9	9	17	11
Financing Indicators	Total Health Expenditures, in Arg Pesos (1)	179.530.027	145.541.230	40.288.373	3	450.670.808	7B
	Municipal Health Expenditures, in Arg Pesos (1)	64.876.156	52.218.997	19.268.409	3	196.305.822	5
	Provincial Transfers 2003, in Arg Pesos (1)	98.417.582	94.702.302	14.693.674	2	307.173.725	7B
	National Transfers 2003, in Arg Pesos (1)	16.236.289	19.589.596	1.487.751	10	59.922.412	7A

Notes: (*) Information corresponds to simple average rate of each region

Source: (1) Own, based on the Direction of Sistematic Information of the Buenos Aires Province Ministry of Health. (2) Own, based on 2001 National Census.

Chart 2.4
Provincial Deviation and Tendency - By Municipality

	VARIABLE	MEAN	DEVIATION	MINIMUM	Municipality	MAXIMUM	Municipality
Supply Indicators	Nº of Beds (1)	208	357	0	Ituzaingó	2.967	La Plata
	Nº Inpatient Centers (1)	3	2	0	Ituzaingó	15	La Matanza Zárate
	Nº Outpatient Centers (1)	13	12	1	Gral. Lavalle	62	La Matanza
	Total Public Establishments (1)	15	14	2	Gral. Lavalle	77	La Matanza
	Nº Physicians (1)	170	268	8	Tapalqué	1.812	La Plata
Demand Indicators	Population (2)	103.188	171.002	1.742	Tordillo	1.255.288	La Matanza
	Infant Mortality Rate (*)	15	8	3	Rojas	51	Pila
	ARS (1)	136	232	1	Gral. Las Heras	2.112	La Matanza
	Intestinal Infections (1)	20	28	1	Balcarce	194	La Matanza
	% population with UBN (2)	12	5	4	Punta Indio Saladillo	30	Florencio Varela
Financing Indicators	Total Health Expenditures, in Arg Pesos (1)	16.077.316	25.759.917	527.453	Tordillo	171.414.368	La Plata
	Municipal Health Expenditures, in Arg Pesos (1)	5.853.488	8.764.673	42.191	Mercedes	70.114.539	La Matanza
	Provincial Transfers 2003, in Arg Pesos (1)	8.879.782	18.434.946	80.862	Gral. Lavalle	156.733.649	La Plata
	National Transfers 2003, in Arg Pesos (1)	1.464.928	3.260.035	11.877	Tordillo	21.754.564	La Matanza

Notes: (*) Information corresponds to simple average rate of each region

Source: (1) Own, based on the Direction of Sistematic Information of the Buenos Aires Province Ministry of Health. (2) Own, based on 2001 National Census.

2.3. Resource distribution between jurisdictions

Chart 2.5 shows that in seven of twelve sanitary Regions the proportion of national expenditure on health is less than 5% of the total, while the average provincial expenditure on health by Region is 50,04%. That implies that provincial resources constitute, in spite of decentralization, the most significant monetary source of intervention in the health sector.

As mentioned before, the level of dispersion is very wide: Region 11 presents the provincial maximum with approximately 82% of health expenditure provided by the provincial level, while the minimum accounts to 30,47% of total expenditure for Region 2.

Municipal expenditures also show wide variations, reaching a maximum value of 66% for Region 2, as opposed to what was observed for provincial expenditure. Moreover, the minimum is found in Region 11, which is the one that receives the greater allocation in the province with a 15% of its expenditure coming from the jurisdiction itself. By assuming similar objective functions, differences among municipalities might be related to managerial abilities and/or differences in health care needs and infrastructure characteristics (basic conditions). Anyway, existing differences in population and number of municipalities between regions must be considered.

Chart 2.5
Total Health Expenditures and relative participation by Government Level

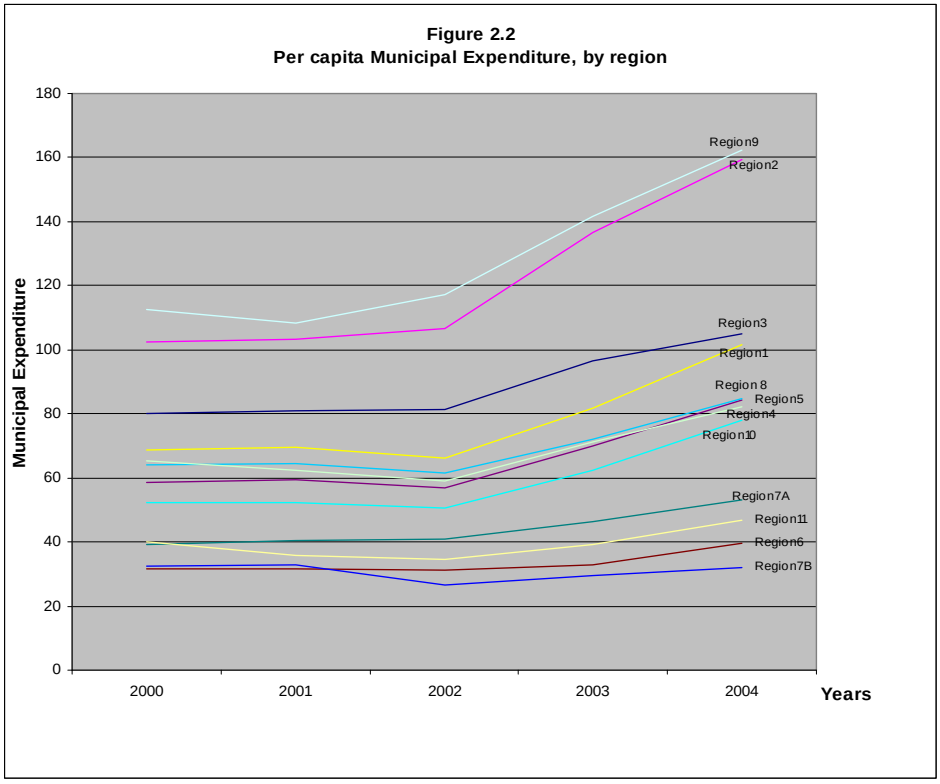
Region	Total Health Expenditures	% Municipal Expenditures	% Provincial Expenditures	% National Expenditures
1	107,54	57,26	40,12	2,62
2	48,23	66,03	30,47	3,51
3	40,29	47,83	48,19	3,98
4	74,06	40,19	55,24	4,57
5	408,64	48,04	44,35	7,61
6	166,67	22,90	51,24	25,86
7A	302,69	35,27	44,94	19,80
7B	450,67	26,02	68,16	5,82
8	167,31	44,03	47,85	8,12
9	64,97	64,34	32,85	2,82
10	50,26	41,88	55,16	2,96
11	273,03	15,05	82,00	2,95

Source: Own, based on the Direction of Sistematic Information of the Buenos Aires Province Ministry of Health.

This defines a relation of 4 to 1 in the municipal resource allocation on health, and somehow, establishes an indicator of self-sustainability in health investment in each municipality. In just four of eleven municipalities, municipal health expenditure exceeds the provincial share, being three of them, Region 1, 2 and 9, the jurisdictions with less population of the province.

Figure 2.2 shows the evolution of municipal per capita health expenditures for years 2000 to 2004, on 2000 constant values, generated by the Direction of Management Analysis of the Sub-Department of Municipal Issues of Buenos Aires Province. Such

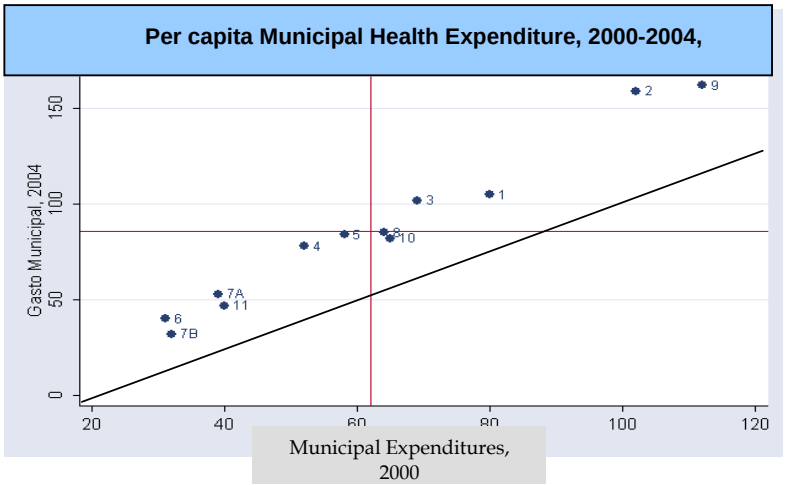
information reveals a profound difference between Regions 6, 7A, 7B and 11 on the one hand, and the rest of them on the other. For the first group, per capita municipal expenditure results always inferior to 60 pesos for all the period, while for the rest, only exceptionally it drops below that level, being this the case of Regions 4, 5 and 10 for year 2002.



Source: Own, based on data from Municipal Issues Sub-department.

To complete the analysis, Figure 2.3 shows, comparatively, the per capita municipal expenditure on health for years 2000 and 2004, expressed in a graph of four squares limited by the mean municipal expenditure for each period.

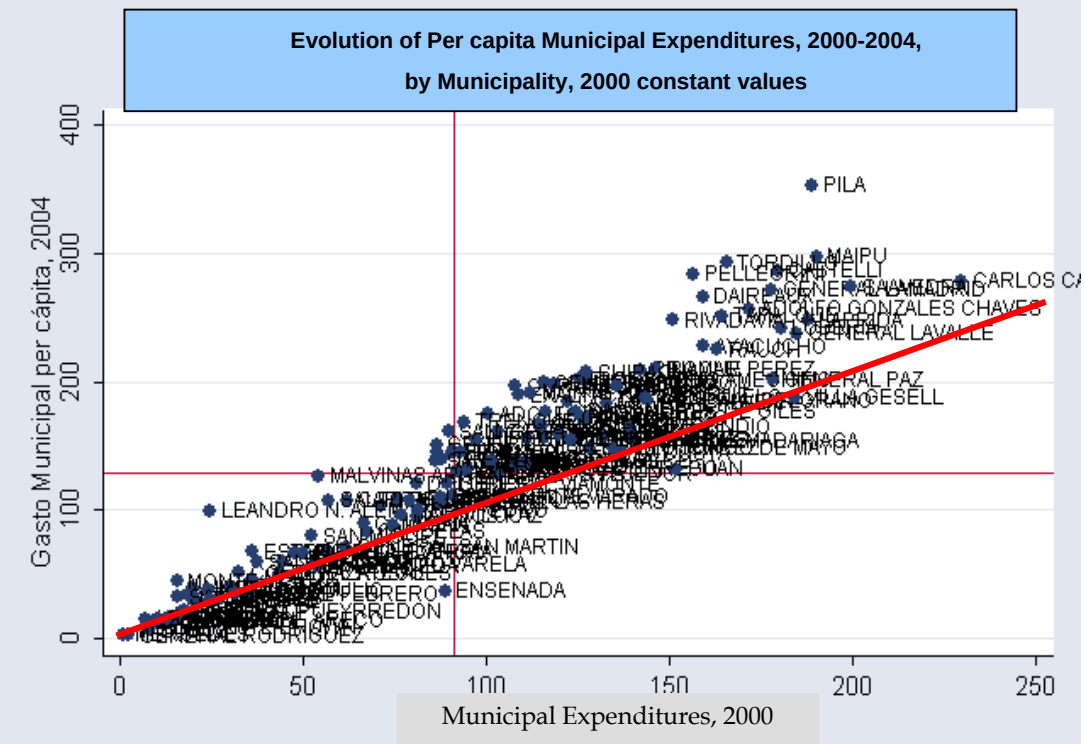
Figure 2.3



Source: Own, based on data from Municipal Issues Sub-Department.
Buenos Aires Province

According to that, southwest square gathers those municipalities where health expenditure laid below provincial average expenditure in both periods, while in the opposite square appear those municipalities or Regions with an unitary expenditure above provincial average. Figure 2.3 illustrates this analysis for sanitary Regions, while Figure 2.4 reproduces it for the municipality level.

Figure 2.4



Source: Own, based on data from Municipal Issues Sub-Department.

Diagonal shows, at 2000 constant values, an identical municipal resource allocation for health area for both years. As it is seen, differences relative to the diagonal are insignificant, as are the changes in the relative positions of each Region.

Four of the twelve sanitary Regions of the Buenos Aires Province are above the provincial average. They are Regions 1, 2, 9 and 10, where ninth Region is the relatively best positioned for both periods. Nevertheless, this marginal variation between both years hides further dispersions at the municipal level.

Figure 2.4 shows the same analysis among municipalities. Nine of the 134 municipalities are below the diagonal, that is, had worsen the resource allocation between both periods at constant pesos.

The municipalities that are below the provincial average in both years are sixty six, while the municipalities of San Antonio de Areco, San Cayetano, Tandil and Tres Lomas, even when they have relatively increased their expenditure on health, moved from above the average for year 2000 to below in 2004.

From those municipalities that performed the greatest variation between both analysed periods, Ensenada counted on a 58% decrease between 2000 and 2004, while in the opposite extreme Leandro Alem experienced the greatest increment -307%-, although it is still located below the provincial average in both periods.

Within the group of higher expenditures, Pila reflects the greatest increment with a positive variation of 87% between both periods, while Puan is the one suffering the bigger reduction.

Provincial health expenditures

Chart 2.6 and Figure 2.5 show, by sanitary Region and for the entire province, the provincial transferences by type of program to each of the twelve sanitary Regions.

Chart 2.6
Total Provincial Transferences and their items
By Sanitary Region - 2003

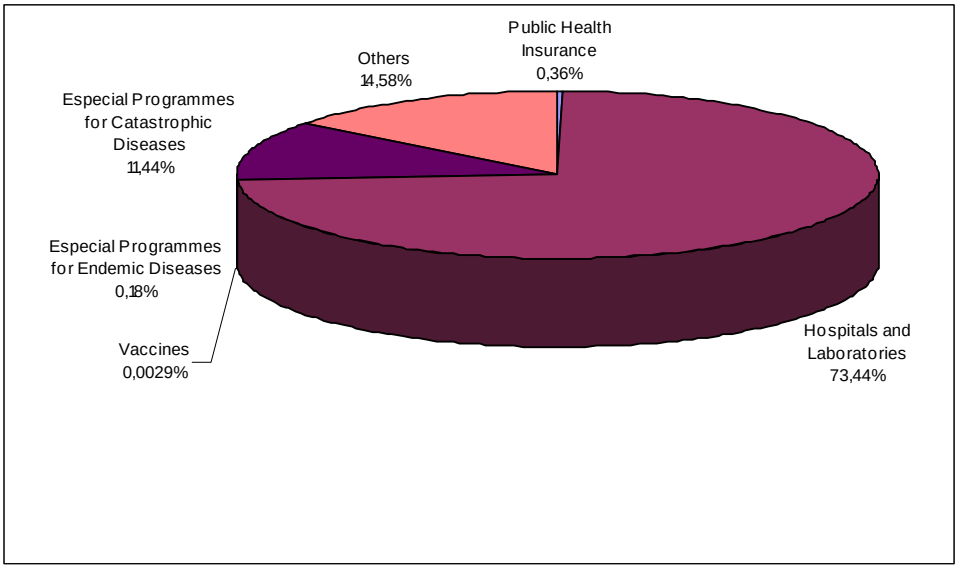
Sanitary Region (*)	Total Provincial Health Transferences	Items of Provincial Health Expenditure					
		Hospitals and Laboratories	Vaccines	Especial Programmes for endemic diseases	Especial Programmes for catastrophic diseases	Others	Public Health Insurance
1	**43.146.864,0**	28.831.168,96	0	55.454	6.251.687,58	7.965.023,45	43.530
2	**14.693.674,4**	9.963.958,16	0	3.850	1.585.668,09	3.140.198,14	0
3	**19.416.385,6**	14.496.817,44	0	22.000	1.749.298,73	3.148.269,45	0
4	**40.909.920,3**	29.361.379,34	0	81.400	5.134.612,13	6.282.734,83	49.794
5	**181.245.505,4**	121.108.997,97	12.675	492.546	27.136.043,50	31.736.621,15	758.622
6	**85.397.893,4**	62.779.054,54	3.360	194.840	11.230.145,95	10.493.432,91	697.060
7A	**136.017.677,2**	90.237.168,13	4.389	270.673	23.283.289,19	21.685.569,90	536.588
7B	**307.173.725,0**	225.907.433,66	10.770	676.042	32.531.102,68	46.194.037,62	1.854.339
8	**80.061.333,0**	58.009.594,04	0	131.463	9.078.895,28	12.732.694,64	108.686
9	**21.340.701,8**	15.268.276,84	0	4.246	2.388.573,52	3.662.307,42	17.298
10	**27.721.395,0**	21.278.617,25	0	3.128	2.210.011,65	4.214.206,14	15.432
11	**223.885.906,0**	190.113.813,14	2.652	143.618	12.556.029,63	20.931.854,24	137.939
TOTAL	**1.181.010.981,1**	**867.356.279,5**	**33.846**	**2.079.260**	**135.135.357,94**	**172.186.949,89**	**4.219.288**

Notes: (*) Due to lack of data, Arrecifes municipality has been excluded form calculations

Source: Own, based on the Direction of Sistematic Information of the Buenos Aires Province Ministry of Health.

The most important items are associated to hospitals and laboratories that take 74% of total resources coming from provincial transferences, followed by Especial Programs for Catastrophic Diseases that reflect 11%. They are followed by Special Programs for Endemic Diseases, with 2.079.260 pesos for 2003, Vaccination with 33.846 pesos and the Health Public Security, the main object of our analysis, with 4.219.288 pesos. All in all, the rest of the smaller programs account for 15% of budget.

Figure 2.5
Relative Participation of Provincial Health Expenditure items. 2003



Source: Own, based on the Direction of Systematic Information of the Buenos Aires Province Ministry of Health.

It can be observed that over a share of 74% of the budget allocated to hospitals, Region 7B takes 225 million pesos, while Region 2 absorves 10 million, fact that recalls the financing gap on the provincial health care sector which is mainly supply subsidy oriented.

In total, PHIP absorves an amount below 1.854.000 pesos, of which Region 7B and Region 5 receive the most, by 2003. As for vaccines, the province compensates for the lack of national investment in this item, given that; it is the federal government the one in charge of financing massively expenditure on this topic.

Differences regarding endemic and catastrophic illnesses are wide between Regions. In the case of catastrophic diseases, such difference varies between the 32,5 million pesos received by Region 7B and the 1,6 million pesos received by Region 2, accounting for a spread of 32 times the smaller amount. This gap widens significantly if allocations for endemic diseases programs are taken into account, reaching a spread of 232 times with 680 thousand pesos for Region 7B and 3,120 thousand pesos for Region 10.

National Transferences

A similar analysis to that developed for the provincial level and for the provincial total by sanitary Region is referred to in charts 2.7 and Figure 2.6 for national expenditures.

Data shows that hospitals are the item with the highest importance, where only four regions receive the total allocation of resources. They are 5, 6, 7A and 8, which are associated to Buenos Aires City surroundings and the tourist area of the province. Next, 33% of the budget is allocated to national programs such as PRO.M.I.N (National Maternal and Child Program), H.I.V, Sexual and Reproductive Health and PROFE. Correlations between UBN and the allocation corresponding to these programs by municipality are low: 0,14; 0,13; 0,10 and 0,09 respectively.

National transferences on Vaccines accounts for 12% of the total, with a minimum of 280 thousand pesos and a maximum of 5.86 million pesos and a gap of 21 times that is associated mainly to the population scale of receptive regions.

Remediar Program, an initiative financed by the Inter-American Development Bank since 2002, and that is due to providing medicines to the Primary Healthcare Centres all around the country, shows a significant gap of less than 13 times between the minimum of 300.000 pesos for Region 9 and the maximum of 4 million pesos for Region 7B.

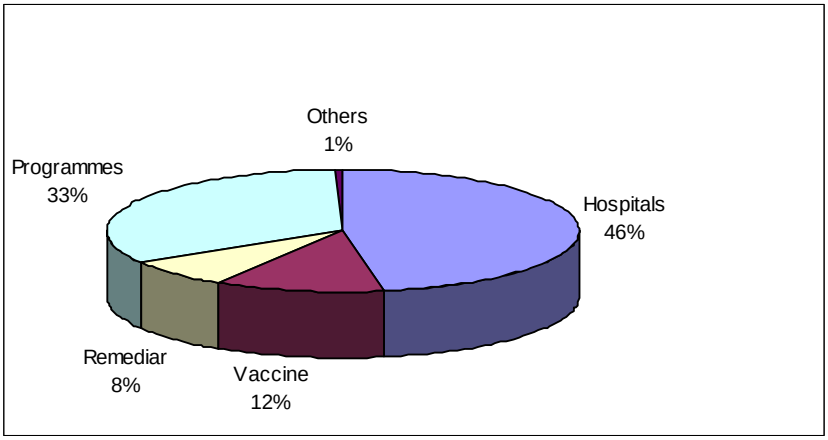
Chart 2.7
Total National Transferences, by Program,
By Sanitary Region - 2003

Sanitary Region (*)	Total Health National Transferences	National Health Expenditure Program				
		Hospitals	Vaccines	REMEDIAR	Especial Programmes	Others
1	**2.820.075,9**	0,00	759.664,37	612.282,99	1.389.172,19	58.956,38
2	**1.691.087,9**	0,00	394.846,74	359.941,87	912.953,59	23.345,72
3	**1.603.578,2**	0,00	280.861,09	343.281,11	956.566,70	22.869,28
4	**3.384.427,9**	0,00	764.368,26	759.105,95	1.814.422,97	46.530,68
5	**31.092.454,9**	9.300.417,13	4.357.760,11	3.439.405,99	13.730.413,00	264.458,66
6	**43.108.922,6**	33.849.164,80	2.059.759,08	1.005.546,39	6.094.052,88	100.399,49
7A	**59.922.412,4**	42.355.993,07	4.464.058,17	1.271.771,48	11.620.932,74	209.656,99
7B	**26.247.369,1**	0,00	5.863.806,84	3.993.029,22	16.070.395,01	320.138,04
8	**13.582.908,7**	6.427.097,00	1.906.431,58	895.863,04	4.255.792,52	97.724,54
9	**1.829.329,7**	0,00	514.899,41	297.116,92	989.438,61	27.874,74
10	**1.487.750,6**	0,00	339.627,80	275.943,87	843.571,52	28.607,38
11	**8.065.155,0**	0,00	910.963,46	1.412.693,75	5.645.510,62	95.987,15

Notes: (*) Due to lack of data, Arrecifes municipality has been excluded form calculations

Source: Own, based on the Direction of Sistematic Information of the Buenos Aires Province Ministry of Health.

Figure 2.6
National Health Expenditure, by Program



Source: Own, based on the Direction of Systematic Information of the Buenos Aires Province Ministry of Health.

Special programs are also associated to population scale, with a maximum of 13.700.000 in the fifth Region and a minimum of 844 thousand pesos in Region 10, setting a relationship of 16 times the smaller value.

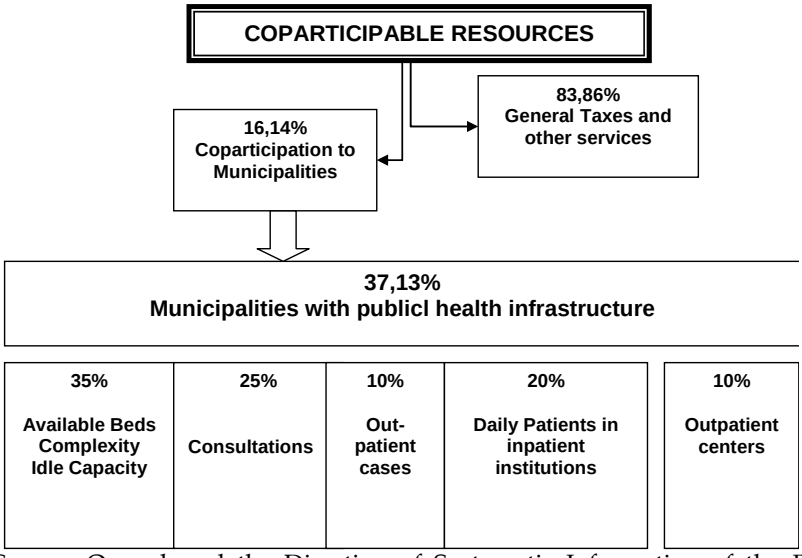
2.4. Provincial Coparticipation

As at the national level, where there is a nation-to-province fund transference mechanism called coparticipation fund, within the Buenos Aires Province a similar mechanism is reproduced between the province and the municipalities. These provincial funds, unlike the national ones, are associated to a set of items linked to performance and infrastructure.

Figure 2.7 shows the resource allocation criteria at the Buenos Aires Province coparticipation scheme, which is instrumented through Law 10.599 and its subsequent modifications. According to them, more than 16% of the coparticipable funds are allocated to municipalities, while the remaining 84% is destined to General Taxes and Other Services. Of the first concept, 37,13% is devoted to those municipalities health institutions, according to their health indicators, while the rest is associated to items as population, area covered, among other issues.

In this way, the allocation of the Health Regime Coparticipation responds to a weighted formula where a 35% is allocated according to number of available beds, complexity profile and percentage of occupied beds; a 25% because of the number of registered medical consultations; a 10% because of the number of registered out-patience in intern establishments and 10% due to the number of outpatient centres.

Figure 2.7
Coparticipation Scheme



Source: Own, based the Direction of Systematic Information of the Buenos Aires Province Ministry of Health.

This allocation mechanism shows that supply reflects mechanism to direct financing. Nevertheless, those associated to production (consultations, out-patience and number of patients assisted daily) represents 55% of the total weight.

Chart 2.8 shows in pesos for the 2000-2005 period, the amount of resources received by each of the Regions, while Chart 2.9 reflects the same values in terms of per capita resources.

It can be observed that Region 7B is the one that historically have received the least health resources by person and by year, with around of 13 pesos for year 2000 and increasing approximately to 19,79 pesos for year 2005.

Furthermore, Region 2 receives more than 120 pesos for the first year and 233 pesos for year 2005. This shows that the growth in the Region with the highest per capita resource allocation almost doubles across the six years under analysis, although it remains relatively constant the Region that receives the least. In any case, the gap does not widen significantly, and fluctuates between 10 and 11 times along these years.

Chart 2.8
Coparticipation - Health Care, by Sanitary Region

Region	2000	2001	2002	2003	2004	2005
1	38.850.886,26	39.263.570,97	35.014.139,65	46.604.128	62.045.979,18	77.218.067,06
2	29.951.373,93	29.582.172,02	26.789.483,29	36.176.418	47.211.465,29	58.139.946,77
3	15.772.263,45	15.761.863,32	14.627.703,05	19.574.517	25.199.869,59	32.584.366,99
4	25.354.465,33	25.577.785,10	23.048.540,13	30.198.208	40.785.209,88	50.861.466,73
5	72.330.089,81	71.801.350,71	67.117.437,33	94.754.324	129.497.624,21	167.661.724,34
6	21.284.035,56	21.091.955,18	18.949.168,49	24.349.690	34.091.170,82	41.890.540,07
7A	29.688.907,05	30.080.545,53	28.471.990,60	40.981.099	55.524.563,94	66.653.668,86
7B	44.015.102,37	43.679.820,41	40.682.566,25	51.859.441	68.096.635,04	67.090.249,06
8	40.962.844,42	40.801.766,30	36.240.365,83	46.648.956	59.930.725,44	76.628.654,20
9	24.837.379,51	25.186.465,63	22.248.114,28	30.570.036	40.268.506,14	50.521.526,59
10	18.057.161,92	17.611.206,99	15.729.192,09	20.665.239	27.289.481,96	33.279.484,07
11	28.476.784,90	28.631.831,17	25.523.537,30	35.404.100	44.209.525,05	53.121.120,39
Annual Total	**389.581.294,50**	**389.070.333,33**	**354.442.238,28**	**477.786.156,00**	**634.150.756,54**	**775.650.815,14**
Coparticipable founds	**1.050.000.000**	**1.050.000.000**	**956.530.688**	**1.289.404.580**	**1.711.125.649**	**2.093.196.037**

Source: Own, based on the Direction of Sistematic Information of the Buenos Aires Province Ministry of Health.

Chart 2.9
Per capita Coparticipation - Health Care, by Sanitary Region

Region	2000	2001	2002	2003	2004	2005
1	61,91	62,57	55,80	74,27	98,88	123,06
2	120,54	119,05	107,81	145,59	190,00	233,98
3	64,80	64,75	60,09	80,42	103,53	133,87
4	48,52	48,95	44,11	57,79	78,05	97,34
5	25,70	25,51	23,84	33,66	46,01	59,56
6	19,92	19,74	17,73	22,79	31,90	39,20
7A	13,30	13,48	12,76	18,36	24,88	29,87
7B	12,92	12,82	11,94	15,22	19,98	19,69
8	39,38	39,23	34,84	44,85	57,62	73,67
9	83,72	84,89	74,99	103,04	135,73	170,29
10	59,30	57,84	51,66	67,87	89,63	109,30
11	27,87	28,03	24,98	34,65	43,27	52,00

Source: Own, based on the Direction of Sistematic Information of the Buenos Aires Province Ministry of Health.

2.5 The Provincial Health Expenditure Process

Provincial health expenditures, through transferences to municipalities, constitute the main source of financing, on average, with approximately 50% of the expenditure on the total, while national expenditure is relatively smaller. Dispersion is wide at the municipal level, fact that evidences not only scale-related differences, but also differences in the financial sustainability required to develop health strategies.

From the information analyzed in the previous sections, is it shown that provincial health expenditures, through the transferences to the municipalities, constitute the first source of financing, in average, with approximately a 50% of the costs in the area, whereas the national expenditures are relatively smaller. The dispersion is wide at the level of municipalities according to scale differences.

Anyway, the mechanism of resources allocation through transferences and co-participation to the municipalities speaks of a broad decentralization process where those are in charge of, at least according to the institutional norms of this process, developing strategies pointing to improve health situation, as well as to extend coverage and provide qualified health services.

Under this frame, this research proposes to identify the presence of a strategic behavior between the different levels from government in the Province of Buenos Aires, oriented to finance the provincial health system, strongly decentralized. This decentralization takes place at the municipal level, being in charge of (a) manage the physical and human resources that operate in each jurisdiction, (b) allocating own resources to the health sector (c) deciding on the direction of the funds granted by the province by means of the coparticipation mechanism, and (d) organizing and distributing the resources (vaccines, medicines, contraceptives, etc.) received by means of programs with national financing.

It is proposed then, to implement an analysis sequence to find a functional relationship between national health expenditures and the provincial ones, explained by the decisions on funds allocation at the municipal levels. These last, as well, would be explained by the own socioeconomic characteristics and particularly by the funds received through coparticipation (which are tied to the structure of the public health services supply).

The raised hypothesis suggests that the provincial health expenditures operate on a subsidiary way to the municipalities, so that a poor local execution takes to a larger extracoparticipable effort by the province. The present chapter proposes an estimation strategy that allows to identify: a) the main variables explaining health expenditures in the municipalities, by the different levels of government, b) the relation between provincial and municipal health expenditures c) the role played by national expenditures with on to the municipalities and the province.

The resulting econometric analysis, using information at municipal level for year 2003 allows to identify the arguments that are detailed in the next paragraphs. Given the nature of the information (data added at the municipal level), different estimations were made from the test of Breusch-Pagan (1979) that confirmed the presence of heterokedasticity (term of disturbance with nonconstant variance). In order to obtain unbiased estimations of the standard errors, all the estimations were made using a the bootstrap technique.

Chart 2.10 shows a description of the variables being used, their mean, maximum and minimum values and standard deviations.

Chart 2.10 – Descriptive statistics

Variable	Detail	Mean	Standard Deviation	Minimum	Maximum
MUNICIPIO	Municipality				
poblac	Population	103.188	171.002	1.742	1.255.288
gprov/capita	Per Capita Provincial Health Expenditures	70,88	55,40	18,94	290,66
gnac/capita	Per Capita Nationall Health Expenditures	11,03	21,68	3,20	239,01
trcond/capita	Per Capita Condicionated Transfers	6,63	2,20	3,10	16,22
trnocond/capita	Per Capita Non Condicionated Transfers	4,40	2,10	0,09	226,02
copa/capita	Per Capita Coparticipation Funds	94,62	73,88	1,32	279,41
gmun/capita	Per Capita Municipal Health Expenditures	106,49	65,83	0,70	261,22
val_seg	Insurance related monetary transferences to municipalities	0,13	0,25	0	1,02
camas/capita	Per Capita Public Beds	0,0046	0,0039	0	0,03
estab_sin/capita	Per Capita Outpatient Centers	0,0003	0,0001	0,00004270	0,001
estab_total/capita	Per Capita Toal Health Institutions	0,0004	0,0002	0,00000485	0,001
medico/capita	Per Capita Physicians	0,0023	0,0013	0	0,01
mort_inf	Infant Mortality Rate	15,47	7,69	2,60	51,30
IRA	Acute Respiratory Infections, Hospital discharge rate	0,06	0,11	0,01	1,01
EDA	Acute Infectous Diarrhea, Hospital discharge rate	0,02	0,02	0,0010	0,19
NBI	Porecenatje of population with Unmet Basic Needs	12,33	5,45	4,30	30,40
pj	Justicialista Party Major	0,56	0,50	0	1
reelect	Reelected Major	0,67	0,47	0	1
dummy_seg	Public Insurance Presence	0,32	0,47	0	1

Source: Own, based on the Direction of Sistematic Information of the Buenos Aires Province Ministry of Health and the 2001 National Census.

A negative and statistically significant relation in observed between per capita municipal health expenditures (dependent variable) and an indicator of socioeconomic needs (percentage of homes with NBI -unmet basic needs-) in each municipality, and a positive and statistically significant relation between this indicator and the provincial health expenditures per capita in the municipalities. On the other hand, it is observed that the statistical significance of variable NBI disappears in the estimation of provincial health expenditures when the municipal expenditures are proposed as the explanatory variable, suggesting the existence of other variables that would be mediating in this relation.

Secondly, a negative and statistically significant relation between the provincial and municipal health expenditures (per capita) is observed. It would be reflecting certain subsidiary behavior of the provincial level, who spends more in those municipalities with worse socioeconomic indicators (those that spend less in health as well).

Thirdly, when regressing the municipal expenditures in health over the expenditures made by provincial coparticipation, we observe a positive and statistically significant relation. Whereas the expenditures by provincial coparticipation (as explanatory variable) influence negatively in the provincial per capita health expenditures on municipalities. This suggests that the municipality receives the transferences by coparticipation, and invests proportionally, and that the provincial state operates "subsidiarily": the greater the transference by coparticipation, the less is the expenditure in health performed outside the one. If to this relation "provincial expenditures - coparticipation" municipal expenditures is integrated as explanatory variable, the data identifies a loss of significance of the coparticipable expenditure in the provincial transferences.

It suggests the presence of a functional dependency: provincial expenditures → municipal expenditures → coparticipation. An explanation for it is that although the province generates systematic payments on the basis of observable health system indicators, the relation between such transferences and the municipal execution is not deterministic. In spite of it, the analysis of the municipal health expenditures determinants shows that the provincial expenditures coefficient is also negative and

significant, being methodologically not possible, with the existing data, to test a hypothesis of sequentiality in the process of health investment.

In fourth place, a high correlation between transferences by coparticipation to municipalities and health infrastructure is observed, which is consistent with coparticipation calculation method. For that reason, the two variables were not included simultaneously in the model (to avoid problems associated to colineality).

From the observation made in the described estimation exercises, a group of definitive estimations is reached on the determinants of the municipal, provincial and national health expenditures in the Province of Buenos Aires. Chart 2.11 displays the determinants of provincial health expenditures, over the municipal expenditures, the coparticipation related transferences, proxies of necessity in health (NBI, respiratory infections, etc.), and variables related to health services supply and the political economy of the municipality. As variable of supply, the number of physicians per capita of the municipality is included. This variable is not built-in to the determinants of the coparticipation, unlike number of establishments or beds. As political variables, the re-election of the mayor and his justicialista party membership.

Chart 2.11 – Estimations on the per capita provincial health expenditures

Variables	Gpcapita	Gpcapita
gmcapita	-0.469 (.000)	-0.546 (.000)
copac	-0.081 (.395)	
NBI01	0.872 (.020)	0,912 (.173)
IRApc	-16.45 (.864)	-17.36 (.878)
medicopc	12246 (0.001)	12334 (0.001)
pj	-3.8 (.712)	-3.852 (.695)
reelect	5.763 (.505)	4.552 (.597)
Constant	90.534 (.000)	91.41 (.000)
Adjusted R2	0.35	0.35
Observations	122	122

Between () is the p-value.

As a result of the estimation, a negative and significant relation between the municipal and provincial health expenditures is observed. On the basis of what was commented earlier, this model supports the hypothesis on extracoparticipables transferences in opposition to the flow of transferences determined by the formal scheme of distribution. In addition, the lack of significance of the coparticipation to explain the provincial expenditures, suggests that the municipal expenditures and surely other

factors are mediating in this relation. On the other hand, the significance of the indicator of physicians per capita supports the fact of the maintenance of the supply structure over the needs indicators.

Chart 2.12, on the other hand, reflects a similar exercise oriented to explain the municipal health expenditures. In this case, the same variables were included as in the previous exercise and two separated regressions were made (including and excluding the provincial health expenditures as independent variables).

Chart 2.12 – Estimations on the per capita municipal health expenditures

Variables	Gmcapita	Gmcapita
gpcapita		-0.241
		(.000)
copac	0.717	0.616
	(.000)	(.000)
NBI01	-0.113	0,109
	(.85)	(.86)
IRApc	4.199	-2.42
	(.965)	(.997)
medicopc	7075	9228
	(.056)	(.003)
pj	-8.93	-8.84
	(.153)	(.159)
reelect	-9.703	-7.216
	(.505)	(.323)
Constant	36.88	54.54
	(.000)	(.000)
Adjusted R2	0.73	0.73
Observations	122	122

Between () is the p-value.

The results confirm the strong explanatory association between the provincial and the municipal expenditure, of inverse sign. This significance of the variable of the provincial expenditures when explaining the municipal ones, reduces the arguments to the hypothesis of a sequential decision between these two levels of government (hypothesis that is not possible to test with the available information). Also, the provincial transferences for coparticipation also appear like explanatory of the municipal investments, suggesting that municipalities depend on those resources to execute their expenses in the sector. On the other hand, the statistical significance of the concentration of physicians is recurrent in this case. The remaining of the postulated variables was not significant to explain municipal expenditures in health.

Finally, Chart 2.13 shows a negative and statistically significant relation between the national health expenditures and the other two levels of government. This supports the hypothesis that it places the national level like tending to balance the investment, increasing his efforts in those jurisdictions where the expenditure is smaller (similar to what was seen between the provincial behavior on the municipalities). As was already commented, the transferences of the national level are mainly in kind.

Chart 2.13 – Estimations on the per capita national health expenditures

Variable	gncapita
gmcapita	-0.031 (.043)
Gpcapita	-0.03 (.021)
NBI01	0,153 (.433)
IRApc	-3.79 (.810)
medicopc	-555.6 (.250)
pj	2.05 (.278)
reelect	0.613 (.734)
Constant	12.82 (.000)
Adjusted R2	0.39
Observations	122

Between () is the p-value.

2.6 Performance of the Health Public Insurance Program (PHIP) in the context of provincial resource allocation.

Chart 2.14 shows schematically, the process of decision making of the PHIP to allocate resources along the province for the analyzed 2003 period.

Chart 2.14
Public Health Insurance Selection and Resources Allocation

Regresor/ Dependent Variable	*1st Step - Logit*	*2nd Step - Ordinary Least Squares*
	Inclusion	**Per capita amount transferred**
predicted/gmun	-0,041(*) (0,01)	-0,0005 (0,0004)
estab_sin/capita	-13.222,45 (*) (4809,52)	
estab_total/capita		-410.169 (**) (132,39)
medico/capita	-8.479.804 (**) (412,77)	-2.635.917 (16,32)
mort_inf	-0,0103 (0,07)	0,008 (**) (0,002)
IRA	3.404.682 (5,24)	0,096 (0,14)
NBI	0,009 (0,06)	0,006 (**) (0,003)
pj	0,029 (0,72)	0,08 (**) (0,03)
reelect	-169.948 (**) (0,79)	0,009 (0,04)
constante	0,12 (2,48)	7.880.064 (**) (0,07)
Pseudo R2 / Adjusted R2	0,62	0,41
Observations	116	116

Source: Own based on the database from the Direction of Sistematic Information of the Buenos Aires Province Ministry of Health.

(*). Coefficient significant at 10%. (**) at 5%, (***) at 1%

The first step, instrumented by a logistic model, where de dependent variable is a dummy that takes value 1 for municipalities under PHIP, tries to explain the health investment by each municipality according to fitted municipal expenditure, obtained from the confirmed null hypothesis in the prior section, variables associated with needs, supply and variables related to political economy.

It is observed that, as well as in the previously analyzed cases, health care financing decisions are more related to supply (physicians, infrastructure, etc.) characteristics, rather than to needs. Specifically, the percentage of population with UBN and the population with Acute Respiratory Disease over the total of younger than four years old children, are not significant variables, just like infant mortality rate. Nevertheless, those variables associated to supply, in this case the number of physicians, is significant and is negatively related to the presence of the PHIP (at 5% confidence), which shows a political component in the degree of physicians' concentration at the municipal level and its effect in the selection of municipalities under program.

Likewise, the variable associated to re-election is negative and significant, associated to the continuity of the management of municipalities under PHIP.

Moreover, the number of outpatient centres is significant at 1% and negatively correlated to the presence of the insurance in those municipalities. This might show that although the insurance does not cover its selection of municipalities associated to demand needs, it does cover its selection according to an indicator of primary assistance, which implies that it somehow cover the actual lack of supply.

Finally, fitted municipal expenditure is negatively associated with the presence of insurance and with a 1% of significance. This might suggest for 2003 certain strategic complementarities in resource allocation.

The second step is, once decided which municipalities are under insurance, to establish which is the amount of money allocated to each one.

The volume of these transferences is associated to a set of variables that do not refer to the significance found in the previous regression. In this case, both, the total public institutions and the infant mortality rate, indicators of supply and demand respectively, are significant controls for the allocations of the insurance, with the expected sign: the higher the infant mortality rate, the higher resource allocation and the greater the number of establishments; the fewer the funds assigned to the provincial program.

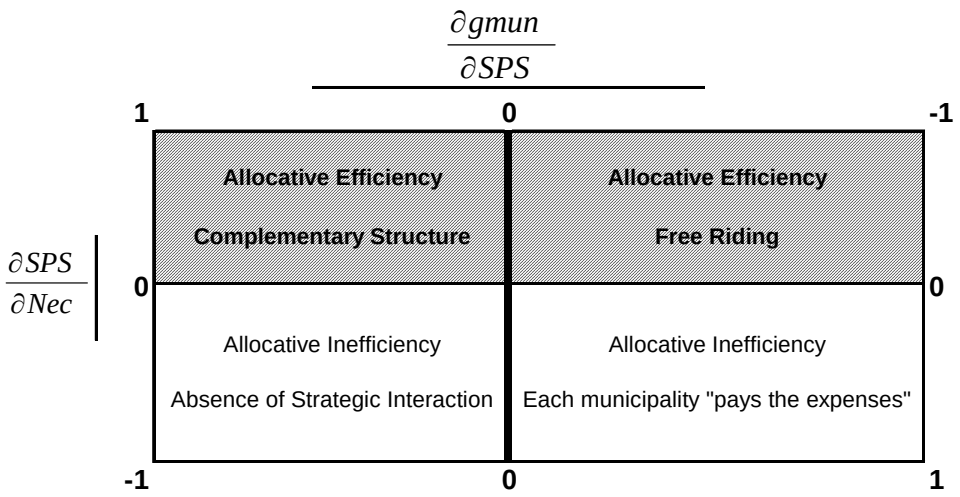
The percentage of UBN population is also significantly correlated to the insurance funds allocation and in the expected positive direction, while political variables found significance in the dummy associated to political alignment: those municipalities administrated by the same political party than the provincial government might be more liable of receiving funds by the insurance. By the contrary, the fitted municipal expenditure variable is not correlated to insurance allocations.

By analyzing both regressions conjunctly, there is room for suggesting that there exists a sequence of steps where those variables associated with indirect needs through Primary Healthcare Centers, municipal expenditures and political variables define the incorporation of municipalities to the PHIP, while those associated to needs and political alignment are the ones that explain mainly the amount of money invested by the insurance in the hiring of physicians[13].

Finally and looking for determining the program's effectiveness from the incentives point of view, Figure 2.8 shows the relationship between two variables. One of them is the reaction of municipal expenditure before changes in the resource allocation by the PHIP, which is defined in the horizontal axis. The second one is the level of significance of indicators associated to needs and the funds assigned by the PHIP

[13] *Elasticities for these estimations are shown on appendix A*

Figure 2.8
Public Health Insurance Efficiency



With a mean value of 0 between two axis and ranking from -1 to 1, the superior squares suggest a correct allocation of funds from the insurance, according to needs. Moreover, the presence of a negative relationship between municipal expenditure and the PHIP suggests that there may be strategic complementarities between the funds allocation for each jurisdiction.

Of the results obtained by the regression, the Figure suggests that PHIP operates in the superior area of the chart, positively associated to needs, but that, however, there are no strategic complementarities with municipal expenditure, as this is non-significant for accounting for local expenditure reaction. Nonetheless, PHIP operates negatively and significantly with respect to municipal expenditure, which suggests that although it does not reach a complete municipal effectiveness, it might have for year 2003 the capacity of incorporating municipal social investment.

Chapter III:
Evaluation of the experience of Public Insurance in Buenos Aires Province: its impact on the assisting model

Daniel Maceira, Ph.D. 14
Pedro Kremer, MSC 15

3.1. Introduction

At the beginning of 2001, Buenos Aires Province put into practice the Public Health Insurance Program (PHIP) as an alternative mechanism for widening attention coverage of the population with fewer resources in the province. Such mechanism tried to somehow complement the supply structure with an incentive to the demand side, instrumented through the nomination of a list of PHIP's beneficiaries by direct contracts of the Provincial Public Health Ministry to municipalities. Such contracts were performed through agreements with Medical and Professional Associations from each involved department.

Innovation over alternative insurance structures is associated to the intention of aligning suppliers' incentives and those of their corporations with the aims followed by the Public Health Ministry within a context of fiscal and operational decentralization of the health system of Buenos Aires Province.

Inside this scheme, and under the benchmark of fiscal provincial resource allocation system, introduced in the second chapter, the present work tries to analyze some issues for the evaluation of the program. The task will be focussed on periods 2004, 2005 and 2006, relying for that on a database by consultation, professionals, municipality and type of intervention.

The ultimate objective is to identify how have the focalization, alignment of interests and strategies of services supply mechanisms developed inside the program and dynamically, with aim of setting lessons to similar initiatives in the future.

At the moment of concluding this document, the PHIP is going through a reformulation phase given the process of new political authorities in charge of the provincial government. This opens up the possibility for deepening this experience's lessons, and for offering the new administration an instrument for the decision making process in the health area.

---

[14] *Ph.D. in Economics. Director of the Health Policy Department of the Center for the Implementation of Public Policy promoting Equity and Growth (CIPPEC), and Senior Researcher of the Centre of Studies on State and Society (CEDES/CONICET);*

[15] *Medical Doctor, MS in Social Sciences with Specialization on Health, and Coordinator of the Health Policy Department of the Center for the Implementation of Public Policy promoting Equity and Growth (CIPPEC).*

The authors are grateful for the comments and contributions of Ana Reynoso, Sofia Olaviaga, Cintia Cejas and Aurelia Furnari. Special acknowledgments to the authorities of the Buenos Aires Province Public Health Insurance on their support and information. The authors are fully responsible for the opinions expressed in this document. Correspondence to dmaceira@cippec.org

3.2. Theoretical Benchmark

Defining horizontal equity as the criterion on which resources are allocated so as to offer the same kind of assistance in terms of quality and effectiveness, to the whole population regardless of their economic capacities, social insurance mechanisms in Latin America in general and in Argentina in particular have a fundamental role (Maceira, 2001). The objective of these instruments is to widen coverage, minimize those inefficiencies normally associated to public suppliers' idle capacity and to advantage from the existence of increasing health professional human resources to enhance accurate coverage for the population (PAHO, 2005).

As long as these interventions are related to priority groups (population without formal coverage, with unmet basic needs or under the poverty or indigence line), the sanitary strategy looks for promoting the access to health services and to put them in an equalitarian scheme with the rest of the individuals of society. Although there are no evidences about how health investment promotes economic development, it is understood that every strategy longing to increase health coverage tries to construct a mechanism that reduces existent inequities on income and makes it easier for the society to achieve greater access or better possibilities of familiar and individual development.

Given this benchmark, the policies focussed on priority population groups, although are against the idea of universal coverage, try to focalize on those that before a segmented health system are located on the area of less resources and narrower access possibilities. In a scheme where the health system is financed and managed by multiple actors, as is the Argentine case (Maceira, 2005) and that of a great deal of countries in the region (IDB, 1996), there is a bias of the system toward inequities. Such characteristic is expressed by the fact that the part of population that is relatively wealthier enjoys coverage with more resources, leaving for the public sector the more complex interventions of the people with fewer resources and relatively more sanitary risks.

Those interventions associated to social insurance promote an advance in the direction suggested, as well as a reduction in the equity gap, building up lists of citizen that allow for the identification of covered population. This action allows defining service packages that take into consideration population's rights to be granted and establishing mechanisms for the transference of resources from relatively healthy people to relatively sick ones, through the utilization of fiscal resources. Such funds usage would be defined by a progressive tax structure or, at least, by a progressive execution of fiscal resources.

Once defined the resource distribution mechanism, the process of focalization of population is established from sanitary needs, so as to capture those individuals that normally count on the public sector as their unique source of health assistance, which has a wide coverage in Argentina (close to 50%. Maceira, 2005). Its match in a decentralized scheme is the provincial insurance. The objective of these PHIP is, on the one hand, to enhance resource allocation based on the definition of packages and lists of beneficiaries and, on the other, to identify mechanisms that facilitates the accurate access to health services, which somehow operates over the quality of the system. Within this group of individuals with fewer resources, the PHIP operates over under-five children and pregnant women.

The application of this strategy of public insurance proposes, then, a combination of the continuity of supply subsidy, through the access of population to Primary Health Care Centres and Public Hospitals, and an effort towards increasing health care through some sort of demand subsidy, that constitutes the public insurance initiative, one of the central axis of the literature about health systems in the last couple of decades (WB, 1993, Frenk & Londoño,1998, among others).

In the particular case of Buenos Aires PHIP, the same professionals working for hospitals and health centres assist people from the same target group in their private medical centres and even in public institutions, yet receiving an extra payment for these services. This generates a kind of complement to wage that incentives higher provision of services.

This proposed scheme combines with a mechanism for the evaluation of consultations so as to give a certain structure combines fixed salaries, on the supply side, with subsidies, on the insurance side. As a consequence, the public insurance under study results in a structure that tries to align interest through a per capita payment, toward not only to a wider assistance, but also to a more efficient one, which constitutes the core of research of the ongoing chapter.

This design develops in a benchmark of municipal decentralization. As well as Argentina counts on a decentralized structure between provinces, Buenos Aires Province proposed an interior decentralization, at the municipal level, which involves the management of resources by each of the 134 municipalities.

This decentralized implementation of public health budgets establishes a strategy based on which provincial taxes allocated to the area combine with municipal and national funds so as to achieve comprehensive health coverage. Nevertheless, inside this background the resource allocation mechanism does not necessarily results clear, as long as budgetary items are related to different aspects of the sanitary problematic and does not necessarily focus on primary care. The proposal for provincial insurance deviates the view towards primary health care, promoting preventive attention in risky groups, poor people and defined groups by age, trying to restructure the social insurance mechanism, which aligns with the key elements of most recent questions raised regarding primary health assistance (PAHO, 2006).

3.3 Research Questions

Within this theoretical context, the document proposes a series of research questions, which will be developed further. These questions are:

1. ¿What is the criteria used by the PHIP for incorporation of municipalities to the program? ¿Does it relates to potential health care needs?
2. ¿Do general health care outputs by municipality show improvements along the period 1998-2004? ¿It is possible to presume associations between results and PHIP involvement?
3.¿Does control consultations implemented by the PHIP impacts on reducing interventions (hospital involvement) along the studied period for children between 2 and 5 years old?

4. Considering several specific diagnosis for children between 2 and 5 years old, ¿Are there implementation differences among municipalities included in the program?
5. If so, ¿are they associated to jurisdictional, socioeconomic and political variables, or due to program implementations characteristics?
6. ¿Do these results show reduction in equity within the Insurance Program over time?

3.4. Data and Methodology

The study recalls into two informational pillars. The first one consists of information gathered from administrative sources from the Health Ministry and from the Buenos Aires Province Treasury, together with complementary information from national census of population and housing from the National Institute of Statistics and Census of Argentine Republic. The second source is the program itself, the PHIP, which provided, for 2004, 2005 and 2006 years complete information of clinical histories: consultation by beneficiary, motive of consultation, diagnosis, existence of pharmacological treatment and type of consultation, by municipality and by year. This database is of approximately 1.700.000 consultations and it is introduce in the description of ***Chart 3.1***.

The information gathered by the PHIP has been classified, so as to identify a menu of interventions defined by patient, aligning motives of consultation in comparable groups. Based on that information, additional variables have been defined, those related to requirements of diagnosis studies, prescription of drugs included or not on pre-existent program, referral to dentists, etc. In such database, approximately 70% of population is female, average age is 7 years and 30% of the observations correspond to preventive consultations, while 14% refer to curative consultations. Likewise, near 28% of consultations occurred during 2004, and 46% of them took place in 2005. As the period under analysis includes 2004 and 2005 fully covered, and just 26 weeks of 2006, it is explained why 2005 represents 48% of the sample.

For the development of this study, three categories of analysis have been created, depending on whether the consultations were *preventive*, *curative* (by prevalent motives in the primary level of care) or *catastrophic* (which require immediate evaluation in centres of higher complexity). At the same time, these categories have been decomposed depending on different motives of consultation. Inside preventive consultations, those related to *health control at every age*, *pregnancy control* and to *sexual health and responsible conception* have been individualized.

Inside curative consultations there are three sub-groups: consultations because of *diarrhoea*, *infections and intestinal parasites*, *acute respiratory infection* (bronchitis, brochiolitis and pneumonias) and nutritional consultations, basically iron-deficit *anemia and malnutrition*.

The third category – of catastrophic consultations- is associated to intoxications, accidents, haemorrhages and meningitis, among others.

Chart 3.1
Basic Information

Number of consultations	**1.618.345**
% of Consultations in 2004	**28,2%**
% of Consultations in 2005	**46,3%**
% of Consultations in 2006	**25,5%**
% of women	**67,7%**
Age average in years	**7,0**
% of Preventive Consultations	**30,1%**
% of Curative Consultations	**13,7%**
% of Catastrophic Consultations	**0,4%**
% of Basic Laboratory Tests	**7,9%**
% of drugs provided by Remediar Program	**32,0%**
% of drugs not provided by Remediar Program	**0,5%**
% of Specialist Referrals	**3,8%**
% of Hospital Referrals	**0,038%**
% of Dentist Referral	**8,4%**

Source: Own, based on the Buenos Aires Province Public Health Insurance Consultations Data

The methodology for the analysis involves the development of descriptive statistics based on the comparison of information between the group under program, the public health insurance, and the characteristics of the population not included in the insurance program, and that somehow identifies the control group based on which this paper tries to establish the success of the focalization plan.

Subsequently, through the comparison between consultations by level, municipality and year, the temporal evolution of each category is identified, in order to estimate through logistic models, the probability of accessing to consultations by type (preventive, curative and hospitalizations). The ultimate objective is to identify the evolution process of the PHIP all along the three years under analysis, as much as the presence of differences between municipalities, establishing, from the decentralization nature of the province and of the program, the presence of differences in municipal management and/or administration between political units.

3.5. Results

3.5.1. Focalization

One of the main challenges of any program relying on demand subsidy is associated to its capacity to individualize the objective population and to grant the set of goods and services for which the program has been defined. In this case, beneficiaries have been identified through two mechanisms: one of them was the selection of municipalities

based on population scale and needs the second was the identification of the specific group to be receptive of services (children and pregnant women).

In terms of the first indicator, the selection of municipalities that would enter the PHIP was defined from the decisions made by the insurance authorities, according to three issues. The first one was each municipality's population density. The second was the relative weight of population with unmet basic needs. The last one was the capacity of identifying political agreements between the provincial government and their matches in municipal governments. From there on, ***Chart 3.2*** shows a series of variables associated to socio-demographic characteristics for the 59 municipalities under insurance and for the 75 that have not been included to the initiative.
The chart shows that over the total provincial population, approximately 11,8 million inhabitants are located in the departments covered by the insurance, while barely 2 million people live without the PHIP coverage. The average population of those departments under insurance program is 200.000 inhabitants, which contrasts with a mean of 27.000 inhabitants for the municipalities that are no included in the initiative.

Nevertheless, the differences between minimum and maximum values, in both groups of municipalities identify the possibility of type II errors, that is, the possibility of a scenario in which departments that could have been included in the PHIP judging by their population, have not.

In terms of population density, clearly the municipalities under PHIP have a mean value significantly higher than those that have not been included. For the first case such value reaches 1.788,40 inhabitants by square kilometre, contrasting with the almost 30 inhabitants by km^2 for the municipalities integrating the second group. This wide dispersion potentially shows the presence of type I errors, given that some of the municipalities included in the PHIP have a relatively low population density, of 2,10 inhabitants by km^2.

Regarding the percentage of people with UBN, the differences are statistically significant, of approximately 14% for populations with insurance versus an 11% for inhabitants of municipalities not included in the PHIP. In spite of this, the population with access to safe water have relatively similar mean and standard deviation values, just like the indicator of percentage of populations without coverage by municipality, with insignificant differences.

While the indicator of population covered by the PHIP has a mean of 5,000 people by primary health care centre, this number reduces to less than half in those municipalities without insurance (2,300 inhabitants by centre). This indicator reverts in the rate of establishments every 10,000 inhabitants, being relatively smaller in the departments covered by the PHIP with respect to those that are not.

Finally, total (National, Provincial and Municipal) expenditures on health and municipal expenditures on health show significant gaps. While total expenses by municipality under PHIP were $165 per capita and its municipal expenditure of $65,66 per capita, this numbers reaches $205,82 and $137,94 respectively in those municipalities that were outside the PHIP. Therefore, the information in terms of needs and population scale favours the selection made by the PHIP, although there are some factors associated to dispersions at the interior of each group that require deeper analysis.

Chart 3.2
Differential characteristics of insured and uninsured municipaities

	Insured (n=59)				Uninsured (n=75)			
	Total	**Mean**	**Min**	**Max**	**Total**	**Mean**	**Min**	**Max**
Population **	11.816.359,00	200.277	8.904	1.255.288	2.010.844	26.811	1.742	301.223
Density **	-	1.788,40	2,10	10.068,50	-	29,78	0,90	836,70
% of population with U.B.,N **	-	13,93	4,30	30,40	-	11,04	4,30	30,00
% of population with access to safe water	-	63,19	2,52	99,11	-	64,98	0,11	88,80
% of population solely covered by public health care sector **	-	46,43	24,27	65,47	-	43,71	21,60	64,50
Population per P.C.C **	-	5.055	752	17.870	-	2.300	321	10.869
Public health care institutions (per 10.000 inhabs.) **	-	26,10	6,95	89,80	-	48,45	7,60	120,50
Per capita total health care expenditures **	9.760,90	165,44	101,05	420,21	15.025,38	205,82	105,05	351,89
Per capita municipal health care expenditures **	3.874,30	65,66	0,70	172,48	10.070,27	137,94	7,66	261,22

Source: Own, based on the 2001 National Census

**- Represents significant differences between insured and non-insured groups. At 5% confidence.

U.B.N- Unmet Basic Needs

P.C.C- Primary Care Center

Finally, political alignment between provincial government –in charge of Justicialista party- and the autonomous municipal government are analysed. According to ***Chart 3.3***, approximately 62,7% of municipalities selected by the program were in the hands of the governing party of the province, while 23,7% have been governed by a major of opposite sign.

Chart 3.3
Provincial-Municipal Political Alignment

	Insured (n=59) Mean	Uninsured (n=75) Mean
Justicialista Party Major *	**62,70%**	**48,10%**
Radical Party Major	**23,70%**	**42,60%**
Reelected Major **	**35,50%**	**41,30%**

Source: Own Primary Research

In both cases the difference is significant with respect to those parties without insurance. Additionally, the experience of municipal management does not affect the PHIP election, while the indicator for re-election of the major in each municipality does not show a significant gap between localities with and without PHIP, as was shown in Chapter 2.

3.5.2. Evolution of consultations by type

The ongoing section proposes to analyse, for all provincial municipalities under program and for each period under analysis, 2004, 2005 and 2006, the distribution of care between curative, preventive and catastrophic consultations, and inside each group across different categories. This aims at identifying if there was homogeneity in the temporal strategy of the public insurance and whether there was a bias towards a particular type of consultation or another. As it is presented in ***Chart 3.4***, preventive consultations motives have been duplicated between 2004 and 2006. This growth focalized basically between the second and third period under analysis.

Chart 3.4
Preventive Consultations Evolution

Year	Health Control					Consultations	Prenatal	TOTAL
	1st Year	2nd Year	2-5 Years	5-14 Years	Adults	S & R Health	Consultations	
2004	**2,97%**	**3,60%**	**7,41%**	**2,71%**	**3,36%**	**0,01%**	**0,02%**	**20,09%**
2005	**7,47%**	**4,58%**	**11,20%**	**3,38%**	**0,83%**	**0,76%**	**0,42%**	**28,64%**
2006	**15,98%**	**4,73%**	**11,74%**	**6,86%**	**0,80%**	**0,75%**	**0,78%**	**41,64%**
Mean	**8,69%**	**4,39%**	**10,47%**	**4,15%**	**1,41%**	**0,58%**	**0,42%**	**30,12%**
Variation	**1:5,3**	**1:1,2**	**1:1,6**	**1:2,5**	**4,2:1**	**1:75**	**1:39**	**1:2**

Source: Own, based on the Buenos Aires Province Public Health Insurance Consultations Data
S & R: Sexual and Reproductive Health

Nevertheless, the differences within preventive consultations are wide. The chart shows, for each of the seven selected motives of preventive consultations, its evolution in time and its percent increment between periods. These types of consultations are health controls at the first year, at the second, at the fifth and at fourteenth, health

controls in adults, consultations associated to sexual and reproductive health, and pregnancy controls.

The consultations that approached the greater expansion between the beginning of the program and the late 2006 are those associated to sexual and reproductive health, in the first place, with an increment of 75 fold and pregnancy controls in the second place, with an increment of 39 fold. These numbers show the low level of these kinds of consultations in the period previous to the PHIP implementation, and the PHIP focalization on pregnant women and women in fertile age.

Thirdly, we found health controls at first year old with 5 fold increment in the whole period. In the opposite extreme are placed health controls in adults, which reflects the only indicator which value falls down more than 4 times between the beginning and the end of the PHIP.

However, from the analysis of average evolution between the three periods it comes up that the higher growth rate corresponds to health controls in children in their first year, whith a mean value of 8,69% between the three periods, fact that contrasts the 0,42% growth rate of pregnancy controls.

Finally, in spite of the analysed variations, clearly health controls at the first year of life is the category that defines the trend of total preventive consultations, given that it is one of the two types of preventive consultations that, together with health controls between the fifth and fourteenth year, achieves the highest qualitative leap between 2004 and 2005.

In the same way that ***Chart 3.4*** analyses preventive consultations by type between 2004 and 2006, ***Chart 3.5*** replicates this analysis for curative consultations, considering prevalent pathologies: consultations due to malnutrition, anemia, diarrhea, parasites, bronchitis/bronchiolitis and pneumonia.

In this case, a percent reduction in consultations over the total can be verified, reaching a decrement of more than 2 times, among which anemia represents the highest fall of almost (49 fold) and diarrhoea the smaller one, with almost no changes.

Chart 3.5
Curative Consultations Evolution

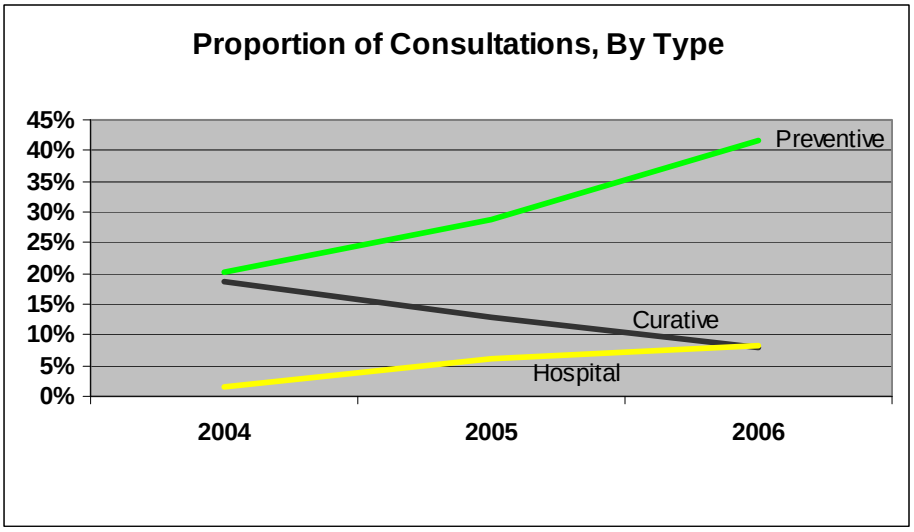
Year	Malnutrition	Anemia	Diarrhea	Parasites	Bronchitis	Pneumonia	TOTAL
2004	0,06%	2,47%	1,75%	3,37%	10,24%	0,84%	18,72%
2005	1,89%	0,42%	2,05%	0,87%	8,74%	0,87%	14,84%
2006	0,05%	0,05%	1,66%	1,53%	4,09%	0,73%	8,10%
Mean	0,97%	0,80%	1,88%	1,62%	7,67%	0,78%	13,72%
Variation	1,2:1	49:1	1,05:1	2,2:1	2,5:1	1,15:1	2,3:1

Source: Own, based on the Buenos Aires Province Public Health Insurance Consultations Data

As in the previous case, the bounded period is between 2004 an 2006, yet dispersion is higher than in the preventive consultations case.

The foregoing analysis about the total evolution of consultations is depicted in ***Figure 3.1*** that shows the constant increment of preventive consultations between both periods, and its relatively higher growth between 2005 and 2006. On the other hand, it is observed the fall in curative consultations as result of the higher relevance of the preventive strategy. At the same time, consultations that require hospitalization grow, although less than proportionally than the other type of consultations. This fact is probably associated to the success in the early detection of preventive consultations, and to the increment in hospitalization due to early detection in the primary care level.

Figure 3.1
Temporal Consultations Evolution, By Type

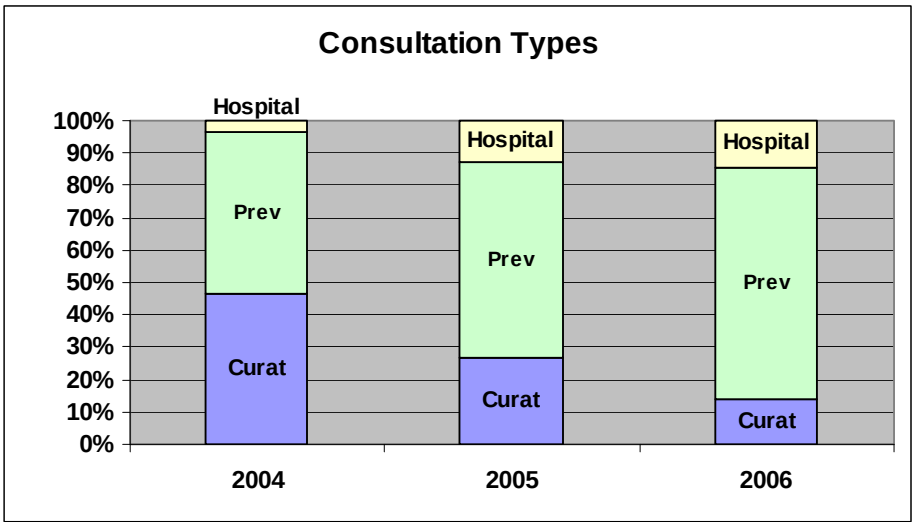


Source: Own, based on the Buenos Aires Province Public Health Insurance Consultations Data

Finally, ***Figure 3.2*** shows the weighted evolution of consultations by type in the three years under analysis. In 2004, preventive and curative consultations had approximately the same weight, that is, between 45% and 50% of the total, against a 4% of consultations due to hospital referral.

In 2005 the preventive consultations weight increases, clearly exceeding 60%, while hospital consultations almost triple. In 2006, the last year of the data sample, the explosion of preventive consultations is confirmed, reaching 72% of the total, reducing curative ones to 15% and incrementing catastrophic ones in approximately 13%.

Figure 3.2
Consultations Evolution, By Type



Source: Own, based on the Buenos Aires Province Public Health Insurance Consultations Data

To conclude, the program shows a clear bias towards preventive consultations. This is associated not only with objective population, but also with the control mechanisms carried on by the program, which lead to modify suppliers conduct as long as they charge services per capita, proposing this way a bias towards promotion and prevention, and an increase in the identification of hospitalization cases against curative attention.

3.5.3 Econometric Implementation

The Public insurance under analysis constitutes demand-subsidy oriented system that complements the traditional payment scheme of fixed salary that characterises public structure of supply subsidy. From this point of view, the insurance offers an additional incentive given that it complements the wages of those professionals that are part of the assisting crew of municipalities, with a per capita payment that is function of a list of patients that is assigned to them, considering a maximum number of patients of a thousand individuals under responsibility.

This way, economic benefit function of professionals is different from the one they had in the period before the coverage strategy was implemented. The prior situation, in which the payment mechanism was a fixed salary, generally implies an incentive to undersupply care, as long as the effort performed and the quantity of patients assisted have no favourable impact on the professional's economic revenue. So, the traditional scheme involves:

$$\max \quad \pi^{med} = w - e.q$$

where the fixed salary (w) is independent of the effort (e) or the quantity of work performed (q), while $e.q$ is the cost associated to developing health care services. Before

such situation, the professional would tend to minimize either the effort (the quality of attention) or the number of assisted patients, given that it is the way of maximizing profits.

Under the new combined modality, wage is linked to a per capita fee. It classically introduces two probable incentives/ results. The first one is represented by a negative result, which is the one of stimulating undersupply just like under fixed payment mechanism. This occurs due to the presence of a great deal of certain payment that may be independent of the quantity of consultations made or the effort devoted to such assistance based upon the monitoring strategy developed. Nevertheless, per capita payments also incentives a higher quality attention with a strong tendency towards health promotion and prevention.

For this to happen, however, some adjustment variables must be included in the classical per capita payment scheme. The first of these adjustments is related to the patient's free will of changing the professional if the received assistance does not result satisfactory. The other essential point relies on the implementation of auditing mechanisms and management controls over the development of professionals, including in many cases the economic incentives associated to the met of certain goals associated to quality and assistance opportunities. When these adjustment mechanisms to the per capita payment are implemented, the professional finds himself highly motivated to offer quality, which in general is kept thanks to the implementation of prevention strategies. Furthermore, these strategies turn out to be beneficial, as long as they imply the reduction of consultations, allowing the professional to deliver effective care to patients under his responsibility.

Therefore, the new professional's profits maximization structure is characterized as follows:

$$\max \pi^{med} = \overline{w} + pN(eq) - eq$$

where p*N* represents the fixed payment dependent on *N* beneficiaries included in the assigned capita. The *N* value, pre-defined by the insurance, results to be dynamically associated to the number of services offered by each physician, controlled by the quality of each attention unity. This way, *pN* value depends on *eq*: the professional is tempted to increase quality so as to, in turn, increment *pN* and count on an aggregate revenue higher than his former fixed wage.

By totally differentiation, and evaluating in the maximum, it can be appreciated that the professional's benefit is positively associated to the accomplished differential eq, which implies a higher quality of care, investing in the development of preventive services.

$$d\pi^{med} = \frac{\partial \pi^{med}}{\partial \overline{w}} d\overline{w} + \frac{\partial \pi^{med}}{\partial p} dp + \frac{\partial \pi^{med}}{\partial N} \frac{\partial N}{\partial eq} deq - \frac{\partial \pi^{med}}{\partial eq} deq$$

$$\frac{\partial \pi^{med}}{\partial eq} = \underset{(+)}{\frac{\partial \pi^{med}}{\partial N}} \underset{(+)}{\frac{\partial N}{\partial eq}} - \underset{(-)}{\frac{\partial \pi^{med}}{\partial eq}} \succ 0$$

As the analyzed information suggests up to here, preventive consultations show a considerable increment all along the period. The remaining exercise would be to identify which were the factors that determined such trend. For that, through a logistic model we analysed the probability of supplying preventive consultations as function of a group of explicative vectors.

The analysis considers that the probability of offering a preventive consultation follows the following patron:

$$Pr(consultation_{kimt}) = \beta_0 + \beta_1 \boldsymbol{D_{it}} + \beta_2 \boldsymbol{S_{kt}} + \xi_m + u_{kimt}$$

For every type of consultation k, for every individual i, for every municipality m under program, and for every moment on time t, where, given the homogeneous per capita mechanism between professional associations and physicians, the access to consultation depends on population indicators of needs (i.e., socio-demographic characteristics, D), that define the correct identification of the group under program by the Insurance; on supply indicators – S-, associated to infrastructure and human and financial resources available in every municipality; and, last, variables associated to political unity of implementation (municipalities under program), which ways of managements are unknown by the researcher. The final goal is to establish the group of estimators β that define each variable vector, while identifying through the term ξ_m the relationship of each political unity m in terms of the program's management and implementation capacity.

Chart 3.6 shows a description of variables identifying their names of it in the and definitions.

Chart 3.6
Description of Selected Variables

Variables	Description
Focalization Variables	
U.B.N	Population with Unmet Basic Needs. 2001 *
Density	Inhabitants /Square Kilometer. 2001 *
Age	Patient´s age in years
Sex	Dummy (1=male)
Insurance Characteristics	
Remediar Program	A free drug is provided. Dummy (1=yes)
Physician Seniority	Physician License Number
Resources and Supply Variables	
Provincial Health Expenditure	Provincial Health Expenditure in $AR 2003
Population/P.C.C	Inhabitants with sole public coverage, per each Primary Care Center **
Temporal Variables	
Year 2005	Consultation occurred in 2005. Dummy.
Year 2006	Consultation occurred in 2006. Dummy.
Municipal Dummies	One Dummy variable per each municipality

Source: Own, based on the Buenos Aires Province Public Health Insurance Consultations Data
(*) According to the 2001 National Census (**) According to Remediar Program, National Ministry of Health

Chart 3.7 summarises the determinants of preventive consultations for approximately 1,3 million observations. Asterisks are associated to each coefficient and establish its significance level at 1% (***), 5% (**) and 10% (*) respectively. Standard deviation of each coefficient is presented between brackets.

Chart 3.7
Consultations determinants, by type. 2004-2006

Variable	Preventive Consultation	
Age	**-0.0028**	***
	(0.0001)	
Male	**-0.0343**	***
	(0.023)	
Physician seniority	**2,42e-07**	***
	(1,13e-08)	
Remediar	**-0.4273**	***
	(0.025)	
Density	**0.0002**	***
	(1,88e-06)	
U.B.N	**0.0482**	***
	(0.024)	
Population/P.C.C	**-0.0005**	***
	(1,37e-06)	
Per Capita Provincial Expenditure	**0.0002**	**ns**
	(0.074)	
Year 2005	**0.2986**	***
	(0.0028)	
Year 2006	**0.5006**	***
	(0.0032)	
Avellaneda	**0.224**	***
	(0.011)	
Azul	**0,400**	***
	(0.035)	
Bahía Blanca	**-0.269**	***
	(0.025)	
Berazategui	**-0.0986**	***
	(0.018)	
Campana	**-1.082**	***
	(0.032)	
Escobar	**-0.332**	**ns**
	(0.28)	
Chivilcoy	**-0.4548**	***
	(0.069)	
San Pedro	**-0.025**	**ns**
	(0.62)	
Tres de Febrero	**0.1806**	***
	(0.020)	
Tres Arroyos	**0.1539**	***
	(0.032)	
Vicente Lopez	**-0.326**	***
	(0.027)	
Zarate	**-0.725**	***
	(0.030)	
Cons	**-0.739**	***
	(0.042)	
N.Obs 1.356.412		

Source: Own, based on the Buenos Aires Province Public Health Insurance Consultations Data
ns- Non significant coeficient.

Chart 3.7 shows, the results achieved of running a logistic model over the probability of developing preventive care by insurance physicians. Consultant's age seems to be negatively and significantly associated to preventive consultations. This may be so because children under a year old make monthly health controls as part of their dynamic controls. Then, such controls are performed on a quarterly manner and every six months until they are three years old, and then annually. This result reflects the age of the health control users over an inverted "J" curve, on which health controls drop from birth until they approach 2 or 3 years old.

Regarding consultants' sex, there is a trend towards females, as pointed out by most. This trend persists after subtracting prenatal controls from the model. The coefficients also reflect that assistance in primary health attention centres is eminently mother-infant, being this the objective population of the program under analysis, even if excluding prenatal consultations from the model.

Physician's professional experience reflects, also, an expected result in the context of this analysis. Higher registration numbers (corresponding to younger doctors) show a significant association with preventive consultations. This outcome coincides with the basic knowledge that these professionals have an education bias towards a intensive preventive medicine.

The presence of medicines included in Remediar[16] exhibits a negative relationship with preventive controls. This is explained by the fact that, with some exceptions as ferrous sulphate for children under a year old, preventive consultations do not require the delivery of medicines, as it is the case for curative consultations.

As regards to population density, the coefficient resulting from estimation is significant and positive to explain preventive consultation. This fact may be associated to the capacity of the promotion and communication system applied by the Provincial Insurance, which allows to concentrate a wide base for this type of consultations, which is strengthen by the population under program.

Furthermore, the PHIP is intentionally focused on municipalities of fewer relative resources. Structural poverty of the municipality (measured in terms of percentage population with unmet basic needs) shows a positive and significant association in this regression.

The indicator of population without coverage by Primary Health Care Centre (CAPS), appears to be significant and with the expected sign: in the municipalities with higher theoretical demands, the probability of reaching the health care centre for making a preventive consultation is smaller. This result is relevant as an illustration of the infrastructure requirements that this type of interventions needs.

Regarding municipal health expenditures, it does not result to be significant for the production of preventive consultations. This outcome matches similar recent results about the role that health expenditures have had to explain at the municipal level (Maceira y Kremer, 2007). .

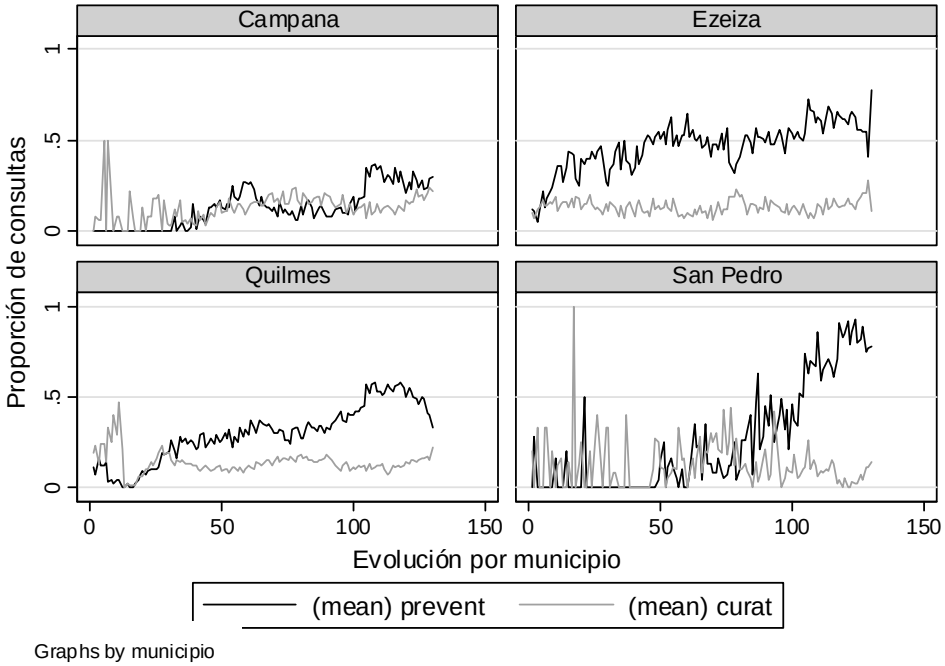
---

[16] Remediar Program is a national government initiative that distributes essential medicines kits to Primary Health Care Centres all around the country, according to the attention of pathologies corresponding to 80% of prevalent diseases in the primary level of assistance.

Dummy variables by year seem to define establish a positive relationship all along the period, as it has been referred to in foregoing paragraphs, while dummy variables by municipality exhibit an important heterogeneity. For some municipalities coefficients are non-significant while there are other group for which the probability of making a preventive consultation results to be significant in either direction.

Variability among municipalities can be also observed in ***chart 3.8***, which displays the weekly evolution of preventive versus curative consultations for a selection of municipalities, which reflects differences in the Provincial Insurance penetration, regardless of directions and control mechanisms articulated from the insurance's central offices.

Chart 3.8
Preventive and Curative Consultations Evolution, By Municipality, 129 weeks of follow up.



Source: Own, based on the Buenos Aires Province Public Health Insurance Consultations Data

Different evolution patrons of preventive versus curative consultations are observed, controlled by prevalent pathologies of the primary care level. The cases of Ezeiza and Quilmes, with differences between them, reflect what happens in many municipalities in which preventive consultations increased significantly. In some cases, it is observed that there are differences over time (Ezeiza), while in others there exists a trend towards increasing the gap between both types of consultations (Quilmes). On the one hand, the case of Campana represents those municipalities where preventive and curative consultations do not success in differentiating each other over time. Finally, San Pedro exemplifies, in its initial segment, those municipalities where the variability over the weeks results to be so noticeably high that it is impossible to define a

tendency, while in the weeks corresponding to the last year under evaluation, it is observed a drastic differentiation for preventive consultations.

Econometric results indicate that the PHIP strategy under evaluation might have shaped a health strategy with a positive bias towards the production of preventive consultations. To confirm these results we propose a test analyzing changes in the weekly index of vaginal births over caesarean sections Usually, health care procedures over which the insurance . This selection is based on the fact that natural births depend on a series of factors over which PHIP must operate such as appropriate and in time prenatal care and the early detection of pregnancy complications..

It is expected that in those municipalities where public insurance is present, modifications in this indicator were spread, and that those modifications turn out to be significant, controlled by a group of variables that could take part on the explanation of registered changes.

Therefore, two ordinary least square estimations were performed where the insurance's penetration in each municipality is instrumented through two alternative variables: relative weight of physicians under program over public sector total number of doctors, and total consultations associated to Public Insurance over total number of public consultations of the department level. In both cases, the absence of insurance turns into cero the dependent variable. With the aim of evaluating the impact of the program, significant and positive coefficients are expected for both exercises. The explicative variables are described in ***chart 3.9***.

Chart 3.9 – Selected Variables Description

Variables	Description
Insurance presence variables	
Insurance Physician	Physians under the Public Insurance Program over total physicians in the pubilc sector. Year 2005***
Insurance Consultation	Consultations performed under the Public Insurance over total consultations in the pubilc sector. Year 2005***
Focalization variables	
U.B.N	Population with Unmet Basic Needs. 2001 *
I.M.R	Infant Mortality Rate. Year 1999.
Resources and Supply Variables	
Per capita total expenditure	Per capita total health expenditure. Year 2003
P.C.C/Total Health Facities	Number of Primary Care Centers over Total Health Facilities **

Source: Own, based on the Buenos Aires Province Public Health Insurance Consultations Data, except for (*) 2001 National Census, (**) Remediar Program, and (***) Statistics Department, National Health Ministry.

We suggest that the higher the penetration of the PHIP on the municipality the higher indicator of vaginal births to caesareans. Additionally, as control variables two indicators of focalization were considered: poverty and infant mortality, as well as two variables associated health care supply: infrastructure devoted to primary care level and health investment by municipality, measured as municipal, provincial and national fiscal contributions.

The following chart 10 shows the results obtained under the two specifications mentioned (incidence of professionals and of consultations at the primary level of attention).

Chart 3.10 – Insurance impact on quality

Variable	Relation Normal/Cesarean delivery			
Insurance Physician	**0.318**	***		
	(0.048)			
Insurance Consultations			**6.623**	***
			(0.857)	
I.M.R	**-0.294**	***	**-0.511**	***
	(0.555)		(0.055)	
U.B.N	**-0.123**	***	**-0.095**	***
	(0.036)		(0.035)	
P.C.C/Total Health Facities	**13.785**	***	**7.468**	***
	(1,63)		(1,508)	
Per capita health expenditure	**0.078**	***	**0.0767**	***
	(0.004)		(0.004)	
Cons	**10.784**		**18.958**	
N. Obs. 1648	R^2 0.277		R^2 0.283	

Source: Own, based on the Buenos Aires Province Public Health Insurance Consultations Data

***-Coefficient Significant at 0.1%

The presence of both a higher share of physicians linked to the public insurance and a higher number of consultations in the context of this strategy, show coefficients to be positive and significant with respect to the increment of natural births relative to caesareans. These results lead to suggest that the impact of PHIP is satisfactory, considering the social, sanitary and economic advantages of this type of procedures.

Normally, caesareans sections increase their incidence in two opposite situations. The first one belongs to the case of populations with high purchasing power in urban areas, where either because of the patient's preference or because of the professional's convenience, caesareans are an important component of births. The alternative case refers to populations in relative health vulnerability, with low access to prenatal control, barriers for the accurate access to child delivery infrastructure, which contributes to a higher (often non-scheduled) caesareans rate. Clearly, the objective population of the public system in general, and of the PHIP in particular, belongs to the second group, due to which it is improbable that the information analysed includes the social groups from highest quintiles

Infant Mortality Rate shows to be negative and significant to explain natural births, which is the expected outcome, considering mortality indicator as a relevant parameter to explain population health. Furthermore, poverty indicator (UBN) shows also an inverse relationship. This fact confirms that the population under analysis belongs to the second group described in the previous paragraph (poor population, less assistencial control, higher number of non-scheduled caesareas).

Finally, both supply indicators related to the health care system present the expected results. On the one hand, the wider presence of primary health care centres over the total establishments would favour the prosecution of natural births based on a wider availability of accessing pre-birth controls and proper derivations to the second assistance level. On the other hand, health expenditure also shows a positive relation with the proportion of natural births against caesareas.

Chapter IV:
Conclusions

The province of Buenos Aires is the largest and most populated province of Argentina (38% of the country's total population). The population distribution differs significantly within its territory between urban and rural municipalities. 48% of the population has no formal health coverage, and of this population, 2.400.000 lives in the worst social-sanitary conditions (child and maternal malnutrition, high mortality rate, infectious diseases, among other social problems) [17] In addition, the province evidences serious problems of access to healthcare services, frequently caused by geographic, economic and administrative barriers.

The healthcare system of Buenos Aires is composed of the same three sub-sectors which compose Argentina's national system: public, private, and social security. In this context, the provincial government (providing the greater part of the funding), the municipalities, the national government (providing relatively little funding), the private sector, and the social security organizations co-exist in providing and financing healthcare services.

Given this structure, the Provincial government must: (i) align policies and regulations for the healthcare sector, (ii) provide healthcare services through public establishments of different levels of complexity and; (iii) provide a significant proportion of the overall healthcare expenditure, through funding of public services providers, direct subsidies and specific programs. In the case of Buenos Aires Province, a long standing debate about different alternatives to give answer to these challenges, resulted in the creation (in October, 2000) of the PHIP, which is one of the objects of this investigation.

Chapter 2 concludes that provincial funds allocation for health are not related to population needs or demands, but related to infrastructure maintenance and supply in each municipality. Considering the dynamics of heath investment among different levels of government, a sequential strategy in the allocation of the resources for the health sector cannot be fully demonstrated. The analysis reflects that the provincial co-participation (structurally bound with the supply of services), would be observed by the municipalities to invest later in the health sector. In addition, the province invest mainly in those municipalities where the municipal expenditures are smaller, partially compensating the imbalances that the transferences related to the co-participation could have generated. However, municipal expenses on health care, according to the dataset available, cannot be considered fully independent of provincial flows. Finally, health expenditures to municipalities from the national level seem to complement, mainly through in-kind inputs, the necessities of investment in those sites where provincial and municipal expenditures are lower.

The PHIP could be seen as an exception, where health financing is related to needs instead of being associated to supply. In the last chapter, the PHIP is presented as an innovative demand subsidy strategy, developed through the enhancement of quality at the primary healthcare level. This section shows a series of lessons that are worthy of attention in the context of this evaluation.

---

[17] *INDEC, National Census 2001*

Firstly, the insurance has achieved an accurate focus, concentrating mainly on the most vulnerable municipalities in terms of poverty, coverage and health indicators. This focus turns out to be relevant from the public policy point of view, given that the insurance program tries to modify certain primary care practices, as part of a fundamental strategy seeking to enhance its beneficiaries' health.

Secondly, it is also important to note the finding of certain "learning" process in the insurance implementation in terms of the distribution of consultations by type. As observed, preventive consultations increased considerably in three years, reflecting a growing trend towards a health care model focused on essential concepts of primary health care as health promotion and disease prevention.

The insurance program's hiring and payment mechanisms, was innovative and successful in the context of public health sub-sector, conditioning the professionals to increase their efforts towards higher quality preventive care. Nevertheless, it was also observed that municipalities show particular characteristics regarding their management and administrative structures that affect the success of the program.

Finally, the insurance program might be seen as one of the instruments with the potential to enhance care quality and performance, as it was observed in the case of births and Caesarean-sections considered in the last section of this study, but this would require a wider set of performance indicators in order to validate these findings.

The overall analysis provide inputs for policy recommendations, both at the provincial financial level in terms of the distribution of efforts to afford population needs, as well as at the Program level, associated to the performance of the Public Insurance Initiative.

First, it seems reasonable to revise the structure of the Coparticipation Fund, in order to allow more equitable access to financial resources to poor municipalities, as well as reducing the transfer of risks (epidemiological and financial) from the provincial government to subprovincial units with managerial responsibilities on hospital infrastructure.

Second, the study shows a complex relation between municipal funds, provincial allocation of resources and population needs. The lack of clear rules in the decentralization process limits the chances of systematic collaboration between both levels of government, leaving room for unmet needs and overspending in certain areas, affecting allocative efficiency.

Third, the characteristics of National funds devoted to health care at the municipal level are mainly tied to the provision of inputs (medicines, vaccines, milk, contraceptives, etc.), all related to National Programs locally implemented. More coordination is needed between policymakers and local managers in order to improve scarce resource utilization, avoiding duplications, crowding out, more that alleviating, health professionals' tasks.
Fourth, in a scenario characterized by high turnover of health managers, programs that show evidence of effectiveness, might received support and continuity. That not only implies the application of long lasting core strategies in terms of health care outputs. It defines the institutionalization of learnings within the public sector, providing

managerial sustainability beyond sources of financing, political parties and personal leaderships.

References

Belizan J., Althabe F. "Rates and implications of caesarean sections in Latin America: ecological study" BMJ Nov 27;319:1397-1402. 1999

Behague D., Victoria C. "Consumer demand for caesarean sections in Brazil: informed decision making, patient choice, or social inequality? A population based birth cohort study linking ethnographic and epidemiological methods." BMJ. Apr 20;324:942-7. 2002.

Frenk, J., Londoño, J.L, Knaul, F. and Lozano, R. (1998). Los sistemas de salud latinoamericanos en transición: una vision para el futuro. In "Atención a la Salud en América Latina y el Caribe en el siglo XXI", Frenk & McCarthy (eds.), Mexico 1998.

Inter American Development Bank (1996) Economic and Social Progress Report., Washington D.C., United States, November 1996.

Instituto Nacional de Estadísticas y Censos, Argentina (2001) Censo Nacional de Población y Vivienda.

Maceira, D. (2001). "Dimensiones Horizontal y Vertical en el Aseguramiento Social en Salud de América Latina y el Caribe", LAC Initiative (OPS-USAID-PHR-FPMD-Harvard), Edición Especial no.3. Washington, DC., United States

Maceira, D. (2006), "Descentralización y Equidad en el Sistema de Salud Argentino", en Flood, C., "La política del gasto social: lecciones de la experiencia argentina", Editorial La Colmena, Buenos Aires, Argentina.

Maceira, D. (2007) Expenditure on health in a decentralized context. Buenos Aires province, Argentina, 2003. Centre of Implementation of Public Policies for Equito and Growth – CIPPEC Buenos Aires, Argentina

Maceira, D. y Kremer, P. (2007) Gasto en Salud y Desempeño. Un Análisis de Brecha de Financiamiento para la Provincia de Buenos Aires. CIPPEC Policy Brief, Diciembre 2007.

Pan American Heath Organization (1998). La salud en las Américas, Vol.1, Washington, United States.

Pan American Heath Organization (1994). Las condiciones de salud en las Américas, Vol.1, Washington, United States.

Pan American Heath Organization (2005). Renovación de la Atención Primaria de la Salud en las Américas, Washington, United States.

Provincia de Buenos Aires, Ministerio de Salud, Estadísticas Sanitarias, varios años, Buenos Aires, Argentina, 2007

Provincia de Buenos Aires, Ministerio de Hacienda (2003) Gasto Provincias y Municipal en salud. Buenos Aires, Argentina

Provincia de Buenos Aires, Seguro Público de Salud, Database 2004/6. Buenos Aires, Argentina, 2007

World Bank (1993),*World Development Report*, Oxford University Press, New York, United States, 1993.

World Health Organization (2000). *The World Health Report 2000,* "Health Systems: Improving Performance", Paris, France.

APPENDIX A

Elasticities
Public Health Insurance Selection and Resources Allocation

Regresor/ Dependent Variable	*1st Step - Logit*	*2nd Step - Ordinary Least Squares*
	Inclusion	**Per capita amount transferred**
predicted/gmun	-3,919 (1%)	-0,475 (ns)
estab_sin/capita	-2,93 (1%)	
estab_total/capita		-1,12 (1%)
medico/capita	-1,70 (5%)	-0,479 (ns)
mort_inf	-0,145 (ns)	0,966 (1%)
IRA	0,175 (ns)	0,044 (ns)
NBI	0,100 (ns)	0,617 (5%)
pj	0,014 (ns)	0,386 (5%)
reelect	-1,035 (5%)	0,052 (ns)
Observations	116	116

Source: Own based on the database from the Direction of Sistematic Information of the Buenos Aires Province Ministry of Health. Own based on 2001 National Census.