5
Keeping Healthy in an Urban Environment: Public Health Challenges for the Urban Poor

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Access to health care and infrastructure services is generally much higher in urban than rural areas, even for the poor. Yet there is increasing evidence of an "urban penalty"[1]: in many countries key health indicators for poor children are as weak in urban areas as they are in rural areas, despite the much wider availability of services. This is presumably due to the very different public health challenges that arise from living in higher density areas.

The urbanization of Latin America has contributed to a dramatic change in its epidemiological profile, as communicable diseases have been replaced by chronic, degenerative, and cardiovascular diseases and violence as the leading causes of death (figure 5.1). This epidemiological transition, which is typical as a society becomes more urbanized, is due to a combination of a changing lifestyle (more sedentary, with a greater proportion of processed foods); lower incidence of poverty; and better access to health care, infrastructure, and education.

This chapter draws on the limited literature on the topic to compare rural and urban health challenges and examine intraurban differences in health outcomes. The first section compares health indicators in rural and urban areas, particularly among the poor. The second section addresses the variations in health indicators within urban areas and assesses their potential causes, including inadequate access to infrastructure, health services, and education. The last section concludes with a call for more systematic research on a topic that appears seriously understudied.

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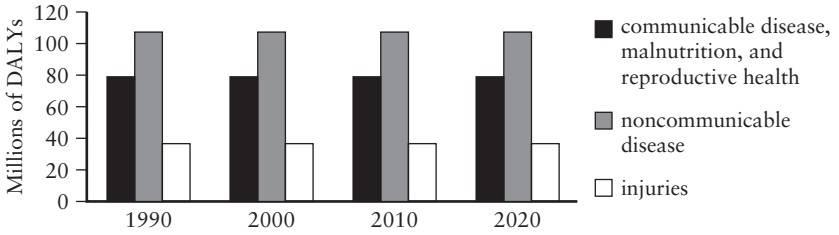
Figure 5.1 Noncommunicable diseases represent an increasing share of the disease burden in Latin America and the Caribbean



Source: PAHO Web site (http://www.paho.org/english/ad/dpc/nc/nc-unit-page.htm).
Note: Disability-adjusted life years (DALYs) are a summary measure that combines the impact of illness, disability, and mortality on population health. They combine years of life lost from premature death (relative to life expectancy at that age in a low-mortality population) and an adjustment for years of healthy life lost from disability. For more information on the concept see WRI 1998.

There is ample literature from both the health and economic fields on the determinants of health outcomes in populations. Excluding genetic makeup and biology, five sets of factors are considered important:

- *Socioeconomic status*. Higher income is positively correlated with better health, with the direction of causality clearly established from wealthier to healthier (Pritchett and Summers 1996). In addition, sickness and poverty often create a vicious cycle, in which health shocks can send households into poverty as debts are incurred for treatment or breadwinners are no longer able to work (WHO/UNICEF 2004).
- *Access to health services*. Surprisingly, there is no consensus in the literature on the extent to which consumption of health services improves health outcomes (Bitrán, Giedion, Valenzuela, and Monkkonen 2003). Studies have shown public expenditure on health services to have a limited impact, possibly due to variations in the quality of expenditure and the importance of individuals' health-seeking behavior (Filmer, Hammer, and Pritchett 1997).
- *Physical environment*. A person's physical environment, including access to water and sanitation, exposure to environmental contamination, the level of cleanliness, and protection from the elements, is a key determinant of health outcomes (Bitrán, Giedion, Valenzuela, and Monkkonen 2003).
- *Personal behavior*. Personal hygiene, nutrition, sexual habits, substance abuse, and choice of physical activities and employment can have an extremely important effect on health, affecting the probability of suffering from obesity, heart disease, cancer, sexually transmitted diseases, and

mental health problems (Bitrán, Giedion, Valenzuela, and Monkkonen 2003).

- *Social environment*. The relationship between a person's social environment—the level of community integration, stability, diversity, and security—and his or her health is not completely understood. But since the early twentieth century, research has demonstrated the beneficial effects of social integration on health. And a study conducted in the United States demonstrates an inverse relationship between membership in social groups and mortality (Kawachi and Kennedy 1997).

Of these five sets of factors, the first three are clearly different in rural and urban areas. The last two may be as well, although with the exception of security issues, addressed in chapter 4, and social capital, addressed in chapter 6, no analysis was found on the topic that distinguishes between rural and urban areas.

Differences in Urban and Rural Health Profiles

Urban and rural populations differ with respect to many health indicators, with the urban population typically better off. However, the picture is more varied when disaggregated by income categories: on some health indicators in some countries, the urban poor are worse off than their rural counterparts, and the health status of the urban population varies widely across countries and city sizes. In addition, urban populations are more susceptible to certain pathologies, although it is difficult to determine whether these pathologies have a greater incidence among lower income quintiles.

How different is the health of urban populations from that of rural populations? If we use the health of children as an overall health indicator, most evidence points toward much better health in urban areas. In Colombia child malnutrition and infant mortality are much more prevalent in rural areas (Flores 2000). In Peru health indicators are two to four times better in urban areas than in rural areas (table 5.1). This comes as no surprise given the higher incomes and better access to services of urban dwellers.

Distribution of Health Outcomes in Urban Areas

The superior performance of urban areas in terms of health indicators masks an important fact: the urban poor fare as badly as or worse than the rural poor in a number of countries and for many indicators. In nine countries in Latin America and the Caribbean, the urban poor perform consistently worse on almost all indicators measured than the urban nonpoor (figure 5.2). Child mortality rates are almost twice those of nonpoor

Table 5.1 Health indicators in rural and urban areas of Peru, 1997
(percent, except where otherwise indicated)

Indicator	*Urban*	*Rural*	*Rural/urban ratio*
Infant mortality rate (under 1 year)	30	62	2.1
Child mortality rate (under 5 years)	40	86	2.1
Children under 5 with average weight at least 1 standard deviation below the mean	16	40	2.5
Net birth rate (per 1,000 people)	24.2	33.5	1.4
Pregnancies without prenatal attention	18.6	53.2	2.9
Births without professional assistance	19.4	78.5	4.0
Female illiteracy	6	24	4.0
Households without drinkable water connection	28.3	74.5	2.6
Households without toilet	33.4	96.6	2.9
Overcrowding (more than five people per room)	13.9	27.8	2.0

Source: Cotlear and Javier 1999.

children, and the percentage of chronically malnourished children is three times as high. Infant and child mortality are higher among the urban poor than their rural counterparts in Brazil, Colombia, the Dominican Republic, and Paraguay. The percentage of chronic child malnutrition is higher among the urban poor than the rural poor in Colombia, Nicaragua, and Paraguay.

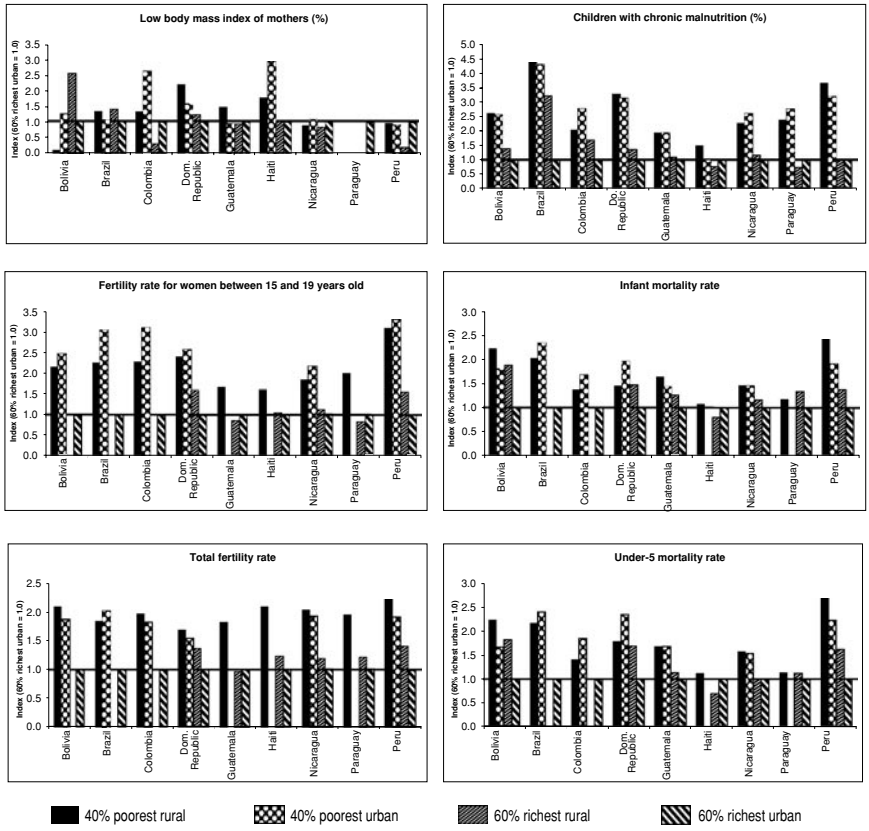
Pathologies in Urban and Rural Areas

Urban and rural populations have different incidences of pathologies. Certain pathologies, such as obesity; nutritional problems; sexually transmitted diseases, including HIV/AIDS; injuries from accidents; violence; drug addiction; and mental health problems seem to be more prevalent in urban areas.[2] These pathologies also seem to hit the poor harder.

OBESITY, SEDENTARISM, AND UNHEALTHY DIET

Urban children have a better variety and quality of food and less incidence of malnutrition than rural children, according to Ruel and Menon (2000). But the combination of a sedentary lifestyle and unhealthy diets associated with urban areas can lead to health problems. One of these problems, obesity, is associated with diabetes, hypertension, and heart disease, which increase morbidity and mortality.

Figure 5.2 The urban poor fare as badly as or worse than the rural poor in many countries



Source: Bitrán, Giedion, Valenzuela, and Monkkonen (2003) based on Demographic and Health Survey data (various years).

Note: Poverty line is based on an asset index comprising variables such as having vehicles and furniture.

Obesity is more prevalent in more urbanized areas in some Latin American countries, including Argentina; among lower income populations; and among women (O'Donnell and Carmuega 1998). The higher prevalence among lower income populations may reflect the relatively low price of unhealthy food.

The urban poor face additional nutritional problems due to the monetized economy of urban areas. Musgrove's study on income, family size, and the price of food (1991) shows that nutrition is more sensitive to changes in income and the price of food among poor urban families

than among poor rural families (who are more affected by changes in family size).

SEXUALLY TRANSMITTED DISEASES, INCLUDING HIV/AIDS

A study analyzing data from 20 Latin American and Caribbean countries finds that the level of urbanization has a statistically significant positive correlation with the number of cases of HIV/AIDS (Stillwagon 2000). These results support the contention that HIV/AIDS is a greater problem in urban areas than in rural areas. In El Salvador, where 46 percent of the population lives in urban areas, 75 percent of the new cases of HIV reported between 1984 and 2002 occurred in urban areas (Mendoza 2000; Aguilar, Chacón, and Romero 1998). This despite the fact that it is easier to target at-risk populations in urban areas for sexually transmitted disease prevention programs (RCAP 1997).

TRAFFIC INJURIES

There is little concrete evidence on traffic injuries in Latin America and much need for research. Worldwide road injuries tend to be more prevalent in urban areas, due to higher population density, and to affect the poor disproportionately (WHO 2004b). Pedestrians, cyclists, and motorcyclists are particularly vulnerable in urban settings, given the growing presence of faster and heavier cars, buses, and trucks. In contrast to the trend in high-income countries, in low- and middle-income countries, annual road deaths are expected to rise 80 percent in the next 20 years (WHO 2004b).

TOBACCO, ALCOHOLISM, DRUG ADDICTION, AND MENTAL HEALTH PROBLEMS

The urban poor in Latin America may suffer disproportionately from tobacco-related illnesses, alcoholism, drug addiction, and mental health problems, although more research is needed to confirm this. In a study of the relationship between health and habitat in Buenos Aires and Santiago de Chile, Bazzani (1995) finds that the main problems of residents of poor neighborhoods include mental disorders (anxiety and depression) and drug addiction. The World Health Organization (WHO 2004b) finds evidence of a disproportionate effect of tobacco and alcoholism on poor people. Whether these effects are greater in urban areas is not clear.

Intraurban Differences in Health Outcomes

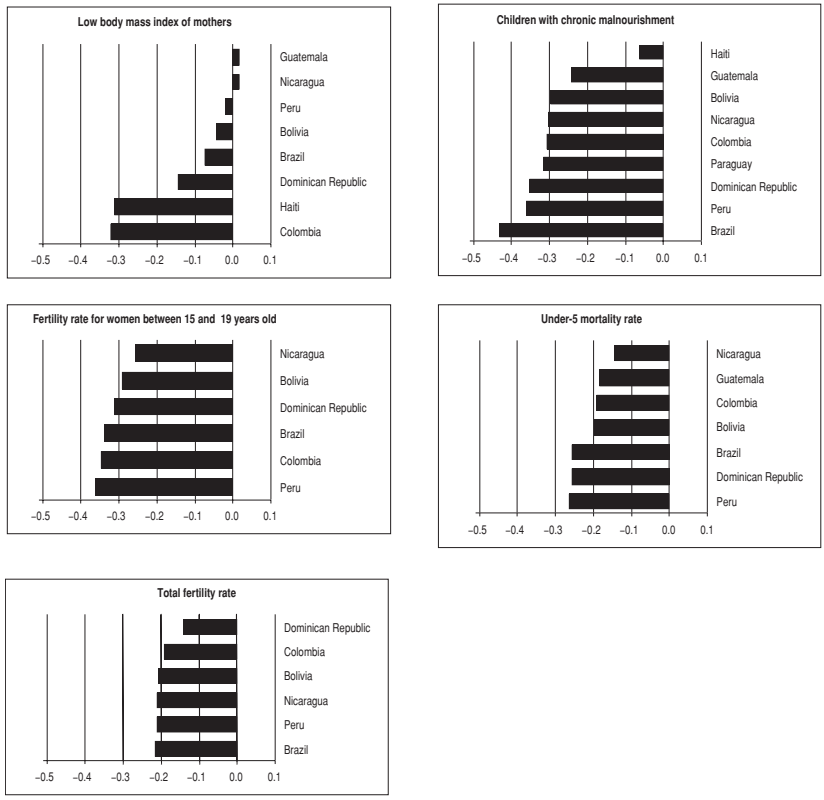
The variation in health indicators between income groups in urban areas appears to be significant. In Colombia, health inequality appears to be more pronounced in urban areas than in rural areas (Florez and Tono 2002). Although there is no completely conclusive evidence on the cause

of this variation, differences in education, infrastructure, and access to medical services across income groups have a large impact.

Intraurban Variation in Health Indicators

The variation in health indicators within urban populations is significant, and is associated with both wealth and access to basic needs (figure 5.3). The countries with the most consistently unequal distribution of health indicators are Brazil and Peru.

Figure 5.3 Health indicators in urban areas vary widely across income groups
(concentration coefficients)



Source: Bitrán, Giedion, Valenzuela, and Monkkonen (2003) based on Demographic and Health Survey data (various years).

Note: Concentration coefficients measure inequality and are calculated in the same way as Gini coefficients. They range from −1 to 1, where 1 is perfect equality.

A study of São Paolo, Brazil, finds that the poor experience four times more infant mortality than the nonpoor (Stephens and others 1997). In Buenos Aires, Argentina, a study analyzing the city by neighborhood finds that rates of infant mortality, as well as pre- and postnatal mortality, are highly correlated with an index of unsatisfied basic needs (Arossi 1996). In another study in Buenos Aires, children living on titled parcels of land performed better on the weight-to-height measure and experienced fewer teenage pregnancies than children in the same low-income neighborhood who lived on untitled land (Galiani, Gertler, and Schargrodsky 2005). Health outcomes also vary across cities within the same country, most notably with city size. Evidence from the Dominican Republic, Guatemala, and Haiti suggests that large cities have significantly stronger health indicators than medium cities (Locher 2000). This finding is confirmed by Montgomery and Hewett (2003), who find that larger cities have significantly better height-to-age ratios than medium-size cities. This may be due to the fact that poverty incidence tends to decrease as city size increases (that is, the health advantage may largely reflect the wealth advantage of larger cities).

Causes of Health Outcomes among the Urban Poor

Health outcomes are influenced by a number of factors. On average, the urban population has better access to infrastructure and medical services and more money than the rural population (see chapters 1 and 3). But the urban poor can experience problems with their physical environment that are distinct from and have greater negative health impacts than those faced by their rural counterparts (see chapter 3).

Environmental pollution has been shown to have a significant effect on the health of urban populations. A study on São Paolo, Brazil, finds that an increase in airborne contamination (which is higher in cities) results in increased hospitalization due to respiratory illness and pneumonia (Gouveia and Fletcher 2000). Strong anecdotal evidence suggests that air pollution has a disproportionately large impact on lower income populations in urban areas, but little research has been conducted on the issue. Evidence does suggest that industrial waste disproportionately affects the health of the urban poor (Bazzani 1995).

Data from Cali, Colombia, reveal the relationship between illness on the one hand and income, unemployment, education, and access to basic services on the other (table 5.2). The data neither prove causality nor isolate the influence of each variable, but they do demonstrate a positive correlation between health and factors associated with poverty.

ACCESS TO INFRASTRUCTURE SERVICES

The clear negative health impacts of the lack of access to basic services, and the large difference in access within urban areas, make this factor one of

Table 5.2 Correlation between illness and poverty-related factors in Cali, Colombia, 1999
(percent)

	Income quintile					
Factor	*1*	*2*	*3*	*4*	*5*	*All*
Unemployment rate	35.9	22.4	18.4	11.8	5.8	17.1
Years of education of household head	6.4	6.6	7.3	8.4	10.3	8.0
Toilet in the house	93.9	98.8	98.6	99.6	100	98.2
Water connection	73.3	81.1	84.3	89.6	95.1	84.7
Sick within the past 4 months	28.9	24.3	26.6	21.3	19.3	24.1

Source: Hentschel 2000.

the better researched determinants of urban health. The World Resource Institute decries deficiencies in the physical environment in marginalized urban areas as one of the main causes of death among the urban poor (WRI 1997). UN-HABITAT (2001) finds that high child mortality is directly correlated to low environmental quality (lack of wastewater treatment, sewerage, and sanitation).

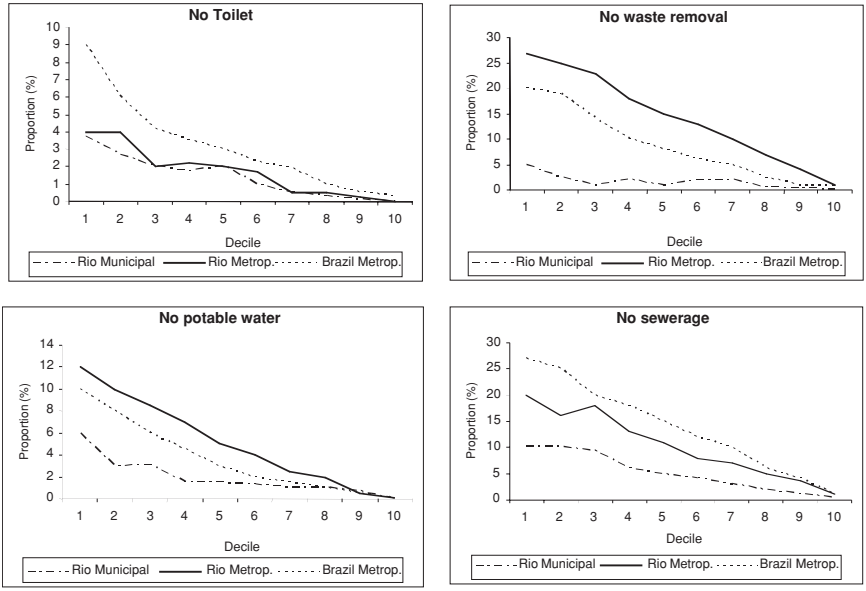
Sattherwaite (2003) emphasizes the huge variation in access to services between and within urban areas of Brazil. He examines Puerto Alegre, a city whose government encouraged citizen participation and focused on poverty alleviation. Life expectancy in Porte Alegre was 74 years in 2000, and the infant mortality rate was 20 per 1,000 live births. In contrast, in other urban areas in Brazil, such as Rio de Janeiro, the severe dearth of basic water and sanitation services is associated with a life expectancy of 54 years and an infant mortality rate of 100 per 1,000 live births.

Average access to services is better in urban areas of Brazil than in rural areas. But the extremely large variation in services by income groups in urban areas helps explain why the health indicators of the urban poor of Brazil are as bad as and sometimes worse than those of their rural counterparts (figure 5.4).

Transportation and electricity infrastructure improve health indirectly. Improved public transportation makes access to and staffing of clinics easier. It also reduces carbon dioxide emissions, which affect acute respiratory infections and lead pollution, both of which are particularly harmful to children. Access to electricity reduces indoor air pollution and makes boiling water easier. Access to electricity and transportation can increase study time and improve access to education, improving health (for a review, see Brenneman and Kerf 2002).

Access to water and sanitation is now clearly understood as a precondition to health (WHO/UNICEF 2004). In a review of studies on access to

Figure 5.4 Access to basic services rises with income in Rio de Janeiro, Brazil



Source: Heutschel 2000.

water and health, Esrey and others (1991) find an average 22 percent reduction in diarrheal morbidity from improved drinking water and sanitation. A study conducted in Argentina used the natural experiment of improved coverage and quality of water services—mainly for the poor—generated by the privatization of several municipal utilities. This improvement led to a drop in child mortality from 9 percent to 5 percent in areas that privatized their water services (Galiani, Gertler, and Schargrodsky 2005). The reduction in child mortality was associated with significant reductions in death from infectious and parasitic diseases and uncorrelated with deaths from causes unrelated to water conditions.

An analysis of the determinants of child health by Leipziger and others (2003) includes variables for water and sanitation, electricity, quality of dwelling, female literacy, malnourishment, variables describing the child's medical attention, and controls for income quintile and country level variables, such as GDP per capita and inequality. Their results show that access to water explains about a quarter of the difference in infant mortality between the poorest and richest quintiles and about 37 percent of the difference in child mortality. They also show that the variation

Box 5.1 Improving Hygiene Practices as part of a Water Supply and Sanitation Project in Peru

PRONASAR, a seven-year rural water supply and sanitation project in Peru, is designed to increase the sustainable use of new and rehabilitated water and sanitation facilities in rural areas and small towns, improve hygiene practices, and strengthen training in operation and maintenance. Launched in 2003, the project is funded by the World Bank, the government of Peru, local communities, the Canadian International Development Agency, and local municipalities.

This intersectoral project works closely with the Ministry of Health as a partner in the Handwashing Initiative for Peru. It demonstrates the type of innovative approach that may maximize the health benefits of improved access to basic services. Hygiene education components like the one included in this rural project should be considered as components of all water and sanitation projects in urban areas.

Source: World Bank 2003.

in access to sanitation between the first and fifth quintiles accounts for 20 percent of the difference in child malnutrition; the quality of housing accounts for 10 percent of the difference.

Leipziger and others also find that the impact of infrastructure on child health is likely to be higher if combined with health and education interventions. An interaction term between variables for infrastructure and education regressed on health indicators is positive and statistically significant, showing that the impact of infrastructure on health increases with education. In fact, when the interaction term is included, the infrastructure variable ceases to be statistically significant, suggesting that infrastructure alone is not enough. This implies that policy interventions are needed that reinforce the complementary effect of access and education (box 5.1).

EFFECTIVENESS OF AND ACCESS TO HEALTH SERVICES

Health care systems in Latin America have been slow to adapt to the epidemiological transition that is occurring in urban areas (Gribble and Preston 1993). Programs that incorporate elements of a new approach have been cost-effective and successful at improving child health (box 5.2).

Although the urban poor use health services more than the rural poor, they do so much less than the rich (Bitrán, Giedion, Valenzuela, and Monkkonen 2003). In addition, although the evidence is not specific to urban areas, health care systems in Latin America provide an unequal distribution of benefits: the gap between the need for and utilization of services is much larger among the poor (Suárez-Berenguela 2000). Simply

Box 5.2 Providing Preventive Health Services in Low-Resource Communities in Brazil

A program in the Brazilian state of Ceará that began in the 1990s presents a model of care for other areas of Latin America that lack resources. The program is based on the new paradigm of prevention and continuity of care. As part of the program, auxiliary health workers, supervised by trained nurses and integrated with teams of physicians, made monthly home visits to families to provide essential health services. This represented a departure from previous approaches, which addressed health problems only when they became urgent. The program improved child health status and vaccinations, prenatal care, and cancer screening. It was inexpensive, as health workers were only paid the minimum wage.

Source: WHO 2002.

increasing access to health care services may not increase the utilization of them, since the poor do not take advantage of health services to the same extent as the rich. These results suggest that education programs must accompany increased access to services in order to maximize their benefits.

Conclusions, Research Directions, and Policy Recommendations

This chapter illustrates the importance of the local dimension of public health and shows how averages hide important differences in health within urban areas. In Bolivia, Guatemala, Nicaragua, and Peru, the urban poor perform better on health indicators than the rural poor. But in Brazil, Colombia, and the Dominican Republic, some indicators of health are weaker among the urban poor than among their rural counterparts.

Even in countries that do not exhibit evidence of an urban penalty, the urban poor perform significantly worse than the nonpoor on all health indicators. Although the reasons for this have not been completely accounted for, one of the main causes appears to be the physical environment of the poor—lack of access to basic infrastructure, poor hygienic practices and pollution. Another factor is use of health services: the urban poor access health services much less than the nonpoor (though more than the rural poor). Moreover, health care systems in Latin America and the Caribbean may be focusing on the wrong problems and lack the ability to address urban pathologies.

Research on public health in Latin America and the Caribbean is sparse and scattered, especially with respect to the urban poor (Bitrán, Giedion, Valenzuela, and Monkkonen 2003). In addition, research on specific

topics tends to concentrate on one region (urban mental health in Brazil, air pollution problems in Chile, nutrition in Guatemala). While this work reinforces the notion of the heterogeneity of the health sector, it points to the need for more and better integrated research into the public health of the urban poor in Latin America and the Caribbean.

Research directions that warrant pursuing include the following:

- Multidisciplinary research into the factors (access to services, education, personal behavior) that influence health and the interaction between them.
- Analysis of the health effects of specific characteristics of urban areas, such as density, heterogeneity, and spatial segregation.
- Analysis of why some countries exhibit an urban penalty and other countries do not, as well as the policy implications of these differences.
- Deeper analysis of the relationship between city size and health, and the rural-urban continuum.
- Collection of benchmark data on health inequalities within geographic and socioeconomic strata in order to better inform policy.

Despite the need for more research into specific issues surrounding the health of the urban poor, some issues are clear enough to justify policy recommendations. In particular, reducing inequalities in urban health outcomes requires more than just increasing access to health care by the poor. The evidence reviewed in this chapter suggests that urban upgrading projects will have an important effect on public health. It may therefore make sense to include a health education component in such projects. More generally, intersectoral programs that seek to maximize the beneficial effects of nonhealth-specific interventions on health need to be promoted.

A first step for concerned authorities may be to evaluate particular cities' health needs. Some resources are already available to do so. They include the Environmental Health Project's Urban Health Assessment (http://www.ehproject.org/) and the WHO's City Health Profile (http://euro.who.int/document/e59736.pdf). While these resources are not poor specific, they are useful in evaluating the health of a city and provide evidence and credibility for serious efforts to promote health at the local level.

Endnotes

1. The term was coined in nineteenth century England, when urban mortality rates, particularly from tuberculosis, were much higher than rural ones. Public health measures, improved water and sanitation, and socioeconomic change led to declines in infant mortality rates, so that by 1905 rural and urban infant

mortality rates were similar (see http://www.unhabitat.org/programmes/guo/ for more details).

2. For a discussion of urban violence, see chapter 4.

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