Equity of access to health care for older adults in four major Latin American cities

Steven P. Wallace[1] *and Verónica F. Gutiérrez*[1]

Suggested citiation Wallace SP, Gutiérrez VF. Equity of access to health care for older adults in four major Latin American cities. Rev Panam Salud Publica. 2005;17(5/6):394–409.

ABSTRACT

Objectives. *To identify if older adults have equitable access to health services in four major Latin American cities and to determine if the inequities that are found follow the patterns of economic inequality in each of the four nations studied.*

Methods. *Data from persons age 60 and over in the cities of São Paulo, Brazil (*n = *2 143); Santiago, Chile (*n = *1 301); Mexico City, Mexico (*n = *1 247); and Montevideo, Uruguay (*n = *1 450) were collected through a collaboration led by the Pan American Health Organization. For our study, three process indicators of access (availability, accessibility, and acceptability) and one indicator of actual health services use (visit to a medical doctor in the past 12 months) were analyzed by wealth quintiles, health insurance type, education, health status, and demographic characteristics.*

Results. *Each of the four cities had a different level of access to care, and those levels of access were only weakly related to per capita national wealth. Given the relatively high level of wealth inequality in Brazil and the lower level in Uruguay, older persons in São Paulo had better-than-expected equity in access to care, while older persons in Montevideo had less equity than expected. Inequity in Mexico City was driven primarily by low levels of health insurance coverage. In Santiago, inequity followed socioeconomic status more than it did health insurance.*

Conclusions. *In the four cities studied, health insurance and the operation of health systems mediate the link between economic inequality and inequitable access to health care. Therefore, special attention needs to be paid to equity of access in health services, independent of differences in economic inequality and national wealth.*

Keywords Aged; aged, 80 and over; health services for the aged; health services accessibility; socioeconomic factors; health policy; Latin America.

In both developed and developing nations the State plays a central role in the organization and funding of health care. State intervention fosters health care systems that tend to reflect and reinforce broader patterns of inequality (1). Political units that allow highly unequal income distributions also invest less in the health services and other services needed by the poorer segments of the population. Latin America has among the highest rates of economic inequality in the world (2). The health care systems of the nations of Latin America would thus be expected to reflect this economic inequality. In fact, half of the Latin American countries do fall in the bottom half of nations worldwide in equity measures of their health systems' performance (3).

A focus on health care for the elderly is gaining increased governmental attention in Latin America. A number of countries, including Argentina,

[1] University of California, Los Angeles, School of Public Health and Center for Health Policy Research, Los Angeles, California, United States of America. Send correspondence to: Steven P. Wallace, UCLA Center for Health Policy Research, 10911 Weyburn, #300, Los Angeles, California 90024, United States of America; telephone: 310-794-0910; e-mail: swallace@ucla.edu

Chile, Cuba, and Uruguay, are in an advanced demographic transition, where over 10% of the population is age 60 or older and where both birth rates and death rates are low (4). An epidemiological shift is increasing the burden of chronic diseases among the older population (5). Even in countries with younger population profiles, such as Brazil and Mexico, death rates have fallen and the number of older persons is growing rapidly (4). Nonetheless, relatively little research on access to care has focused specifically on older populations in Latin America.

Because of both ethical and economic concerns, equity in health status and in health care has become a priority issue for international organizations, including the World Health Organization (WHO) (3), the Pan American Health Organization (PAHO) (6), and the Organization for Economic Cooperation and Development (OECD) (7). For the evaluation of health care systems, WHO has developed criteria that give the same weight to equity in the distribution of health services as to the economic efficiency of the system. In this WHO framework, health systems are assessed according to equity in health outcomes, responsiveness in the provision of care, and financial contributions towards care (3). The OECD's modification of that framework (7) defines access to services as a component of the responsiveness dimension. Access to medical care is considered equitable when persons in poor health receive more medical care than do persons in good health, and when persons of different social strata with similar health problems receive similar amounts of medical care (8). In the Andersen model (9), determinants of health service use are divided into predisposing characteristics of the person (e.g., demographic characteristics such as age and gender), enabling characteristics of the context that are amenable to policy interventions (e.g., health insurance, income), and need (e.g., health status). Access is considered equitable when only need determines health services use. Since the indicator of access is the observed use of services, this is called "achieved access."

In addition, the process that patients must go through to obtain care can be inequitable (7). Indicators of process problems include common issues such as long queue times and low patient satisfaction. This dimension can be divided hierarchically for analysis. First, services have to be *available* in the area where the people who need the services live. If available, services need to be financially and logistically *accessible*. Finally, the care that is received needs to be *acceptable* so that recipients are motivated to continue with needed treatment (10). Following the WHO and OECD frameworks, equitable systems of care would have minimal differences between rich and poor individuals in the indicators of access to necessary health services.

To examine the extent of equity of access to medical care for older persons, and its association with broader patterns of inequality between and within countries, we analyzed available data for four large cities in Latin America: São Paulo, Brazil; Santiago, Chile; Mexico City, Mexico; and Montevideo, Uruguay. These cities are the largest urban areas in each of those countries: Santiago and Montevideo contain over one-third of their countries' entire populations, Mexico City contains about one-quarter of Mexico's urban population, and São Paulo contains about 10% of Brazil's urban population (11).

Uruguay and Chile represent nations at the most advanced end of the demographic transition in Latin America (Table 1). Uruguay has the oldest population in Latin America, with 17.1% age 60 and over. (The next oldest countries in Latin America are Cuba and Argentina, with 13.7% and 13.3% elderly, respectively.) Chile's population is 10.2% age 60 and over, compared to 7.9% in Brazil and 6.9% in Mexico. The older population is primarily urban in all four nations, and a majority (around 55%) is female. Life expectancy at birth varies from a high of 76.1 years in Chile to a low of 68.4 years in Brazil. Healthy life expectancy at age 60, which reflects only those remaining years spent in good health,

TABLE 1. Population characteristics of the four countries in study of equity of access to health care for older adults in four major Latin American cities

Characteristic/(Source)	Brazil	Chile	Mexico	Uruguay
Total population, year 2000 (in thousands) (12)	170 693	15 211	98 881	3 337
Population age 60 and over, year 2000 (in thousands) (12)	13 405	1 550	6 844	572
Percent of total population age 60 and over, year 2000 (12)	7.9%	10.2%	6.9%	17.1%
Percent population age 60 and over living in urban areas, year 1997 (12)	78.3%	84.2%	73.4%	91.5%
Life expectancy (yr) at birth, year 2000 (13)	68.4	76.1	74.2	75.1
Healthy life expectancy (yr) at age 60, women, 2001 (13)	13.0	15.5	14.9	16.8
Gross domestic product (GDP) per capita, purchasing power parity (PPP), 1999 (US$) (14)	7 037	8 652	8 297	8 879
Health care expenditure per capita (PPP), 1999 (US$) (13)	566	670	453	997
Social spending as percent GDP, 2000–2001 (15)	18.8%	16.0%	9.8%	23.5%
Poverty rate, urban residents age 60 and over, year 1997 (12)	13.7%	9.8%	36.4%	2.4%
Gini coefficient of inequality, urban areas, 1999 (14)	0.625	0.553	0.507	0.44
Ratio of income of richest 10% to income of poorest 40% of total population (10/40 ratio), 1999 (14)	32	18.7	18.4	8.8

varies for women, with a high of 16.8 years in Uruguay and a low of 13.0 in Brazil.

The four countries in this analysis are middle-income developing nations. Three had similar levels of economic wealth in 1999, with their per capita gross domestic product (GDP) after adjusting for "purchasing power parity" (PPP) being around US$ 8 000. Brazil's was lower, at near US$ 7 000 (Table 1). The total spending (PPP-adjusted) per person on health care had a wider range, with a high of US$ 997 in Uruguay, an intermediate level of US$ 670 in Chile, and lows of US$ 566 in Brazil and US$ 453 in Mexico. The governments of all four countries expanded their social expenditures in the 1990s, although the total social expenditures at the end of the decade varied widely, from 23.5% of GDP in Uruguay to 9.8% in Mexico.

The poverty rates of older persons varied widely among the four countries, from over one-third of older persons in Mexico to around 10% in Brazil and Chile, and a low of 2.4% in Uruguay (Table 1). While health status is associated with amount of wealth, it is also associated with inequality in the distribution of wealth (16). Two common measures of economic inequality are the Gini coefficient, which measures income concentration, and the 10/40 ratio, which measures the income of the richest 10% to that of the poorest 40% of the population. In both measures, lower numbers indicate more equality (see (15) for methodologies and trend data). In 1999, Uruguay had the lowest urban economic inequality in Latin America (urban Gini = 0.44, 10/40 ratio = 8.8) (Table 1), and had shown steadily improving rates of income equality during the 1990s. In 1999, Mexico had moderate levels of inequality (urban Gini = 0.507, 10/40 ratio = 18.4). The 1999 levels were higher than they had been in the mid-1980s, but they had remained relatively stable during the 1990s. Given Chile's total wealth and economic growth, the country had relatively high but stable rates of inequality (urban Gini = 0.553, 10/40 ratio = 18.7). In 1999, Brazil had the highest inequality in Latin America (urban Gini = 0.625, 10/40 ratio = 32). Brazil's Gini coefficient had increased during the 1990s and was the third highest in the world after Sierra Leone and Swaziland (17).

While incomes in Latin America are higher in urban than in rural areas, inequality is often the greatest in the urban centers. In both Brazil and Chile the Gini coefficients for urban areas are almost 10% higher than they are for rural areas, and in Mexico they are about 5% higher (15). City-specific data on the Gini economic inequality index are rarely published. Studies that included data on Santiago (18) and on Montevideo (19) calculated Gini indices for those two cities that are almost identical to the overall urban figures for those two countries. Data from São Paulo also support this generalization (20).

The WHO framework distinguishes between the level of an indicator in a country and its distribution. Given the country-level pattern of wealth (GDP per capita), total spending on medical care, and levels of poverty among older persons, Mexico or Brazil are expected to show the worst overall *levels* of access to care for older persons, and Uruguay or Chile are expected to show the best levels. Differences in the distribution of access within each country are expected to reflect the wealth inequality in each nation. The *distribution* of access for the elderly is expected to be the least equitable in São Paulo, better in Mexico City and Santiago, and the most equitable in Montevideo.

The pattern of equity in access to health care might be mediated by government programs that improve access to primary health care (21). The four countries have very different systems of medical care, and all of them underwent a variety of reforms in the 1990s that might mediate the expected pattern.

In Brazil the health system is made up of a complex network of services that includes public and private suppliers and payers (22). The public system, the Unified Health System (UHS) (*Sistema Único de Saúde*), is based on a decentralized, tiered and regionalized design for universal health care access (23). At the national level the Ministry of Health (*Ministério da Saúde*) is primarily responsible for regulating and financing the public system. There are large regional economic disparities in Brazil, and federal support for health services is not very redistributive. The result is that wealthier states, especially in southern Brazil, generally spend more on health care per capita. Between 1994 and 2001 the city of São Paulo, which is located in the southern state of the same name, experimented with establishing UHS health care networks that relied on private physician cooperatives. The cooperatives' competition for patients potentially improved access for some of those persons (24). Municipalities are responsible for providing primary health care to their residents, with administrative and financial support from the federal and state governments. Approximately 75% of the total population receives health care exclusively from the public system. The other 25% receives care through private commercial businesses, community institutions, and philanthropic organizations (22, 23). Brazil spends 8.3% of its GDP on health care (13).

Chile has a pluralistic system, with about 20% of the population covered by one of a number of different private insurance companies (*Instituciones de Salud Previsional*) and two-thirds of the population covered by public insurance through the National Health Fund (*Fondo Nacional de Salud* (FONASA)). Under 5% are covered by insurance provided by the three branches of the armed forces. Private insurance premiums are risk-adjusted by age and sex and are paid for entirely by the insured. Therefore, 85% of the insured older population is in the public system, which is partially underwritten by the Government (25). (About 5% of the older population has no health insurance, although most of them are eligible for public coverage.) The provision of care is also mixed public-private, with a sizable proportion of publicly insured persons using private primary care, and a substantial proportion of

privately insured persons using public hospitals for in-patient care (26, 27). Overall, Chile spends 7.2% of its GDP on medical care (13).

Mexico also has a pluralistic health care system, although there are substantial variations among different public systems, in addition to public-private differences. The largest public health insurance provider is the Mexican Social Security Institute (*Instituto Mexicano del Seguro Social* (IMSS)), which covers most privately employed formal-sector workers. This formal-sector insurance covers about 40% of the population (28). Civil servants and other government employees are covered through the State Workers' Social Security and Services Institute (*Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado* (ISSSTE)). Even though it is limited to government employees, it is not considered better in quality or access than is the Mexican Social Security Institute. Employees of the national oil company (*Petróleos Mexicanos* (PEMEX)) and the armed forces have their own insurance programs, which are considered to have better resources than the other public programs. Insurance for all of these pubic sector employees combined covers about 10% of the population (28). The Secretariat of Health (*Secretaría de Salud*) is primarily responsible for providing care to the uninsured. Each public program has its own doctors and facilities, with resources often most available in Mexico City and least available in outlying regions. Private insurance is also available but covers less than 3% of the population. Nevertheless, over half of health care spending comes from private sources, when out-of-pocket spending is included (29). Overall, private primary care providers treat about as many persons as do public providers, although there is a modest shift towards the public sector in old age (28). Mexico spends 5.4% of its GDP on medical care (13).

Of the four countries considered in our study, Uruguay relies the least on public medical care insurance. The Ministry of Public Health (*Ministerio de Salud Pública*) covers only one-third of the population, primarily low-income persons. Private collective health care institutions (*instituciones de asistencia médica colectiva*) cover 44% of the country's population and are the primary source of coverage for most middle- and upper-income persons. This private insurance includes non-profit "mutual assistance" funds, provider-organized networks, and for-profit commercial insurance. About 5% of the population is uninsured (30). While the Government started to separate the insurance and provision aspects of health care in the public sector in the late 1990s, progress in implementing the plan has been slow. Overall, the country spends about 10.9% of its GDP on health care (13).

For the four countries, their respective levels of national wealth, medical care spending, and poverty among the elderly are expected to strongly influence the average level of access to care of their citizens. This suggests that Uruguay should have the best access and Brazil the worst. Greater economic equity in a country is expected to lead to greater equity in the distribution of access to care, suggesting that Uruguay should have the least inequity, Mexico and Chile intermediate levels, and Brazil the most. Policy initiatives described above for Brazil and Chile might reduce levels of inequity in access. Since Mexico does not have universal insurance coverage, having any health insurance is expected to be particularly important in fostering access to care in that country. In the other three countries, economic status is expected to be important, along with insurance status. If government interventions prioritize problems that are the most personally and widely experienced (e.g., waiting times), Brazil and Chile would have inequities in access that are less than their levels of income inequality would lead us to expect.

METHODS

The data for this analysis are from a survey called *Salud, Bienestar y Envejecimiento en América Latina y el Caribe* (Health, Well-Being, and Aging in Latin America and the Caribbean, or the "SABE survey"), which was sponsored by the Pan American Health Organization. This multicountry study used a common core questionnaire and comparable methods to collect cross-sectional data in 1999–2000 from samples of community-dwelling persons age 60 and older in each of the single-largest cities in Argentina, Barbados, Brazil, Chile, Cuba, Mexico, and Uruguay (31). The sampling frame excluded persons in institutions, including nursing homes and mental institutions. The analyses in this article use a normalized weight to correct for disproportionate sampling of older ages and varying response rates.

The dependent variables are both achieved access (the use of services) and process indicators of access. Following the Andersen model (9), we used whether an older person had had a medical visit in the preceding 12 months as the achieved access indicator. A medical visit, primarily an ambulatory care visit, was used since it was more frequent than hospital admission and was the entry point for most elders into the medical care system. Inequities in primary care thus affect older persons across multiple types of needed care. The tables that we present use the shorthand "MD visit" term for all medical visits since almost all the visits were with doctors. While the survey asked if the respondent had had a medical visit in the past 12 months, it focused on only the preceding 4 months for information about process indicators concerning the most recent visit. This may have increased the reliability of the process information. The time it took to get to the provider was used as an indicator of geographic availability (30 minutes or less, versus over 30 minutes). The number of days it took to obtain the appointment was used as an indicator of accessibility (29 days or less, versus 30 days or more). The time the older person had to wait in the office before being seen was an indicator of acceptability (under one hour, versus one hour or more). Our process indicators of access likely underreported process barriers because those who were de-

terred from obtaining a medical visit in the previous four months were not asked about the process indicators.

Independent variables included indicators of need, predisposing, and enabling variables, according to the Andersen model (9). Need was indicated by self-assessed health, chronic diseases, and disability. Self-assessed health was recoded to fair and poor versus excellent, very good, and good. Chronic conditions were recoded to indicate whether the elderly person reported one or more of seven chronic diseases (heart disease, hypertension, stroke, diabetes, cancer, arthritis, and lung disease), versus none. Disability was indicated by the older person reporting difficulty in one or more activities of daily living (ADLs: bathing, dressing, eating, transferring in and out of bed, using the toilet, and walking across a room), versus none.

Gender was included as a control variable since it is an important predisposing social characteristic that is often related to inequality (32). Age is considered a predisposing variable in the Andersen (1995) model, but it could also be considered a need variable since frailty increases with age (33). We recoded age into three ordinal groups: 60–69 years, 70–79 years, and 80 and over.

Enabling variables included economic resources and health insurance type. Income information in the survey was often incomplete and not reliable. Since this analysis is concerned with relative wealth (inequality) rather than an absolute measure (e.g., poverty), an "asset index" was created that was based on household possessions, by following a procedure similar to that used in other cross-national analyses (34, 35). The SABE survey asked if each household owned any of these 14 items: refrigerator, washing machine, water heater, microwave oven, television, telephone, videocassette recorder, radio, heater, air conditioner, fan, bicycle, motorcycle, and automobile. Homeownership was also determined. To construct the index, a principal components factor analysis was conducted for each city, and the first factor loadings (accounting for between 20% and 25% of the factor variance) were applied as weights to each of the 15 items owned (that is, the 14 household items plus the home itself). A sum of the weighted items created an index of assets that reflects each city's economic level and pattern of consumer durable consumption. This index was then divided into fifths to identify the economic stratum for each older person (36). For analysis of the travel time to the last medical visit, household ownership of an automobile was added as an independent indicator of enabling resources because a car provides added mobility that may shorten travel time. An automobile could also be a wealth indicator, but the correlation with asset quintiles was 0.21 or less in each city. A minority of households in this survey had a car: São Paulo, 44.6%; Santiago, 25.8%; Mexico City, 37.5%; and Montevideo, 26.6%.

Education of the household head is also an enabling indicator because of its association with both income and knowledge about medical problems and institutions. While assets are divided into quintiles and are therefore sensitive to the distribution of wealth in each city, education was recoded into logically occurring breaks between levels of schooling and was therefore more of an absolute (rather than relative) resource proxy. Any reported attendance at a secondary school or higher was coded as any secondary school. Completed primary school was the coding for those who reported six years or more of primary school, while those reporting any primary schooling but less than six years were coded as incomplete primary education. The education of the head of household diverges the most from that of the older-adult respondent when the older person lives in a household headed by one of their children. Education of the household head was only moderately correlated with our asset measure (Pearson's $r = 0.39 – 0.43$).

Government intervention in access to care is most apparent in the health insurance held by the older adult. This was also the most difficult variable to recode for comparison purposes. When possible, insurance types that provided similar levels of access to care were combined.

In São Paulo the insurance variables were public insurance (the Unified Health System), other public insurance (coded as "other"), private insurance (combining private insurance and private plan), and no insurance ("none"). "Other" and "none" were combined in the regression analysis because of the small number of persons with no insurance.

For Mexico City we combined the insurance programs of the State Workers Institute (ISSSTE), the PEMEX national oil company, and the armed forces to create a new variable for "other public insurance," leaving the program of the Mexican Social Security Institute (IMSS) as "general public insurance." The small number of older persons with employer-provided insurance or insurance paid for by the beneficiary was coded as "other." The last insurance category that we used for Mexico City was for those reporting no insurance ("none"). Due to the small size of the "other" category and the unknown level of benefits provided, "other" was combined with "none" in the regression analysis.

In Santiago the categories of health insurance were National Health Fund general public, private, military, and none. In the regressions, the military insurance was combined with general public since both insurance types provide similar levels of access to medical services (27).

For Montevideo we recoded insurance into a single public insurance category, private insurance (including all mutual plans), an "other" category that included those reporting only ambulance insurance and other private insurance, and those with no reported insurance ("none").

Health insurance was used in the analysis instead of the source of care because there was no information on source of care for those with no recent medical care use. In addition, for those reporting a medical visit in the preceding four months in Brazil and Uruguay, relatively few older persons with public insurance used a private provider,

and few with private insurance used a public provider. In contrast, in Chile over one-third of those with public insurance reported using a private provider, and 8% of those with private insurance reported using a public provider. In Mexico, one-quarter of those with general public insurance (IMSS) used a private provider. For Chile and Mexico, therefore, we also examined the added effect of provider type on those with a recent medical visit for the three process indicators of access (travel time, wait for appointment, and wait in doctor's office).

The analysis below first examines the distribution of need, enabling, and access indicators for each asset quintile in each city, using chi-square tests to identify statistical differences by wealth. Second, the access indicators are examined net of predisposing, need, and enabling factors in a series of logistic regressions for each city. This analysis identifies the determinants of access in each city, identifying whether factors other than need affect access to care. A final set of logistic regressions is run on a combined sample from all four cities to compare the relative levels of inequality in access in each city for achieved access (use of physician) and for the three process indicators of access (availability, accessibility, and acceptability).

RESULTS

Tables 2 through 5 present the distributions by wealth (asset index) of other enabling factors, need, and access to care indicators for persons age 60 and over in São Paulo, Brazil; Santiago, Chile; Mexico City, Mexico; and Montevideo, Uruguay, respectively. Wealth is an enabling factor that should vary with other economic indicators. The validity of the asset index as a wealth indicator is first examined by looking at whether older persons in different quintiles reported that they had enough money for daily expenses (yes versus no). In all four cities the percent with enough money increases across the quintiles, and the rate of reporting enough money is consistently around three times as high in the top quintile as in the bottom quintile. As expected, education of the head of the household is associated with socioeconomic level, with those in the lowest wealth quintile most likely to not have completed primary school. Increasing wealth is associated with a higher primary school completion rate for the household head, with a gap of more than 40% between the lowest and highest wealth groups in all four cities.

The type of health insurance that older persons reported is closely tied to wealth (Tables 2–5). In both São Paulo and Montevideo, public insurance is the predominant form among those in the lowest wealth quintile, while private insurance becomes the most common form in the highest wealth group. The largest shift from public to private insurance is between the top two wealth quintiles in São Paulo and between the bottom two wealth quintiles in Montevideo. A similar pattern of decreasing rates of public insurance and increasing rates of private insurance occurs in Santiago, although public insurance remains the most common form even among the highest wealth quintile. The largest change in the public-private mix in Santiago is between the top two wealth quintiles. What is most striking in Mexico City is that almost half of older persons in the lowest wealth quintile report no health insurance and that about one-quarter in the second- and third-lowest wealth quintiles also report no health insurance. The rates of older persons with no health insurance are substantially higher in Mexico City than in the other three cities. In Mexico City the pattern of insurance is similar between the top two wealth quintiles, and the largest change occurs between the bottom two wealth quintiles.

Need is measured using three different variables. As expected, self-reported health varies with wealth in all four cities. The largest increase in fair or poor health is between the top wealth quintile and the next lower one in all the cities (Tables 2–5). There is no relationship between the presence of one or more of seven chronic conditions and wealth in any city except Santiago, and even there the relationship is weak and nonlinear. In most wealth categories, between 70% and 80% of older adults reported one or more chronic conditions. The same lack of variation by wealth was found when the two most common conditions (arthritis and hypertension) were not included in the analysis (data not presented). Limitation in activities of daily living (ADLs), on the other hand, does follow wealth in all the cities. The highest rate of limitations was among the least wealthy, and the lowest rate was among the most wealthy.

While most enabling and need indicators vary by wealth in all four cities, the access indicators show less variation. Achieved access, indicated by a medical visit in the preceding 12 months, varied by wealth in Santiago, Mexico City, and Montevideo, but not in São Paulo (Tables 2–5). Those with the least wealth were less likely to see a doctor in the first three cities, despite those persons' generally higher levels of need. Among those who had had a medical visit in the previous 4 months, process indicators of equity for the most recent visit varied by wealth within cities. More wealth was associated with lower rates of access barriers in availability (over 30 minutes to get to their doctor) only in Montevideo, where the two wealthiest groups were least likely to report long travel times. Barriers in accessibility (30 days or more wait for an appointment) varied by wealth in all four cities, although in Mexico City long waits for an appointment were reported most by the wealthier groups, and in Montevideo the middle wealth group was the most likely to report long waits. Acceptability (wait in the doctor's office) varied with wealth in São Paulo, Santiago, and Montevideo. In all three cities the wealthiest were least likely to have long waits in the office.

Montevideo reported the lowest overall rate of self-assessed fair or poor health (39%), followed by São Paulo (54%), Santiago (62%), and Mexico City (69%) (all pairwise comparisons of cities significant, $P \leq 0.001$). Older persons in São Paulo, Santiago,

TABLE 2. Socioeconomic status, health status, and access to care, persons age 60 and over, for each wealth indicator quintile, São Paulo, Brazil, 1999

Indicators	Bottom fifth of asset index (%)	Next fifth of asset index (%)	Middle fifth of asset index (%)	Next fifth of asset index (%)	Top fifth of asset index (%)	All older persons (%)
Enabling indicators						
Reports having enough money for daily expenses[a]	17.9	25.1	29.0	34.0	50.8	31.5
Less than complete primary school education, household head[a]	91.1	85.5	77.8	72.3	45.1	74.2
Health insurance:[c]						
Public	79.2	62.4	56.5	44.7	24.7	53.4
Private	13.3	27.6	34.3	46.3	62.0	36.8
Other	4.0	6.5	7.8	6.4	10.1	7.0
None	3.5	3.6	1.4	2.6	3.2	2.8
Need indicators						
Self-reported health fair or poor[a]	64.1	60.1	55.0	53.7	37.2	53.9
One or more of seven chronic conditions	74.9	78.1	77.0	78.0	72.7	6.1
Any activity of daily living limitations[b]	24.8	20.7	17.5	17.3	15.6	19.2
Access indicators						
No medical visit in past 12 months	18.3	15.6	14.7	17.5	17.2	16.7
Primary care over 30 min away, last visit	25.1	31.3	24.7	31.4	23.8	27.2
Wait 30 days or more for appointment, last visit[a]	32.2	24.9	20.3	18.9	10.4	21.2
Wait over 1 hour to be seen in doctor's office, last visit[a]	23.0	28.6	18.0	20.6	14.6	20.9

Source: SABE 1999, São Paulo, Brazil.
[a] $P < 0.001$ for unequal distribution across wealth categories.
[b] $P < 0.01$ for unequal distribution across wealth categories.
[c] $P < 0.001$ for unequal distribution of insurance types across wealth categories.

TABLE 3. Socioeconomic status, health status, and access to care, persons age 60 and over, for each wealth indicator quintile, Santiago, Chile, 1999

Indicators	Bottom fifth of asset index (%)	Next fifth of asset index (%)	Middle fifth of asset index (%)	Next fifth of asset index (%)	Top fifth of asset index (%)	All older persons (%)
Enabling indicators						
Reports having enough money for daily expenses[a]	15.5	22.8	26.1	42.9	54.4	32.3
Less than complete primary school education, household head[a]	62.5	46.9	39.6	26.7	10.5	37.2
Health insurance:[d]						
General public	77.3	81.0	78.8	79.8	60.3	79.5
Private	1.6	5.0	3.2	5.4	25.7	8.2
Military	4.0	1.6	4.0	7.0	3.5	4.0
None	17.1	12.4	14.0	7.8	10.5	12.3
Need indicators						
Self-reported health fair or poor[b]	67.6	71.3	68.5	57.9	45.1	61.9
One or more of seven chronic conditions[b]	75.0	86.0	81.6	73.0	76.6	78.2
Any activity of daily living limitations[c]	21.3	21.7	24.0	18.1	12.1	19.4
Access indicators						
No medical visit in past 12 months[c]	31.7	19.8	24.3	30.9	30.0	27.3
Primary care over 30 minutes away, last visit	12.4	19.3	19.4	18.9	19.4	18.2
Wait 30 days or more for appointment, last visit[b]	23.7	23.8	27.6	22.4	9.5	21.0
Wait over 1 hour to be seen in doctor's office, last visit[a]	38.5	38.5	28.8	38.8	17.5	32.1

Source: SABE 1999, Santiago, Chile.
[a] $P < 0.001$ for unequal distribution across wealth categories.
[b] $P < 0.05$ for unequal distribution across wealth categories.
[c] $P < 0.01$ for unequal distribution across wealth categories.
[d] $P < 0.01$ for unequal distribution of insurance types across wealth categories.

and Montevideo reported statistically similar levels of one or more chronic conditions (76%, 78%, and 77%), while fewer older persons in Mexico City reported any chronic conditions (68%, $P < 0.001$). The overall rates of difficulty with any ADLs were statistically similar in all four cities (17%–20%).

Overall, Santiago had the highest proportion of older persons who reported no medical visit in the preceding 12 months (27%, $P < 0.001$ with São Paulo and Mexico City; the difference with Montevideo was not statistically significant). Montevideo had the next

TABLE 4. Socioeconomic status, health status, and access to care, persons age 60 and over, for each wealth indicator quintile, Mexico City, Mexico, 1999

Indicators	Bottom fifth of asset index (%)	Next fifth of asset index (%)	Middle fifth of asset index (%)	Next fifth of asset index (%)	Top fifth of asset index (%)	All older persons (%)
Enabling indicators						
Reports having enough money for daily expenses[a]	25.9	43.6	52.2	57.2	76.6	51.7
Less than complete primary school education, household head[a]	76.4	58.4	50.0	40.4	23.1	49.4
Health insurance:[e]						
General public	40.9	60.9	50.4	63.2	59.9	55.2
Other public	10.3	9.4	24.8	19.7	20.2	17.0
Other	0.4	1.3	1.6	3.0	6.6	2.5
None	48.3	28.3	23.3	14.1	13.2	25.4
Need indicators						
Self-reported health fair or poor[a]	72.8	76.7	77.5	69.2	52.0	69.5
One or more of seven chronic conditions	62.1	71.6	69.5	68.8	68.0	68.0
Any activity of daily living limitations[b]	26.0	19.0	21.9	19.8	12.2	19.6
Access indicators						
No medical visit in past 12 months[c]	25.1	19.4	17.4	21.4	20.7	20.8
Primary care over 30 minutes away, last visit	27.2	27.3	27.7	28.4	22.7	26.4
Wait 30 days or more for appointment, last visit[d]	21.9	28.9	21.9	31.6	31.8	27.1
Wait over 1 hour to be seen in doctor's office, last visit	20.4	19.5	25.7	24.1	23.5	22.5

Source: SABE 1999, Mexico City, Mexico.
[a] $P < 0.001$ for unequal distribution across wealth categories.
[b] $P < 0.01$ for unequal distribution across wealth categories.
[c] Chi-square $P < 0.05$ for unequal distribution across wealth categories.
[d] Chi-square $P < 0.05$ for comparison between quintiles 1, 2, and 3 combined versus quintiles 4 and 5 combined.
[e] $P < 0.001$ for unequal distribution of health insurance types across wealth categories.

TABLE 5. Socioeconomic status, health status, and access to care, persons age 60 and over, for each wealth indicator quintile, Montevideo, Uruguay, 1999

Indicators	Bottom fifth of asset index (%)	Next fifth of asset index (%)	Middle fifth of asset index (%)	Next fifth of asset index (%)	Top fifth of asset index (%)	All older persons (%)
Enabling indicators						
Reports having enough money for daily expenses[a]	19.0	32.1	42.5	48.6	69.8	42.4
Less than complete primary school education, household head[a]	70.7	50.9	48.3	29.9	19.7	43.9
Health insurance:[c]						
Public	62.9	37.9	27.5	17.6	7.7	30.4
Private	27.3	56.1	61.9	76.3	85.6	61.8
Other	4.0	5.6	8.8	5.8	5.3	5.9
None	5.8	0.4	1.9	0.4	1.4	1.9
Need indicators						
Self-reported health fair or poor[a]	50.4	38.2	41.1	36.6	27.9	38.9
One or more of seven chronic conditions	78.3	76.1	82.4	75.9	73.5	77.4
Any activity of daily living limitations[b]	18.8	20.0	21.0	14.4	11.3	17.3
Access indicators						
No medical visit in past 12 months[b]	31.4	24.1	23.2	17.6	21.9	23.6
Primary care over 30 min away[b]	23.6	27.5	26.2	15.6	12.9	21.3
Wait 30 days or more for appointment[a]	6.5	11.6	21.2	12.3	8.4	12.5
Wait over 1 hour to be seen in doctor's office[b]	25.6	20.0	15.2	12.3	9.6	16.0

Source: SABE 1999, Montevideo, Uruguay.
[a] $P < 0.001$ for unequal distribution across wealth categories.
[b] $P < 0.01$ for unequal distribution across wealth categories.
[c] $P < 0.001$ for unequal distribution of health insurance types across wealth categories.

highest proportion with no medical visit in the preceding 12 months (24%, $P < 0.001$ with São Paulo), followed by Mexico City (21%, $P < 0.05$ with São Paulo and Santiago), and São Paulo (17%, $P < 0.05$ with all other cities).

The highest rates of older persons who reported a long travel time to their doctor for the last visit in the previous four months were in São Paulo and Mexico City (27% and 26%, respectively; $P < 0.05$ with Santiago and

Montevideo), while Montevideo and Santiago were statistically similar (21% and 18%, respectively).

The highest proportion of older persons who reported long delays in appointments was in Mexico City (27%, $P < 0.05$ with the other cities), with São Paulo and Santiago having a somewhat lower rate (21%), and Montevideo having the lowest (12%, $P < 0.05$ with the other cities). Long wait times in the doctor's office were most often reported in Santiago (32%, $P < 0.001$ with the other cities), with Mexico City and São Paulo having similar rates (23% and 21%, respectively), and Montevideo having the lowest (16%, $P > 0.05$ compared to São Paulo, $P < 0.05$ compared to Mexico City and Santiago).

At the bivariate level the pattern of access indicator levels was not consistent among the four cities. Montevideo had the best overall mix of access indicators, with the lowest levels of waits for an appointment and wait in the doctor's office. São Paulo had the lowest rate of no medical visits, but was tied for the highest rate for long travel times. Santiago and Mexico City had an unfavorable mix of rankings. Santiago had the highest rate for no medical visits and for long waits at the doctor's office, but the lowest for long travel times. Mexico City had the highest rate of long waits for an appointment, was tied for highest on long travel time to the doctor, and had the second highest wait in the doctor's office.

To examine the effect of enabling characteristics of wealth and health insurance on access to care, independent of predisposing and need factors that are also associated with access, we estimated logistic regressions for the achieved access indicator and the three process indicators of access for each city.

In all four cities, women were more likely to have had a medical visit, after controlling for differences in other predisposing, need, and enabling factors (Table 6–9). Age was related to a medical visit in the preceding 12 months in Santiago and Uruguay, with the youngest age group (ages 60–69) more likely than an older age group to have reported no visits.

TABLE 6. Logistic regression of four indicators of access to care, persons age 60 and over, São Paulo, Brazil, 1999

		For most recent medical visit (within last 4 mo)		
	No medical visit past 12 mo (odds ratio, (OR))	Over 30 min travel to last visit (OR)	One month or more wait for appointment (OR)	Over 60 min wait to be seen at office (OR)
Female (vs. male)	.67[a]	1.16	1.00	1.04
Age (reference (ref) = 60–69)				
70–79	1.04	.97	1.08	.86
80 & over	.99	.58[b]	.69	.81
Educ. household head (ref = any secondary)				
No education	1.22	1.23	1.09	1.87[b]
Incomplete primary education	1.10	1.53[c]	1.24	1.38
Completed primary education	1.46	1.77[c]	.54	.74
Wealth: asset index (ref = top fifth)				
Lowest fifth	1.16	.62[b]	1.86[b]	.62[d]
20–39%	.94	.84	1.65[d]	1.18
40–59%	.83	.69	1.42	.70
60–79%	1.18	1.11	1.45	.99
Automobile at home (vs. none)	NA[f]	.56[a]	NA	NA
Health insurance (ref = private)				
Public insurance	1.48[d]	.82[e]	4.07[c]	5.67[c]
Other/None	1.75[d]	1.39[e]	2.54[d]	2.80[d]
Self-reported health fair/poor vs. excellent/very good/good	.54[c]	1.08	2.11[c]	1.38[a]
Any chronic conditions (vs. none)	.31[c]	.96	1.09	.92
Difficulty with any ADL[g] (vs. none)	.40[c]	1.11	1.14	1.06
Model fitting statistics				
Constant	.54[d]	.42[d]	.03[c]	.06[c]
χ^2, degrees of freedom	212, 15	39, 16	154, 15	145, 15
$P <$	0.0001	0.001	0.0001	0.0001
Cox & Snell pseudo-R^2	.10	.03	.11	.10

Source: SABE 1999, São Paulo, Brazil.

[a] $P < 0.001$ for variable compared to reference category.

[b] $P < 0.05$ for variable compared to reference category.

[c] $P < 0.01$ for variable compared to reference category.

[d] $P < 0.1$ for variable compared to reference category.

[e] $P < 0.01$ for public insurance versus other/none; these variables are not statistically different from the reference category.

[f] NA = not applicable, therefore not included in model.

[g] Reported difficulty with one or more activities of daily living (bathing, dressing, eating, transferring in and out of bed, using the toilet, and walking across a room).

Socioeconomic status was associated with medical visits independently of other variables (Tables 6–9). The educational achievement of the household head was associated with any doctor visit in the past 12 months, net of other predictors, in all the cities except São Paulo. In Montevideo, older persons in households headed by those with incomplete primary school education level were most likely to have had no doctor visits in the past 12 months. In Santiago and Mexico City, households headed by someone with the highest level of education (any secondary school) were most likely to have not seen a doctor in the past 12 months. In all the cities except São Paulo, the lowest-wealth group was the most likely to go without a medical visit, when compared to the highest-wealth group, after controlling for need and other variables. Insurance status was a strong predictor of physician use in all four cities. Compared to private insurance, public insurance was associated with a higher rate of no medical visits in São

TABLE 7. Logistic regression of four indicators of access to care, persons age 60 and over, Santiago, Chile, 1999

		For most recent medical visit (within last 4 mo)		
	No medical visit past 12 mo (odds ratio, (OR))	Over 30 min travel to last visit (OR)	One month or more wait for appointment (OR)	Over 60 min wait to be seen at office (OR)
Female (vs. male)	.54[a]	1.17	.94	.81
Age (reference (ref) = 60–69)				
70–79	.68[a]	1.00	.90	.81
80 & over	.83	.46[c]	.73	1.74[c]
Educ. household head (ref = any secondary)				
No education	.89	.40	1.30	.88
Incomplete primary education	.73[b]	1.67[b]	.83	1.58[b]
Completed primary education	.67[c]	1.50	2.49[d]	1.91[c]
Wealth: asset index (ref = top fifth)				
Lowest fifth	1.65[c]	.42[c]	3.16[c]	2.75[d]
20–39%	.91	.79	2.95[d]	2.69[d]
40–59%	1.14	.72	3.05[d]	1.64
60–79%	1.21	.96	2.79[c]	2.63[d]
Automobile at home (vs. none)	NA[e]	.59[b]	NA	NA
Health insurance (ref = private)				
General public/military	2.16[d]	.52	2.68	.72
None	2.31[c]	.47	1.71	.68
Self-reported health fair/poor vs. excellent/very good/good	.28[a]	.81	.80	1.32
Any chronic conditions (vs. none)	.34[d]	1.02	.61[b]	.60[c]
Difficulty with any ADLs[f] (vs. none)	.59[c]	1.55	.96	.75
Model fitting statistics				
Constant	1.46	.50	.07[a]	.36[c]
χ^2, degrees of freedom	253, 15	26, 16	40, 15	49, 15
$P <$	0.0001	0.05	0.0001	0.0001
Cox & Snell pseudo-R^2	.18	.04	.08	.08

Source: SABE 1999, Santiago, Chile.
[a] $P < 0.001$ for variable compared to reference category.
[b] $P < 0.1$ for variable compared to reference category.
[c] $P < 0.05$ for variable compared to reference category.
[d] $P < 0.01$ for variable compared to reference category.
[e] NA = not applicable, therefore not included in model.
[f] Reported difficulty with one or more activities of daily living (bathing, dressing, eating, transferring in and out of bed, using the toilet, and walking across a room).

Paulo and Santiago, but a lower rate in Montevideo. Having no insurance increased the odds of not having a medical visit in all the cities.

Health status was a consistent predictor of a medical visit in the preceding 12 months. After controlling for other variables, we found that self-assessed fair or poor health, any chronic condition, and difficulty with any ADL were each independently associated with a lower odds of no doctor visits. That is, those with health problems were more likely to go to the doctor. In sum, insurance and socioeconomic status had significant effects on receipt of a medical visit in the preceding 12 months, even after controlling for need and predisposing variables.

Among those with a medical visit in the previous four months, a different pattern was evident for the process indicators of health care access: travel over 30 minutes to last medical visit (availability), one month or more wait for last appointment (accessibility), and over one hour wait to be seen at the doctor's office (acceptability).

Few predisposing or need variables were associated with these measures across all four cities, and few consistent patterns emerged from the scattered associations. In three cities (São Paulo, Santiago, and Mexico City), the oldest group was least likely to have long travel times to the doctor. Poor health (self-reported fair or poor health, any chronic conditions, or difficulty with any ADLs) increased the odds of access problems in one or more indicators in all the cities. In Santiago, having a chronic condition reduced the odds of having reported an access problem.

Enabling characteristics, on the other hand, were more consistently associated with the process indicators of access to health care. Education of the household head was significantly associated with all three indicators in Santiago, with two indicators in Montevideo, and with one indicator in São Paulo (Tables 6–9). In all cases, older persons in households headed by those with any secondary education had the lowest rate of poor access indicators. Wealth was associated with all three process indicators in São Paulo and Santiago, and with one in Montevideo. Having an automobile in the household reduced the odds of long travel time in São Paulo, Santiago, and Montevideo. Health insurance was associated with all three process indicators in São Paulo, Mexico City, and Montevideo.

To test the effect of insurance on inequality in access by the wealth groups, we examined each access indicator in equations identical to those described above, but without controlling for insurance (data not shown). In Santiago and Mexico City there was no change in the overall pattern of wealth effects between the regression without insurance and the regression with insurance. In São Paulo and Montevideo the size and number of significant wealth coefficients decreased when health insurance was added to the model.

Health insurance type and source of care were similar in São Paulo and Montevideo, but there was less overlap in Santiago and Mexico City. Therefore, for Santiago and Mexico City we estimated additional logistic

regression models that included source of care. A variable was added indicating whether the older person visited a private facility (39% of visits in Santiago, 30% in Mexico City). In Mexico City all other providers were combined, while in Santiago the remainder were divided between public providers (primarily public hospitals, 21% of visits) and municipal clinics (40% of visits). Adding the source of care did not change the pattern of significance of other variables in most equations, but it was strongly significant itself in most process indicators. In Santiago, public providers (mostly public hospitals) had the worst access odds for all three process indicators. Compared to the older persons' experience with public providers, a long travel time was less likely at municipal clinics (odds ratio (OR) = 0.44, $P < 0.05$) and at private providers (OR = 0.59, $P < 0.1$). Long waits for an appointment were less likely at private providers (OR = 0.16, $P < 0.001$) and at municipal clinics (OR = 0.45, $P < 0.01$). Long waits in the doctor's office were less likely at private providers (OR = 0.13, $P < 0.001$) but similar at municipal clinics (OR = 1.13, $P > 0.1$). When provider type was included in the equation for long waits at the doctor's office, both public insurance and no insurance became less likely to have long waits than did private insurance. The insurance parameters did not change when provider type was added to distance or to wait for an appointment. In Mexico City the type of provider did not predict travel time net of other variables. However, older persons using private providers (compared to other providers, primarily general public and other public) were less likely to have had long waits for appointments (OR = 0.28, $P < 0.001$), and were also less likely to have had long waits at the doctor's office (OR = 0.28, $P < 0.001$). When provider type was included in the process indicator equations for Mexico, insurance remained a significant predictor for travel time and appointment wait, but insurance was no longer significant for waits in the doctor's office. Overall, private providers in both Santiago and Mexico City had better process indicators than did public providers in most indicators, and the addition of provider type changed the effect of insurance type in only a few indicators.

TABLE 8. Logistic regression of four indicators of access to care, persons age 60 and over, Mexico City, Mexico, 1999

		For most recent medical visit (within last 4 mo)		
	No medical visit past 12 mo (odds ratio, (OR))	Over 30 min travel to last visit (OR)	One month or more wait for appointment (OR)	Over 60 min wait to be seen at office (OR)
Female (vs. male)	.68[a]	.87	.78	1.09
Age (reference (ref) = 60–69)				
70–79	.86	1.34	.93	.93
80 & over	.79	.58[c]	.93	.54[c]
Educ. household head (ref = any secondary)				
No education	.66	1.04	.82	.99
Incomplete primary education	.76	.91	1.11	1.14
Completed primary education	.60[b]	1.20	.95	.80
Wealth: asset index (ref = top fifth)				
Lowest fifth	1.63[b]	1.02	.84	.91
20–39%	1.39	1.30	.78	.81
40–59%	1.21	1.23	.65	1.07
60–79%	1.30	1.34	.90	1.04
Automobile at home (vs. none)	NA[f]	.95	NA	NA
Health insurance (ref = other public)				
General public insurance	.93	.64[e]	4.40[d]	.62[b]
Other/None	2.39[d]	1.18[e]	1.01	.44[b]
Self-reported health fair/poor vs. excellent/very good/good	.54[d]	.78	.96	1.34
Any chronic conditions (vs. none)	.30[d]	1.08	3.72[d]	.95
Difficulty with any ADLs[g] (vs. none)	.53[a]	2.02[a]	.90	.84
Model fitting statistics				
Constant	.91	.39[b]	.07[d]	.42[b]
χ^2, degrees of freedom	148, 15	28, 16	86, 15	17, 15
$P <$	0.0001	0.02	0.0001	0.29
Cox & Snell pseudo-R^2	.12	.04	.12	.03

Source: SABE 1999, Mexico City, Mexico.
[a] $P < 0.01$ for variable compared to reference category.
[b] $P < 0.05$ for variable compared to reference category.
[c] $P < 0.1$ for variable compared to reference category.
[d] $P < 0.001$ for variable compared to reference category.
[e] $P < 0.01$ for general public insurance versus other/none; these variables are not statistically different from the reference category.
[f] NA = not applicable, therefore not included in model.
[g] Reported difficulty with one or more activities of daily living (bathing, dressing, eating, transferring in and out of bed, using the toilet, and walking across a room).

When combining all four cities in a series of logistic regressions, the level of access continued to differ among the cities even after controlling for the differences in predisposing, need, and enabling variables among them. Compared to older persons in São Paulo, the odds of having no medical visits was significantly higher ($P < 0.05$) in Santiago (OR = 2.2), Mexico City (OR = 1.3), and Montevideo (OR = 1.6). Compared with the experience of older persons in São Paulo, the odds of having long travel times to the doctor were similar in Mexico City and significantly lower ($P < 0.001$) in both Santiago (OR = 0.59) and Montevideo (OR = 0.66). Compared to São Paulo, long waits for appointments were similar in Mexico City and less likely ($P < 0.05$) in Santiago (OR = 0.72) and Montevideo (OR = 0.69). And long waits in the doctor's office were most common

TABLE 9. Logistic regression of four indicators of access to care, persons age 60 and over, Montevideo, Uruguay, 1999

		For most recent medical visit (within last 4 mo)		
	No medical visit past 12 mo (odds ratio, (OR))	Over 30 min travel to last visit (OR)	One month or more wait for appointment (OR)	Over 60 min wait to be seen at office (OR)
Female (vs. male)	.72[a]	.73	.50[b]	1.21
Age (reference (ref) = 60–69)				
70–79	.90	1.17	.74	.85
80 & over	.57[a]	.81	1.11	1.10
Educ. household head (ref = any secondary)				
No education	1.31	1.63	1.09	.91
Incomplete primary education	1.36[c]	2.38[b]	.81	1.32
Completed primary education	.99	1.58	1.00	1.82[a]
Wealth: asset index (ref = top fifth)				
Lowest fifth	2.79[d]	.75	.33[a]	1.31
20–39%	1.45	1.19	.97	1.25
40–59%	1.49[c]	1.18	2.18[a]	1.09
60–79%	.88	.84	1.28	.91
Automobile at home (vs. none)	NA[e]	.59[c]	NA	NA
Health insurance (ref = private)				
Public insurance	.67[a]	1.52[c]	3.62[d]	3.28[d]
Other/None	1.77[a]	1.63	2.91[a]	1.85
Self-reported health fair/poor vs. excellent/very good/good	.32[d]	1.17	.99	1.17
Any chronic conditions (vs. none)	.26[d]	1.06	1.02	1.23
Difficulty with any ADLs[f] (vs. none)	.68[c]	.98	2.05[b]	1.11
Model fitting statistics				
Constant	1.04	.15[d]	.11[d]	.05[d]
χ^2, degrees of freedom	246, 15	44.7, 16	58.6, 15	52.0, 15
$P <$	0.0001	0.0001	0.0001	0.0001
Cox & Snell pseudo-R^2	.16	.06	.07	.07

Source: SABE 1999, Montevideo, Uruguay.
[a] $P < 0.05$ for variable compared to reference category.
[b] $P < 0.01$ for variable compared to reference category.
[c] $P < 0.1$ for variable compared to reference category.
[d] $P < 0.001$ for variable compared to reference category.
[e] NA = not applicable, therefore not included in model.
[f] Reported difficulty with one or more activities of daily living (bathing, dressing, eating, transferring in and out of bed, using the toilet, and walking across a room).

in Santiago (OR = 1.52 with São Paulo, $P < 0.01$), with Mexico City and Montevideo having similar odds of long waits as in São Paulo and lower odds than in Santiago. In sum, in the multivariate analysis, Santiago presented the worst levels in two access indicators and was tied for best in the other two indicators. São Paulo and Mexico City were the most similar, with relatively low rates of older persons who did not have a medical visit during the preceding 12 months, but having relatively high rates of long travel time and long waits for an appointment.

DISCUSSION

This study examined equity in access to health care for persons age 60 and over in São Paulo, Brazil; Santiago, Chile; Mexico City, Mexico; and Montevideo, Uruguay. Equity of access to health care is critical for older people because they are the most dependent of any age group on medical care for maintaining a decent quality of life, and because they are the heaviest users of medical services. Equitable access is defined as the use of services based only on need (achieved access) and processes of care indicators that are not associated with predisposing, enabling, or need variables. Our hypotheses regarding equity of access to care and older adults were that: (1) the level of access to care in each country would reflect the wealth (GDP per capita, percent elders in poverty, medical spending per person) of each country, (2) inequities in access to health care within countries would correspond to inequalities in the distribution of economic resources, and (3) inequities in access would be mediated by government health care programs and consequently related primarily to having any insurance coverage in Mexico City, and to type of insurance coverage and relative level of wealth in the other cities. If access to health care for the elderly followed national resources, we would expect Uruguay to have the best access and Brazil the worst. Although there is no absolute leader in access to care, Montevideo has the best overall mix of indicators, with all adjusted *process* indicators as good as or better than those in the other cities. Uruguay, in the year studied, had the highest GDP per capita by a small margin, spent the most per capita for medical care by a large margin, and had the lowest rate of older persons in poverty by a large margin. In addition, over 10% of medical visits in Uruguay were in the elder's home, reducing wait times in most categories. Contrary to expectations, Santiago has an overall mixed pattern of access to care, despite Chile being second after Uruguay in terms of GDP per capita, poverty of older persons, and medical care spending per capita. The gap in Santiago's overall performance may be a result of the operation of its municipal primary care system, which serves most persons with public insurance. In 1999 about 40% of all older persons used municipal clinics, most of which required an in-person visit to make an appointment. This likely resulted in the unusually high rate of long waits to be seen at the doctor's office, particularly for those who remained after making an appointment to be seen that day. (Although a telephone appoint-

ment system was added in 2000, complaints continued about the difficulty of making appointments, and heavy use of the system during the winter influenza season further slowed the system (37)). These waits for municipal providers for those with public insurance, combined with high out-of-pocket costs in the private system, may explain Santiago's having the worst rate of any medical visits in the past 12 months, even after controlling for medical need as well as predisposing and enabling factors. Brazil, with the lowest GDP and medical spending per person, was the most likely to have had older persons with a medical visit, and had average levels of indicators of process access. Brazil did have total social spending as a percent of GDP and elderly poverty rates that were similar to those for Chile. São Paulo's better-than-expected performance in medical visits is likely the result of a relatively high rate of private insurance, combined with a high rate of any medical care visits for those with private insurance. It may also be partly the result of different patterns of medical care practice and popular culture that encourage more frequent medical visits for preventive services among older persons in all insurance groups. In sum, the level of access to care in each of the four cities was influenced partly by national wealth and spending on health care, but also significantly by the structure and operation of the medical care system in each city.

The pattern of equity of access within each country is also more complicated than expected. Based on national and urban rates of economic inequality, Montevideo was expected to have the fewest inequities in access, and São Paulo the most. Differences by wealth exist in the bivariate analysis in one or more process access indicators in all of the cities, with access problems being most common among the poorest, except in Mexico City. Contrary to expectations, Montevideo has the most bivariate associations between wealth and access problems. This bivariate analysis supports the prediction that access to health care is typically associated with economic position. Because the need for services and predisposing characteristics vary by wealth category, multivariate analyses are needed to understand the true relationship.

In the multivariate analysis, Montevideo continues to have an association between no medical visits and less wealth and education. The groups in Montevideo with the most wealth and the most education experienced the best achieved access, suggesting that low economic inequality and a good level of access to care for those who do see the doctor do not guarantee low access inequities in achieved access. This pattern is ameliorated in Montevideo by the fact that those with public health insurance (which is more common among the low-wealth groups) had better access in the medical visit indicator than those with private insurance. In contrast, medical visits in São Paulo are *not* associated with wealth or education, after controlling for need, predisposing, and other enabling factors. Only insurance type predicts no medical visits, with public insurance and no insurance (compared to private insurance) having less achieved access.

In both Santiago and Mexico City, elders in the lowest-wealth group and elders with no health insurance have the worst odds of obtaining a medical visit, independent of need, predisposing, and other enabling factors. This is particularly consequential in Mexico City, where one-quarter of older persons have no insurance. Also in both cities, those whose household head had completed primary education had the best access. Those with public insurance in Santiago had lower achieved access than did those with private insurance. This intermediate pattern of inequity in achieved access for older persons is consistent with the intermediate levels of economic inequity in each country.

The three other indicators of equity examined are related to the process of care. While São Paulo unexpectedly had little inequity in the receipt of a medical visit, older persons with a medical visit in São Paulo experience more economic inequities in availability (travel over 30 minutes to last visit), accessibility (wait of one month or more for an appointment), and acceptability (wait of over 60 minutes in the doctor's office). Access to an automobile cuts the odds of a long travel time to medical care almost in half, and the highest-education group is the least likely to face long travel times. On the other hand, those in the lowest-wealth group had a lower risk of long travel times. It is likely that the placement of clinics in poor neighborhoods contributes to the improved travel times for the lowest-income group, while other resources are important for those at other income levels. Those in the lowest-wealth group in São Paulo also have the lowest risk of a long wait in the doctor's office, but the highest risk for a long wait for an appointment. Relative to private insurance, public insurance reduces access in two process indicators, and having no insurance reduces access in all three process indicators. Overall, then, as expected, process indicators of access to care more often favor those with more resources, except where specific medical system characteristics, such as the placement of clinics, may intervene. São Paulo also demonstrates the clearest effect of health insurance changing wealth inequalities in access. When health insurance is not accounted for, the size and significance of wealth effects increase further for no medical visit, long wait for an appointment, and long wait in the doctor's office, especially for the lowest-wealth group compared to the highest-wealth group.

The indicators of process equity would be expected to be most equitable in Montevideo. However, in that city, long travel time is less likely for those with an automobile, those in the highest-education group, and those with private insurance, all of which are resource-related enabling characteristics. Compared to public insurance, private insurance also improves access in reducing the odds of long waits for an appointment and long waits in the doctor's office. Wealth is associated with process indicators in Montevideo only for long waits for appointments, where the poorest group

does the best, and the middle-wealth group does the worst. This overall pattern of inequities in process indicators of access in Montevideo is not substantially better than it is in São Paulo, even though economic inequality in Uruguay is much lower than it is in Brazil.

Mexico City presents a unique pattern of process indicators of access to health care for older persons. In Mexico City the only enabling variable that predicts process indicators is health insurance, and even there the pattern varies by indicator. Long travel time is more likely for the uninsured than those with general public insurance, long waits for appointments are most likely among those with general public insurance, and long waits at the doctor's office are most likely for those with the other public insurance. Even though about one-quarter of older persons with the general public insurance (Mexican Social Security Institute (IMSS)) and other public insurance (primarily the State Workers Institute (ISSSTE)) use private providers, this does not create a wealth effect or eliminate the insurance effect. The effect of wealth on private provider use may be reduced since half of those using private providers (whether they have IMSS, ISSSTE, or no insurance) have their care paid for by children or other family members whose resources may not be captured by the elder's household wealth index. After controlling for all other predictors, provider type is not associated with long travel time, but private provider is associated with a lower odds of a long wait for an appointment and a long wait at the office. This suggests that the distribution of different types of health insurance across different wealth strata among older persons did not improve equity of access among the different wealth groups, but may instead have created inequities *within* each wealth group, based on the type of insurance held. Since each insurance type is well represented in each wealth stratum, Mexico presents a case of moderate economic inequality in the country that is not mirrored in process indicators of access.

Santiago is the inverse of Mexico City in its pattern of process indicators of access. Health insurance type is not associated with any of the process indicators of access, while wealth and education are associated with all three indicators. For all three process indicators the wealthiest group and the highest-education group have better access. The only exception is that the lowest-wealth group is less likely to have long travel times, after controlling for automobile use. This pattern is most likely related to the structure of the public health insurance system, which covers the majority of older persons in every wealth category. The public insurance system provides free care in municipal clinics, which are often located in low-income neighborhoods. Public insurance also provides subsidized, but not free, care in the private sector. After controlling for other enabling, need, and predisposing factors, those using private providers had, on average, half the chance of long travel, waits for appointment, and waits in the office. Thus, one-third of older persons with public insurance avoided potential process barriers by using private services and paying the out-of-pocket cost personally. That is, those most capable of taking advantage of private providers were those with more resources. Therefore, while Chile's public insurance has the highest coverage rate of all wealth groups of the four cities studied, its free choice provisions allow economic inequality to translate into inequity in access to care.

In sum, the pattern of inequity in access to health care for older persons within cities is created by the interaction that the pattern of economic inequality has with the design of the health care system. Santiago, with moderate wealth inequality, allows that inequity to persist through its public health insurance system. Montevideo, with comparatively low wealth inequality, also appears to allow inequities to persist with its high rate of private insurance, especially among the highest-wealth group. In contrast, São Paulo, with very high wealth inequality, and Mexico City, with moderate wealth inequality and high elder poverty, both appear to moderate their wealth inequality by having all wealth groups well represented in their pubic insurance schemes and by having similar proportions of each wealth group use public providers. The location of primary care clinics in poor neighborhoods is also an important factor influencing access. In Mexico City the most serious access problem is the large proportion of the older population who do not have any formal insurance coverage.

There are several limitations to our analysis. First, our process indicators of access to care all involved distance and/or time. Data on other factors that influence the ability to obtain needed care were not available or were not comparable in the survey for the four cities. This was true for such factors as financial barriers, the interpersonal skills of the provider, and the patient's perception of the technical quality of the care (10). Second, the data set did not contain information about whether the last visit, which the process measures referred to, was for primary care (more common) or specialist care (less common). Those with worse health status may be more likely to be seeking specialist or rehabilitation care, where there are more access barriers. This could confound health status and access problems even though we controlled for health status in our models. Third, for independent variables we used an indicator of wealth (ownership of household durables) that has been adopted by the World Bank and others, but it is still only a proxy for the liquid economic resources needed to pay for medical care. The use of quintiles may also mask the inequality between the richest 5% of the population and rest of the population in Brazil and other countries with extreme economic inequality (38). Finally, the data were from the largest city in each country, and, given the concentration of medical and other resources in those cities, it is likely that the poor and elderly would have better access to care in those major cities than would similar persons in smaller urban areas and rural areas of the

same countries. Therefore, this analysis should be seen as a best-case scenario in each country, with inequalities likely to be larger in smaller urban areas, and larger still in rural areas.

In terms of our measures, Montevideo had the best overall *level* of access, along with the lowest national levels of economic inequality and the highest percent GDP spending on social programs. Ironically, Montevideo had more inequality in access to health care by wealth and education than did Mexico City, which had the highest rate of uninsured elders in the four cities studied, the highest national levels of poverty among the elderly, the lowest percent of GDP devoted to social programs, and an intermediate level of economic inequality. At the bivariate level, the lowest-wealth quintiles experienced similar access barriers in most indicators in both Montevideo and Mexico City, but the highest-wealth quintile has lower access barriers in Montevideo than it does in Mexico City. Type of insurance modifies this relationship only in Montevideo, where there is also the largest change from public to private insurance. Thus, the relative degree of equity of access in Mexico City may be a function of the generally poor process access among those who use medical services across all wealth groups and insurance types. The inequity in Montevideo is driven by the generally good access experienced by wealthier older persons, who are disproportionately privately insured. This pattern of economic inequality in access is even more prominent in Santiago, where wealth combined with public insurance subsidies allows only some older persons to avoid a long wait time.

Thus, a better *level* of access in a country does not guarantee a better *distribution* of that access. Health systems and health policies appear to mediate both between total national resources and levels of access, as well as between national economic inequality and the equity of access to health services. As countries and international institutions focus on reducing economic inequality in Latin America, our work suggests that economic growth alone does not improve equity of access, and there needs to be attention focused as well on equity of access to health care.

Acknowledgments: This analysis would not have been possible without the contributions of the principal investigators of the SABE project, especially Martha Peláez, Alberto Palloni, Cecilia Albala, Roberto Ham-Chande, Maria Lúcia Lebrão, and Omar Prats. We would also like to thank Pedro Paulo Marín and Rebecca Gonzales for their ongoing support, and the anonymous reviewers for their suggestions. Partial support for this analysis came from PAHO, the Fulbright Foundation, and the California-Mexico Health Initiative (CMHI).

REFERENCES

1. Mackintosh M. Do health care systems contribute to inequalities? In: Leon D, Walt G, eds. Poverty, inequality and health. Oxford: Oxford University Press; 2001. Pp. 175–93.
2. Hoffman K, Centeno MA. The lopsided continent: inequality in Latin America. Annu Rev Sociol. 2003;29:363–90.
3. World Health Organization. The world health report 2000: health systems, improving performance. Geneva: WHO; 2000.
4. Villa M, Rivadeneira L. El proceso de envejecimiento de la población de América Latina y el Caribe: una expresión de la transición demográfica. In: Encuentro latinoamericano y caribeño sobre las personas de edad. Santiago, Chile: Comisión Económica para América Latina y el Caribe; 1999. Pp. 25–58.
5. Pan American Health Organization. Health in the Americas. Washington, D.C.: PAHO; 1998.
6. Alleyne GA. Equity and the goal of Health for All. Rev Panam Salud Publica. 2002;11(5–6): 297–301.
7. Hurst J, Jee-Hughes M. Performance measurement and performance management in OECD health systems. Paris: Organization for Economic Cooperation and Development; 2001. (Labor Market and Social Policy Occasional Papers No. 47; DEELSA/ELSA/WD(2000)8).
8. Bambas A, Casas JA. Assessing equity in health: conceptual criteria. In: Equity & health. Washington, D.C.: Pan American Health Organization; 2001. Pp. 12–21.
9. Andersen RM. Revisiting the behavioral model and access to medical care: does it matter? J Health Social Behav. 1995;36(1):1–10.
10. Wallace SP, Enriquez-Haass V. Disponibilidad, accesibilidad y aceptabilidad en el sistema de atención médica en vías de cambio para los adultos mayores en los Estados Unidos. Rev Panam Salud Publica. 2001; 10(1):18–28.
11. United Nations. World urbanization prospects: the 2003 revision population database [Web site]. Available from: http://esa.un.org/unup/index.asp?panel=2 Accessed 15 May 2004.
12. Comisión Económica para América Latina y el Caribe, Centro Latinoamericano y Caribeño de Demografía. Los adultos mayores en América Latina y el Caribe—datos e indicadores. (Boletín informativo, edición especial con ocasión de la II Asamblea Mundial de Naciones Unidas sobre el Envejecimiento). Santiago, Chile: Naciones Unidas; 2002.
13. World Health Organization. The world health report 2002: reducing risks, promoting healthy life. Geneva: WHO; 2002.
14. United Nations Development Programme. Human development report 2003. New York: Oxford University Press; 2003.
15. Comisión Económica para América Latina y el Caribe. Panorama social de América Latina 2002–2003. Santiago, Chile: Naciones Unidas; 2002.
16. Daly MC, Duncan GJ, Kaplan GA, Lynch JW. Macro-to-micro links in the relation between income inequality and mortality. Milbank Q. 1998;76(3):315–39.
17. World Bank. 2002 world development indicators. Washington, D.C.: World Bank; 2002.
18. Larrañaga O. Distribución de ingresos y crecimiento económico en Chile. Santiago, Chile: Comisión Económica para América Latina y el Caribe; 1999. (Serie Reformas Económicas, No. 35).
19. Baker JL. Uruguay: maintaining social equity in a changing economy. Washington, D.C.: World Bank; 2001. (Report No. 21262).
20. Fiess NM, Verner D. The dynamics of poverty and its determinants: the case of the Northeast of Brazil and its states. Washington, D.C.: World Bank; 2004. (Policy Research Working Paper No. 3259).
21. Larrañaga O. Eficiencia y equidad en el sistema de salud chileno. Santiago: Comisión Económica para América Latina y el Caribe; 1997. (Serie Financiamiento del Desarrollo, No. 49).
22. Pan American Health Organization. Health in the Americas, 2002 edition. Washington, D.C.: PAHO; 2002.
23. Fleury S. Dual, universal, or plural? Health care models and issues in Latin America: Chile, Brazil and Colombia. In: Molina CG, Nuñez del Arco J, eds. Health services in Latin America and Asia. Washington, D.C.:

Inter-American Institute for Social Development, Johns Hopkins University Press; 2001. Pp. 3–36.
24. Medici AC. Financing health policies in Brazil. Washington, D.C.: Inter-American Development Bank; 2002.
25. Chile, Ministerio de Planificación y Cooperación. Situación de la salud en Chile, 2000. Análisis de la VIII Encuesta de Caracterización Socioeconómica Nacional (Casen 2000). Santiago, Chile: MIDEPLAN; 2001.
26. Marín PP, Wallace SP. Health care for the elderly in Chile: a county in transition. Aging Clin Exp Res. 2002;14(4):271–8.
27. Wallace SP. Medical care equity for older persons in Chile: the role of the insurance sector. CEPAL Rev. 2002;78:119–31.
28. México, Instituto Nacional de Estadística, Geografía e Informática. Población usuaria de servicios de salud y su distribución porcentual según tipo de institución para cada sexo y grupo de edad, 2000 [Web site]. Available from: http://www.inegi.gob.mx/est/contenidos/espanol/tematicos/mediano/med.asp?t=msal02&c=3351 Accessed 31 October 2003.
29. Pan American Health Organization. Profile of the health services system, Mexico. Washington, D.C.: PAHO, Division of Health Systems and Services and Development; 2002.
30. Organización Panamericana de la Salud. Perfil del sistema de servicios de salud de Uruguay. 2da edición. Washington, D.C.: OPS; 2002.
31. Peláez M, Palloni A, Albala C, Alfonso JC, Ham-Chande R, Hennis A, et al. Survey on Aging, Health and Wellbeing, 2000. Washington, D.C.: Pan American Health Organization; 2003.
32. Casas JA, Dachs JNW, Bambas A. Health disparities in Latin America and the Caribbean: the role of social and economic determinants. In: Equity & health. Washington, D.C.: Pan American Health Organization; 2001. Pp. 22–49.
33. Ostir GV, Carlson JE, Black SA, Rudkin L, Goodwin JS, Markides KS. Disability in older adults. 1: prevalence, causes, and consequences. Behav Med. 1999;24(4):147–56.
34. Filmer D, Pritchett L. Estimating wealth effects without income or expenditure data—or tears: educational enrollment in India. Washington, D.C.: Development Economics Research Group, The World Bank; 1998. (World Bank Policy Research Working Paper No. 1994).
35. Filmer D, Pritchett L. The effect of household wealth on educational attainment: evidence from 35 countries. Pop Dev Rev. 1999;25(1): 85–120.
36. Gwatkin D, Johnson K, Wagstaff A, Rutstein S, Pande R. Socio-economic differences in health, nutrition, and population in Colombia. Washington, D.C.: The World Bank, Health and Population Advisory Service; 2002.
37. Letelier L. Gobierno admite colapso de sistema telefónico para pedir hora en consultorios. La Tercera. 2004 December 18.
38. Portes A, Hoffman K. Latin American class structures: their composition and change during the neoliberal era. Lat Am Res Rev. 2003; 38(1):41–85.

Manuscript received 29 June 2004. Revised version accepted for publication 25 February 2005.

RESUMEN

La equidad del acceso de adultos mayores a la atención de salud en cuatro grandes ciudades latinoamericanas

Objetivos. Determinar si los adultos mayores tienen un acceso equitativo a los servicios de salud en cuatro grandes ciudades latinoamericanas y si las faltas de equidad observadas reflejan los patrones de desigualdad económica en cada uno de los países estudiados.

Métodos. Se obtuvieron datos de personas de 60 años de edad o mayores en las ciudades de São Paulo, Brasil (n = 2 143); Santiago, Chile (n = 1 301); México, D.F., México (n = 1 247); y Montevideo, Uruguay (n = 1 450) en el transcurso de un proyecto conjunto encabezado por la Organización Panamericana de la Salud. Para nuestro estudio se examinaron tres indicadores de procesos relativos al acceso (disponibilidad, accesibilidad y aceptabilidad) y un indicador de la utilización real de los servicios de salud (consultas a un médico en los últimos 12 meses) según quintil económico, tipo de seguro médico, escolaridad, estado de salud y características demográficas.

Resultados. En cada una de las cuatro ciudades se observó diferente grado de acceso a la atención sanitaria, y los niveles de acceso a dicha atención mostraron solamente una ligera asociación con la riqueza nacional per cápita. Dado que el grado de desigualdad económica es relativamente acentuado en Brasil y menor en el Uruguay, las personas mayores en São Paulo tuvieron un acceso más equitativo del esperado a la atención de salud, mientras que las personas de edad en Montevideo tuvieron un acceso menos equitativo del esperado. La falta de equidad en México, D.F., obedeció principalmente a la poca cobertura del seguro médico. En Santiago, la falta de equidad mostró una mayor vinculación con el estrato socioeconómico que con la posesión de un seguro de salud.

Conclusión. En las cuatro ciudades estudiadas el aseguramiento médico y el modo en que funcionan los sistemas de salud son factores mediadores en el vínculo entre la desigualdad económica y la falta de acceso equitativo a la atención sanitaria. Por consiguiente, es preciso prestar especial atención a la equidad del acceso a los servicios de salud, independientemente de las diferencias existentes en lo que respecta a la desigualdad económica y a la riqueza nacional.

Palabras clave Anciano; ancianos de 80 años y más; servicios de salud para ancianos; accesibilidad a los servicios de salud; factores socioeconómicos; política de salud; América Latina.