Chapter 13

Health in the city (2)

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Urban health: is the city infected?

The city is, at once a centre for disease and poor health, and also a place for hope, cures and good health. From the earliest times, the city has attracted the poor and been the target of the plague, as well as war. Likewise, the health care industry has always been part of the economic base of cities – from Lourdes, in France, to Rochester, Minnesota, to megacities around the world. With its highly disproportionate share of health resources, e.g. hospitals, physicians, nurses and social services, the big city is a centre of excellence in medicine. Yet, as Richard Horton, editor of the *Lancet* once noted: 'for all of its rational efficiency and benevolent intent, the city is likely to be the death of us.'[1] Are cities socially infected breeding grounds for disease? Or do they represent critical spatial entities for promotion of population health?

I propose to begin with a global view of urban health and disease, and the challenge this poses for public health today. Next, I examine some evidence for the hypothesis that population health in cities is relatively poor. Finally, I suggest that the more pertinent question is not whether the city is unhealthy or healthy but rather the extent to which we can alleviate the problems posed by inequalities of income and wealth – in the city as well as outside of it.

A global view of urban health

The United Nations projects that 61 per cent of humanity will live in cities by 2025.[2] There are now 19 megacities; in 2015, the UN estimates that there will be 23.[3] The fastest growing megacities are located in developing nations. Such cities are like 'huge human sponges, soaking up 61 million new people each year'.[4] Air travel and other routes of transportation have magnified their influence and vulnerability.

In contrast to megacities in developing countries, New York, London, Paris and Tokyo – the largest cities of wealthy nations belonging to the OECD – share a recent history of relative success in assuring their population's health, and confront a range of common characteristics and problems. They are great centres for prestigious

university hospitals, medical schools and medical research institutions. Despite these resources and the success of their public health reformers and urban planners in improving their quality of life, these world cities still confront onerous health risks – albeit to different degrees – for at least six problems:

- the re-emergence of infectious diseases (e.g. tuberculosis) and the arrival of new ones (e.g. AIDS)
- water and air pollution
- an increase in the homeless population
- barriers in access to medical services for ethnic minorities and/or the poor
- terrorism (e.g. the World Trade Center bombing in New York) and bio-terrorism (e.g. the release of toxic sarin gas in Tokyo's subway system)
- rising inequalities among social groups.

These problems will challenge any big city to develop a solid public health infrastructure. With or without such investments, there is already widespread belief that urban health is not as good as that of the population as a whole. Those who disagree point to contrary evidence. Strangely enough, there is insufficient evidence to provide strong support for either view. Hence, the 'puzzles' to which Julian Le Grand has alluded.

The reason we have so little solid evidence is that we have no routine information systems for monitoring the health of populations living in cities. While institutions responsible for disease surveillance and control – at the international, national and local authority levels – collect vital statistics and epidemiologic data by geographic location, national policy is made without systematic analysis of information for monitoring health status, public health infrastructure and the performance of health systems in cities. Julian Le Grand is deceptively modest when he confesses to 'knowing relatively little about health and the city'. The fact is that all of us know relatively little because information on health status is reported routinely by national or regional units; the city is most often ignored as a unit of analysis in health policy. I therefore propose to present a case for both sides of the urban health controversy – the city is sick and the city is healthy – summarising highly selective evidence for each view.

The sick city

Since the city is, by definition, the place where human density is greatest, it is hardly surprising that the city is a vector for disease transmission, particularly for the spread of infectious disease. One has only to recall the vivid descriptions of the plague in

Egypt or the cholera epidemics in London or New York or Paris to realise how cities can become epicentres for disease. But beyond such images of epidemics in the city, what kind of evidence do we actually have on population health in cities of OECD nations?

The Big Cities Health Inventory in the United States

In 1997, an unusual and unpublished database was assembled in the United States by the Chicago Department of Health.[5] Data reported by health departments of 46 big cities in the US (between 1992 and 1994) indicated that the average incidence rates for the leading infectious diseases – tuberculosis, AIDS and syphilis – were much higher in these cities than for the US as a whole. This is to be expected given the effects of population density on the transmission of infectious disease. More striking, however, were the mortality data (1994) reported by these cities for the leading causes of death from non-communicable diseases: heart disease and cancer. In stark contrast to the situation in England, the average age-adjusted mortality rate from heart disease across these cities was higher than the US average – 164 per 100,000 population versus 145.[6] For cancer, the average age-adjusted mortality rate across these cities was 153 per 100,000 population, in contrast to 132 for the US as a whole.

There are two convenient ways to summarise this information. The first is to calculate an overall mortality rate for all causes of death; the second is to calculate years of potential life lost (YLL). For all of the criticisms one might make of the YLL measure, it is nonetheless an important indicator of the health of a population. Simply defined, it is the number of years of life lost by people who died before the age of 65. The overall mortality rate for the 46 cities was 654 per 100,000; for the US as a whole it was 507. The average years of potential life lost for the 46 cities was 75 per 1000 population; for the US as a whole it was 54.

Urban social health in the United States (1995)

In 1995, the National Association of Public Hospitals in the US published a compendium of data on the 100 largest cities.[7] Among a range of indicators, this report notes that, in 1993, the gonorrhoea rate in the 25 largest cities was 434 per 100,000; for the US as a whole it was 172 per 100,000. Shifting to more generalised health indicators, the average infant mortality rate for the 100 cities was 12.2 per 1000 in 1988; for the US as a whole it was 9.8. In a subsequent study more specifically on 'inner city health', Dennis Andrulis, the former Director of Research for the National Association of Public Hospitals, characterises the greater prevalence of a large number of health problems in cities than in suburbs and rural areas as the 'urban health penalty'.[8]

In support of these findings on the urban health penalty and in contrast to evidence from the survey in England (see Le Grand's chapter), a study of low birth weight and children's height in England's Northumberland County concludes that 'there is substantial disadvantage to living in urban areas compared with rural areas'. This finding is particularly noteworthy because it adjusts for levels of 'deprivation' across urban and rural areas.[9] Yet another study, in Wales, using a different indicator of 'health' – premature mortality from all causes – also supports the sick city hypothesis after controlling for differences in 'deprivation' measures across urban and rural areas.[10] What then should one conclude from this assorted evidence on health in cities? People don't just 'feel worse' in cities (as indicated by the survey cited by Le Grand) – they are doing worse. Cities are therefore unhealthy places – at least in the US, England and Wales. What about in the rest of the EC?

Project Megapoles: health in Europe's capitals

Project Megapoles, a study of Europe's capital cities, has generated some fascinating comparative data. Funded by the EEC, this project seeks to improve health in these cities, especially for three target groups:

- youth and young families
- the socially disadvantaged
- older persons

In its main report, Project Megapoles compares age-specific mortality for each European capital to national rates.[11] Once again, we have, for the most part, evidence in support of the 'sick city' hypothesis. On average, mortality rates for infants (0–4 years) were 7 per cent higher in the cities than in their respective nations (31 per cent higher in Copenhagen; 44 per cent higher in Vienna; only 6 per cent higher in London and Stockholm). In contrast, these rates were lower in five cities: Helsinki (–18 per cent), Lisbon (–9 per cent), Lazio (–12 per cent), Madrid (–20 per cent) and Lyon (–25 per cent).

The World Cities Project

The Megapoles project was a source of inspiration in designing our own World Cities Project, a collaborative enterprise between the Wagner School of Public Service, New York University, and the International Longevity Center (ILC-USA). Among the megacities of the world today, New York, Paris, London and Tokyo often serve as a model for their counterparts in developing nations due to their relative wealth and dominance, their ties to the global economy, and their concentration of business,

cultural and scientific activities. Along with our partners at ILC-UK, ILC-France and ILC-Japan, we have embarked on a project to study public health infrastructure as well as health outcomes and health services for older persons and children in these cities.[12] The evidence we have examined so far lends some qualified support for the hypothesis that population health in cities is worse than at the national level. I emphasise the term 'qualified' because the evidence is mixed (see Table 13.1). In NYC, the evidence is incontrovertible: life expectancy at birth (LEB) is lower than in the US as a whole, particularly for males (67.8 years); infant mortality (IM) is higher; and rates of 'feeling worse' (self-reported total mobility limitations) among persons of 65 years and older (18.1 per cent) are higher than for New York State overall (16 per cent). In Tokyo, however, there are no significant differences, along these measures, in comparison to Japan as a whole. In Paris, although there are no differences in LEB when compared to France as a whole, infant mortality is lower in Paris than in France as a whole (4.0 versus 4.6). And in London, although there are no significant differences in IM, or in LEB for men, women have a longer LEB (79.3) than in the UK as a whole (78.8).

This 'qualified support' is fractured, however, when one examines life expectancy at 65 years, particularly for women (see Table 13.2). In New York City and London, there are no differences between city and the nation. In Tokyo, however, women live longer at 65 than in Japan as a whole (21.2 years versus 20.9 years). And in Paris, women live much longer than in France as a whole (26.5 versus 20.6).

Such findings – however intriguing – do not refute the hypothesis that cities are unhealthy, for the strongest case has yet to be made. It is that these wealthy world cities, along with all other megacities, are places where flagrant inequalities exist among sub-population groups. All of the averages we have considered mask enormous pockets of poverty with disadvantaged groups that suffer disproportionately in terms of their health status.

The healthy city

Since the city has been a symbol of civilization and human accomplishment over the past 2000 years and earlier, it has been the place for visions of human betterment, including population health.[13] In 1875, Sir Benjamin Ward Richardson, a disciple of Edwin Chadwick, gave a lecture to the Social Science Association meeting in Brighton, England on *Hygeia: a city of health*. His vision of an ideally healthy city inspired Ebenezer Howard and the 'Garden City' movement of the 1890s, as well as the WHO's 'Healthy Cities' movement that began in the late 1980s.[14]

Moving from the vision to the concept, the case for the healthy city is typically grounded in economic arguments or celebrations of its vitality and innovation in such diverse realms as architecture, urban design, culture, technology, and more. A recent American example may be found in President Clinton's State of the Union message in 1998, in which he refers to American cities as the 'vibrant hubs of great metropolitan regions'. In this respect, the Report of the US Conference of Mayors and the National Association of Counties notes that, between 1982 and 1998, metropolitan areas in the United States generated 85 per cent of all jobs and 86 per cent of the nation's total economic growth.[15] This economic power is concentrated among some regional giants that dwarf not only their own states but most of the world's nations. Metropolitan New York's economic output, for example, is greater than that of 45 of the 50 states.[16]

Claims for the enduring power of cities, including big cities, most often come out of the literature on urban planning and do not typically invoke evidence about population health. But there is a body of evidence in support of the hypothesis that urban health compares favourably to that of the nation as a whole.

The National Health Interview Survey

The National Health Interview Survey (NHIS) is one of the most reliable indicators of functional health (how people feel) in the United States. In 1988, the results of this national survey were reported for major metropolitan regions in the US. Comparison of health indicators for these regions – an aggregation of the urban population – with the national average provides a unique opportunity to shed light on another dimension of urban health (see Table 13.3). In contrast to the Big Cities Health Inventory, which relies on outcome measures of health, NHIS suggests that most indicators of self-assessed health status are better in major metropolitan areas than for the country as a whole.

For example, the percentage of population with activity limitations is lower in metropolitan areas than in the country as whole (12.4 in MSAs versus 13.7). Likewise, the percentage of population reporting fair or poor health in the metropolitan areas is lower than in the country as a whole (8.7 versus 9.4). Also, the number of restricted activity days per 100 persons is lower in metropolitan areas than in the rest of the country (1390 days versus 1470 days). Self-reported data on selected chronic conditions support these more general indicators of functional health in the NHIS (see Table 13.3). There are only two conditions for which reported rates appear to be higher in major metropolitan areas than in the US as a whole: asthma and deformities or orthopaedic impairments.

Focused studies on urban–rural differences

In Virginia, a study of low birth-weight infants in rural versus urban areas found that rural areas had a higher incidence of low birth-weight infants.[17] This study probably reflects the fact that the infants' parents in rural areas were more apt to be single, less educated, African-American, and to have lower income than their counterparts in the urban areas.

In Kentucky, a comparison of health status between rural and urban adults found few differences when measured by a sophisticated set of criteria used in the 'medical outcomes study' (physical functioning, role functioning, social functioning, general mental health and general health perceptions). With respect to rural versus urban elderly adults, however, Mainous and Kohrs found a situation of 'rural inferiority' – rural elderly had significantly worse health status than their urban counterparts.[18]

In Georgia, with respect to cancer, a study found that residents of a rural area were twice as likely to have unstaged cancers as their urban counterparts. This probably reflects less effective diagnosis and assessment of the tumours' growth. Among patients with a known and documented tumour 'stage' at diagnosis, rural patients tended to have more advanced disease than urban patients, which probably reflects better access to medical treatment in urban areas.[19] Thus, for cancer care there may be an urban 'advantage' at least in terms of treatment.

Additional and more recent evidence from the NHIS (beyond Table 13.3) suggests that the central city is healthier with respect to self-reported incidence of diabetes and hypertension. Also, as in England, the US National Household Survey of Drug Abuse reports higher rates of binge drinking and consumption of alcohol in rural areas than in urban areas. But in contrast to England, the US has higher tobacco use in rural areas than in cities. In summary, a review of selective evidence can support the hypothesis that cities are actually healthy in comparison to rural areas.

Concluding observations

There is evidence of an 'urban penalty' in terms of doing worse and feeling worse in the United States. But there is also evidence of an 'urban advantage' in terms of self-assessed health status, health habits and with respect to quality cancer screening services. The reason the evidence reviewed here is mixed and possibly confusing is twofold:

(a) There are many ways to define and measure health. As we have seen, measures range from disease prevalence, LEB, age-specific mortality rates and indicators of self-assessed health.

(b) There are many ways to define and measure cities. As we have seen, spatial definitions range from inner cities to large metropolitan areas. Therefore, an apt conclusion may be that the *a priori* is as dangerous in health policy as it is in philosophy! More concretely, this suggests that in thinking about rural versus urban health, it is prudent to avoid assumptions about the validity of urban versus rural factors as determinants of health and to include well-known risk factors for bad health as they affect both rural and urban spatial units. These factors are: poverty, inequality and low levels of social capital/social cohesion.

Acknowledgements

I wish to thank Irena Dushi, Susan Ghanbarpour and Meron Makonnen for their assistance with my review of the literature and preparation of tables for this paper.

Table 13.1 Life expectancy, infant mortality and total mobility limitation, national and city data

Location	*LEB (male)*	*LEB (female)*	*IM (1995)*
New York City (1990)	67.8	77.7	8.8
US	71.8	78.8	8.0
Tokyo (23 wards) (1995)	76.3	82.9	4.2
Japan	76.4	82.9	4.3
Paris (1990)	72.6	80.8	4.0
France	72.7	80.9	4.9
London (1991)	73.1	79.3	6.3
UK	73.2	78.8	6.0

Sources

Life Expectancy at Birth (LEB):

New York City: New York City Department of Health (NYCDOH)/Center for Health Statistics.

Paris: INSEE, *Chiffres et Indicateurs départementaux*, published by Ministère de la Santé and Ministère des Affaires Sociales.

Tokyo: Tokyo Eiseikyoku (1997). *Annual report on health in Tokyo. Vol. 48.* Tokyo Statistical Association, 1997.

London: Life expectancy figures come from Bone *et al. Health expectancy and its uses.* OPCS, April 1995.

US, Japan, France and UK: figures come from *OECD health data 2000: a comparative analysis of 29 countries.*

Infant Mortality (IM):

New York City: New York City Department of Health (NYCDOH)/Center for Health Statistics.

Paris: INSEE, *Chiffres et Indicateurs départementaux*, published by Ministère de la Santé and Ministère des Affaires Sociales.

Tokyo: Tokyo Eiseikyoku (1997). *Annual report on health in Tokyo. Vol. 48.* Tokyo Statistical Association, 1997.

London: Infant mortality figures come from PHCDS.

US, Japan, France and UK: figures come from *OECD health data 2000: a comparative analysis of 29 countries.*

Table 13.2 Life expectancy at 65 years

Location	*Life expectancy at 65 years (male)*	*Life expectancy at 65 years (female)*
New York City (1990)	15.3	19.0
US	15.1	18.9
Tokyo (23 wards) (1995)	16.5	21.1
Japan	16.5	20.9
Paris (1995)	21.4	26.2
France	16.1	20.6
London (1991)	14.5	18.6
UK	14.2	18.0

Sources

New York City: New York City Department of Health (NYCDOH)/Center for Health Statistics.

Paris: INSEE, *Chiffres et Indicateurs départementaux*, published by Ministère de la Santé and Ministère des Affaires Sociales.

Tokyo: Tokyo Eiseikyoku (1997). *Annual report on health in Tokyo. Vol. 48.* Tokyo Statistical Association, 1997.

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US, Japan, France and UK: figures come from *OECD health data 2000: a comparative analysis of 29 countries.*

Table 13.3 Selected health characteristics

Health characteristics	*All large CMSAs & MSAs*[a]	*Rest of the country*
Percentage limited in activity	12.4	13.7
Percentage with fair or poor respondent-assessed health	8.7	9.4
Restricted activity days per 100 persons	1389.8	1470
Arthritis	113.1	129.9
Deafness	71	90.8
Deformities or orthopaedic impairments	121.6	111.6
Heart disease	71.6	84.1
High blood pressure	108.2	121.5
Haemorrhoids	43.6	45.8
Chronic bronchitis	46.2	49.4
Asthma	44	41.2
Hay fever	88.6	93
Chronic sinusitis	114.2	139.7

Sources

US data from *Current estimates from NHIS 1988, Series 10, # 173*. CMSA and MSA data from *Health characteristics of large metropolitan statistical areas: US, 1988–1989*

Notes

a. MSAs are metropolitan statistical areas. The NHIS report contains data for 18 Consolidated Metropolitan Statistical Areas (CMSAs) and 15 (MSAs). The total population represented in the survey is 117,211,000. The definition and titles of MSAs are established by the US Office of Management and Budget (OMB) with the advice of the Federal Committee on Metropolitan Statistical Areas. Since January 1980, each MSA must include at least one of the following: one city with 50,000 or more inhabitants and an area (defined by the US Bureau of the Census as urbanised) of at least 50,000 inhabitants and a total MSA population of at least 100,000 (75,000 in New England). The 1980 standards provide that, within metropolitan complexes of 1 million or more population, separate component areas are defined if specified criteria are met. Such areas are designated primary metropolitan statistical areas (PMSAs), and any area containing PMSAs is designated a consolidated metropolitan statistical area (CMSA).

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