

H N P D I S C U S S I O N P A P E R

Reaching The Poor Program Paper No. 1

Argentina: Assessing Changes in Targeting Health and Nutrition Policies

Leonardo C. Gasparini and Mónica Panadeiros

October 2004



Argentina: Assessing Changes in Targeting Health and Nutrition Policies

Leonardo C. Gasparini and Mónica Panadeiros

October 2004

Health, Nutrition and Population (HNP) Discussion Paper

This series is produced by the Health, Nutrition, and Population Family (HNP) of the World Bank's Human Development Network. The papers in this series aim to provide a vehicle for publishing preliminary and unpolished results on HNP topics to encourage discussion and debate. The findings, interpretations, and conclusions expressed in this paper are entirely those of the author(s) and should not be attributed in any manner to the World Bank, to its affiliated organizations or to members of its Board of Executive Directors or the countries they represent. Citation and the use of material presented in this series should take into account this provisional character. For free copies of papers in this series please contact the individual author(s) whose name appears on the paper.

Enquiries about the series and submissions should be made directly to the Managing Editor. Submissions should have been previously reviewed and cleared by the sponsoring department, which will bear the cost of publication. No additional reviews will be undertaken after submission. The sponsoring department and author(s) bear full responsibility for the quality of the technical contents and presentation of material in the series.

Since the material will be published as presented, authors should submit an electronic copy in a predefined format (available at www.worldbank.org/hnppublications on the Guide for Authors page). Drafts that do not meet minimum presentational standards may be returned to authors for more work before being accepted.

The Managing Editor of the series is Joy de Beyer (jdebeyer@worldbank.org). The Editor in Chief for HNP publications is Alexander S. Preker (apreker@worldbank.org). For information regarding this and other World Bank publications, please contact the HNP Advisory Services at healthpop@worldbank.org (email), 202-473-2256 (telephone), or 202-522-3234 (fax).

Health, Nutrition and Population (HNP) Discussion Paper

Argentina: Assessing Changes in Targeting Health and Nutrition Policies

Leonardo C. Gasparini ^a Mónica Panadeiros ^b

^a Universidad Nacional de La Plata, La Plata, Argentina

^b Fundación de Investigaciones Económicas Latinoamericana (FIEL), Capital Federal, Argentina

Paper prepared for the Program on Reaching the Poor with Effective Health, Nutrition, and Population Services, organized by the World Bank in cooperation with the William and Melinda Gates Foundation and the Governments of the Netherlands and Sweden.

Abstract: This study assesses the level of targeting achieved in health and nutrition policies directed to pregnant women and children under 5 years of age in Argentina. It is based on information from two large household data sets collected through Living Standards Measurement Surveys undertaken in 1997 and 2001. The results suggest that although health and nutrition public programs are pro-poor, they became less so between 1997 and 2001 for two reasons: a substantial reduction in the fertility rate of poor couples, and an increase in the use of public facilities by wealthier households, likely triggered by the economic crisis that Argentina has suffered since 1998.

Keywords: Argentina, health service inequality, maternal and child health, antenatal care, attended delivery

Disclaimer: The findings, interpretations and conclusions expressed in the paper are entirely those of the authors, and do not represent the views of the World Bank, its Executive Directors, or the countries they represent.

Correspondence Details: Leonardo C. Gasparini. Mailing address: CEDLAS-UNLP, Calle 6 entre 47 y 48, Oficina 516, 1900 La Plata, Argentina. Telephone/Fax: 54-221-4229383, Email: leonardo@depeco.econo.unlp.edu.ar

Table of Contents

FOREWORD	vii
ACKNOWLEDGMENTS	ix
Context and Goals of the Study	1
Health, Nutrition, and Distribution in Argentina	1
Health	1
Nutrition	2
Mean Income and Distribution	2
Who Benefits from Health and Nutrition Policies?	4
The Data	4
Welfare Indicators	4
The Use of Health Services and Nutrition Programs	5
Antenatal Care	5
Attended Delivery	7
Visits to a Doctor	7
Medicines	8
Hospitalizations	8
Vaccination	8
Nutrition Programs	9
Summarizing Incidence Results	9
Characterizing Changes in Targeting	13
Aggregate Decompositions	13
Microsimulations	15
Conclusions	17
Statistical Appendix	19
References	35

List of Figures

Figure 3.1 Antenatal care	6
Figure 3.2 Concentration curves Health services, 1997	10
Figure 3.4 Concentration curves Visits to a doctor and BCG vaccination, 1997	10
Figure 3.4 Concentration curves Visits to a doctor and BCG vaccination, 1997	11
Figure 3.5 Concentration curves Nutrition programs, 1997	11
Figure 3.6 Concentration curves Antenatal care, attended delivery, medicines and hospitalizations, 1997 and 2001	12
Figure 3.7 Concentration curves Nutrition programs, 1997 and 2001	12

FOREWORD

This discussion paper is one in a series presenting the initial results of work undertaken through the Reaching the Poor Program, organized by the World Bank in cooperation with the Gates Foundation and the Governments of Sweden and the Netherlands.

The Program is an effort to begin finding ways to overcome social and economic disparities in the use of health, nutrition, and population (HNP) services. These disparities have become increasingly well documented in recent years. Thus far, however, there has been only limited effort to move beyond documentation to the action needed to alleviate the problem.

The Program seeks to start rectifying this, by taking stock of recent efforts to reach the poor with HNP services. The objective is to determine what has and has not worked in order to guide the design of future efforts. The approach taken has been quantitative, drawing upon and adapting techniques developed over the past thirty years to measure which economic groups benefit most from developing country government expenditures.

This discussion paper is one of eighteen case studies commissioned by the Program. The studies were selected by a professional peer review committee from among the approximately 150 applications received in response to an internationally-distributed request for proposals. An earlier version of the paper was presented in a February 2004 global conference organized by the Program; the present version will appear in a volume of Program papers scheduled for publication in 2005, *Reaching the Poor with Effective Health, Nutrition, and Population Services: What Works, What Doesn't, and Why*.

Further information about the Reaching the Poor Program is available at the following sites:

Program Overview:

<http://www1.worldbank.org/prem/poverty/health/rpp/overview.htm>

List of Papers Commissioned by the Program:

<http://www1.worldbank.org/prem/poverty/health/rpp/projectlist.htm>

Presentations at the Program Conference:

<http://www1.worldbank.org/prem/poverty/health/rpp/conference.htm>

ACKNOWLEDGMENTS

We thank the outstanding research assistance of Julieta Trías of Universidad Nacional de La Plata and Eugenia Orlicki of the Fundación de Investigaciones Económicas Latinoamericanas. We are also grateful to seminar participants at a workshop of the World Bank's Thematic Group on Health, Nutrition and Population and Poverty, and Daniel Bergna for useful comments and suggestions. This is a condensed version of part of a study entitled "Targeting Health and Nutrition Policies: the Case of Argentina," prepared for the World Bank's Thematic Group on Health, Nutrition and Population and Poverty. The full study is available from the authors upon request.

The authors are grateful to the World Bank for publishing the study as an HNP Discussion Paper.

Context and Goals of the Study

Argentina has been in a deep recession since 1998. Public spending has fallen dramatically, and borrowing abroad has been impossible since the country's default. Targeting scarce public resources to the needy has become more than ordinarily important and difficult. Not an easy job at any time in a country like Argentina, where universal programs were the rule for decades, targeting now has to contend with falling incomes. Many people—not just the poor—now feel entitled to public assistance.

This study addresses the distributional incidence of social policies in Argentina. Analysis is focused on health and nutrition policies for pregnant women and children under five years of age (U5). Individual and household information from two Living Standards Measurement Surveys (1997 and 2001) is used to identify beneficiaries of public programs.

The study is intended to help answer two sets of questions.

- Who are the beneficiaries of the publicly financed programs for pregnant women and children? Are these programs pro-poor? Which programs are more pro-poor? Has the structure of beneficiaries changed between 1997 and 2001? Have the programs become less (more) pro-poor?
- Why have public programs become less (more) pro-poor between 1997 and 2001?

The first set of questions is tackled through a benefit-incidence analysis. Public health and nutrition programs, though open to everyone, are intended mainly to benefit the poor, who usually have nutritional problems and lack private health insurance. However, some nonpoor people also benefit from public provision, attracted by the low cost (most publicly provided health services are free) and reasonable quality.

To shed light on the second question, we decompose changes in the benefit-incidence results for a particular service into three components: changes in individual and household characteristics linked to the decision to consume a service; changes in the way decisions are made to consume the service or not; and changes in the public/private decision on where to consume the service. Both aggregate and microeconomic decompositions are implemented to provide estimates of these three components.

Health, Nutrition, and Distribution in Argentina

Health and nutrition have generally been good in Argentina, as compared with other Latin American countries.

Health

Argentina's health system is organized around a strong public sector, which, besides regulating health services, owns and operates an extensive network of public hospitals and

primary health care centers (PHCC). Expenditures on health by the three levels of government (federal, provincial, and municipal) account for 25 percent of the welfare system in Argentina (DGSC 2001). The public health system is universal, in the sense that everyone is entitled to use most services at public health facilities. However, in practice, public expenditures are targeted mostly to low- and middle-income families, because more affluent households usually opt for private treatment.

Most public health policies are channeled through the network of public hospitals and PHCCs, where people have access to all sorts of health services, mostly free of charge. Our analysis is concentrated on the following services for pregnant women and U5 children: antenatal care, attended delivery, visits to a physician, medicines, hospitalizations, and immunization.¹

Nutrition

Nutrition problems have been infrequent in Argentina, a country abundant in food. However, malnutrition-caused deaths of children covered in the press have recently opened public debate about the nutrition problem.

Public nutrition programs targeted to needy children have been small in size and coverage. Babies are provided with milk while under medical supervision at public hospitals or PHCCs. Children benefit from nutrition programs delivered through selected kindergartens and schools and local feeding centers (*comedores*) and sometimes delivered directly to the house. Some nutrition programs are targeted to extremely poor localities (Programa Alimentario Nutricional Infantil, PRANI- and Pro-Huerta). The recent economic crisis and the increase in malnutrition forced the government to institute some emergency nutrition programs in 2002.

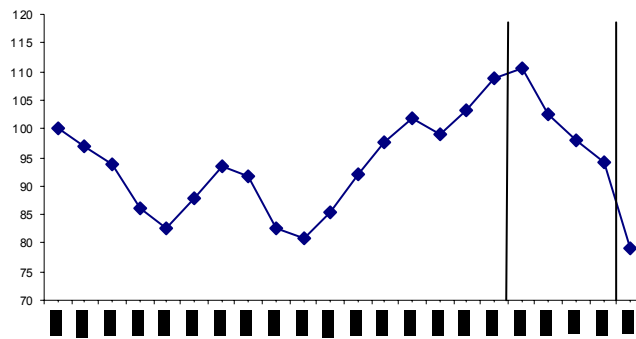
In this chapter we study three publicly provided nutrition services: milk for babies at public health facilities, meals in kindergartens, and meals at local feeding centers.

Mean Income and Distribution

Argentina's economic performance over the last three decades has been disappointing. Figure 2.1 shows large cyclical fluctuations in the disposable mean income, without any signs of a rising trend. The vertical lines in the figure indicate the period covered by this analysis, when income fell substantially. Per capita disposable income in real terms dropped 13 percent between 1997 and 2001, according to National Accounts estimates.

¹ In the extended version of this paper we also include information on post natal care, medical studies and analysis, treatment of chronic diseases, and HIV/AIDS testing of pregnant women.

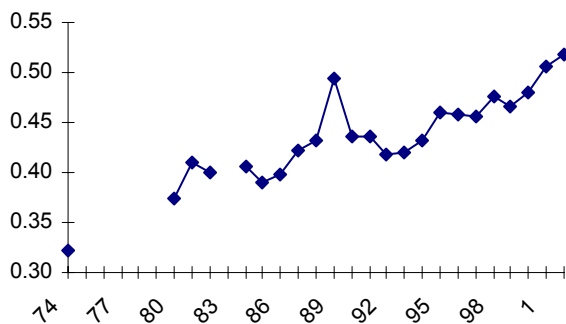
Figure 2.1: Mean disposable income Argentina, 1980-2002 1980=100



Source: National Accounts Statistics

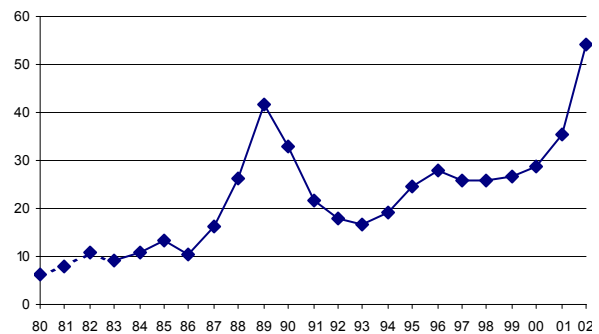
Along with a stagnant economy, Argentina has suffered dramatic transformations in income distribution (Gasparini 2003). Inequality and poverty have substantially increased over the last three decades (figures 2.2 and 2.3). The Gini coefficient for household per capita income distribution in Greater Buenos Aires (GBA), an urban region with a third of the Argentinean population, increased from 34.5 in 1974 to 53.8 in 2002 (CEDLAS 2003). The poverty headcount ratio, using the official poverty line was 5 percent in 1980 in GBA, 28.9 percent in 2000, but a dramatic 54.3 percent by 2002, reflecting the economic crisis.² In few countries has poverty increased so much so fast without a war or a natural disaster.²

Figure 2.2: Gini coefficient for Household per capita income Greater Buenos Aires, 1980-2002



Source: CEDLAS (2003).

Figure 2.3: Poverty headcount ratio Greater Buenos Aires, 1980-2002



Source: CEDLAS (2003).

² Trends in inequality and poverty for the rest of urban Argentina in the 90s are similar to the ones depicted in figures 2.2 and 2.3 for GBA. The levels vary significantly, however, across regions. For instance, while in the city of Jujuy, in the northwest of the country, the poverty headcount ratio is 57.3 percent, in Río Gallegos, in the Patagonia region, it is 11 percent, while in the city of Buenos Aires the rate reaches 10 percent.

Who Benefits from Health and Nutrition Policies?

Using a traditional benefit-incidence analysis of public spending on health and nutrition programs for pregnant women and U5 children, we assess the targeting precision of average public spending. Benefits from a specific program are assigned to individuals according to their answers to a household survey on their use of that program.³

The Data

Benefit-incidence analyses require household surveys with data on a welfare indicator and information on the use of social programs. In the last decade, Argentina has conducted two Living Standard Surveys with questions on the use of various health and nutrition services. The first survey, known as Encuesta de Desarrollo Social (EDS), was conducted in 1996–67 and includes around 75,000 individuals (representing 83 percent of total population) living in urban areas, see Table 3.1 in the Statistical Appendix.⁴ The second survey, Encuesta de Condiciones de Vida (ECV), with similar coverage and questionnaires, was conducted in 2001.⁵

Welfare Indicators

A crucial stage in a benefit-incidence analysis is sorting households by a welfare indicator. Among the variables usually included in a household survey, household consumption adjusted for demographics is the best proxy for individual welfare (Deaton and Zaidi 2002). Unfortunately, most household surveys in Argentina, including the EDS and the ECV do not have household-expenditure questions. Here we use mostly household income adjusted for demographics, *equivalized household income*, as the individual welfare indicator.⁶

In Table 3.2, individuals with consistent answers and positive reported household incomes are grouped in deciles. The table shows mean income of each decile for the distribution of per capita household income and equivalized household income.⁷ Table 3.3 shows various inequality indices for both distributions in 1997 and 2001. Inequality significantly increased between 1997 and 2001. This result is robust to changes in the inequality index and the distribution considered. Table 3.4 shows various poverty indicators computed using the official poverty line. Poverty has also significantly increased over the period.

³ See van de Walle and Nead (1995) and van de Walle (1998). More recent assessments of these techniques and their problems are in Bourguignon, Pereira da Silva and Stern (2002) and Carneiro, Hansen, and Heckman (2002). For benefit-incidence analysis in Argentina see Flood et al. (1993), Harriague and Gasparini (1999), Gasparini et al. (2000) and DGSC (2002).

⁴ All Tables are at the end of the paper, in the Statistical Appendix

⁵ The sample frame for both surveys is the same. Migration was not relevant in the period under analysis.

⁶ *Equivalized household income* is computed here as total household income divided by the number of adult equivalents in the household raised to a power of 0.9 in order to consider moderate consumption economies of scale within the household. We use the official adult equivalent scale for Argentina. See the extended version of the paper for details.

⁷ We show *weighted* statistics throughout this chapter. Weights to expand the sample to the population are provided by the Instituto Nacional de Estadística y Censos (INDEC).

The Use of Health Services and Nutrition Programs

This study focuses on health and nutrition programs targeted to pregnant women and U5 children. Table 3.5 shows total population and children by quintiles of the distribution of equivalized household income. By construction, quintiles have 20 percent of total population. Instead, since the number of children per household decreases as income rises, the share of children is not uniform along income distribution. For instance, the share of U5 children was 30.1 in the bottom quintile and 12.1 in the top quintile in 1997. This fact has fundamental consequences on the distributional incidence of public programs directed to children. Even a universal program for all children will be pro-poor, given the inverse correlation between the number of children and household income. This relationship became less strong between 1997 and 2001, as a consequence of a fall in the fertility of low-income families relative to the rest,⁸ implying, a potential reduction in the targeting of social policies.

From the surveys, we are able to identify households that use public health services and nutrition programs for children and pregnant women. The rest of this section is devoted to analyzing the use of these services and computing benefit-incidence results.

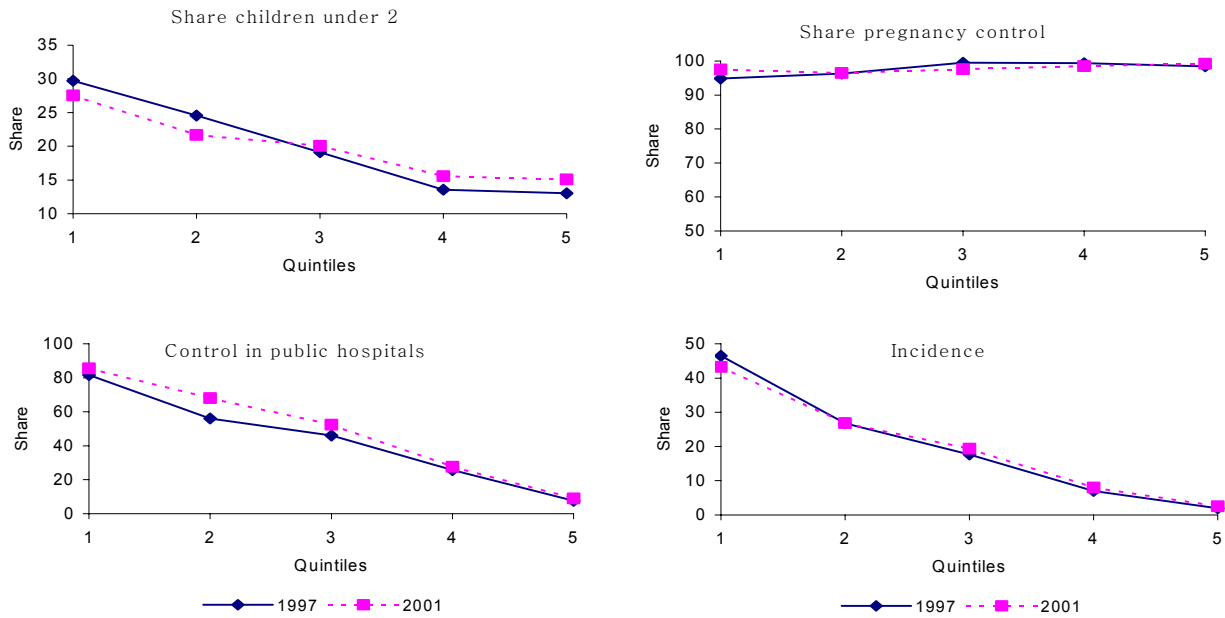
Antenatal Care

Mothers of children under 2 years of age are asked whether they used antenatal care while pregnant.⁹ The surveys also ask about the month of the first visit, the frequency of tests, and the site of most visits. Table 3.6 and Figure 3.1 show the results by equivalized household income quintiles for 1997 and 2001. Antenatal care is widespread in Argentina, even for poor mothers. The share of children whose mothers made at least one visit was 97.1 in 1997 and 97.7 in 2001. That share rose from 94.8 to 97.6 in the bottom income distribution quintile. Differences across quintiles are more evident in the number of visits, the month of the first visit, and the visit site. On average, poor mothers make the first visit after the third month of pregnancy, while mothers from rich households make it after a month and a half of pregnancy. The share of pregnant women with more than 4 visits increases significantly with household income: from around 70 percent in the first quintile to 95 percent in the top quintile. Most poor mothers go to public hospitals or primary care centers for antenatal care, while most rich mothers prefer private institutions. The differences are very significant: in 2001, 85.6 percent of mothers in the bottom quintile, but only 9 percent in the top quintile, reported receiving antenatal care in public facilities. During the economically depressed period studied, the share of visits to facilities has increased along income distribution lines. The average rose from 51.6 percent to 54.9 percent between 1997 and 2001.

⁸ Marchionni and Gasparini (2003) report a similar trend for the GBA using information from the Encuesta Permanente de Hogares.

⁹ There is a selection bias, since mothers are not asked about miscarriages or children who died. However, since infant mortality is low in Argentina, the selection bias is probably small.

Figure 3.1: Antenatal care



Source: authors' calculations based on the EDS and ECV.

The public sector finances public health facilities. Some of these resources (e.g., doctors' and nurses' salaries, supplies, a portion of capital costs) allow public hospitals and centers to provide most antenatal care free of charge. Who are the beneficiaries of this public subsidy? A usual assumption is that the users of the subsidized service and their families are the beneficiaries of the public program. By using a free public service, a family saves the cost of buying that service, assumed to be equal to the average cost of public provision.¹⁰

To find the beneficiaries of each public program, we identify the potential users of the service (mothers with children under 2 in the case of antenatal care), the effective use of the service, and the public/private choice. Table 3.6 shows two incidence results according to whether the number of visits is considered (H2) or not (H1) in the calculations.¹¹ In both cases, subsidies for antenatal care in public facilities are highly pro-poor. This bias weakens when the number of visits (H2) is considered. In 1997, more than 40 percent of all beneficiaries of this program belonged to the first income distribution quintile. The share of beneficiaries from the top quintile was around 2 percent. This pro-poor pattern is basically

¹⁰ The factors used in producing the service are not considered beneficiaries of public provision. It is assumed that doctors and nurses could find a similar job in the private sector if the public sector decided not to provide health services.

¹¹ Theoretically, the number of visits is relevant for an incidence analysis. However, the surveys record neither the exact number of visits (they just ask whether the mother made more than four visits) nor the type of facility visited (the surveys just ask where mothers made *most* of their visits).

the consequence of a greater concentration of children under 2 at the bottom of income distribution and sharp decrease in choice of public facilities at higher incomes.

The targeting precision of the public subsidy for antenatal care decreased between 1997 and 2001 (Figure 3.1). This change seems to be mainly a consequence of a reduction in the share of children under 2 in the bottom quintile and the increase in the use of public facilities by middle- and high-income households. In the next section we analyze this point in greater detail.

Attended Delivery

Most deliveries in urban Argentina are assisted by a medically trained person. Even at the bottom quintile, the proportion of attended deliveries is close to 100 percent (Table 3.7). The share of normal births has decreased over time, especially in the bottom quintiles. However, the share of cesarean sections is still increasing significantly at higher household incomes. More than half of all deliveries are attended at public facilities. This share has increased slightly in recent years. Deliveries in public facilities are much more frequent for poor than for rich mothers. In 2001, while 83.4 percent of deliveries by mothers in the bottom quintile were in public facilities, only 11.3 percent of mothers from the richest quintile gave birth in publicly funded facilities. Because fertility is higher and the use of public facilities more widespread among poor households, the subsidy for attended deliveries in public facilities is decidedly pro-poor.

We have also computed incidence results assuming that cesarean deliveries cost twice as much as vaginal deliveries. Because the share of cesarean deliveries increases with income, incidence results under this assumption are much less pro-poor.

Visits to a Doctor

Both surveys for 1997 and 2001 ask parents about visits to a doctor for their children aged 0 to 4, but there are differences in the questionnaires. The 1997 survey first asks about the child's health status (Has the child felt sick or had an accident in the last 30 days?), and then reports consultations with a physician only for "sick" children. This two-stage procedure misses information about visits to a doctor for routine check-ups of well children. The 2001 survey instead asks about any consultations with a physician, irrespective of the subjective assessment of a child's health status. Table 3.8 shows large differences in the share of children seen by a doctor (32.7 percent in 1997 and 53.8 percent in 2001), very likely due to this difference in the questionnaires. If in 2001 we restrict the analysis to children reported sick, the shares are similar (32.7 percent in 1997 and 29.3 percent in 2001). Patterns also differ with income distribution. The share of U5 children who visited a doctor the month before the survey is more sensitive to household income in the 2001 survey than in the 1997 survey. This is a sign that taking a well child to a doctor is more common in wealthier households than in poorer ones.

Two other differences undermine the comparison: only the 1997 survey records the number of visits during the month and only the 1997 survey has information on visits to public facilities that are not completely free of charge and are partially financed with user charges.

Despite the methodological differences, results for both 1997 and 2001 clearly indicate a pro-poor profile of public subsidies for services offered by doctors in public facilities. Around 70 percent of the beneficiaries of these subsidies are individuals in the two poorest quintiles of the population. Leakages to rich households are small.

Comparisons can also be made ignoring in 2001 individuals not reported as sick (even when we know they went to see a doctor), and ignoring in 1997 the available information on the number of visits and partial financing of visits. This alternative (labeled H2 in table 3.8) suggests a reduction in the precision of public subsidy targeting for visits to doctors in public facilities.

The 1997 survey includes a question on waiting time. While a person in the lowest quintile waits an average of 79 minutes for a doctor to see a child, the average waiting times for the other quintiles are 75, 56, 55, and 45 minutes, respectively. This significant difference in waiting time is probably one of the factors accounting for the lower probability that a child from a poor household will visit a doctor, even when the service is free of charge.

Medicines

At public health facilities, some medicines are free or sold at subsidized prices. The targeting precision of these subsidies can be studied with the help of household surveys. However, again, the two-stage questionnaire of 1997 and the lack of detail in the 2001 questions on the financing of medicines blur the comparative results. Despite these drawbacks, Table 3.9 unambiguously suggests a pro-poor profile of public subsidies for medicines prescribed for children in public facilities. Around 50 percent of these drugs go to children from households in the bottom quintile of the equivalent household income distribution. Again, the targeting precision of this public program was clearly reduced between 1997 and 2001.

Hospitalizations

According to the household survey responses, on average 8.4 percent of U5 children are hospitalized during a year (Table 3.10). That number was unchanged between 1997 and 2001. During that period, the use of public facilities slowly increased along the lines of income distribution.

Vaccination

Table 3.11 shows that immunization of U5 children is widespread in Argentina¹²—99 percent of children get at least one dose of the BCG vaccine. The corresponding shares for the Sabin and measles vaccines are 95.4 percent and 72.8 percent, respectively. Most children get their shots at public facilities. Even children from wealthier households participate in public immunization programs. However, since poor households have more children and some children from rich families use private facilities, the incidence of immunization public programs is still clearly pro-poor. For instance, in the case of BCG,

¹² Information on vaccine was recounted by the mother and confirmed by inspection of a vaccination card.

while 30.6 percent of the vaccines are assigned to children in the poorest quintile, 10.5 percent benefit children in the top quintile. The 2001 survey does not record information on the use of public facilities for vaccination, so all incidence results refer to 1997.

Nutrition Programs

As explained above, the three levels of government in Argentina run a variety of nutrition programs. The survey captures those that make available milk for babies in hospitals, food in some public kindergartens, and meals in local feeding centers. Tables 3.12 through 3.14 show significant differences in targeting across these programs. The share of total benefits accruing to the poorest 20 percent of the population ranges from 77.3 percent for meals in local feeding centers to 41.7 percent in public kindergartens. Local feeding centers are usually located in public schools in poor neighborhoods.

The coverage of these nutrition programs has dramatically increased in the last four years. For instance, while only 2.6 percent of poor children attended local centers to get free meals in 1997, 20.2 percent of them did in 2001.

Like health services in public hospitals, the milk delivery program in public facilities seems to have become less targeted over time. Changes seem to have been pro-poor in the case of food in kindergartens and somewhat neutral in the case of local feeding centers.

Summarizing Incidence Results

The literature has developed a range of graphic and analytical instruments to summarize information on the incidence of public programs. In Figures 3.2 through 3.7, we show concentration curves for various health and nutrition programs. Individuals are sorted according to their equivalized household income. The concentration (Lorenz) curve shows the cumulative share of total benefits (income) from a given program accruing to the poorest n th of the population. Concentration curves above the Lorenz curve characterize progressive programs, while curves above the diagonal (the “perfect equality line”) are associated with pro-poor programs Lambert (1993).¹³

Concentration curves do not significantly differ among health programs, with the exceptions of immunization programs, which are less pro-poor, especially the quadruple and Measles Mumps and Rubella vaccines (Figures 3.2 and 3.3). Figure 3.4 shows substantial differences between a typical concentration curve for a health service and a typical concentration curve for a vaccination program. Curves for nutrition programs are estimated with less precision, considering the scope of these programs (Figure 3.5). Curves for meals in local feeding centers are above the curves for the other nutrition programs.

The targeting precision seems to have decreased for all health services considered since 1997, according to the concentration curves shown in Figure 3.6. The same comment

¹³ See also a new World Bank website with technical notes on quantitative techniques for health equity analysis (http://www.worldbank.org/poverty/health/wbact/health_eq.htm).

Figure 3.4: Concentration curves Visits to a doctor and BCG vaccination, 1997

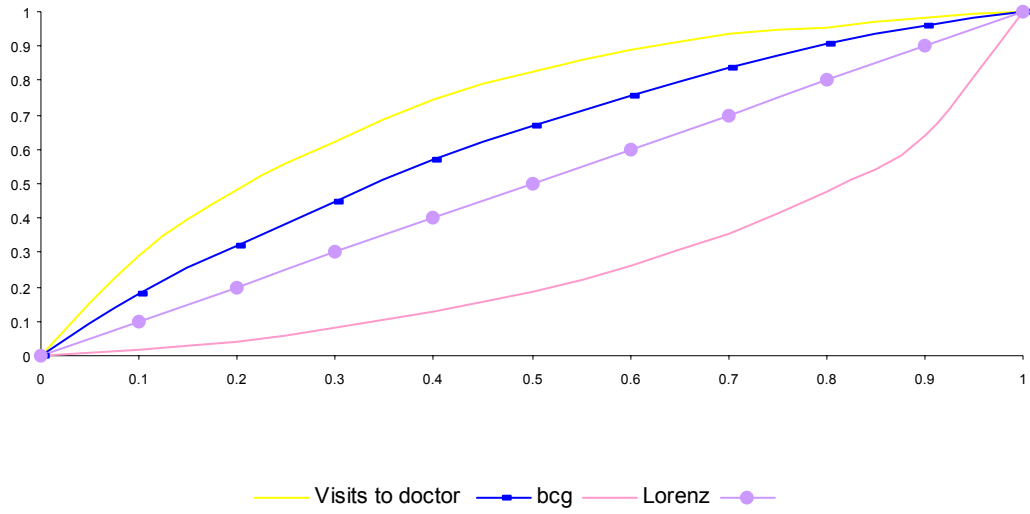


Figure 3.5: Concentration curves Nutrition programs, 1997

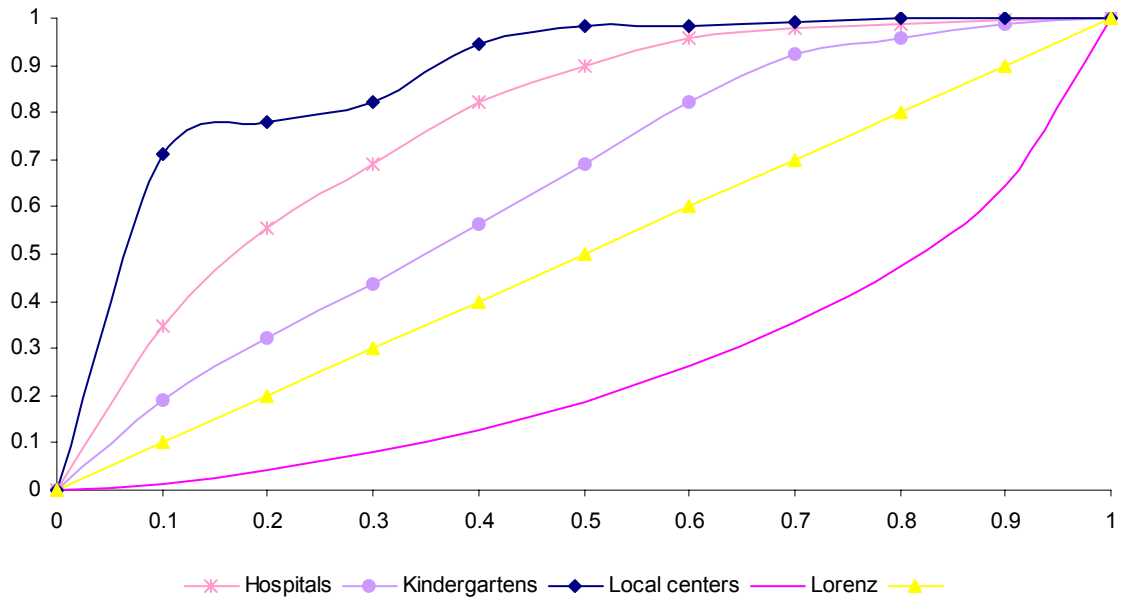


Figure 3.6: Concentration curves Antenatal care, attended delivery, medicines and hospitalizations, 1997 and 2001

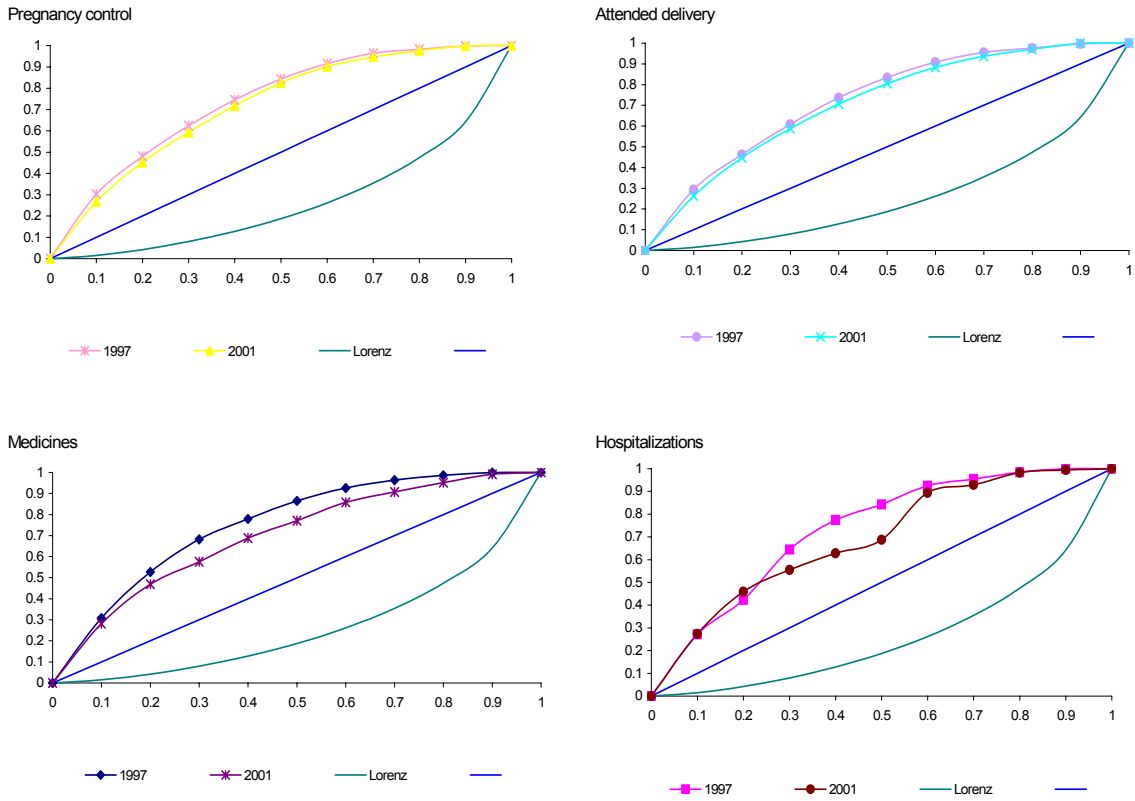
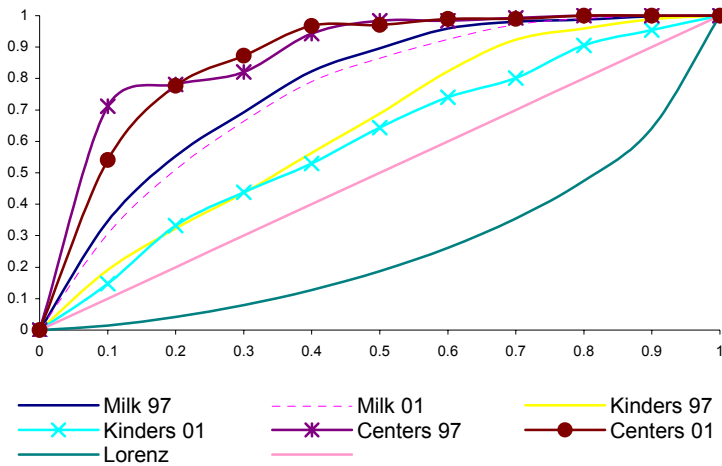


Figure 3.7: Concentration curves Nutrition programs, 1997 and 2001



All health and nutrition programs considered are pro-poor. The most pro-poor is meals in the local feeding center program, followed by milk in hospitals, all health services, and immunization programs. Between 1997 and 2001 targeting precision has decreased in the health services for which comparable data are available. That is also true of the milk delivery programs. For the rest of the nutrition programs, changes have been insignificant.

Characterizing Changes in Targeting

Benefit-incidence results come from aggregating individual decisions on the consumption of publicly provided services. A household will consume a service if at least one of its members is eligible for that service, if she (or her parents) decides to consume the service, and if she decides to do it in the public sector. Accordingly, differences in a program's targeting over time or across regions are the result of differences in the three stages described above. It is relevant to identify to what extent the change in a program's targeting accuracy results from changes in the sociodemographic structure of the population or from changes in household decisions on the consumption of the service (whether to use it or not and where to do it). In this section, we tackle this question using aggregate and microeconomic decompositions.

Aggregate Decompositions

Suppose we group total population in quintiles $h=1, \dots, 5$ according to their equivalized household income. The proportion of total users of a given health service j in a public facility that belong to quintile h in time t is denoted as b_{hjt} . These proportions are the inputs of any benefit-incidence measure. If b_{hjt} is decreasing in income, it is said that the public program j is "pro-poor." The value b_{hjt} can be written:

$$b_{hjt} = q_{hjt} \cdot a_{hjt} \cdot p_{hjt},$$

where q_{hjt} is the proportion of people who qualify for service j who belong to quintile h , a_{hjt} is the rate of use of service j in quintile h relative to the population mean, while p_{hjt} is the share of users in the public sector in h relative to the population mean. Differences among quintiles in the value of b are driven by differences in q , a , and p .

Let us illustrate this decomposition with the case of antenatal care by medically trained persons. By definition, only pregnant women qualify for this service. If pregnant women are not uniformly distributed along the income distribution line, the value of q will differ across quintiles. In most countries, fertility rates decrease with income, which implies a value of q decreasing with income for health services related to pregnant women and children. All other things constant, this pattern will imply a pro-poor bias for any health service directed to that population.

The relative use of a service (summarized by a) is the second determinant of the incidence results. Keeping all the other things constant, if in contrast to pregnant women from rich

households, most women from poor households decide not to see a medically trained person, the value of a will increase with income. Finally, the choice between public or private care is the third crucial determinant of the incidence results. If poor pregnant women choose a public facility more often than rich women, the value of p will decrease with income.

Differences in the pattern of the b s, and then in the incidence results over time and across regions depend on differences in factors on the right-hand-side of the equation. We use this simple decomposition to get a preliminary characterization of differences in incidence results over time and across regions in Argentina.

Table 4.1 shows the results of the decomposition of incidence results by quintiles for different health programs. The first three panels in each table reproduce results from the previous section. The distribution of potential users, the participation decision and the choice between public or private determine the incidence results in the fourth panel. The differences in incidence by quintile are reported in row 5.

There is a clear reduction in the degree of targeting of the public antenatal care program. In 1997, 46.5 percent of total beneficiaries of that program belonged to the bottom quintile of the equivalized income distribution; in 2001 that share fell to 43.3 percent. This drop of 3.2 points has its complement in the gains of 1.6 for quintile 3, 1 for quintile 4, and 0.6 for the top quintile. Where does this reduction in targeting come from? The last panel helps us to characterize the incidence changes by showing decomposition results. The line labeled “potential users” shows incidence results if we change the distribution of pregnant women (first panel) between 1997 and 2001 but keep fixed the participation rates and the public/private decisions at the values of a given year. Since the values of a and p can be fixed at two alternative years, in the table we report the average over the four possible simulations.¹⁵

The distribution of pregnant women became less pro-poor between 1997 and 2001, implying a 1.4 drop in the incidence on the bottom quintile. This means that, with everything constant, the demographic changes would explain a sizeable part of the decrease in the precision of subsidy targeting to antenatal care in public hospitals and primary health centers. Poor women are now more likely to be seen by medically trained persons. This increase in participation (combined with the changes in the rest of the distribution) implies an increase in incidence on the bottom quintile, of 0.9 points. The last effect, labeled “public provision,” seems the most relevant. Although the use of public hospitals increased for poor people, it increased proportionally more for the rest of the population. This effect implies a sizeable drop in the precision of targeting in the bottom quintile.

Table 4.1 also shows results for attended deliveries. Participation rates are assumed to be unchanged, because no information is available for 2001. The reduction in targeting precision on the bottom quintile between 1997 and 2001 is again a consequence of the reduction in the relative fertility rate of poor women and the relative increase in the use of public facilities by nonpoor women. In contrast with the case of antenatal care, the first effect seems to be the

¹⁵ Results are quite robust to changes in the base year.

dominant one. Similar results are obtained for public subsidies to medicines. The incidence of public hospital admissions increased a bit for the bottom quintile, and decreased a lot for the second one, leading to a fall in the overall precision of targeting as measured by the concentration index. This fall for the second quintile is explained by a relative reduction in fertility, a large drop in the share of hospitalized children, and a less pronounced increase in the use of public facilities, compared to other quintiles of the distribution.

The reduction in the precision of targeting of the nutrition programs for milk in hospitals and primary health centers and meals in local feeding centers is due to a fall in the fertility rates of poor people and a large increase in the participation of people from other quintiles of the distribution in nutrition programs (Table 4.2).

Aggregate decompositions can also be applied to study differences in incidence results across regions. Table 4.3 shows results for deliveries and visits to doctors in 1997.¹⁶ Differences between two regions in incidence results are the consequence of differences in the distribution of potential users, the participation rates, and the choice of public facilities. The table shows the decomposition of differences between the North and GBA. Similar results can be obtained for any other two regions from the information in table 4.3. There is a substantial difference in the precision of targeting the public subsidy to deliveries in public facilities between the North and GBA. Most of that difference comes from a much more concentrated distribution of U5 children in the bottom quintile of the *national* income distribution in the North than in GBA. While 19.5 percent of U5 children in GBA belong to the bottom quintile of the national distribution of equivalized household income, that share rises to 44.1 percent in the North. Of the 28.5 points of the incidence difference for the bottom quintile between the two regions 23.8 points are explained by this population effect. If all women chose public facilities to have their babies, a subsidy to deliveries in public facilities would be more pro-poor in the North, since the population in that region is considerably poorer than in GBA. In the North, even without much effort to improve targeting, public programs are usually more pro-poor.

In addition to the population effect, the difference in targeting in favor of the North is explained by a less intensive use of public facilities by the rich in the North than in GBA. Similar results apply to visits to doctors in 1997 and to most of the health and nutrition programs in 2001 (Tables 4.4. and 4.5).

Microsimulations

Though informative, the aggregate decompositions are rough approximations of the effect on the benefit-incidence results of changes in the structure of the population, the decision to consume a given health service, and the public/private choice. A more sophisticated analysis can be performed with the help of microeconomic (or microsimulation) decomposition techniques.¹⁷ Suppose we want to analyze changes between t and t' in the

¹⁶ We consider four regions: the North, the Center, the South, and GBA. The North is the poorest region of the country. GBA is a large metropolitan region with a third of Brazil's total population. The South (Patagonia) is the least populated and richest region, with the lowest indices of inequality and poverty.

¹⁷ For the use of microsimulation techniques to distributional problems see Bourguignon et al. (2003).

concentration index for the program of visits to doctors in public facilities. The idea behind this methodology is to simulate for each individual the counterfactual decision of whether to visit a doctor in a public facility or not in time t , if certain factors were those of time t' instead of those observed in time t .¹⁸ We consider three sets of factors that can be alternatively changed between t and t' : the characteristics of each individual (and her family), the way these characteristics are linked to the decision to visit a doctor, and the way these characteristics are linked to the choice to attend a public facility instead of a private one.

To implement this methodology, we estimate econometric models of the decision to visit a doctor, and the conditional decision to attend a public facility, as functions of various individual and household characteristics.¹⁹ Changes in the concentration index are decomposed into three effects. The *population effect* is obtained by simulating the health decisions in time t , if the individual and household characteristics were those of time t' ; the *participation effect* comes from simulating each individual's health decisions in time t , if the parameters governing the decision to visit a doctor were those of time t' , while the *public provision effect* is computed by assuming that the parameters governing the public/private decision were those of time t' .

Table 4.6 reports the decomposition results. The first row reports the change in the absolute value of the concentration index between 1997 and 2001 for each health service,²⁰ the last three rows show the values of each effect. The concentration index for the antenatal care program in public facilities declined 4.8 points between 1997 and 2002, implying less precise targeting. If the only change between 1997 and 2001 had been in the way individual decisions are made, the CI would have increased 0.4 points—a negligible change. The effect of changes in public/private decisions between 1997 and 2001 contributed 1.7 points to the overall fall of the CI. The most significant factor in this decline was the change in population characteristics. Even keeping all parameters constant, the change in characteristics would have contributed 3.5 points to the reduction in the CI. The reduction in the number of children in poor families is likely the main factor behind this result.

The population effect is also highly relevant for targeting in attended deliveries, medicines, and hospitalizations. The public provision effect is negative, except for attended deliveries, likely reflecting an increasing number of middle- and high-income groups seeking care at public hospitals as the result of the economic crisis. The participation effect is negligible in all cases but hospitalizations, a sign of the increase in hospitalization of children from the poorest quintile.

¹⁸ A more detailed explanation of the methodology, including a formal section, is included in the extended version of this paper and can be obtained from the authors upon request.

¹⁹ Details of the estimated models are given in the next section and in the extended version of the paper.

²⁰ Changes do not exactly coincide with those in table 3.15, because observations with missing information in variables included in the models were dropped.

Conclusions

This study analyzes targeting precision of health and nutrition policies for pregnant women and U5 children in Argentina, using information from two Living Standards Measurement Surveys (1997 and 2001). A benefit-incidence analysis tells us that public health and nutrition programs are pro-poor. However, the results of aggregate and microeconomic decompositions suggest that incidence changes in the last five years have been pro-rich, due to two different factors: a substantial reduction in the fertility rate of poor couples and an increase in the use of public facilities by wealthier households, likely triggered by Argentina's continuing economic crisis since 1998.

Statistical Appendix

Table 3.1: Living Standards Surveys Observations and population represented by the sample

	1997	2001
Observations		
Total	75,407	71,574
Men	36,439	34,556
Women	38,968	37,018
Population		
Total	29,991,693	31,959,425
Men	14,448,953	15,389,584
Women	15,542,740	16,569,841

Source: authors' calculations based on the EDS and ECV.

Table 3.2: Mean incomes by decile

	Per capita income		Equivalent income	
	1997	2001	1997	2001
	(i)	(ii)	(iii)	(iv)
1	35.7	24.2	50.6	34.0
2	73.6	52.1	100.2	71.4
3	104.6	78.9	140.3	104.2
4	137.3	107.1	178.8	139.5
5	173.6	137.1	221.5	175.8
6	220.3	176.8	276.1	221.1
7	278.3	227.5	343.9	280.7
8	363.9	300.4	443.2	363.6
9	517.7	428.0	617.5	511.4
10	1190.0	981.1	1382.7	1136.5
Mean	309.5	251.3	375.6	303.8

Source: authors' calculations based on the EDS and ECV.

Table 3.3: Share of deciles and inequality indices

	Per capita income		Equivalent income	
	1997	2001	1997	2001
	(i)	(ii)	(iii)	(iv)
Share of deciles				
1	1.2	1.0	1.3	1.1
2	2.4	2.1	2.7	2.3
3	3.4	3.1	3.7	3.4
4	4.4	4.3	4.8	4.6
5	5.6	5.5	5.9	5.8
6	7.1	7.0	7.4	7.3
7	9.0	9.1	9.2	9.2
8	11.8	11.9	11.8	12.0
9	16.7	17.0	16.4	16.8
10	38.5	39.0	36.9	37.4
Income ratios				
10/1	33.3	40.6	27.3	33.4
90/10	11.3	13.7	9.7	11.7
95/80	2.3	2.3	2.2	2.2
Inequality indices				
Gini	50.7	52.2	48.4	49.9
Theil	0.491	0.521	0.443	0.471
CV	1.410	1.481	1.291	1.350
A(.5)	0.213	0.227	0.194	0.207
A(1)	0.380	0.406	0.348	0.374
A(2)	0.645	0.678	0.603	0.641
E(0)	0.477	0.520	0.427	0.468
E(2)	0.994	1.097	0.833	0.912

Source: authors' calculations based on the EDS and ECV.

Table 3.4: Poverty measures, Official poverty line

	1997	2001
	(i)	(ii)
Head-count ratio	0.326	0.429
Poverty Gap	0.143	0.226
FGT (2)	0.088	0.160

Source: authors' calculations based on the EDS and ECV.

Table 3.5: Population and children by quintiles, Distribution of equivalized household income

1997						
Individuals	1	2	3	4	5	Total
<i>All</i>						
Sample	17,084	15,362	14,820	13,620	12,524	73,410
Population	5,859,871	5,858,144	5,858,311	5,850,874	5,810,177	29,237,377
<i>Children under 2</i>						
Sample	1,456	972	799	605	472	4,304
Population	470,802	388,856	302,447	214,781	206,541	1,583,427
<i>Children under 5</i>						
Sample	2,446	1,645	1,326	1,074	792	7,283
Population	801,369	651,945	488,135	394,471	322,350	2,658,270
Shares	1	2	3	4	5	Total
<i>All</i>						
Sample	23.3	20.9	20.2	18.6	17.1	100.0
Population	20.0	20.0	20.0	20.0	20.0	100.0
<i>Children under 2</i>						
Sample	33.8	22.6	18.6	14.1	11.0	100.0
Population	29.7	24.6	19.1	13.6	13.0	100.0
<i>Children under 5</i>						
Sample	33.6	22.6	18.2	14.7	10.9	100.0
Population	30.1	24.5	18.4	14.8	12.1	100.0
2001						
Individuals	1	2	3	4	5	Total
<i>All</i>						
Sample	12,387	12,017	11,538	10,814	10,544	57,300
Population	4,832,178	4,832,686	4,831,489	4,829,508	4,815,221	24,141,082
<i>Children under 2</i>						
Sample	938	718	599	455	409	3,119
Population	353,412	278,273	257,517	199,744	193,819	1,282,765
<i>Children under 5</i>						
Sample	1,626	1,207	1,041	774	688	5,336
Population	608,055	472,205	445,167	340,094	318,925	2,184,446
Shares	1	2	3	4	5	Total
<i>All</i>						
Sample	21.6	21.0	20.1	18.9	18.4	100.0
Population	20.0	20.0	20.0	20.0	20.0	100.0
<i>Children under 2</i>						
Sample	30.1	23.0	19.2	14.6	13.1	100.0
Population	27.6	21.7	20.1	15.6	15.1	100.0
<i>Children under 5</i>						
Sample	30.5	22.6	19.5	14.5	12.9	100.0
Population	27.8	21.6	20.4	15.6	14.6	100.0

Source: authors' calculations based on the EDS and ECV.

Table 3.6: Antenatal care by quintiles of the equivalent household income distribution
1997

	1	2	3	4	5	Total
Children under 2	29.7	24.6	19.1	13.6	13.0	100.0
% visits	94.8	96.3	99.5	99.4	98.4	97.1
Month of first visit	3.1	2.8	2.6	1.8	1.6	2.6
% with more than 4 visits	73.0	82.3	91.7	94.5	95.6	84.5
Visits in public hospital	81.6	56.0	46.0	25.7	7.6	51.6
Incidence H1	46.5	26.8	17.7	7.0	2.0	100.0
Incidence H2	42.1	27.3	20.1	8.2	2.3	100.0

2001

	1	2	3	4	5	Total
Children under 2	27.6	21.7	20.1	15.6	15.1	100.0
% visits	97.6	96.5	97.6	98.5	99.2	97.7
Month of first visit	3.6	2.4	2.1	2.0	1.7	2.5
% with more than 4 visits	69.6	83.0	87.8	91.0	94.8	83.1
Visits in public hospital	85.6	68.1	52.4	27.7	9.0	54.9
Incidence H1	43.3	26.8	19.3	8.0	2.5	100.0
Incidence H2	38.2	28.2	21.4	9.2	3.0	100.0

Source: authors' calculations based on the EDS and ECV.

Note: H1=incidence without taking the number of visits into account. H2=incidence taking the number of visits into account.

Table 3.7: Attended delivery by quintiles of the equivalent household income distribution

	1	2	3	4	5	Total
Children under 2	29.7	24.6	19.1	13.6	13.0	100.0
% attended delivery	98.3	99.4	99.9	100.0	100.0	99.3
% caesarean section	21.4	27.4	37.4	38.3	45.6	31.1
Delivery in public hospital	79.5	59.4	49.1	27.3	10.9	53.4
Incidence (H1)	44.5	27.7	17.9	7.1	2.7	100.0
Incidence (H2)	34.6	27.4	23.9	9.7	4.4	100.0

2001

	1	2	3	4	5	Total
Children under 2	27.6	21.7	20.1	15.6	15.1	100.0
% attended delivery	98.3	99.4	99.9	100.0	100.0	99.3
% caesarean section	28.2	33.3	38.4	39.8	47.9	36.0
Delivery in public hospital	83.4	67.5	49.5	33.0	11.3	55.0
Incidence (H1)	41.9	27.0	18.4	9.5	3.2	100.0
Incidence (H2)	35.8	27.1	21.3	11.4	4.5	100.0

Source: authors' calculations based on the EDS and ECV.

Note: the 2001 survey does not record the share of attended deliveries. We assume no changes between 1997 and 2001 to compute incidence results.

Note: H1=incidence without considering the differential costs of vaginal delivery and caesarean sections. H2=incidence results assuming that the cost of caesarean sections is twice the cost of normal births.

Table 3.8: Visits to a doctor by quintiles of the equivalent household income distribution

1997						
	1	2	3	4	5	Total
Children under 5	30.1	24.5	18.4	14.8	12.1	100.0
Reported sick	33.6	36.6	34.5	37.3	37.1	35.5
Saw a doctor if reported sick	90.7	90.8	92.4	94.4	95.4	92.2
Saw a doctor	30.5	33.3	31.9	35.2	35.4	32.7
Number visits	2.5	2.4	2.2	2.4	2.5	2.4
Publicly financed (1)	77.4	56.5	42.5	20.5	10.3	48.0
Publicly financed (2)	83.0	61.5	45.0	22.3	11.1	51.7
Incidence (H1)	47.0	29.2	14.4	6.6	2.9	100.0
Incidence (H2)	45.1	29.6	15.6	6.9	2.8	100.0

2001						
	1	2	3	4	5	Total
Children under 5	27.8	21.6	20.4	15.6	14.6	100.0
Reported sick	31.3	34.7	35.9	31.8	44.3	35.0
Saw a doctor if reported sick	81.3	79.0	84.7	85.0	90.7	83.8
Saw a doctor (3)	25.4	27.4	30.4	27.1	40.2	29.3
Saw a doctor (4)	46.7	51.2	54.9	57.3	65.9	53.8
Publicly financed	89.7	68.1	45.4	23.5	8.6	50.6
Incidence (H3)	42.8	27.7	18.7	7.7	3.1	100.0
Incidence (H2)	43.2	27.5	19.1	6.7	3.4	100.0

Source: authors' calculations based on the EDS and ECV.

Note: (1) includes total and partial financing. (2) includes all partial financing as total financing. Incidence H2 uses this assumption and ignores differences in number of visits. (3) calculated as the product of the two previous rows, (4) actual answers. Incidence H3 uses the actual number of visits while in H2 it is estimated as in (3).

Table 3.9: Medicines by quintiles of the equivalent household income distribution

1997						
	1	2	3	4	5	Total
Children under 5	30.1	24.5	18.4	14.8	12.1	100.0
Prescribed medicines	25.1	27.0	27.2	29.5	26.9	26.8
Obtained medicines	96.7	94.9	97.7	96.4	97.3	96.5
Publicly financed	49.7	29.2	21.4	10.1	3.1	27.2
Incidence (H1)	51.6	26.1	14.8	6.1	1.4	100.0

2001						
	1	2	3	4	5	Total
Children under 5	27.8	21.6	20.4	15.6	14.6	100.0
Prescribed medicines	54.6	55.0	59.6	56.8	63.5	57.6
Obtained medicines	94.5	94.5	97.0	96.4	99.4	96.3
Publicly financed	64.8	36.4	25.9	19.1	8.0	32.3
Incidence (H2)	49.4	21.7	16.3	8.7	3.9	100.0
Incidence (H1)	47.3	24.4	16.5	8.2	3.7	100.0

Source: authors' calculations based on the EDS and ECV.

H1: Ignores population that does not self-report being sick.

Table 3.10: Hospitalizations by quintiles of the equivalent household income distribution

1997						
	1	2	3	4	5	Total
Children under 5	30.1	24.5	18.4	14.8	12.1	100.0
In-hospital last year	8.8	10.6	6.9	7.1	7.0	8.4
Publicly financed	84.3	70.5	62.1	29.1	9.2	63.1
Incidence	42.5	35.0	15.1	5.9	1.5	100.0
2001						
	1	2	3	4	5	Total
Children under 5	27.8	21.6	20.4	15.6	14.6	100.0
In-hospital last year	9.6	6.8	10.9	9.1	4.5	8.4
Publicly financed	91.9	66.0	67.3	35.1	15.0	65.4
Incidence	44.5	17.5	27.1	9.1	1.8	100.0

Source: authors' calculations based on the EDS and ECV.

Table 3.11: Vaccines, 1997 by quintiles of the equivalent household income distribution

BCG						
	1	2	3	4	5	Total
Children under 5	30.1	24.5	18.4	14.8	12.1	100.0
Get vaccine? (1997)	97.5	98.0	99.2	99.2	95.7	98.0
Get vaccine? (2001)	99.1	98.4	99.2	97.4	99.6	98.8
Doses	1.0	1.1	1.1	1.1	1.0	1.1
Publicly financed	98.4	98.4	96.3	91.7	85.3	95.5
Incidence	30.6	25.5	18.9	14.5	10.5	100.0

Sabin						
	1	2	3	4	5	Total
Children under 5	30.1	24.5	18.4	14.8	12.1	100.0
Get vaccine? (1997)	93.9	94.6	94.9	97.1	96.4	95.0
Get vaccine? (2001)	93.9	96.1	95.1	95.6	97.7	95.4
Doses (1997)	3.3	3.3	3.4	3.4	3.3	3.3
Doses (2001)	3.4	3.4	3.4	3.4	3.4	3.4
Publicly financed	98.6	98.2	96.0	91.3	82.7	95.0
Incidence	30.6	24.9	18.8	15.0	10.8	100.0

DPT						
	1	2	3	4	5	Total
Children under 5	30.1	24.5	18.4	14.8	12.1	100.0
Get vaccine? (1997)	87.1	90.0	86.2	86.4	72.8	85.8
Get vaccine? (2001)	80.8	82.0	77.9	79.6	82.9	80.6
Doses (1997)	3.2	3.2	3.3	3.3	3.3	3.3
Doses (2001)	3.5	3.5	3.5	3.6	3.5	3.5
Publicly financed	66.7	46.1	33.3	17.6	10.4	36.3
Incidence	48.4	27.9	14.7	6.4	2.6	100.0

Measles						
	1	2	3	4	5	Total
Children under 5	30.1	24.5	18.4	14.8	12.1	100.0
Get vaccine?	71.8	73.2	74.1	78.6	65.4	72.8
Doses	1.1	1.1	1.1	1.1	1.1	1.1
Publicly financed	98.2	98.2	95.7	91.1	80.5	94.7
Incidence	31.6	25.7	18.7	15.0	9.0	100.0

Quadruple						
	1	2	3	4	5	Total
Children under 5	30.1	24.5	18.4	14.8	12.1	100.0
Get vaccine? (1997)	28.5	30.4	40.5	51.1	60.2	38.4
Get vaccine? (2001)	67.0	72.2	79.4	76.9	86.4	75.0
Doses	3.0	2.9	3.2	2.9	3.1	3.0
Publicly financed	97.4	93.4	89.8	79.5	74.2	87.4
Incidence	25.2	19.7	20.9	17.5	16.8	100.0

MMR						
	1	2	3	4	5	Total
Children under 5	30.1	24.5	18.4	14.8	12.1	100.0
Get vaccine? (1997)	15.0	19.2	26.2	29.4	43.4	23.6
Get vaccine? (2001)	72.3	68.9	71.3	72.0	79.0	72.3
Doses	1.2	1.3	1.2	1.3	1.2	1.2
Publicly financed	95.1	92.6	89.9	74.3	73.5	84.8
Incidence	21.0	22.3	21.2	16.9	18.6	100.0

Source: authors' calculations based on the EDS and ECV.

Note: Quadruple=DPT plus the vaccine against Haemophilus Influenzae type B.

Table 3.12: Milk for babies in hospitals by quintiles of the equivalent household income distribution

1997						
	1	2	3	4	5	Total
Children under 5	30.1	24.5	18.4	14.8	12.1	100.0
Get milk?	24.1	16.6	12.8	8.8	11.6	16.4
Publicly financed	91.8	80.4	74.7	28.2	4.7	74.2
Incidence	55.0	26.9	14.5	3.0	0.5	100.0

2001						
	1	2	3	4	5	Total
Children under 5	27.8	21.6	20.4	15.6	14.6	100.0
Get milk?	35.8	29.4	23.8	24.6	21.6	28.2
Publicly financed	92.0	82.4	54.2	31.6	6.2	65.5
Incidence	49.7	28.4	14.2	6.6	1.1	100.0

Source: authors' calculations based on the EDS and ECV.

Table 3.13: Food in kindergartens by quintiles of the equivalent household income distribution

1997						
	1	2	3	4	5	Total
Children under 5	30.1	24.5	18.4	14.8	12.1	100.0
Attend kindergarten?	10.3	13.1	21.1	27.0	38.9	18.9
Public kindergarten	70.8	55.2	56.5	33.5	20.6	44.8
Number of meals	1.6	1.3	1.2	1.3	1.0	1.1
Incidence	31.4	20.0	24.2	16.0	8.3	100.0

2001						
	1	2	3	4	5	Total
Children under 5	27.8	21.6	20.4	15.6	14.6	100.0
Attend kindergarten?	33.3	36.9	41.3	45.4	49.2	41.4
Public kindergarten	86.2	69.5	61.0	52.3	24.5	54.7
Number of meals	1.7	1.3	1.2	1.1	1.0	1.3
Incidence	41.7	21.0	19.2	12.6	5.5	100.0

Source: authors' calculations based on the EDS and ECV.

Table 3.14: Meals in local feeding centers by quintiles of the equivalent household income distribution

1997						
	1	2	3	4	5	Total
Children under 5	30.1	24.5	18.4	14.8	12.1	100.0
Get food in local centers?	2.6	1.9	0.6	0.1	0.3	1.4
Public local centers	35.3	8.9	14.5	50.3	0.0	24.2
Number of meals	1.1	1.6	1.0	1.0	0.0	1.1
Incidence	78.1	16.2	4.1	1.7	0.0	100.0

2001						
	1	2	3	4	5	Total
Children under 5	27.8	21.6	20.4	15.6	14.6	100.0
Get food in local centers?	20.2	12.2	10.4	9.0	1.5	12.0
Public local centers	25.9	14.9	2.5	1.6	-	16.0
Number of meals	1.3	1.2	1.0	1.0	-	1.2
Incidence	77.3	19.4	2.3	1.0	0.0	100.0

Source: authors' calculations based on the EDS and ECV.

Table 3.15: Concentration indices

Health	1997	2001	Nutrition	1997	2001
Antenatal care	-46.9 (-48.4, -45.8)	-42.9 (-44.5,-41.1)	Milk in hospitals	-54.4 (-55.7, -52.8)	-49.6 (-51.5,-47.9)
Attended delivery	-45.3 (-46.4, -43.8)	-41.4 (-43.0,-39.1)	Meals in kindergartens	-27.9 (-33.0, -19.9)	-19.5 (-23.3,-15.1)
Visits to a doctor	-44.0 (-44.9, -43.1)		Meals in local centers	-75.4 (-79.3, -70.8)	-72.4 (-74.5,-69.5)
Medicines	-51.0 (-53.5, -48.4)	-38.7 (-41.7,-36.6)			
Tests and analyses	-41.9 (-45.5, -38.1)				
Hospitalizations	-46.6 (-49.9, -44.3)	-37.2 (-43.3,-33.1)			
Treatment of chronic diseases	-44.2 (-47.1, -41.4)				
<i>Immunization</i>					
BCG	-22.3 (-23.5, -21.4)				
Sabin	-21.6 (-22.8, -20.2)				
DPT	-24.1 (-25.3, -23.0)				
Measles	-23.4 (-24.5, -21.9)				
Quadruple	-8.5 (-10.8, -5.2)				
MMR	-4.0 (-7.5, -1.2)				

Source: authors' calculations based on the EDS and ECV.

Note: 95 percent confidence intervals below concentration index estimates. Intervals computed by bootstrap with 200 replications.

Table 4.1: Aggregate Decomposition of Incidence Results Health Services, 1997 and 2001

Antenatal care

	1	2	3	4	5	Total
1. Potential users						
1997	29.7	24.6	19.1	13.6	13.0	100.0
2001	27.6	21.7	20.1	15.6	15.1	100.0
2. Participation						
1997	94.8	96.3	99.5	99.4	98.4	97.1
2001	97.6	96.5	97.6	98.5	99.2	97.7
3. Public provision						
1997	81.6	56.0	46.0	25.7	7.6	51.6
2001	85.6	68.1	52.4	27.7	9.0	54.9
4. Incidence						
1997	46.5	26.8	17.7	7.0	2.0	100.0
2001	43.3	26.8	19.3	8.0	2.5	100.0
5. Difference						
	-3.2	0.0	1.6	1.0	0.6	
6. Effects						
Potential users	-1.4	-2.1	1.7	1.4	0.4	
Participation	0.9	-0.2	-0.5	-0.1	0.0	
Public provision	-2.7	2.4	0.4	-0.2	0.1	

Attended deliveries

	1	2	3	4	5	Total
1. Potential users						
1997	29.7	24.6	19.1	13.6	13.0	100.0
2001	27.6	21.7	20.1	15.6	15.1	100.0
2. Participation						
1997	98.3	99.4	99.9	100.0	100.0	99.3
2001	98.3	99.4	99.9	100.0	100.0	99.3
3. Public provision						
1997	79.5	59.4	49.1	27.3	10.9	53.4
2001	83.4	67.5	49.5	33.0	11.3	55.0
4. Incidence						
1997	44.5	27.7	17.9	7.1	2.7	100.0
2001	41.9	27.0	18.4	9.5	3.2	100.0
5. Difference						
	-2.6	-0.8	0.5	2.4	0.4	
6. Effects						
Potential users	-1.5	-2.2	1.7	1.5	0.6	
Participation	0.0	0.0	0.0	0.0	0.0	
Public provision	-1.1	1.5	-1.2	1.0	-0.1	

(table continues on next page)

Medicines

	1	2	3	4	5	Total
1. Potential users						
1997	30.1	24.5	18.4	14.8	12.1	100.0
2001	27.8	21.6	20.4	15.6	14.6	100.0
2. Participation						
1997	24.2	25.6	26.6	28.5	26.2	25.9
2001	51.6	52.0	57.8	54.8	63.1	55.5
3. Public provision						
1997	49.7	29.2	21.4	10.1	3.1	27.2
2001	64.8	36.4	25.9	19.1	8.0	32.3
4. Incidence						
1997	51.6	26.1	14.8	6.1	1.4	100.0
2001	49.4	21.7	16.3	8.7	3.9	100.0
5. Difference						
	-2.2	-4.4	1.4	2.6	2.5	
6. Effects						
Potential users	-1.7	-1.9	2.3	0.7	0.6	
Participation	0.6	-0.9	0.6	-0.6	0.3	
Public provision	-1.1	-1.6	-1.5	2.6	1.6	

Hospitalizations

	1	2	3	4	5	Total
1. Potential users						
1997	30.1	24.5	18.4	14.8	12.1	100.0
2001	27.8	21.6	20.4	15.6	14.6	100.0
2. Participation						
1997	8.8	10.6	6.9	7.1	7.0	8.4
2001	9.6	6.8	10.9	9.1	4.5	8.4
3. Public provision						
1997	84.3	70.5	62.1	29.1	9.2	63.1
2001	91.9	66.0	67.3	35.1	15.0	65.4
4. Incidence						
1997	42.5	35.0	15.1	5.9	1.5	100.0
2001	44.5	17.5	27.1	9.1	1.8	100.0
5. Difference						
	2.0	-17.5	12.0	3.2	0.3	
6. Effects						
Potential users	-1.8	-2.2	3.0	0.6	0.4	
Participation	2.7	-12.2	8.7	1.6	-0.8	
Public provision	1.1	-3.2	0.4	0.9	0.7	

Source: authors' calculations based on the EDS and ECV.

Table 4.2: Aggregate decomposition of incidence results, Nutrition programs, 1997 and 2001

Milk in hospitals

	1	2	3	4	5	Total
1. Potential users						
1997	30.1	24.5	18.4	14.8	12.1	100.0
2001	27.8	21.6	20.4	15.6	14.6	100.0
2. Participation						
1997	24.1	16.6	12.8	8.8	11.6	16.4
2001	35.8	29.4	23.8	24.6	21.6	28.2
3. Public provision						
1997	91.8	80.4	74.7	28.2	4.7	74.2
2001	92.0	82.4	54.2	31.6	6.2	65.5
4. Incidence						
1997	55.0	26.9	14.5	3.0	0.5	100.0
2001	49.7	28.4	14.2	6.6	1.1	100.0
5. Difference						
	-5.3	1.5	-0.2	3.5	0.5	
6. Effects						
Potential users	-1.1	-1.9	2.3	0.5	0.2	
Participation	-5.9	1.8	1.6	2.4	0.1	
Public provision	1.7	1.6	-4.2	0.7	0.2	

Meals in local centers

	1	2	3	4	5	Total
1. Potential users						
1997	30.1	24.5	18.4	14.8	12.1	100.0
2001	27.8	21.6	20.4	15.6	14.6	100.0
2. Participation						
1997	2.6	1.9	0.6	0.1	0.3	1.4
2001	20.2	12.2	10.4	9.0	1.5	12.0
3. Public provision						
1997	35.3	8.9	14.5	50.3	0.0	24.2
2001	25.9	14.9	2.5	1.6	0.0	16.0
4. Incidence						
1997	81.1	12.1	4.8	2.0	0.0	100.0
2001	75.6	20.4	2.8	1.2	0.0	100.0
5. Difference						
	-5.5	8.3	-2.0	-0.8	0.0	
6. Effects						
Potential users	-0.5	-0.8	0.7	0.6	0.0	
Participation	-8.6	-3.9	2.5	9.9	0.0	
Public provision	3.2	13.0	-5.2	-10.9	0.0	

Source: authors' calculations based on the EDS and ECV.

Table 4.3: Aggregate regional decomposition of incidence results, 1997

Deliveries

	1	2	3	4	5	Total
<i>1. Potential users</i>						
North	44.1	26.4	14.6	10.0	4.8	100.0
Center	32.1	23.2	19.7	13.7	11.3	100.0
South	27.5	20.3	22.7	15.6	13.9	100.0
GBA	19.5	25.4	20.6	15.2	19.3	100.0
Argentina	29.7	24.6	19.1	13.6	13.0	100.0
<i>2. Participation</i>						
North	94.5	98.0	98.0	99.7	97.9	96.6
Center	95.7	99.2	100.0	99.5	99.9	98.3
South	98.2	99.0	98.3	100.0	99.6	98.9
GBA	93.4	92.6	100.0	99.0	97.6	96.1
Argentina	94.8	96.3	99.5	99.4	98.4	97.1
<i>3. Public provision</i>						
North	83.2	58.4	39.3	15.2	7.1	59.3
Center	77.0	42.7	40.2	16.6	0.8	45.0
South	81.5	65.3	52.8	40.7	23.0	57.3
GBA	86.2	65.5	52.8	35.4	9.2	52.2
Argentina	81.6	56.0	46.0	25.7	7.5	51.6
<i>4. Incidence</i>						
North	60.6	26.4	9.8	2.7	0.6	100.0
Center	54.1	22.4	18.1	5.2	0.2	100.0
South	39.0	23.3	20.9	11.2	5.6	100.0
GBA	32.0	31.4	22.2	10.8	3.5	100.0
Argentina	46.5	26.8	17.7	7.0	1.9	100.0
<i>Comparison North vs. GBA</i>						
	1	2	3	4	5	Total
<i>Actual incidence</i>						
GBA	32.0	31.4	22.2	10.8	3.5	100.0
North	60.6	26.4	9.8	2.7	0.6	100.0
<i>Difference</i>	-28.5	5.0	12.4	8.2	2.9	
<i>Effects</i>						
Population	-23.8	7.3	9.7	4.1	2.7	
Participation	0.4	-1.1	0.6	0.1	0.0	
Public provision	-5.0	-1.2	2.1	4.0	0.2	

(Table continues on next page)

Visits to a doctor

	1	2	3	4	5	Total
<i>1. Potential users</i>						
North	44.6	26.3	13.7	10.6	4.8	100.0
Center	31.5	23.1	19.8	14.6	11.1	100.0
South	28.1	18.5	22.7	16.9	13.8	100.0
GBA	20.6	25.7	19.1	17.2	17.4	100.0
Argentina	30.1	24.5	18.4	14.8	12.2	100.0
<i>2. Participation</i>						
North	27.6	27.2	34.5	44.6	33.2	30.5
Center	31.9	36.7	37.0	32.8	33.2	34.3
South	23.9	27.7	29.4	28.1	29.5	27.4
GBA	33.4	34.5	26.2	34.9	37.3	33.3
Argentina	30.5	33.3	31.9	35.2	35.2	32.7
<i>3. Public provision</i>						
North	76.7	57.5	32.6	12.8	1.4	51.6
Center	75.1	45.7	35.0	12.8	4.2	43.0
South	80.0	65.9	58.0	16.5	9.0	50.4
GBA	81.0	65.1	54.9	30.5	15.0	50.8
Argentina	77.4	56.5	42.4	20.5	10.3	48.0
<i>4. Incidence</i>						
North	60.0	26.2	9.8	3.9	0.1	100.0
Center	51.2	26.3	17.4	4.1	1.0	100.0
South	39.0	24.6	28.1	5.7	2.7	100.0
GBA	33.0	34.1	16.2	10.9	5.8	100.0
Argentina	45.2	29.3	15.8	6.8	2.8	100.0
<i>Comparison North vs. GBA</i>						
	1	2	3	4	5	Total
<i>Actual incidence</i>						
GBA	33.0	34.1	16.2	10.9	5.8	100.0
North	60.0	26.2	9.8	3.9	0.1	100.0
Difference	-26.9	7.9	6.4	7.0	5.7	
<i>Effects</i>						
Population	-22.8	7.4	7.7	5.2	2.5	
Participation	3.5	3.9	-5.0	-2.5	0.1	
Public provision	-7.5	-3.5	3.6	4.4	3.0	

Source: authors' calculations based on the EDS.

Table 4.4: Aggregate regional decomposition of incidence results, North compared GBA, Health services, 2001

<i>Antenatal care</i>						
	1	2	3	4	5	Total
<i>1. Actual incidence</i>						
GBA	31.8	26.0	27.0	10.8	4.4	100.0
North	60.9	25.4	8.9	4.3	0.5	100.0
<i>2. Difference</i>						
	-29.1	0.6	18.0	6.5	4.0	
<i>3. Effects</i>						
Population	-19.5	-0.9	11.3	6.6	2.5	
Participation	1.1	-1.4	-0.4	0.5	0.1	
Public provision	-10.8	2.9	7.1	-0.6	1.3	
<i>Deliveries</i>						
	1	2	3	4	5	Total
<i>1. Actual incidence</i>						
GBA	42.0	21.2	25.5	8.0	3.2	100.0
North	63.8	25.4	7.0	3.4	0.3	100.0
<i>2. Difference</i>						
	-21.8	-4.2	18.5	4.6	2.9	
<i>3. Effects</i>						
Population	-19.2	1.0	10.9	5.4	1.8	
Participation	0.3	-0.9	0.6	0.1	0.0	
Public provision	-3.0	-4.3	7.0	-0.8	1.0	
<i>Visits to doctors</i>						
	1	2	3	4	5	Total
<i>1. Actual incidence</i>						
GBA	33.5	30.0	20.4	10.4	5.7	100.0
North	57.8	25.8	10.7	4.5	1.2	100.0
<i>2. Difference</i>						
	-24.4	4.2	9.8	5.9	4.5	
<i>3. Effects</i>						
Population	-22.7	1.8	9.8	6.8	4.3	
Participation	0.8	3.9	-3.7	-1.1	0.2	
Public provision	-2.4	-1.4	3.8	0.2	-0.1	
<i>Medicines</i>						
	1	2	3	4	5	Total
<i>1. Actual incidence</i>						
GBA	37.0	13.8	18.5	22.9	7.9	100.0
North	64.2	25.0	5.2	4.7	0.9	100.0
<i>2. Difference</i>						
	-27.2	-11.2	13.3	18.2	7.0	
<i>3. Effects</i>						
Population	-24.8	2.0	6.9	11.3	4.6	
Participation	-8.1	5.0	2.0	0.0	1.2	
Public provision	6.0	-18.4	4.3	7.0	1.0	
<i>Hospitalizations</i>						
	1	2	3	4	5	Total
<i>1. Actual incidence</i>						
GBA	38.2	8.5	40.8	12.4	0.0	100.0
North	65.9	21.6	6.5	5.4	0.6	100.0
<i>2. Difference</i>						
	-27.7	-13.1	34.3	7.1	-0.6	
<i>3. Effects</i>						
Population	-24.9	1.8	13.0	9.4	0.7	
Participation	-1.8	-5.7	5.5	2.5	-0.6	
Public provision	-1.0	-9.4	15.8	-4.3	-1.1	

Source: authors' calculations based on the ECV.

Table 4.5: Aggregate regional decomposition of incidence results, North compared. GBA, Nutrition programs, 2001

<i>Milk</i>						
	1	2	3	4	5	Total
<i>1. Actual incidence</i>						
GBA	39.4	30.2	19.0	9.3	2.2	100.0
North	61.8	24.0	9.6	3.9	0.7	100.0
<i>2. Difference</i>						
	-22.4	6.2	9.4	5.4	1.4	
<i>3. Effects</i>						
Population	-22.1	3.4	9.7	6.7	2.3	
Participation	2.7	-3.5	-1.7	2.3	0.2	
Public provision	-3.1	6.2	1.3	-3.4	-1.0	
<i>Food in kindergartens</i>						
	1	2	3	4	5	Total
<i>1. Actual incidence</i>						
GBA	14.9	21.7	23.7	20.2	19.5	100.0
North	39.6	27.2	15.4	12.7	5.1	100.0
<i>2. Difference</i>						
	-24.6	-5.5	8.3	7.5	14.4	
<i>3. Effects</i>						
Population	-21.2	-6.5	5.5	9.9	12.3	
Participation	2.7	8.5	-2.1	-4.2	-4.9	
Public provision	-5.7	-7.2	4.5	1.2	7.1	

Source: authors' calculations based on the ECV.

Table 4.6: Microeconomic decompositions (Microsimulations) Change in the absolute value of the concentration index 1997-2001

	Antenatal care (i)	Attended deliveries (ii)	Medicines (iii)	Hospitalizations (iv)
Difference	-4.8	-5.2	-11.6	-7.2
Participation	0.4	0.0	-0.8	2.1
Public provision	-1.7	0.6	-3.6	-5.7
Population	-3.5	-5.8	-7.2	-3.6

Source: authors' calculations based on the ECV.

References

- Bourguignon, F., Lustig, N. and Ferreira, F. (eds.) (2003). *The Microeconomics of Income Distribution Dynamics*. Forthcoming.
- Bourguignon, F., Pereira da Silva, L. and Stern, N. (2002). Evaluating the poverty impact of economic policies: some analytical challenges. Washington, D.C.: World Bank. Processed
- Carneiro, P., Hansen, K., and Heckman, J. (2002). Removing the veil of ignorance in assessing the distributional impacts of social policies. Working paper. University of Chicago. Processed.
- CEDLAS (2003). Estadísticas distributivas en la Argentina. La Plata: Universidad Nacional de La Plata, Centro de Estudios Distributivos, Laborales y Sociales, Departamento de Economía.
- Deaton, A. and Zaidi, S. (2002). Guidelines for constructing consumption aggregates for welfare analysis. LSMS Working Paper 135 Washington. The World Bank
- DGSC (2001). *Caracterización y Evolución del Gasto Público Social*. Dirección de Gastos Sociales Consolidados. Secretaría de Política Económica, Ministerio de Economía. Buenos Aires:Ministerio de Economía, Secretaría de Política Económica, Dirección de Gastos Sociales Consolidados.
- DGSC (2002). El impacto distributivo de la política social en la Argentina. Dirección de Gastos Sociales Consolidados. Secretaría de Política Económica, Ministerio de Economía.
- Flood, M., Gasparini, L. and Harriague, M. (1993). Impacto distributivo del gasto público social: Argentina, 1991. *Anales de la XXVIII Reunión de la Asociación Argentina de Economía Política*: Tucumán: Asociación Argentina de Economía Política
- Gasparini, L. (director) (2000). El impacto distributivo del gasto público en sectores sociales en la Provincia de Buenos Aires. Un análisis en base a la Encuesta de Desarrollo Social. *Cuadernos de Economía* 50: 1–52.
- Gasparini, L. (2003). Argentina's distributional failure. Washington, D.C.: Inter-American Development Bank. Processed.
- Harriague, M. and Gasparini, L. (1999). El impacto redistributivo del gasto público en los sectores sociales. *Anales de la XXXIV Reunión de la Asociación Argentina de Economía Política*, Rosario: Asociación Argentina de Economía Política.
- Lambert, P. (1993). *The distribution and redistribution of income*. Manchester University Press.

Marchionni, M. and Gasparini, L. (2003). Tracing out the effects of demographic changes on the income distribution. The case of Greater Buenos Aires, 1980-2000. Working paper. La Plata: Universidad Nacional de La Plata.

Mills, J. and Zandvakili, S. (1997). Statistical inference via bootstrapping for measures of inequality. *Journal of Applied Econometrics* 12, 133-150.

Sosa Escudero, W. and Gasparini, L. (2000). A note on the statistical significance of changes in inequality. *Económica* XLVI (1): 111–22.

van de Walle, D. and Nead, K. (1995). *Public Spending and The Poor: Theory and Evidence*. Baltimore, Md., and Washington, D.C.: Johns Hopkins University Press for the World Bank.

van de Walle, D. (1998). Assessing the welfare impacts of public spending. *World Development* 26 (3): 365–79.



HEALTH, NUTRITION,
AND POPULATION



HUMAN DEVELOPMENT NETWORK

THE WORLD BANK

About this series...

This series is produced by the Health, Nutrition, and Population Family (HNP) of the World Bank's Human Development Network. The papers in this series aim to provide a vehicle for publishing preliminary and unpolished results on HNP topics to encourage discussion and debate. The findings, interpretations, and conclusions expressed in this paper are entirely those of the author(s) and should not be attributed in any manner to the World Bank, to its affiliated organizations or to members of its Board of Executive Directors or the countries they represent. Citation and the use of material presented in this series should take into account this provisional character. For free copies of papers in this series please contact the individual authors whose name appears on the paper.

Enquiries about the series and submissions should be made directly to the Managing Editor Joy de Beyer (jdebeyer@worldbank.org) or HNP Advisory Service (healthpop@worldbank.org, tel 202 473-2256, fax 202 522-3234). For more information, see also www.worldbank.org/hnppublications.



THE WORLD BANK

1818 H Street, NW
Washington, DC USA 20433
Telephone: 202 477 1234
Facsimile: 202 477 6391
Internet: www.worldbank.org
E-mail: feedback@worldbank.org