Chapter 16

Health Services Research and the City

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1.0. INTRODUCTION

Health services research is, by nature, multidisciplinary, for it draws on the methods, concepts, and theories of social sciences, which are relevant to the study of how the organization and financing of health services can improve the delivery of health care services (Gray, *et al.*, 2003). While medicine and public health, too, are multidisciplinary enterprises drawing on such disciplines as molecular biology, physiology, anatomy, genetics, epidemiology and more, health services research departs from these disciplines in focusing not on the nature of disease and health but rather on the financing and organization of health systems.

So it is with urban health services research albeit that this field is more narrowly focused on health services in cities. The city focus has resulted in a large body of research on vulnerable groups, barriers to service access, public health clinics and community health centers. Likewise, it has led to important investigations of safety-net institutions, e.g. public hospitals and health centers, which serve a disproportionate share of uninsured and low-income patients. In addition, urban health services research has focused on a host of specific services associated with subpopulations suffering from TB, HIV/AIDS, drug addiction and other social pathologies that are typically associated with the "inner city."

If one views the field of urban health services research through a kind of intellectual telescope, what is most striking are the many issues that have escaped careful scrutiny. The city, after all, is more than a center of disease, poor health and pervasive poverty (Rodwin, 2001; Glouberman, 2003). Since the oracle of Delphi and the miracles of Lourdes, the city has also functioned as an economic base for medical cures. Most large cities serve as headquarters for academic medical centers (Ginzberg and Yohalem, 1974), places where health professionals congregate, and more generally, strategic locations for health promotion (Freudenberg, 2000) as well as the diffusion of healthy lifestyles among the well-to-do. There is a significant

literature on academic medical centers, hospitals, health centers and multiple organizational forms of medical practice but most studies do not explore the relationships between these institutions and the city. What is more, there are few comparative analyses of health systems and services among cities (Rodwin, 2005).

These gaps in the field are unfortunate for several reasons. First, they leave open a host of important and unanswered questions. For example, does the density of tertiary health services – academic medical centers, sub-specialists, and state-of-the-art medial technologies – improve access and quality of urban health care? Does it confer any discernable benefits on the health status of the urban populations who reside in their proximity? Do the teaching programs, hospital clinics and affiliated health centers provide significant benefits to those most in need of basic health services, including primary care? What side effects, other than employment (Vladeck, 1999) diffuse down to the most disadvantaged "inner city" populations who live in the shadow of the academic medical center? And what is the optimal location of public facilities for the provision of health services to the most disadvantaged?

Second, given significant differences among cities and their health systems, there are clearly ample opportunities for comparative learning. For example, cities as different as New York, Los Angeles, Chicago, and Houston could clearly learn from one another's experience in organizing their public health infrastructure and providing health services to their residents? Often it is easier to implement policy changes at the local level, particularly when decision-making is decentralized, fragmented and responsive to local preferences, traditions and distinctive conditions. Typically, local authorities are able to move faster than their national governments in learning from city-to-city exchanges (O'Meara, 1999). Thus, it would be fruitful for the field of urban health services research to initiate systematic comparisons of urban health systems – both among cities as well as among neighborhoods within them.

In this chapter, we review some of the more salient studies at the intersection of urban and health services research. In addition, we propose a research agenda to address the gaps noted above. Finally, to illustrate some small steps along an international dimension of the proposed research agenda, we provide some examples of our own on-going urban health services research on world cities.

2.0. URBAN STUDIES AND HEALTH SERVICES RESEARCH

As Scott Greer (1983) observed over two decades ago, "What is striking to those who have been immersed in urban studies and then have become interested in the social response to health and ill health is the extreme segregation of the two areas of inquiry." From the heyday of 19th century European public health movements which focused on the importance of sanitation (clean water supply, sewers and garbage disposal) and improvements in housing conditions, to twentieth century interventions aimed at improving access to health services, the main body of research on public health, as well as on medical care, was largely focused on cities. Moreover, the triumph of public health is largely responsible for making cities more habitable. Yet, the field of urban studies has largely ignored public health (Coburn, 2004), and the field of health services research has followed the growth of the welfare state in veering away from local territorial concerns and focusing largely on statistical aggregates ranging from regions, states and nations.

Urban planners typically study cities from perspectives that span across architecture, urban design, transportation, economic development, the environment,

sociology, anthropology, management, and ecology. Even in great syntheses on the state of cities, e.g. Lewis Mumford's *Culture of Cities* (1938), Jane Jacobs's *Death and Life of Great American Cities* (1961) or more recently Peter Hall's *Cities in Civilization* (1998), there is virtually no discussion of the health systems that service their populations. Likewise, in the official annual reviews by the Department of Housing and Urban Development on the State of Cities (HUD, 1999a), there are no chapters on the state of local public health infrastructure or even safety-net services for the uninsured, most of which are left to city and county governments.

In the literature on public health, there are, of course, some classic case histories on the evolution of public health and hospitals in specific cities. For example, on New York City, Duffy's (1974) history of public health or Rosner's (1982) history of New York's hospitals. In the broader field of health services research, however, whenever the city appears as a unit of analysis, there seem to be only two ways to explain it. The investigators are either: 1) focused on "inner city" (often meant to refer to "poor" and "poor minority") populations that happen to be concentrated in specific inner city neighborhoods ("concentrated deprivation"); or 2) have selected, unwittingly, a spatial unit that happens to be a neighborhood, a city, or part of a greater metropolitan region. In both cases, however, their choice was driven more by data availability or other criteria than derived from theoretical or practical considerations about how characteristics of cities are related to different aspects of health care systems.

We propose to review two bodies of urban health services research, which fit either in categories (1) or (2) above, or provide noteworthy exceptions to them: a) health services for "inner city" populations; and b) performance of health systems. All of these areas of research are clear exceptions to our general proposition that health services research has focused largely on national or state levels of analysis. They deserve a good deal of attention because of their significance for the field. But none of them dispel our critique that the dominant approach to health services research has largely ignored the question of how cities and their health systems affect urban health.

3.0. HEALTH SERVICES FOR "INNER CITY" POPULATIONS

The dominant literature on health services in cities focuses on the use of health care among vulnerable populations and the organizations that care for them. Only rarely does this literature discuss the unique challenges associated with addressing the health care needs of vulnerable populations in urban environments. By focusing exclusively on the underserved populations of the "inner city," it fails to provide a complete picture of urban health care systems. Nonetheless, this literature has contributed to our understanding of the health services system for the uninsured and disadvantaged (the so-called "safety net"), the barriers to access faced by vulnerable populations, and the value of innovations in health policy and health care delivery for these populations. Noteworthy examples include single city case -studies of particular populations, programs or safety-net institutions, studies that examine a particular type of program or safety-net institution in several cities and, more rarely, studies that compare health services for vulnerable populations in urban, suburban and/or rural areas. Review of this literature can be organized into lessons about safety net providers and health insurance programs for the poor and underserved.

3.1. Safety-Net Providers

An important cluster of studies on "inner city" populations examines the performance and well-being of health care safety-net institutions in cities. The U.S. relies on a patchwork "system" of safety-net providers for the uninsured, Medicaid recipients, and other medically vulnerable populations. The nature of the patchwork varies considerably from community to community (Grogan and Gusmano, 1999; Lewin and Altman, 2000), but often includes institutions and programs funded, in part, by city and other local governments (National Governor's Association, 2000; Norton and Lipson, 1998a). City and County public hospitals, community health centers, local health departments, and a variety of local programs for the uninsured are usually the "providers of last resort" for individuals in the community who do not qualify for Medicare, Medicaid, or other forms of public health insurance (Salit, *et al.*, 2002). Beyond these formal safety-net institutions, physicians and other health care providers located in low-income neighborhoods represent an important part of the ambulatory care system for poor people.

Concerns about the viability of the health care safety-net have prompted studies that evaluate the health and performance of safety-net institutions in cities (Ambruster and Lichtman, 1999; Felt-Lisk, *et al.*, 2002; Thaver, *et al.*, 1998; Thorpe, 1988). These institutions and programs play a critical role in providing access to care for the uninsured and other medically underserved individuals, but they are threatened by recent changes in the health care system. The growth in the number of uninsured, reductions in payments from public and private payers and greater competition in the health care system have combined to make it more difficult for health care safety-net providers to serve the uninsured (Cunningham, 1998; Iglehart, 1995; Lewis and Altman, 2000). An Institute of Medicine (IOM) report notes that America's health care safety-net is "intact, but endangered" (Lewin and Altman, 2000). Faced with these challenges, cities across the U.S. are working to restructure their health care safety-net systems. This often involves changing the role of government and forming a variety of public-private partnerships (Andrulis, 1997; Felland and Lesser, 2000; Gabow, 1997; Norton and Lipson, 1998b).

Many of the innovations adopted in recent years involve the application of fashionable management technologies and public health ideas to health programs for the poor. In summary, such elements of managed care (Andrulis and Gusmano, 2000) involve the use of primary care gatekeepers, health promotion and disease prevention programs, and careful scrutiny of medical care use. For example, more than 100 health care safety-net institutions created their own Medicaid managed care plans during the 1990s (Freund, 1984; Gray and Rowe, 2000; Gusmano, *et al.*, 2002). Nearly all of these plans are based in cities. They are important because their survival and performance can have dramatic effects on their sponsoring organizations and the populations they serve. Although these plans remain fragile, they are playing an increasingly important role in the Medicaid program of many cities (Sparer and Brown, 2000).

The Agency for Healthcare Research and Quality (AHRQ) has coordinated a number of studies of the urban health care safety-net, which provide a comparative analysis of these institutions, as well as several indices that measure their needs and capacities. As Billings and Weinick (2003), the authors of these reports, have emphasized, "all safety-nets are local," which is why the AHRQ compares safety net institutions in 90 metropolitan areas, including 171 cities. The extraordinary variation in the size, scope and health of the health care safety-net in different parts of

the U.S. supports the thesis that "place matters" among and within metropolitan regions (Dreier, *et al.*, 2001). Kawachi and Berkman (2000) have provided a theoretical and empirical basis for research on the impact of neighborhood characteristics, e.g. income, social cohesion and crime on population health status. Billings and Weinick, (2003) show that neighborhood characteristics, not directly related to the health care system, are important because they influence the health care safety-net and are, in turn, influenced by it.

To support such analyses, Billings and Weinick, (2003) include a variety of contextual variables in their data book, including population size, age distribution, racial/ethnic distribution, income, education, living arrangements, home ownership, and crime. This recognition of the relationship between city and neighborhood characteristics and the health care safety-net represents an important and promising direction for a more comprehensive analysis of urban health care systems. Likewise, a recent comparative study of the urban safety net in Baltimore, Detroit, Boston, Oakland, Atlanta and Chicago represents a promising direction for comparative health services research on cities (O'Toole, *et al.*, 2004).

3.2. Health Insurance Programs for the Poor and Underserved

A second topic in the literature on health services for inner city populations is the implementation of Medicaid (health insurance for the very poor), the State Community Health Insurance Program (SCHIP) – a recent program that covers children whose parents' income exceeds Medicaid eligibility levels – and other federal, state and local programs designed to expand access for the poor and underserved. Although most of the literature on Medicaid and SCHIP is focused on national or state levels of government, there are several exceptions. For example, studies that evaluate innovations in Medicaid and SCHIP enrollment (Fairbrother, *et al.*, 2004; Halfon, *et al,* 1997; Haslanger, 2003), access to care for Medicaid and SCHIP enrollees (Fossett, *et al.*, 1992), and the implementation of Medicaid managed care (Delia, *et al.*, 2001; Gabow, 1997; Page, 1999; Perloff, 1996) often examine city-level data.

Cities and other local governments have also adopted their own small programs to extend health care coverage to the uninsured and other vulnerable populations (Hatton, 2001; Norton and Lipson, 1998b). These programs take a variety of forms ranging from physician volunteer efforts supported by a small pool of public funds, to state licensed programs for the uninsured. Like Medicaid and SCHIP, local programs for the uninsured usually involve some role for managed care (Andrulis and Gusmano, 2000). Some programs contract with HMOs or other managed care organizations. Other cities have created quasi-managed care plans for the uninsured. The Boston Medical Center's (BMC) *Boston HealthNet (Pilot) Program*, for example, served as the pilot plan for BMC's Medicaid managed care plan. This program and similar plans in cities across the country, are not state licensed HMOs, but rely on managed care techniques to control costs and encourage primary care (Andrulis and Gusmano, 2000). Such programs are quite fragile due to the uncertainty of the local fiscal environment, and the growing pressures to spend limited resources on different priorities. Their existence highlights the extent to which cities are responsible for the "residual" populations that fall between the cracks of national and state policy (Rodwin and Gusmano, 2005). The limited scope and instability of these programs, however, illustrates the limits that cities face when they try to address these problems – limits in their capacity to raise revenue and reliance

on local business to maintain their tax receipts (Elkin, 1987; Peterson, 1981; 1995; Peterson and Rom, 1990; Stone, 1989).

3.3. Programs for Special Populations

Since special populations – for example, ethnic minorities, poor immigrants, and injection drug using (IDU) populations are concentrated in cities, the urban health services research literature includes many studies of programs for these groups (Solomon, *et al.*, 1991; Juday, *et al.*, 2003). Such programs include those for people with tuberculosis and HIV/AIDS (Ryan White) as well as needle exchange and other programs for IDU populations. Infectious diseases like hepatitis, tuberculosis, and HIV/AIDS spread rapidly in densely populated areas and cities are viewed as "breeding grounds," as well, for social pathologies, e.g., drug use (*New York Academy of Medicine*, 2001). Some of this literature explores the prevalence of these conditions and identifies the risk factors for infection, but most studies examine the availability, use and performance of health care and social programs for specific subpopulations. Even broad-based interventions such as the RW Johnson's Urban Health Initiative, tend to focus on specific population groups, e.g. children (Schroeder, 1998).

3.4. Barriers to Services and Insurance

Studies that investigate the use of health services by subpopulation groups identify multiple barriers to access. Not surprisingly, these include barriers that affect other poor and underserved groups including, income, education, insurance and the availability of health care providers. In addition, alcohol use, the presence of minor children, concerns about privacy, trust and stigma also inhibit the use of health care among these special populations (Hutchinson, *et al.*, 2004; Shedlin and Shulman, 2004; Sterk, *et al.*, 2002). Finally, policies designed to provide care can, themselves, represent a barrier if they "impose unrealistic expectations" on the populations they are designed to serve (Van Olphen and Freudenberg, 2004).

3.5. Race, Ethnicity, Culture and Access to Medical Services

Studies that focus on health care for inner city populations often document and explain the relationship between race, ethnicity and access to quality health care. Big cities often serve as the sites for this research because their populations are so diverse. These studies highlight significant barriers to access faced by racial and ethnic minorities (Andrulis, 2000; Garbers, *et al.*, 2004; Kotchen, *et al.*, 1998; Ray, *et al.*, 1998; Seid, *et al.*, 2003).

What accounts for these persistent barriers to access? Language (Seid, *et al.*, 2003), culture (Garbers, *et al.*, 2004; Kosloski, *et al.*, 2002), insurance coverage (Andrulis, 2000), and proximity to medical services (Prinz and Soffel, 2004; Schulz, *et al.*, 2002), all contribute. And one important response to these access barriers faced by racial and ethnic minority residents of cities is the growing push to develop greater "cultural and linguistic competence" among health care providers (Diversity Rx, 2001). AHRQ, the Department of Health and Human Services and the National Institutes of Health, among others, have each called for research and training to improve cultural competence.

4.0. PERFORMANCE OF HEALTH SYSTEMS—PRACTICE VARIATIONS AND AVOIDABLE HOSPITALIZATIONS

John Wennberg's pioneering research on small-area variations in health care delivery, and the subsequent research that it spawned, compares the performance of health care systems across small geographic areas including, but not limited to, cities (Wennberg and Gittlesohn, 1973; Wennberg, Freeman and Culp, 1987). These studies document extensive variations in rates of hospital admission for certain conditions and rates of surgical procedures between areas that have similar demographic characteristics and similar rates of mortality (Perrin, *et al.*, 1990). The findings raise important questions about standards of clinical decision-making and the adequacy of reimbursement mechanisms.

This approach to health services research can also be used to evaluate disparities in care and to investigate problems of access to care for poor, underserved populations in cities. For example, studies of ambulatory sensitive conditions (ASC) often examine the variation in rates of ASC within and across cities. This research suggests that individuals without health insurance are more likely to be admitted to hospitals with ASC because they are less likely to receive appropriate and timely primary care than those with insurance (Billings, *et al.*, 1996; Weissman, *et. al,* 1992; Hadley, *et al.*, 1991). These are diagnoses for which access to timely and appropriate primary care should decrease or avoid the need for hospital admission. High rates of admission for ASC, among residents of an area, may indicate that residents face inappropriate barriers to primary care.

In contrast to many comparisons of the urban health care safety-net or the implementation of Medicaid and other health care programs for the poor, much of the literature on small area variations in health care documents the performance of a local health care system for the entire population, not just the components of the system that address the needs of the poor. The most noteworthy examples of this approach, applied to whole cities, are the comparative analyses of Boston and New Haven (Fisher, *et al.*, 1994; Wennberg, *et al.*, 1987) which suggest that significant differences in population-based patterns of hospital discharges, in these cities, do not appear to reflect differences in population health, as measured by mortality. Such findings are critical to the development of further research on the relationship between city characteristics and their health systems.

5.0. BEYOND "INNER CITY" POPULATIONS AND MEASURING HEALTH SYSTEMS PERFORMANCE

Most of the health services research noted above is related to the city, either because it is focused on poor populations and the organizations and programs that serve them, or because the data were available at the city level. It is not, however, related to the city through criteria that are derived from theoretical or practical considerations about how the organization and financing of health services are tied to intrinsic characteristics of cities.

There are, however, some notable exceptions to this pattern. Andrulis and Goodman (1999) published an impressive compendium on the 100 largest cities in the U.S. with some indicators on the extent of the social safety net. This dataset is noteworthy for it distinguishes suburbs from central cities and documents important dimensions of the urban health penalty (Andrulis, 1997). To date, Andrulis

and colleagues have focused primarily on measures of health, including infant mortality and life expectancy, but they also present data on the use of prenatal care in these cities. The next stage of the analysis will extend this work to include information on the use of hospital services. There remain, nevertheless, insufficient data on urban (inner city as well as suburban) and health system characteristics across most cities.

6.0. A RESEARCH AGENDA ON HEALTH SERVICES AND THE CITY

The costs of segregating inquiry among the fields of urban planning and health services research have been increasing along with urbanization. For as we live in a more urbanized world, there is increasing awareness that the city is indeed a strategic unit of analysis for understanding the health sector. Yet most health services research – both in the United States and among international organizations such as the United Nations, the World Health Organization (WHO) or the Organization for Economic Cooperation and Development (OECD) – continues to assume that states or the nation, as a whole, are the most relevant units of analysis for assessing the performance of health systems and health policy. There are many limitations to this view.

First, there are enormous variations in health and health system performance within nations, between urban and rural areas, between large and small cities, and between depressed and prosperous ones. Many studies on urban health have documented evidence of an urban health penalty for subpopulation groups living in cities (Andrulis and Shaw-Taylor, 1996; Geronimus, 1996). Other studies have focused on disparities in health status among different groups (NYCDHMH, 2004). In addition, the RW J Foundation's Tracking Project has highlighted disparities in resource levels and health system performance among midsize cities across the U.S. (Ginsberg, 1996).

Second, it is exceedingly difficult to disentangle the relative importance of health systems from other determinants of health, including the sociocultural characteristics and the neighborhood context of the population whose health is measured (Ellen, *et al.*, 2001). It is even more difficult to do so at a level of aggregation such as the nation state where important dimensions of health policy are made.

Third, despite the rise of the welfare state, even in the most centralized nations, many dimensions of health and social policy elude national and state levels. Some of the most challenging problems – care for vulnerable older persons, people with severe mental illness, the most economically disadvantaged and the uninsured-fall into a kind of residual category of problems that are passed down to local governments among which city governments bear a disproportionate share (Rodwin and Gusmano, 2005).

For all of these reasons, a good case can be made for integrating inquiry across the fields of urban studies and health services research. Among those concerned with cities, this will require a new focus on the health sector and measures of population health. Among those wedded to health services research, it will require special attention to health systems and population health in cities, which will, in turn, require disaggregated data on health services and health at the city and neighborhood levels. To extend previous inquiries along these lines beyond the dominant literature on "inner cities" and health, it would be helpful to develop a framework that explicitly addresses the broad scope of relationships between cities and health systems.

6.1. A Framework for Comparing Cities, Health Services and Health

Development of such a framework raises a number of important questions: What specific requirements do cities place on their public health infrastructure and the organization and financing of their health services? Conversely, what are the effects of hospitals, academic medical centers, medical research and training activities, and more generally patterns of access to primary care services on the local economy of the city, as well as its population's health? How do national and subnational level patterns of health care financing and organization affect city-level interventions in the health sector? Finally, how do spatial patterns of what Kronick and Enthoven (1999) called "excess and deprivation" in the supply of health services, across city neighborhoods, affect a city's health system and its population's health?

Such questions raise at least two conceptual issues. First, a task in any comparative inquiry is the issue of defining relevant units of analysis. Second, related to the first, is the need to structure comparative analyses around similarities, as well as differences, among these units, so as to encourage the generation of hypotheses about the impact of differences in health services financing and organization across cities that share in common a number of explicit attributes.

With respect to the first issue, although there is a rich literature on the classification of cities (Clark, 1996; Friedmann, 1986) most existing comparisons of health and health care in cities have not paid sufficient attention to this problem. Vlahov and Galea (2002) recognize its importance by highlighting what they call "urbanization" as one of two dimensions in their proposed "urban health framework." By this term, they refer to the broader forces affecting the nature of cities over time. If one were to measure such a concept at one point in time and rely on some crude indicators for characterizing different cities, some obvious ones to consider would be: population size, density, and income per capita. Such indicators allow one to distinguish between major categories of cities: e.g. megacities of the third world, defined by the United Nations as urban agglomerations with a population exceeding 10 million people; global (or world) cities or "city-regions" (Scott, 2001), and mid-size or smaller cities, once again classified by density and income per capita. The mid-size or smaller cities might usefully be classified in relation to their current patterns of economic growth. For example, in the U.S. it is common to distinguish northeastern rust-belt, de-industrializing cities from the rapid growing sun-belt cities of the southwest. Alternatively, the U.S. Department of Housing and Urban Development (HUD, 1999b) distinguished a set of "double trouble" cities due to their high unemployment, significant population loss, and/or high poverty rates; and the RW Johnson Foundation's urban health initiative has selected five "distressed cities" for specific interventions and evaluations of their effectiveness (Weitzman, *et al.*, 2002; Brecher, *et al.*, 2004).

Even with such crude distinctions, however, acceptance of such city "categories," (or others) still leaves unanswered the problem of how to define relevant spatial boundaries for purposes of making comparisons. For example, most United Nations' demographic and housing studies, among cities, refer to the most expansive definitions available. New York is defined even more broadly than the U.S. Census definition of the consolidated metropolitan area (21.2 million) or the tri-state region (19.5 million) with 21 counties in New York, New Jersey and Connecticut, let alone the 8 million that make up the legal entity New York City.

Some of the most important studies of health and quality of life in cities have followed the United Nations in this respect. For example, an important comparison

of social and health indicators across the world's largest metropolitan areas draws on these United Nations definitions (Population Action International, 1990). Likewise, the World Bank has collected some basic health and quality of life indicators on large cities around the world (World Bank, 2002). In contrast, an important data collection exercise, initiated by the European Community – Project Megapoles (Bardsley, 1999) – draws on the legal definition of city boundaries for the major capitals of Europe. In this case, the selection criteria for inclusion are not related to population size but rather to their political functions as national capitals. The one exception to this criterion was the inclusion of Lyon for France, instead of Paris because French authorities representing the capital decided not to participate.

With respect to the second issue, structuring comparative analyses around similarities, as well as differences, among city units, even after selecting cities among the same category (in terms of population size and density) and agreeing on relevant criteria to define appropriate units of analysis, it is critical to think about relevant criteria for defining similarities and differences among these units. Once again, Vlahov and Galea's (2002) focus on three dimensions of cities – social environment, physical environment and health and social services – is a useful starting point. But to enable a focus on similarities and differences across cities, these dimensions need to be disaggregated. For example, one would want to have some indicators on the economic base of cities, their physical environment, housing characteristics, transportation, socio-economic, demographic characteristics, and more. To develop an understanding of health and social services, it is important to develop some indicators of health system characteristics. For example, the levels of health care resources, the relative importance of hospitals and academic medical centers in the city, the mix of public and private hospitals and the strength of the social safety net.

In summary, an initial framework for comparing cities, health services and health would begin by distinguishing city categories and spatial units of analysis (Table 1).

Next, it would classify them according to a variety of key urban/neighborhood and health system characteristics, as depicted in Table 2, and explore the impact of cities – their neighborhood and health system characteristics – on two outcomes: the use of health services and health status.

Such a framework would provide a useful foundation on which to develop indicators to compare cities with respect to their health systems, use of health services and population health.

Table 1. A Framework for Comparative Analysis

City Categories
Megacity
World city
Mid-size city
Smaller city
Distressed vs. Prosperous city
Spatial Units of Analysis
Metropolitan region
Urban core
Central business district
Suburbs
Neighborhoods

Table 2. The Relationship between Cities and Health System Characteristics

Urban/Neighborhood characteristics		Health system characteristics
Economic base		Health care resources
Housing		Organizational factors
Transportation		Health insurance coverage
Socio-economic and demographic		Social safety-net
Physical environment		

6.2. Development of a Database

One of the nagging difficulties in advancing health services research along the lines of the framework outlined above is the lack of available and comparable data on urban and health system characteristics of cities. In the U.S., the Chicago Department of Health has led the way in collecting basic population health data, on an annual basis, for large cities across the nation (Benbow, 1998) but there are no comparable data for their urban and health system characteristics. The Urban Institute collected data on the 100 largest cities in the U.S., but this dataset contained few indicators on population health and health services (Brookings Institute, 2004). As we noted earlier, the compendium of the 100 largest cities in the United States published by Andrulis and Goodman (1999) includes some indicators on the extent of the social safety net. However, it does not contain sufficient data on urban and health system characteristics (e.g., the current version includes data on the use of prenatal services, the next version will include some additional information about hospitalizations). Another noteworthy contribution to database development on health systems characteristics of mid-size urban communities around the country is the RW J Foundation's (Ginsberg, 1996) because it provides extensive indicators on health system characteristics. In this case, however, there are insufficient indicators on urban characteristics and population health.

To advance health services research on cities, there is no way to escape the "nitty gritty" work of developing a comparative database along the lines of the framework we have outlined. While it would be imprudent to draw causal inferences from such comparisons, observed differences in health status and the use of health care services among a set of cities from a common category, with comparable units of analysis and a set of similar urban characteristics, but different health systems characteristics, can suggest promising directions for new research. Beyond the research component, such a database can support the study of best practices, as well as interesting failures, when policymakers and program mangers look around for innovations to improve health system organization in their own cities. In comparison to the typical study tour, the combination of such a database with selected cases of urban health care innovations would assist knowledgeable practitioners to interpret what they see.

7.0. THE WORLD CITIES PROJECT (WCP): AN INTERNATIONAL EXAMPLE OF HEALTH SERVICES RESEARCH ON CITIES

The World Cities Project (Rodwin and Gusmano, 2002; World Cities Project, 2004) compares health systems, health and quality of life in the four largest cities of the wealthy nations belonging to the OECD: New York, London, Paris and Tokyo. These cities are surely among the best studied cities in the world. Our principal common

units of analysis are their historic urban cores (Figure 1) but often studies extend to their surrounding first rings and greater metropolitan regions. What we have termed their "urban" characteristics have been the subject of serious scholarship, e.g. on their global functions (Sassen, 2001), competitive advantages, politics and planning (Savitch, 1988) transportation infrastructure (Focas, 1988) historical development and architecture (Burrows and Wallace, 1999). Although these cities serve as headquarters of "command and control" for transnational corporations and international financial institutions (Sassen, 1999; Harris, 1997), there are still formidable problems in collecting comparable data about them (Short, *et al.*, 1996).

Despite wide-spread interest in these cities and city-specific data on many dimensions of health and health services, comparative analyses of their health systems are notably absent from the comparative urban literature. Moreover, scholars of urban health and services, in an international context, have not systematically compared world cities (Harpham and Tanner, 1995; Atkinson, *et al.*, 1996). For these reasons, we present the WCP as a way to bridge the gap among these segregated areas of inquiry. In addition, WCP illustrates how health services research can frame a comparative analysis of cities around spatial units deliberately selected to highlight points of similarity as a starting point for generating hypotheses to explain observed differences.

7.1. The Urban Core as a Unit of Analysis

In contrast to studies of health system performance at the national level, comparison of world cities provides spatial boundaries within which to assemble local data on the characteristics of populations, the density of medical resources, the extent of health insurance coverage, and other neighborhood and health system characteristics. For this reason we defined an urban core for New York City, London, the Paris Region, and Tokyo (Figure 1). Our definition of the urban core was guided by five criteria: 1) historic patterns of urban development; 2) population size; 3) population density; 4) mix of high and low income populations; and 5) functions as central hubs for employment and health care resources.

First, with respect to urban development, Manhattan, Inner London, and Paris represent the historic centers from which these metropolitan regions grew (Fig. 1). In Tokyo, the same can be said of its 11 inner wards within the surrounding Yamanote subway line. Second, in terms of population size, Manhattan, Inner London, and Paris range from 1.5 to 2.7 million.

Third, in terms of density, Manhattan and Paris are similar: 66,000 versus 53,000 inhabitants per square mile. Both Manhattan and Paris have almost twice the population density of Inner London. Likewise, however one might define an urban core in Tokyo, the density is much closer to London than to Manhattan or Paris.

Fourth, the urban cores of these cities combine a mix of high and low-income populations. In Manhattan, average household incomes range from $92,876 on the Upper East Side to $23,730 in Central Harlem; in Paris, they range from French Francs (FF) 388,883 in the 8th to FF 131,765 in the 20th *arrondissement*; and in Inner Tokyo they range from 3,791 yen in Chiyoda to 1,782 in Arakawa*. In Great Britain household income data is not available but variations in measures of social deprivation vary widely. For example, among the boroughs of Inner London, the percentage of persons who are "income deprived" ranges from 16.8 % in Kensington to

*Manhattan: Housing and Vacancy Survey, 1996; Paris: Ministry of Finance, 1996

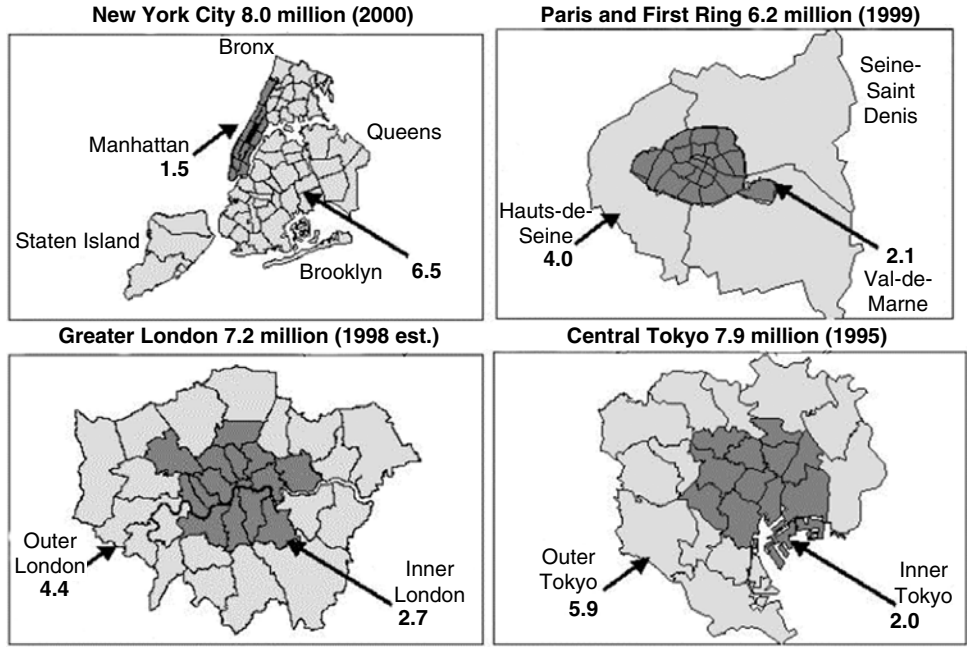

Figure 1. Urban Core and First Ring Populations (Millions).

51.3 % in Tower Hamlets. Tower Hamlet's rank among all 354 local authorities in England is 16, while Kensington's is 177.

Finally, a number of criteria related to their functions as central hubs – what geographers call "central place theory" – suggest three striking parallels among Manhattan, Inner London, Paris, and Inner Tokyo (Berry, 1961; King, 1984).

7.2. Concentrated Employment Centers

These urban cores function as employment centers that attract large numbers of commuters. Approximately one third of the first ring's employed labor force commute to Manhattan, Inner London, Paris, and Inner Tokyo every day.

7.3. Health Care Resources

The urban core as a unit of analysis provides a frame within which to focus cross-national comparisons on a more coherent and discernable set of health system characteristics. For example, with respect to the concentration of medical resources, Manhattan, Paris, and Inner Tokyo are characterized by a high density of physicians (Table 3). Inner London is the outlier. But all four urban cores have a much higher density of physicians than their first rings. The core/first ring ratio of physician density is higher for Inner Tokyo (3.8) and London (3.6) than for Manhattan (2.1) or Paris (2.3).

They also have high levels of acute care hospital beds (public and private combined) with the exception of London (Table 3). Manhattan, Inner London, and Inner Tokyo have 2.5 times as many beds as their first rings; Paris has only 1.5 times as many. These ratios indicate the concentration of acute hospital beds including those among large university teaching hospitals in all of the central cores.

Table 3 Health Care Resources: Manhattan, Inner London, Paris, and Tokyo (1995-2000)

	Manhattan	Inner London	Paris	Inner Tokyo
Number of teaching hospitals	19	13	25	9
Number of medical schools	5	4	7	7
Acute hospital beds per 1000 population	8.9 (1997)	4.1 (1990)	9.6 (1995)	12.8 (2000)[1]
Physicians per 10,000 Population	71.2 (1995)	36.9 (2000)	84.6 (1997)	70.0 (2000)

[1]This figure is an estimate derived by reducing the number of general hospital beds by 30% so as not to include beds in which length of stay is over 30 days.
Sources: Manhattan: New York State Department of Health (NYSDOH), 1998; London: UK Department of Health and Health of Londoners Project; Paris: physicians-Ministère de l'Emploi et de la Solidarité, Direction de la Recherche, des Etudes, de l'Evaluation et des Statistiques (DREES) repertoire ADELI, January 1st 2002; hospitals DRESS, SAE, 2001; Tokyo: "Report on Survey of Physicians, Dentists and Pharmacists 1998", Tokyo Metropolitan Government, Bureau of Public Health, 2000.

In summary, Paris – the city of 2.1 million inhabitants all living within its nineteenth-century walls and the peripheral freeway that surrounds its twenty *arrondissements* – was the prototypical "urban core" against which we selected a comparable urban core for New York, London and Tokyo. The Paris population and area (105 square kilometers) is miniscule in comparison to Greater London's 7.2 million people and 1,590 square kilometers; New York City's 8 million people and 826 square kilometers; and Central Tokyo's 7.9 million people and 616 square kilometers. Paris is comparable to the urban core of these cities (Figure 1). For New York City, this is Manhattan; for London it is the fourteen boroughs known as "Inner London;" For Tokyo, since there is no conventional definition of an urban core, we relied on the five criteria noted earlier and arrived at an urban core comprised of 11 inner wards *(kus)* that have a population of 2 million (1995).

Beyond the selection of four urban cores of New York, London, Paris and Tokyo, WCP illustrates how a comparative inquiry structured around comparable units of analysis can serve to highlight some striking similarities and differences for further investigation.

7.4. Similarities and Differences

All four urban cores have economies based on services and information, which are closely tied to national and international transactions. They are also centers of culture, media, government, and international organizations. And their resident populations include some of the wealthiest and poorest members of their respective nations.

The poverty rate, defined as the percentage of households with income below one-half of the median, is almost twice as high in Manhattan (28.5%) as in Paris (12.8%)†. Although it is impossible to obtain household income data for the United Kingdom, comparison of occupational/class categories defined by the census may

† Poverty level for Manhattan is the percentage of households with income below half of Manhattan median income. For New York City, it is the percentage of households with income below half of NYC median income. The poverty level for Paris is measured as the percentage of households with income below half of Paris median income. For the Parisian agglomeration, it is the percentage of households with income below half of the Parisian median agglomeration income. The area of Paris agglomeration is slightly larger than Paris and its first ring. Data for both cities refer to pretax income; for Manhattan, pretax income includes social security payments and welfare payments but does not include other transfer payments, e.g., food stamps.

Table 4. Measures of Poverty: New York, London, Paris, and Tokyo (1991-1996)

	Urban core	Agglomeration[1]
New York (1994)	28.5%	25.6%
London (1991)	17.0%	14.9%
Paris (1994)	12.8%	10.2%
Tokyo (1996)	2.08%	1.56%

Sources: NYC: Current Population Survey 1994; London: Office of National Statistics (ONS), 1991; Paris: INSEE study on income of Parisian households, carried out by Christine Chambaz; Tokyo: Tokyo Statistical Association (1998); *Tokyo Statistical Yearbook*, 1996.

be used as a proxy for income. Although this is not comparable to the Manhattan and Paris figures, it allows us to observe a similar pattern in all three cities—poverty rates for the population of the urban core are slightly higher than in their first rings (Table 4). In the Paris agglomeration, the poverty rate is 10.2%; in New York it is 25.6%. In Greater London, the share of lower "classes" is 14.9% as opposed to 17% in Inner London. For Tokyo, since we have no data on poverty rates, we examine a proxy indicator of deprivation: the percentage of households receiving public assistance (Figure 2). In 1996 it was slightly higher in the urban core (2.08%) than the periphery (1.56%).

With the exception of Tokyo, a similar pattern holds for the percentage of foreign-born populations. Roughly one-quarter of the population in Inner London and Manhattan, and about 20% of the population in Paris, was born abroad. In Paris and Inner London, this foreign-born population is higher than in the first ring, but in Manhattan the percentage of foreign-born population is lower than in the surrounding boroughs.

Despite their common characteristics, there are some significant differences that make the comparison of these four world cities a promising, if challenging,

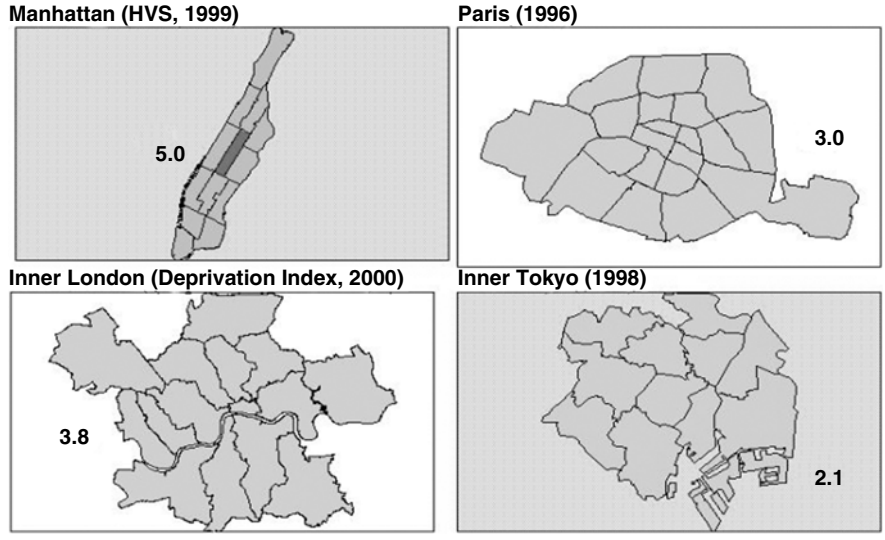

Figure 2. Average Household Taxable Income: Ratio Highest/Lowest Neighborhood.

area for health services research. One of the characteristics of world cities is the polarization between the rich and the poor. Manhattan is characterized by the highest level of inequality in the distribution of income among the four cities. For example, intracity variation in average household income varies from a ratio of 2.1 in Inner Tokyo, 3.0 in Paris, to 5.0 in Manhattan. Opinions differ, however, on the extent to which some of these variations among cities are important (Hamnett, 1994). Paris has been called a "soft" world city in contrast to New York because it provides more family services, income support and health services to the poor (Body-Gendrot, 1996). Tokyo is closer to Paris, based on the above data, and although there is no available household income data on London, studies of London's socio-economic disparities suggest that it resembles New York more closely than Paris or Tokyo.

In addition to income inequality, consider some of the differences among the health systems of these cities. In comparison to Great Britain which assures health care coverage under its National Health Service, and France and Japan, which assure universal coverage under their national health insurance programs, only the U.S. still maintains significant financial barriers to health care access. This is true even in New York City, with its extensive safety net; 28% of the New York City population is uninsured and this remains a significant impediment to health care access. Thus, a reasonable starting hypothesis for distinguishing New York from our other world cities is that the absence of universal coverage exacerbates the problem of access.

7.5. Applying the Framework for Comparing Cities, Health Services, and Health to Four World Cities

WCP has applied elements of the framework presented earlier to study four dimensions of health and access to health care in four world cities: infant mortality, coronary artery disease (CAD), avoidable hospital conditions (AHC), and patterns of aging, quality of life and use of long-term care services.

Our studies of infant mortality across the four cities and their neighborhoods have revealed two findings. First, in comparison to other world cities, Manhattan has more neighborhoods characterized by concentrated poverty and the highest infant mortality rates, and these neighborhoods contribute to Manhattan's citywide high median infant mortality rate (Neuberg and Rodwin, 2002). The degree of consistent spatial inequality over the course of a decade (1988-1997), in Manhattan, far exceeds that of the other cities. Second, after controlling for births, Manhattan is the only city with a statistically significant association between the infant mortality rate and an income (or deprivation) indicator (Rodwin and Neuberg, 2005). Although we do not have sufficient neighborhood data on material conditions, income inequalities, and levels of available health services for mothers to explain the relative importance of these critical variables, we submit the following hypothesis for further study: Manhattan's pattern of spatial inequalities and concentrated poverty combined with its health system characteristics leading to inadequate service provision in the most deprived neighborhoods are the most important factors in accounting for its outlier status.

Our study on the prevalence and treatment of CAD examined mortality, morbidity and treatment patterns for acute myocardial infarction, and other forms of CAD in New York, London, and Paris (Gusmano, *et al.*, 2004). We explored the relationship between the health system and neighborhood characteristics and the

prevalence of CAD in New York, London, and Paris. We also examined the relationship between gender and treatment across these cities and their nations (Weisz, *et al.*, 2004). Similarly, our study of avoidable hospital conditions (AHC) compares rates of AHCs by race, and by neighborhood, in these cities (Gusmano, *et al.*, 2003). By comparing the treatment of CAD and rates of AHC for individuals just before and after the age of universal Medicare coverage with treatment for individuals in London and Paris where access to medical care is not conditioned on age, both of these studies allow us to examine the importance of health insurance coverage, income, gender and neighborhood of residence for access to primary and specialty care in these cities.

Finally, in our book on *Growing Older in Four World Cities* (Rodwin and Gusmano, 2005), we found convergent patterns in the share of older persons receiving home help in contrast to divergent patterns in the level of institutional long-term care. Also, we found that there are significantly fewer institutional long-term care beds in the urban cores of these cities than in their surrounding first rings (Figure 1). Land prices make it extraordinarily expensive to build institutional care beds in these urban cores which raises an important policy issue for the future of long-term care in world cities. Can we afford to support the costs of aging in place for the most vulnerable residents?

This question raises a host of issues about the quality of life across diverse neighborhoods in New York, London, Paris, and Tokyo and has led us to investigate the availability and use of health, social and long-term care services within and across these cities. We are particularly interested in the availability of services for isolated older persons. To what extent and how do isolated older persons receive supportive services in their neighborhoods? Third, what explains the gap between eligibility for entitlements and actual use of services by older persons? Is it due to lack of knowledge about available benefits, barriers to access within specific neighborhoods, problems of negotiating bureaucracies, cultural attitudes, including stigma associated with their vulnerable status, fear of losing their assets in order to qualify for benefits; or still other factors? (Gusmano and Rodwin, 2003).

8.0. CONCLUSION

There is a rich and extensive literature on health services in cities. A host of studies explore health services for the urban poor, racial and ethnic minorities and a variety of other "special" populations. A growing number of studies compare health systems across cities, but few provide a comprehensive analysis of urban health care systems. While cities have a disproportionate number of vulnerable populations and organizations that serve them, they also serve as centers of medical excellence with a concentration of academic medical centers, other hospitals, physicians and other health care professionals. We have argued that the field of health services research should adopt a broader perspective on cities and attempt to provide a more balanced assessment of urban health systems. Moreover, we have proposed an initial framework that addresses the relationships between cities and their health systems.

The World Cities Project illustrates this approach to the comparative analysis of urban health systems for an important category of cities. We hope it will stimulate others to extend the approach to these cities and apply it to many more.

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