# Democracy, Social Policy, and Mortality Decline in Brazil

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**Abstract**

From 1960 to 1995, Brazil made slower progress than most other Latin American countries at raising life expectancy and reducing infant mortality, even though it achieved the fastest economic growth in Latin America and one of the fastest rates of fertility decline. Policy failures, particularly neglect of basic health care for the poor, did more than socioeconomic challenges, such as high income inequality, to produce this disappointing outcome. Military rule from 1964 to 1985, and the low quality of democracy in the preceding and succeeding periods, contributed heavily to Brazil's neglect of basic health care.

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Brazil from 1960 to 1995 achieved the fastest economic growth in Latin America and one of the fastest rates of fertility decline, but made slower progress than most other Latin American countries at raising life expectancy and reducing infant mortality. This study finds that policy failures, particularly neglect of basic health care for the poor, did more than socioeconomic challenges, such as high income inequality, to produce this disappointing outcome. It also finds that military rule from 1964 to 1985, and the low quality of democracy in the preceding and succeeding periods, contributed heavily to Brazil's neglect of basic health care.

The first section of this paper evaluates the quality of Brazil's mortality data; the second describes Brazil's performance on alternative mortality indicators and traces the evolution of its infant mortality rate. The third section compares Brazil's socioeconomic situation from 1960 to 1995 to that of other Latin American countries, and the fourth outlines Brazil's policies in the areas of education, nutrition, family planning, and provision of water and sewerage. The fifth section analyzes the evolution of Brazil's health care system; the sixth describes the country's major primary health care initiatives. The seventh section uses a comparison to Chile, which began to implement effective public health programs in the mid-1960s, to explore the reasons why Brazil during this era neglected social policies conducive to the rapid reduction of premature mortality. The eighth section summarizes what the Brazilian case tells us about the causes of mortality decline and about the impact of democracy on public health policies.

**1. Sources of Mortality Data in Brazil**

Vital registration statistics are less complete in Brazil than in Argentina, Chile, or Costa Rica (Table 1). Birth registration has been mandatory in Brazil only since the mid-1970s (Scheper-Hughes 1992: 296). Death registration is necessary to obtain a burial permit, but unofficial burials are widespread (Azevedo 1981: 60-61; Scheper-Hughes 1992: 291; Szwarcwald et al. 1997: 505). In the 1980s, official agencies registered 20 to 30 percent fewer births and 25 to 45 percent fewer deaths than were estimated from census and survey data (Becker and Lechtig 1986: 47; Simões et al. 1989: 23-24; PAHO 1990: 37; Szwarcwald et al. 1997: 505). In recent years, however, vital statistics have improved. By 1997, according to the Health Ministry, birth underregistration fallen to 13 percent and death underregistration to 20 percent. In the impoverished Northeast, however, the figures were 27 and 44 percent respectively (Brasil. Ministério da Saúde 2001: Tables F-10 and F-11).

[Insert Table 1 about here]

In Brazil as in other Latin American countries, death registration tends to be less complete for infants than for older persons (PAHO 1998b: 4; Szwarcwald et al. 1997: 505). Rather than register the deaths of unbaptized children or of infants who have lived only a few days, parents often prefer clandestine burials (Scheper-Hughes 1992: 291). Becker and Lechtig (1986: 47) estimated that only 66 percent of infant deaths were registered in 1980, and the Pan American Health Organization (PAHO) estimated that only 50 to 80 percent of infant deaths were registered in 1985-90 (Table 1). Death registration improved less in the 1990s for infants than for older persons. According to the Health Ministry, only 57 percent of infant deaths were registered in Brazil in 1998, with the proportion varying from 81 percent in the Southeast to 39 percent in the Northeast. State-by-state estimates of infant death registration ranged from 99 percent in Mato Grosso do Sul (Center-West) to 20 percent in Maranhão and Piauí (Northeast) (Brasil. Ministério da Saúde 2001: Table F-11).

Because vital statistics are incomplete, most researchers have used census and survey data to estimate Brazilian mortality levels and trends (Wood and Carvalho 1988: 117; Becker and Lechtig 1986: 43-47; Simões et al. 1989; Hill et al. 1999). Censuses since 1950 have asked women to report the number of children ever born and the number surviving (Goyer and Domschke 1983: 86-87; Wood and Carvalho 1988: 262; United Nations 1992: 57; CELADE 1998: 159). Since 1972, a government-sponsored national household survey, the Pesquisa Nacional por Amostra de Domicilios (PNAD), has asked similar questions. Such survivorship questions in censuses and surveys can be used to produce indirect estimates of infant mortality rates (Table 2). Other survey sources of infant mortality estimates for Brazil are the family planning and maternal and infant health survey of 1986 and the Demographic and Health Surveys of 1986 and 1996.

[Insert Table 2 about here]

Census and survey data are not immune to reporting errors, and seldom satisfy all of the assumptions needed to produce valid infant mortality estimates from answers to survivorship questions (Simões and Oliveira 1986: 30; Murray 1987: 774; United Nations 1992; Chackiel and Gough 1997). The PNAD surveys do not cover the rural areas of the Amazon, which are sparsely populated but may have high infant mortality rates. The 1986 and 1996 Demographic and Health surveys differed in sample size and methodology (Rutstein 2001), such that for the 1976-81 period, the 1986 survey produced an infant mortality estimate of 96 per 1000, whereas the 1996 survey produced an estimate of 75 per 1000 (Macro International 2001). Hence, census and survey estimates of infant mortality, although better than vital registration estimates in Brazil, have their own imperfections. Unlike vital registration statistics, moreover, they include no information on causes of death, and produce estimates for five-year periods rather than for individual years.

These data deficiencies make it hard to estimate infant mortality levels and trends. As late as 1980, estimates of infant deaths per 1000 live births in Brazil ranged from 81 (Becker and Lechtig 1986) to 80 (IBGE 1998) to 75 (US Bureau of the Census 2000) to 67 (Hill et al. 1999) to 64 (average of PNAD survey estimates for 1980 in UNICEF 1992). Since about 1985, however, estimates of infant mortality in Brazil have converged (Table 2, Figure 1). Moreover, the Cardoso government has worked hard since 1995 to improve the quality and availability of health data. According to a technical expert in the Pan American Health Organization, Brazil in the late 1990s spent more than a million dollars a year to improve the completeness and accuracy of the health data it reported to this international agency (Castillo-Salgado 2001).

[Insert Figure 1 about here]

**2. Brazil's Progress at Reducing Premature Mortality**

In 1995, the infant mortality rate in Brazil was 41 per 1000, compared to a mean of 33 per 1000 for 20 Latin American countries. From 1960 to 1995, the percent decline in infant mortality in Brazil was 64 percent, compared to a mean of 67 percent for 20 Latin American countries (Table 3). Brazil's performance on other mortality indicators varied, but was mostly below the mean for the region (Tables 3, 4, and 5). Compared to other countries in the region with well-developed welfare states, Brazil's infant mortality rate in 1995 was almost twice that of Argentina and almost four times that of Costa Rica or Chile (Table 2). From 1960 to 1995, Brazil's 64 percent infant mortality reduction barely exceeded Argentina's, whose per capita GDP growth during the period was less than half of Brazil's, and was far smaller than that of Chile or Costa Rica, which it also outpaced at per

capita GDP growth (see Table 6 below). Brazil's progress at reducing premature mortality was also below the median of all countries for which data are available. Brazil ranked 95th of 173 countries at reducing infant mortality from 1960 to 1996 (UNICEF 1998), and 86th of 143 countries at raising life expectancy from 1960 to 1997 (UNDP 1992, 1999).

[Insert Tables 3, 4, and 5 about here]

Table 1 and Figure 1 above provide a variety of infant mortality estimates for Brazil. The earliest estimates, from census data, pertain to the 1935-1940 period, when the rate was estimated to be 163 or 164 per 1000 (Simões and Oliveira 1986: 34; Becker and Lechtig 1986: 21). According to census estimates, infant mortality declined steadily over the next two decades, to 146 per 1000 in 1945-1950 and to 121 per 1000 in 1955-60. The Hill et al. (1999) estimates, which are based on census and survey data, pick up in 1960, when the infant mortality rate was estimated to be 115 per 1000. These estimates show a slow but steady decline from 1960 to 1995, except for a somewhat faster drop in the late 1970s and a somewhat slower decline in the early 1980s (the early 1980s slowdown is confirmed by Simões et al. (1989), which Hill et al. did not use in deriving their estimate for the period). Lack of a reliable year-by-year series makes it hard to compare Brazil's pattern of infant mortality decline to the patterns in Argentina, Chile, and Costa Rica, but the available evidence shows no signs of a precipitous drop in any particular period (Figure 2). In this respect Brazil's pattern of infant mortality decline resembles Argentina's and differs from that in Chile and Costa Rica, where infant mortality fell rapidly following the initiation of nationwide primary health care programs in the late 1960s and mid-1970s respectively.

[Insert Figure 2 about here]

**3. Socioeconomic Factors and Mortality Decline in Brazil**

Brazil's per capita GDP in 1960 was $2,428, 13th among 18 Latin American countries for which data are available. By 1995 it had risen to $6,907, 5th among these countries (Table 6). Brazil's 2.84-fold increase in per capita GDP between 1960 and 1995 outpaced all other Latin American countries, including Chile (2.19), Costa Rica (1.50), and Argentina (1.39). Brazil's strong performance at raising per capita GDP from 1960 to 1995 stands in notable contrast to its weak performance at reducing infant mortality. Underscoring this contrast, research has found that during the 1968-1974 "miracle" period, when per capita GDP soared from $3,294 to $5,228 (Penn World Tables 6.0, 1996 PPP US$, chain index), infant mortality actually rose in the metropolitan areas of Belo Horizonte, Recife, São Paulo, and other state capitals, partly because of a decline in real wages (Cordeiro 1982: 86, Wood 1977, Yunes 1981: 207; Wood and Carvalho 1988: 116-17, Scheper-Hughes 1992: 283). The weight of the evidence suggests, however, that infant mortality in Brazil as a whole fell during the "miracle" period. The Hill et al. (1999) study, which derives its estimates from the best available census and survey data, found that infant mortality in Brazil fell steadily from 107 per 1000 in 1965 to 82 per 1000 in 1975 (Table 2, Figure 1).

[Insert Table 6 about here]

According to the Hill et al. (1999) data, the rate of infant mortality decline slowed during the recession of the early 1980s, but picked up again later in the decade, even though the economy continued to stagnate. The recession of the early 1980s was the only time when the rate of economic growth (negative) was consistent with the rate of infant mortality decline (slow). Prior to the early 1980s, economic growth was rapid while infant mortality

decline was slow, albeit steady. After the early 1980s, economic growth was slow but infant mortality decline accelerated, although not as much as in Chile after the mid-1960s or as in Costa Rica after the mid-1970s. A strong variant of the "wealthier is healthier" thesis would thus have a hard time accommodating Brazil. Variation in the rate of economic growth rarely coincided with variation in the pace of infant mortality decline (Barros, Mendonça, and Rocha 1995: 262-63). Despite having the fastest per capita GDP growth in Latin America from 1960 to 1995, moreover, Brazil underperformed most other Latin American countries at reducing infant mortality. The least that can be said is that Brazil might have done more to use the fruits of its rapid growth to reduce infant mortality.

Brazil is often called the "world champion" of income inequality. Deininger and Squire (1996) put this appellation to the test, averaging over several decades Gini coefficients from "high quality" income distribution studies for 103 countries around the world. Brazil's average Gini of 57.3 turned out to be fourth-highest in the world, behind South Africa (the champion at 62.3), Gabon, and Sierra Leone. Starting with the Deininger and Squire database, but adding new studies and using a method designed to improve comparability across countries and over time, Londoño and Székeley (1997) estimated income inequality and income poverty for several Latin American countries from 1970 to 1995. Brazil, with a Gini index of 61.4, had the highest inequality among the eleven Latin American countries with data for 1995, although Chile, with a Gini of 56.6, was not far behind. Costa Rica had a more even income distribution, with a Gini of 46.5 in 1995. Argentina has produced no estimates of national income distribution since 1961, but Altmir and Beccaria (2001: 590) reported a Gini of 43.3 for households and 46.4 for individuals in Greater Buenos Aires in 1994 (Table 7). It is worth noting that all Latin American countries in 1995 had Ginis above 38.6, the median of the 103 countries in the Deininger and Squire study.

[Insert Table 7 about here]

In 1970, Brazil's Gini index was 57.1. From this already high level, it rose to 61.4 in 1995. Brazil's 4.3 point increase in the Gini index was the second-greatest among the nine Latin American countries with estimates for both years. Chile had the greatest rise in the Gini at 9.1; Costa Rica came in third at 2.0 (Londoño and Székely 1997). Argentina was excluded from the Londoño and Székely study because it lacked estimates of national income distribution for the era, but Altmir and Beccaria (2001), analyzing data from the country's major metropolitan areas, found a rise in the Gini of 7.2 during the period. From 1970 to 1995, then, income inequality rose in each of the four Latin American countries compared in this study. Brazil's rise was not as great as in Chile or Argentina, but it was greater than in Costa Rica. In each of the six other Latin American countries in the Londoño and Székely study, the Gini fell.

High and rising income inequality could help to explain why, despite rapid economic growth, the level of income poverty -- according to some studies -- barely budged in Brazil from 1970 to 1995 (Table 8). Londoño and Székely (1997) found that the proportion of Brazilians receiving less than $1 per day (in 1985 US dollars) fell only from 24 to 23 percent from 1970 to 1995, and that the proportion receiving less than $2 per day fell only from 49 to 43 percent. In Brazil as in other developing countries, however, income poverty is hard to estimate reliably, in part because most of the population is clustered around the poverty line. As Draibe, Castro, and Azeredo point out (1995: 74), "Brazil entered the 1990s with approximately 100 million impoverished people. Roughly speaking, one third (approximately 50 million) live[d] below or at the poverty line; another third [lived] just slightly above the

line." In such a situation, alternative ways of calculating the poverty headcount can produce widely differing estimates, and small gains or losses in household income, or minor adjustments to the poverty line, can result in large changes in the share of the population apparently suffering from income poverty.

[Insert Table 8 about here]

These problems in estimating the poverty rate are apparent in Table 8, in which two sources, apparently drawing in many cases on identical underlying surveys (see the survey dates in the notes to Table 8), give very different estimates for $1 per day poverty in 1995. In Brazil in 1995, $1 per day poverty was 23 percent according to Londoño and Székely (1997), but 5 percent according to the World Bank (2000). No simple explanation exists for this discrepancy. To construct a poverty line, Londoño and Székely used $1.00 per day in 1985 US dollars at purchasing power parity (1997: 13), whereas the World Bank used $1.08 per day in 1993 US dollars at purchasing power parity (2000: 319-320). This difference seems insufficient, however, to explain why Londoño and Székely produced a $1 per day poverty headcount of 23 percent, whereas the World Bank produced one of 5 percent. Moreover, whereas the Londoño and Székely methodology, compared to that of the World Bank, produced much higher $1 per day estimates for Brazil and Panama, it generated much lower estimates for Guatemala, Mexico, and Venezuela, as well as similar estimates for Chile, Colombia, Costa Rica, Honduras, and Peru.

Such discrepancies in income poverty estimates pose problems for policy planning and evaluation (Blackwood and Lynch 1994). Data on undernourishment provide additional insight into the severity of income poverty. To the extent that the poor have access to basic education, safe water, adequate sanitation, and health care, they usually receive it from the public sector, although they must often spend private income to make effective use of these publicly-provided services. To the extent that the poor have access to food, however, they usually buy it in the private market, although the government sometimes subsidizes food or provides it free of charge. In the 1980s, Brazilian families earning less than two minimum salaries per month, about $100 in then-current US dollars, spent an estimated 44 percent of their income on food (Draibe, Castro, and Azeredo 1995: 59). In a shantytown outside Recife, young families in the 1980s reportedly spent about twenty percent of their income on powdered milk alone (Scheper-Hughes 1992: 318). In short, undernourishment is more likely than deprivation in access to education, safe water, adequate sanitation, or health care to be correlated with income poverty. To the extent that undernourishment is low, the lower estimates of income poverty gain plausibility relative to the higher estimates.

Brazil from 1960 to 1990 suffered no overall scarcity of calories, and only in the 1960s did it suffer an overall scarcity of protein. As Table 9 shows, Brazil's per capita calorie availability rose from 2,320 per day in 1960, already above the FAO (2000) recommended minimum of 2,200 per day, to 2,777 per day in 1990. Meanwhile, per capita protein availability rose from 42.9 grams per day in 1960 to 80.3 grams per day in 1990, much higher than the FAO (2000) recommended minimum of 53 grams per day. By 1990, Brazil was more than half a standard deviation above the Latin American mean on both calorie and protein availability. Its rise in calorie availability from 1960 to 1990 was also more than half a standard deviation above the Latin American mean, and its increase in protein availability was nearly one and a half standard deviations above the mean.

[Insert Table 9 about here]

People differ not only in their abilities to command available food, but also in their abilities to absorb nutrients from food (Drèze and Sen 1989: 35-45). Hence, a country with adequate food availability might include a

great many undernourished inhabitants. Although undernourishment remains a very serious problem among the most impoverished Brazilians (Scheper-Hughes 1992: 135-163), the country as a whole fares better than most other Latin American nations not only on aggregate calorie and protein availability, but also on the main statistical measures of adequate nourishment. A study by the FAO (2000) concluded that only 15 percent of Brazilians were inadequately nourished in 1980, and that the proportion fell to 10 percent by 1997. This 10 percent level was half a standard deviation below the 1997 mean for 20 Latin American countries. Likewise, the 33 percent decline from 1980 to 1997 in the proportion of people undernourished was two-thirds of a standard deviation greater than the mean decline for the region. Another study found that only 5.7 percent of Brazilian children were born underweight in the 1990s (Smith, El Obeid, and Jensen 2000), again about half a standard deviation below the Latin American mean (Table 10). This 5.7 percent figure was fairly close to the UNICEF estimate of 8 percent for 1995-99 (UNICEF 2001: 82), as well as to the health ministry's estimate of 6 to 8 percent in 1997-99 (Brasil. Ministério da Saúde 2000a: 28). To the extent that these estimates of undernourishment can illuminate the prevalence of income poverty, they would seem to lend credence to the World Bank (2000) estimate that approximately 5 percent of Brazilians made less than $1 per day in 1995, rather than to the Londoño and Székely (1997) estimate of 23 percent.

[Insert Table 10 about here]

From 1960 to 1995 Brazil reduced its total fertility rate (the number of children each woman is expected to bear in her lifetime) from 6.2 to 2.8. Brazil's 1995 fertility rate was half a standard deviation below the Latin American mean, and its 1960-1995 progress at reducing fertility toward the replacement rate of 2.1 was half a standard deviation above that mean (Table 11). Brazil owed its rapid fertility decline mostly to urbanization, the growing autonomy of women, and the rise of secular and consumerist cultural values, facilitated by the relentless spread of television (Martine 1996, Schwartzman 2000: 33-34). The main vehicles for fertility decline were abortion and sterilization, partly because it was hard to obtain other methods of contraception (Martine 1996; Singh and Sedgh 1997: 12). Without this rapid fertility decline, Brazil's progress at reducing infant mortality might well have been even slower. Brazil thus did relatively "well" at reducing fertility, but relatively poorly at reducing infant mortality. The least that can be said is that fertility factors do not seem to be responsible for the sluggish pace of mortality decline in Brazil.

[Insert Table 11 about here]

To summarize, Brazil from 1960 to 1995 did fairly well on most socioeconomic indicators. By 1995, it had a higher per capita GDP and a lower fertility rate than the average Latin American country. It had the highest income inequality in the region, but its levels of undernourishment were lower than the Latin American average. From 1960 to 1995, moreover, Brazil reduced fertility and undernourishment more than the average Latin American country. It trailed its neighbors at reducing income inequality and poverty, but enjoyed the fastest economic growth in the region. In short, socioeconomic disadvantage was not the main cause of Brazil's disappointing performance at reducing premature mortality. It is well worth examining the possibility that social policy deficiencies contributed heavily to the sluggish expansion of survival-related capabilities in Brazil.

**4. Social Policies: Education, Nutrition, Family Planning, Water, and Sewerage**

In 1986, according to a World Bank study, combined federal, state, and municipal public spending on social benefits in Brazil amounted to about 18 percent of GDP. About 43 percent of such spending went to pensions, 23 percent to education, 17 percent to housing, 12 percent to health care, and 5 percent to other programs (Draibe, Castro, and Azeredo 1995: 40). By 1995, social spending at the three levels of government had risen to 21 percent of GDP, with 48 percent going to pensions, 21 percent to education, 16 percent to health care, 5 percent to housing, and 10 percent to other programs (Neri et al. 1999: 19).

Little of this spending reached the poor. According to the World Bank, only 18 percent of social spending in the mid-1980s went to the 41 percent of Brazilians with household incomes of less than two minimum salaries. In 1988, rural workers made up 28 percent of retirement beneficiaries, but received only 14 percent of retirement funds. Meanwhile, 49 percent of employed Brazilians, mostly in the informal sector, were completely outside the pension system. Unlike in Chile, where housing subsidies were progressive, the richest 5 percent of Brazilians received about 20 percent of housing funds; the poorest 60 percent received about 6 percent. The poor funded a significant share of these middle-class and upper-class welfare benefits, both by paying higher indirect taxes than would otherwise have been the case, and by paying higher prices for goods and services to corporations who passed along to consumers the cost of higher payroll taxes (Draibe, Castro, and Azeredo 1995: 53-58; information on progressivity of housing subsidies in Chile comes from Foxley, Aninat, and Arellano 1979: 114).

This section will summarize Brazil's post-1960 policies in education, nutrition, family planning, and provision of basic infrastructure. The overall record of Brazilian social policy since 1960 cannot be called distinguished. Indeed, deficiencies in social policy are probably the most important reason why Brazil from 1960 to 1995 reduced infant mortality slower than the average Latin American country, despite enjoying the fastest economic growth in the region, and why Brazil in 1995 ranked 16th among 20 Latin American countries on infant mortality, despite ranking 5th on per capita GDP. As might be expected in such a vast country, certain municipalities and states had more effective social policies than others. Urban planning in the southern city of Curitiba, and primary health care in the northeastern state of Ceará, have become world-famous for innovative design and positive results. Even before 1995, moreover, some national policies were quite successful, including the expansion of primary education and the provision of water in central urban zones. Since 1995, the government of Fernando Henrique Cardoso has engineered pathbreaking changes in education and health care policies that are likely to accelerate the pace of premature mortality reduction, provided they can overcome the obstacles posed by persistently high income inequality and slower economic growth than in the 1960s or 1970s.

Education, particularly of women, contributes significantly to reducing premature mortality (Caldwell 1986: 187-191; Hill and King 1993, Schultz 1993: 68-78; Murthi, Guio, and Drèze 1995, Subbarao and Raney 1995). Education improves knowledge about nutrition, sanitation, and health, and tends to make women more assertive in demanding food and health care for children. Male education also reduces the risk of early death, but its effect on this outcome is weaker (Murthi, Guio, and Drèze 1995: 762-64). Low levels of educational attainment in Brazil in 1995 made premature mortality rates higher than they would otherwise have been, and slow progress at improving education from 1960 to 1995 reduced the pace of mortality decline during the period.

Brazil's literacy rate in 1995 was below the mean for 20 Latin American countries, as was its rate of progress at reducing illiteracy from 1960 to 1995. Illiteracy was mainly a problem of the older generation (Castro 2000: 293), but Brazil was below the median for Latin America in youth as well as adult illiteracy (it was just

above the mean, but the mean was depressed by the presence of an asymptote of 100 percent, as well as by very low rates of youth literacy in Haiti and Nicaragua) (Table 12).

[Insert Table 12 about here]

Females trailed males on mean years of schooling from 1960 to 1995 (Barro and Lee 2000), exacerbating the effect of low schooling on premature mortality. According to Barro and Lee (2000), Brazilian females in 1995 had an average of 4.2 years of schooling, nearly a standard deviation below the mean for 20 Latin American countries. Their meager progress since 1960, when the figure had been 3.1 years, was even more than a standard deviation below the mean for Latin America (Table 13). Basic education in Brazil was deficient in quality as well as quantity. In 1997, fewer than half of all Brazilian eighth graders could do fourth-grade math (Herrán and Rodríguez 2001: xi). In 1994, 18 percent of primary students were repeating the previous grade, the highest repetition rate in Latin America and barely lower than the 1970 level of 19 percent. Brazil's 1994 primary repetition rate was more than two standard deviations below the mean for Latin America; so was its progress at reducing primary repetition from 1970 to 1994 (Table 13).

[Insert Table 13 about here]

The first chapter of Opportunity Foregone, a recent volume on Brazilian education (Birdsall and Sabot 1996), is entitled "Education in Brazil: Playing a Bad Hand Badly" (Birdsall, Bruns, and Sabot 1996). Problems with Brazilian education policy have included low per capita investment in schooling, diversion of resources to university education and to private schools (both serving mainly the better-heeled), enrollment expansion at the expense of educational quality, short school days and years, inadequate teacher training and pay, frequent strikes by educational employees, and the use of schools by government officials more as a source of patronage jobs than as places for educating the young (Birdsall, Bruns, and Sabot 1996; Plank, Sobrinho, and Xavier 1996; Castro 2000). Not all of the problems of Brazilian education are due to misguided government policies. Judith Tendler has noted that employers in parts of Brazil prefer to hire poorly educated workers, whom they consider less "uppity" and less likely to leave for a better job (McGuire and Campos 1997: 22). Poverty reduces awareness of the benefits of schooling, raises the opportunity cost of keeping children out of the work force, and complicates the purchase of school-related books, clothing, and transportation. The low quality of education, coupled with low demand for moderately-skilled workers resulting from Brazil's capital-intensive growth, has reduced returns to, and thus demand for, schooling (Birdsall, Bruns, and Sabot 1996). In the 1990s, however, rapid gains in productivity increased the need to hire better-educated workers, contributing to a sharp rise in demand for schooling (Castro 2000: 295-96).

A more recent study, aptly entitled "Education: Way Behind but Trying to Catch Up" (Castro 2000), notes that Brazilian educational policies and outcomes improved in the 1990s, beginning at the state and municipal levels. In 1991, the state of Minas Gerais began regular standardized testing, introduced merit criteria and competition into the process of hiring principals, gave more autonomy to individual schools, and devised new channels for parental involvement. Within a few years, these reforms had catapulted Minas Gerais from the middle to the top among Brazilian states at student performance on diagnostic tests (Castro 2000: 298). Beginning in 1995, several Brazilian municipalities and states began to pay mothers a subsidy for keeping their children in school, and the federal government soon followed. Such programs covered about three million children by 1999, and preliminary analysis suggests that they contributed to higher school attendance, lower dropout rates, and

reduced poverty among beneficiaries. Mexico and Honduras adopted programs modeled on the Brazilian ones (World Bank 2001). In January 1998, the federal government put into effect the FUNDEF program, which guaranteed that the equivalent of US $300 would be made available for the education of each public school student up to the 8th Grade. The funding was produced by mandating that 25 percent of state revenues go to education, by redistributing resources within states from richer to poorer schools, and by contributions from central-government revenues in cases where the first two provisions produced insufficient funds (Herrán and Rodríguez 2001: Ch. 5, 37-38). The FUNDEF program led to higher education spending, enrollments, teacher salaries, and teacher hiring, with most of the benefits going to the poorest school districts (Castro 2000: 297).

Military governments introduced several food and nutrition programs in the 1970s and 1980s, most targeted ostensibly either to school children or to impoverished mothers and infants. Civilian governments expanded some of these programs after 1985. School lunch programs probably reached about 80 percent of school children in the late 1980s, but only about 10 percent of pregnant women had signed up for the targeted nutrition programs by this date, and only about a third of low-income pregnant and nursing women, infants, and school children were benefiting from such programs (Cordeiro 1982: 88; Atwood 1990: 157; Draibe, Castro, and Azeredo 1995: 21-22, 27-28). A survey in 1989 showed that the nutrition programs were poorly targeted, with most benefits going neither to the poorest families nor to the poorest regions. Many of those enrolled in the programs were not actually receiving food, and in marked contrast to one of the more successful initiatives in Chile, food distribution was usually separated from health care provision (Peliano 1992). Until the early 1990s, the school lunch program mainly benefited children in the wealthier South and Southeast, with few benefits reaching the poorest families. Since that time, however, the program has been targeted more effectively to poorer families and regions (Silva 2000).

Brazil's rapid fertility decline helped to alleviate what would otherwise have been strong upward pressure on the infant mortality rate, but only a limited part of the fertility decline can be traced to government family planning programs. The Brazilian government until 1974 was officially pronatalist, and distribution of birth control information or devices was illegal (Wood and Carvalho 1988: 160-63; Pitanguy 1994: 112-119; Martine 1996: 55). Some state and municipal governments launched family planning programs in the late 1970s, but the first national-level initiative came only in 1986. Even in the 1990s, family planning services covered only a small share of the population (Martine 1996: 55). Cross-national analyses place Brazilian family planning in a broader perspective. Since 1972, researchers have used an expert rating system to measure investment in family planning in about 100 developing countries (Lapham and Mauldin 1972, Ross and Mauldin 1996, Ross and Stover 2000). The researchers send questionnaires to country experts, aggregate the responses into component measures of different aspects of family planning effort, and assign each country an overall score equal to its achieved percentage of the maximum attainable score on the combined components. Averaging the results of the five surveys, Brazil's overall score was three-fifths of a standard deviation below the mean for 20 Latin American countries (Table 14). The ratings show a jump between 1972 and 1982, presumably because of the impact of the state and local initiatives of the late 1970s, but the fertility rate, which started out in 1960 at 6.2, had already declined to 3.9 by 1980 (Wang et al. 1999).

[Insert Table 14 about here]

Household studies have found a strong relation between access to safe water and lower infant mortality in Brazil, particularly in households with lower socioeconomic status (Merrick 1985: 19; Victora et al. 1988; Wood and Carvalho 1988: 90-92; Timæus and Lush 1995: 178; Sastry 1996: 224; Terra de Souza et al. 1999: 273). On the whole, Brazil since about 1970 has done quite well at expanding access to safe water. The proportion of Brazilians reportedly served by water supply systems rose from 30 percent in 1969 to 94 percent in 1998. This percentage gain was the highest in Latin America, two standard deviations above the mean. The 1998 percentage was also a full standard deviation above the mean (Table 15). Only 80 percent of rural Brazilians were served by water supply systems in 1998, but that figure too was a standard deviation above the Latin American mean for rural areas. The military government's PLANASA program, introduced in the early 1970s, played a major role in expanding access to safe water in the central cities (Merrick 1985: 1; Wood and Carvalho 1988: 121; Horn 1985: 56).

[Insert Table 15 about here]

Like much else in Brazil, however, access to safe water is poorly distributed. In the late 1980s, about 58 percent of Brazilian children lived in households with per capita incomes below half a minimum wage per household member. Among these households, only 20 percent were connected to adequate sewerage systems, only 24 percent had safe water in the home, and only 27 percent had regular trash collection (Neri et al. 1999: 6). In low-income peripheral urban areas, where the risk of infant death was higher than in the central cities, few families were connected to a water supply system (Azevedo 1981: 62; Katakura and Bakalian 1998: 7). Access to sewerage or septic systems was also deficient, even at the aggregate level. Data are unavailable for rural regions, but in urban areas, the proportion of Brazilians served by sewerage or septic systems rose from 25 percent in 1969 to 74 percent in 1998. This percentage gain was one-third of a standard deviation below the Latin American mean, and the proportion with access to sewerage or septic systems in 1998 remained four-fifths of a standard deviation below the mean (Table 16). Provision of water and sewerage improved in the early 1990s, when the government, with World Bank financing, expanded a program of water and sewerage connections targeted to urban shantytowns. Stressing community participation and low-cost appropriate technology, this PROSANEAR I program by 1996 had connected about a million impoverished households to water and to sewerage systems at a cost of about US $100 per connection (Katakura and Bakalian 1998).

[Insert Table 16 about here]

**5. Social Policies: The Health Care System**

Combined public and private health spending in Brazil in 1989 amounted to 4.8 percent of GDP. Two-thirds of these expenditures originated in the public sector; one-third came from private citizens (World Bank 1994: 8). By 1995, total health spending in Brazil had risen to 7.6 percent of GDP, or about US $280 per capita (PAHO 1998a: 315). As a proportion of GDP, Brazilian health spending in 1995 was one-third of a standard deviation above the mean for 20 Latin American countries; in US dollar terms, it was half a standard deviation above the mean. Gauged by major mortality indicators, Brazilian health spending was inefficient: life expectancy in Brazil in 1995 was half a standard deviation below the mean for the 20 countries, and infant mortality was one-third of a standard deviation above the mean. As in Argentina (McGuire 2001a), the main reason for this inefficiency has been the neglect of primary health care for the poor.

Public health interventions in Brazil date back at least to the 1790s, when the Portuguese Crown encouraged variolation in an attempt to quell outbreaks of smallpox (Alden and Miller 1987: 209-213). Two medical schools were built in 1832, but graduated few physicians. Most state activities in the health field prior to 1900 were aimed at controlling infectious diseases, particularly yellow fever, which caused a number of epidemics in major cities after 1849 (Stepan 1976: 50, 59). During this era, the main institutions involved in health provisioning were the Church, mutual aid societies, and the family (Horn 1985: 48). A watershed occurred in 1903-09, when Rio de Janeiro under public health director Oswaldo Cruz used a vaccination and sanitation campaign to control a yellow fever epidemic (Stepan 1976: 85-100). Brazil introduced its first contributory health insurance program in 1923, when the Ley Eloy Chaves established contributory medical, disability, retirement, and burial cost insurance for employees of railroad companies. This law provided the basis for all subsequent contributory schemes. The railway workers' fund that collected the contributions and dispensed the benefits was known as the Caixa de Aposentadoria e Pensões (CAP). In Brazil, an aposentadoria is a retirement or disability pension; a pensão is a payment to the survivors of a deceased employee (Malloy 1979: 40-43).

Other firms soon established CAPs, and after the 1930 coup that made Getúlio Vargas president, functionally similar but sector-wide IAPs were established as well. The largest such fund, IAPI, covered industrial workers. Launched in 1938, IAPI gained a reputation for administrative competence (Malloy 1979: 76, 79; Geddes 1994: 75, 77), although it delivered no health services until 1950 and never reached more than 30 percent of its supposedly insured population, which amounted to about 45 percent of Brazilians covered by social insurance (Malloy 1979: 110). By 1939 the contributory health and pension system insured just under 2 million Brazilians, including virtually all urban formal-sector employees, in 98 CAPs and 5 IAPs (Malloy 1979: 68). The richest IAPs had their own networks of providers, but the majority contracted with private health care providers (Lobato and Burlandy 2000: 3). In 1953, the CAPs were consolidated into a single IAP of workers in railway and public services, with the result that all social insurance for the rest of the 1950s was delivered by six IAPs plus a separate institution for civil servants.

The contributory system had several deficiencies. First, until the early 1970s, it excluded domestic workers, rural workers, and most of the self-employed, as well as their family members (Malloy 1979: 97-98). Second, both the IAPs and CAPs were underfunded. The government and employers failed to live up to their obligations to pay into the funds, and during the 1950s and 1960s bad investments, mostly in real estate, eroded the capital base. Third, making claims was a cumbersome process that usually required intervention by a functionary with whom the claimant had a personal connection (Huber 1996: 171). Fourth, except in the top echelons of IAPI, employment by the funds was a conspicuous source of patronage (Malloy 1979: 72-73). Fifth, benefits were much scantier in some regions and economic sectors than in others (Lobato and Burlandy 2000: 3; Malloy 1979: 68-69). A 1960 law finally standardized the benefits provided by the IAPs, but the funds remained separate organizations (Lobato and Burlandy 2000: 3). Sixth, social security resources, based as they were on payroll deductions, fluctuated with economic conditions. Because retirement and disability pensions were fixed, health insurance absorbed the brunt of downturns (Weyland 1995: 1707, Weyland 1996: 171; Lobato and Burlandy 2000: 5).

Paralleling the activities of the social insurance sector were those of the Ministry of Health. A Ministry of Education and Health was created in 1930, from which a separate Ministry of Health split off in 1953 (Ruffino-Netto and Souza 1999: 41). These ministries were responsible for preventive medicine, long-term care, national health policy coordination, and facilities providing basic health care for the poor, particularly in rural areas

(Lobato and Burlandy 2000: 4). In 1949, when the central government spent about 1 percent of GNP on health, 87 percent passed through the Ministry of Health and only 13 percent through the contributory social insurance system. The situation reversed itself during the 1964-1985 military regime. In 1965, Ministry of Health still received 64 percent of federal health spending, but the proportion dropped to 40 percent in 1969, 30 percent in 1975, and 19 percent in 1978 (McGreevy 1984: 14), with the contributory system getting the remainder. Accordingly, whereas the Ministry of Health had received 4.6 percent of the federal budget in 1961; it received 0.9 percent in 1974 (Cordeiro 1980: 160).

In 1966 the military unified the six IAPs into a single fund, the Instituto Nacional de Previdência Social (INPS). The INPS operated as a gigantic IAP, channeling contributions from payroll deductions to curative medical services and to retirement, disability, and survivor pensions. In 1974 the INPS was placed under the jurisdiction of the newly-created Ministério da Previdência e Assistência Social (MPAS). In 1977 the MPAS restricted the jurisdiction of the INPS to pensions and created a new agency, the Instituto Nacional de Assistência Médica da Previdência Social (INAMPS), to collect and disburse the social security contributions destined for curative medical care. INAMPS discharged this duty partly by operating its own facilities, but mostly, and increasingly, by contracting out service delivery to private providers, first on the basis of fee-for-service arrangements and, after 1991, on the basis of a prospective payment system like that used by Medicare in the United States. INAMPS lasted from 1977 to 1993, when it was folded into the Ministry of Health. Its authority began to wane as of 1987, however, when its staff and facilities were shifted to the state health secretariats. From 1987 to 1990 INAMPS was simply a funding conduit; from 1990 to 1993 it also oversaw state and municipal health service delivery and contracts with private providers (Malloy 1979: 128-130; Malloy 1991: 30; Draibe, Castro, and Azeredo 1995: 19; Lobato and Burlandy 2000: 4; Lobato 2000: 13, Jack 2000: 24-25).

The demise of INAMPS in 1993 stemmed from the universalization and unification of public health care, a process that began in the early 1970s, was formalized in the 1988 constitution, and culminated in the emergence of the Sistema Único de Saúde (SUS) in 1990. Health insurance coverage was extended to rural workers in 1971 through the FUNRURAL program. Financed by taxes on agricultural wholesalers and on the wage bills of urban firms, FUNRURAL was the first social insurance program to break with the principle that benefits should depend on contributions. In 1972, self-employed and domestic workers also joined the social insurance system, extending it into the informal sector (Malloy 1991: 32). By 1974, some 93 percent of Brazilians were legally covered by some form of social insurance protection (Malloy 1979: 128-134).

The military promoted the expansion of the private sector in health care provision, believing that government services were inefficient (Weyland 1995: 1701). The promise of guaranteed contracts from INAMPS, for example, stimulated the construction of new private hospitals (Lobato and Burlandy 2000: 4-5). The share of hospital beds in private-sector facilities rose from 14 percent in 1960 to 73 percent in 1976 (Cordeiro 1980: 162; Lobato 2000: 10). Although the private sector in 1976 accounted for only 2 percent of local health posts and 38 percent of office visits, it included 53 percent of doctors, 57 percent of nurses, and 84 percent of hospitalizations. By the early 1970s, INAMPS, which funded 90 percent of Brazil's health services, allocated only 21 percent of its expenditures to its own facilities. Private hospitals took 61 percent; the rest went to businesses, associations, universities, non-profits, and other government agencies (Lobato 2000: 13-14). Such policies resulted in a high-cost, specialized, curative, hospital-based health care system concentrated in profitable regions of the country (Lobato and Burlandy 2000: 4-5). Private medical personnel and facilities were located mainly in middle-class

neighborhoods in big cities, where they were relatively inaccessible to the urban and rural poor (Weyland 1995: 1701).

INAMPS paid private providers on a fee-for-service basis, exercising no control over the kind of care provided. The government also did a poor job of oversight: in 1981, an INAMPS audit found irregularities in nearly 90 percent of the bills it was asked to pay at 400 contracted hospitals (World Bank 1994: 62). Office visits were reimbursed at a very low rate relative to diagnostic tests and hospital stays, which helps to explain why health professionals in the mid-1970s ordered 130 diagnostic tests for every 100 office visits, much higher than the international norm of 25 per 100, and why Brazil around 1980 had the lowest rate of office visits to hospital stays among 14 countries in the Americas (Horn 1985: 60; McGreevy, Piola, and Vianna 1989: 324-25). Hospitalization was itself a major cause of death: at least 53,000 and perhaps as many as 100,000 Brazilians died of hospital-acquired infections in 1990, a rate much higher than in industrialized countries (World Bank 1994: 111). The INAMPS practice of paying higher fees for cesarean births led to an estimated 186,000 unnecessary cesarean deliveries in 1979 (McGreevy, Piola, and Vianna 1989: 325). In 1986, 32 percent of all births in Brazil, and 64 percent among high-income groups in São Paulo, were by cesarean section (World Bank 1994: 109).

The extension of coverage to rural workers, the self-employed, and domestic workers, together a 1975 law that granted anyone the right to use INPS and INPS-contracted facilities for emergency care, led to soaring demand for health services (World Bank 1994: 21). Because few changes were made in funding or service provision, de facto rationing emerged. Employees of large corporations and, especially, top civil servants and military personnel received much higher quality services than rural workers, domestic workers, or the self-employed (Malloy 1991: 35; Lobato 2000: 15). Already under strain because of rising demand, the health budget entered a crisis in 1980 when mounting foreign debt and a sharp rise in oil prices triggered a recession, drastically reducing payrolls and thus contributions to INPS and INAMPS. As a cost-cutting measure, the government reduced reimbursements to the private sector. Private providers responded by presenting fraudulent bills (Weyland 1996: 159), by going on strike, and by becoming more selective about the types of patients and cases they would handle (Lobato 2000: 13-15).

As health services deteriorated, the quality of care became a salient social issue, and a health reform movement led by health professionals and health policy experts gained momentum. The reformers criticized the low quantity and poor quality of health care available to the rural and urban poor, denounced the dependence of government-funded health provision on the private sector, and inveighed against the system's excessive reliance on curative as opposed to preventive medicine. In a conciliatory response to the economic crisis of the early 1980s and the impending transition to civilian rule, the military government appointed leaders of the health reform movement to top posts in the ministries of health and social welfare and in INAMPS (Weyland 1995: 1702).

The health reform movement helped to transform the Brazilian health care system, but the process was slow. In 1987, all Brazilians became legally entitled to medical treatment in any INAMPS or INAMPS-reimbursed facility in non-emergency as well as emergency situations. The 1988 constitution included a clause stipulating a universal right to health, and required the state to protect that right by creating a decentralized "unified health system" that would use a single pool of funds, drawn from payroll deductions and general revenues, to fund both preventive medicine and curative health care. Such unification meant doing away, once and for all, with the distinction between those eligible for the generally higher-quality health care funded by social insurance and those

eligible only for the generally lower-quality health care financed out of general revenues. A coalition of private-sector health providers, clientelist politicians, and civil servants with a stake in the old system impeded progress toward decentralization and unification (Weyland 1995, Weyland 1996: Ch. 7; Araújo 1997: 118-119), but INAMPS was finally abolished in 1993, ending the last vestiges of legal privilege in health care for contributors to the social insurance system.

The Sistema Único de Saúde (SUS) created in 1990 delegated administrative responsibility for health care provision from the federal to state and municipal governments, but funding for such health care still came mostly from the federal government, albeit now entirely via the Ministry of Health. The federal government also retained oversight and ultimate decision-making capacity, and provided few programs to help the municipalities develop health management expertise. Initially, then, decentralization amounted simply to deconcentration, the transfer of administrative but not political authority (Araújo 1997). Nor was the financing system completely overhauled. As late as 1992, the Ministry of Health still received 55 percent of its budget from the Ministry of Social Welfare, which still obtained most of its funds from payroll taxes, and remained responsible for financing pensions as well as health care (Lobato and Burlandy 2000: 12; Lobato 2000: 7).

The economic crisis and runaway inflation of the early 1990s ravaged the new SUS system. From 1989 to 1993, per capita public spending on health fell from $99 to $69 (PAHO 1998c: 11, in current US dollars). In 1993, when the Ministry of Social Welfare ran short of funds, it simply stopped handing over revenues to the Ministry of Health, which was forced to turn to the Ministry of the Treasury to make up the shortfall (Weyland 1995, Weyland 1996: Ch. 7). After 1993, however, the situation improved, thanks to economic recovery in the wake of the 1994 Real Plan, a growing emphasis on public health after Fernando Henrique Cardoso became president in 1995, and the creation of a new tax on banking transactions earmarked for the SUS in 1996. Federal expenditure on health rose from US $7.5 billion in 1993 to US $17.1 billion in 1997, and per capita public health spending rose from US $69 in 1993 to $124 in 1997 (PAHO 1998c: 11, 17). Dispensing with the fee-for-service model, the federal government by the late 1990s was transferring about US $6-10 per month per inhabitant to each municipality to fund primary health care. The amount was higher if the municipality was willing and able to undertake a variety of specific initiatives promoted by the federal government, including the Family Health and Community Health Agents programs, which will be discussed in the next section.

It is too early to draw conclusions about how these health reforms have affected health care outputs and health outcomes, but preliminary signs are promising. From 1987 to 1999, hospital discharges fell from 81 to 73 per 1000 population, while office visits rose from 1.67 to 2.19 per capita. The largest increases in consultations came in the poorest regions of the country (PAHO 1998c: 19; Brasil. Ministério da Saúde 2001: Tables F-1 and F-3). From 1987 to 1997, according to national health surveys, the proportion of the population with access to basic care rose from 73 to 95 percent, and the proportion of infants routinely vaccinated rose from 53 to 79 percent. From 1986 to 1996, the proportion of women receiving prenatal care from trained personnel rose from 74 to 85 percent, and the proportion of deliveries in health institutions rose from 80 to 91 percent. The proportions were lower in rural areas and in the Northeast (where respectively only 68 and 74 percent of expectant mothers had prenatal care in 1996) (PAHO 1998c: 18-19), but because better-off Brazilians already had high coverage before the reforms, it is reasonable to assume that a fair proportion of the improvement took place among the previously underserved.

**6. Social Policies: Primary Health Care**

The Serviço Especial de Saúde Público (SESP), an agency under the Ministry of Education and Health, launched Brazil's first major primary health care program in 1942. Its initial goal was to facilitate the export of natural rubber, iron ore, quartz, and mica -- all crucial to the Allied war effort -- by fighting malaria and giving simple medical care to rubber tappers in the Amazon and to construction workers rebuilding a railway line linking mining areas in northern Minas Gerais to the port of Vitória, Espírito Santo (Bastos 1993: 26-30, 59-115). From 1942 to 1945, SESP recieved most of its funding and nearly half of its technical personnel from the United States (Bastos 1993: 471, 479). Among its first directors was Charles Wagley, the noted US anthropologist .

SESP expanded rapidly in size and geographical scope, as well as in the types of activities it undertook. The number of SESP employees, about sixty percent of whom worked full-time, rose from 1,398 in 1946 to 3,486 in 1961 to 5,416 in 1973 to 10,330 in 1986. Meanwhile, the agency's operations expanded outward from the Amazon and the mining areas of Goiás and Minas Gerais to small communities elsewhere, particularly in the Northeast. By 1986, about half of the agency's employees worked in the Northeast, about a quarter in the Amazon, and the remainder in other parts of the country (Bastos 1993: 469-73). Meanwhile, the initial focus on malaria prevention and control and simple curative care expanded to include vaccination campaigns, epidemiological research, health education, compilation of health statistics, the construction and operation of health posts and hospitals, provision of water and sewerage in urban areas, and the training of health personnel (Bastos 1993: 142-143, 164; Brasil. Ministério da Saúde 1972: 1-2).

When US aid ended in 1960, SESP became the Fundação Serviços de Saúde Pública (FSESP), a "foundation" (a government agency organized for a specific task) under the Ministry of Health (Bastos 1993: 141-42, Horn 1985: 49). During the 1940s FSESP's main health worker was the visitadora sanitaria, who made home visits for health education and curative care. During the 1950s and 1960s it was the atendente, who worked exclusively in a health post after receiving 2 or 3 months of training. Recognizing that the atendente program was overemphasizing curative services, FSEP returned in the 1970s to its original system of visitadoras, who used home visits to provide immunizations, oral rehydration, nutrition education, pre- and post-natal care, checkups for infants and children, first aid, simple curative care, and other services. Most of the visitadoras were female; they were assisted by auxiliaries, mostly male, who attended walk-ins while the vistadora was out on home visits and helped with other tasks such as vaccinations. The visitadoras were selected carefully according to merit criteria from 19-25 year-old community women with at least six years of schooling. They were trained for five months, paid regularly and relatively well, and enjoyed good job security. As many as 100 candidates might apply for a single open position (Rice-Márquez, Baker, and Fischer 1988: 89-91).

By 1969, FSESP had become one of the Brazilian government's "pockets of efficiency" (Geddes 1994: 61-69; Evans 1995: 61-62). The agency won "great respect from national and international technical personnel," radiated "a certain public health 'mystique'" (Azevedo 1981: 90), and acquired a "reputation for honesty, efficiency, and effectiveness in public health" (Horn 1985: 49). Merit hiring may well have had much to do with these successes. Tendler (1997a: 28-29) viewed merit hiring as crucial to the effectiveness of the Programa de Agentes de Saúde in the state of Ceará after 1987, and Pinto (1984: 179) cited the selection of atendentes by local and regional leaders as the main reason why the PIASS program failed to deliver effective primary care in the Northeast in the late 1970s and early 1980s (these other programs will be disussed momentarily). Interviews with

health clinic personnel indicate that they are often anguished by the tension between their responsibilities as health professionals and their need to serve political patrons (Scheper-Hughes 1992: 204-206).

On the down side, FSESP suffered from serious financial problems in the early 1960s, and was declared insolvent in 1964. Reorganization of the Ministry of Health in 1970 deprived FSESP of some of its responsibilities for medical research and for water and sanitation projects, demoralizing some of its administrators. Red tape was crippling: nearly 60 forms had to accompany every request for supplies to stock a health post. After the return to civilian rule in 1985, FSESP was plagued increasingly by partisan and ideological conflict, patronage appointments, and strikes (Bastos 1993: 485-491). These problems, together with the intruduction of the Sistema Único de Saúde, foreshadowed the demise of the agency. In 1990, FSESP was incorporated into the Fundação Nacional de Saúde (FUNASA), an autonomous agency within the Ministry of Health. FUNASA assumed responsibility for disease control, vaccinations, basic sanitation, and epidemiological surveillance, especially in indigenous communities.

Despite the obstacles it faced, FSESP made a major contribution to disease control and health care in some of the most remote and impoverished regions of Brazil. Its main drawback was lack of scale. FSESP was simply too small to produce major improvements in the health status of tens of millions of impoverished Brazilians. Although FSESP health personnel carried out about 2 million medical consultations per year during the 1960s and 1970s (Brasil. Ministério da Saúde 1972: 4), Brazil's rural areas in 1980 included nearly 22 million people with incomes insufficient to meet basic needs (David et al. 2000). In 1989, FSESP's 10,905 employees included 939 doctors, 337 nurses, 356 nurses' aides, and 1,852 atendentes. In 2000, by comparison, the Programa de Agentes Comunitários de Saúde, introduced in 1991, employed 118,960 community health workers, and the Programa Saúde da Família, introduced in 1994, employed 5,957 family health teams, each of which included a doctor, a nurse, a nurse auxiliary, and four to six community health workers (Brasil. Ministério da Saúde 2000a: 5, 32; 2000b: 6, 30). In the Northeastern state of Ceará in 1986, FSESP employed 713 people, from security guards and orderlies to doctors and administrators (Bastos 1993: 473). By contrast, the Community Health Agents program introduced in Ceará in 1987 employed 7,300 health agents (Tendler 1997a: 42).

A shorter-lived effort to provide primary care began in 1976, when the military government launched the Programa de Interiorização de Ações de Saúde e Saneamento (PIASS) in the Northeast. Funding for the initiative came from INAMPS, the Ministry of Health, and state health secretariats. The program got off to a quick start, building 2,280 health posts and health centers in 1978 and 1979. The atendentes who staffed the health posts were usually young people selected by local leaders, given three months of training, and paid a monthly salary of one minimum wage. They distributed food, provided simple curative care, administered vaccinations, and referred clients to health centers for inpatient care. They were poorly supervised, however, and did not always come from the area in which they worked. These factors, combined with the limited range of services the atendentes provided, contributed to serious underutilization of the health posts (Pinto 1984), as did poor service in some areas (Scheper-Hughes 1992: 201-210).

PIASS was extended to other regions of the country in 1979, but its own administrators estimated that the program never covered more than 25 percent of its initial target population. They attributed its problems to overcentralization, a scarcity of funding and supplies, inadequate organization and recruitment of staff, and an inability to acquire land for projected facilities (Atwood 1990: 157). In 1980 the program was folded in to a new

initiative, the Programa Nacional de Serviços Básicos de Saúde (Prevsaúde). The goal of Prevsaúde, which was supposed to be administered jointly by the Ministry of Health and the Ministry of Social Welfare, was to extend basic health service coverage to the entire population (Brasil. Ministério da Saúde e Ministério da Previdência e Asistência Social 1981: 6, 42-60). The Ministry of Social Welfare was reluctant to fund the initiative, however, and this resistance, coupled with economic recession and the determined opposition of the main national associations of physicians, hospitals, and private health insurers (who criticized the program as "statizing"), gutted the initiative in 1981 and 1982 (Cordeiro 1982: 90; Pinto 1984: 176; Atwood 1990: 158; World Bank 1994: 21-22). PIASS and Prevsaúde thus expanded the physical infrastructure needed to deliver basic health care, but the service they actually provided was limited in quantity and quality.

In 1983, shortly after the demise of Prevsaúde, the National Conference of Bishops of Brazil introduced the Pastoral da Criança (Shepherd of the Children), a nationwide primary health care program that lasted through the end of the twentieth century. Although an agency of the Catholic Church, the Pastoral worked closely with the Ministry of Health, which financed at least 70 percent of the Pastoral's expenditures from 1987 to 2000, as well as with UNICEF and other national and international agencies. Staffed by volunteers, who numbered some 145,000 in 2000, the Pastoral provided immunizations, prenatal care, checkups for infants and children, nutrition education, and oral rehydration therapy. It also collected health statistics, promoted literacy and breastfeeding, fought child abuse, and worked to combat AIDS and other sexually transmitted diseases. About 90 percent of its volunteers were women, and most of its activities involved home visits. In 2000, the Pastoral served a monthly average of 77,000 expectant mothers and 1,600,000 children (Pastoral da Criança 2000, Bellamy 2001, Serra 2001: 22; UNICEF 2001: 17).

Few epidemiological studies are available to corroborate the Pastoral's effectiveness, but one carried out in 1996 in a municipality of the southern state of Santa Catarina showed that the actions of the Pastoral had led to healthier practices among participating families (Neumann et al. 1999). A 1997 study of Brazil as a whole found that infant mortality in the 26,546 neighborhoods served by the Pastoral was 16 per 1000 live births, down from 28 per 1000 in 1994 (Brasil. Presidência da República 1998). This 16 per 1000 rate was much lower than the 39 per 1000 registered for Brazil by the 1996 Demographic and Health Survey (BEMFAM 1997: 19), and was achieved despite the fact that the Pastoral focused its activities on Brazil's poorest communities.

In addition to these nation-wide programs, a number of local primary health care experiments have been undertaken in Brazil (Azevedo 1981: 90). None is more famous than the Health Agents Program launched in 1987 in the northeastern state of Ceará, which in 1993 won UNICEF's Maurice Pate Award for promoting the well-being of children. When a drought hit the region in 1987, Ceará's state government began to hire community health agents, mostly women, as part of a job-creation program. Each of the new health agents was given three months training and assigned to make monthly visits to 50-250 households to provide prenatal care, vaccinations, and checkups, as well as to promote breastfeeding and oral rehydration. By 1992, 7,300 community health agents had been hired, along with 235 half-time nurse supervisors. These health workers served 65 percent of Ceará's population at a cost of less than US $8,000,000 per year, or about $1.50 for each person served (Tendler 1997a: 11, 22, 35; Terra de Souza et al. 1999: 268). In 1994, Ceará's Health Agents Program was integrated into the nationwide Programa Saúde da Família (Svitone et al. 2000: 300), to be discussed below.

At the level of health care outputs, the program in Ceará was very successful. From 1987 to 1990, the proportion of 0-3 year olds who had made at least one visit to a doctor in the preceding three months rose from 5 to 47 percent, and the proportion whose most recent diarrhea episode had been treated with oral rehydration therapy rose from 23 to 56 percent (Svitone et al. 2000: 297). From 1987 to 1992, the proportion of the population vaccinated for measles and polio soared from 25 to 90 percent (Tendler 1997b: 111). The performance of the program was more ambiguous at the level of health outcomes, but most accounts suggest substantial achievements. Terra de Souza et al. (1999) report that Ceará experienced only a modest decline in infant mortality from 1986 to 1994, from 102 to 80 per 1000. Tendler, however, reports a more rapid decline from 1987 to 1992, from 102 to 65 per 1000 according to one set of figures (1997a: 22) and from 77 to 44 per 1000 according to another set (1997b: 110). Svitone et al. (2000: 297) report a 32 percent decline from 1987 to 1990 (from 95 to 60 per 1000), compared to a 10 percent drop in Brazil as a whole (from 52 to 47 per 1000), and add that the share of infant deaths caused by diarrhea fell from 48 percent in 1987 to 23 percent in 1990. The weight of the evidence thus seems to suggest that the program was quite effective in reducing infant mortality. It should be noted, however, that Ceará's economic growth from 1987 to 1992 was considerably higher than the national average, and that the introduction of a milk distribution program may also have reduced the infant mortality rate (Tendler 1997b: 111). No similar improvement took place during the period in life expectancy, literacy, or income poverty (Tendler 1997b: 113).

The inauguration of president Fernando Henrique Cardoso in January 1995 launched a period of unprecedented emphasis on primary health care. From 1994 to 2000, according to Health Minister José Serra (2001: 15), federal spending on health grew about 30 percent in real terms, while the proportion spent on primary care rose from 17 to 25 percent. The main vehicles for the delivery of primary care were the Community Health Agents Program (Programa Agentes Comunitários de Saúde, PACS) and the Family Health Program (Programa Saúde da Família, PSF). The Community Health Agents Program was introduced in 1991, but did not begin to increase rapidly in scale until 1994. The Family Health Program, which absorbed Ceará's health agents program, began in 1994.

The Community Health Agents Program employed modestly trained health workers to visit households once a month to identify health risks; to record health information; to monitor the health of infants, children, the elderly, and people with chronic diseases; to promote prenatal care, vaccinations, breastfeeding, oral hygiene, sanitary precautions, school attendance, and cancer screening; and to provide education about family planning, oral rehydration therapy, nutrition, and sexually transmitted diseases. Each agent was assigned to monitor the health of an average of 550 people, and each was trained and supervised by a salaried nurse, who was responsible for no more than 30 agents. Municipal governments chose the agents, ostensibly according to merit criteria. Candidates had to be over 18 years old, literate, and resident in the community for at least two years. The agents were paid about $100 per month in 2000 US dollars, with the funding coming from federal, state, and municipal revenues (Brasil. Ministério da Saúde 2000a).

The Community Health Agents Program was scheduled to be subsumed by the Family Health Program, which began in 1994. The Family Health Program involved community health agents in a larger team with added resources and responsibilities. A Family Health Team comprised a doctor (a generalist or family practicioner), a nurse, a nurse auxiliary, and four to six community health agents, as well as other health personnel according to local resources and needs. Each team surveyed the population for which it was responsible (which averaged about 3,450 people), identified major health problems and risks, developed a plan to improve the health status of the

population, submitted the plan for evaluation by a municipal health council, and delivered basic health care, mostly through a program of home visits. The Family Health Teams were selected by the municipalities in cooperation with community associations, were usually trained at university-based facilities, and were funded by federal, state, and municipal revenues (Brasil. Ministério da Saúde 2000a; Dal Poz and Viana 1999). Members of the teams had full-time contracts and received salaries competitive with what they could earn in private practice (Serra 2001: 16).

The post-1994 primary health care programs developed innovative mechanisms for financing, administration, and community participation (Collins, Araújo, and Barbosa 2000; Dal Poz and Viana 1999), but their most revolutionary feature was their scale, which was vastly greater than that of any prior initiative. In 2000, 5,957 health teams attended 21 million people (up from 328 teams attending 1 million people in 1994), while 119,000 health agents attended 68 million people (up from 29,000 agents attending 17 million people in 1994). The programs were scheduled to continue expanding until 2002, at which time they were slated reach their maximum scope: 150,000 health agents attending 81 million people (about half of the total population) and 20,000 health teams covering 69 million people. The programs operated throughout Brazil, but focused on impoverished areas. In 2000, community health agents attended more than 80 percent of the population most of the poorest states, but only about 10 percent in São Paulo and Rio de Janeiro. The family health teams, which required more administrative resources, had more scattered coverage in poor states, with Bahia notably underserved (Brasil. Ministério da Saúde 2000a, 2000b). The failure of the family health teams to cover some of these areas was probably due to the dearth of community organization and of administrative, financial, and human resources in some of the poorer municipalities. Federal transfers account for only about 40 percent of the costs of the Family Health Program, so local resources are quite important. In some areas, doctors from Cuba have been hired to participate in the family health teams until Brazilian doctors can be recruited and trained (Dal Poz and Viana 1999: 4).

It is too early to evaluate the effects of the Community Health Agents and Family Health programs on infant mortality, but initial signs are encouraging. In 1994, family health teams began to operate in Camaragibe, an impoverished municipality of 119,000 on the outskirts of Recife, Pernambuco. By 1999 they served 90 percent of the population. In 1993, before the program began, Camaragibe had 153 public health workers, among whom 7 percent were community health agents. By 1999 the municipality had 782 public health workers, including 360 community health agents. Infant mortality in Camaragibe reportedly fell from 112 per 1000 in 1993 to 16 per 1000 in 1999 (Levcovitz et al. 2000).

**7. Democracy, Public Health Policy, and Mortality Decline in Brazil and Chile**

Brazil and Chile, along with Argentina and Costa Rica, have some of the most developed welfare states in Latin America (Huber 1996: 142-144). In each of these countries, the initiatives of forward-looking presidents and bureaucrats, party competition for the votes of the urban working and middle classes, and pressures exerted by civil society groups, notably labor, encouraged state elites to adopt contributory health and pension insurance in the 1920s, 1930s, or 1940s. In their early years of operation, these social insurance programs embraced only the military, civil servants, and a white- and blue-collar labor aristocracy. After a time, however, they generated infrastructure, expertise, and expectations that gave them the potential to expand to the previously excluded poor and destitute (McGuire 2001b). This potential was realized in Chile and Costa Rica, where democracy persisted

and deepened (until the military coup in Chile in 1973), but not in Brazil or Argentina, where military rule prevailed from the mid-1960s to the mid-1980s.

Among these countries, Brazil and Chile provide a particularly interesting comparison. In the early 1960s, each countrys had a competitive political regime, an extensively developed welfare state, and a high levels of labor militancy. Each also had a high infant mortality rate: 115 per 1000 in Brazil and 118 per 1000 in Chile. In the mid-1960s, however, their political regimes, social policies, and mortality outcomes began to diverge. Brazil suffered a military coup in 1964, continued to neglect primary health care for the poor, and experienced slow decline in premature mortality despite fast economic growth. Chile deepened its democracy until 1973 (when it too suffered a military coup), expanded primary health care for the poor, and registered a rapid decline in premature mortality despite slow economic growth. By 1995, the infant mortality rate was 44 per 1000 in Brazil, but only 11 per 1000 in Chile.

The Brazilian welfare state took shape during the presidency of Getúlio Vargas, who came to office in 1930 as a result of a coup. Vargas began his fifteen-year presidency by introducing the secret ballot, extending the vote to women, calling an assembly to reform the constitution, and extending pension and curative medical care benefits to some categories of urban workers. After being elected by a constituent assembly in 1934, Vargas scheduled direct elections for 1938. In 1937, however, as fascism gained momentum in Europe, Vargas, with the support of the army and the coffee elite, canceled the elections, closed congress, disbanded political parties, introduced press censorship, and imprisoned his political opponents. He then announced a new political system called the Estado Nôvo, in which society was to be organized, as in fascist doctrine, around corporatist lines, with a legislature composed of occupationally-based interests rather than territorially-based representatives. Democracy thus had little to do with the initial creation of the Brazilian welfare state. By all accounts, the system of pensions and limited health care for urban-formal sector workers was imposed from above, partly as a means of controlling potential labor opposition (Malloy 1979, Collier and Collier 1989, Huber 1996).

The Estado Nôvo's corporatist design was never fully implemented, and as the Allies gained the upper hand in World War II, corporatism under authoritarian auspices fell out of favor. In 1943, Vargas allowed political parties to resume operations, permitted wage hikes, restricted foreign investment, and freed leftist political leaders from prison, with an eye toward mobilizing support for his candidacy in a presidential election scheduled for 1945. In response to this policy shift to the left, and perhaps also remembering Vargas's decision to cancel the 1938 elections, the military made a pre-emptive coup in 1945 and oversaw elections in which Vargas was barred from running.

Three parties competed under the political regime that emerged with the 1945 elections. Two of them, the Partido Social Democático (PSD) and the Partido Trabhalista Brasileiro (PTB), were closely linked to Vargas. The PSD, representing the state political machines backing Vargas, chose as its presidential candidate General Eurico Dutra, who won the 1945 election. The PSD was also the party of Juscelino Kubitschek, president from 1955 to 1960. The PTB appealed to urban workers, but also served as Vargas's personal political vehicle; Vargas was re-elected president in 1951 under the PTB label. The third party, the União Democrático Nacional (UDN), was opposed to Vargas and had its base in São Paulo's liberal elite. The UDN sponsored the candidacy of Jânio Quadros, who was elected president in 1960. Of these four presidents, only Dutra (1945-50) and Kubitschek (1955-60) completed their terms. Vargas committed suicide in 1954 after being ousted by the military after a scandal that

implicated one of his aides in the killing of an ally of an anti-government journalist. Quadros resigned after seven months in office in a failed attempt to create a political crisis that would result in congress granting him enhanced powers. He was replaced by the vice-president, João Goulart, a left-leaning member of the PTB.

Despite political competition from 1945 to 1964, several factors made Brazil less than fully democratic during this era. First, the Partido Comunista Brasileiro, which had taken 10 percent of the vote in the 1945 presidential election, was banned from 1947 to 1985. Second, illiterates were denied the right to vote until 1985. Third, the military played a growing role in the political system during the early 1960s, inducing congress to curb Goulart's powers and hinting that the president's policy goals, which included agrarian reform, rural unionization, granting the vote to illiterates, and legalization of the Partido Comunista, might provoke a coup. Fourth, politicians throughout the 1945-1964 period often switched parties, formed unlikely electoral alliances to gain access to government funds, and did little to dispel the impression that "democracy" was a system in which opportunistic politicians plundered the state for patronage resources. Such practices not only made the vote less meaningful, but also made public policy less responsive to the interests of the poor. Under the prevailing system of clientelism individual poor people could win small favors from local politicians, discouraging the formation of broad, well-organized coalitions of disadvantaged people. In the absence of such coalitions, the system tended to respond primarily to the interests of the economic elite, which had much better access to prominent politicians at the state and national levels (Mainwaring 1999: 208-210).

After the 1964 coup, the military abolished the existing political parties and replaced them with a pro-government party (ARENA) and a sanctioned "opposition" party (MDB). The military chose the president, governors, and mayors under authoritarian rule (1964-1985), but allowed ARENA and the MDB to compete electorally for national and state legislatures and for city councils. The persistence of legislative elections in Brazil, in contrast to Argentina, Chile, or Uruguay, may owe something to relatively low elite perception of threat prior to the coup (O'Donnell 1978, 1982; cf. Remmer and Merkx 1982), but the opportunism of politicians and the weakness of party identities in Brazil meant that electoral and legislative activity could help legitimate the regime without paving the way for a powerful opposition (Mainwaring 1999: 84). Politicians could be won over with favors (or, if need be, expelled from the legislature on national security grounds), and had little hope of mobilizing mass support. In Chile and Argentina, by contrast, parties and political movements, including some anathema to the military, commanded more allegiance from citizens and from their own leaders, so military rulers were less willing to risk maintaining a veneer of electoral and legislative activity. The regimes they built were accordingly more exclusionary and repressive: deaths by repression per million population were 400 times as high in Chile and in Argentina as in Brazil (King 1989: 1062). Authoritarianism could be milder in Brazil than in Argentina or in Chile precisely because democracy was shallower.

In 1974, initially because of struggles internal to the military regime (Stepan 1988), Brazil began a transition from authoritarian rule that culminated in the inauguration of a civilian president, José Sarney, in 1985 (Skidmore 1988; Stepan ed. 1989). As with Pandora's Box, once the military cracked open the lid, civil society poured out, making it all but impossible to return to the status quo ante. A new unionism, more autonomous and radical than the pre-1964 version, arose in the industrial suburbs of São Paulo and began to spread to other areas. New political parties emerged, notably the union-linked Partido dos Trabalhadores (PT), which was more coherent and leftist than the parties of the 1945-1964 era. Inspired by Liberation Theology, church-linked neighborhood organizations appeared in impoverished neighborhoods, and women's groups, African-Brazilian groups, and

organizations of the rural poor began to mobilize. It was in this context that the health reform movement began to emerge. These democratizing impulses contributed not only to the restoration of civilian rule in 1985, but also to the emergence of a universal health care system and to new initiatives to deliver basic health care for the poor. Patronage, clientelism, and inefficiency slowed these developments in the late 1980s and early 1990s, but they gained new momentum during the presidency of Fernando Henrique Cardoso.

Until 1973, Chile ranked with Uruguay and Costa Rica as one of Latin America's longest-lived democracies, and supported one of the continent's best-developed welfare states. Consensus exists that pressure from labor unions and other interest groups, together with electoral competition for votes, were driving forces behind the creation and expansion of the Chilean welfare state beginning in the early 1920s (Arellano 1985; Raczynski 2000: 120-121). As of 1960, however, the welfare state had done little to improve the lot of the poor. In 1960, life expectancy and infant mortality were about the same in Chile as in Brazil, although Brazil's per capita GDP was barely half of Chile's (Tables 3, 4, and 6). These comparisons raise the question as to why Chile, which in 1960 had one of the most advanced welfare states in the Americas, a history of labor militancy, and thirty years of political stability and competitive politics, had such high rates of early death.

What Chile lacked, despite its vaunted democratic traditions, were strong incentives for politicians to enact policies to improve the material well-being of the destitute. Many of the constraints on democracy in pre-1958 Chile were similar to those in pre-1964 Brazil. Illiterates in Chile were denied the vote until the 1970 election won by Allende, the Communist Party was banned from elections from 1948 to 1958, and no secret ballot existed in the Chilean countryside until 1958, with the result that many of the rural poor were either enmeshed in clientelist networks that resulted in their voting for landowner-dominated parties, or disenfranchised by fraud and intimidation (Loveman 1979: 293-94). In the late 1950s, however, the quality of Chilean democracy improved significantly. In 1957 a Christian Democratic Party was formed, and in 1958 the Communist Party was legalized and a secret ballot was introduced in the countryside. These reforms intensified competition among right, center, and left parties, encouraging each to try to attract new or previously "captive" voters. The Christian Democrats appealed particularly to sharecroppers and tenant farmers, while the Socialists and Communists courted landless laborers and shanty-town dwellers. Voter mobilization by the Christian Democrats, whose Catholic roots helped them unravel the clientelist networks that bound the rural poor to conservative politicians, helped their candidate, Eduardo Frei Montalvo, win the presidency in 1964.

The Frei Montalvo government (1964-1970) built rural health clinics, trained community health workers, and helped to organize mother's centers and neighborhood councils (Loveman 1979, Angell 1993). It also undertook "a food and epidemy-control programme, a child-nutrition programme consisting of free distribution of milk for low-income school children, sanitary improvements in slum areas and homes for the orphans and aged" (Foxley, Aninat, and Arellano 1979: 107). Elected to succeed Frei was Salvador Allende (1970-73), a Socialist and former physician. Allende augmented many of Frei's reforms, shifting resources from hospitals to community health centers and keeping clinics open longer. Public-sector physicians were required to spend at least a quarter of their time practicing in health centers, and compulsory service in such facilities after the receipt of the MD was expanded from three to five years (Navarro 1974: 107).

The initiatives under Frei and Allende contributed to a sharp drop in premature mortality. Between 1964 and 1973, according to official statistics, infant mortality fell from 104 to 66 per 1000 live births, while life

expectancy at age one rose from an estimated 66.0 years in 1964 to 69.3 in 1973 (Chile. Banco Central 1989: 405, 428). Behind the rapid reduction of premature mortality was the expansion of basic public health care, generated in part by the deepening of democracy and the resulting intensification of competition among political parties for the votes of the poor. No such process took place in Brazil, where the 1964 military coup cut short an incipient, if chaotic, deepening of democracy under Goulart, and where the tiny FSESP program represented the sole nationwide primary health care initiative during the 1960s and early 1970s. Accordingly, whereas Chile's infant mortality rate fell from 118 per 1000 in 1960 to 56 per 1000 in 1975, Brazil's fell only from 115 per 1000 in 1960 to 82 per 1000 in 1975 (Hill et al. 1999).

Infant mortality also fell rapidly during the Pinochet dictatorship (1973-89), however, particularly between 1974 and 1984, when the rate plunged from 65 to 20 per 1000 (Figure 2). During this period Chile's real per capita GDP fell from $5,184 to $4,844 (1996 $US at PPP, chain index; Penn World Tables 6.0), so a rise in overall affluence does not explain the infant mortality drop. If Pinochet's free-market policies aided the decline, it was by causing a deep recession that led to a precipitous drop in the birth rate, especially among the poor. Fertility-related factors are estimated to have accounted for 25 to 30 percent of the infant mortality decline during this period (Foxley and Raczynski 1984: 233; Taucher and Jofré 1997: 1229). The rest of the drop was due largely to a reallocation of health expenditure. Pinochet cut spending on health care, but channeled much of what was left to prenatal care; nutrition monitoring for children under six; intensive care for malnourished children; and distribution of free milk and food to expectant women, nursing mothers, and young children (Hakim and Solimano 1978, Foxley and Raczynski 1984, Castañeda 1992). Chile's public health service laid off 300 doctors in the late 1970s, but hired 900 nurses, 700 midwives, and 200 nutritionists (Scarpaci 1985: 426).

Grimmer changes also took place in health-related policies and outcomes under Pinochet. Because of the rapid infant mortality decline, life expectancy at birth rose from 66.5 in 1974 to 71.5 in 1985, but life expectancy at age one rose only from 70.1 to 71.9, less than half the annual rate of the 1964-1973 period (Chile. Banco Central 1989: 405). Free meals to school-age children declined by nearly fifty percent (Foxley and Raczynski 1984: 238-39), and food inspections by health officials fell from 124 in 1974 to 5 in 1981. During this period Chile experienced a sharp rise in cases of typhoid and hepatitis, and by 1983 Chile had 25 percent of the typhoid cases in the Western Hemisphere, with only 2 percent of the region's population (Scarpaci 1985: 427).

The Pinochet experience shows that targeted spending can be effective, even in a context of declining resources. It also shows that infant mortality is an imperfect measure of basic living standards. It does not show, however, that democracy is inimical or irrelevant to reducing infant mortality. As noted above, infant mortality fell swiftly not only under Pinochet, but also under the democratic governments of Frei and Allende. To implement its programs, moreover, the Pinochet government drew on infrastructure, expertise, and expectations built up during the previous democratic era. Paternalistic concern for women and children, an attempt to create a safety net as a pre-emptive strike against protest, and efforts to improve a dismal image for international eyes may all have motivated Pinochet and his allies to try to reduce the infant mortality rate, but without the existing scaffolding of the welfare state, it is unlikely that the programs would have achieved such success (Raczynski 1994: 80, Huber 1996: 167). Pinochet's programs kept infant mortality on the downward trajectory it had been following since 1965, but were no more successful than those of earlier or subsequent democratic governments. In 1989, at the end of Pinochet's presidency, Chile's infant mortality rate was 17 per 1000 -- barely below the 19 per 1000 registered in 1985, despite the fastest economic growth of the dictatorship. By 1995, however, after only five years of democratic

rule, the infant mortality rate had been cut to 11 per 1000, despite the handicap of starting from an already low level. Part of the post-1990 decline can be attributed to social policies embracing not only the destitute, but also the working class and lower middle classes (Weyland 1997, Raczynski 2000, Ruíz-Tagle 2000).

**8. Conclusion: Implications of the Brazilian Case**

Some cross-national analyses of progress at reducing premature mortality have emphasized socioeconomic factors (Rogers and Wofford 1989, Kim and Moody 1992, Pritchett and Summers 1996, Filmer and Pritchett 1999, Barlow and Vissandjée 1999). Others have stressed social policy interventions, particularly basic health care for the poor (Halstead, Walsh, and Warren eds. 1985, Vallin and López eds. 1985, Caldwell 1986, Drèze and Sen 1989, Mehrotra and Jolly eds. 1997, Ghai ed. 2000). This analysis has found that social policy failures, particularly the neglect of basic health care for the poor, were mainly responsible for Brazil's sluggish reduction of premature mortality from 1960 to 1995. Socioeconomic challenges, particularly high inequality and pockets of extreme hunger and poverty, slowed mortality decline as well, but rapid growth and the swift drop in fertility partly compensated for these ills. After 1995, the Cardoso government began a systematic campaign to reduce the risk of early death among the poorest Brazilians by expanding the Family Health and Community Health Agents programs. More health posts, physicians, and patient consultations do not assure the delivery of effective health care (McGreevy, Piola, and Vianna 1989: 332; Scheper-Hughes 1992: 196-210; Filmer, Hammer, and Pritchett 2000), but to the extent that these programs function well, they will represent a solid beginning to a long-overdue attack on a major national challenge.

In addition to exploring the relative weight of social policies and socioeconomic factors in contributing to mortality outcomes, this study has assessed the role of democracy in encouraging the delivery of basic health services to the poor. Several reasons would lead one to expect democracies to do better than authoritarian regimes at providing such services. Assuming that political incumbents are motivated primarily by a desire to stay in office (Geddes 1994), their goals will be to maximize support and to minimize opposition. From the standpoint of maximizing support, providing social services to the poor in a democracy, particularly where the poor are numerous, can win votes. In authoritarian regimes, by contrast, incumbents may be better served by repressing opposition or buying off elite rivals, particularly if improving the health and education of the poor increases their level of social mobilization and reduces the predictability of their political behavior (Gerring and Thatcher 2001: 3). From the standpoint of minimizing opposition, poor people who are motivated to protest the failure of a government to provide social services usually face much higher costs in acting on this motivation in authoritarian than in democratic regimes. Hence, authoritarian incumbents are more likely than democratic incumbents to risk instilling this motivation, if by running this risk they can save resources for other purposes (Lake and Baum 2001: 594-96, 618). Supporting these hypotheses, cross-national quantitative analyses have found that spending on social services is significantly higher in democracies than in authoritarian regimes (Moon 1985: 140-142; Gerring and Thacker 2001, Lake and Baum 2001).

At a less abstract level, Kurt Weyland (1996: 19-20) has provided a useful taxonomy of ways in which democracy can promote pro-poor social policies: (1) by empowering interest groups advocating pro-poor social policies, (2) by empowering social movements advocating pro-poor social policies, (3) by giving political elites electoral incentives to enact pro-poor social policies, and (4) by encouraging bureaucratic elites to enact pro-poor social policies in order to preempt protest, to advance their own interests vis-à-vis other elites, or to fulfill what

they perceive as their professional obligations (Weyland 1994: 19-20). Strictly speaking, the fourth route seems equally available to incumbents of authoritarian regimes: under Pinochet, for example, Chilean functionaries expanded mother-and-infant programs both as a means of dampening protest (Drèze and Sen 1989: 239) and as a way of fulfilling what they viewed as their professional obligations. Let us therefore examine how the first three routes played out in the Brazilian case, focusing on the public provisioning of primary health care to the poor.

Pressure from interest groups was certainly not sufficient to encourage the delivery of basic health services to the poor prior to 1995, for not many such services existed in Brazil before that date. There is little sign, moreover, that interest-group pressure encouraged the expansion of the Community Health Agents or Family Health programs in the 1990s. The Confederation of Rural Workers (CONTAG) pressed with some success for better pension benefits, but apparently did not make much of the health care issue (Weyland 1996: Chapter 6). The main pressure from interest groups in the health care field was from associations of doctors, hospitals, drug manufacturers, and insurers -- against the unification and universalization of the health care system. Such pressure delayed progress toward a more equitable health care system for several years.

The activities of social movements more plausibly contributed to the expansion of basic health services in impoverished parts of Brazil. The health reform movement that gathered momentum during the democratization process in the early 1980s provided impetus for the universalization and unification of the health care system, against the opposition of medical business. Dom Paulo Evaristo Arns, the Cardinal Archbishop of the city of São Paulo and an exponent of liberation theology, organized the Pastoral da Criança in 1982. Cardinal Arns's sister, Dr. Zilda Arns Neumann, coordinated the program, which used volunteer networks connected to the movement's Ecclesiastical Base Communities. The municpal health councils, as well as other channels of popular participation in the Community Health Agents and Family Health programs, employ networks of social capital stimulated by the various social movements that emerged during the democratization process. The activities of social movements, then, which had considerably more latitude during democratiztion and under democracy than they did under the military regime, do seem to have contributed to the expansion of basic health services to the Brazilian poor.

In Chile, as noted in the previous section, electoral incentives were significant in encouraging the Frei and Allende governments to improve basic health services in the late 1960s and early 1970s. The effects of such incentives are attenuated, however, when democracies are constrained by literacy clauses, bans on political parties, or the presence of military tutelage or vetoes, or when they are pervaded by patronage and clientelism (Mainwaring 1989: 208-210). Some of these ills plagued the Chilean political system prior to 1958, and all of them plagued the Brazilian polity from 1945 to 1964. The quality of Brazilian democracy began to improve after 1985, when the literacy clause was abolished (Schneider 1991: 317) and the Communist Party was legalized (Skidmore 1988: 263), but it was not until the early 1990s that military influence in politics, which had been very high in the Sarney government (1985-1990), diminished significantly (Hunter 1997). Patronage and clientelism, in contrast, actually expanded toward the end of the military regime, and continued unabated through 1994 (Mainwaring 1999: 200-214).

The profound economic crisis of the early 1990s increased consensus that some measure of state reform was necessary, reducing some of the obstacles that patronage and clientelism had previously placed on the capacity of governments to implement policies (Mainwaring 1999: 314). The Cardoso government, which took office in 1995, was neither immune to the constraints imposed by patronage and clientelism nor above making use of these

long-standing features of the Brazilian political system for its own ends. Its combination of success at stabilizing the economy and more committed and effective leadership, however, made it easier for the Cardoso government than for its predecessors to reform the education and health care systems. Cardoso's long-standing personal commitment to social justice increased the energy with which he and his allies expanded the delivery of basic health care to the poor.

The Family Health and Community Health Agents programs began before Cardoso came to office, but did not begin to expand rapidly until after 1995. Had the Cardoso administration not pushed them energetically, they might well have shared the fate of the Prevsaúde initiative in the early 1980s, which disappeared in the face of resistance from social security bureaucrats and medical business. In explaining the government's commitment to these programs, it is worth noting that health minister José Serra, who served as health minister after April 1998, was widely regarded by mid-2001 to be one of the main "pre-candidates" for the 2002 presidential contest, and that the main electoral challenge to the governing coalition was expected to come from the left rather than from the right.

In the end, however, it is hard to assess the degree to which electoral incentives, as opposed to other factors, were responsible for the Cardoso government's decision to devote unprecedented resources to the delivery of basic health services. Electoral incentives had this effect in Chile in the 1960s, however, as well as in Costa Rica in the 1970s (McGuire 2001b). Argentina, like pre-1995 Brazil, provides a useful contrasting case, suggesting that pro-poor policies are less likely to emerge when politicans have weaker electoral incentives to deliver them. As of the early 1990s, no coordinated national primary health care initiatives existed in Argentina; Stillwaggon (1998: 166) concluded that "only the province of Neuquén has made a concerted effort over twenty-five years to provide primary care under public (provincial) auspices." Strongly encouraging this provincial effort was political competition between the neo-Peronist Movimiento Popular Neuquino and the orthodox Peronist Partido Justicialista (McGuire 2001c). At the national level in Argentina, however, the poor since 1945 have been firmly ensconced in the Peronist camp, or else barred from voting altogether by military rule or by electoral restrictions on Peronism. Accordingly, political elites, Peronist and non-Peronist alike, have faced only weak electoral incentives to improve the access of the Argentine poor to social services. Argentina's situation is much like that of the United States, where 44 million people remained without health insurance in 2000 in part because neither major party's candidates had strong incentives to compete for the support of a group made up mostly of non-voters or firm Democrats (Blumenthal 2000). Neither Argentina nor the United States have done much at the national level to improve basic health care for the poor, and both suffer higher rates of premature mortality than countries at similar levels of affluence. Brazil's experience is broadly similar to that of Argentina, and stands in marked contrast to those of Chile, Costa Rica, and the Argentine province of Neuquén. These contrasting cases suggest that electoral incentives can indeed play an important role in encouraging pro-poor social policies, even if they are neither necessary nor sufficient for this end.

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# Table 1
# Mortality Underregistration, 20 Latin American Countries, 1986-1996

| Country (ranked in order of overall mortality underregistration in 1996) | Overall mortality underreg. (percent) | Overall mortality underreg. (percent) | Overall mortality underreg. (percent) | Overall mortality underreg. (percent) | Infant (0-1) mortality data complete-ness | Child (1-4) mortality data complete-ness | Birth data complete-ness |
|---|---|---|---|---|---|---|---|
| | 1986 | 1990 | 1993 | 1996 | 1985-90 | 1985-90 | 1985-90 |
| **Chile** | 12.5 | 9.4 | 0.0 | 0.1 | C | IC | C |
| **Costa Rica** | 5.0 | 5.0 | 0.0 | 0.1 | C | C | C |
| Cuba | 1.5 | 0.0 | 0.0 | 0.1 | C | C | C |
| Uruguay | 25.3 | 3.9 | 2.6 | 2.1 | C | C | C |
| Venezuela | 18.5 | 18.5 | 3.7 | 3.7 | IC | VIC | C |
| **Argentina** | 9.3 | 8.1 | 8.2 | 4.4 | C | IC | C |
| Guatemala | 18.1 | 7.2 | 2.5 | 5.8 | IC | IC | C |
| Mexico | 15.5 | 14.3 | 7.5 | 7.2 | VIC | IC | C |
| Colombia | 36.4 | 21.7 | 14.5 | 16.4 | VIC | VIC | C |
| **Brazil** | 25.3 | 27.8 | 22.4 | 19.0 | VIC | IC | C |
| Panama | 23.1 | 23.1 | 26.4 | 20.0 | VIC | VIC | C |
| El Salvador | 45.0 | 28.9 | 22.5 | 22.5 | VVIC | VVIC | VIC |
| Ecuador | 31.6 | 34.7 | 24.8 | 24.3 | VIC | VIC | IC |
| Honduras | 47.8 | 46.6 | 52.7 | 42.0 | VVIC | VIC | C |
| Paraguay | 15.2 | 50.3 | 43.7 | 44.5 | VVIC | VVIC | VVIC |
| Peru | 53.3 | 52.9 | 46.2 | 47.0 | VVIC | VVIC | nd |
| Dominican Rep. | 40.3 | 0.0 | 43.9 | 48.0 | VVIC | VIC | nd |
| Nicaragua | n. d. | 53.4 | 44.8 | 56.0 | VVIC | VVIC | IC |
| Bolivia | nd | nd | nd | nd | nd | nd | nd |
| Haiti | nd | nd | nd | nd | nd | nd | nd |
| Mean, 20 LA countries | 24.9 | 22.5 | 20.4 | 20.2 | | | |
| USA | 1.0 | 1.1 | 2.8 | 2.8 | C | C | C |

**Notes:** nd: no data. * Crude death rate per 1000 as estimated by the Population Division of the United Nations is slightly lower than the crude death rate calculated from national death registries.

**Definitions:** Overall mortality underregistration: percentage by which the estimated crude death rate per 1000 (calculated by the UN Population Division mostly from census and survey data) exceeded the official crude death rate per 1000 (according to national vital registration statistics reported to the Pan American Health Organization, PAHO) at a year close to the indicated year. Infant mortality, child mortality, and birth data completeness: codes are C (complete; underregistration 10 percent or less), IC (incomplete; underregistration between 10 and 20 percent), VIC (very incomplete; underregistration between 20 and 50 percent), and VVIC (very, very incomplete; underregistration more than 50 percent). The calculations compare estimates prepared by the Centro Latinoamericano y Caribeño de Demografía (CELADE), the Pan American Health Organization, and the Population Division of the United Nations to the average annual numbers of registered deaths of children under 1 year old and 1-4 years old, and of registered births, as reported to PAHO in 1985-1990.

**Sources:** Overall mortality underregistration: 1986: PAHO 1990: 37 (Brazil and Paraguay figures are for "information areas" within each country); 1990: PAHO 1994: 433; 1993: PAHO 1998b: 455; 1996: PAHO 1999. Completeness of infant mortality, child mortality, and birth registration: PAHO 1998b: 40.

**Table 2**
**Estimates of Infant Mortality in Brazil, 1960-1998**

| Source | Hill et al. 1999 | Becker and Lechtig 1986 | CELADE 1998 | United Nations 1992 | US Census Bureau 2000 | IBGE 1998 | Simões et al. 1989 | United Nations 1994 | Ministério da Saúde 2001 |
|---|---|---|---|---|---|---|---|---|---|
| Data | Census Survey | Census | Census Survey Vital reg. | Survey | Census Survey Other | Census Survey | Survey Vital reg. | Vital reg. | Survey? |
| Note | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 1960 | 115 | 121 | | | 116 | | | | |
| 1961 | | | | | | | | | |
| 1962 | | | 109 | 114 | | | | | |
| 1963 | | | | 109 | | | | | |
| 1964 | | | | 107 | | | | | |
| 1965 | 107 | | | 109 | | | | | |
| 1966 | | | | 104 | | | | | |
| 1967 | | | 100 | 104 | | | | | |
| 1968 | | | | 103 | | | | | |
| 1969 | | | | 94 | | | | | |
| 1970 | 95 | 114 | | 99 | 98 | | | | |
| 1971 | | | | 96 | 96 | | | | |
| 1972 | | | 91 | 89 | 94 | | | | |
| 1973 | | | | 84 | 92 | | | | |
| 1974 | | | | 92 | 90 | | | | |
| 1975 | 82 | | | 81 | 88 | | | | |
| 1976 | | | | 89 | 85 | | | | |
| 1977 | | | 79 | | 83 | | | | |
| 1978 | | | | 70 | 80 | | | | |
| 1979 | | | | | 78 | | | | |
| 1980 | 67 | 81 | | 64 | 75 | 80 | | | |
| 1981 | | | | | 73 | 77 | 75 | | |
| 1982 | | | 64 | 63 | 71 | 74 | 68 | | |
| 1983 | | | | | 68 | 70 | 65 | 57 | |
| 1984 | | | | 59 | 66 | 67 | 67 | 61 | |
| 1985 | 61 | | | | 64 | 64 | 66 | 49 | |
| 1986 | | | | | 61 | 61 | 58 | 47 | |
| 1987 | | | 55 | | 59 | 57 | 53 | 45 | |
| 1988 | | | | | 56 | 54 | 51 | 41 | |
| 1989 | | | | | 53 | 51 | | 40 | 52 |
| 1990 | 50 | | | | 51 | 47 | | 39 | 49 |
| 1991 | | | | | 48 | 44 | | | 47 |
| 1992 | | | 47 | | 47 | 43 | | | 45 |
| 1993 | | | | | 46 | 43 | | | 43 |
| 1994 | | | | | 45 | 42 | | | 41 |
| 1995 | 41 | | | | 44 | 41 | | | 39 |
| 1996 | 39 | | | | | | | | 38 |
| 1997 | | | | | | | | | 37 |
| 1998 | | | | | | | | | 36 |

1. Hill et al. 1999: 34. Based on knotted regression line fitted to estimates from PNAD surveys from 1972 to 1986, DHS surveys from 1986 and 1996, and censuses of 1970 and 1980.
2. Becker and Lechtig 1986: 21. Indirect estimates from census data.
3. CELADE 1998: 19. Figures for 1962 and 1967 from PAHO 1998: 29, which draws the original data from CELADE 1996. 1962 figure actually 1960-65, 1992 figure actually 1990-1995, and so on. Estimates based on census, survey, and vital registration data.
4. United Nations 1992: 57-60. Based on PNAD surveys of 1972, 1973, 1976, 1977, 1978, 1984, and 1986. When surveys produced differing estimates for the same reference year, the mean of the estimates is recorded. Estimates based on interviews with mothers aged 15 to 19 are excluded from the data set.
5. United States. Bureau of the Census 2000. "Combines data from country sources (especially censuses and surveys) with the Census Bureau's International Programs Center's estimates and projections."
6. IBGE 1998: 2.27. Based on census, population enumeration, and PNAD survey data.
7. Simões et al. 1989: 32. Based on vital registration statistics corrected for underreporting of both births and deaths using region-specific correction factors derived from PNAD survey estimates.

8. United Nations (1994): Table 19. Excludes "Indian jungle population." Based on vital registration statistics from IBGE, which are known to suffer from underreporting of infant deaths.
9. Ministério da Saúde 2001. Source reports only that "data were estimated on the basis of indirect demographic methods."

**Table 3**
**Infant and Under-5 Mortality, 20 Latin American Countries, 1960-1995**

| Country (ranked in order of % decline of infant mortality, 1960-1995) | Infant mortality 1960 | Infant mortality 1995 | Infant mortality, % decline 1960-1995 | Under-5 mortality 1960 | Under-5 mortality 1995 | Under-5 mortality, % decline 1960-1995 |
|---|---|---|---|---|---|---|
| **Chile** | 118 | 11 | 91% | 155 | 12 | 92% |
| **Costa Rica** | 87 | 12 | 86% | 123 | 14 | 89% |
| El Salvador | 129 | 25 | 81% | 191 | 30 | 84% |
| Honduras | 137 | 29 | 79% | 204 | 36 | 82% |
| Cuba | 39 | 9 | 77% | 49 | 10 | 80% |
| Ecuador | 107 | 27 | 75% | 178 | 35 | 80% |
| Panama | 58 | 16 | 72% | 88 | 19 | 78% |
| Peru | 142 | 40 | 72% | 234 | 55 | 76% |
| Nicaragua | 130 | 38 | 71% | 193 | 48 | 75% |
| Colombia | 79 | 24 | 70% | 125 | 29 | 77% |
| Mexico | 94 | 32 | 66% | 134 | 40 | 70% |
| Guatemala | 136 | 48 | 65% | 202 | 62 | 69% |
| **Brazil** | 115 | 41 | 64% | 177 | 48 | 73% |
| Venezuela | 56 | 21 | 63% | 75 | 25 | 67% |
| **Argentina** | 60 | 23 | 62% | 72 | 25 | 65% |
| Paraguay | 67 | 26 | 61% | 92 | 31 | 66% |
| Uruguay | 48 | 20 | 58% | 56 | 23 | 59% |
| Dominican Rep. | 102 | 47 | 54% | 149 | 56 | 62% |
| Bolivia | 152 | 77 | 49% | 255 | 102 | 60% |
| Haiti | 169 | 95 | 44% | 253 | 136 | 46% |
| Mean, 20 LA countries | 101 | 33 | 67% | 150 | 42 | 72% |

**Definitions:** Infant mortality: deaths under age 1 per 1000 live births. Under-5 mortality: deaths under age 5 per 1000 live births. Percent decline: Proportion of distance traveled by 1995 from 1960 level to a minimum of 0.

**Source:** Hill et al. 1999.

**Table 4**
**Life Expectancy at Birth and at Age 60, 20 Latin American Countries**
**c. 1960- c. 1995**

| Country (ranked in order of % increase in life expectancy at birth, 1960-1990). | Life expectancy at birth in years | Life expectancy at birth in years | Life expectancy at birth, % increase | Life expectancy at age 60 in years | Life expectancy at age 60 in years | Life expectancy at age 60, % increase |
|---|---|---|---|---|---|---|
| | 1960 | 1997 | 1960-1997 | 1960/65 | 1990/95 | 1960/65 - 1990/95 |
| **Chile** | 57.1 | 74.9 | 64% | 16.6 | 20.0 | 25% |
| **Costa Rica** | 61.6 | 76.0 | 62% | 17.8 | 21.1 | 27% |
| Honduras | 46.5 | 69.4 | 59% | 14.8 | 19.9 | 34% |
| Domin. Rep. | 51.8 | 70.6 | 57% | 15.7 | 19.2 | 24% |
| Cuba | 63.8 | 75.7 | 56% | 17.6 | 21.2 | 29% |
| Peru | 47.7 | 68.3 | 55% | 14.6 | 17.6 | 19% |
| Nicaragua | 47.0 | 67.9 | 55% | 14.7 | 19.4 | 31% |
| El Salvador | 50.5 | 69.1 | 54% | 15.5 | 19.1 | 25% |
| Mexico | 57.1 | 72.2 | 54% | 17.4 | 20.3 | 23% |
| Panama | 60.7 | 73.6 | 53% | 17.2 | 20.3 | 24% |
| Ecuador | 53.1 | 69.5 | 51% | 16.8 | 20.0 | 24% |
| Venezuela | 59.6 | 72.4 | 50% | 16.7 | 19.2 | 19% |
| Colombia | 56.6 | 70.4 | 49% | 16.0 | 18.9 | 21% |
| Guatemala | 45.6 | 64.0 | 47% | 15.2 | 19.0 | 26% |
| Bolivia | 42.7 | 61.4 | 44% | 13.8 | 16.1 | 14% |
| **Brazil** | 54.7 | 66.8 | 40% | 16.8 | 19.5 | 20% |
| **Argentina** | 64.9 | 72.9 | 40% | 17.1 | 19.2 | 16% |
| Uruguay | 67.7 | 73.9 | 36% | 18.0 | 19.2 | 10% |
| Paraguay | 63.8 | 69.6 | 27% | 17.1 | 19.1 | 16% |
| Haiti | 42.2 | 53.7 | 27% | nd | nd | nd |
| Mean, 20 LA countries | 54.7 | 69.6 | 49% | 16.3 | 19.4 | 23% |

**Note:** nd = no data.

**Definitions:** % increase in life expectancy at birth: proportion of distance traveled by 1997 from 1960 level to a maximum of 85 years. % increase in life expectancy at age 60: proportion of distance traveled by 1990/5 from 1960/5 level to a maximum of 90 years.

**Sources:** Life expectancy at birth: UNDP 1999. Life expectancy at age 60: Palloni, DeVos, and Peláez 1999.

**Table 5**
**Under-60 Mortality, 20 Latin American Countries, c. 1960- c. 1995**

| Country (ranked in order of % decline of 15-60 mortality, 1960-1990). | 15-60 mortality | 15-60 mortality | 15-60 mortality, % decline | Probability of surviving to age 60 | Probability of surviving to age 60 | Probability of surviving to age 60, % increase |
|---|---|---|---|---|---|---|
| | 1960 | 1990 | 1960-1990 | 1960/65 | 1990/95 | 1960/65 - 1990/95 |
| **Costa Rica** | 225 | 98 | 57% | 0.71 | 0.88 | 59% |
| Dominican Rep. | 307 | 133 | 57% | 0.57 | 0.80 | 53% |
| Panama | 257 | 120 | 53% | 0.69 | 0.84 | 48% |
| Nicaragua | 389 | 184 | 53% | 0.48 | 0.75 | 52% |
| Mexico | 278 | 135 | 52% | 0.62 | 0.79 | 45% |
| Honduras | 341 | 172 | 50% | 0.48 | 0.75 | 52% |
| Ecuador | 280 | 152 | 46% | 0.59 | 0.77 | 44% |
| Peru | 364 | 201 | 45% | 0.52 | 0.76 | 50% |
| Venezuela | 250 | 144 | 43% | 0.65 | 0.82 | 49% |
| Cuba | nd | nd | nd | 0.74 | 0.86 | 46% |
| Guatemala | nd | nd | nd | 0.46 | 0.71 | 46% |
| **Brazil** | 259 | 164 | 37% | 0.58 | 0.73 | 36% |
| Colombia | 268 | 175 | 35% | 0.63 | 0.78 | 41% |
| **Chile** | 198 | 130 | 34% | 0.61 | 0.84 | 59% |
| Bolivia | 419 | 279 | 34% | 0.43 | 0.65 | 39% |
| El Salvador | 325 | 225 | 31% | 0.55 | 0.74 | 42% |
| Paraguay | 193 | 143 | 26% | 0.73 | 0.81 | 30% |
| **Argentina** | 177 | 139 | 21% | 0.73 | 0.82 | 33% |
| Haiti | 401 | 322 | 20% | nd | nd | nd |
| Uruguay | 146 | 134 | 8% | 0.78 | 0.84 | 27% |
| Mean, 18 or 19 LA countries | 282 | 169 | 39% | 0.61 | 0.79 | 45% |

**Notes:** nd = no data. Ranking of Cuba and Guatemala based on rank of % increase of probability of surviving to age 60.

**Definitions:** 15-60 mortality: probability of dying between ages 15 and 60 per 1000 persons reaching age 15 (mean of male and female figures, unweighted for each gender 's share of population). % decline of 15-60 mortality: proportion of distance traveled by 1990 from 1960 level to a minimum of 0. % increase of probability of surviving to age 60: proportion of distance traveled by 1995 from 1960 level to a maximum of 100%.

**Sources:** 15-60 Mortality: Wang et al. 1999. Probability of dying by age 60: Palloni, DeVos, and Peláez 1999.

**Table 6**
**GDP per capita, 20 Latin American Countries, 1960 - 1995**

| Country (ranked in order of multiple by which 1995 exceeded 1960 GDP per capita | GDP per capita, 1996 US$, parity purchasing power, chain index | GDP per capita, 1996 US$, parity purchasing power, chain index | Multiple by which 1995 exceeded 1960 GDP per capita |
|---|---|---|---|
| | 1960 | 1995 | 1960 to 1995 |
| **Brazil** | 2,428 | 6,907 | 2.84 |
| Paraguay | 2,169 | 5,614 | 2.59 |
| Panama | 2,423 | 5,713 | 2.36 |
| Dominican Rep. | 1,640 | 3,846 | 2.35 |
| Colombia | 2,527 | 5,712 | 2.26 |
| **Chile** | 3,952 | 8,670 | 2.19 |
| Mexico | 4,007 | 7,440 | 1.86 |
| Ecuador | 2,155 | 3,810 | 1.77 |
| Guatemala | 2,572 | 4,008 | 1.56 |
| **Costa Rica** | 3,660 | 5,484 | 1.50 |
| Uruguay | 6,061 | 8,916 | 1.47 |
| Peru | 3,180 | 4,597 | 1.45 |
| **Argentina** | 7,481 | 10,371 | 1.39 |
| El Salvador | 3,441 | 4,658 | 1.35 |
| Honduras | 1,705 | 2,188 | 1.28 |
| Venezuela | 5,764 | 6,745 | 1.17 |
| Bolivia | 2,432 | 2,711 | 1.11 |
| Nicaragua | 3,191 | 2,231 | 0.70 |
| Cuba | nd | nd | nd |
| Haiti | nd | nd | nd |
| Mean, 18 LA countries | 3,377 | 5,535 | 1.64 |

**Note**: nd = no data

**Source**: Penn World Tables 6.0

# Table 7
## Income Inequality (Gini index), 16 Latin American Countries, 1970-1995

| Country (ranked in order of lowness of Gini c. 1995) | Gini index c. 1970 | Gini index c. 1995 | Change in Gini index c. 1970 to c. 1995 |
|---|---|---|---|
| Uruguay | nd | 42.3 | nd |
| **Argentina** | 36.1 | 43.3 | 7.2 |
| Peru | 48.5 | 44.9 | -3.6 |
| **Costa Rica** | 44.5 | 46.5 | 2.0 |
| Venezuela | 48.0 | 47.1 | -0.9 |
| Colombia | 57.3 | 48.2 | -9.1 |
| Nicaragua | nd | 50.3 | nd |
| Dominican Rep. | nd | 51.6 | nd |
| El Salvador | nd | 52.3 | nd |
| Mexico | 57.9 | 54.2 | -3.7 |
| **Chile** | 47.4 | 56.5 | 9.1 |
| Honduras | 61.8 | 56.9 | -4.9 |
| Panama | 58.4 | 57.4 | -1.0 |
| Paraguay | nd | 59.1 | nd |
| Guatemala | nd | 59.9 | nd |
| **Brazil** | 57.1 | 61.4 | 4.3 |
| Mean, 10 or 16 LA countries | 51.7 | 52.0 | -0.1 |

**Notes:** nd = no data. Data for Argentina are for Greater Buenos Aires only, and are for households. Data for Uruguay are for urban areas only. Sources give no estimates for Cuba or Haiti. Because of large discrepancies in World Bank (2000: 282) and Inter American Development Bank (2000: 6) estimates, Bolivia and Ecuador are excluded. "1970" figures for 1970 except Chile (1971), Honduras (1968), and Mexico (1968). "1995" figures for 1995 except Argentina (1994), Chile (1994), Colombia (1993), Dominican Republic (1992), El Salvador (1996) Guatemala (1989), Nicaragua (1993), Panama (1991), Peru (1994), and Uruguay (1989).

**Definitions:** The lower the Gini index, the lower the inequality. When the index is 0 each household has the same amount of income; when the index is 100 the richest household has all the income and the rest of the households have no income. Data may be either for households or individuals. Following Deininger and Squire (1996), Londoño and Székely (1997: 3) assume no systematic difference between estimates based on individual income and estimates based on household income. Change in Gini index: 1995 Gini index minus 1970 Gini index.

**Sources:** Londoño and Székely 1997, except: Argentina: Altmir and Beccaria 2001: 590. Uruguay: IADB 2000: 6. El Salvador, Nicaragua, and Paraguay : World Bank 2000: 282-83.

**Table 8**
**Share of Population in Receiving Less than $1 per Day,**
**16 Latin American Countries, c. 1970 - c. 1995**

| Country (ranked in order of World Bank estimate of lowness of $1/day poverty headcount) | Share of population receiving less than $1/day, according to World Bank (2000) | Share of population receiving less than $1/day, according to Londoño and Székely (1997) | Share of population receiving less than $1/day, according to Londoño and Székely (1997) | Change in share of population receiving less than $1/day, according to Londoño and Székely (1997) |
|---|---|---|---|---|
| | c. 1995 | c. 1970 | c. 1995 | c. 1970 to c. 1995 |
| Uruguay | 1.9 | nd | nd | nd |
| Dominican Rep. | 3.2 | nd | 13.2 | nd |
| **Chile** | 4.2 | 5.2 | 4.4 | -0.8 |
| **Brazil** | 5.1 | 23.8 | 22.9 | -0.9 |
| **Costa Rica** | 9.6 | 3.1 | 7.4 | 4.3 |
| Panama | 10.3 | 31.8 | 26.9 | -4.9 |
| Colombia | 11.0 | 18.0 | 7.7 | -10.3 |
| Bolivia | 11.3 | nd | nd | nd |
| Venezuela | 14.7 | 10.4 | 7.7 | -2.7 |
| Peru | 15.5 | 14.0 | 11.2 | -2.8 |
| Mexico | 17.9 | 16.1 | 10.6 | -5.5 |
| Paraguay | 19.4 | nd | nd | nd |
| Ecuador | 20.2 | nd | nd | nd |
| El Salvador | 25.3 | nd | nd | nd |
| Guatemala | 39.8 | nd | 24.1 | nd |
| Honduras | 40.5 | 48.8 | 39.0 | -9.8 |
| Mean, 9-16 LA countries | 15.6 | 19.0 | 15.9 | -3.7 |

**Notes:** nd = no data. Uruguay data for urban areas only. Data for Argentina, Cuba, Haiti, and Nicaragua unavailable. Londoño and Székely c. 1970 figures for 1970 except Chile (1971), Honduras (1968), and Mexico (1968). Londoño and Székely c. 1995 figures for 1995 except Chile (1994), Colombia (1993), Dominican Republic (1992), Guatemala (1989), Mexico (1994), Panama (1991), and Peru (1994). World Bank 1995 figures for World Bank except Chile (1994), Colombia (1993), Dominican Republic (1992), El Salvador (1996) Guatemala (1989), Nicaragua (1993), Panama (1991), Peru (1994), and Uruguay (1989).

**Definitions:** $1/day: Londoño and Székely (1997: 13) estimated poverty rates using 1985 US dollars at parity purchasing power (PPP), whereas the World Bank (2000: 319-320) used 1993 US dollars at PPP and drew the line at $1.08 rather than $1.00. It is unlikely, however, that these discrepancies explain why the two sources produced very different poverty rates for some countries, particularly in view of the fact that they produced very similar rates for other countries. Change in share of population receiving less than $1/day: 1995 share (as given in Londoño and Székely) minus 1970 share.

**Sources:** Londoño and Székely 1997, World Bank 2000: 280-81.

**Table 9**
**Calorie and Protein Availability, 20 Latin American Countries**
**c. 1960 to c. 1990**

| Country (ranked in order of calorie availability per capita c. 1990) | Calorie availability, kcal per capita per day | Calorie availability per capita | Calorie availability per capita, absolute change | Protein availability, grams per capita per day | Protein availability, grams per capita per day | Protein availability per capita, absolute change |
|---|---|---|---|---|---|---|
| | c. 1960 | c. 1990 | c. 1960 to c. 1990 | c. 1960 | c. 1990 | c. 1960 to c. 1990 |
| Mexico | 2,490 | 3,104 | 614 | 57.8 | 93.8 | 36.0 |
| Cuba | 2,297 | 2,981 | 684 | 47.7 | 74.0 | 26.3 |
| **Argentina** | 3,073 | 2,974 | -99 | 100.2 | 103.6 | 3.4 |
| **Costa Rica** | 2,197 | 2,827 | 630 | 53.7 | 74.8 | 21.1 |
| **Brazil** | 2,320 | 2,777 | 457 | 42.9 | 80.3 | 37.4 |
| Uruguay | 2,794 | 2,709 | -85 | 106.3 | 97.1 | -9.2 |
| Paraguay | 2,404 | 2,677 | 273 | 64.1 | 90.3 | 26.2 |
| El Salvador | 1,840 | 2,663 | 823 | 40.0 | 59.0 | 19.0 |
| Colombia | 2,165 | 2,565 | 400 | 41.7 | 59.9 | 18.2 |
| **Chile** | 2,531 | 2,533 | 2 | 55.0 | 62.7 | 7.7 |
| Venezuela | 2,187 | 2,531 | 344 | 57.5 | 74.3 | 16.8 |
| Ecuador | 2,034 | 2,491 | 457 | 39.5 | 87.4 | 47.9 |
| Dominican Republic | 1,850 | 2,298 | 448 | 36.9 | 62.6 | 25.7 |
| Nicaragua | 2,523 | 2,293 | -230 | 51.6 | 55.5 | 3.9 |
| Honduras | 1,927 | 2,258 | 331 | 34.5 | 57.9 | 23.4 |
| Panama | 2,169 | 2,256 | 87 | 45.9 | 59.6 | 13.7 |
| Guatemala | 1,927 | 2,255 | 328 | 35.1 | 41.0 | 5.9 |
| Bolivia | 1,798 | 2,054 | 256 | 34.4 | 52.1 | 17.7 |
| Peru | 2,223 | 1,960 | -264 | 42.0 | 36.6 | -5.4 |
| Haiti | 2,028 | 1,856 | -173 | 27.4 | 31.3 | 3.9 |
| Mean of 20 LA countries | 2,239 | 2,503 | 264 | 50.7 | 67.7 | 17.0 |

**Note:** FAO (2000) recommended minimums for Latin America are 2,200 kcal and 53 grams of protein per capita per day.

**Definitions:** c. 1960 refers to 1961-63, except 1966-68 in El Salvador and Nicaragua. c. 1990 is the mean of figures for 1988-90 and 1992.

**Source:** Wilkie, Alemán, and Ortega 1999: 200.

# Table 10
## Undernourishment, 20 Latin American Countries, c. 1980 to 1990s

| Country (ranked in order of lowness of proportion of inhabitants undernourished c. 1997) | Proportion of inhabitants undernourished | Proportion of inhabitants undernourished | Proportion of inhabitants undernourished, absolute change | Average calorie deficit of undernourished inhabitants | Proportion of under-5 children underweight |
|---|---|---|---|---|---|
| | c. 1980 | c. 1997 | c. 1980 to c. 1997 | c. 1997 | 1990s |
| **Argentina** | 0 | 1 | 1 | 140 | 1.9 |
| **Chile** | 7 | 4 | -3 | 150 | 0.8 |
| Uruguay | 3 | 4 | 1 | 150 | 4.4 |
| Ecuador | 11 | 5 | -6 | 160 | 13.0 |
| Mexico | 5 | 5 | 0 | 210 | 13.9 |
| **Costa Rica** | 8 | 6 | -2 | 160 | 5.1 |
| **Brazil** | 15 | 10 | -5 | 250 | 5.7 |
| El Salvador | 17 | 11 | -6 | 200 | 11.2 |
| Colombia | 22 | 13 | -9 | 220 | 8.4 |
| Paraguay | 13 | 13 | 0 | 220 | 3.7 |
| Panama | 21 | 16 | -5 | 230 | 6.1 |
| Venezuela | 4 | 16 | 12 | 210 | 5.1 |
| Peru | 28 | 18 | -10 | 240 | 7.8 |
| Cuba | 4 | 19 | 15 | 210 | 1.5 |
| Honduras | 31 | 22 | -9 | 270 | 18.3 |
| Bolivia | 26 | 23 | -3 | 230 | 8.4 |
| Guatemala | 18 | 24 | 6 | 250 | 26.6 |
| Dominican Republic | 25 | 28 | 3 | 250 | 5.9 |
| Nicaragua | 26 | 31 | 5 | 300 | 11.9 |
| Haiti | 48 | 62 | 14 | 460 | 27.5 |
| Mean, 20 LA countries | 16.6 | 16.6 | -0.1 | 226 | 9.4 |

**Definitions:** c. 1980 refers to 1979-81; c. 1987 refers to 1996-98. Proportion of inhabitants undernourished: Proportion of inhabitants with food consumption below minimum calorie requirement level. Calculated from data on per capita calorie availability, minimum calorie requirement norms, and distribution of income or consumption corrected for (1) elasticity of food consumption with respect to income and (2) availability of calories through non-income channels (Naiken 2001). Proportion of under-5 children underweight: Proportion of under-5 children two or more standard deviations below the expected weight of health children of the same age using National Center for Health Statistics/World Health Organization norms.

**Sources:** FAO 2000, except Proportion of under-5 children underweight: Smith, El Obeid, and Jensen 2000: 211-212.

# Table 11
## Fertility Rate, 20 Latin American Countries, 1960 - 1995

| Country (ranked in order of % decline in fertility rate) | Fertility rate 1960 | Fertility rate 1995 | Fertility rate, % decline 1960 to 1995 |
|---|---|---|---|
| Cuba | 4.2 | 1.8 | 114% |
| Colombia | 6.8 | 2.6 | 89% |
| **Chile** | 5.3 | 2.5 | 88% |
| Dominican Republic | 7.4 | 2.9 | 85% |
| **Brazil** | 6.2 | 2.8 | 83% |
| **Costa Rica** | 7.0 | 3.0 | 82% |
| Panama | 5.9 | 2.8 | 82% |
| Mexico | 6.8 | 3.0 | 81% |
| Venezuela | 6.6 | 3.1 | 78% |
| Uruguay | 2.9 | 2.3 | 75% |
| Peru | 6.9 | 3.3 | 75% |
| Ecuador | 6.7 | 3.3 | 74% |
| El Salvador | 6.8 | 3.8 | 64% |
| Paraguay | 6.8 | 4.1 | 57% |
| Honduras | 7.5 | 4.6 | 54% |
| Nicaragua | 7.4 | 4.8 | 49% |
| Bolivia | 6.7 | 4.6 | 46% |
| **Argentina** | 3.1 | 2.7 | 40% |
| Haiti | 6.3 | 4.7 | 38% |
| Guatemala | 6.9 | 5.1 | 38% |
| Mean, 20 LA countries | 6.2 | 3.4 | 70% |

**Definition**: Fertility rate: "The number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children at each age in accordance with prevailing age-specific fertility rates" (Wang et al. 1999: 3). Percent decline: Proportion of distance traveled by 1995 from 1960 fertility level toward the replacement rate of 2.1.

**Source**: UNICEF 1997: 96-97.

**Table 12**
**Literacy, 20 Latin American Countries, 1960 to 1995**

| Country (ranked in order of percent increase in percent literate, 1960 to 1995) | Percent literate, age 15 and over | Percent literate, age 15 and over | % increase in percent literate, age 15 and over | Percent literate, youth (age 15-24) |
|---|---|---|---|---|
| | 1960 | 1995 | 1960 to 1995 | 1998 |
| Cuba | 65 | 96 | 78% | 99.7 |
| Venezuela | 65 | 91 | 63% | 97.7 |
| Peru | 61 | 89 | 62% | 96.4 |
| Ecuador | 68 | 90 | 60% | 96.7 |
| Mexico | 65 | 90 | 60% | 96.6 |
| Bolivia | 36 | 83 | 60% | 95.4 |
| **Chile** | 84 | 95 | 58% | 98.7 |
| **Costa Rica** | 84 | 95 | 58% | 98.2 |
| Paraguay | 75 | 92 | 58% | 96.8 |
| Uruguay | 90 | 97 | 57% | 99.3 |
| Panama | 77 | 91 | 57% | 96.6 |
| Colombia | 73 | 91 | 53% | 96.6 |
| **Brazil** | 61 | 83 | 47% | 92.0 |
| Dominican Republic | 65 | 82 | 44% | 90.4 |
| **Argentina** | 91 | 96 | 43% | 98.5 |
| Honduras | 63 | 73 | 41% | 82.4 |
| Guatemala | 38 | 65 | 38% | 78.4 |
| El Salvador | 49 | 72 | 36% | 87.7 |
| Haiti | 20 | 45 | 28% | 62.5 |
| Nicaragua | 50 | 66 | 21% | 73.1 |
| Mean, 20 LA countries | 64 | 84 | 49% | 91.7 |

**Definitions:** Literacy: Percentage of people aged 15 and above who can, with understanding, both read and write a short, simple statement on their everyday life. (Source for overall literacy in 1960 does not provide a definition.)

**Sources:** Literacy 1960: Wilkie and Reich 1978: 118. Literacy 1995: UNDP 1999: 148-49. Youth literacy 1998: UNDP 2000: 194-97.

**Table 13**
**Schooling, 20 Latin American Countries, 1960/70 to 1995/96**

| Country (ranked in order of % increase in mean years of schooling in the female population 15 years or over) | Mean years of schooling in the female population 15 years or over | Mean years of schooling in the female population 15 years or over | % increase in mean years of schooling in the female population 15 years or over | Percent repeating grade in primary school | Percent repeating grade in primary school | Percent repeating grade in primary school, % reduction toward 0, 1970 to 1996 |
|---|---|---|---|---|---|---|
| | 1960 | 1995 | 1960 to 1995 | c. 1970 | c. 1996 | 1970 to 1996 |
| Cuba | nd | nd | nd | 21.6 | 3.1 | 86% |
| Panama | 4.6 | 8.4 | 33% | 15.4 | 10.0 | 35% |
| **Argentina** | 5.1 | 8.5 | 31% | 11.3 | 5.6 | 50% |
| Venezuela | 2.6 | 6.8 | 31% | 2.2 | 10.3 | -368% |
| Peru | 2.6 | 6.8 | 31% | 17.0 | 15.2 | 11% |
| Mexico | 2.5 | 6.6 | 30% | 11.0 | 6.9 | 37% |
| Ecuador | 3.0 | 6.1 | 24% | 12.4 | 3.5 | 72% |
| Paraguay | 3.3 | 6.0 | 21% | 17.7 | 9.1 | 49% |
| Uruguay | 5.3 | 7.6 | 21% | 17.7 | 9.5 | 46% |
| El Salvador | 1.8 | 4.6 | 20% | 7.3 | 4.3 | 41% |
| **Chile** | 5.1 | 7.2 | 19% | 10.4 | 5.3 | 49% |
| Colombia | 3.1 | 5.4 | 18% | 16.6 | 7.2 | 57% |
| Dominican Rep. | 2.6 | 4.7 | 16% | 22.3 | nd | nd |
| **Costa Rica** | 4.0 | 5.8 | 15% | 10.3 | 11.4 | -11% |
| Nicaragua | 2.1 | 4.1 | 14% | 12.8 | 12.6 | 2% |
| Honduras | 1.8 | 3.7 | 13% | nd | 12.0 | nd |
| Guatemala | 1.3 | 2.9 | 11% | 15.8 | 15.3 | 3% |
| Haiti | 0.7 | 2.0 | 9% | nd | 12.7 | nd |
| **Brazil** | 3.1 | 4.2 | 8% | 19.2 | 18.4 | 4% |
| Bolivia | 4.3 | 4.8 | 4% | nd | 3.1 | nd |
| Mean, 17-19 LA countries | 3.1 | 5.6 | 19% | 13.71 | 9.58 | 30% |

**Notes:** nd means no data. Cuba ranking estimated on the basis of increase in literacy rate from 1960 to 1995. c. 1970 = 1970 except in El Salvador and Mexico (1975). c. 1996 = 1996 except in Bolivia (1990), Brazil (1994), Cuba (1995), Haiti (1990), Nicaragua (1997), Panama (1989), and Peru (1995).

**Definition:** Grade repetition: Total number of pupils who are enrolled in the same grade as in a previous year, expressed as a percentage of the total enrolment in the specified grade.

**Sources:** Mean years of schooling: Barro and Lee 2000. Grade repetition: UNESCO 2001.

**Table 14**
**Family Planning Effort, 20 Latin American Countries, 1972-1999**

| Country (ranked in order of mean of total family planning effort scores across five surveys) | Total family planning effort score, mean of scores in five surveys | Total family planning effort score 1972 | Total family planning effort score 1982 | Total family planning effort score 1989 | Total family planning effort score 1994 | Total family planning effort score 1999 |
|---|---|---|---|---|---|---|
| Cuba | nd | nd | nd | nd | nd | nd |
| Colombia | 63.2 | 53 | 71 | 62 | 66 | 64 |
| Mexico | 61.0 | 13 | 66 | 77 | 74 | 75 |
| El Salvador | 55.4 | 43 | 63 | 68 | 57 | 46 |
| Dominican Republic | 54.6 | 47 | 55 | 54 | 67 | 50 |
| **Chile** | 54.2 | 53 | 44 | 58 | 55 | 61 |
| Panama | 54.2 | 63 | 51 | 52 | 56 | 49 |
| **Costa Rica** | 47.2 | 70 | 33 | 55 | 46 | 32 |
| Ecuador | 42.2 | 20 | 35 | 58 | 52 | 46 |
| Uruguay | 41.7 | nd | nd | 42 | 49 | 34 |
| Honduras | 41.0 | 23 | 25 | 63 | 50 | 44 |
| Guatemala | 41.0 | 30 | 28 | 53 | 57 | 37 |
| Peru | 38.2 | 0 | 22 | 51 | 59 | 59 |
| **Brazil** | 35.4 | 0 | 43 | 32 | 43 | 59 |
| Haiti | 35.4 | 10 | 36 | 42 | 38 | 51 |
| Venezuela | 35.0 | 23 | 31 | 54 | 38 | 29 |
| Nicaragua | 30.5 | 0 | 20 | nd | 53 | 49 |
| Paraguay | 29.0 | 10 | 8 | 36 | 35 | 56 |
| Bolivia | 25.8 | 0 | 8 | 23 | 49 | 49 |
| **Argentina** | 24.0 | nd | nd | 21 | 21 | 30 |
| Mean, 20 LA countries | 42.6 | 26.9 | 37.6 | 50.1 | 50.8 | 48.4 |

**Notes:** nd = no data. Cuba ranking based on an educated guess.

**Definitions:** Family planning effort scores are based on expert ratings (see text). The scores for 1972 are not strictly comparable to the scores for other years, but are consistent across countries.

**Source:** Estimates for all years except 1999 from Ross and Mauldin 1996: 146; estimates for 1999 from and Ross and Stover 2000: 17-18.

# Table 15
## Access to Safe Water, 20 Latin American Countries, 1969 to 1998

| Country (ranked by % change in share of total population served by water supply systems) | Share of total population served by water supply systems | | | Share of urban population served by water supply systems | | | Share of rural population served by water supply systems | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1969 | 1998 | % change | 1969 | 1998 | % change | 1969 | 1998 | % change |
| Uruguay | 68.1 | 97.8 | 93% | 81.6 | 98.2 | 90% | 11.4 | 93.1 | 92% |
| **Brazil** | 29.4 | 93.6 | 91% | 52.9 | 97.4 | 94% | 4.4 | 80.1 | 79% |
| **Costa Rica** | 76.4 | 97.6 | 90% | 100.0 | 97.6 | -2% | 53.6 | 97.6 | 95% |
| **Chile** | 57.5 | 94.2 | 86% | 80.6 | 99.1 | 95% | 7.4 | 65.7 | 63% |
| Panama | 48.3 | 86.8 | 74% | 95.2 | 87.7 | -8% | 6.7 | 85.8 | 85% |
| Mexico | 56.7 | 88.6 | 74% | 81.6 | 97.3 | 85% | 21.8 | 64.6 | 55% |
| Guatemala | 36.9 | 80.3 | 69% | 86.5 | 98.8 | 91% | 11.0 | 70.3 | 67% |
| Honduras | 40.9 | 80.9 | 68% | 96.8 | 93.8 | -3% | 18.5 | 69.7 | 63% |
| Bolivia | 19.8 | 73.5 | 67% | 58.3 | 93.1 | 83% | 1.0 | 44.0 | 43% |
| Cuba | 78.7 | 92.9 | 67% | 89.4 | 98.3 | 84% | 60.4 | 76.4 | 40% |
| Peru | 34.8 | 75.4 | 62% | 69.1 | 86.8 | 57% | 8.4 | 50.7 | 46% |
| Dominican Republic | 32.1 | 71.4 | 58% | 75.8 | 83.1 | 30% | 9.0 | 50.7 | 46% |
| **Argentina** | 55.2 | 78.6 | 52% | 70.3 | 84.7 | 48% | 12.0 | 24.5 | 14% |
| Ecuador | 40.4 | 70.3 | 50% | 92.0 | 81.5 | -10% | 8.9 | 51.4 | 47% |
| Nicaragua | 37.5 | 66.5 | 46% | 87.3 | 95.0 | 61% | 5.9 | 33.6 | 29% |
| Haiti | 6.5 | 46.0 | 42% | 44.9 | 48.8 | 7% | 2.9 | 44.5 | 43% |
| Paraguay | 15.1 | 43.6 | 34% | 31.0 | 70.1 | 57% | 6.0 | 12.8 | 7% |
| El Salvador | 43.4 | 59.3 | 28% | 79.8 | 92.4 | 62% | 25.0 | 25.3 | 0% |
| Venezuela | 83.6 | 86.3 | 17% | 100.0 | 91.3 | -9% | 55.5 | 53.7 | -2% |
| Colombia | 76.6 | 76.4 | 0% | 97.5 | 89.2 | -8% | 47.6 | 46.4 | -1% |
| Mean, 20 LA countries | 46.9 | 78.0 | 59% | 78.5 | 89.2 | 50% | 18.9 | 57.0 | 47% |

**Definition:** % change: if positive, figure is proportion of distance traveled by 1998 from 1969 level to a maximum of 100 percent. If negative, figure is absolute decline in the percentage served.

**Sources:** 1969 figures: PAHO 1970: 169. 1998 figures: PAHO 2000.

## Table 16
## Access to Sewerage or Septic Systems, 20 Latin American Countries, 1969 to 1998

| Country (ranked by % change in share of urban population served by sewerage or septic systems) | Share of urban population served by sewerage or septic systems | | | Share of rural population served by sewerage or septic systems | | | Share of total population served by sewerage or septic systems | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1969 | 1998 | % change | 1969 | 1998 | % change | 1969 | 1998 | % change |
| **Costa Rica** | 21.7 | 98.1 | 98% | nd | 94.8 | nd | nd | 96.2 | |
| Panama | 64.5 | 98.6 | 96% | 0.7 | 86.5 | 86% | 30.7 | 93.2 | 90% |
| Cuba | 33.9 | 97.0 | 95% | nd | 82.0 | nd | nd | 93.3 | nd |
| Dominican Republic | 12.4 | 95.6 | 95% | nd | 78.7 | nd | nd | 89.5 | nd |
| Guatemala | 38.9 | 94.7 | 91% | nd | 71.3 | nd | nd | 79.5 | nd |
| Uruguay | 52.1 | 95.4 | 90% | nd | 84.5 | nd | nd | 94.4 | nd |
| **Chile** | 33.8 | 93.3 | 90% | 5.2 | 12.1 | 7% | 24.8 | 81.3 | 75% |
| Nicaragua | 32.4 | 93.0 | 90% | nd | 56.0 | nd | nd | 75.8 | nd |
| Honduras | 48.6 | 93.9 | 88% | 0.1 | 49.5 | 49% | 13.9 | 70.2 | 65% |
| **Argentina** | 33.7 | 88.5 | 83% | nd | 39.1 | nd | nd | 83.9 | nd |
| Bolivia | 21.7 | 82.3 | 77% | nd | 35.3 | nd | nd | 63.5 | nd |
| Mexico | 50.1 | 87.0 | 74% | nd | 32.1 | nd | nd | 72.5 | nd |
| Peru | 61.9 | 89.5 | 72% | 0.2 | 39.5 | 39% | 27.0 | 73.7 | 64% |
| Venezuela | 48.8 | 82.6 | 66% | 1.9 | 72.2 | 72% | 31.5 | 81.2 | 73% |
| **Brazil** | 25.1 | 73.5 | 65% | nd | 14.5 | nd | nd | 59.3 | nd |
| Paraguay | 13.7 | 65.0 | 59% | nd | 14.0 | nd | nd | 41.0 | nd |
| El Salvador | 73.7 | 85.9 | 46% | 0.2 | 50.3 | 50% | 24.9 | 68.3 | 58% |
| Ecuador | 53.5 | 70.5 | 37% | 3.0 | 37.0 | 35% | 22.1 | 58.0 | 46% |
| Haiti | 18.5 | 45.7 | 33% | nd | 16.5 | nd | nd | 26.4 | nd |
| Colombia | 71.7 | 65.9 | -6% | 20.9 | 20.0 | -1% | 50.4 | 52.2 | 4% |
| Mean, 8-20 LA countries | 40.5 | 84.8 | 74% | 4.0 | 49.3 | 47% | 28.2 | 72.7 | 62% |

**Note:** nd = no data.

**Definition:** % change: if positive, figure is proportion of distance traveled by 1998 from 1969 level to a maximum of 100 percent. If negative, figure is absolute decline in the percentage served.

**Sources:** 1969 figures: PAHO 1970: 169. 1998 figures: PAHO 2000.