Report No. 18142

Brazil
The Brazil Health System
Impact Evaluation Report

June 30, 1998

Operations Evaluation Department

Currency Equivalents

Currency Unit = Real (R.)
(Excange rate effective December 31, 1997)
US$1 = R. 1.116
R. 1 = US$0.8961

Abbreviations and Acronyms

AIDS	Acquired Immunodeficiency Syndrome
AIH	Autorização da Internação Hospitalar
BMI	Body-mass index
DHS	Demographic and Health Surveys
FNS	National Health Foundation
HNP	Health, nutrition, and population
INAMPS	Instituto Nacional de Assistência Médica da Previdência Social; National Institute for Medical Assistance and Social Security
INPS	Instituto Nacional de Previdência Social; National Institute of Social Security
LSMS	Living Standards Measurement Survey
MOH	Ministry of Health
MPAS	Ministério da Previdência Social e da Assistência Médica/Ministry of Social Security and Medical Assistance
NGO	Nongovernmental organization
PNAD	National Household Sample Survey
SUCAM	Superentendência para Campanhas de Saúde Pública
SUS	Sistema Unica da Saúde
WHO	World Health Organization

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Washington, D.C. 20433
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Office of the Director-General
Operations Evaluation

June 30, 1998

MEMORANDUM TO THE EXECUTIVE DIRECTORS AND THE PRESIDENT

SUBJECT: Impact Evaluation Report: The Brazil Health System

Attached is the Operations Evaluation Department (OED) report entitled (*Impact Evaluation Report: The Brazil Health System*).

The report evaluates the performance of the Bank both in supporting projects financing investment operations in the health, nutrition and population sector and in undertaking related economic and sector work in Brazil. The report finds that the Bank's operations targeted important and relevant concerns. but that it is less clear that the approaches employed contributed to improvements in the effectiveness of Brazil's health system or were the best means to improve access. Two of four disease-control projects contributed to declines in disease incidence, but efforts to expand physical infrastructure in the Northeast did not contribute to improved health system performance, economic efficiency or substantial improvements in consumer satisfaction with health services. The Bank's analytic work identified contemporary challenges but it is not clear that it adequately examined the institutional context and political economy of the Brazilian health care system. Based on lessons learned the report recommends a number of areas for emphasis in future activities.

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Preface

Over the past two decades, the World Bank emerged as the world's largest lender in the health, nutrition and population (HNP) sector. In addition, the Bank plays a major role in providing advice on national health policies. This Country Sector Impact Study is one of four studies being undertaken by the World Bank's Operations Evaluation Department (OED) as part of a comprehensive assessment of the Bank's development effectiveness in the HNP sector. The other study countries are India, Mali and Zimbabwe. Brazil was selected as one of the country case studies because it represents the challenges of a large and complex health system in a setting undergoing rapid economic and institutional change and where external assistance accounts for a small proportion of total health expenditure.

Ms. Susan Stout is task manager for OED's overall assessment of development effectiveness in HNP. Mr. Varun Gauri managed the Brazil sector impact study and is the author of this report. Mr. Benjamin Crow and Ms. Marcia Bailey provided administrative assistance.

Executive Summary

1. The World Bank has financed 10 projects in the health, nutrition, and population (HNP) sector in Brazil. It has also undertaken significant field research, including four major sector studies since 1989; conducted sector work in the related areas of social security and poverty; and been a policy interlocutor for the Government of Brazil. This study evaluates the development effectiveness of that work.

2. Brazil was selected as one of four sector impact studies being undertaken by the World Bank's Operations Evaluation Department (OED) as part of a comprehensive assessment of the Bank's development effectiveness in the HNP sector. The other study countries are India, Mali, and Zimbabwe. Brazil was selected because it represents the challenges of a large and complex health system in a setting undergoing rapid economic, epidemiological, and institutional change and where external assistance accounts for a small proportion of total health expenditure.

3. The study follows a framework for the assessment of development effectiveness that guides the larger study. Policy advice can be provided through a range of activities, such as formal and informal sector work, discussions during project preparation, supervision, and evaluation, as well as through direct channels such as the Bank's work in generating and disseminating policy through its policy, research, and knowledge management activities. Projects exert influence through transfer of resources for specific goods and services, as well as to the degree their implementation arrangements embody "rules of the game" that influence the institutional environment. The Bank can have a direct effect on the *service delivery structure* (public and private facilities, service providers) through such steps as investing in new facilities or the development of health manpower and also on the financial, regulatory, and accountability systems that constitute the *institutional arrangements* that govern the sector. Its investments outside of the sector (and/or through investing in marketing and information elements of the service delivery structure) can influence the demand for services and health-related behaviors.

4. This study of the Bank's experience in Brazil addresses two groups of questions. First, what was the Bank's overall strategy for health in Brazil, and was it the right one? The study examines the Bank's strategy against two criteria: whether it was relevant to the sector and country, and whether it was well built—that is, premised on solid research and the right evidence. Second, what were the outcomes of this body of work? Of course, improved health outcomes are the ultimate goal, and a good strategy increases the likelihood they will be achieved.

5. The study is based upon a review of World Bank sector studies and project documents, extensive interviews with World Bank staff, government officials, and other stakeholders during three visits to Brazil, as well as on a series of papers commissioned as background to the study.

Relevance of the Bank's Strategy

6. The Bank's strategy for health in Brazil has focused on three main concerns: it provided resources for expanding the accessibility of basic health services in poor or marginal areas; it offered policy advice and studies for improving the efficiency and efficacy of the health care system; and it financed projects to control endemic diseases such as malaria, schistosomiasis, and AIDS. That strategy appears *prima facie* relevant to a country like Brazil, which has a high

degree of poverty and inequality for a middle-income country, has a health care delivery system known for inefficiency and inequity, and suffers from a variety of tropical diseases.

7. But a close examination of the Bank's work in Brazil raises some questions. It is not clear, for instance, whether the construction of clinics and health posts—critical elements of the Bank's strategy in the late 1980s and early 1990s to improve the effectiveness of the system—was the best means to improve access. Many of the health posts are underutilized, short of qualified staff, and lack the facilities to satisfy increasingly demanding and increasingly urban consumers, who instead often go directly to hospitals and clinics.

8. *Epidemiological Relevance.* Trends in health status are encouraging, though Brazil now faces developed-country problems as it continues to confront the traditional public health challenges in the interior and marginal areas. Children are much healthier now than in the past, and more of them are getting healthier faster, apparently because of improvements in purchasing power, maternal education, utilization of health services, community infrastructure and water supply, and individual behavior. Despite the recent improvements, sharp regional inequalities persist: children in the Northeast are much less healthy than children in the Center-South, and the health of children in the rural Northeast is improving most slowly. Differential access to maternal education, health care and water, and new reproductive patterns explain why the health of children in the rural Northeast continues to lag. Brazil's fertility decline has been dramatic and has in all likelihood reduced the prevalence of the factors associated with risks to childhood health. Induced abortion must have been instrumental when the fertility decline accelerated in the late-1960s and early-1970s because the pill and the rhythm method were then the only widely known contraceptive techniques, and given the prevailing inadequacy of contraceptive information at the time, their efficacy was probably limited. Diarrhea among children declined sharply and diseases preventable through vaccination are largely under control in Brazil. Increasing incidence rates of tuberculosis and leprosy are symptomatic of weaknesses in Brazil's public health system. Endemic parasitic diseases continue to threaten rural and remote areas.

9. The World Bank's past strategy for improving childhood health in the rural Northeast has underachieved. Although the Bank financed major investments designed to expand access to primary health care in the rural Northeast from the mid- to late-1980s to the present—projects in which maternal child health was a high priority at the time of appraisal—those investments did not help the region keep pace. Neither the Brazilian government, Brazilian NGOs, nor international organizations such as the World Bank can claim credit for Brazil's fertility decline, despite the latter's efforts to encourage the development of population policies in the 1980s. Government policies, women's groups, and international agencies were ambivalent, actively opposed, or marginal to population policy in Brazil until the fertility decline had already become an established fact. In recent years those three actors have all helped to raise the awareness of and access to birth control alternatives, but the explanation of the fertility decline, though still not clearly understood, is undoubtedly a demand-side story.

10. An epidemiological transition is said to occur in a country when, as a result of modernization and development, infant mortality and fertility decline, life expectancy increases, and infectious and parasitic diseases are no longer the leading causes of death. As early as 1980, "post-transitional" conditions became the leading causes of death in every region of Brazil. By 1980 cardiovascular disease became, and remains, the leading cause of death in each major region and in almost all states. These are not diseases of the rich alone. Indeed, both the prevalence of these diseases and of the risk factors associated with them, such as smoking, poor

diet, and lack of exercise, are generally higher among the poor, who are relatively uneducated and are less likely to be reached by information campaigns. The Bank's sector work includes a major analysis of the determinants of adult mortality that outlined these issues, but the Bank has not been successful in following up this analysis through specific investments.

11. *Institutional Relevance* Most health economists would not object to the broad structure of Brazil's health care system. Following the dictum, the Brazilians go a long way toward "separating the financing from the provision of services." The government health care system, called the Sistema Unica da Saúde (SUS), contracts out large majority of inpatient care and a substantial portion of outpatient services to a network of private and philanthropic hospitals, clinics, and other facilities. All told, the public sector manages and owns only 31 percent of the hospital beds it supports. Despite the ostensibly efficient structure of the health system, in reality it is experiencing incoherencies and critical problems, if not a crisis. Severe underfinancing of the public system results in regional inequalities, arbitrary rationing in facilities, and a perceived decline in quality. Aggravating the problem of scarcity, the political economy of budgeting for health in Brazil weakens the sector.

12. The World Bank has not developed a strategic response to the causes or the consequences of underfinancing in the Brazilian health sector. The Bank's response to date has been primarily to provide financing for unmet needs, such as for basic health services in the Northeast, health infrastructure, and endemic diseases. While providing financing can be a valuable contribution, Brazil can access the private capital markets with relative ease; it is difficult to know whether or not the government would have obtained the funds for Bank-financed projects from other sources.

13. Decentralization is an eminently political issue, and has taken a variety of shapes within the Brazilian health system over the past 20 years. The Bank sought to support health decentralization in the mid-1980s through the São Paulo Basic Health Project, but the complexity of politics in that state, and of federal state relationships resulted in a project that was not well articulated with the evolving governance structure. Investments in the Northeast supported decentralization through technical and managerial training. The recent health sector reform, Reforsus, supports decentralization by encouraging managerial development as well, but its emphasis on setting national cost-effectiveness priorities places its strategy in conflict with the objective of local autonomy and regional diversity in SUS prices.

14. Despite efforts to make it more equitable and effective, the system remains distorted and expensive. Because health care is free in Brazil and because health manpower and facilities remain more concentrated in the wealthier regions, government health expenditures are not well targeted to the poor. Although it has targeted much of its investments in the poorest regions of Brazil, the Bank has not developed a long-term strategy for confronting the institutional dynamics that underly the misallocation of resources in the Brazilian health sector.

Project Impact on Health Outcomes

15. The second part of the study assesses the outcomes of the two main kinds of World Bank health projects in Brazil, the control of endemic diseases, and the provision of basic services, based on a detailed analysis of two projects selected to represent the Bank's investments in both areas.

16. *Malaria Control and Disease-specific Projects*. The Brazil Amazon Basin Malaria Control project responded to a dramatic upsurge of malaria in the Amazon Region and sought to improve the health of native Indian peoples living in that area. The annual incidence of the two strains of malaria found in the project area fell significantly during the life of the project. The severity of malaria also declined between 1989 and 1996, resulting in a decline in deaths from the disease. Existing evaluations from the World Bank, including the ICR, attribute a significant portion of these accomplishments to the Amazon Malaria Control Program and to project funds particularly to the decision by project leadership beginning in late 1992 to change the strategy from malaria eradication to malaria control and case management. The existing evaluations argue that this change in strategy was responsible for most of the project's achievements.

17. OED's analysis shows that of the overall reductions in malarial mortality, severity, and case fatality from the peak in the late 1980s to 1996, about 70 percent occurred before project strategy began to change in 1992. That case fatality in most states was falling even before the project became effective suggests that a cause in addition to the change in strategy, perhaps the prior introduction of mefloquine, was responsible for saving lives. External factors such as migration and land-settlement patterns might have contributed to the reduction in malarial incidence as well the endemic disease control program and the Bank's project support to the program.

18. *Basic Health Projects* The two Northeast Basic Health Services projects were part of the Brazilian government's 15-year development plan for the Northeast Region, whose social and development indicators lagged behind the country as a whole. The projects built health care facilities, encouraged management improvements at the federal and state levels, and provided technical skills training for the development of new "basic health care modules" and programs of comprehensive care for women and children.

19. Partly as a result of a difficult political and macroeconomic context, these projects evolved into facilities construction and medical equipment programs. They succeeded in expanding access to basic health services but did not transform the mode of basic health care delivery within that system. Existing evaluations of the projects find that these design problems limited the projects' impact, although child health in the region improved significantly during the life of the project, and access to health care played a significant role in that improvement. It is difficult, however, to determine how much of the expanded access to immunizations, prenatal care, and attended births are attributable to the project because the project did not include a detailed and specific system for monitoring and evaluation. It is reasonable to assume that the project itself did not contribute significantly because it disbursed very slowly until 1994, then shifted priorities and a significant portion of the net improvement in child health had already occurred by 1994. In addition, the health of rural children in the Northeast, which the original project design had targeted, did not improve as fast as the health of rural children in other regions. Although the projects were adequately designed given the state of the art and the consensus among health planners at the time, focus group work makes it apparent that they did not take into account the changing demands of increasingly urban consumers. In retrospect, it is apparent that provision of basic health care entails not merely more training and facilities but realigning incentives in the sector. In particular, it requires intervening in the current labor markets for health providers and in the process of policy formation and consensus building in the sector.

Key Findings

The key evaluative findings of the study are:

- *The World Bank's disease control and basic health services projects have targeted important and relevant concerns.* Access to health care remains difficult in Brazil. The diseases the Bank's projects have focused on—malaria, leishmaniasis, Chagas' disease, schistosomiasis, and AIDS—are significant problems in Brazil, strike young people, and disproportionately afflict poor and marginalized groups.

- *At least two of the four World Bank disease-control projects have contributed to declines in the incidence of those diseases and mitigated their effects on afflicted individuals.* The endemic disease project and the second malaria control project helped to slow the spread of disease and promoted treatment programs. Although it would be rash to attribute all of those reductions in incidence to the projects, they certainly contributed. The first malaria control project did not reduce the incidence of malaria in Rondônia and was unsatisfactory. It is too soon to tell whether the AIDS project has slowed the rate of increase in disease incidence.

- *The World Bank's first malaria control project in Brazil underestimated the importance of institutional strengthening and behavior change in public health, but subsequent disease control projects have helped build Brazil's human, physical, and information systems for disease surveillance.* The second malaria project shifted strategies midstream to emphasize treatment and control over eradication, and the Northeast endemic disease project worked to strengthen public health capacities of state and local governments. The current AIDS project is pioneering collaboration between the government and nongovernmental organizations (NGOs) to promote safe health behaviors. No project to date, however, has included good measures of the performance of the disease surveillance and health care systems.

- *The World Bank's analytic work identified contemporary challenges in adult health in Brazil, but the Bank has been unable to follow up with projects that address them.* The sector work identified maternal health and the promotion of healthy behaviors, such as exercise, diet, smoking cessation, and injury prevention, as critical areas where public health activities might cost-effectively improve health and reduce the burden on the health care system. The Bank was not able to develop public health projects addressing these concerns with the Government of Brazil.

- *There is no evidence that the World Bank's basic health services projects for the Northeast promoted overall health system performance, economic efficiency, or substantial improvements in consumer satisfaction with health services.* In addition, they did not help the health of children in the rural Northeast catch up to the rest of the country. They did help to build a working relationship with the Government of Brazil after a difficult period of misunderstanding. They also helped to build the infrastructure for health care in the region, but they (rightly but belatedly) abandoned their original strategy for basic care, built on rural health posts, late in the implementation process. Consumers remain frustrated with the quality and accessibility of health care in the region, and human resources bottlenecks remain a significant problem.

- *The World Bank's current strategy for sector reform in Brazil, the Reforsus project, suffers from weaknesses in the analysis of and response to a complex political and institutional*

environment. The early HNP projects in Brazil were unsatisfactory and suffered from lapses in "borrower commitment and institutional capacity"; in other words, the World Bank conceptualized those projects as injections of financial and technical resources without examining the political and economic incentives that would govern how those resources would be used. The current Reforsus sector reform project is predicated on a more sophisticated understanding of economic incentives. It aims to improve the efficiency of the health care system by paying doctors and hospitals more when they provide particularly cost-effective services. That strategy is unlikely to work, however, because the actual rates at which the government reimburses providers will continue to bear little relation to the real cost of services, because those rates continue to be set in a non-transparent process, and because a variety of other rules also influence the payments providers receive. In the end, incentive payments made to hospitals and municipalities may not change the behavior of doctors. In addition, the continued use of one set of reimbursement rates to distribute resources to the various states and municipalities makes it difficult for the ministry to set national programmatic priorities across Brazil's diverse regions. In short, Reforsus remains primarily a infrastructural investment project because its strategy does not address several key problems in the political economy of health care in Brazil.

- *The World Bank has not developed a long-term strategy for confronting the mis-allocation of resources in the Brazilian health sector.* Brazil's health care expenditures need to be targeted more closely on cost-effective interventions and should encourage more innovative approaches to both preventive and curative care. A particularly strong health care lobby, the government's use of "contingency" restrictions to reduce the public health budget, and the traditional training of health care professionals are deeply entrenched obstacles to such reforms. These cannot be overcome quickly, nor can an external agency such as the World Bank hope to affect them alone. If the World Bank is to address this critical issue in the Brazilian health sector seriously, it should develop a strong and consistent presence in Brazilian health issues, the kind of presence necessary to build, gradually and persistently, a broad-based coalition for reform.

Recommendations

- The World Bank should adopt a long-term strategy of coalition building to grapple with the difficult, institutionally embedded problems of the Brazilian health sector.

- The World Bank should initiate sector work and perhaps an institutional development project on the regulation of private health care in Brazil.

- The World Bank should continue to finance projects that address the needs and health conditions of the poor, but it should pilot new approaches for providing basic health care services.

- The World Bank should study and finance health projects that focus on the chronic and degenerative diseases that are increasingly affecting the poor of Brazil.

1. Was the World Bank's Strategy for Health Relevant to Brazil?

1.1 The Bank's strategy for health in Brazil has focused on three main concerns: it provided resources for expanding the accessibility of basic health services in poor or marginal areas; it offered policy advice and studies for improving the efficiency and efficacy of the health care system; and it financed projects to control endemic diseases such as malaria, schistosomiasis, and AIDS. (Annex B lists Bank health projects and sector work in Brazil.) That strategy appears *prima facie* relevant to a country like Brazil, which has a high degree of poverty and inequality for a middle-income country, has a health care delivery system known for inefficiency and inequity, and suffers from a variety of tropical diseases.

1.2 But a close examination of the Bank's work in Brazil raises some questions. It is not clear, for instance, whether the construction of clinics and health posts—critical elements of the Bank's strategy in the late 1980s and early 1990s to improve the effectiveness of the system—was the best means to improve access. Many of the health posts are underutilized, short of qualified staff, and lack the facilities to satisfy increasingly demanding and increasingly urban consumers, who instead often go directly to hospitals and clinics. In other words, whereas the Bank's projects in São Paulo and the Northeast focused on expanding physical access to health care, it is now apparent that the critical problems are financial accessibility and human resources in the sector.

1.3 Further, it is not clear whether the Bank's research, both in its sector work and project preparation, adequately examined the politics, institutions, and political economy of the Brazilian health care system. During the period in which Bank-supported health projects were launched in Brazil, the country emerged from two decades of military bureaucratic authoritarianism, drafted a new constitution that granted each citizen an equal right to unlimited health care, experienced years of acute macroeconomic crisis, and then moved toward democratic consolidation and economic stability. From 1964 through 1985, the military government in Brazil had built a health care system through the social security institute (first called INPS, then the MPAS and INAMPS) that reimbursed competing private providers for care given to formal sector workers, first on a fee-for-service basis and after 1984 according to a prospective payment system. By the late-1980s the system was clearly in need of reform: it excluded various segments of the population (especially those outside the social security system) from access to curative care; it did not use the prospective payment system to create incentives for cost containment and quality; it bifurcated preventive care activities, which remained under the auspices of the underfunded Ministry of Health (MOH), from curative care, under INAMPS; and it stimulated political interests at the national, state, and municipal levels that sought to secure resources for overall health spending and for particular hospitals and services, such as the provision of pharmaceuticals and facilities construction. The constitution of 1988 solved some of those problems but created others by guaranteeing free and universal access to health care. It also created a new political dynamic in the sector. All of these elements made efforts to transform the health delivery system in Brazil, which the Bank attempted both through particular projects and through policy advice, extremely complex. Furthermore, the Bank's unsophisticated understanding of the institutional framework in Brazil made its ambitions broader and its effectiveness more transitory than they should have been.

1.4 Finally, while the Bank's focus on endemic diseases undoubtedly addressed a major health concern for the poor, and one in which a government role is appropriate, it is important to weigh the importance of other health needs that the Bank might have addressed. In particular, an aging population and urbanization dramatically changed the epidemiological profile of Brazil in the past two decades, even in the poor Northeast, where cardiovascular disease became the leading cause of death among adults as early as 1980. This raises the possibility that a strategy emphasizing financial accessibility to more curative and urban-based care, combined with new public health strategies (such as community health agents, injury prevention campaigns, and anti-tobacco policies), might have been as relevant, if not more so.

1.5 This chapter examines in detail the strategies that the Bank did pursue and might have pursued. The chapter is divided by categories of health needs: childhood health and nutrition, fertility and women's reproductive health, infectious and parasitic diseases, and chronic and degenerative diseases. Each section first characterizes recent trends in health indicators and their causes, then it evaluates the relevance of those health needs for the strategy that the Bank did take or might have taken. The last section of the chapter analyzes the structure and political economy of the health care system in Brazil. That analysis makes clear in exactly what ways the Bank might have sharpened its work on Brazilian health sector reform.

Childhood Health and Nutrition

1.6 **Brazilian children are much healthier now than in the past, and more of them are getting healthier faster.** Two good indicators of the general health of children—infant mortality rates and childhood height-for-age—show significant improvements in recent years. Data from the vital registration system corrected for underreporting show that the infant mortality rate was halved between 1985 and 1995, and household data from the Demographic and Health Surveys (DHS) of 1986 and 1996, which are perhaps more reliable, tell a comparable story. Moreover, they suggest that the rate of improvement in children's health is increasing. Data on the prevalence of childhood stunting, which is said to occur when a child's height-for-age is two or more standard deviations less than accepted international norms, support the claim that children's health has improved significantly in Brazil and that it is improving more quickly now than in the past.[1]

Table 1.1. National Infant Mortality Rates[a] in Different Periods in Brazil, 1977–95 (Estimates Based on Household Surveys)

	Infant Mortality Rate	*Annual Change between Periods (%)*
1977–81	85.5	—
1982–85	72.7	-3.3
1987–91	53.1	-4.9
1992–95	36.0	-7.1

a. Number of deaths below one year of age per 1,000 live births.
Sources: DHS 1986 and 1996.

1. Carlos Augusto Monteiro, Maria Helena D'Aquino Benicio, and , 1997, "Changes in Poverty-related Health Indicators and in Brazil: Causes and Impact on Regional Inequities," background paper for this report.

Table 1.2. Changes in the Prevalence (%) of Growth Retardation in the Child Population Below Five Years of Age in Brazil, 1975, 1989, and 1996

Growth Retardation (chronic undernutrition)	*1975*	*1989*	*1996*	*Annual Change (%)* *1975–89*	*1989–96*
Severe Cases ("stunted children") *(HAZ < -2)*	32.9	15.7	10.4	-3.7	-4.8
All Cases *[100-2 * (HAZ) > 0)]*	58.4	34.2	26.2	-3.0	-3.3

Note: HAZ is observed height minus expected height (for age and sex) expressed in standard deviation units (NCHS/WHO standards).
Sources: ENDEF 1975; PNSN 1989; DHS 1996.

1.7 **The cause of the improvement in childhood health in Brazil is a complex interaction of improvements in purchasing power, maternal education, utilization of health services, community infrastructure and water supply, and individual behavior.** These are the factors that improve child health the world over. No single account across all time periods and settings explains how these mechanisms interact to enhance health. In Brazil the literature has emphasized that maternal education increases child survival and height-for-age independently of its impact on household income and that its effect probably works through improved access to information (Thomas, Strauss, and Henriques 1992; Henriques, Strauss, and Thomas 1989; Victora and others 1992). There is evidence that although the full effect of household income on childhood health is strongly positive, increases in parental wages also raise the time-cost of child care and have an indirectly negative effect (Kassouf and Senauer 1996). The literature also argues that community infrastructure and lower prices improve childhood health (Thomas and Strauss 1993) and that health care, including the impact of oral rehydration therapy, has enhanced the odds of childhood survival in Brazil (Victora and others 1996; Monteiro 1996). Changes in individual behavior, such as more common breastfeeding and fewer short-interval births, might also have had an important role (Monteiro 1996). Finally, one study argues that maternal nutrition as measured by parental height improves childhood survival and height-for-age (Henriques, Strauss, and Thomas 1989).

1.8 **An OED analysis finds that the utilization of health care services explained a significant part of gains in children's health in Brazil between 1989 and 1996, and improvements in the distribution of income, maternal education, access to water, and new reproductive patterns were also important.** The role of income in recent years is difficult to ascertain because the recent DHS surveys on health status do not include questions on income. But a comparison of data from Brazil's National Household Sample Survey (PNAD) from 1985–89 and 1992–96 finds that mean per capita family income fell between the two periods, but the proportion of individuals below the poverty line declined (1.8 percent per year) and the income share of the poorest 40 percent improved slightly (0.5 percent per year). (Yearly income data are aggregated to average family income over the years in which surveyed children were born.) Although the PNAD data are for all families—not just families with children—they are consistent with the hypothesis that increased family income of the poorest households contributed to the improvement in children's health witnessed between 1989 and 1996. That improvement in the income distribution, in turn, might well be related to the economic stabilization following the Real Plan of 1994.

1.9 Upon examining the relative risks for childhood stunting among subsamples of households in the DHS surveys, the analysis finds that health care consumption and maternal education were probably the most important causes of recent improvements. Table 1.4 shows that even after adjusting for socioeconomic class using the years of schooling of the head of the household, a child whose mother had zero to three years of education in 1996 was 2.5 times at greater risk of stunting than a child whose mother had four to seven years of education in 1996. Because the proportion of children whose mothers had less than four years of schooling fell from 43.3 percent in 1986 to 28.0 percent in 1996, maternal education in all likelihood contributed significantly to the improvement in children's health. Similarly, delivery at home, the failure of a mother to receive prenatal care, and the lack of basic immunization each more than doubled the risk of stunting (after adjusting for socioeconomic status). Between 1986 and 1996, the proportion of children born at home, without prenatal care, and failing to receive basic immunization declined at annual rates of 4.8 percent, 6.2 percent, and 5.8 percent, respectively. The connection of urban households to public water and public sewage is also important: the lack of either connection also more than doubled the risk of childhood stunting after correcting for socioeconomic class. The proportion of households connected to public water fell at 4.5 percent per year between 1986 and 1996, but households connected to public sewage systems increased annually at 0.1 percent over the same period. As Table 1.4 shows, short birth interval and high birth order are associated with a substantially higher risk of stunting, but maternal age at birth was not. Those two risk factors also declined significantly over the past 10 years. Finally, Table 1.4 shows the expected annual decline in childhood stunting associated with each of the above risk factors between 1986 and 1996 (based on the 1996 relative risks adjusted for socioeconomic level). It shows that health care and maternal education could each "explain" about one-third of the annual decline in the prevalence of child stunting in Brazil between 1986 and 1996 (Monteiro and others 1997).

Table 1.3. Prevalence of Stunted Children According to Indicators of Health Care in Brazil, 1996

		Relative Risk	
Indicators	*% of Stunted Children*	*Crude*	*Adjusted*[a]
Prenatal Visits			
5+	6.50	1.00	1.00
1–4	16.50	2.54	2.06 (1.62–2.65)
0	26.70	4.13	2.99 (2.37–3.78)
Birth Assistance[b]			
Yes	8.80	1.00	1.00
No	32.90	3.78	2.64 (2.12–3.29)
Basic Immunization[c]			
Yes	8.30	1.00	1.00
No	20.60	2.48	2.01 (1.64–2.45)
Score of Health Care Consumption Level[d]			
Good	6.70	1.00	1.00
Fair	11.40	1.71	1.60 (1.27–2.03)
Poor	24.90	3.73	2.82 (2.13–3.74)
Very Poor	39.90	5.97	4.03 (2.92–5.57)

a. Adjusted for family head's years of schooling.
b. Births in health services.
c. DPT (3 or more shots), anti-measles, and anti-tuberculosis
d. Good = prenatal care (any), birth at hospital, and complete immunization; Fair = only two of the above; Poor = only one of the above; Very Poor = none of the above.
Source: DHS 1996.

Table 1.4. Expected Decline in the National Prevalence of Child Stunting Due to Improvements in Health Care, Water Supply, Maternal Education, and Reproductive Patterns from 1986 to 1996

	Frequency (%) of Risk Factors in:			
	1986	*1996*	*Relative Risk for Exposed Children*	*Expected Annual Decline (%) in the Prevalence of Stunting*
Health Care Consumption Level[a]				
Good	44.30	59.20	1.00	
Fair	32.20	29.70	1.60	
Poor	15.60	7.90	2.82	
Very Poor	7.90	3.20	4.03	-1.70
Access to Water Supply[b]				
Yes	71.50	84.30	1.00	
No	28.50	15.70	2.48	-1.30
Maternal Education (years of schooling)				
≥ 11	13.70	16.70	1.00	
8–10	10.30	15.10	1.39	
4–7	32.60	40.20	1.74	
0–3	43.40	28.00	4.31	-1.60
Maternal Reproductive Risk[c]				
Low	45.00	56.70	1.00	
Moderate	23.30	23.20	1.44	
High	31.70	20.20	2.46	-1.10

a. See Table 1.3.
b. Only urban areas.
c. Low = Birth order 1 to 2 and/or birth interval higher than 24 months; Moderate = Birth order 3 to 4 and/or birth interval between 18 and 24 months; High = Birth order higher than 4 and/or birth interval lower than 18 months.
Source: DHS 1986 and 1996.

1.10 **Despite the recent improvements, sharp regional inequalities in children's health persist: children in the Northeast are much less healthy than children in the Center-South, and the health of children in the rural Northeast is improving most slowly.** In the Northeast the memory of landed patriarchs who dominated society, called "colonels" because they purchased that title from the military authorities, lingers. The Northeast remains the poorest, most rural, and most traditional region of the county. The consequences of that social organization are visible in its health indicators. While over 10 percent of children nationwide still suffer severe growth retardation, or "stunting," in the Northeast that number is almost 18 percent, and in the rural Northeast it is one in four. The same discrepancies are apparent in infant mortality rates. DHS data from 1996 show that the infant mortality rate for the Northeast as a whole was 71.8 for the years 1987–95, and for the Center-South it was 32.3 over that same period. (Here the "Center-South" covers states in Brazil's Center-West, South, and Southeast regions. The sample of births for the North, which largely covers the Amazon region, was relatively small.) Although severe, chronic adult undernutrition is generally not a problem in Brazil, DHS data suggest that it remains so in the rural Northeast, whereas in the urban Northeast and in the urban and rural Center-South the percentage of underweight women of reproductive age has since 1989 hovered near 5 percent, which is what one would expect in a well-nourished population, and in the rural Northeast 8.8 percent of women were underweight in 1996.

1.11 While in urban areas the Northeast/Center-South gap in childhood health, though still large, is declining, in rural areas it is stagnant or increasing. Table 1.5 and Table 1.6 show that although the ratios of infant mortality rates and the prevalence rates of childhood stunting between the Northeast and Center-South fell significantly in urban areas (the urban Northeast was "catching up"), they increased in rural areas. The failure of the rural Northeast to keep pace with health improvements in the other regions, despite significant attention from the Brazilian government and from international donors, is a troubling evaluative finding (Monteiro and others 1997).

Table 1.5. Changes in Infant Mortality Rates in Urban and Rural Strata in Brazil, 1977–95

	1977–85	*1987–95*	*Annual Change (%)*
Urban			
North	51.1[a]	42.1[a]	-1.7
Northeast	120.4	62.8	-4.8
Center-South	47.0	33.0	-3.0
Brazil	68.8	41.2	-4.0
Rural			
Northeast	135.2	84.4	-3.7
Center-South	61.2[a]	28.8	-5.3
Brazil	100.9	60.8	-4.0

a. Rates based on less than 1,000 live births.
Sources: DHS 1986 and 1996.

Table 1.6. Changes in the Prevalence (%) of Stunted Children in Urban and Rural Strata in Brazil, 1975, 1989, and 1996

				Annual Change (%)	
	1975	*1989*	*1996*	*1975–89*	*1989–96*
Urban					
North	39.0	23.0	16.6	-2.9	-4.3
Northeast	40.8	23.8	13.0	-3.0	-6.5
Center-South	20.5	7.5	4.6	-4.5	-5.5
Brazil	26.6	12.5	7.7	-3.8	-5.5
Rural					
Northeast	52.5	30.9	25.2	-2.9	-2.6
Center-South	29.4	12.3	9.9	-4.2	-2.8
Brazil	40.5	22.7	18.9	-3.1	-2.4

Sources: ENDEF 1975; PNSN 1989; DHS 1996.

1.12 **Differential access to maternal education, health care and water, and new reproductive patterns explain why the health of children in the rural Northeast continues to lag.** It is noteworthy that changes in income could not explain these differing rates of improvement in health status. Table 1.7 shows that rural mean per capita family income declined less than urban income between the periods 1985–89 and 1992–96 and that rural poverty also fell more steeply. Nevertheless, the annual decline in the prevalence of stunting was 5.5 percent in urban areas and only 2.4 percent in rural areas. The reasons for this are that health care for children and mothers, maternal education, and new reproductive patterns all improved more in urban areas. Table 1.8 presents the differential effects of the risk factors in the various regions and sectors. Differential consumption of health care and maternal education, in particular, explain why the health of children in the urban Northeast started to catch up to children in the urban Southeast (although, of course, there remains a long way to go), but that the health status of children in the rural Northeast continues to lag.

Table 1.7. Trends in Economic Indicators by Region in Brazil, 1985–89 and 1992–96

	North			*Northeast*			*Center-South*			*Brazil*		
	Urban	*Rural*	*Total*	*Urban*	*Rural*	*Total*	*Urban*	*Rural*	*Total*	*Urban*	*Rural*	*Total*
GDP Per Capita (R$ of 1995)												
1985–89	--	--	2,548.00	--	--	1,709.00	--	--	4,413.00	--	--	3,510.00
1992–96	--	--	2,333.00	--	--	1,654.00	--	--	4,399.00	--	--	3,460.00
AC (%)	--	--	-1.20	--	--	-0.50	--	--	0.05	--	--	-0.20
Mean Monthly Per Capita Income (R$ of 1996)												
1985–89	263.00	--	--	185.00	71.00	138.00	368.00	140.00	328.00	328.00	109.00	276.00
1992–96	195.00	--	--	170.00	70.00	135.00	324.00	139.00	298.00	285.00	105.00	195.00
AC (%)	-3.70	--	--	-1.20	-0.20	-0.30	-1.70	-0.10	-1.30	-1.90	-0.50	-4.20
% of Income Share of the Poorest 40%												
1985–89	9.76	--	--	8.52	12.49	8.58	9.82	11.21	9.18	8.81	10.50	7.98
1992–96	9.07	--	--	8.41	10.04	8.01	9.93	11.03	9.56	8.82	9.64	8.24
AC (%)	-1.01	--	--	-0.18	-2.80	-0.95	0.16	-0.23	0.59	0.02	-1.17	0.46
% of Individuals Below the Poverty Line												
1985–89	44.30	--	--	42.70	46.00	44.30	20.50	28.50	21.70	26.40	36.60	29.20
1992–96	47.70	--	--	36.90	40.40	38.20	18.40	19.10	18.50	24.40	29.60	25.60
AC (%)	1.10	--	--	-1.40	-1.20	-2.00	-1.00	-3.30	-2.10	-1.10	-2.70	-1.80

Note: AC = Annual change.
Sources: Lavinas and Magina 1996; Sonia Rocha 1997 (personal communication). See note at the end of Table 2.15.

Table 1.8. Expected Decline in the Regional Prevalence of Stunted Children Due to Improvements in Health Care, Water Supply, Maternal Education, and Reproductive Patterns, Regionally, in Urban and Rural Brazil, 1986–96

	Annual Decline (%)				
		Expected Due To:			
	Observed[a]	*Health Care*	*Water Supply*	*Maternal Education*	*Reproductive Patterns*[b]
Urban					
North	-4.3	-0.4	0.0	-1.4	-1.3
Northeast	-6.5	-1.0	-2.2	-1.0	-1.6
Center-South	-5.5	-0.4	-1.0	-1.4	-0.7
Rural					
Northeast	-2.6	-2.2	n.a.	-1.3	-0.7
Center-South	-2.8	-3.3	n.a.	-0.5	-0.9

a. Annual decline based on the period 1989–96.
b. Increase in maternal age and average number of years between births.
Sources: DHS 1986 and 1996.

1.13 **The World Bank's past strategy for improving childhood health in the rural Northeast has underachieved.** As the evidence above shows, although the prevalence of stunting in the rural Northeast has improved significantly in recent years, it has not improved as quickly as it has in the rest of the country, even though there is so much more room for improvement. The reasons for that lag are probably not related to income. Rather, it is probably a result of the risks associated with a deficiency in health care consumption, which contributed less to expected improvements in the Northeast than could be expected from the gains and expected contributions witnessed in the rural Center-South, and to risky reproductive patterns, whose prevalence did not decline in rural areas as much as they did in urban areas (Table 1.8). Although the World Bank financed major investments designed to expand access to primary health care in the rural Northeast from the mid- to late-1980s to the present—projects in which maternal child health was a high priority at the time of appraisal—those investments did not help that region keep pace. The reasons for that underachievement are examined in Chapter 3.

1.14 **Targeted nutrition programs in Brazil have had mixed results, and the World Bank's nutrition project of 1976–85 did not contribute significantly to institutional development in the sector.** A review of past evaluations of nutrition interventions attempted in Brazil found that while both food donation programs and subsidies could reduce malnutrition among beneficiaries, the impact was generally modest, and the majority of beneficiaries experienced no change in their nutritional status (Musgrove 1990). OED rated the World Bank's first HNP project in Brazil—the Nutrition Research and Development project of 1976—unsatisfactory because its implementation languished as Brazil's priorities in the sector evolved and as the country encountered the debt crisis of the early 1980s. The World Bank did contribute a valuable assessment of nutritional issues in Brazil in 1996 (World Bank 1996).

Fertility and Women's Reproductive Health

1.15 **Brazil's fertility decline has been dramatic.** The number of births per woman—the total fertility rate—fell in Brazil from 5.8 in 1970 to 2.3 in 1996. Despite almost no population policy on the part of the Brazilian government (and, indeed, even in the face of early opposition to and suspicion of the international population policy community), the speed of the decline in Brazil has been faster than in India, Bangladesh, Mexico, and, by some measures, Indonesia, a country with an active population policy. Although the more urbanized Center-South regions experienced the demographic transition sooner, recent declines in total fertility have been much sharper in the Northeast. Indeed, evidence from the 1996 DHS suggests that fertility in the urban Northeast is now comparable to that in the Center-South (Martine 1996).

1.16 **The fertility decline has in all likelihood reduced the prevalence of the factors associated with risks to childhood health.** As the tables above show, health care use, maternal education, reproductive patterns, and income all contributed to recent improvements in childhood health in Brazil. Declining fertility rates affected all of those risk factors. They obviously affect the reproductive patterns associated with risks for childhood health, short birth intervals, and/or high parity. Fertility declines also reduced demand for immunization, prenatal care, and birth attendance, which in recent years helped to make health care more accessible at a time when the health budget had been declining. By reducing the intrafamily dependency ratio, falling fertility also contributed to the modest reduction in poverty observed in recent years. Finally, because age-specific fertility declines were substantially greater for women over 25 (who tend to be less educated than younger women), the average education rates of mothers increased, which on average improved the health of young children in the country (Monteiro and others 1997).

1.17 **Neither the Brazilian government, Brazilian NGOs, nor international organizations such as the World Bank can claim credit for Brazil's fertility decline.** Although the reason Brazilian women began to have fewer children remains unclear, social scientists do know what did not happen in Brazil. Changing marital patterns and breastfeeding practices did not contribute significantly to the fertility decline. Instead, the two other proximate determinants of fertility—abortion and contraception—were most important. Induced abortion must have been instrumental when the fertility decline accelerated in the late-1960s and early-1970s because the pill and the rhythm method were then the only widely known contraceptive techniques, and given the prevailing inadequacy of contraceptive information at the time, their efficacy was probably limited. Surveys indicate that the rate of female sterilization—now the most common method of contraception in Brazil—was relatively uncommon until the mid- to late-1970s, when its usage rose dramatically. Abortion is illegal in Brazil except in cases of rape or when the life

of the mother is in danger, but in practice women receive abortions from private medical practitioners, induce them themselves, or induce them and then go to public facilities after their life is threatened at a rate of 200 or 300 for every 1,000 pregnancies. Prevalence rates for modern contraceptive techniques have been increasing rapidly in recent years, reaching 51 percent in 1996. By far the two most common contraceptive methods are female sterilization (27.3 percent of all women between 15 and 49 years of age) and the pill (15.8 percent prevalence in the same sample). The health consequences of these fertility control patterns are complex and damaging; legal restrictions, financial incentives, cultural norms, and misinformation frequently lead women to use delivery as an occasion for sterilization, which is undoubtedly one reason why cesarean-section delivery rates in Brazil are the highest in the world and why maternal mortality in Brazil is unusually high (Martine 1996; DHS 1996).

1.18 Government policies, women's groups, and international agencies were ambivalent, actively opposed, or marginal to population policy in Brazil until the fertility decline had already become an established fact. In recent years those three actors have all helped to raise the awareness of and access to birth control alternatives, but the explanation of the fertility decline, though still not clearly understood, is undoubtedly a demand-side story. In Brazil's particular modernization history individuals very quickly entered an increasingly urban, consumerist, and media-dominated society whose health care system was simultaneously growing much more medicalized. As a result, educated and uneducated women alike sought fertility control options, and with few alternatives and little public information, they aborted more frequently and, later, obtained tubal ligations and oral contraceptives (Martine 1996; McDonough and DeSouza 1981).

1.19 The World Bank's contribution to fertility concerns in Brazil includes one sector study and components of the Northeast Basic Health Services projects. In Brazil the sector work was received as a valuable, but certainly not seminal, piece of research. The Northeast Basic Health Services projects encountered a number of institutional, procedural, and financial obstacles that are examined in detail in Chapter 3.

Infectious and Parasitic Diseases

1.20 **Diarrhea among children declined sharply, and oral rehydration therapy seems to have played a significant role.** Of the registered deaths due to infectious and parasitic diseases in Brazil, intestinal parasites account for the largest portion, some 34.1 percent in the country as a whole in 1994 and 51.9 percent in the Northeast. In 1980, over 71 percent of the deaths due to infectious and parasitic diseases in the Northeast were a consequence of intestinal parasites.[2] Most of these deaths strike children. The proportion of infant mortality due to diarrhea fell from 32 percent in 1980 to 17 percent in 1989, and infant deaths attributed to diarrhea dropped from 41 percent to 25 percent, resulting in an overall reduction of 57 percent. The most detailed study of the decline of diarrheal deaths among children in the Northeast found that increases in water supply, vaccine coverage, breastfeeding duration, and nutritional status could account for only 21 percent, or about a third, of the actual decline. That study argues that oral rehydration therapy, introduced in the Northeast of Brazil in the early 1980s, must account for a significant portion of the decline in diarrheal deaths (Victora and others 1996).

2. Ruy Laurenti and others, 1997, "Evaluation of Epidemiological Appropriateness of the World Bank's Work in Brazil, background paper for this report.

1.21 **Diseases preventable through vaccination are largely under control in Brazil.** Mass vaccination programs for children and the publicity surrounding "National Vaccination Days" raised the proportion of children under five who received complete basic vaccinations (DPT, anti-measles, and anti-tuberculosis) from 55 percent in 1986 to 81 percent in 1996. As a result, the incidence rates of measles, neonatal and accidental tetanus, and diphtheria have been falling steadily since the mid-1980s, and polio has been eliminated. The mortality rate due to tuberculosis among children under five has also fallen sharply. The key challenge now is to sustain those vaccination programs. Given the prevailing inefficiencies in the purchase and distribution of pharmaceuticals in Brazil and in the health sector in general, that challenge can present problems, as the widely reported shortcomings in the vaccination program of 1996–97 demonstrated (Laurenti and others 1997; Waldman and others 1995).

1.22 **Increasing incidence rates of tuberculosis and leprosy are symptomatic of weaknesses in Brazil's public health system.** As in many parts of the world, tuberculosis in Brazil has surged in recent years as a result of the AIDS epidemic, growing worldwide immigration, and relative neglect from the international public health community during the 1970s and early 1980s. Mortality rates for tuberculosis are also rising, probably as a result of its coincidence with AIDS. Leprosy incidence has been falling in recent years in every country in the world except for Brazil. Some part of the increase in Brazil is undoubtedly a result of better detection efforts, but there are reasons to believe that the disease itself is also spreading. Coverage rates of multidrug therapy may be less than 40 percent. The social costs of both diseases are high because they tend to affect economically active age groups. It is noteworthy that although Brazil has succeeded in controlling diseases for which only a single intervention is required, rising rates of tuberculosis and leprosy, for which diagnosis and treatment are complex, suggest that it has difficulty with conditions requiring a well-articulated public health system that can guarantee quality and regularity in the delivery of services (Laurenti and others 1997; Waldman and others 1995).

1.23 **Endemic parasitic diseases continue to threaten rural and remote areas.** In Brazil malaria is now almost exclusively an illness of the Amazon region, where it was responsible for 2.3 percent of all deaths in 1994 and a substantial proportion of the overall disease burden. Following an epidemic in the mid- and late-1980s, malaria rates have declined in Brazil as a result of changes in land settlement patterns and the efforts of the malaria control program. (The effectiveness of that program is examined in detail in Chapter 3.) In the Northeast leishmaniasis, schistosomiasis, and Chagas' disease have threatened rural residents for decades. Although the epidemiology of these diseases makes it difficult to determine trends in incidence—leishmaniasis outbreaks seem to occur in cyclical patterns, and Chagas' disease has a long dormancy period—recent data suggest that the threat is declining. Increasing urbanization and the government's endemic disease program in the Northeast, based on epidemiological stratification, may be responsible for that improvement. Yellow fever disappeared from Brazil in the middle of the century, but with the reintroduction of the vector *A. aegypti* in 1976, it again became a threat in parts of the country. The existence of an effective vaccine and the government's program to eradicate the vector hold out the prospect, though still remote, of again eliminating the illness (Laurenti and others 1997; Waldman and others 1995).

1.24 **Outbreaks of dengue and cholera, thought to be under control, have resurfaced in recent years.** Cholera returned to Brazil in areas along the border with Peru and Colombia in 1991 and has since spread to the smaller cities in the North and Northeast. The fact that it did not reach major metropolitan areas (with the exception of Fortaleza) suggests that sanitation systems

in Brazil might be better then had been suspected. The dengue epidemic of the mid-1980s followed the reintroduction not only of *A. aegypti* but also of the *A. albopictus* mosquitoes into Brazil in the 1970s and 1980s. Dengue, for which no vaccine is yet available, will constitute a major challenge for Brazilian public health authorities. The MOH is now investing significant resources in a vector control program for dengue.

1.25 The AIDS epidemic in Brazil, originally most intense among homosexual and bisexual men, has increasingly been affecting women, heterosexuals, and intravenous drug users. Whereas the ratio of males to females in AIDS incidence was 40 to 1 in 1983, it is now 3 to 1. As of May 31, 1997, the country had 110,872 reported cases. No population-based studies of seroprevalence exist, and sentinel surveillance surveys find seroprevalence rates in major cities as low as 0.5 percent among low-risk groups (pregnant women) and as high as 18 percent among high-risk groups (sexually transmitted disease clinic patients). With support from the World Bank, the government has launched a national AIDS prevention and treatment program that is increasing capacities for surveillance, treatment, institution building, and prevention by working with NGOs (Laurenti and others 1997; Ministry of Health 1996).

1.26 The Brazilian government can now combat infectious and parasitic diseases with modern methods, and the World Bank has significantly supported the development of those capabilities. Until 1990 the Brazilian agency responsible for fighting these diseases was the Superentendência para Campanhas de Saúde Pública (SUCAM), an extremely hierarchical organization with a quasi-military command structure. Frequently, it expended the great majority of its financial and human resources on vector eradication. At the same time, the public health capacities of the MOH remained underdeveloped as a result of relative neglect during the military regime: public health facilities and personnel were often not equipped to treat infected individuals. When it became evident that vector eradication was sometimes impossible—the best example was the failed effort to eradicate the malaria mosquitoes in the state of Rondônia—the government shifted to programs of disease control. These recognized that behavior change on the part of individuals was critical and emphasized information campaigns, community mobilization, leadership by state and municipal authorities, and treatment of infected individuals. At the same time, vector control efforts were targeted to areas of high incidence, a strategy that required the development of sophisticated information systems and the techniques of epidemiological stratification. The government inaugurated the new era of fighting infectious diseases by closing SUCAM and creating a public health agency called the National Health Foundation (FNS) to take responsibility in that area.

1.27 The international health community, including the World Bank, learned these lessons along with the Brazilians. The early Bank projects did not include the more modern approach, but when the Bank-sponsored project to fight malaria in Rondônia faltered, the international community moved to modify the recommended strategies. The Bank did not learn that lesson, nor act on it, quickly; and critics of the Rondônia malaria program were vocal by the mid-1980s. Nevertheless, by 1992 the World Bank and the World Health Organization (WHO) did help to forge a new international consensus on fighting parasitic diseases that emphasized the importance of community mobilization, epidemiological stratification, and clinical treatment. The Bank's second malaria project and the Northeast endemic disease control project were modified at about that time. The AIDS project of 1995 included significant resources for epidemiological surveillance and for working with NGOs to help change behavior. Those projects have made important contributions to the development of new and modern epidemiological capacities in Brazil.

Health Concerns of the Epidemiological Transition

1.28 **As early as 1980, "post-transitional" conditions became the leading causes of death in every region of the country.** An epidemiological transition is said to occur in a country when, as a result of modernization and development, infant mortality and fertility decline, life expectancy increases, and infectious and parasitic diseases are no longer the leading causes of death. Those new demographic patterns emerged in Brazil's South and Southeast decades ago, and by 1980 all regions of the country were undergoing that transition. By 1980 cardiovascular disease became, and remains, the leading cause of death in each major region and in almost all states, only surpassed in a few states by death due to external causes. External causes, most often homicides among men and traffic accidents among women, are now the second leading cause of death in Brazil, and cancer is third (Laurenti and others 1997).

Table 1.9. The Leading Causes of Death: Proportionate Mortality in Brazil (% of All Deaths), 1994

	South	*Southeast*	*Center-West*	*North*	*Northeast*	*Brazil*
Circulatory Diseases	32.6	30.6	27.1	17.9	19.5	27.6
External Causes	11.8	9.8	17.6	13.9	9.7	12.1
Neoplasms	15.2	11.9	9.9	7.8	6.3	9.3
Respiratory Diseases	10.7	10.6	7.7	6.4	5.9	9.2
Glandular, Metabolic, and Immune Interruptions	4.0	6.5	4.1	3.4	3.9	5.2
Infections and Parasites	3.2	4.1	6.4	7.0	6.4	4.8
Unknown Causes	9.5	12.5	12.8	28.3	37.0	17.0

Source: OED Paper #5.

1.29 **The prevention and treatment of these conditions will require reform of the health care system in coming years.** Although Brazil now faces developed-country problems at the same time as it continues to confront the traditional public health challenges in the "interior" and marginal areas, these newer health problems are not the diseases of the rich alone. Indeed, both the prevalence of these diseases and of the risk factors associated with them, such as smoking, poor diet, and lack of exercise, are generally higher among the poor, who are relatively uneducated and to whom information reaches less easily (World Bank 1989). As Brazil's population continues to age, living longer more sickly, the health system will need to screen for cancer, treat strokes, care for long-term and chronic conditions, and provide chemotherapy and other complex, expensive treatments more often. Although some Brazilians in the metropolitan areas can receive adequate care for these conditions, the majority of Brazilians will not gain access to advanced, privately financed health care in the near future. Rising demand and escalating costs will tax an already underfunded public system. Clearly, much-needed investments in medical infrastructure, equipment, and medical training, some of which the World Bank is helping the Brazilian government undertake, will be necessary. It is obvious, however, that Brazil will not be able to guarantee free and universal health care indefinitely, as it currently purports to do. To fulfill its promises in health, the Brazilian government will either have to ration care explicitly, rely more heavily on private financing, or both. Problems with the current system of health care are addressed more directly in the next section; here, suffice it to say that demographic pressures will further tax an already overburdened system.

1.30 **The World Bank is helping the Brazilian government upgrade modern health facilities, but the Bank has not worked in the area of prevention, and its leverage with respect to policy reform is limited.** The Health Sector Reform project, Reforsus, which the

World Bank has financed along with the Interamerican Development Bank, creates an innovative instrument for disbursing grants in an equitable manner to health facilities on the basis of competitive bids. This will help the health system respond to the emergent demands of an aging population. With the exception of a thoughtful and innovative piece of sector work in 1989 on adult health, however, the World Bank strategy has not addressed techniques for behavior change that might reduce the incidence of chronic and degenerative diseases in a cost-effective manner, such as antismoking efforts. One condition of the Reforsus loan requires the government to increase the relative supplier prices for cost-effective treatments. It has been difficult for the government to push that reform through, however, because of intransigent problems in the political economy of the sector. The following section examines those problems in detail.

The Health Care System in Brazil

1.31 **Most health economists would not object to the broad structure of Brazil's health care system.** Following the dictum, the Brazilians go a long way toward "separating the financing from the provision of services." The government health care system, called the Sistema Unica da Saúde (SUS), contracts out large majority of inpatient care and a substantial portion of outpatient services to a network of private and philanthropic hospitals, clinics, and other facilities. All told, the public sector manages and owns only 31 percent of the hospital beds it supports.

1.32 The government reimburses both public and private or philanthropic hospitals not for services they have provided, but on the basis of a table linking prospective fees and guidelines to various diagnoses, a fee schedule called the Autorização da Internação Hospitalar (AIH). For ambulatory care, the SUS reimburses public and private providers on an ex post per capita basis and is moving toward a capitated prospective payment system for primary care. In addition, since 1987 the MOH has been slowly decentralizing control of publicly owned facilities to states and municipalities. Despite policy reversals under successive federal governments, by 1992 municipalities managed 69 percent of public facilities, seven times more than in 1980. Granted, most of these were small, outpatient health posts or clinics, but municipalities are gradually taking charge of complex facilities as well. A total of 98 municipalities of the 150 or so that enjoy the highest degree of autonomy permitted under Brazilian law have attained those powers during the last two and a half years.

1.33 Privately financed health care has grown rapidly in recent years. A wide variety of indemnity insurers, in-house company health plans, managed care organizations, and group practice associations now provide health care for an estimated 25 percent of Brazilians (Lewis and Medici 1995), a figure confirmed by results from the 1997 Brazil Living Standards Measurement Survey (LSMS), which places the figure at 26 percent. These plans, which vary widely in quality and price, are currently subject to almost no regulatory oversight. As a consequence, although many of these private providers and financiers offer health care of world class quality, others provide services of questionable quality, go to great lengths to exclude bad risks from coverage, and are financially insolvent. A law establishing minimal standards, disclosure, capital requirements, and conditions of coverage for private health providers and payers is now pending before the Congress.

1.34 Currently, privately insured individuals still have recourse to public hospitals and clinics, which, as stipulated in the constitution of 1988, must be free and universally accessible. Because those individuals often resort to the public system in the event of catastrophically expensive

illnesses, most private insurance plans are not priced to include coverage for catastrophic conditions. The congressional legislation would require private health insurers to reimburse the national health system when it provides services to their subscribers, particularly for the most expensive procedures. That proposed legislation would make most private health plans more costly because they would be forced to offer more comprehensive plans or to pay the public system for its function as the provider of "last resort." It will probably also lead to consolidation in the industry as cost pressures force insurers and other payers to merge to form vertically integrated health care networks.

1.35 **Despite the ostensibly efficient structure of the health system in Brazil, in reality the system is experiencing incoherencies and critical problems, if not a crisis: as always the devil is in the details.** Four particular details are most obviously problematic: (i) severe underfinancing of the public system results in regional inequalities, arbitrary rationing in facilities, and a perceived decline in quality; (ii) the incentives for cost-effectiveness and quality are weak; (iii) the inherent tension between decentralization and providing cost-effective care remains an obstacle; and (iv) Brazil has not overcome the historical legacy of a highly curative system.

1.36 **Severe underfinancing of the public system results in regional inequalities, arbitrary rationing in facilities, and a perceived decline in quality.** Brazil's constitution of 1988, following a decades-long social movement combating the inequitable health care policies of the military regime, enshrined a system of health care that was to be universal and free for all citizens. But the demand for health care in a modern society is practically limitless, and given the degree of need as well as the extent of scarcity in Brazil, rationing was inevitable. The government's criteria for rationing resources across regions includes past utilization rates, a procedure that institutionalizes regional inequities in access to health care. With the recent decentralization and policies designed to increase the absolute and relative number of hospital beds in the North and Northeast, hospital admission rates have become more equal across the country. Nevertheless, because the facilities for providing more complex services remain concentrated in the South and Southeast, there remain significant differences in regional per capita SUS expenditure. In an effort to increase the use of ambulatory services, the government now limits hospital admissions in each state to no more than 9 percent of its population. Although most states' admissions rates are comfortably below that limit, the demand for hospital care will undoubtedly rise as the population ages in coming years, putting pressure on the rationing criteria.

Table 1.10. SUS Resources by Geographic Region

	SUS Transfers for Hospital and Ambulatory Care per capita, 1995, nominal $R 1995	*SUS Ambulatory Visits per capita, 1996*	*SUS Hospital Beds per capita, 1994*	*SUS Hospital Admissions as Percentage of Total Population, 1996*	*Total Population, 1996*
South	47.46	1.86	3.80	8.47	23,356,213
Southeast	48.02	2.41	3.60	7.01	67,098,649
Center-West	40.85	1.78	3.90	7.72	10,465738
North	23.84	1.21	2.10	7.38	11,410,630
Northeast	34.36	1.72	2.90	7.91	45,540,748
Brazil	41.79	2.00	3.30	7.56	157,871,978

Source: OED Paper #7.

1.37 The health sector has not recovered from the hyperinflation of the late-1980s and early-1990s. Between 1990 and 1994, medical prices increased almost three times faster than adjustments in the AIH fees, and as a result supplier prices are far below actual costs. Public health spending as a percent of GDP fell from 3.1 percent in 1989 to 2.1 percent in 1992. The government had planned to reverse a portion of that sharp deterioration in real supplier prices with dedicated revenues from a new tax on financial transactions. That plan would increase federal spending on health 22 percent per year between 1994 and 1998, so that total annual (public plus private) per capita expenditure on health would reach $250 by the end of 1998 (up from $136 in 1994) (Medici 1994). But given the fiscal adjustment of recent years and the present financial crisis, even that partial recovery for the health sector will not be attained. Consequently, the infrastructure of the network of private and philanthropic facilities that offer the bulk of SUS services has deteriorated, and health care professionals in the public system feel poorly remunerated. To make ends meet, doctors frequently work at two or three different sites; a recent study found that 25 percent of Brazilian doctors have four or more work activities.[3] Often, their employers are both publicly reimbursed and purely private, which can create conflicts of interest. When in the recent past AIH rates were especially low and public vigilance particularly weak, fraud in the system was widespread; it was commonplace for providers to reclassify diagnoses into the more highly reimbursed conditions. With prices still well below cost, health facilities continue to have incentives to select patients whose conditions are most highly reimbursed. Stories of long lines for hospital services, mistakes in emergency care, strikes and walkouts on the part of health professionals, arbitrary triage, and other crises are reported daily in the Brazilian press.

Table 1.11. Relative Mean Salaries of Professionals in Brazil, 1990

	Relative Mean Salary
Engineers and Architects	145.8
Computer Systems Analysts	157.3
Doctors	100.0
Nurses	70.4
Secondary School Teachers	50.5
Senior Civil Servants	58.3

Source: NESCON, UPMG 1997.

1.38 Aggravating the problem of scarcity, the political economy of budgeting for health in Brazil weakens the sector. The largest portion of health revenues come from taxes designated to fund social security broadly defined, which includes pensions, health, and social assistance. Every year, the representatives of the health sector "negotiate" in Congress, the cabinet, and the National Council on Social Security for their piece of the pie. Although the rules governing the terms of that bargaining are not as slanted toward pensions as they were a few years ago, when the commissioner for pensions unilaterally cut off the social security contribution to health financing for fiscal year 1992, the health sector remains weaker than pensions. In addition, once the budget has been appropriated, the Secretary of the National Treasury, an organ of the Ministry of Finance, establishes a quarterly schedule of disbursements for the various ministries, a practice that usually results in "contingency" restrictions for health, particularly in the first three quarters of the year, for the purposes of fiscal adjustment. The result is an irregular flow of resources to health, which makes planning in the sector difficult and often inefficient. Figure 1.1 shows that a large fraction the total resources spent on health programs in 1995 were disbursed

3. Fernando Campos and others, 1997, "Educaco Medica no Brasil," background paper for this report.

in the last two months of the year. It also shows that the Ministry of Finance's "contingency" restrictions tend to fall most heavily on public health programs and not on hospital and ambulatory reimbursements. In 1996 health surveillance received only R$5.7 million of the R$55.9 million originally budgeted to it for that year while payments for services (AIH–UCA) received R$7,961 million but had been budgeted only R$7,371 million. For the following year, as of June 30, 1997, although 43.5 percent of the total health budget had been executed, basic sanitation had received only 2.8 percent of its allocation, the program to eradicate the *A. aegypti* mosquito only 6.8 percent, the ministry's program for fighting nutritional needs 2.3 percent, and the program for health surveillance 1.1 percent.[4] The reasons for this are that these programs do not enjoy a broad political constituency of either providers or consumers and as a result, suffer most when health resources are cut back or delayed.

1.39 The severe underfinancing of SUS facilities has led more and more Brazilians to purchase private health insurance. Access to private insurance is, of course, highly correlated with socioeconomic level. In the population as a whole, 26 percent of individuals have private health insurance, but whites are more than twice as likely to have insurance as nonwhites (32 percent versus 13–14 percent). Even larger disparities exist across education and expenditure quintiles. Over 67 percent of individuals with college education enjoy access to insurance but only 5 percent with no education have it; similarly, 64 percent of individuals in the top expenditure quintile have insurance while only 4 percent in the lowest quintile have access to it.[5]

1.40 The OED analysis found that insured individuals are significantly more likely to utilize health care services than those who rely exclusively on the SUS, conditional upon being sick in the last 30 days. More surprisingly, the analysis also found that adults and children with private health insurance are likely to be healthier than uninsured adults and children even after controlling for individual and parental education, household income, family structure, race, gender, age, access to clean water and sanitation, and municipal-level fixed effects. (The analysis could not control for selection bias in insurance coverage). In particular, the analysis found that insurance positively affects the adult male body-mass index (BMI), is marginally significant for adult female BMI, and significantly reduces the likelihood of childhood wasting. (Annex C presents findings for adult health.) A simulation experiment based on the model found that, with all other variables set at sample means, moving from uninsured to insured would reduce the probability of a child's being stunted from 4 percent to 0.7 percent and would increase an adult male's BMI by 2 percent. The positive finding in the fixed effects specifications strongly suggests that the insurance variable is in not proxying some underlying measure of wealth or class but rather that it has significant explanatory power for on its own account. This is a surprising result given the conventional wisdom that health care services do not directly and measurably affect objective measures of health status, and it therefore warrants more research and careful follow-up. Nevertheless, for the purposes of this study it emphasizes the importance of access to private health insurance in Brazil, confirms magnitude of differential access to it, and suggests that the Brazilian and international health policy community should focus on better understanding the impact of private health coverage and the factors that might make it more accessible (Rose 1997).

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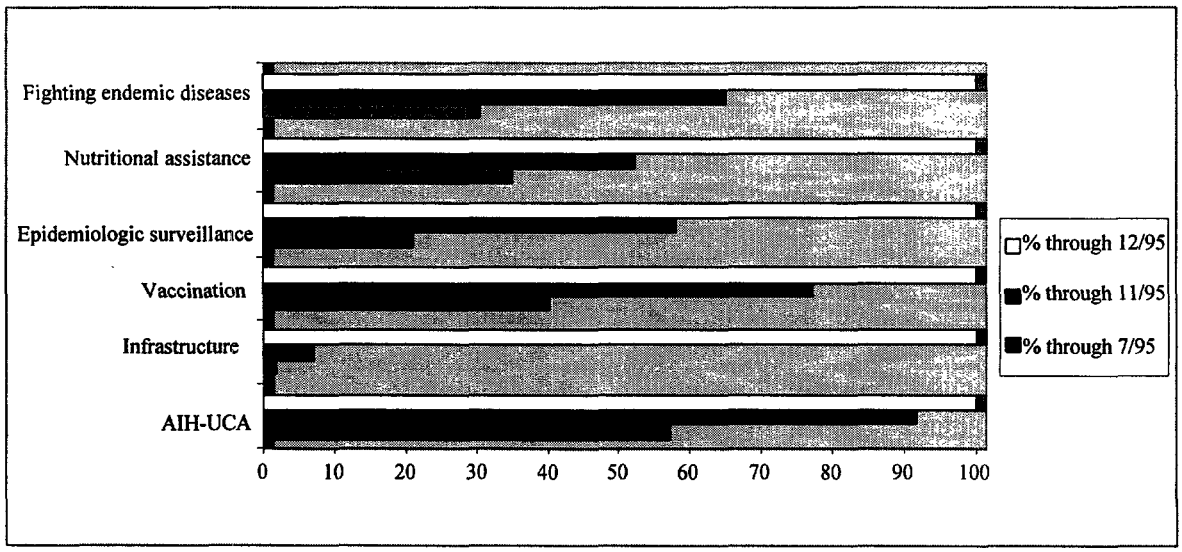
4. Elizabeth Barros, 1997, "Politica de Saúde no Brasil: alguns aspectos de sua evolucao e albumas questoes de conjuntura," background paper for this report.

5. Elaina Rose, 1997, "Health in Brazil: Results from the Brazil Living Standards Measurement Survey," background paper for this report.

1.41 The World Bank has not developed a strategic response to the causes or the consequences of underfinancing in the Brazilian health sector. The Bank's response to date has been primarily to provide financing for unmet needs, such as for basic health services in the Northeast, health infrastructure, and endemic diseases. While providing financing can be a valuable contribution (Chapter 3 assesses how effective projects have been), Brazil can access the private capital markets with relative ease; and it is difficult to know whether or not the government would have obtained the funds for Bank-financed projects from other sources. The role for the Bank in middle-income countries like Brazil will increasingly be to provide technical advice, build consensus around worthwhile policy initiatives, and lend its name and credibility to those initiatives. That new role requires a strategic response to the central problems that Brazil faces; and in the health sector, one of the most important problems is continual underfinancing.

1.42 Because Bank health financing accounts for less than 1 percent of annual health expenditures in Brazil, it would be unrealistic to think that it could compensate entirely for the funding shortfall, or to believe that the Bank could by itself leverage fundamental changes in Brazilian political economy. Nevertheless, the Bank could play an important role in helping to build support in Brazil for policy reform. In particular, the ongoing and intransigent budgetary problems of the SUS raise the possibility that private payers could, given appropriate regulations and targeted subsidies, eventually grow to provide health care to lower- and middle-income segments in Brazil more efficiently than the public system. The Bank might have made the development of an appropriate private sector regulatory framework the focus of its sector reform instead of choosing to work with the AIH tables. Conceivably, it might also have made its financing conditional on the degree to which particularly important public health programs were spared from "contingency" restrictions. These suggestions are, of course, only the barest sketch of one possible strategic response, which in its full form would require much more analysis than can be presented here. The basic point is that the Bank should have a coherent response to the crisis of underfinancing in the sector; right now that does not exist.

Figure 1.1. Actual Expenditures for Budgeted Programs, 1995



Source: SIAFI/MF.

1.43 **Second, problems in the structure of the health system in Brazil result in weak current incentives for quality and cost effectiveness.** In general, quality assurance mechanisms for health in Brazil are weak. The ministry is only now beginning to develop the necessary information, monitoring, and evaluation systems—consideration of how that information can be tied to incentives in the sector remains a long way off. Quality of care remains an important area for future research in Brazil, but the Bank did contribute a valuable summary of past work in its sector work on the financing and organization of the health system (World Bank 1994). Quality assurance in privately financed health facilities, transparency from indemnity insurers, and minimal regulations of managed care providers are also underdeveloped in Brazil. Legislation that would regulate the sector for the first time is now in Congress.

1.44 The principal mechanism for guaranteeing the cost-effectiveness of care are the AIH diagnostic tables. For a variety of reasons, these are not the best instrument for that purpose. Not only do the tables fail to reflect true costs, but their supply prices are not reliable signals of relative marginal costs. In other words, although in theory the table would present a schedule of fees that reflected both the cost of providing services and the social utility of their consumption, in practice the supply prices are used to subsidize a variety of activities in the sector, such as university research, and to provide benefits to public sector employees. As Table 1.12 shows, average costs for various services vary widely depending on the type of facility providing the service.

Table 1.12. SUS Hospital Admissions Mean Value of AIH by Provider, 1991–96

Type of Provider	*1991*	*1992*	*1993*	*1994*
Private	396.68	394.06	200.36	360.80
Contracted	402.17	394.84	205.24	336.04
Federal	466.90	352.31	166.34	219.27
Federal-Autonomous Funds	--	--		--
State	398.22	351.30	179.24	288.91
Municipal	324.32	291.63	150.54	246.80
Philanthropic	388.18	379.73	200.20	312.03
University Instruction	392.88	381.91	181.37	281.12
University Research	1,139.73	774.21	470.82	789.17
Total	419.85	399.98	212.60	358.33

Source: DATASUS/MS.

1.45 The ministry has revised the relative prices in the AIH tables more than 60 times in the past three years. Some revisions have followed the introduction of new technologies and medical procedures, others reflected new programmatic priorities, and still others were attempts to adjust the AIH values to changes in market prices. The process by which the table values change is less than transparent, and interest group negotiations invariably intervene. To complicate matters, the fee schedules are not the only parameters affecting supply prices; regulations on the permissible length of hospital stay for a given diagnosis are also subject to change. Finally, as in any country, not only supply prices, but a web of rules regarding professional practice, affect the market for health care providers, the overall cost of services, and, therefore, the utilization of health care in Brazil.

1.46 Nevertheless, the government has attempted to use the AIH tables to induce providers to offer and patients to consume more cost-effective health care services. In particular, a 1993 regulation introduced incentives into the tables for family planning in public facilities, community health agents, and ambulatory care for psychiatric patients. The World Bank-

sponsored Reforsus project likewise operates on the condition that the government increase the relative prices of cost-effective services. It is not clear, however, whether the AIH tables will serve as an effective instrument for setting programmatic priorities. First, as noted above, a variety of rules governing length of hospital stays, provider activities, and the use of the AIH fees to subsidize other activities make the actual supply prices difficult to calculate. Given those rules and given uncertainty about market costs for various services, it is not clear that raising the relative price of, say, cervical screening relative to chemotherapy will lead more women to use screening programs. How the owners and managers of private, philanthropic, and public facilities provide incentives to their salaried providers, and how those providers then interact with consumers to induce consumption is a problematic topic for economic and sociological research. The economic analysis accompanying Reforsus notes, "Attempting to modify consumption patterns solely through changes in SUS tariffs may not be efficient"; it also might not be possible. Second, Brazil is a country with tremendous regional diversity. What is a cost-effective priority in the interior of the Northeast will not be the same in Rio Grande do Sul. The use of supply prices for setting priorities will be effective in that context only if they vary by region, but objections to that idea are strong both ideologically ("a citizen of the Northeast cannot be *valued* less than one in the South") and from the private sector, which would prefer to negotiate the AIH prices directly with the federal government. Moreover, the difficulty of establishing actual costs inside the system would leave price-setting to interregional bargaining, a process likely to favor the more developed areas of the country (Barros 1997).

1.47 The fundamental tension is that the AIH tables are currently used both to share resources and to set programmatic priorities. Parties interested in maintaining a particular price for a particular medical service or product lobby to keep it so. That makes it difficult for the health ministry to reprogram priorities and target resources in a manner that both responds to epidemiological needs and rewards effectiveness. As a result, the World Bank strategy of promoting cost-effectiveness in the Brazilian health care system by developing a package of basic services and working with the AIH tables is unlikely to succeed. Moreover, given the degree of uncertainty regarding the actual costs of services, it will be difficult to know when and if that strategy does succeed.

1.48 **The third set of structural challenges for Brazil's health system involves the capacities and incentives of local governments to whom health services have been decentralized.** The current strategy dates to 1993, when the government settled on an approach that would devolve powers to the municipalities in three stages: incipient, partial, and full. In the last and most advanced state of autonomy, the municipality assumes full responsibility for the management of all aspects of health care in its area, including epidemiological surveillance, public health, and the provision, purchasing, and payment of medical care. It receives transfers from the SUS, which it then uses to pay private providers. The municipality must pay providers at least the rates specified in the AIH tables, but it can exceed them if it so chooses. So far, just 150 or so of more than 5,000 municipalities operate with advanced autonomy.

1.49 Alongside the movement to greater local control, however, the ministry has also proposed in its operating norms for 1996 a number of limitations on municipal activity. The norms propose, for instance, a minimal level of expenditure for ambulatory services and a prospective per capita financing mechanism for them, controls on and a reduction in expenditures for high technology care, a role for the states in managing ambulatory care of medium complexity, and incentives for the Program of Family Health and Community Health Agents, which are programs of coordinated health outreach. Some critics of these plans argue

that they unduly restrict local powers. They argue, for instance, that the Family Health and Health Agents programs might not be suited to very urban settings and that the municipality that should be able to make that decision without incurring a financial penalty. Others respond that Brazil's health system is inefficient, that there is an imbalance between hospital and ambulatory care, and that municipalities cannot of themselves shift that balance. The issue is part of broader tension between decentralizing control and organizing a coordinated and cost-effective delivery of medical care, a tension with which Brazil's policymakers will struggle in the coming years.

1.50 The World Bank's stance on health decentralization in Brazil has never been clear and comprehensive. Decentralization is an eminently political issue whose effectiveness depends critically on the specific institutions involved. In Brazil, it is unlikely that the Bank will know those institutions better than its client knows them. The São Paulo project sought to support the health decentralization underway in the middle 1980s, but the complexity of politics in that state, as well as the Bank's failure to appreciate it in full, resulted in a project that was not well articulated with the evolving governance of the state. The Northeast basic health services projects supported decentralization by providing technical and managerial training. The recent health sector reform, Reforsus, supports decentralization by encouraging managerial development as well, but its emphasis on setting national cost-effectiveness priorities places its strategy in conflict with the objective of local autonomy and regional diversity in SUS prices. That is exactly the tension described above, and one that the Bank could provide valuable technical assistance by analyzing in more depth.

1.51 **Overcoming the legacy of health policies of the military regime is the last and most politically difficult challenge for the sector.** Most observers recognize the origins of the problem. For years, the military regime funded health care through the social security institute, which covered only formal sector workers who contributed salary deductions. Medical care facilities nationwide were underdeveloped, so the institute encouraged and reimbursed private providers. Large numbers entered the market, and the system of contracting out and the network of SUS-related private and philanthropic hospitals and clinics were born. Without a program to coordinate the supply of health care, private providers, unsurprisingly, concentrated in the more prosperous regions. The role of the MOH, which might have played a coordinating function, was limited to public health measures under the military regime, and it was a distinct second to the Social Security Institute (INAMPS), whose power and prestige lay in its reimbursement of private providers and control of pensions. When the democratic governments assumed power in the late 1980s, they inherited the legacy of a formerly exclusionary and highly centralized health system with relatively weak capacity in public health and unresponsive to local needs and Brazil's enormous regional diversity.

1.52 Despite efforts to make the system more equitable and effective, Brazil's health system remains distorted and expensive. Because public health care is free in Brazil and because health manpower and facilities remain more concentrated in the wealthier regions, government health expenditures are not well targeted on the poor. In 1994, 20.9 percent of Brazil's public expenditures on health, education, and housing went to families in the upper quintile of the income distribution, and only 15.5 percent to the lowest quintile. By comparison, the corresponding figures for Chile were 4.0 percent and 36.3 percent, respectively (World Bank 1994 -- find this cite ??). Although the health accounts data do not lend themselves to simple categorization in Brazil, a "back-of-the-envelope" calculation finds that about 1 percent of Brazil's total public and private health expenditures in 1996 went to public health programs. The

comparable figure for the United States in 1995 was 3.3 percent.[6] Again, the data are sketchy and not easily compared, but they do suggest that Brazil, where the marginal benefits of certain, efficacious public health programs are probably relatively high, could improve the effectiveness of its health expenditures. To reiterate, the point is not that Brazil spends too much on hospital care: given the existing and projected needs of its aging population, Brazil's hospital expenditures are probably too low. Nor is it the case, moreover, that public health programs are uniformly more cost-effective than "curative" care. Nevertheless, the data support the widely held impression that there is considerable room for Brazil to improve the targeting and cost-effectiveness of its health care system.

1.53 The government has attempted some of those reforms. The Program of Family Health, initiated in 1993, creates teams consisting of a doctor, a trained nurse, and health auxiliaries who conduct health outreach in marginal and rural areas. An initial evaluation of the program in two small municipalities of two Northeast states, Pernambuco and Ceará, finds that the program reduced diarrheal infection rates while also reducing hospital admissions (Gentile 1997). The program might not be the ideal public health instrument for urban areas, however, and the difficulty of recruiting doctors for it requires salaries about twice as high as the mean, which leaves the sustainability of the program open to doubt. The MOH has also proposed regulations compelling states and municipalities to spend more health care resources on ambulatory care and to finance those expenditures with reductions in high technology care. Several municipalities, states, congressional leaders, and their financial backers—the health care "lobby"—have so far successfully opposed that proposal.

1.54 The health lobby in Brazil is strong, well organized, and well known. To understand its organization, a word about Brazil's political economy is in order. Brazil has long been and continues to be a country in which business, labor, and social organizations are fragmented, whose political parties are nonprogrammatic and greatly weakened by regional divisions and personalistic ties, where clientelistic relationships dominate the nonformal sectors and corporatism ties the formal sectors to the state, and in which state institutions are numerous and frequently divided. One author, writing about developments in democratic Brazil, concludes: "Very few, if any encompassing interest associations, broad-based social movements, and program-oriented parties have emerged, and the institutional unity of the state has diminished further" (Weyland 1996).

1.55 The institutional fragmentation of Brazilian society is at the root of the obstacles President Fernando Henrique Cardoso faced in getting administrative and social security reforms through the Congress and, hence, of the fiscal and trade deficits and the current financial crisis. That fragmentation is also especially important for reform in the social sectors. Because health care and classroom teaching are necessarily extremely decentralized services and also by

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6. The figure for the United States is taken from Levit and others (1996). The figure for Brazil is based on the $14 billion SUS spending in 1996, an estimate of $6 billion for state and municipal spending on health (probably a low estimate), and an estimate of $8 billion for private spending (probably low because it excludes out-of-pocket payments and since industry estimates for 1996 were $14 billion in private health care spending), for a total of $28 billion. Public health spending on the part of the ministry in 1996 included the program to fight endemic diseases, the entire AIDS program, the coordination of basic sanitation activities, nutritional support programs, vaccination, and epidemiological surveillance, which totaled $207 million. Assuming that public health programs in state and municipal governments constitute the same fraction of their health spending as it does at the federal level (probably an overestimate), then total public health spending in Brazil is $286 million, about 1 percent of total public and private health expenditures.

tradition very ritualized interactions, reforms in those sectors require building a consensus among large numbers of actors and making a credible, concerted, and sustained effort over a long period of time. That is very hard to accomplish when personalistic ties, regional divisions, institutional quarrels, and party weakness result in never-ending compromise or frequently changing leadership. World Bank health projects frequently suffered from almost yearly changes in project managers and ministers.

1.56 In that institutional context and in a setting with toothless campaign finance laws, interest group lobbies easily overcome weak party loyalties and ideological commitments. The health lobby is one of the strongest and most well organized of those groups. At the state level, leading families almost always have stakes in the medical care, pharmaceuticals, and construction industries (for whom health facilities constitute a major source of revenue). They lobby the state and local politicians and the state and local health councils to channel resources to the sector and to their interests. In the national Congress, 95 of the 596 parliamentarians are registered in an official health "bloc." The health "bloc" consists of individuals ranging across the ideological spectrum, from socialists from the old "health movement" to promoters of an open (and federally subsidized) market for health. Many but not all of them have personal, family, or political interests in the sector, and all tend to support increased resources for health care. An OED analysis of voting patterns and campaign finance contributions attempted to link interest group pressures to voting outcomes, but data on both variables was insufficient to permit a detailed analysis (Barros 1997). The analysis did find, however, that the rate of registration in the health lobby is indeed highest in the Northeast, the region of the country most notorious for clientilism in the sector, a finding presented in Table 1.13. (A comparison of total regional populations to parliamentary representation shows that the North and Northeast are overrepresented. Many political analysts attribute the predominance of clientilistic forces in Brazilian politics to this substantial deviation from the principle of "one man, one vote" in favor of the North and Northeast.) Although it is difficult to obtain evidence of interest group influence in the sector, occasionally it emerges. For instance, a Senate committee investigating corruption and mismanagement found that 27 percent of the unfinished civil works in the country were health-related facilities. A Senate investigation in 1993 found that dozens of municipalities in the state of Bahia had hospital admission rates over 25 percent (while the average for each state is now capped at 9 percent), which it attributed to the political influence of the local mayors (*A Folha da São Paulo*, November 3, 1994).

Table 1.13. Percentage of Federal Parliamentarians in the "Health Lobby"

	% of Population	*Total Parliamentarians*	*Total In Health Lobby*
Northeast	28.9	178	35 (19.7%)
North	7.2	86	10 (11.6%)
Center-West	6.6	53	7 (13.2%)
Southeast	42.5	191	33 (17.3%)
South	14.8	86	10 (11.6%)
Brazil	100.0	596	95 (15.9%)

1.57 In all pluralistic countries, political interests block social policy reform, but in Brazil those forces are particularly strong because of the fragmentation of the institutions—social movements, political parties—that could control or channel them to collective ends. Policy initiatives proposed by the World Bank should recognize that fragmentation and, gradually and persistently, build coalitions to support reform.

1.58 Finally, the education of the current generation of health professionals and the labor market for them also impedes efforts to make the Brazilian health care system more cost-effective. Experts in the field agree that the training physicians have received in medical schools since the late 1960s, when the social security institute began to expand the Brazilian health system rapidly, has encouraged specialization and high technology care. A few schools have created curricula with more emphasis on prevention and family health programs, and a Kellogg Foundation initiative is encouraging others to do so as well. Evaluations of previous efforts, however, indicate the graduates were not significantly more likely to practice primary care medicine. Unsurprisingly, the studies suggest that the success of efforts to change medical curricula depends on a simultaneous changes in the labor market for health professionals (Campos and others 1997).

1.59 Brazil has one of the lowest ratios of nurses to doctors in the developing world: in 1994 there were 4.5 doctors for every fully trained nurse. The problem is not a shortage of nursing applicants but a shortage of nursing jobs. One study found that between 1977 and 1983 there were 23,033 nurses trained but only 7,629 positions available (Campos and others 1997). While the private sector has the majority of medical jobs and provides the large majority of health care services in the country in Brazil, the public sector had almost twice as many nursing positions (see Table 1.14). That reinforces the impression that Brazil's heath labor markets are not generating and rewarding enough health professionals trained in providing cost-effective primary care.

Table 1.14. Employment of Health Professionals by Sector in Brazil, 1995

Professions	*Public*	*Private*	*Total*
Doctors	148,035	159,917	307,952
Nurses	27,081	14,420	41,501
Dentists	28,449	13,060	41,509
Pharmacists	3,973	2,935	6,908
Physiotherapists	2,377	5,133	7,510
Nutritionists	3,022	1,899	4,921
Total	212,937	197,364	410,301

1.60 In sum, the legacy of a curative system in Brazil creates a vicious circle. It is impossible to move to a more cost-effective system without professionals trained to do so, but it is also impossible for schools to produce providers interested in cost-effectiveness if the labor markets do not reward them. Those interested in changing Brazil's health care system must move simultaneously on both fronts.

1.61 The World Bank must adopt a long-term strategy of coalition building if it is to grapple with the fundamental reasons why Brazil's health system remains inequitable and inefficient. Changing the education of health care providers will take more than a generation. Overcoming interest group pressures will be at least as hard and will take at least as long. No institutional actor, least of all an external one, can hope to accomplish those tasks alone. Serious reform requires a commitment to building political coalitions among multilateral organizations, Brazilian civil society and business, political parties, health care providers, and the government. To date, the Bank has no long-term strategy for and little experience in coalition building. A visible, permanent, and informed presence in Brazilian policy debates would be the minimal first step.

The World Bank's Economic and Sector Work in Health

1.62 The World Bank contributed four valuable and insightful pieces of health research sector work (see Annex B for a list). Two of them, the Adult Health work of 1989 and the work on the Financing, Organization, and Delivery of Health Care of 1994, used innovative approaches to disseminate their findings. The former was researched and written for a remarkably low price on the basis of background papers from leading Brazilians in the field who worked essentially for honoraria. The latter organized a conference in Brazil to present and debate findings; several leading health economists, policy makers, and representatives from the private sector attended.

1.63 Despite these efforts, however, it appears, on the basis of extensive interviews and conversations with health researchers and policymakers, that the Bank's work has not significantly changed health policy Brazil. (OED also surveyed state health secretariats and leading academics to assess the impact of Bank sector work, but the response rate was too low for its results to be considered representative). The Bank's research, while it may have "planted seeds" in the Brazilian health policy debate that might one day bear fruit, did not appear to have significantly influenced nutrition, women's health, public health, and health financing policies at the highest level.

1.64 These (necessarily subjective) findings reinforce the importance of maintaining an intellectual presence in the sector. Although the reports made an impression when first circulated, the Bank needs to stay focused on the findings, link them closely to future policy dialogues and projects, and build coalitions around an agenda if it is to shift the terms of debate in Brazil. Given the complexity of the Brazilian health system and the interests at stake, reforms will require commitment, persistence, and nurturing relationships with strategically important partners over a 10 to 15-year period, which will require a great deal of patience on the part of the Bank.

Key Evaluative Conclusions on World Bank Strategy

1.65 *The World Bank's disease control and basic health services projects have targeted important and relevant concerns.* Access to health care remains a significant problem in Brazil. The diseases the Bank's projects have focused on—malaria, leishmaniasis, Chagas' disease, schistosomiasis, and AIDS—all constitute significant shares of the disease burden in Brazil, strike young people, and disproportionately afflict poor and marginalized groups.

1.66 *The World Bank's analytic work identified the contemporary challenges in adult health in Brazil, but the Bank has been unable to follow up with projects that address them.* The sector work identified maternal health and the promotion of healthy behaviors, such as exercise, diet, smoking cessation, and injury prevention, as critical areas where public health activities might cost-effectively improve health and reduce the burden on the health care system. The Bank was not able to develop public health projects addressing these concerns with the Government of Brazil.

1.67 *The World Bank's current strategy for sector reform in Brazil, the Reforsus project, suffers from weaknesses in the analysis of and response to a complex political and institutional environment.* The early HNP projects in Brazil were unsatisfactory and suffered from lapses in "borrower commitment and institutional capacity"; in other words, the World Bank conceptualized those projects as injections of financial and technical resources without

examining the political and economic incentives that would govern how those resources would be used. The Reforsus sector reform project, predicated on a more sophisticated understanding of economic incentives, aims to increase the provider reimbursement rates of more cost-effective health care interventions. That strategy is still unlikely to affect health care delivery and consumption patterns significantly, however, because provider reimbursement rates do not accurately reflect relative supply prices, the rates are set in a politicized non-transparent process, and a variety of other rules such as restrictions on length-of-stay and professional practice affect the prices providers receive. How the owners of health facilities provide incentives to their salaried professionals, and how those providers then interact with consumers to induce consumption remains a problematic topic for economic research. In addition, the use of one set of reimbursement rates to distribute resources to the various states and municipalities makes it difficult for the Ministry to set national programmatic priorities across Brazil's diverse regions. In short, the Reforsus strategy does not address several key problems in the political economy of health care in Brazil.

1.68 *The World Bank has not developed a long-term strategy for confronting the misallocation of resources in the Brazilian health sector.* Brazil's health care expenditures need to be targeted more closely on cost-effective interventions and should encourage more innovative approaches to both preventive and curative care. A particularly strong health care lobby, the government's use of "contingency" restrictions to reduce the public health budget, and the traditional training of health care professionals are deeply entrenched obstacles to such reforms. Those cannot be overcome quickly, nor can an external agency such as the World Bank hope to affect them alone. If the World Bank is to address this critical issue in the Brazilian health sector seriously, it should develop a strong and consistent presence in Brazilian health issues, the kind of presence necessary to build, gradually and persistently, a broad-based coalition for reform.

2. Did World Bank Projects Have an Impact on Health Outcomes?

2.1 This assessment evaluates one example of each of the two principal kinds of health projects that the World Bank has supported in Brazil, combating endemic diseases and providing basic health services. Analyzing the outcomes and their causal factors of those two representative projects, together with a review of available evaluations of the other projects, will permit an overall accounting of the Bank's development effectiveness in health in Brazil.

2.2 Three out of the ten health projects in Brazil do not fall into either category and, for differing reasons, are not suited to an outcomes evaluation. The effects of the nutrition project of 1976 are, at this stage and given the extant data, probably no longer detectable. The previous chapter argued that the nutrition project did not significantly contribute to Brazil's institutional development in the sector. The 1985 National Health Policy Studies project, originally attached to the São Paulo Basic Health Project, financed a series of small research grants totaling $2 million. An audit found that it helped to establish the field of health policy research in Brazil, but given the state of the health system, one would be hard pressed to argue that it significantly improved efficiency in the sector. The current health sector reform project, Reforsus, will be subject to an outcomes evaluation when closed. Chapter 2 raised concerns regarding its strategic conception of the sector.

Malaria Control and the Disease-specific Projects

2.3 The Brazil Amazon Basin Malaria Control project responded to a dramatic upsurge of malaria in the Amazon Region and sought to improve the health of native Indian peoples living in that area. Specifically, its objectives were (i) to reduce the prevalence of malaria to a level that no longer constituted a public health problem and to reduce the risk of its reintroduction to areas of low prevalence; and (ii) to enhance the organizational efficiency and responsiveness of SUCAM, then Brazil's leading federal public health agency.

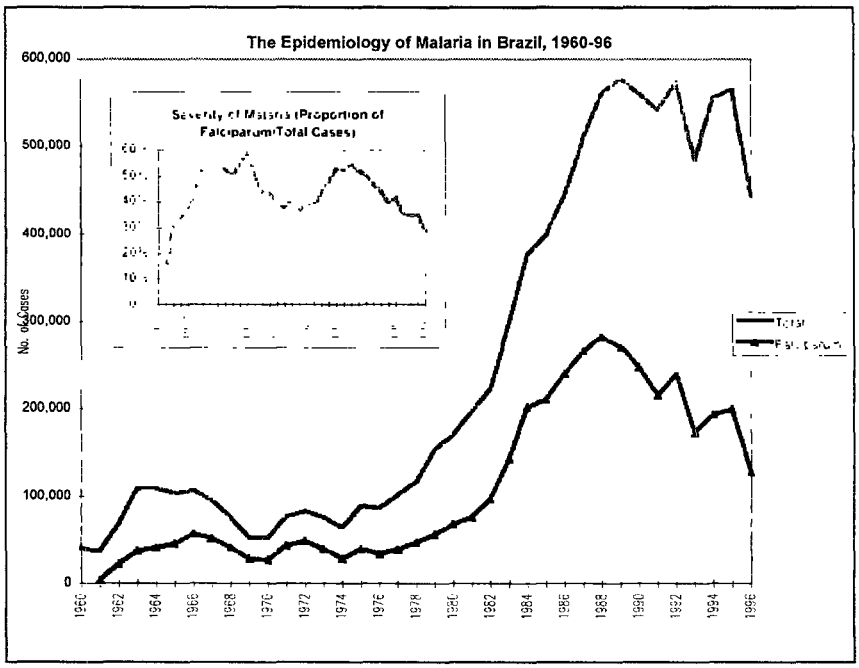
2.4 The annual incidence of both strains of malaria in the project area, *P. falciparum* and *P. vivax*, fell significantly during the life of the project, resulting in an overall decline in incidence from 35 to 31 per 1,000 people. The severity of malaria (the fraction of *falciparum* cases) also declined from 47 percent in 1989 to 29 percent in 1996, resulting in a decline in case fatality, which is the fraction of those infected with the *falciparum* strain who die. (*Vivax* is generally not fatal). The Implementation Completion Report (ICR) argues that as a result of these reductions in incidence, severity, and case fatality there were 1.97 million fewer malaria cases, 231,000 fewer deaths, and 8.96 million fewer Disability Adjusted Life Years (DALYs) lost between 1989 and 1996 than if the epidemic had continued on at the rate of increase witnessed in 1988. Existing evaluations from the World Bank, including the ICR, attribute a significant portion of these accomplishments to Brazil's Amazon Malaria Control Program and to project funds and particularly to the decision by project leadership beginning in late 1992 to change the malaria control strategy. At that time, the project moved from focusing on widespread vector eradication efforts to emphasizing the treatment of infected patients and using epidemiological stratification to target vector control on the most afflicted areas. In other words, the goal shifted from malaria eradication to malaria control and case management. The existing evaluations argue that this

change in strategy was responsible for most of the project's achievements: by focusing on reducing the incidence of *falciparum* cases and treating those infected with that strain, the malaria control program dramatically reduced expected malarial deaths, which accounted for 93 percent of all DALYs saved because on average the Brazilians who died of malaria during this period were 14 years old. The average cost of a DALY saved for this project was calculated as $69.

2.5 Although the assumptions implicit in DALY calculations remain controversial (Musgrove, Hammer), the above calculations are methodologically consistent; and they show persuasively that the Programa de Controle da Malária na Bacia Amazônica (PCMAM) helped to save lives, particularly the young lives, in a cost-effective manner. Still, at least two questions arise regarding the analysis. First, the Brazilian Amazon is a large and heterogeneous region. Was the cost-effectiveness uniform across various regions and states, or did institutional factors and epidemiological strategies in the various states affect outcomes? Second, it is clear that the project coincided with a reduction in malarial incidence, but did it cause it?

2.6 Of the overall reductions in malarial mortality, severity, and case fatality from the peak in the late 1980s to 1996, about 70 percent occurred before project strategy began to change in 1992. (Figure 2.1 shows that the *falciparum* infection incidence rates, which are responsible for nearly all malaria deaths in Brazil, started to fall in 1988.) That case fatality in most states was falling even before the project became effective suggests that a cause in addition to the change in strategy, perhaps the prior introduction of mefloquine, was responsible for saving lives. In the state of Rondônia, which had by far the highest coefficient of incidence in the mid 1980s, malarial incidence started to fall significantly before the project began in 1988 and 1989, which were also the years when the waves of gold miners rushing into the state began to subside. In short, external factors such as migration and land-settlement patterns might have contributed to the reduction in malarial incidence as well.

Figure 2.1 The Epidemiology of Malaria in Brazil, 1960–96



2.7 To investigate these questions, OED analyzed the cost-effectiveness of malarial interventions at the state level in Brazil. It also examined whether institutional, strategic, and external factors were systematically related to the variance in cost-effectiveness across states.

2.8 The analysis first made projections of malarial incidence, severity, and case fatality in all nine Amazon states in the absence of project interventions and then used observed outcomes and state-level project costs to calculate cost-effectiveness in each state. The methods, comparable to the analysis for the Amazon region as a whole, included corrections for potential double-counting of deaths and for malaria cases diagnosed in a states different from the ones in which they originated. (The latter correction affected cost-effectiveness outcomes only 7 percent on average, but it did have a sizable impact on the state of Tocantins, in which, because the state "imported" a large fraction of its cases, the cost per DALY would have been 55 percent higher without the correction.) The results are shown in Figure 2.2. The first observation of note is that cost-effectiveness varied widely by state, ranging from US$13 per DALY in Mato Grosso to US$237 per DALY in Tocantins.[7] This finding reinforces the idea that the efficacy of health interventions is very sensitive to local contexts and that wide variations occur even within a single geographic region and country (Mills 1994; Hammer 1995). As a recent World Bank bulletin put it, "With malaria, it is not possible to extrapolate from one region to another. Illness and death rates, as well as causative factors, for malaria differ."[8]

Table 2.1: Cost-Effectiveness of Brazil's Malaria Control Program by State

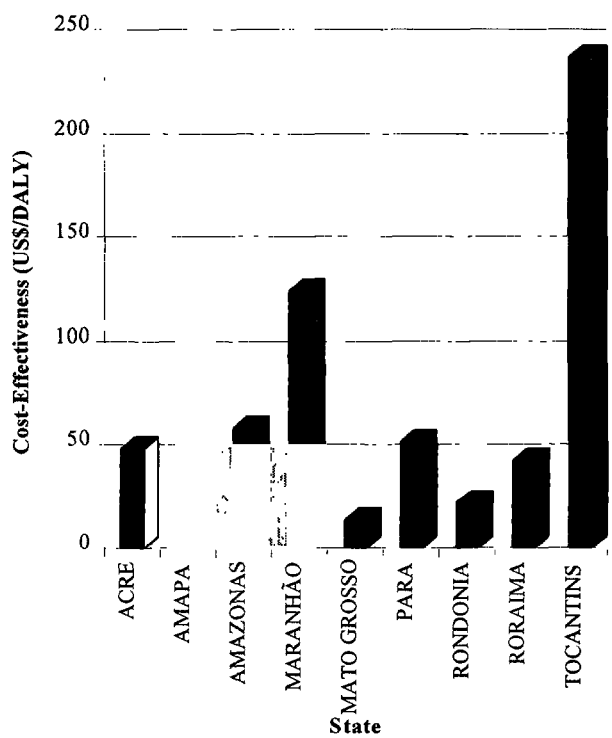
	Total DALYs Averted	*% DALYs Averted by Curative Treatment*	*Cost Effectiveness (US$/DALY)*
Acre	576,032	26%	47.90
Amapa	298,085	16%	111.31
Amazonas	1,080,966	28%	58.02
Maranhão	1,154,898	11%	123.70
Mato Grosso	3,805,311	31%	13.59
Pará	3,324,055	38%	51.07
Rondônia	8,253,327	16%	21.44
Roraima	575,679	35%	42.09
Tocantins	236,556	11%	236.97

7. Dariush Akhavan, 1997, "Cost-Effectiveness of malaria Control and Treatment in the Brazilian Amazon: Lessons in Strategy," background paper for this report.

8. World Bank, 1997, "Health Aspects of Environmental Assessment," Environment Department, No. 18, Washington, D.C.

2.9 What factors might have helped or hindered the malaria program in the various Amazon states? To begin with, epidemiological strategy might have been important. The state of Mato Grosso took an aggressive posture: patients with apparent symptoms were presumptively treated with antimalarial medications, with the result that Mato Grosso spent a proportionately higher fraction on curative care for malaria than the other states and had the most cost-effective program. (Whether that strategy also induced drug resistance among the parasites will be seen in the years ahead.) Other attributes of the malaria program itself might also have influenced state-level cost-effectiveness, such as continuity of the technical leadership, the number of malariologists trained, and a strong information and education (IEC) focus. Nonprogram factors might also have affected outcomes. In particular, it is widely believed that when gold miners (*garimpeiros*), loggers, and other fortune seekers, most of them poor and uneducated, wandered through the vast Amazon region, their lack of immune resistance, their outdoors lifestyle, and their misinformation about the disease created a fertile target for the parasite. Malarial incidence declined more in states where gold-mining activity subsided, such as Rondônia and Mato Grosso, than in states where it continued, such as Pará, or so goes the argument. Other nonprogram factors include political continuity of the state government and the adequacy of the state medical infrastructure.

Figure 2.2. Cost-Effectiveness by State, 1989–96



2.10 To examine the relationship between state-level cost-effectiveness and these factors, the OED analysis divided the nine Amazon states into three groups of three according to level of cost-effectiveness of malaria control. The analysis then compared the distributions of measures of the potential causative factors between the top and bottom thirds to see if there were any systematic differences in treatment strategy, land settlement patterns, political continuity, etc. between the top and bottom performers in cost-effectiveness. Absolute measures of these variables were used where available (kilometers deforested per state, number of urban immigrants, treatment costs, etc.); in other cases, PCMAM leaders were surveyed to obtain appropriate measures ("aggressivity of treatment strategy," strength of IEC component, etc.). Given the small sample size and uncertainty about the specification of the underlying model (researchers have almost no idea how land settlement, individual behavior, and prevention and

treatment efforts interact to affect incidence and case fatality), this simple approach seemed appropriate. Obviously, it would be extremely rash to say that the factors found to differ significantly between the two groups of states caused declines in incidence and case fatality; these methods only demonstrate the plausibility of certain explanations.

2.11 The results of the analysis are presented in Akhavan, 1997. To summarize the findings, the factors that were found to be positively related to cost-effectiveness, at a 10 percent significance level in a one- or two-sided heteroschedastic t-tests (as appropriate), were:

- the presence and performance of competent technical and managerial staff, evaluated on a scale by PCMAM staff, significance level 6.9 percent;
- the number of professionals trained in the control and epidemiology of malaria, 1993–96, significance level 6.9 percent;
- the proportion of treatment costs over total costs, including and excluding Mato Grosso, significance level 3.9 percent and 0.4 percent, respectively;
- the proportion of immigrants in the urban population, 4.0 percent significance level; and
- the slope of the coefficient of incidence of malaria in 1987–88, borderline significance at 10.0 percent.

2.12 The findings of this analysis are consistent with the hypotheses both that external factors were related to cost-effectiveness and that the strategy taken by the PCMAM program promoted it. The two external factors found to be significant in this analysis were (i) the slope of the coefficient of incidence before the program began, which indicates, unsurprisingly, that there might be decreasing returns to scale in malaria control; and (ii) the proportion of immigrants in the urban population, which suggests that the waves of *garimpeiros* and fortune seekers that wandered through the region might have brought malarial susceptibility with them. Among the external factors analyzed, square kilometers of land deforested between 1989 and 1992, which might be associated with the patterns of land settlement indicative of high-risk behavior for malaria, was not found to be significant. This was a somewhat surprising result, but recent work does suggest that transportation links have a more direct relationship to deforestation than population growth does. The program-specific variables associated with cost-effectiveness included the number of malariologists trained and the focus on curative treatment (as measured by the ratio of treatment costs to total costs), strategies that PCMAM promoted after 1992. The findings regarding curative treatment are noteworthy. They show that a program with a relatively high ratio of treatment costs to total costs is unlikely to be less cost-effective than a program with relatively low treatment costs, and they are consistent with the observation that in all states except Mato Grosso curative treatment saved DALYs more cost-effectively than prevention did. Given that the fraction of curative costs was sharply higher in Mato Grosso than in the other states (33 percent in Mato Grosso and 17 percent in Roraima, the next highest state) and even though Mato Grosso was the most cost-effective state overall, it is possible that its investments in curative care were so high that cost-effectiveness started to decrease. This is consistent with the finding that when Mato Grosso is excluded from the analysis, the statistical significance of the ratio of treatment costs improves from 5.9 percent to 0.4 percent. In summary, this analysis supports the decision of the government of Brazil and international donors like the World Bank

to move to a curative approach to malaria control, but it also suggests that external factors might have been responsible for a significant part of the decline in malarial incidence.

2.13 The PCMAM project recognized the importance of information systems, interaction with patients, and responsiveness to local conditions, but because it did so belatedly, good measures of the improvement in the performance of the health system are unavailable. Under trying economic and political conditions, it produced a pool of 100 malariologists; built valuable information systems for epidemiological surveillance; constructed health posts, clinics, and local laboratories; and initiated a program of operational research. However, no good indicators of systemic performance, such as those used in the recent World Bank project in India (Loan No. 29640), were included in the project's design; so it is not possible to know by how much the health system in Brazil has grown more responsive to local conditions and to the concerns of patients.

2.14 This issue, in a nutshell, encapsulates the story of the Bank's work on specific diseases in Brazil. The early Bank projects did not address the motives and incentives of patients, providers, and other key actors. As past audits and evaluations bear out, the first malaria project visualized the challenge simply as the elimination of mosquitoes, without considering the incentives offered by local governments and others to entice *garimpeiros*, the behavior and knowledge of immigrants, and the culture and traditional activities of SUCAM and other health providers in the area. Even at that time or shortly after, it was apparent that the knowledge and occupations of inhabitants significantly affected malarial incidence (D. Sawyer cited in Mills). Follow-up work commissioned by OED for this evaluation confirms those findings.[9] Similarly, the Northeast Endemic Disease project, although it contributed to a decline in disease incidence rates, did not begin focusing on information and local responsiveness until late in the project cycle. The AIDS project, which is more recent, focused explicitly on the problem of how to affect behavior change in marginal populations, developed a significant role for nongovernmental organizations and local community groups, and by all indications, is helping to build those ties, increase condom prevalence rates, and increase awareness of the disease.

Box 2.1. Malaria and Behavior Change

One state health coordinator for the Fundação Nacional de Saúde (FNS) recounted a learning experience. In Machadinho, Rondônia, despite the efforts of talented malariologists, the incidence of malaria was unusually high and would not go down, even among town dwellers not engaging in risky activities. Finally, he realized the cause: every evening the residents gathered in the square to watch TV outdoors on a large screen. A collection of people outdoors at dusk offered the mosquitoes an ideal target. After the TV was eliminated, the incidence rates among town dwellers declined. It is precisely that observation of local patterns and conditions that municipalities and states are now encouraging, with varying success, in Brazil. In Ariquemes, Rondônia, once called the "worldwide capital of malaria," community health agents are being trained to identify the symptoms of *falciparum* infection. A health coordinator said, "The core of our program now is rapid diagnosis and rapid treatment. If we had the human resources to accomplish that, we could eliminate malaria as a serious problem in this region."

Providing the financial, informational, and human resources to facilitate that task will be important for the government of Brazil and international donors in the future. It will also be important to address, through policy dialogue, the inducements offered by state and local officials that promote the kinds of behaviors and occupations associated with malarial risk. Incentives, behavior change, and local responsiveness will be critical.

9. Diana Sawyer and others, 1997, "Prevention and Treatment of Malaria: Evidence from Household Surveys," background paper for this report.

The Basic Health Services Projects

2.15 The two Northeast Basic Health Services projects were part of the Brazilian government's 15 year development plan for the Northeast Region, whose social and development indicators lagged behind the country as a whole. Four states were included in the first project, all nine northeast states in the second. The projects' objectives were to (i) improve the health status of the rural poor in selected areas of the Northeast states; (ii) improve access to and the efficiency of the basic health services in the selected areas; and (iii) reinforce the implementation of health sector reforms, particularly decentralization. The projects aimed to accomplish these objectives by building health care facilities, encouraging management improvements at the federal and state levels, and providing technical skills training for the development of new "basic health care modules" and programs of comprehensive care for women and children. Their inspiration was a 1978 Brazilian program, the PIASS, that had been among the first to attempt to democratize access to health care in the country by creating a network of rural health facilities.

2.16 By 1994, eight years after the appraisal of the first project and four years into the effectiveness of the second, only 55 percent and 45 percent of project finances were disbursed, respectively. The macroeconomic crisis of the early 1990s, delays in obtaining counterpart funds from the states, political changes, and successive transformations of the national health care system all contributed to implementation delays. Nine different health ministers and as many project managers presided over the projects. In addition, although the Northeast Region was changing over this period, with migration to the cities and the establishment of more private health facilities, World Bank and government procedures did not allow project management teams to accommodate to the emerging context. The projects had designated a specific set of municipalities in the project states to be benefited, and until 1994 the World Bank remained committed to that design despite evidence that the needs of the region were changing. After that time, political stability and new resolve on the part of the government, and more flexibility and better supervision on the part of the Bank, helped the project to disburse fully and left a legacy of mutual respect and improved management skills in both institutions.

2.17 Partly as a result of the difficult political and macroeconomic context, the projects evolved into a facilities construction and medical equipment program. That program succeeded in expanding access to basic health services in the Northeast. It did not, however, transform the mode of basic health care delivery within that system. The reason for this is, again, partly the political and economic context of the country, but the lack of attention to consumer demand in project design was also responsible. Although the projects were adequately designed given the state of the art and the consensus among health planners at the time, in retrospect, it is apparent that they did not take into account the changing demands of increasingly urban consumers. (Modifications in 1994 and 1995 allowed the project to disburse funds for a variety of purposes, including the construction of local hospitals, a public health school in Fortaleza, and water desalinization plants in the interior of Alagoas.) Moreover, with the apparent success of the Community Health Agents Program first implemented in Ceará, it was evident that health agents could do more to promote the consumption of basic health care in rural areas than the construction of health posts.

Box 2.2. Community Health Agents

The state of Ceará implemented a program of community health agents (PACS), in which teams of nurse auxiliaries supervised by trained nurses monitored and promoted health in rural communities. The initiative began in the late 1980s as an emergency employment program in a drought year. Vaccination rates and other measures of the health system improved sharply in Ceará in the years that followed, and although health indicators in Ceará are not now dramatically different from other states in the Northeast, by all accounts the program helped to improve the functioning of the health system in Ceará, which is one of Brazil's poorest states. Ceará has received a number of awards and grants recognizing its achievements, and the story of how it, uniquely among Brazilian states, developed an effective community health agents program is well known (Tendler 1998).

The community health agent program has been replicated throughout Brazil, but in other states it has been funded centrally, or has required federal government subsidies to take shape. Community health agents, which traditionally have addressed maternal and child health, are beginning to tackle more complex problems. In Rondônia, they are being trained to diagnose malarial severity. Dr. Carlile, one of the founders of the PACS in the state of Ceará, says that health agents are also working to take blood samples for the control of Chagas' disease, to identify rabid dogs, and to collect vital statistics. Nevertheless, in a country where health problems are growing more complex and where consumers are increasingly unsatisfied unless they see a doctor, PACS has its limitations. In response, the government has created the Family Health Program, in which the health agents are allied with nurses and a doctor and address more complex health concerns. The program, first adopted in Ceará, the municipality of Niteroi in Rio de Janeiro, and Porto Alegre, is now widespread in Brazil. Preliminary analyses suggest that it is improving health indicators as well as the efficiency of the health system.

Although the PACS story in Ceará is famous, what is not as well understood is why a modernizing government interested in initiatives like the PCS came to power in Ceará and not in other Northeastern states, many of which are still dominated by the traditional "colonels." Although a definitive answer to that question remains to be elaborated, it is probably related to the social structure of the state. Ceará, unlike Bahia and other Northeast states, did not have sugar cane economy. Instead, it relied on cotton, cattle, and subsistence farming, which create less social distance between the landowners and their workers, who worked not as employees but as sharecroppers in Ceará. A particularly bad drought cycle, a social security tax on sharecroppers, and parasites destroyed the cotton economy in Ceará and led more and more people to the cities. The urban business elites begin to travel and to organize. As a result, when a political division ruptured the "three colonels" of the state in the mid 1980s, the modern business elites were ready to take power and possessed an urban social base to support them. This history and the presence of a modernizing government is not unique to Ceará, but it is acclaimed; and understanding the historical origins of the Ceará government is helpful for grasping the factors that promote that state's "ownership" of innovative health programs.

2.18 At the most basic level, the projects failed to transform the mode of health care delivery because they did not recognize that that goal entails not merely more training but realigning incentives in the sector. In particular, it requires intervening in the current labor markets for health providers and in the process of policy formation and consensus building in the sector. The government's own evaluation of the project concludes: "The lack of means and legal instruments to activate components of the project that involved deep reforms (in management and in changes in the service delivery model) gave the more traditional components (civil works) more space to develop" (Ministerio da Saúde 1996). An insightful evaluation of the projects conducted for the Joint Brazil/World Bank Commission noted that the projects "did not supply human resources, which are the main bottleneck in the health sector crisis." It also emphasized the ideological weakness of Brazilian political parties, which are the institutions that might mobilize political consensus for fundamental public sector health reforms: "Two further points mentioned by many technical departments during our mission are the *strong political patronage* throughout the Northeast and the frequent *political confrontation between state governments and municipalities* when the pertinent political parties are not the same or are not allied" (Pintos Dias 1996, emphasis in original).

2.19 Existing evaluations of the projects have found that these design problems limited the projects' impact on the ground. For instance, the ministry's field survey of the output of the first project, part of its fine 1996 evaluation report, found that while over 70 percent of health centers were providing adequate antibiotics, only 29 percent of the health posts were monitoring child growth. As Chapter 2 showed, child health in the region improved significantly during the life of the project, and access to health care played a significant role in that improvement. It is difficult, however, to determine how much of the expanded access to immunizations, prenatal care, and facility births (which, as the analysis of DHS data in Chapter 2 showed, reduce the risk of childhood stunting) are attributable to the project because the project did not include a detailed and specific system for monitoring and evaluation. It is reasonable to assume that the project itself did not contribute significantly to that expanded access in those areas because it disbursed very slowly until 1994, then shifted its priorities. A significant portion of the net improvement in child health had already occurred by 1994. In addition, the health of rural children in the Northeast, which the original project design had targeted, did not improve as fast as the health of rural children in other regions.

2.20 Given that the projects' objectives changed in 1994, it is possible that they contributed to the performance of the health care system in ways that are not captured by measures of childhood health. To determine if there was any relationship between project inputs and overall health system quality, OED compared project disbursements under the second Northeast Basic Health Services project to three measures of system performance. The measures chosen were: (i) the change in the percentage of observed deaths due to unknown causes, which should decline if hospitals and other facilities are improving their capacity for diagnosis and treatment; (ii) the change in the incidence rate of leprosy, which, because leprosy is a treatable and preventable condition for a well articulated and coherent health care system, should also decline; and (iii) hospital admissions per capita, which will decline if ambulatory care centers are finding and treating patients more efficiently. As the results Table 2.2 demonstrate, there is no strong linear relationship between the per capita project disbursements and these measures of state health system performance. It should be noted that the overall rates of undiagnosed deaths and leprosy remained high in the Northeast, 37.0 percent of deaths in 1994 and 70.3 per hundred thousand in 1996, respectively.

Table 2.2. Per Capita Project Disbursements and Indicators of State Health System Performance

	PNE I and II Disbursements per capita (1996 Br R$)	*Change in % of Undiagnosed Deaths (1990–94)*	*Change in Leprosy Detection Rate (1991–95)*	*Change in Hospital Admissions per capita (1991–96)*
Alagoas	7.67	-4.7%	-23.9%	-23.2
Bahia	2.95	1.6%	7.4%	24.4
Ceará	4.20	-0.9%	2.4%	-24.9
Maranhão	2.78	-2.1%	3.5%	-29.6
Minas Gerais (Sudene)	12.75			
Paraíba	3.32	-1.7%	7.5%	-34.2
Pernambuco	4.18	-11.1%	17.4%	-17.4
Piauí	6.18	-2.1%	10.1%	-22.1
Rio Grande do Norte	6.29	-1.5%	-2.8%	-15.6
Sergipe	7.48	-16.1%	1.5%	-1.5
R^{2a}		0.24	0.23	0.0

a. Square of Pearson correlation with disbursements per capita.

2.21 On another measure of overall health system performance, consumer satisfaction, preliminary findings show that Brazilians who benefited from the PNEs are not pleased with their health care. The MOH will soon implement a randomized survey in all project states to determine if the outputs of the Northeast Basic Health Services projects satisfy patients and potential consumers of the public sector health system. Anticipating that work, an OED study assembled focus groups in two municipalities in each of three Northeast states to gauge in a qualitative manner the opinions of residents and patients regarding the health care system. Each site had received World Bank financing to build local health posts and/or clinics, and in each case there were separate sessions with males, females, doctors, and other health care providers.[10]

2.22 In general, most of the consumers in the groups spoke of the money they did not have to purchase drugs and to go to private hospitals, of long lines for SUS emergency care, of how important it is to see doctors, not merely health auxiliaries in the health posts, and of the ways in which their health concerns merged with the difficulties of poverty. For the doctors, the consumers' "overdemand" for health care, particularly hospital health care, was critical, as were problems of nepotism in the public system and the absence of real decisionmaking autonomy for hospital administrators. The other health care professionals frequently spoke of their salaries, which they called a "pittance."

2.23 The focus groups made clear that access to a doctor and, broadly, human resources in the sector, is a major concern. Solutions, however, were not plentiful. One respondent referred to a local, unused health post as a "white elephant." Another noted that it was hard to get doctors to work in their community because it lacked good facilities and medical equipment. One interesting comment described cultural clashes between the medical system and people of the Northeast:

> The problem with doctors, with most doctors, is this. You get to the clinic. The doctor looks over your status. If you get there and know how to talk well, are well dressed, the doctor treats you well. But here in the Northeast what happens a lot is you get there, the doctor looks at you and sees you are a humble person, and then the doctor treats you whatever way he pleases. The people here are uneducated, for example some don't know how to read, sometimes they don't know their rights. So they try to get something, demand it, scream, and swear in the hospital; but sometimes they just don't have any rights.

2.24 The quality of care in the public system was also a concern for many of the interviewees. They described long waits, dirty conditions, and doctors and facilities who wouldn't treat uninsured patients, or who treated them in SUS offices in secret. This story, from a woman in Coruripe, Alagoas, captured several of these issues:

> [My brother] was in the SUS hospital, and the conditions were poor for him. So the doctor, he was nice, he said to me, "Look, my dear, if you want your brother to recover, and he's very sick, you should take him out of here. If you can afford it. He will need to spend more than eight days here, his pulmonary infection is bad, and we don't have enough medications. Without private help, his life is in danger. Maybe you can buy the drugs yourself. I have my private patients, and I also have patients in SUS like your brother. I will treat your brother like a private patient. But the private care is different. There's more attention there—my work will be the same, I'm a doctor and I'll treat your brother like a private patient—but the nursing staff here are terrible." At ten that morning, my brother's bandages were all over his bed—the usual dirty mess. So I got together

10. NESCON, 1997, "Avaliacao de Impacto Setorial Da Efetivadade de Desenvolvimiento do Trabalho do Banco No Setor da Saúde no Brasil," background paper for this report.

> with my family, and we bought medicine, and he spent four days in the hospital. But thanks to God that doctor knew his job, and he said, "Look, my dear, I have both SUS and private patients. You see. So I can tell you the conditions in this hospital are awful."

2.25 Very few of the patients were familiar with the government's Family Health Program, but several did know the Community Health Agents Program. The responses to the latter were favorable, such as this one:

> I think a lot of people became more aware, started having more prenatal checkups. Although not one has come into my house yet, I know what health agents are and I know people who work as health agents. They help you get vaccines for your children. People who didn't go to the doctor, who sometimes used *benzedeiras*, for them the doctor was the pharmacist, they started going to the hospital and to the health post. I think the health agents helped things a lot.

2.26 To summarize, although the Northeast Basic Health Services projects helped build health infrastructure in a region that needed (and continues to need) it, particularly during the last two years of the projects' effectiveness, they did not transform the mode of health care delivery in the region as they had originally intended. Changes in the politics and governance of health in Brazil complicated that process, and the projects' designs, though cognizant of the problem, did not recognize what those changes would mean for sectoral incentives and institutions. The projects supplied infrastructure which, though necessary, is not sufficient to improve health care delivery: the main problem remains the labor market for health care providers. A simple analysis of health outcomes in the various states finds no relationship between them and project inputs. Finally, the most important measure of project impacts is whether they helped to improve the health status of their target populations. As chapter 2 showed, although health indicators improved in the Northeast over the past decade, they did not improve as much as they did in the other rural areas of the country: the Northeast Basic Health Services projects under-achieved.

2.27 The political and institutional obstacles for the World Bank's basic health services project on São Paulo were even more complex, and the project's failure to grasp them resulted in an unsatisfactory outcome. After the decentralization of 1987, the state and municipal governments of São Paulo vied with each other for political dominance, and the health sector was frequently an object of competition. As a result, the structure of the basic health system envisioned in the 1985 project never took root. (Some Brazilians do credit the São Paulo project with encouraging the old social security institute, INAMPS, to first transfer resources to the public sector, and for foreseeing the eventual structure of the SUS: tripartite financing with municipal management.) The Bank's early focus on basic health care and vaccinations and its insistence on a family planning component, which Brazil resisted and which delayed implementation significantly, did not adapt to the changing epidemiological and political context of the state. The Bank had also hoped to manage the political problems with a detailed set of conditions on state–municipal relations. Again, an understanding of the political forces in the sector and their institutional context hampered the Bank's efforts.

Box 2.3. Behavior Change and Incentives in Health

UNICEF Brazil has for years been trying to promote healthy behaviors among Brazilians and encourage politicians to implement policies that support public health. In addition to its more traditional information and education campaigns, UNICEF has worked with Brazil's TV Globo to write Brazilian soap opera scripts that promoted breast-feeding and anti-diarrheal practices among viewers. It has more recently collaborated with MTV Brazil on similar projects. UNICEF Brazil also gives out a variety of prizes to municipalities and states. Recent prizewinners have included the state of Paraná for work in women's health, the state of Minas Gerais for improvements in the income distribution, the municipality of Icuapui in Ceará for educational enrollment, and to Rio Grande de Sul for allocating resources to the poorest municipalities in the state. UNICEF regularly gives out prizes for the most "child friendly" municipalities in the country, and the organization's international prizes have also gone to local governments in Brazil in recent years. These awards are useful to politicians, and UNICEF's aim is to encourage a healthy competition among local governments for improving social indicators.

These prizes can be politically charged and controversial. To be credible, they need to be based on objective and clear indicators. "If you are not careful with these prizes," says UNICEF Brazil's Resident Representative, Agop Kayayan, "you can shoot yourself in the foot." There is also a concern that the value of the prizes declines as they become more numerous, and because politicians will all want to lay claim to some achievement, there is a tendency for the number of prizes to proliferate. Whereas UNICEF Brazil used to give out one prize a year, it now gives out more than five annually. The World Bank has a different mandate that UNICEF, and there is no reason for it to imitate that organization's activities. Nevertheless, the World Bank might be able to use prizes and creative public information campaigns to promote its objectives in the health sector in Brazil. In particular, the Bank's technical expertise and resources might be useful in the formulation and measurement of precise indicators of achievement in health, which Brazilian authorities or others might use to distribute praise or blame.

Key Evaluative Conclusions on Project Outcomes

2.28 *At least two of the four World Bank disease control projects have contributed to declines in the incidence of those diseases and mitigated their effects on afflicted individuals.* The endemic disease project and the second malaria control project helped to slow the spread of disease and promoted treatment programs. Although it would be rash to attribute all of those reductions in incidence to the projects themselves, the projects certainly contributed. The first malaria control project did not reduce the incidence of malaria in Rondônia and was unsatisfactory. It is difficult at this stage to determine whether the AIDS project has slowed the rate of increase in disease incidence.

2.29 *The World Bank's first malaria control project in Brazil underestimated the importance of institutional strengthening and behavior change in public health, but the World Bank's subsequent disease control projects have helped significantly to build Brazil's human, physical, and information infrastructure for epidemiological surveillance.* The second malaria project shifted strategies in mid-stream to emphasize treatment and epidemiological stratification over disease erradication, and the Northeast endemic disease project worked to strengthen public health capacities of state and local governments. The current AIDS project is pioneering collaboration between the government and nongovernmental organizations (NGOs) to promote safe health behaviors. No project to date, however, has included good measures of the performance of the epidemiological surveillance and health care systems.

2.30 *There is no evidence that the World Bank's basic health services projects promoted overall health systems performance, economic efficiency, or substantial improvements in consumer satisfaction with health services.* In addition, they did not help the health of children in the rural Northeast catch up to the rest of the country. They did help to build a working relationship with the government of Brazil after a difficult period of misunderstanding. They helped to build the infrastructure for health care in the region; but they (rightly but belatedly)

abandoned their original strategy for basic care, built on rural health posts, late in the implementation process. Consumers remain frustrated with the quality and accessibility of health care in the region, and human resources bottlenecks remain a significant problem.

3. Recommendations

3.1 The evaluative findings of this sector impact study suggest the following recommendations for future World Bank strategy in the health sector in Brazil:

- *The World Bank must adopt a long-term strategy of coalition building to grapple with the difficult, institutionally embedded problems of the Brazilian health sector.* Individual and piecemeal sector reform projects, whether at the state or national level, have not and will not affect fundamental change without tackling the problems that require long-term solutions, such as medical education, the labor market for health care providers, and the political economy of budgeting. A strategy for coalition building should adopt at least a ten-year timeframe, identify relevant and influential actors to tackle specific problems, and persistently work to build a shared agenda. If the Bank is to undertake a serious reform effort, a highly visible, permanent, and informed presence in Brazilian policy debates would be the minimal first step.

- *The World Bank should initiate sector work and perhaps an institutional development project on the regulation of private health care in Brazil.* The private sector already plays a significant role in the financing of health care in Brazil, and there every reason to believe that its scope will widen in the future. With appropriate regulation and targeted subsidies, the private sector could eventually provide health care efficiently and effectively to middle-income and perhaps even poorer segments. Currently, few standards exist concerning quality and risk selection on the part of private payers. Legislation that structures and regulates the private sector might encourage vertical integration, setting the stage for a sustained, socially beneficial, and cost-effective expansion of private health care in the future.

- *The World Bank should continue to finance projects that address the needs and health conditions of the poor, but it should pilot new approaches for providing basic health care services.* The distribution of political power and the structure of Brazilian political economy make it unlikely that Bank projects that address the health needs of poor and marginal citizens are merely replacing money that would already be spent. Nevertheless, past Bank-supported approaches to providing basic health services have not been particularly effective. Bank projects should encourage and pilot the several innovative approaches that are emerging in Brazilian civil society.

- *The World Bank should study and finance health projects that focus on the chronic and degenerative diseases associated with the epidemiological transition.* The increase in the incidence of cancer and cardiovascular disease in Brazil will require the health system to expand, improve, and develop new delivery systems, such as home care. The Bank's contribution could be particularly useful in experimenting with ways to reduce the incidence of lifestyle-related risk factors among poor and marginal groups.

- *The World Bank should develop and implement monitorable indicators of health system performance in Brazil.* It is important to develop and use measures of health system performance if health providers and systems are to be held accountable for the quality of the services they offer. Implementing performance measures will require the Bank to conduct both sector work at an extremely high level as well as to finance institutional development projects with both public and private sector actors in Brazil.

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Annex A

OED Commissioned Papers

1. *"Changes in Poverty-Related Health Indicators and in Brazil: Causes and Impact on Regional Inequities"* by Carlos Augusto Monteiro et al. This paper uses 1986 and 1996 DHS data, as well as income data from the PNADs, to argue that access to health care, maternal education, access to water, and changing reproductive patterns are all determinants of childhood health. It contends that regional differences in childhood health in Brazil can be explained by the differential effects of recent changes in those risk factors. In English.

2. *"Cost-Effectiveness of Malaria Control and Treatment in the Brazilian Amazon: Lessons in Strategy"* by Dariush Akhavan. This study analyzes the cost-effectiveness of malaria control in the Amazon region at the state level. It then compares cost-effectiveness to a variety of indicators of state institutional capacity, project coordination, and exogenous factors (such as estimates of migration). The paper also breaks down the relative contributions of prevention and treatment to the cost-effectiveness of the malaria control. In English.

3. *"Aspectos Politicos da Saúde: Ambito Federal e Regioes Norte e Nordeste do Brasil"* by Laura Frade et al. This study analyzes the characteristics and strength of the health lobby in Brazil. It finds that the number of Congressional representatives and Senators with ties to the health lobby is significantly higher in the Northeast than in the rest of Brazil. In Portuguese.

4. *"Avaliacao de Impacto Setorial Da Efetividade de Desenvolvimiento do Trabalho do Banco No Setor da Saúde no Brasil"* by NESCON, Univerisade Federal de Minas Gerais. These two volumes present transcripts of focus groups with male and female consumers of health care, as well as in-depth interviews with medical providers, in the states of Ceará, Alagoas, and Minas Gerais. The interviews and focus groups occurred in rural areas near the originally specified target areas for the Projetos Nordeste. There is an overall summary, which shows how health consumers appear to be demanding more complex kinds of services. In Portuguese.

5. *"Evaluation of Epidemiological Appropriateness of the World Bank's Work in Brazil"* by Ruy Laurenti et al. This paper presents an up-to-date and thorough portrait of health conditions in Brazil. Included are a state-level breakdown of the proportional causes of mortality in 1980, 1985, 1990, and 1994; estimates of mortality corrected for underreporting; and morbidity statistics on neoplasms, tuberculosis, leprosy, and other conditions. The paper concludes with an assessment of World Bank strategy. In Portuguese.

6. *"Educaco Medica no Brasil"* by Francisco Campos et al. This paper assesses medical education and the health labor force in Brazil. It breaks down the health labor force by level, sector, and type of training for the major regions in the country. It concludes with an analysis of potential changes and interventions to improve medical training in Brazil, including an examination of the new Programa da Saúde da Familia. In Portuguese.

7. *"Politica de Saúde no Brasil: alguns aspectos de sua evolucao e algumas questoes de conjuntura"* by Elizabeth Barros. This paper examines the key issues in the financing of health care in Brazil, including the division of the social security budget, decentralization and state and

municipal autonomy, SUS reimbursement rates for public and private hospitals, financing proposals currently before the Congress. It concludes with an assessment of Reforsus and its contributions to sectoral issues in Brazil. In Portuguese.

8. *"Prevention and treatment of malaria: evidence from household surveys"* by Diana Sawyer et al. This paper presents data from household surveys in 1987 and 1995 in Machadinho, Rondônia, regarding malaria and household decision making. It finds that information regarding the causes of malaria reduces the probability of incidence. In English.

9. *"Health in Brazil: Results from the Brazil Living Standards Measurement Survey"* by Elaina Rose. This paper uses data from the 1996 LSMS to model household decision making regarding access to health care in Brazil, estimate the key determinants of childhood nutritional status, and describe access to health care by region, economic level, gender, etc. It finds that private health insurance significantly affects both health care utilization and health status, even after controlling for socioeconomic background and state and municipal-level fixed effects. In English.

10. Survey questionnaires on sector work. We sent out anonymous questionnaires to all 27 state health secretariats and selected academics soliciting their perceptions of the quality and effectiveness of the World Bank's four major recent pieces of sector work in health. We received 20 responses, the great majority of which indicate that most respondents have not read and are not familiar with the principal findings of the Bank's research. In Portuguese.

Sector Work and Projects in Brazil

HNP Sector Work

Adult Health Care in Brazil (1989)
Brazil: Women's Reproductive Health (1991)
The Organization, Delivery, and Financing of Health Care in Brazil (1994)
Addressing Nutrition Problems in Brazil (1996)

Projects

Table 3: HNP Lending in Brazil, FY76-FY96 and Projected to FY99

Year	*Loan Number*	*Project Name*	*Project Status*	*Project Cost ($M)*	*Loan ($M)*	*OED Report*	*Rating*	*Sustainability*
1976	Ln. 1302	Nutrition I	Completed	68.4	19.0	PCR	U	NA
1982	Ln. 2061	Northwest Development I: Health	Completed	20.3	12.0	Audit	US	UNC
1984	Ln. 2447	São Paulo Health	Completed	104.5	55.4	PCR	U	UNC
1984	Ln. 2448	National Health Policy Studies	Completed	2.0	2.0	Audit	S	Likely
1986	Ln. 2699	Northeast Health Services I	Completed	122.2	59.5	ICR	MS	
1989	Ln. 3072	Amazon Basin Malaria	Completed	198.0	99.0	ICR	S	
				515.4	**246.9**			
						Most Recent 590 Rating		
						IP	*DO*	*Date*
1988	Ln. 2931	Northeast Endemic Disease Control	Active	218.0	109.0	HS	HS	April 1996
1990	Ln. 3135	Northeast Basic Health Services II	Active	610.6	267.0	S	S	February 1997
1994	Ln. 3659	AIDS Control	Active	250.0	160.0	HS	S	October 1996
1996	Ln. 4047	Health Sector Reform	Active	750.0	300.0	S	S	February 1997
				1,828.6	**836.0**			
1998		Minais Gerais Health Sector Reform	Planned	200.0	75.0			
1998		Parana Health	Planned	75.0	75.0			
1999		Northeast Health/SUS	Planned	400.0	150.0			
1999		Malaria/Endemic Diseases	Planned	150.0	150.0			
				825.0	**450.0**			

Annex C

Determinants of Adult Health (Individuals Age 18 and Over)

	(1) *Sick in last 30 days (Logit)*	*(2)* *Sick in last 30 days (Logit)*	*(3)* *Sick in last 30 days (Logit)*	*(4)* *Sick in last 30 days (Logit)*	*(5)* *BMI*	*(6)* *BMI*	*(7)* *BMI*	*(8)* *BMI*
Sample	*Female*	*Female*	*Male*	*Male*	*Female*	*Female*	*Male*	*Male*
Age 25–34	-0.220	-0.190	-0.100	0.110	1.100	1.100	1.400	1.300
	(1.600)	(2.100)	(0.700)	(1.100)	(5.500)	(5.300)	(7.000)	(7.100)
Age 45–54	0.180	0.050	0.070	0.040	2.800	2.900	2.100	1.900
	(1.200)	(0.500)	(0.400)	(0.320)	(13.000)	(12.100)	(10.000)	(9.600)
Age 55–64	0.510	0.320	0.330	0.220	3.500	3.400	2.100	2.000
	(3.600)	(3.300)	(2.100)	(1.900)	(12.000)	(12.600)	(8.700)	(8.700)
Age 65+	0.620	0.420	0.680	0.440	2.600	2.600	1.200	1.000
	(3.900)	(3.700)	(3.500)	(3.500)	(7.600)	(8.100)	(3.900)	(3.500)
Schooling: preschool	-0.530	-0.270	0.060	-0.130	-0.400	-0.260	1.200	1.000
	(1.500)	(0.700)	(0.170)	(0.500)	(0.400)	(-0.300)	(1.600)	(1.300)
Schooling: < than 4 years	0.190	0.130	-0.070	-0.070	1.100	0.940	0.440	0.400
	(1.400)	(1.400)	(0.500)	(0.700)	(3.700)	(3.100)	(2.000)	(1.800)
Schooling: 4 years	-0.010	-0.006	-0.120	-0.120	0.820	0.720	0.830	0.760
	(0.100)	(0.070)	(0.700)	(1.100)	(2.600)	(2.300)	(3.100)	(2.900)
Schooling: < than 8 years	0.120	0.018	-0.290	-0.310	0.330	0.240	0.240	0.110
	(0.600)	(0.150)	(1.600)	(2.300)	(0.800)	(0.700)	(0.900)	(0.400)
Schooling: 8 years	0.050	-0.014	-0.550	-0.490	0.070	-0.040	0.740	0.570
	(0.300)	(0.110)	(2.600)	(3.000)	(0.200)	(0.100)	(2.400)	(1.700)
Schooling: < than 11 years	-0.050	-0.040	-0.550	-0.400	-0.210	-0.420	0.600	0.440
	(0.300)	(0.240)	(1.700)	(2.000)	(0.500)	(0.900)	(1.700)	(1.200)
Schooling; 11 years	-0.050	-0.090	-0.470	-0.290	-0.310	-0.640	0.160	0.510
	(0.300)	(0.720)	(1.700)	(1.900)	(0.900)	(1.700)	(2.200)	(1.700)
Schooling: > than 11 years	-0.270	-0.080	-0.210	-0.040	-0.750	-0.730	0.380	0.150
	(1.300)	(0.490)	(0.900)	(0.200)	(1.900)	(1.800)	(3.900)	(0.400)
Expenditures	0.020	0.220	-0.400	0.180	-0.170	0.280	0.630	0.780
	(0.200)	(1.700)	(0.400)	(1.200)	(0.600)	(0.900)	(2.800)	(3.500)
White	-0.170	-0.120	0.160	0.090	-0.150	-0.300	0.150	0.090
	(1.700)	(1.800)	(1.500)	(1.200)	(0.700)	(1.600)	(0.800)	(0.600)
Black	-0.300	-0.150	0.110	0.090	0.380	0.160	0.230	0.040
	(1.900)	(1.200)	(1.500)	(0.700)	(0.900)	(0.500)	(0.700)	(0.140)
Has insurance	0.020	0.050	0.110	0.050	0.150	0.360	0.460	0.480
	(0.200)	(0.600)	(0.600)	0.500)	(0.700)	(1.700)	(2.100)	(2.400)
Multifamily	0.900	-0.120	0.040	-0.080	0.120	-0.070	0.030	-0.140
	(0.007)	(1.400)	(0.300)	(0.680)	(0.400)	(0.300)	(0.130)	(0.600)
Female head	0.240	0.210	-0.140	0.150	-0.390	-0.370	-0.570	-0.940
	(2.500)	(3.200)	(1.000)	(1.300)	(2.100)	(2.100)	(2.500)	(3.900)
Urban	-0.200		-0.120		0.640	6.100	0.980	2.100
	(1.500)		(0.800)		(2.900)	(7.700)	(5.500)	(1.400)
Fixed effects	State	Municipality	State	Municipality	State	Municipality	State	Municipality
Number of observations	6,382	6,382	5,695	5,695	5,813	5,813	4,910	4,910

Note: 6-statistics are in parentheses.
Source: The 1997 Brazil Living Standards Measurement Survey (LSMS).