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Brazil: Are Health and Nutrition Programs Reaching the Neediest?

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Social inequalities represent a major problem in Latin America. As pointed out in *Human Development Report 2003* (UNDP 2003), of the 12 countries that rank highest in income concentration, 6 are in Latin America. (The other 6 are in Africa.) The Latin American countries with the greatest income inequality are Brazil, Nicaragua, Honduras, Paraguay, Chile, and Colombia, in descending order of their Gini coefficients, which range from 60.7 to 57.1.

Health inequalities are recognized by the Pan American Health Organization as “the leading health problem” in the Americas (PAHO 1998). Reducing such inequalities is not a simple task, however. Knowledge about the impact of health interventions on the inequalities is imperfect, and some interventions may actually increase inequalities instead of reducing them (Victora and others 2000).

A common strategy is to target health programs at the poorest people. Nutrition supplementation projects—milk supplements, family ration distribution, school meals in poor neighborhoods, and so on—are classic examples. In Brazil such projects were popular until about 10 years ago, but, beset by difficulties in the management and distribution of food, they have given way to programs that offer money allowances to the poorest families on condition that the families keep their children in school and bring them to health facilities regularly.

Meanwhile, health service strategy has been heading away from targeting specific groups and toward universal coverage since the creation of the Sistema Único de Saúde (SUS—Unified Health System) by Brazil’s 1988

constitution. The SUS offers free and comprehensive health care to anyone, regardless of contribution or affiliation. In a country with huge social disparities, the SUS has been an important mechanism for equalizing access to services, as can be seen, for example, by comparing health services with dental services (Barros and Bertoldi 2002), which are not widely offered within the SUS.

Programs Studied

In this study we evaluate to what extent four current Brazilian health programs, some universal and some targeted, cover the neediest. These programs, selected for their importance, national coverage, and availability of data, are the national immunization program, the national antenatal care program, the Family Health Program (Programa Saúde da Família, PSF), and the Pastorate of the Child. The first two are universal, intended for the whole population. The third is also universal, but it was designed to start with the poorest people and expand gradually. Unlike the first three programs, which are operated by the government, the Pastorate of the Child is run by a nongovernmental organization (NGO) linked to the Catholic Church. The Pastorate of the Child is the only strictly targeted initiative of the four; it is directed at very poor families or at families with malnourished children.

National Immunization Program

The National Immunization Program was created in 1973 with the objective of eradicating vaccine-preventable diseases. By 1988 vaccine coverage for illnesses included in the official list was slightly above 60 percent. Efforts were made to improve the program, and by 1991 coverage was officially reported to be 90 percent or more for measles, for diphtheria, pertussis, and tetanus (DPT), and for tuberculosis (bacille Calmette-Guérin vaccine, BCG), with polio lagging, at about 76 percent (de Miranda and others 1995). From 1994 to 2002, the total number of doses administered rose from nearly 31 million to more than 162 million, and coverage of individual vaccines was high—more than 95 percent for all vaccines in the official calendar.¹

Since 2000, in addition to polio, measles, BCG, and DPT, vaccines against *Haemophilus influenzae* type B, hepatitis B, mumps, and rubella have been made available through the public health service. The vaccines are freely available in public health centers and polyclinics for routine vaccination of

children and the elderly. National immunization campaigns are organized regularly, with vaccination stations scattered in health facilities, supermarkets, shopping malls, and community centers.

Despite this effort, full immunization coverage has not yet been achieved. Using data from the Brazil Demographic and Health Survey (DHS) of 1996, we have shown that only 75 percent of children between 12 and 23 months old had received all doses of the vaccines prescribed by the basic immunization calendar—that is, one BCG, three DPT, and three polio (authors' unpublished data). Very similar results were found in a study carried out in the city of Porto Alegre (de Miranda and others 1995). In Ceará, a state where strong efforts were directed toward child health, coverage for all the vaccines prescribed for the first year was 89 percent in 1994 (Victora and others 2000).

National Antenatal Care Program

In 1984 Brazil's Ministry of Health launched the Program of Integral Assistance to Women's Health (PAISM). Antenatal care was already provided through the primary health care system, but it was felt that it had to be strengthened. With the creation of the Sistema Único de Saúde, the conditions were laid for the antenatal care program to be offered widely. Local health authorities are responsible for the program, and services are delivered at primary health care facilities. The basic guidelines for the local programs recommend a first antenatal visit in the first three months of pregnancy and additional visits every four weeks thereafter for uncomplicated pregnancies. The visits should include, at minimum, a check for edema and measurement of blood pressure, uterine height, and fetal heart frequency. A few laboratory tests are also routine, plus immunization against tetanus, if necessary. Antenatal care coverage is high: more than 90 percent of women have at least one checkup, and the average is more than six consultations (Monteiro, França Júnior, and Conde 2000; Coutinho and others 2002; Trevisan and others 2002). The same studies, however, also show variation in the prevalence of adequate care, defined as a first consultation in the first 20 weeks of pregnancy and at least six consultations overall. In Juiz de Fora (Minas Gerais State), 26.7 percent of the women had adequate antenatal care (Coutinho and others 2002); in Caxias do Sul (Rio Grande do Sul State), 35.2 percent (Trevisan and others 2002); and in Pelotas (Rio Grande do Sul State), 37 percent (Silveira, Santos, and Costa 2001). In São Paulo City, by contrast, the figure was 69 percent (Monteiro, França Júnior, and Conde 2000).

Family Health Program (PSF)

Since the creation of the Family Health Program by the Ministry of Health in 1994, Brazil's primary health system has been undergoing a reform designed to bring it closer to households. To this end, there has been a shift from the traditional static health center—a primary health facility typically staffed by a pediatrician, an obstetrician, and an adult clinician, plus nurses and secretarial personnel—to family health teams responsible for outreach as well as passive service. This shift has been gaining momentum in recent years.

The PSF was created to reorganize primary health care by instituting teams made up of a general practitioner, a registered nurse, a nurse assistant, and four community health workers. Each team is in charge of up to 1,000 families, or about 4,500 individuals. The rationale behind the PSF is to offer health care that assigns priority to preventing disease and promoting health, in addition to providing curative care. Services are delivered at health facilities or, whenever necessary, through home visits. The composition of the PSF team was designed to encourage bonding with the people covered in order to foster a sense of mutual responsibility toward health.²

In most municipalities the plan for implementation of the program is to start in the poorest areas and areas not yet covered by primary health care. The Ministry of Health offers incentives to municipalities that attain coverage of more than 70 percent of the population, paying approximately \$20,000 per team per year, compared with \$10,000 for municipalities with coverage below 5 percent. If this policy is maintained, the PSF should replace the traditional health centers in a few years. As of October 2003, according to data from the national program office, the Northeast Region had the highest coverage, 49.8 percent. Coverage for the Central-West, South, North, and Southeast Regions was 38.9, 33.7, 31.0, and 26.0 percent, respectively.

Pastorate of the Child

The Pastorate of the Child (Pastoral da Criança) was launched in 1983 as an initiative of the Catholic Church. The Pastorate's purpose is to work directly with families in their homes to promote such cultural values as fraternity, social coresponsibility, and ecumenism; to reduce malnutrition, infant mortality, and social marginalization; and to foster integrated child development.

At the core of the program are the volunteer leaders, mainly women, who visit the enrolled families to provide information on suitable infant-

feeding strategies, especially breastfeeding, and to monitor growth by measuring and weighing all children monthly. The leaders also teach families about immunization and use of oral rehydration therapy. As they gain experience, the volunteers also help with respiratory infections and the prevention of domestic accidents. The work done is always voluntary, and most leaders devote one day a month to it.

Pastorate leaders are recruited from the local community to work with up to 15 neighborhood children. The leaders are trained for their main duties, described in the Pastorate Leader's Guide. Because an information system was developed to monitor and evaluate the activities promoted by the Pastorate, not only can the tasks performed be quantified, but a health profile of the communities assisted can also be drawn.

According to data from the Pastorate management (www.pastoraldacrianca.org.br), in 2000, 100 percent of Brazil's 27 states and 61 percent of all parishes were served by the Pastorate. In all, 3,555 municipalities are covered by 133,134 leaders, and, on average, 1.6 million children under age six are seen by the program each month (roughly equivalent to 10 percent of the Brazilian population). The Pastorate also runs literacy projects and income generation programs for adults and broadcasts a weekly radio program over 1,343 stations.

Available data on the program are limited, but they suggest a less optimistic situation. In Criciúma (Santa Catarina State), less than 5 percent of the children were covered by the Pastorate, and dropouts were frequent (Neumann and others 1999).

Research Questions

Our main hypothesis is that coverage of universal programs such as immunization and antenatal care is high overall but is lower among the poorest, especially when the quality of service is taken into account. We also hypothesize that although targeted programs assist mostly the poorest, a fair degree of leakage (that is, coverage of nonpoor persons) occurs and that coverage among the extremely poor is limited.

Using existing information from surveys, as well as new data collected from PSF-covered areas in Porto Alegre (Rio Grande do Sul State), we assess the performance of the four health programs described above with respect to their coverage of the poor and their focus (targeting). Where suitable data (mainly from the Porto Alegre PSF study) are available, the reasons for the observed results on coverage and focus are explored.

Methods

The analyses are intended to describe how the benefits of the programs assessed were distributed across the population, classified in terms of wealth. One indicator used was focus—that is, the percentage of the benefit going to the poor, with benefit in this case represented by program coverage (Habicht, Mason, and Tabatabai 1984). To give a more complete picture of program performance, the full distribution of economic status for the population served by the programs studied is presented in the results.

Coverage, defined as the proportion of the population assisted by the program, was also calculated, both for the whole population and by economic stratum. The coverage indicators can be directly estimated from the data sets based on cross-sectional surveys that are representative of the whole population.

Inequalities in coverage can be assessed by ratios of differences between the poorest and the richest, typically comparing the 20 percent poorest with the 20 percent richest. Inequalities were also evaluated by measures of coverage concentration derived for each program. These concentration measures have the advantage of including the whole distribution under study instead of only the extreme groups, as in ratio and difference measures (Kakwani, Wagstaff, and van Doorslaer 1997). The concentration index, a Gini-like measure, is defined as twice the area of a Lorenz-type concentration curve. This curve is obtained by plotting the cumulative distribution of an outcome against the respective percentile of the population ordered by income (or other socioeconomic indicator).³

Economic classification is a critical issue in equality analysis. The approach used here was based on information for household assets, which was available from each study. Using this information, asset index scores were developed for each household. The technique used in constructing the index scores was principal component analysis, as proposed by Filmer and Pritchett (2001) and applied in several other studies (for example, Gwatkin and others 2000). After the asset score was created, the households were divided into quintiles. The whole process took into account the sampling strategy of each study and thus included weighting, stratification, and correction for clustering, as necessary. The results are expressed as quintiles of households. Because there are more people per household in some quintiles (especially the poorer ones) than in others, the number of individuals can vary from quintile to quintile of households. Our focus population, the poor, was defined as the households in the study population in the first (poorest) quintile or the individuals living in such households.

A criterion for assessing adequacy of the antenatal program was needed, and the Kessner criterion (modified by Takeda) for adequate antenatal care was used. Care was classified as adequate if the mother attended at least six consultations, starting in the first 20 weeks of pregnancy (Silveira, Santos, and Costa 2001). This criterion has been tested against other approaches and performed better (Delgado-Rodriguez and others 1997).

For immunization, a simple criterion already used in other studies (de Miranda and others 1995) was applied. Children age one year or more were considered fully immunized if they had received at least one dose of BCG and three doses of the polio and DPT vaccines.

All the analyses were performed with Stata Release 8.0 (StataCorp. 2003).

Data Sources

Data from four cross-sectional studies were used. Of these, the Demographic and Health Survey (DHS) was a large national survey; the other three, which were carried out by the authors, dealt with specific population groups in selected Brazilian cities and states.

Demographic and Health Survey, 1996

DHS surveys, undertaken in many countries using a common approach, are designed to collect information on fertility and family planning, maternal and child health, child survival, and other reproductive health topics. The DHS program includes modules on the household, on women of reproductive age, and on the children born to these women. Health status outcomes and use of health services for specific conditions include occurrence of some diseases of infancy and childhood, mortality under age five (including neonatal, postneonatal, and infant mortality), nutritional status of children and mothers, access to antenatal and delivery care, breastfeeding, family planning, and fertility. These surveys do not include modules on household consumption and income.

The DHS survey conducted in Brazil in 1996 (Pesquisa Nacional sobre Demografia e Saúde, PNDS) included 13,283 households, a sample designed to be representative of the whole country except the rural area of the North Region. The results can be disaggregated by state and for some metropolitan areas such as São Paulo, Rio de Janeiro, and Porto Alegre. The survey was carried out by the Sociedade Civil Bem-Estar Familiar no Brasil (BEMFAM) and was supported by the United Nations Population Fund

(UNFPA), the United Nations Children's Fund (UNICEF), Brazil's Ministry of Health, the Brazilian Institute of Geography and Statistics (Instituto Brasileiro de Geografia e Estatística, IBGE), and the U.S. Agency for International Development (USAID).⁴ Our study uses DHS data in assessing the antenatal and immunization programs.

Criciúma Study, 1996

The study of Criciúma, Santa Catarina State, southern Brazil, was carried out by N. A. Neumann and colleagues in 1996 and was funded by the Pastorate of the Child. The sample included 2,208 children under age three who were selected using a stratified two-stage sampling scheme. Extensive information on family characteristics, including family income and ownership of a variety of goods, and on utilization of health services were collected from the mothers. In particular, coverage by the Pastorate and characteristics of the assistance being provided were carefully recorded (Neumann and others 1999). This data set was used to assess the Pastorate of the Child, as well as the government antenatal care program.

Sergipe Study, 2000

The study carried out in 2000 in the state of Sergipe, northeastern Brazil, by J. A. Cesar and colleagues was funded by the World Health Organization's Department of Child and Adolescent Health. It was based on a two-stage sample designed to be representative of households in the state with at least one child under five and included 1,785 children from urban and rural areas. Extensive information on family characteristics, including family income and ownership of a variety of assets, and on utilization of health services was collected from the mothers. In addition, qualitative data on the PSF and other health-related initiatives were gathered from mothers, health workers, nurses, and doctors through focus group discussions, in-depth interviews, and interviews with experts. The study provided data for assessing the PSF and the immunization and antenatal care programs.

Porto Alegre PSF Study, 2003

A cross-sectional study funded by the World Bank under the Reaching the Poor Program was carried out in Porto Alegre, the capital of Rio Grande do Sul State, by A. J. D. Barros between July and September 2003. Porto Alegre, with approximately 1.3 million people according to the 2000 census, is one

of the richest cities in Brazil, yet it is encircled by poor neighborhoods where part of the population is deeply deprived.

At the time of the study, 56 PSF units had been operating in the city for more than six months. The population covered by these units (that is, living in their catchment areas) was estimated at 143,000. A sample of 900 households was selected through two-stage cluster sampling. The primary units were 45 areas covered by PSF units, and the secondary units were the households, 20 of which were selected in each primary sampling unit. Through standardized interviews, data concerning household assets and infrastructure were collected, together with information on access to and utilization of health services, health expenditure and financing, and satisfaction with health services. All individuals living in the selected households were included in the study. The economic classification of the sample was done using the wealth index (*indicador econômico nacional*, IEN) proposed by Barros and Victora (2005), in which an asset score was developed through principal component analysis using a set of 13 variables from the 2000 Brazilian Census. The proposed asset score was calculated for each household in our sample. Instead of dividing the households into quintiles based on the study sample, they were classified according to the distribution of the wealth index for the whole city of Porto Alegre (referred to as IEN/POA), using the cutoff points presented in the Barros and Victora paper. This strategy allowed the sample, which included only households in areas covered by the PSF, to be classified into wealth quintiles relative to the population of the whole city. Thus, households belonging to the first reference quintile are among the 20 percent poorest in the entire city, not in the sample alone.

Findings about Distribution

This section describes how benefits from the four programs assessed are distributed in the population, with an emphasis on population coverage and focus on the poor. All the results presented are original, the product of analyses performed on the data sets described above.

National Immunization Program

Both the DHS and the Sergipe study indicated that about 20 percent of children age one to four years had not received all doses of the basic immunization scheme (one BCG, three DPT, and three polio). Table 13.1 shows a significant difference across wealth quintiles only for the DHS, where incomplete immunization is more than twice as frequent among the poorest

Table 13.1. Prevalence and Inequality of Incomplete Immunization among Children Age 12 Months and Older, by Wealth Quintile, Brazil DHS (1996) and Sergipe Study (2000)
(Percent except as indicated)

Wealth quintile	DHS (N = 3,827)	Sergipe (N = 1,436)
1 (poorest)	33.4	28.0
2	16.4	20.4
3	14.2	20.6
4	11.9	15.5
5 (least poor)	15.3	17.8
Entire sample	19.3	20.5
<i>p</i>	<0.001	0.176
Concentration index	-0.218	-0.108

Source: Brazil DHS 1996; data for Sergipe from study by Cesar and others.

Note: DHS, Demographic and Health Survey.

than among the least poor. The concentration index is -0.218 , indicating the concentration of incomplete immunization in the poor population. Data from Sergipe also point to a higher prevalence of incomplete immunization among the poorest, although the disparity is not significant, and yield a concentration index of -0.108 . The lower inequality in the Sergipe study than in the DHS is linked to the much wider national coverage of the DHS, which includes both the richest and the poorest regions of the country.

Turning to the focus of the program, in the DHS 21 percent of the fully immunized children were from the poorest quintile of households, which included 26 percent of all children. In Sergipe 17.8 percent of fully immunized children were from the poorest group, which accounted for 19.7 percent of all children. Given that the immunization program is universal, high focus was not expected. Nevertheless, coverage is clearly lower among the poorest, contrary to the idea of program universality.

Antenatal Care

The availability of data about antenatal care in three of the studies we drew on is an indication of the program's importance in Brazil. It is certainly one of the most traditional programs delivered through the primary care network. The quality criterion used, proposed by Kessner, is widely accepted

Table 13.2. Proportion of Mothers Receiving Inadequate Antenatal Care (Kessner Criterion) by Wealth Quintile, Three Studies, Brazil (Percent except as indicated)

Wealth quintile	DHS (1996)	Sergipe (2000)	Criciúma (1996)		Percentage of children in Criciúma sample using SUS
			Total sample	SUS users	
1 (poorest)	70.0	49.1	37.8	38.7	93.8
2	43.5	48.3	27.9	29.2	89.4
3	27.4	35.3	24.6	29.3	77.4
4	19.1	30.2	21.0	26.5	65.1
5 (least poor)	13.6	18.7	15.9	24.6	37.1
Entire sample	38.4	35.7	25.9	30.7	74.3
<i>P</i>	<0.001	<0.001	0.003	0.166	<0.001
Concentration index	-0.317	-0.183	-0.162	-0.009	

Source: Brazil DHS 1996; data for Sergipe from study by Cesar and others; data for Criciúma from Neumann and others (1999).

Note: DHS, Demographic and Health Survey; SUS, Sistema Único de Saúde.

and, as mentioned, performs better than other criteria (Delgado-Rodriguez and others 1997).

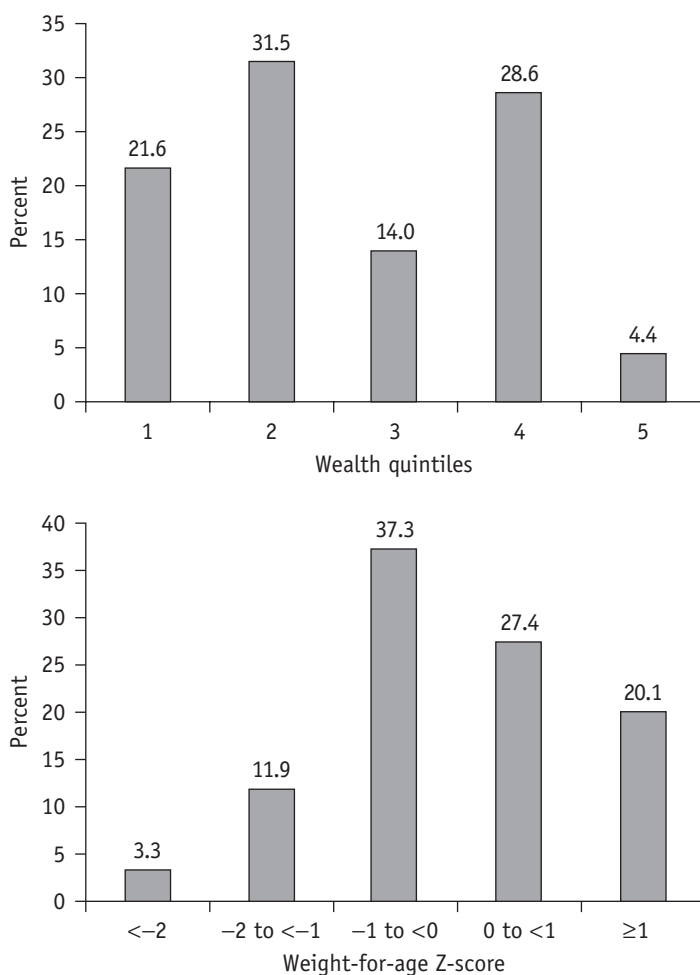
In the three studies, the overall proportion of mothers receiving inadequate antenatal care ranged from 25.9 percent in Criciúma to 38.4 percent in the whole country (table 13.2). In Criciúma it was possible to isolate the children who used the SUS as their primary source of health care, and in this group the prevalence of inadequate antenatal care was 30.7 percent.

Inequality across wealth quintiles was again evident from the data. As expected, the DHS, with its much wider area, showed the highest concentration index for inadequate care, -0.317. Inadequate coverage was about five times higher in the poorest quintile than in the least poor. The Sergipe study yielded the second-highest concentration index, -0.183, close to the -0.162 for Criciúma. The latter, located in a wealthy part of the country, presented the lowest prevalence of inadequate care, but the degree of inequality was comparable to that in Sergipe, as measured by the concentration index and the ratio of poor to least poor. When, however, only SUS users from Criciúma were considered, the concentration index was -0.009, and no significant difference across wealth quintiles was found. The lower degree of inequality was attributable to higher prevalence of noncoverage in the

better-off quintiles. Wealthy SUS users had antenatal care coverage similar to that of the middle quintile of the whole sample. SUS users are a minority in the least poor quintile (37.1 percent), while in the poorest they are the absolute majority (93.8 percent).

On the focus issue, the proportions of poor children among those receiving adequate antenatal care were 13.1, 13.6, and 17 percent, respectively, for

Figure 13.1. Distribution of the Population Covered by the Pastorate of the Child by Wealth Quintile and Weight-for-Age Z-Score, Indicating Program Focus (Incidence), Criciúma, 1996



Source: Neumann and others 1999.

the DHS, Sergipe, and Criciúma, while proportions of poor children in the whole sample were 26.9, 20.4, and 20 percent, respectively. Focus in this universal program is low.

Pastorate of the Child

The Pastorate of the Child is the only fully targeted program analyzed in this chapter. As explained earlier, the Pastorate is meant to concentrate on undernourished children and on children from the poorest families. Measuring program focus is, therefore, more relevant than for the programs discussed above. As shown in figure 13.1, among the children covered by the Pastorate, 21.6 percent were from the poorest quintile of households, and almost 32 percent were from the second quintile. The distribution of nutritional status among covered children (figure 13.1) follows closely the distribution of the total population presented in table 13.3, suggesting that the program fails to concentrate on malnourished children.

Table 13.3. Coverage of the Pastorate of the Child by Wealth Quintile and by Children's Weight-for-Age Z-Score, Criciúma, 2003

	Percentage of children surveyed	Coverage (percent)
<i>By wealth quintile</i>		
1 (poorest)	20.0	4.8
2	26.6	5.3
3	16.0	3.9
4	20.1	6.4
5 (least poor)	17.3	1.1
Entire sample	100	4.5
<i>P</i>		0.049
<i>By children's weight-for-age Z-score</i>		
<-2	5.4	2.7
-2 to <-1	16.4	3.3
-1 to <0	32.4	5.2
0 to <1	29.4	4.2
≥1	16.4	5.5
Entire sample	100	4.5
<i>P</i>		0.169

Source: Neumann and others 1999.

Coverage of the program was low, at 4.5 percent of all children (table 13.3). Only the richest quintile had distinctly lower coverage, but the significance was borderline. The highest coverage was achieved in the fourth quintile. No significant difference was found for coverage by nutritional status. In absolute terms, the severely malnourished children had the lowest coverage, and the best nourished had the highest coverage.

Family Health Program (PSF)

The PSF is in different phases of implementation in various places in Brazil. We studied it in the city of Porto Alegre, where it is relatively new, and in the state of Sergipe, where it has been much more widely implemented. Although the PSF is not targeted explicitly toward the poor, the plan is for its implementation to start in the poorest areas and in those not yet covered by a primary health unit. The potential program beneficiaries are all residents of the units' catchment areas (who are referred to here as PSF residents). Because a number of these individuals will never use the public service, we also conducted some analyses with service users in Porto Alegre—that is, those who reported having used the PSF at least once in the previous six months (referred to as PSF users).

In Porto Alegre the program focus was estimated at 36 percent—the proportion of the population living in the catchment area of PSF facilities that belonged to the poorest 20 percent of the city's residents. Considering only actual PSF users, focus was 41 percent. An additional 28 percent of PSF users came from the second-poorest 20 percent of the population. Thus, in all, nearly 70 percent of those using PSF services belonged to the poorest 40 percent of the population. (The full distributions are shown in figure 13.2.) Total PSF coverage in the city was estimated at 10.8 percent, and the coverage of the poorest 20 percent was 19.3 percent (table 13.4).

In Sergipe 27 percent of the residents of areas served by the PSF were in the poorest 20 percent of the population, compared with 36 percent in Porto Alegre (see figure 13.2). Focus was thus lower in Sergipe than in Porto Alegre. Coverage, however, was higher: more than 55 percent of the poorest 20 percent of Sergipe residents were in areas where the PSF was active, compared with only 19 percent in Porto Alegre. The same was true at the middle and higher economic levels. In Sergipe 25 percent of all people in the highest 20 percent of the population lived in PSF-served areas, a figure 10 times higher than in Porto Alegre (table 13.4).

The differences observed are probably attributable to the different stages of implementation of the program in the two sites. At the beginning, cover-

Figure 13.2. Distribution of Wealth Status for Residents of Areas Covered by the Family Health Program (PSF), Porto Alegre and Sergipe, and for PSF Users, Porto Alegre



Source: Neumann and others 1999.

Table 13.4. Family Health Program (PSF) Coverage by Wealth Quintile, Porto Alegre (2003) and Sergipe (2000) (percent)

Wealth quintile	Porto Alegre N = 3,827	Sergipe N = 1,436
1	19.3	55.1
2	14.3	49.2
3	11.4	42.6
4	6.7	31.1
5	2.5	24.9
Entire sample	10.8	41.1

Source: For Porto Alegre, data from study by Barros; for Sergipe, data from study by Cesar and others.

age is low and focus is high, as observed in Porto Alegre. Later, with increased overall coverage, focus decreases, but coverage is still higher among the poor.

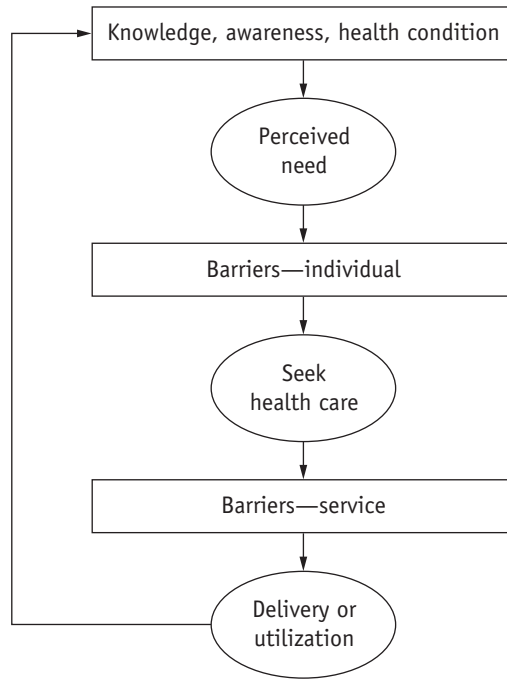
Findings about Reasons for the Distribution

The programs studied had markedly different profiles of distribution in the population served. Further data on the programs are explored to establish, to the extent possible, why that is so.

Immunization and Antenatal Care Programs

The universal preventive programs—immunization and antenatal care—that are studied here showed similar patterns: reasonably high coverage of the whole population and low focus on the poor. That is what is expected from universal programs. But when coverage is stratified according to decreasing wealth, the result is a consistent reduction in coverage.

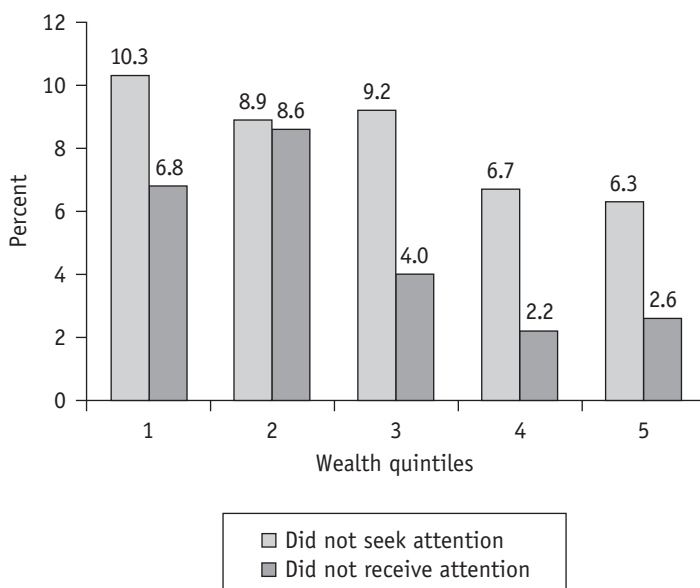
Barriers to the utilization of these services by the poor may be present at one or more levels in the path leading to the actual use of preventive health services (figure 13.3). Poorer people may be less aware of the benefits of the programs because they are less likely than the better off to be reached by educational messages. Furthermore, given their harsh living conditions, they may assign less importance than the better off to preventive care. Even if the poor perceive a need for preventive care, they may fail to seek it because of personal barriers such as lack of money or transportation or a

Figure 13.3. Simple Model of Health Service Utilization

negative perception of health services (resulting from frequent rescheduling, expectations of long waiting times, and similar considerations). Finally, obtaining access to the desired program or service may be limited by service-related deficiencies such as already fully booked service rosters, long waits, and difficulties in obtaining laboratory exams. We discuss below the evidence concerning each group of possible obstacles to service utilization.

Starting with the barriers closest to utilization—those related to the service itself—our data suggest that access to health services is not an important problem. Among those who sought health care, either curative or preventive, only 6 percent failed to get medical attention, although this was more common among the poor ($p = 0.02$) than among the better off (figure 13.4). About a third of those who failed to get care gave as the reason that the service was fully booked. Other common reasons were that the doctor was unavailable, that the waiting time was too long, and that the specialized service or doctor needed was not available at the facility visited. The high access to health services is confirmed by other studies based on the 1998 National Household Sample Survey (PNAD) carried out by the IBGE.

Figure 13.4. *Percentage of the Population That Failed to Seek or to Receive Medical Attention on the First Attempt, by Wealth Quintile, Porto Alegre, 2003*



Source: Data from study by Barros.

These found access to health services in general to be about 97 percent (IBGE 2000; Barros and Bertoldi 2002).

Access to referral services was lower. In the Porto Alegre study 12 percent of the individuals reported that they failed to get the laboratory exams requested, and 23 percent did not obtain access to a specialist doctor when referred by the generalist.

Another indication of service availability is that 27 percent of the Porto Alegre sample received medical care in the 15 days before the interview, with no significant difference by wealth quintile. Despite similar utilization, there was a clear difference in motives for the consultation across economic groups. Among the worse off, an illness was more commonly (65 percent) cited as a motive than among the better off (16 percent). Conversely, prevention was more common among the richest quintile (51 percent) than among the poorest (23 percent).

As for personal barriers to use of health services, among those reporting a need for medical attention in Porto Alegre, 9 percent did not seek care. There was no significant difference among wealth quintiles (figure 13.4).

More than a third of the respondents blamed lack of time. Other reasons included reported negligence about the person's own health, the time required to book an appointment (including getting in line early in the morning), and other difficulties with scheduling appointments.

We do not have data on barriers related to knowledge, awareness, or motivation (see the first box in figure 13.3), but a 2000 study of antenatal care in Caxias do Sul, near Porto Alegre (Trevisan and others 2002), showed that the main reported motive for not attending antenatal care was lack of information about its importance. Nevertheless, only 5 percent of mothers failed to attend.

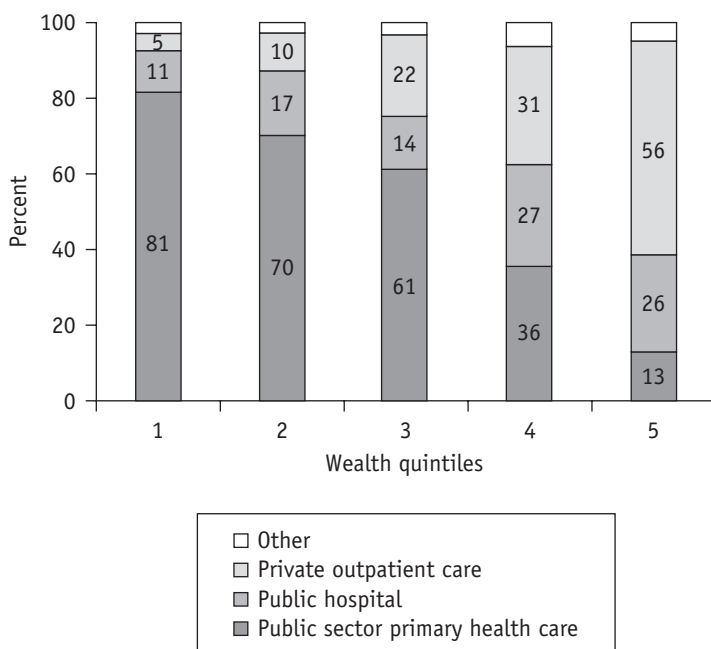
Negative perceptions of the quality of public health services could potentially reduce utilization, but studies consistently show high levels of user satisfaction with both public and private health services. In a study to assess user satisfaction with antenatal care within the Brazilian public health system (Ribeiro and others 2004), 86 percent of users rated the service as either good (22 percent) or excellent (64 percent). Satisfaction with health services in general was also high (86 percent good and very good) in the 1998 national household survey (IBGE 2000). In the Porto Alegre PSF study a similar proportion (84 percent) of users rated the service as good or very good.

Contrasting with this picture of high access to and high satisfaction with public health services, we found in the Porto Alegre study a strong association between economic level and type of service used. Figure 13.5 shows a steep decrease in the use of public sector primary health care with increasing economic well-being. Conversely, use of private services (private health insurance or direct payment) increased with economic level ($p < 0.001$). Higher utilization of public hospital outpatient and emergency services was also observed among the better off.

Important differences in the use of public sector primary health care according to health insurance coverage were found (figure 13.6). In all wealth quintiles, insured individuals were less than half as likely as the uninsured to use government services.

Using a Poisson regression model with utilization of primary health care as the outcome, we assessed the effect of health insurance coverage after adjustment for the effect of wealth (Barros and Hirakata 2003). Having private health insurance reduced the use of primary health care by 63 percent (adjusted relative risk = 0.37; 95 percent confidence interval = 0.26–0.52). There was no interaction between health insurance and wealth. Coverage by private health insurance was 6.5 percent in the poorest quintile, increasing to nearly 70 percent among the richest ($p < 0.001$).

Figure 13.5. Where Respondents Sought Health Care for the First Time during Previous 15 Days, by Wealth Quintile, Porto Alegre, 2003



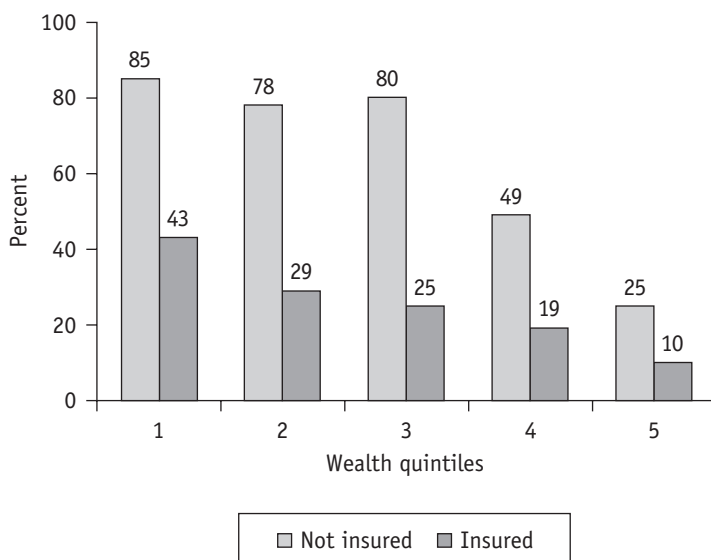
Source: Data from study by Barros.

Note: χ^2 test, $p < 0.001$.

Putting the evidence together, the low coverage of preventive programs among the poorest does not seem to be caused by difficulties in delivering services, given the general high access to and utilization of services. The high rates of self-exclusion from public services observed among the wealthy and among privately insured individuals indicate that important problems are being perceived by users but are not clearly captured by the available studies. These problems are probably related to waiting times, hours of operation, and limitations in access to specialized services and complementary exams (laboratory and imaging).

User awareness may also pose problems at the distal end of our model. As reported in the Caxias do Sul study (Trevisan et al. 2002), poor patients may not be aware of or convinced of the importance of immunization and antenatal programs. Perhaps they do not even know about the recommended immunization schedule or the recommended number and frequency of ante-

Figure 13.6. Use of Primary Health Care among Users of a Health Service in the Previous 15 Days, by Wealth Quintile and Health Insurance Coverage, Porto Alegre, 2003



Source: Data from study by Barros.

Note: For both variables, $p < 0.001$.

natal consultations. This possibility is supported by a study showing that low maternal schooling was the main factor associated with incomplete immunization in the Northeast Region among public health service users, even after controlling for family income (da Silva and others 1999).

Family Health Program (PSF)

Unlike the first two programs, the PSF showed higher coverage among the poor. The reason is likely related to the factors discussed above. Better-off individuals and the privately insured migrate to private services for both primary care with a general physician and specialist care. Our study was not designed to investigate in detail why this happens. Still, despite a general preference for private services, the PSF and public services play an essential role in providing health care to the poorest and manage to offset the advantage of the better off, resulting in similar access rates for nonpoor and poor.

The same program may exhibit different behavior with respect to focus and coverage over its life span. In its initial stages the PSF in Porto Alegre had high focus and low coverage. In Sergipe coverage was much higher, and focus was lower. The results are very much in accordance with the proposed targeted implementation of the PSF.

Pastorate of the Child

Finally, the Pastorate of the Child, a program whose importance is recognized worldwide, and the only targeted program studied here, failed to give priority to the neediest as defined by economic or nutritional criteria. Neumann and others (1999) identified an important problem of dropout. Among mothers who had participated in the Pastorate at some point, 70 percent had left the program, mainly because of migration, lack of time, or interruption of the Pastorate leader's visits. But it is unlikely that these motives can explain the low focus.

An alternative explanation is program efficacy. If children covered by the program experience improved growth, they shift to higher Z-score groups, giving the impression that covered children are better nourished than the rest. It is unlikely, though, that this could fully explain the results.

The dependence of the program on the leader's volunteer activities can be a limiting factor for focus and coverage of the poorest because the most deprived communities may be those where recruiting leaders is more difficult or where leaders' work is less intensive or less regular. Improved targeting and better incentives to keep children under surveillance are needed.

Limitations

National data and data from several locations were used. Even so, only a fraction of current health programs and services was studied, and the investigation does not reflect Brazil's wide regional diversity. The consistency of the results, however, suggests that despite temporal and regional variations, the picture presented is credible.

The search for solutions to social, economic, and health inequalities involves the documentation of such inequalities, but the reasons behind them also have to be uncovered. Long-term, complex social processes are at work, as well as real or perceived health service deficiencies. We have explored this issue within the limits of the available information. For a better understanding, specific quantitative and qualitative studies will be needed. For example, a qualitative study carried out in Pelotas in southern Brazil showed that the public saw public health facilities in the city's periur-

ban slums as poor substitutes for the good-quality private health care used by the wealthy (Behague, Goncalves, and Dias da Costa 2002). In-depth assessment of quality of care is important to ensure that equality is measured not only by use of services but also by how well people are being served.

Implications

We have shown that health care coverage is lower among the poor than among the wealthy for the two universal programs studied: immunization and antenatal care. The Pastorate of the Child, the only targeted program studied, also showed low coverage, as well as low focus and a high dropout rate. Coverage of the poor by the PSF was higher than coverage of the wealthy because of its targeted implementation. But this higher coverage was also attributable to self-exclusion by the better off: the wealthier the individuals, the less they used the service. We also showed that coverage by private health insurance reduced the use of the PSF by more than 60 percent. Asked why people would choose to use the PSF, most mentioned the proximity of the facility, and very few brought up quality of care.

Interpretation of the results requires some caution because the programs studied are directed at different populations and involve very different approaches. The immunization program, for instance, requires the presence of the child for a very short time on a limited number of occasions. Antenatal care involves medical consultations, laboratory exams, and so on. PSF utilization encompasses preventive activities but is most frequently related to treatment of illness.

The differences can be revealing. The Brazilian experience with successful immunization is globally recognized. The last case of polio in Brazil was in 1989, and the disease was officially declared eradicated in 1994. For the past two years no autochthonous measles cases have been reported. The immunization program is widely seen as of good quality and the vaccines as reliable. Although we did not have data on where children received their vaccines, private immunization clinics are known to be few and seldom used. Most children, nonpoor and poor, get their vaccines at the health centers. But even though the program was perceived as being of good quality and highly accessible, as well as free, coverage among the poor was much lower than among the better-off.

The record of the immunization program contrasts with the case of general PSF utilization, where constraints related to quality or to ease of access put the wealthier off. The results we presented are in agreement with the conclusions of the qualitative primary health care study of Pelotas by Beh-

ague, Goncalves, and Dias da Costa (2002), in which people voiced their distaste for the units. Paradoxically, several quantitative studies among users have shown high reported satisfaction, but one may wonder whether subjects provide valid answers when interviewed at a service site by someone who looks like a government official (IBGE 2000; Trad and others 2002).

All told, action on several fronts seems necessary if public health services for the poor are to be improved:

- Empower users, especially the poorest, by informing them about the importance of each program, what is expected from the user, and what the user should expect from the service—and create channels for complaints to be heard.
- Instead of simply expanding primary health care by increasing the number of service units, improve accessibility to the service by reducing waiting times, the need to line up very early in the morning, and other inconveniences.
- Improve access to referral services such as laboratory exams and specialists.
- Continue to monitor and evaluate programs with an equity lens by repeating exercises such as the present study and expanding them to cover other health programs.
- Feed back results of equity studies to decision makers and to the general population.

Notes

1. The data are from Datasus, <http://tabnet.datasus.gov.br/cgi/pni/dpnimap.htm>.

2. For further information on the PSF, see its Website, http://portal.saude.gov.br/saude/visao.cfm?id_area=149.

3. A clear and practical approach to concentration curves and indexes is available at the World Bank Website “Quantitative techniques for health equity analysis: Technical notes,” http://www.worldbank.org/poverty/health/wbact/health_eq.htm.

4. Details about the Brazilian and other DHS surveys can be found at the DHS Website, www.measuredhs.com.

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