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THE HEALTH OF URBAN POPULATIONS IN DEVELOPING COUNTRIES*

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Sometime in the next thirty years, if United Nations projections prove to be on the mark, the populations of poor countries will cross an historic threshold, becoming for the first time more urban than rural (United Nations 2005). The full implications of this urban transition are only beginning to be appreciated. There are several dimensions along which urban populations must be distinguished. The health circumstances of small cities and towns differ in many ways from those of larger cities. Within any city of appreciable size, a great diversity of levels of living can be found. Some of the urban poor live in communities of concentrated disadvantage—*slums*, in the usual shorthand—where they are subjected to a daily barrage of health threats, but other poor families are dispersed across the city’s landscape. On the supply side, urban health systems will often present the full array of health providers, ranging from traditional healers, purveyors of drugs in street markets, ill-equipped pharmacists and chemists operating from ramshackle storefronts, and so on up the scale to the most highly-trained of surgeons. Among all urban providers, a high percentage are likely to be engaged in private practice, whether on a full-time or part-time basis, and for this reason urban health care is more monetized than rural care. In urban areas, unlike rural, it is not so much the distance to services that presents a barrier to their use, but rather the social, informational, and economic costs of access.

To convey the scale of the urban health challenge that lies ahead, we summarize in Section A the urban health differentials that can be identified in data from internationally-comparable sample surveys. Here we begin by documenting urban–rural differences and proceed to give closer attention to the within-urban inequalities in health. Section B focuses attention on the supply side of urban health, with particular emphasis on the money costs and quality of health care. In Section C, we turn to a description of urban health risks that have not been sufficiently appreciated, or which, to be effectively addressed, would require an expansive conception of the role of the public health system. Section D concludes.

A The Urban Burden of Disease: Overview

To bring some order to what will be a wide-ranging discussion, we begin with an overview of urban causes of death and disability, drawing upon data from Mexico, one of the few low- and middle-income countries that can provide reliable cause-specific information.¹

¹See WHO (2007b: 14), which indicates that of the 115 countries reporting to WHO on the quality of cause-of-death statistics, only 29 (representing a mere 13 percent of world population) were judged to have adequate records.

Table 1: Disability-adjusted years of life lost in Mexico by cause and residence. 1991 estimates, expressed per 1000 population. Source: Lozano et al. (1999: 130).

Cause	Rural		Urban		Rural/Urban
	Rural	Rank	Urban	Rank	
Diarrhea	12.0	1	2.8	9	4.28
Pneumonia	9.3	2	3.9	7	2.39
Homicide and Violence	9.2	3	7.4	2	1.23
Motor Vehicle-Related Deaths	7.9	4	8.3	1	0.95
Cirrhosis	7.5	5	6.3	4	1.19
Anemia and Malnutrition	6.8	6	2.4	11	2.86
Road Traffic Accidents	5.5	7	6.8	3	0.81
Ischemic Heart Disease	5.1	8	5.3	6	0.96
Diseases of the Digestive System	4.7	9	1.7	15	2.74
Diabetes Mellitus	4.1	10	5.7	5	0.72
Brain Vascular Disease	3.0	11	3.0	8	1.02
Alcoholic Dependence	3.0	11	1.9	13	1.56
Accidents (falls)	2.8	13	2.6	10	1.09
Chronic Lung Disease	2.6	14	1.9	13	1.39
Nephritis	2.2	15	2.2	12	1.01

Table 1 shows for Mexico the 15 leading causes of disability-adjusted life years (DALYs) lost in rural and urban areas. Several lessons can be extracted from this table. First, urban areas do not necessarily present health profiles that are wholly distinct from those of rural areas. In Mexico, the causes of DALYs lost are much the same in urban and rural areas, although they follow a different rank order. Of the top 5 causes in Mexico's urban areas, three (deaths related to motor vehicles, homicide and violence, and cirrhosis) are also found among the top five in rural areas. Second, interventions to address two of the most important causes of death and disability in urban Mexico—those related to violence and to traffic-related deaths and injuries—would in many countries be considered outside the scope of the public health system. Third, the table reminds us that even in a middle-income country such as Mexico, diarrheal disease and pneumonia continue to be important causes of urban death and disability—here as elsewhere, an epidemiological transition is underway whereby the burden of disease is tilting toward non-communicable causes, but this transition is evidently far from being complete.

1 Averages and inequalities

It is commonly believed that in modern-day populations, rural levels of health are worse than urban, and this belief is supported by good scientific evidence. In its analysis of 90 surveys from the Demographic and Health Surveys program, the Panel on Urban Population Dynamics (2003) found that on average, the urban populations of poor countries exhibit lower levels of child mortality than rural populations, and similar urban–rural differences were evident across a range of health indicators. HIV/AIDS presents the large exception to the general rule of urban health advantage. As will be discussed below, although the epidemic is penetrating rural areas and may be driving up incidence rates there, prevalence continues to be higher in urban areas, often substantially so. Apart from HIV/AIDS, however, in most low- and middle-income countries the urban advantage in terms of average health levels is too well-documented to dispute.

But averages can be a misleading basis on which to set health priorities. Upon disaggregation, urban health averages can be shown to mask wide within-city differentials, and when these are examined, the urban poor are often discovered to face health risks that are nearly as bad as those of rural villagers and are sometimes decidedly worse. To see the urban situation clearly, two types of disaggregation are needed at a minimum: the urban poor must be distinguished from other urban residents; and among the poor, those living in slums need to be considered separately from the poor who live elsewhere (Montgomery and Hewett 2005). It is also important to distinguish cities from each other on the basis of their health institutions and personnel, and in terms of the strength of oversight and management that is exercised by municipal and other tiers of government.

The data needed to explore these distinctions are not always available. Demographic surveys will usually allow a country's urban poor to be studied as a group, but seldom provide reliable estimates of health among the poor in any given city, to say nothing of the sub-group of poor residents who live in a city's slums. Although there is good reason to expect deficiencies of health personnel and services in the smaller and less-advantaged cities, the empirical evidence on this point is still very thin. The comprehensive review provided by Dussault and Franceschini (2006) emphasizes urban–rural imbalances in health personnel, but does not differentiate among types of urban areas.

2 The urban poor

Intra-urban health inequalities—which are all too often overlooked by health and development agencies—are clearly apparent in household survey data. Using the 90 DHS surveys mentioned above, the Panel on Urban Population Dynamics (2003)

Table 2: Infant mortality estimates for urban poor, urban nonpoor, and rural, by region. (Rates expressed per 1000 births.) Source: Panel on Urban Population Dynamics (2003).

DHS Surveys in Region	Rural	Urban Poor	Urban Nonpoor
North Africa	81	60	43
Sub-Saharan Africa	103	89	74
Southeast Asia	59	53	27
South, Central, West Asia	74	69	49
Latin America	69	62	39
Total	86	75	56

estimated all-cause infant mortality for the urban poor, other urban households, and all rural households. The results are summarized in Table 2. As can be seen, the urban poor face significantly greater mortality risks than other urban residents, although as a rule, rural-dwellers face even higher levels of risk. In a survey-by-survey comparison of the poor urban and rural infants, this study found that the risks facing the urban poor were significantly lower in about two-thirds of the surveys. However, in 29 percent of the surveys, poor urban infants faced significantly higher mortality risks than their rural counterparts. (In the remaining surveys, there was no significant difference between poor urban and rural infants.) Even the generalization that urban infant mortality is lower than rural needs to be carefully qualified; much depends on whether the urban poor are separated out in the urban–rural comparisons.

The evidence available does not yet permit broad pronouncements to be made about the relative risks of the urban poor and rural-dwellers that apply irrespective of health measure. The National Research Council study analyzed children’s height for age—an indicator that summarizes a child’s history of nutrition and disease—obtaining the results shown in Table 3 for children in the age range of 3–36 months. (The table’s entries are Z-scores, with a value of -100 indicating that a child is one standard deviation shorter, given its age and sex, than the median height of an international reference population.) The urban poor are again seen to exhibit worse health than other urban children. When the height of poor urban and rural children were compared, in almost all surveys (60 of the 67 examined) the poor urban children were found to be significantly taller for their age than were rural children. In the height-for-age measure, evidence of an urban advantage persists even for the urban poor.

Table 3: Height for age Z-scores among children 3–36 months of age, by residence and poverty status. Source: Panel on Urban Population Dynamics (2003).

DHS Surveys in Region	All Rural	Urban Poor	Urban Nonpoor
North Africa	-155.00	-122.35	-86.53
Sub-Saharan Africa	-184.60	-153.64	-125.86
Southeast Asia	-139.01	-106.46	-48.18
South, Central, West Asia	-176.78	-157.95	-120.31
Latin America	-157.09	-130.28	-80.61
Total	-173.51	-145.43	-109.37

As is well known, poor urban dwellers are exposed to substantial risks when their neighborhoods lack the public health infrastructure needed to safeguard water supply and assure sanitary disposal of waste (UN-Habitat 2003a,b). WHO (2002) estimates that in 2001, diarrhoeal diseases accounted for some 2 million deaths, almost all of which took place in low- and middle-income countries, with unsafe water, inadequate sanitation, and poor hygiene likely implicated in a large percentage of these. In its examination of data from the Demographic and Health Surveys, the Panel on Urban Population Dynamics (2003) showed that urban poverty is associated with a lack of access to piped drinking water and with inadequate sanitation. Table 4 presents selected findings from this study, again comparing poor urban households with other urban and also rural households. As the table shows, the urban poor are markedly ill-served by comparison with other urban households. Rural households receive even less than poor urban households by way of water and sanitation services, although they benefit to an extent from lower population densities, which offer a form of natural protection against some communicable diseases.

Investments in public health infrastructure require the mobilization of substantial financial sums, and although public health authorities can help publicize needs and exert pressure, the key decision-makers are generally located elsewhere in the political-bureaucratic system.² There are, however, complementary initiatives that lie squarely within the purview of public health. As McGranahan (2007) argues, citing Cairncross and Valdmanis (2006) among others, the literature on water and sanitation has tended to give too little attention to the hygienic and storage behaviors that cause water to be contaminated after it has been drawn from the pipes. Important fecal-oral routes for contamination can be addressed through domes-

²See Evans (2007) on recent innovations in financing for improvements in urban water supply, sanitation, and housing.

Table 4: Percentages of poor urban households with access to services, compared with rural households and the urban non-poor. Source: Panel on Urban Population Dynamics (2003).

DHS Countries in Region		Piped Water on Premises	Water in Neighborhood	Flush Toilet	Pit Toilet
North Africa	Rural	41.6	37.3	41.3	17.5
	Urban poor	67.3	27.8	83.7	8.5
	Urban non-poor	90.8	7.8	96.3	2.6
Sub-Saharan Africa	Rural	7.8	55.7	1.1	47.6
	Urban poor	26.9	61.6	13.0	65.9
	Urban non-poor	47.6	45.8	27.4	67.2
Southeast Asia	Rural	18.6	53.7	55.5	24.3
	Urban poor	34.0	53.7	61.8	22.9
	Urban non-poor	55.8	40.1	89.0	9.4
South, Central, West Asia	Rural	28.1	53.6	4.3	55.4
	Urban poor	58.0	36.3	39.8	34.1
	Urban non-poor	80.2	17.7	64.0	23.2
Latin America	Rural	31.4	36.4	12.6	44.0
	Urban poor	58.7	35.2	33.6	47.0
	Urban non-poor	72.7	24.9	63.7	31.6
TOTAL	Rural	18.5	50.7	7.5	46.6
	Urban poor	41.5	49.4	28.3	51.7
	Urban non-poor	61.5	34.0	48.4	46.5

tic hygiene interventions, including an emphasis on hand washing especially after defecation, control of flies, and encouragement of safer practices in food preparation and water storage. Cairncross and Valdmanis (2006) assemble evidence showing that behavioral interventions in these areas can achieve substantial reductions in diarrhoeal diseases.

3 The spatially-concentrated urban poor

It is not surprising that when poor city-dwellers live in close proximity to each other without the benefit of safe drinking water and adequate sanitation, they face elevated risks from water-, air-, and food-borne diseases. This much has been known since the 18th century in the West, well before the mechanisms of transmission were understood (Dyson 2001, Woods 2003). It remains difficult, however, to partition the overall risks facing slum-dwellers into the risks attributable to household poverty, and the additional risks produced by the spatial concentration of poverty in slum neighborhoods and communities.

Although not definitive on this score, Figure I is suggestive of the impact of concentrated poverty on child mortality in Nairobi, Kenya. In the slums of Nairobi,

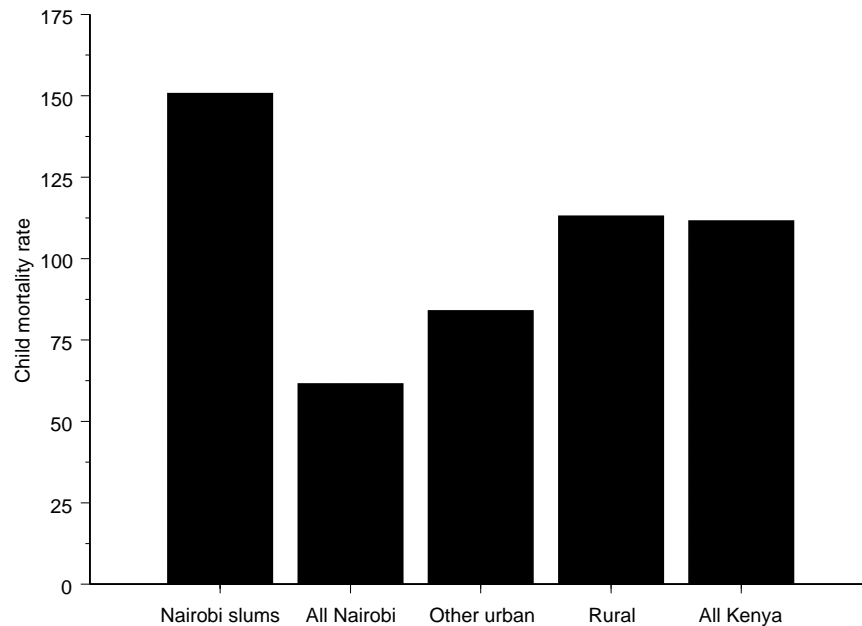


Figure I: Comparison of child mortality rates ($5q_0$) in the Nairobi slums sample with rates for Nairobi, other cities, rural areas, and Kenya as a whole. Source: African Population and Health Research Center (2002).

child mortality rates, at 150 per thousand births, are substantially above the rates seen elsewhere in that city; slum mortality rates are high enough even to exceed rural Kenyan mortality. The addition to risk evident in the Nairobi slums may be due to multiple factors: the poor quality and quantity of water and sanitation in these communities; inadequate hygienic practices; poor ventilation and dependence on hazardous cooking fuels; the city's highly monetized health system, which for the poor delays or prevents access to Nairobi's modern health services; and the transmission of disease among densely-settled slum-dwellers.

There are additional factors of a social epidemiological character that are worth considering. Facing health threats from their unprotected physical environments—with the lack of services being a constant reminder of social exclusion—and lacking the incomes needed to counteract these daily threats, the urban poor may well feel unable to take effective action to safeguard their health. Poor individuals and families may thus lack the sense of self-efficacy needed to energize their health-seeking behavior in such difficult environments. Poor communities may be reminded by the absence of basic services that the community as a whole is socially excluded and lacks the political voice needed to bring attention to its plight. At

the individual and family level, as we will discuss, social exclusion combined with the daily stresses of poverty may bring on paralyzing fatigue, anxiety, low-level depression and other expressions of mental ill-health. At the community level, the symptoms may be expressed in the weaknesses and fragilities of local community organizations, that is, in the lack of what has been termed “bonding” social capital.

B The Urban Health System

A distinguishing feature of urban health systems is the prominence of the private sector. Not surprisingly given the higher average levels of income in urban populations and the income diversity that establishes market niches, private services tend to be much more developed in cities than in rural areas, especially in the larger cities (Dussault and Franceschini 2006). Fee-for-service arrangements are generally characteristic of urban health care, whereas rural services are often ostensibly provided free of money cost (or made available for nominal fees) at public health-posts and clinics.³ In the more monetized urban economy, the urban poor without cash on hand can find themselves unable to gain entry to the modern system of hospitals, clinics, and well-trained providers. They may then seek care in other niches of the urban system where less-trained providers make drugs and diagnoses available for affordable fees, and may also pursue traditional practitioners, who can adjust the level and type of payment to the needs of their poor clients.

As the Islam et al. (2006) study has documented for Manila and Indore, India, urban health providers are well aware of the effects of monetization on the health-seeking behavior of the poor. They see poor clients who, having endured their illnesses until care cannot be put off any longer, finally present themselves in a more debilitated condition than they would otherwise have been. Health providers realize that the poor are likely to abandon courses of prescribed medication to save on the costs of purchasing medicines, or may economize by buying less than what was prescribed. They are not really surprised when the poor fail to return as requested for follow-ups and assessments of progress.

In very few low- and middle-income countries is it possible for the urban poor to receive subsidized care from for-profit private providers, and generally such subsidies are available only through the private non-profit and public-sector clinics and hospitals. Manila’s public-sector subsidy program provides one instructive example. In this health system, subsidies are made available for the purchase of medicines but supplies are not similarly covered. As one physician said in exasperation,

³Even in Latin America, where health insurance systems are more inclusive than in other low- and middle-income regions, only 20 percent of the urban poor are covered by insurance (Fay 2005).

Sometimes, they say they can ask for discounts or even for free medicines, depending on the [income] class. But in supplies, they cannot. So for instance, they get antibiotics for free [but] if you do not have syringe, how can you provide it? We still ask them to buy syringe to provide for the vaccines.

As this quotation suggests, stock-outs of medicines and basic supplies such as syringes occur frequently in Manila's public-sector facilities. When they occur, it is left to the patient to find the funds to seek out prescribed medicines and supplies at private pharmacies or other sources. In the Manila case, the lowest tier of the public health system—the *barangay* health center—is an vital component of the system for the poor, because for various reasons the *barangay* centers are more likely to hold small stocks of some of the subsidized medicines.

As the Manila example illustrates, subsidies for the urban poor often depend on an unsystematic set of arrangements, requiring poor patients and their families to spend time searching and negotiating with what must be a bewildering variety of personnel at scattered locations. As they engage in this form of health-seeking behavior, the poor can be discouraged by the difficulties of finding affordable transport, inconvenient hours of operation at clinics or health centers, the frequent absence of key staff, and long waits to receive care. In effect, the poor are being asked to substitute the costs of their time for the prospect of reduced money costs of medicines. In a full-cost sense, a subsidy for the poor that exists in theory may prove to be no subsidy at all.

When the poor succeed in receiving formal health care, is that care likely to be of sufficient quality to make an effective difference to their health? A recent urban quality-of-care study in New Delhi raises serious doubts on this score (Das and Hammer 2007b,a). The study was set in both slum and non-slum neighborhoods, covering a range of income levels. A full inventory was made of the health providers who serve these neighborhoods; it revealed that a 15-minute walk would bring a typical neighborhood resident within reach of 70 health providers of some sort. Even for the poor, access in the sense of geographic distance was not the problem in this case; and if anything, the Delhi poor tended to seek care for illness at least as often as the non-poor. The study assessed the quality of health-care provision in two ways: via a series of vignettes measuring provider knowledge of the steps to take in making a diagnosis and prescribing treatment or referral (rating the provider responses in relation to examination protocols); and by a follow-up in which many of the same providers were observed as they interacted with patients.

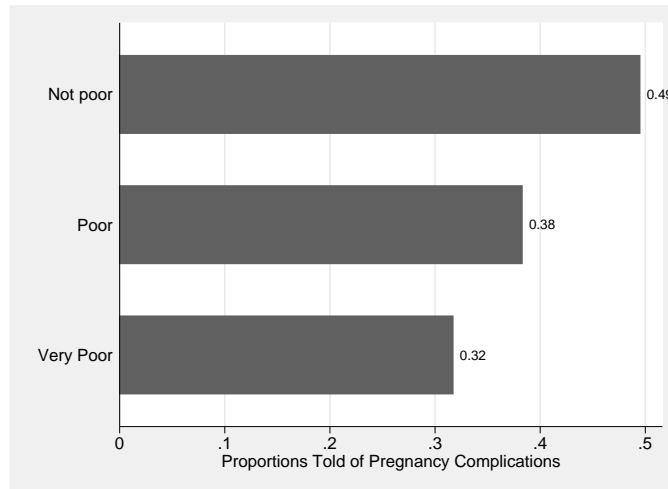
The study found that the quality of care available in the poor neighborhoods was so low that the authors could fairly describe it as "money for nothing." Both public-sector and private providers serve the poor neighborhoods of Delhi, and

both know less about appropriate care than the providers who practice in better-off neighborhoods. (Levels of provider knowledge were low across all study neighborhoods, but were especially low in the poor neighborhoods.) Evidently, the Indian public sector does not see to it that its more competent providers are allocated to the poor neighborhoods where they are needed most. When later observed as they interacted with patients, providers generally asked even fewer questions and exerted even less effort in examinations than their vignettes had suggested they would. In short, it would seem that even strenuous health-seeking efforts on the part of the New Delhi poor would bring them no assurance of reasonable quality health care.

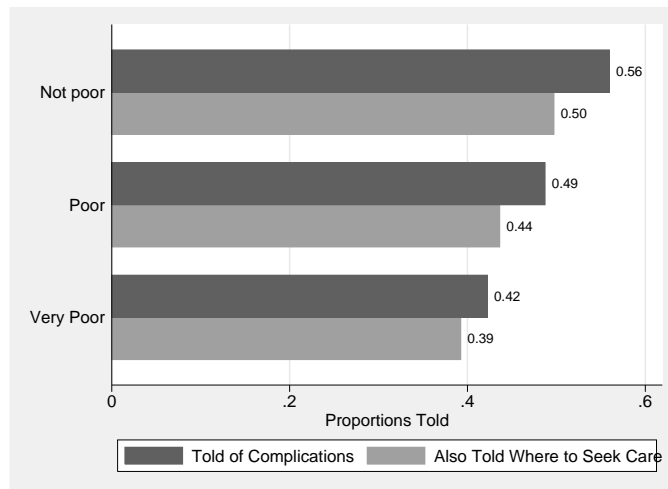
Figure II shows that low quality of care is generally characteristic of urban India (top panel) and is also a concern in the urban areas of the Philippines (bottom panel). The figure depicts the percentage of women who, in one or more prenatal care visits, were warned of the complications of pregnancy. Among poor urban Indian women, not even 40 percent are told during prenatal visits of the danger signs of pregnancy. Although the percentages are somewhat higher in the urban Philippines, less than half of poor women are informed of the risks and fewer still are told where to seek care if signs of danger surface.

C Under-Appreciated Health Risks

In this section we turn attention to specific urban risks and causes of mortality and morbidity. Several themes unite this material. First among them is the importance of disaggregation of urban health conditions and risk factors by poverty and place. A second and closely-related theme is that of urban social epidemiology, with emphasis on the concepts of individual and collective efficacy in health-seeking. A third theme in the discussion concerns health conditions or risks that are sometimes overlooked, or which are not as well-integrated as they might be in urban public health policies. Mental health is perhaps the leading example of such a condition. It is closely associated with poverty and with the health threats that arise from violence and alcohol abuse, which place disproportionate burdens on women. Other examples include the burdens of illness and death stemming from road traffic accidents and outdoor air pollution. In many countries HIV/AIDS already occupies a prominent place on the urban health agenda, whereas urban tuberculosis (and in some countries, malaria) receive less attention. Only the most expansive public health programs in low- and middle-income countries have conceived of the field of action in such broad terms as to encompass all these areas.



(a) Women informed of complications and their danger signs during pregnancy, urban India



(b) Women informed of complications and danger signs during pregnancy, and told where to seek care if these appear, urban Philippines.

Figure II: Information on pregnancy complications given during prenatal care, by relative poverty. women with one or more visits, urban India and urban Philippines. Source: Demographic and Health Surveys analyzed in Islam et al. (2006).

1 Mental health

Mental health as such made no appearance in the quantification of DALYs given in Table 1, but it is arguably a central factor in the health of the urban poor, and one whose contribution to the urban burden of disease has been insufficiently appreciated. Over the past decade, the World Health Organization has issued a series of reports emphasizing the importance of mental health in developing as well as developed countries (WHO 1996, 2001, 2005b). In a recent review, Prince et al. (2007: Table 1) summarize the WHO burden-of-disease estimates for mental health in low-income and middle-income countries. In these countries, mental ill-health accounts for roughly 24 percent of all disability-adjusted life-years lost to non-communicable diseases. For reasons to be described shortly, this figure is likely to understate the full impacts of mental health. And yet, as the authors note, “Despite these new insights, ten years after the first WHO report on the global burden of disease, mental health remains a low priority in most low-income and middle-income countries.”

Community-based studies of mental health in low- and middle-income countries suggest that 12 to 51 percent of urban adults suffer from some form of depression (see 16 studies reviewed by Blue, 1999). Anxiety and depression are typically found to be more prevalent among urban women than men and are believed to be more prevalent in poor than in non-poor urban neighborhoods (Almeida-Filho et al. 2004). In a study of Mumbai, Parkar et al. (2003) give an evocative account of the stresses that affect men and women in a slum community just north of the city. Men in this community are deeply frustrated by the lack of work, and this is reflected in a high incidence of alcoholism and violence directed at their wives. Although less is known about mental health among adolescents in low- and middle-income countries, recent studies indicate that this age group also warrants attention. Harpham et al. (2004) made use of the WHO’s short-form, self-reporting questionnaire—a bank of 20 items designed to detect depression and anxiety—to study the mental health of adolescents in Cali, Colombia. Girls were found to be three times more likely than boys to exhibit signs of ill-health (as Prince et al. 2007 note, among adults the female–male ratio is typically 1.5–2.0) and further multivariate analysis showed that low levels of schooling, within-family violence, and perceptions that violence afflicts the community were all significantly associated with mental ill-health among adolescents.

There are two avenues by which an individual’s mental ill-health might affect other dimensions of health. First, it has been hypothesized that socioeconomic stress undermines the physiological systems that sustain health. Prince et al. (2007: Panel 2) emphasize the effects of depression on serotonin metabolism, cortisol metabolism, inflammatory processes, and cell-mediated immunity; they also note

that mental disorders are implicated in a range of behaviors (e.g., smoking, poor diet, obesity) that raise the risks of other diseases. Boardman (2004), McEwen (1998), Steptoe and Marmot (2002) and Cohen et al. (2006) provide supportive evidence, although Hu et al. (2007) are skeptical of the hypothesized link from poverty to socioeconomic stress to cortisol metabolism, finding little evidence for it in their large sample of Taiwanese elderly. The possibility of such adverse spill-over effects from an individual's mental ill-health to other areas of health, and the need for a full accounting of these effects in calculating the disease burden stemming from mental disorders, is the principal theme of the comprehensive review by Prince et al. (2007).

The second avenue needing exploration also involves spill-over effects, but in this case the posited linkage would connect women's mental health to the health-seeking energies they can deploy on behalf of their children and other family members. To judge from the review by Prince et al. (2007: 867), very little research has been conducted on how mental health affects women's health-seeking behavior. A few studies have linked mental ill-health to the difficulties that individuals face in adhering to their own treatment regimens, especially the demanding protocols required in anti-retroviral therapies for HIV/AIDS and directly-observed short-course treatments for tuberculosis. A bit more attention has been given to the associations between a woman's mental health and her reproductive health, and between the health status of pregnant women and their children's birthweight, with the latter possibly involving health-seeking behavior. But almost nothing seems to have been written on whether and how mental ill-health undermines the sense of self-efficacy that motivates a woman to seek health-care for others in her family. This is a surprising gap in the literature, especially in view of the well-documented role that women play in protecting the health of their families and the equally common finding that mental ill-health is more common among women than men.⁴

2 Intimate-partner violence and alcohol abuse

Violence in urban areas takes a variety of forms, ranging from political and extra-judicial violence to gang violence, local violent crime, and abuse taking place within the home. Moser (2004: Tables 1 and 2) develops a framework within which these complex forms of violence can be analyzed and describes the points of intervention within the judicial, public health, and other urban systems (also see Winton 2004). Garrett and Ahmed (2004) have developed a module for measuring aspects of crime, violence, and physical insecurity that could be adapted for use in surveys, so that these problems can be better documented than they are at

⁴See Montgomery and Ezeh (2005) for further discussion with attention to social capital and collective efficacy.

present. Our discussion will mainly be concerned with intimate-partner violence and its links to alcohol abuse and women's mental health.

Heise et al. (1994) reviewed community-based data for eight urban areas from different regions of the developing world, finding that mental and physical abuse of women by their partners was common, with damaging consequences for women's physical and psychological well-being. Using data collected from a module included in several Demographic and Health Surveys, Kishor and Johnson (2004) examined whether women had ever been beaten by a spouse or partner. In Cambodia, 18 percent of women had been beaten, and the percentages in the other study countries were also high: Colombia (44%), Dominican Republic (22%), Egypt (34%), Haiti (29%), India (19%), Nicaragua (30%), Peru (42%), and Zambia (48%). In seeking to understand why women who were the victims of violence did not seek help from the authorities or others outside the home, this study found that embarrassment was a major reason given by women, as well as the belief that it would be futile to seek care or that partner violence was simply a part of life. In some countries (but not in all), poor women were more likely than other women to have experienced violence at the hands of their spouses or partners. Where the connection could be explored, strong links were also found between spousal alcohol abuse and violence.

These findings were echoed in the WHO (2005a) study summarized in Figure III, which covered both urban and rural study sites. The WHO analysis also documented a close association between the experience of violence and women's mental health. As Figure IV shows, among the women in this study's Bangladeshi urban site (left-most bars) who had been abused by their partner, some 21 percent had had thoughts of suicide, as against only 7 percent of women who had not been abused. In all but one of the sites in the study, the difference in this measure of mental health was statistically significant, and as can be seen in the figure, the ratios are on the order of 2:1 or higher.

Other forms of urban violence also merit attention. Crime is particularly prevalent in Latin America's large cities, where it disproportionately victimizes men living in low-income neighborhoods (Barata et al. 1998, Grant 1999, Heinemann and Verner 2006). Data collected between 1991 and 1993 in São Paulo suggested that men aged 15–24 in low-income areas were over 5 times likelier to fall victim to homicide than were men of the same age in higher-income areas (Soares et al., cited in Grant 1999). South African cities also exhibit extraordinarily high rates of violent crime (Stone 2006).

A need exists for systems that can provide women and the poor with some protection from the varied forms of urban violence to which they are vulnerable within and outside the home. To create such systems will require new partnerships linking agencies across urban sectors. In the transport sector, for example, there

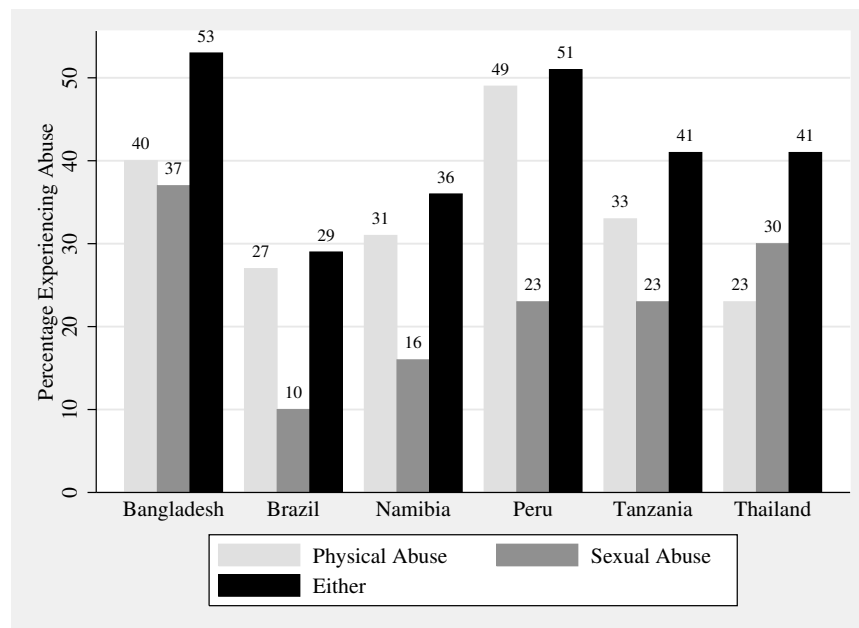


Figure III: Experience of physical or sexual violence by an intimate partner since age 15, among ever-partnered urban women. Source: WHO (2005a: Figure 2)

is a need to make safe the areas where the poor wait for buses and jeepneys; the health sector also has a role to play in security, in that public latrines can be places of risk especially for women; and the authorities responsible for electrification and road construction need to attend to the unlit paths and lanes within slums, a concern for the poor who must commute in the early morning hours or late at night. Effective partnerships against crime and violence involve the formulation of community-driven violence-prevention strategies and the initiation of dialogue between community groups and the police. (The police may initially resist efforts to involve them in this way, complaining of having to be “social workers” as well as policemen.) Creation of safe spaces is especially high on the policy agenda for adolescent girls and boys (Erulkar and Matheka 2007).

3 Reproductive health

The Panel on Urban Population Dynamics (2003) provides a lengthy discussion of reproductive health among urban women, and here we select only a few points for emphasis. Among all urban women, those who are poor are significantly less likely to use modern contraception to achieve control over their family-building (see Ta-

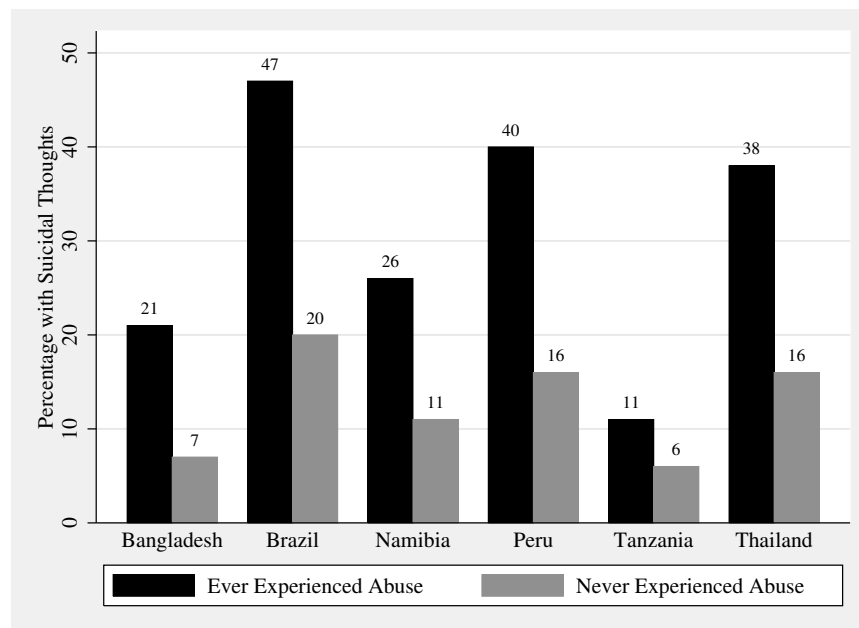


Figure IV: Percentage of ever-partnered urban women reporting suicidal thoughts, according to their experience of physical or sexual violence, or both, by an intimate partner. Source: WHO (2005a: Figure 11)

ble 5). They are generally more likely to use contraception than rural women, but in some regions of the developing world there is little to separate the two groups. The unmet need for modern contraception—this is measured by the proportion of women in a reproductive union who say that they want to prevent or delay their next birth, believe themselves to be capable of conceiving, and yet do not make use of modern contraception to achieve their stated aims—is markedly higher among poor urban than other urban women.

As Panel on Urban Population Dynamics (2003) discusses, it is not clear that even when they use modern contraception to prevent conception, urban women do so in an effective manner. Although quantitative estimates are limited to selected case studies, unintended pregnancy and induced abortion are evidently not uncommon for urban women.⁵ To cite a few examples: Women in three squat-

⁵ AGI (1999) provide an excellent overview of induced abortion, a generally hidden and difficult-to-study area of health. See *International Family Planning Perspectives*, which is a good source of information on this topic; the publication archive is <http://www.guttmacher.org/pubs>. The journal *Studies in Family Planning* is another helpful source: <http://www.blackwell-synergy.com/loi/sifp>.

Table 5: Contraceptive use for women aged 25–29 by residence and, for urban areas, poverty status. Source: Panel on Urban Population Dynamics (2003)

DHS Surveys in Region	All Rural	Urban Poor	Urban Nonpoor
North Africa	0.26	0.37	0.48
Sub-Saharan Africa	0.08	0.13	0.22
Southeast Asia	0.44	0.40	0.47
South, Central, West Asia	0.33	0.35	0.44
Latin America	0.32	0.37	0.47
Total	0.22	0.26	0.35

ter settlements in Karachi, Pakistan, were estimated to have a lifetime rate of 3.6 abortions per woman (Jamil and Fikree 2002). Another study found abortion to be widespread in Abidjan, Côte d’Ivoire, where abortion is illegal yet nearly one-third of the women surveyed who had ever been pregnant had had one (Desgrées du Loû et al. 2000). A recent study of Ouagadougou, Burkina Faso by Rossier (2007) estimated an annual abortion rate of 4 percent among women aged 15–49 years, suggesting that over a reproductive lifetime, a woman would have 1.4 abortions on average. Calvés (2002) studied women in their twenties living in Yaoundé, Cameroon. Of these young women, 21 percent reported having had an abortion; just over 8 percent had had more than one. Once again, the fact that modern contraceptive services are available in urban areas does not imply that women, especially poor women, have the knowledge and the social and economic wherewithal to make effective use of the methods.

4 HIV/AIDS

An enormous literature is now available on the social epidemiology of HIV/AIDS in both developing and developed countries. Despite the quantities of research underway on HIV/AIDS, much remains to be learned about its social components. Indeed, although HIV/AIDS is commonly thought to be more prevalent in urban than rural areas, until recently the scientific basis for this belief has been thin (UNAIDS 2004: 31). In only a few low- and middle-income countries are community-based studies of prevalence now available that can quantify the urban–rural differences.⁶ Figure V presents findings from several nationally representative community-based

⁶See Dyson (2003). Country profiles are available at <http://www.census.gov/ipc/www/hivaidsn.html>, but these profiles are worked up from the reports of selected clinics and various

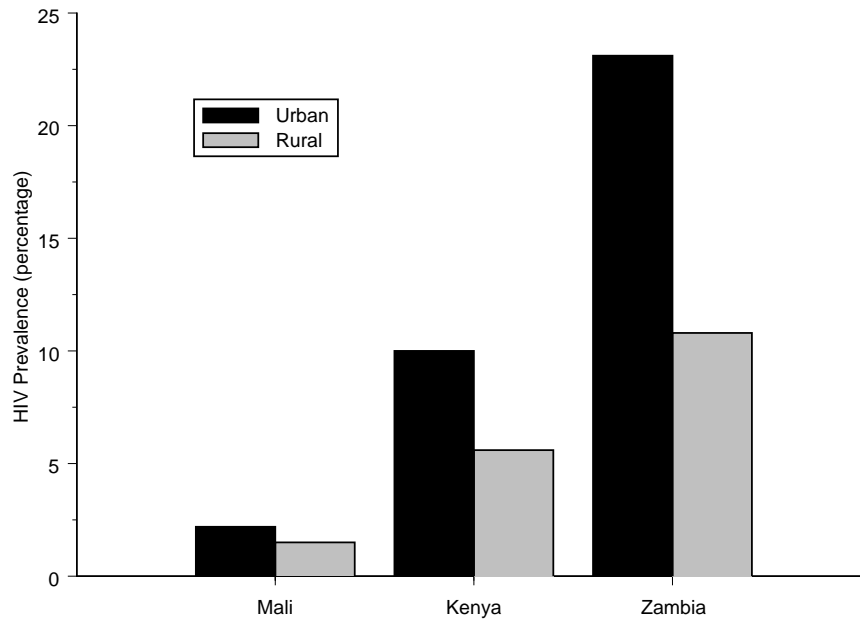


Figure V: Estimates of urban and rural prevalence of HIV from the Demographic and Health Surveys: Mali, 2001; Kenya, 2003; and Zambia, 2001–2002. Sources: Mali Ministère de la Santé (2002), Kenya Central Bureau of Statistics (2003), Zambia Central Statistical Office (2003).

studies in which prevalence is estimated from blood samples taken in connection with a DHS survey. In these three cases—Mali, Kenya, and Zambia—urban prevalence rates are clearly much higher than rural rates. Where HIV/AIDS is concerned, there is little evidence of the “urban advantage” that is seen in other domains of health. However, circular and urban-to-rural migration is contributing to the spread of disease in rural areas (UNAIDS 2004: 33), and many observers foresee an era of rising rural incidence and prevalence.

Because the community-based studies are relatively recent, the role played by urban poverty in the risks of HIV/AIDS in low- and middle-income countries is only beginning to be studied. Using the community surveys conducted under the DHS program, Mishra et al. (2007) found that contrary to expectation, HIV prevalence is higher among the better-off families. These families were more likely to live in urban areas, which accounts for a part of the association, and other risk factors (including sexual risk-taking, use of condoms, and male circumcision) tended

sentinel sites, which do not necessarily yield statistically representative portraits for urban or rural populations.

to mask the association between living standards and prevalence. Even with statistical controls for such factors in place, a positive association between living standards and HIV prevalence persisted. In studies of urban adolescents and other selected socio-economic groups, however, poverty has been linked to higher HIV prevalence as well as to a number of contributing risk factors, including earlier sexual initiation and more reported forced or traded sex, which would seem to place poor women at higher risk of contracting the virus (Hallman 2004). In short, the association with living standards is still a matter of dispute.

5 Tuberculosis

Tuberculosis is even today among the leading causes of death for adults in low- and middle-income countries, killing an estimated 1.6 million people worldwide in 2005 (WHO 2007c). Much as in the nineteenth century, urban crowding increases the risk of contracting tuberculosis (van Rie et al. 1999), and high-density low-income urban communities may face elevated levels of risk. The interactions between HIV/AIDS and tuberculosis, and the spread of multi-drug-resistant strains of the disease, have generated fears of a global resurgence of tuberculosis and have caused WHO to expand its program beyond DOTS as such.

The concept of urban collective efficacy is directly relevant to the DOTS strategy, the core of WHO's treatment strategy. In a study of tuberculosis in urban Ethiopia, Sagbakken et al. (2003) showed how the local social resources of urban communities (organized in "TB clubs") can be marshalled to reduce the stigma associated with the disease and encourage patients to adhere to the demanding short-course regimen of treatment. Similar interventions have been fielded in urban India, as described by Barua and Singh (2003), using community health volunteers to identify local residents with symptoms of tuberculosis and refer them to hospitals for diagnosis; local health workers attached to the hospitals then provide follow-up care and lend support during treatment. An elaborate system of care, involving multiple urban community and health service associations in Lima, Peru, is described in Shin et al. (2004). As reported in WHO (2007c: 78), Bangladesh has made urban DOTS a focus in a program that links non-governmental organizations, private practitioners, medical colleges, and the corporate sector. As the country profiles presented in WHO (2007c) make clear, a number of countries have yet to reach WHO's treatment success rate target of 85 percent of identified patients, and although data are scarce, it is very likely that detection rates of tuberculosis among the urban poor are well below rates for other urban residents.

6 Traffic-related injuries and deaths

We now broaden the discussion to encompass sectors that have not always been linked to or carefully integrated with urban public health programs, yet which have significant implications for health. Injuries and deaths from traffic accidents are a case in point. Table 1 for Mexico showed just how important these are among all urban causes of death and disability, but the great range of factors involved—touching on engineering concerns and urban planning and land-use policies as well as individual behavior—seem in many countries to have inhibited the public health sector from taking action. The scale of this public health problem is enormous: the WHO (2004) estimates that road traffic injuries lead to 1.2 million deaths annually and an additional 20–50 million non-fatal injuries, the majority of which occur in low- and middle-income countries.

To elucidate the factors involved, Híjar et al. (2003) conducted a detailed analysis of pedestrian injuries in Mexico City, where pedestrian death rates are estimated at three times those of Los Angeles. Using a mix of spatially-coded quantitative data and qualitative methods, these authors developed portraits of drivers and victims that underscore the importance of several mutually reinforcing risk factors: poverty, a lack of understanding of how drivers are apt to react to pedestrians, inattention by drivers and pedestrians alike to risky conditions, insufficient public investment in traffic lights and road lighting, and dangerous mixes of industrial, commercial, and private traffic. Bartlett (2002) draws on hospital and community-based studies to show how poverty and gender affect the risks, and how the time pressures on urban parents limit the effort they can devote to closely supervising their children.

In seeking to raise the public-health profile of these important causes, WHO (2004, 2007a) has given particular emphasis to the risks that are faced by adolescents and young adults, among whom road traffic injuries rank (worldwide) in the top three causes of death in the ages of 5 to 25 years (WHO 2007a: 3). In WHO's Africa region, it is pedestrians (especially children 5–9) who face the greatest risks, whereas in Southeast Asia, the deaths occur disproportionately to riders of bicycles and motorized two-wheelers, who are aged 15–24 years. In poor countries of Asia, it is the vulnerable road users—pedestrians, bicyclists and operators of motorized two-wheelers—who bear a greater share of the injury burden than the occupants of cars, vans, and buses. For adolescents, young adults, and children alike, males face greater risks than females.

The full package of interventions known to be effective in high-income countries has typically not been implemented in low-income countries. The interventions include behavioral interventions—the promotion through media campaigns and other public-health communication outlets of seat-belt use for adolescents and

adults and appropriate restraints for infant and child passengers, and encouragement for bicycle and motorcycle riders to wear helmets—as well as traffic engineering concerns, such as the need to remove “unforgiving” roadside objects, properly maintain existing roads, and situate new ones so that high-speed traffic is not routed through densely-settled communities or placed near busy markets, schools, and children’s play-spaces. In many low- and middle-income countries, only meager resources are allotted to traffic control and enforcement of speed and road safety laws. Public health planners will also need to assess the priority that has been given to emergency rescue services (which may involve connections between the health system and the police) and the availability of pre-hospital care and in-hospital trauma centers.

7 Outdoor air pollution

Traffic and vehicular regulation are also key factors in outdoor air pollution. The Latin American literature is especially rich in scientific analyses of outdoor urban air pollution and its effects on respiratory illness via the intake of airborne particulates and other pollutants emitted by industry and vehicles. Ribeiro and Alves Cardoso (2003) provide a thorough review of such studies for São Paulo; for Mexico City, Santos-Burgoa and Riojas-Rodríguez (2000) have assembled and reviewed a great range of studies. There is increasing interest in the problem in India, China, and other rapidly-developing countries of Asia, where the effects of economic growth are readily apparent in levels and severity of outdoor air pollution.⁷ In Delhi, a crucial public health intervention was recently made by the Supreme Court in a decision that mandated conversion to compressed natural gas for bus, taxi, and other fleets of vehicles. There is reason to think that on a per-vehicle basis, this intervention has been effective; however, because the total volume of traffic has increased in Delhi, it is not yet obvious that the total volume of particulates and other pollutants has decreased (Kumar 2007, Narain and Krupnick 2007).

8 Future risks from climate change

Although much remains to be done to clarify the health implications of climate change, enough is already known to sketch the core elements of an urban adaptation strategy for low- and middle-income countries (Huq et al. 2007, McGranahan et al. 2007, Satterthwaite et al. 2007). According to current estimates, gradual increases in sea level are now all but inevitable over the coming decades, and this will place large coastal urban populations under threat. Alley et al. (2007) forecast rises in

⁷For an overview of air pollution issues in Asia, see <http://www.healtheffects.org/Asia/papasan-overview.htm>.

sea level of between 0.2 and 0.6 meters by 2100, which will be accompanied by periods of exceptionally high precipitation, more intense typhoons and hurricanes, and episodes of severe thermal stress. (The health effects of heat waves have not been much studied in the low- and middle-income countries, but the effects in Europe and the United States have been well-documented.) In Asia, many of the region's largest cities are located in the flood-plains of major rivers (the Ganges–Brahmaputra, Mekong, and Yangtze rivers) and in coastal areas that have long been cyclone-prone. Mumbai saw massive floods in 2005, as did Karachi in 2007. Flooding and storm surges also present a threat in coastal African cities (e.g., Port Harcourt, Nigeria, and Addis Ababa, Ethiopia) and in Latin America (e.g., Caracas, Venezuela). Figure VI depicts one of the major low-elevation coastal zones of China near Shanghai and Tianjin, two of the world's fastest-developing economic regions, in which increasing numbers of urban dwellers will be placed at risk.

Urban flooding risks in poor countries stem from a number of factors: the predominance of impermeable surfaces that cause water run-off; the general scarcity of parks and other green spaces to absorb these flows; rudimentary drainage systems that are often clogged by waste and which in any case are quickly overloaded with water; and the ill-advised development of marshlands and other natural buffers. When urban flooding takes place, fecal and other hazardous materials contaminate flood waters and spill into open wells, elevating the risks of water-borne disease. The urban poor are often more exposed than others to these environmental hazards, because the housing they can afford tends to be located in the riskier areas.

As Revi (2008) discusses in a detailed analysis of urban adaptation needs in India, governments from the local to national levels and their public health systems will need to anticipate increases in extreme-weather events. The Indian Ocean tsunami of 2005 heightened attention to coastal zone management in India and the region, but to judge from Revi's account, the responsibilities for urban adaptation and disaster management have been strewn across the bureaucratic landscape and are not yet organized in any coherent manner. Revi puts special emphasis on what is termed the "lifeline" infrastructure needed to cope with extreme events: the roads, bridges and other transport systems; water, sewer, and gas pipelines; infrastructure for coastal defenses and drainage; the power and telecommunications infrastructure that are of vital importance during disasters; arrangements made with local non-governmental and relief agencies for alerting populations to imminent threats and responding to disaster; and the hospitals, fire and police stations, schools, military forces and other first-responders involved during the onset and aftermath of such disasters (Satterthwaite et al. 2007, McGranahan 2007). In short, to plan adequately for the upcoming era of climate change, the urban public health system must engage with partners across a broad range of urban agencies. Many of the priority areas needing attention are already areas of concern on other counts—

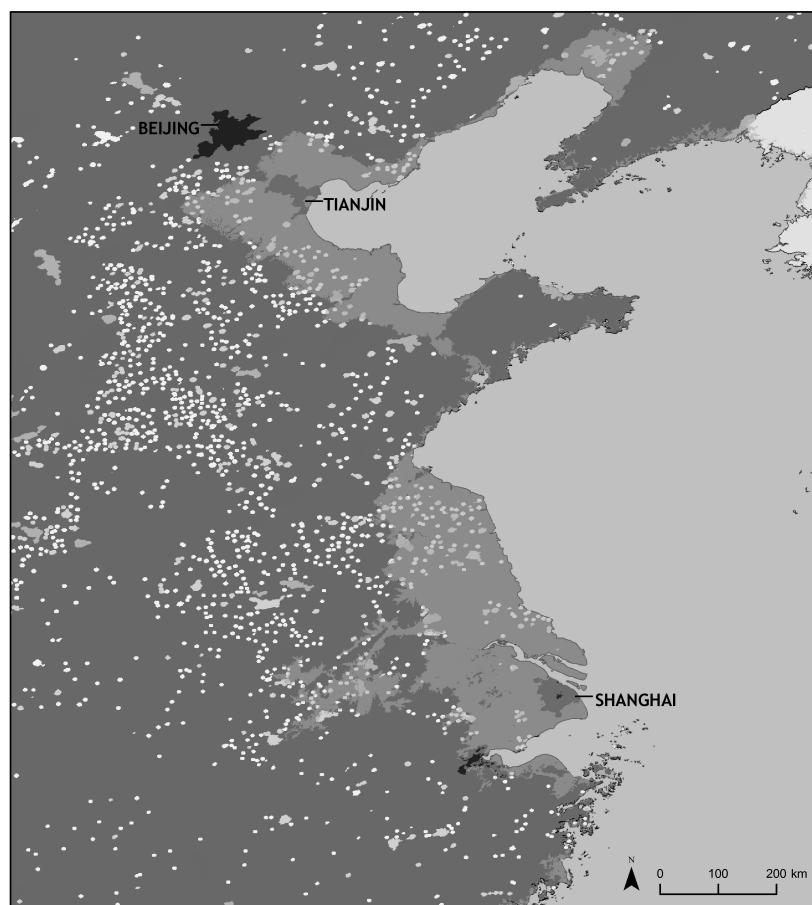


Figure VI: Yellow Sea region of China, areas within 10 meters of sea level. Source: McGranahan et al. (2007).

for instance, improvements in water and sanitation systems for the urban poor—but the prospects of climate change adds a new element of urgency to them.

D Conclusions

The preceding sketch of urban health in low- and middle-income countries is no substitute for the full treatment that the issues deserve, but it may at least suggest where further basic scientific and program intervention research is most needed. A theme running through the discussion is the need for concerted action, with the public health sector working in tandem with other local government agencies. Public health professionals cannot by themselves mandate the provision of safe water and adequate sanitation for the urban poor, with all the attendant financial costs; nor can they, acting alone, rise to meet the challenges of mitigating urban air pollution, reorganizing traffic and pedestrian activities to reduce deaths and injuries, and readying cities to adapt to the threats that will be posed by climate change. What is needed is what Harpham (2007) terms “joined-up government,” whereby public health agencies join with concerned actors in other sectors of municipal, regional, and national governments. Because the urban health system is dauntingly complex, with private for-profit and private non-profit care being a significant presence in most cities, effective partnerships are also likely to require engagement with the private sector. With political and administrative decentralization now well underway in many low- and middle-income countries, the arena in which creative partnerships are forged will increasingly be the local and municipal level. Much remains to be learned about how health expertise that is now situated in national ministries of health, and the international funding and technical assistance that has also been directed to national ministries, can be redeployed effectively to meet the many health needs of cities and their neighborhoods.

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