

# COMPARING THE CITIES DATA BASE

Terry McGee

## I. THE CONTEXT OF THE CITIES DATA BOOK

### The Response to the Region's Urban Growth

The Cities Data Book differs from most national databases. First, the CDB informs about cities' characteristics that can be used to measure city-level performance and programs that can improve the quality of life in cities. For example, information on the quantity and quality of types of household access to water can be used to develop a policy response. Second, the range of data collected is extraordinarily comprehensive, diverse, and complex, which in turn created many challenges for data analysis. Third, the urban indicators collected have, in part, been selected to reflect ADB's policy requirements as identified in the Urban Sector Strategy Report (July 1999). These policy priorities are reducing urban poverty, promoting urban governance, mobilizing financial resources, strengthening urban management, and promoting sustainability.

Since virtually all urban places in developing countries share similar challenges of governance, managing growth or decline, reacting to spatial restructuring, reducing poverty, and providing services to city residents, it may be argued there is nothing distinctive about urban conditions in Asian cities as they face up to the urban challenge.

However, following on from Chapter 1, the sheer number of people that will be in-

involved in the urban shift in the region is much larger than any other region of the world and is occurring at a rate unparalleled in human history. It is estimated that of the 1.7 billion increase in urban population between 2000 and 2025, some 70 percent will occur in Asia. National and municipal governments will be faced with massive challenges in managing urban transition.

While these scenarios are defined at a regional level, individual countries will experience different urbanization patterns. In 2000, 80 percent of Asia's population was located in the six population giants that exceed 100 million in size (Bangladesh, People's Republic of China, Indonesia, Japan, and Pakistan) and this number will increase with the addition of Philippines and Viet Nam before 2020. For the majority of other countries in Asia, such a tyranny of numbers will not be such an important factor in urban transition. However, throughout the urban systems of the region there will still be the same need for strategic priorities in managing urbanization that will involve marshalling national, local, public and private actions in developing financial, managerial, and governance capacity, with the ultimate goal of developing livable cities.

### Cross-Boundary Urban Growth Issues

This general description of the urban transition does not reflect that virtually all urban places in the urban systems in Asia are expanding beyond their existing boundaries and that urban growth has accelerated since 1970. Nine of the 18 cities in the CDB form

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part of rapidly growing urban agglomerations listed in the 1995 UN Population Division estimates. Table 5.1 shows this data; many of the CDB cities will form part of rapidly growing agglomerations over the next 15 years as their populations increase by more than 50 percent. It must be stressed that the cities in this CDB were not chosen to be representative of the Asian and Pacific region, but rather to give a cross-section of the types of cities that are emerging. An important selection factor were cities with which ADB had some association, either through lending or technical assistance operations.

The late involvement of much of the developed world in the urban transition process is occurring as a new global order is emerging, reliant upon the speeding-up of flows of people, commodities, capital, and information through time and space. This urbanization differs from the first urban transition of developed countries (Castells 1996). These more recent processes appear to be leading to megacities, concentrations in the largest urban places of more than ten million inhabitants. And these megacities are merely the tips of spatial icebergs of a larger agglomeration of functionally related urban settlements labelled extended metropolitan

regions (EMRs) (Ginsburg, Koppell, and McGee 1991) or mega-urban regions (McGee and Robinson 1995).

The emergence of these cross-boundary urban forms was first identified in Jean Gottman's study of the emergence of megalopolis, referring to the belt of urban settlements stretching from Boston to Washington in the Northeast United States. He attributed these to the underlying technological, sociological, and economic imperatives of urban sprawl represented by the image of cars, freeways, suburbanization, shopping malls, and office and factory decentralization from the urban core (Gottman 1961). Even 40 years ago, Gottman identified the basic components of EMRs that are currently operating in developing countries in Asia. These include the reconfiguring of urban space by outward expansion from the city core. This can occur by

- *creating corridors along main arterial highways;*
- *building new satellite towns* that form a poly-nucleated pattern of urban nodes outside the urban core; or
- *developing new activities (suburbs, industrial estates) haphazardly in urban peripheries.* Depending upon the pace of economic development, these spatial processes are often associated with redeveloping urban core areas and the restructuring of economic activities, which involve changes to higher order service activities.

Another way of looking at the issue is to perceive the morphology of most of these agglomerations as including three main subregions that form part of the EMRs. First is a city core, clearly illustrated by Melbourne and Mandaluyong, in which the built environment is older and experiencing rapid change. The city cores of Cebu, Colombo, Dhaka, Hanoi, Kathmandu, Lahore, Medan, and Phnom Penh are also older, but the pace of change is much slower and there is still a growing population. This means that the central core is experiencing increased density, pressure on services, and environmental deterioration. In the Central Asian cities, the older city cores have been mostly replaced by Soviet-style built environments

**Table 5.1. CDB Cities Forming Part of UN-Defined Agglomerations** (population size in millions)

City	Agglomeration		Estimated Agglomeration 2015
	1998	2000	
Bangalore	4.3	5.5	7.9
Dhaka	6.5	12.3	21.1
Phnom Penh	1.0	1.0	1.8
Hanoi	2.5	3.7	5.1
Hong Kong	6.5	6.9	7.6
Lahore	4.5	6.0	9.9
Mandaluyong	0.8	10.8	14.8
Medan	2.0	1.8	2.6
Melbourne	0.5	3.1	3.4
Seoul	10.3	9.8	9.9

Notes: City size is taken from city estimates (CDB). Agglomeration figures are for cities with 750,000 inhabitants or more in 1995. (Source: UN Population Division, Department of Economic and Social Affairs 2000; *World Urbanization Prospects: 1999 Revision*, Data Tables and Highlights). Of the remaining cities in the CDB, Colombo and Hohhot could be legitimately included but neither are listed in the UN database.

which are also deteriorating. Second, surrounding the urban core are areas that could be described as suburban as many inhabitants commute to the city core to work. This spatial patterning, as reflected in the data for day and night populations, is most marked in the cities of Melbourne and Mandaluyong with 700 percent and 208 percent increases, respectively, in their day populations. This keeps employment in the cities' cores. The pattern is less marked for the remainder of the cities, but the majority see their daily populations grow by an average of 25 percent during the day. Exceptions are Hanoi, Hong Kong, and Ulaanbaatar, which show little or no movement from outside their boundaries. Seoul exhibits a trend of outward commuting that can be attributed to its successful programs of employment creation in adjacent new towns (Won Be Kim 1999).

Third, there are zones that may be described as peri-urban, since they still fall within the agglomeration boundaries but exhibit a mixture of agriculture, new towns, industrial estates, and residential areas consisting of both formal and informal housing. These areas are not included in the cities database although in many cases they are the locations of the most rapid population growth and some of the most intractable problems of conflicting land use, environmental problems, and infrastructure provision. These problems are exacerbated by the many problems related to governance.

An understanding of these various processes and their social, economic, and spatial consequences provides the basic framework for the comparative analysis of the CDB urban indicators. It is important to position each urban unit of analysis within the context of the broader processes of urbanization. For example, Melbourne City is one of the cities included in the CDB that provide a set of benchmarks for the other 17 cities included in the database. The city's estimated population in 1999 was only 44,500, making it the smallest city of all the 18 cities. Yet it has one of the fastest growing urban populations at more than 5.8 percent per year, which is higher than some of the rates in the poorest cities in the CDB, such as Bangalore,

Dhaka, and Phnom Penh, where the volume of in-migration significantly contributes to city growth. The explanation for this high rate of population growth in Melbourne is different from the other fast-growing Asian cities. Melbourne City is the core of a metropolitan area of 3.3 million people, among whom the younger population is moving from the outer suburbs to pursue work and education in the city core. This is reflected in a high household formation rate largely composed of single households. Melbourne is the main financial and service core of the region and it has a daytime population of 400,000 who commute to the city to work from surrounding urban areas. This example demonstrates the importance of analyzing each city individually for history, administration, culture, and socio-economic conditions.

Finally, it is important to stress that the very large size of the cities database analyzed poses considerable problems for comparative data analysis. While some of these variables have been discarded because of incomplete responses and misunderstanding of the data needed by the data suppliers, some 122 variables and ratios are still capable of being used. Selecting variables for the most useful comparative policy perspective is not always easy.

## II. DEVELOPING A FRAMEWORK FOR ANALYSIS

Given the very real challenges that the CDB presents for comparative analysis, it is important to emphasize the practical policy-oriented goals that are the purpose of the project. All indicators should be concerned with the main strategic objectives as in ADB's Urban Sector Strategy (see Appendix 5). To recall, the overall objective is sustainable urban development, supported by operational objectives related to reducing urban poverty, promoting economic growth, quality of life, and good governance, and protecting the environment.

Where possible, indexes will be used to indicate city performance. The comparative analysis therefore needs to reflect the strategic domains that ADB has identified for policy initiatives and response. The analysis that

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follows collapses these indicators into two groups:

### Context Variables

These variables deal with positioning the urban unit in the national unit of which it is part. Typical data at the national level would be national population, rate of national population increase, national level of urbanization, human development index (HDI) rank, and gross national product (GNP) per capita of country collected for the year closest to 1998. City data would include city size, city density, city rate of population increase, city development index, city product per capita, and city gross domestic product (GDP) per capita. Simple ratios could be developed for the ratio of city and national population increase, ranking of cities in national urban hierarchy, and ratio of city GDP to national GDP.

### City Comparison Indicators

The assumptions underlying choice of city comparison indicators are

- *the indicators have a minimum of 80 percent coverage for all cities in the database.* For some important variables, such as women-headed households, this data was retained despite falling below the 80 percent average requirement;
- *the indicators be clearly understood by data suppliers so that there is a common basis for comparison.* For example, the data on modes of travel was 100 percent supplied while that on property tax collection costs had weak coverage. The latter was discarded;
- *the indicators can be inferred to be representative of the condition they are measuring.* The indicators used are based on the assumption that more productive, well serviced, environment friendly, and livable cities are emerging in the developed countries. In the CDB, Melbourne and Hong Kong may be taken as the benchmarks against which the performance of other cities can be measured. It should be stressed that this assumption is certainly valid if the major goal is

to identify strategic priorities within urban sectors and between cities; and

- *the city comparison indicators should be chosen to be as representative as possible to meet the objectives defined above.* The following groups of indicators were identified to be
  - *city context data:* demographic—size and growth;
  - *city context data:* demographic—vital statistics;
  - *city economy/productivity*—city product, gross domestic product, etc.;
  - *city economy employment/competition*—percentage in services sector, connectivity, etc;
  - *poverty*—poverty levels, households below poverty line, household percentage expenditure on food;
  - *social*—infrastructure, persons per hospital bed, floor area, school children per classroom at secondary level;
  - *sustainability*—mode of transport, automobile ownership, connections for water, electricity, etc.; and
  - *governance*—taxes versus wages in budget, user charges versus transfers.

By strengthening the city database, policymakers are provided with a firmer basis for their policy-making decisions. These databases are likewise intended to help them recognize priorities for policy development and assist them by comparing their own city with others.

### Comparing Cities: Methods of Analysis

Under the assumptions above, four types of data analysis to compare the 18 cities are suggested.

#### Indexes

Several key indicators were correlated with other indicators to establish the key indexes as follows:

- The *City Development Index* (CDI) clearly indicates city performance (see Figure 5.1). The higher the CDI the stronger the relationship to increasing household income, increasing city product, and increasing infrastructure provision and local government performance, as mea-

sured by local government capital expenditures. The CDI strongly correlates with all forms of international activity, including exports, air travel, tourism, international communications including the Internet, international headquarters, and prime floor space costs.

- *City product* is also a strong indicator of city performance showing a strong relationship with household income, infrastructure and governance measures.
- *Population indicators* such as household size show that the cities with a higher household size are strongly correlated with lower levels of city economic performance (see Figure 5.2).
- *Population size* of cities is only weakly related to household income and city performance.
- The *local government capital expenditures* are strongly related to economic performance and infrastructure provision.

This exercise suggests it is possible to show certain indicators such as the CDI, household size, and local government capital expenditures are key indicators in identifying city performance. There is need to investigate and refine this process further.

### Urban Indicators

A second method of comparing cities involves comparing individual urban indicators. For example, while there is a general tendency for the household size to decrease in relationship to the increase in the CDI, there are also exceptions to this generalization (see Figure 5.3). Colombo, Lahore, Suva, Naga, and Mandaluyong have larger household sizes than their position in the CDI ranking. In seeking to develop urban management policies in health provision, it would be important to consider the cultural explanations of this indicator. Another example might be given in the floor area per person which shows that all cities in the database with the exception of Melbourne (55 square meters) have below 20 square meters per person (see Figure 5.4). If the developing cities were to follow similar housing preferences as Melbourne as they develop, then the space needed for residential hous-

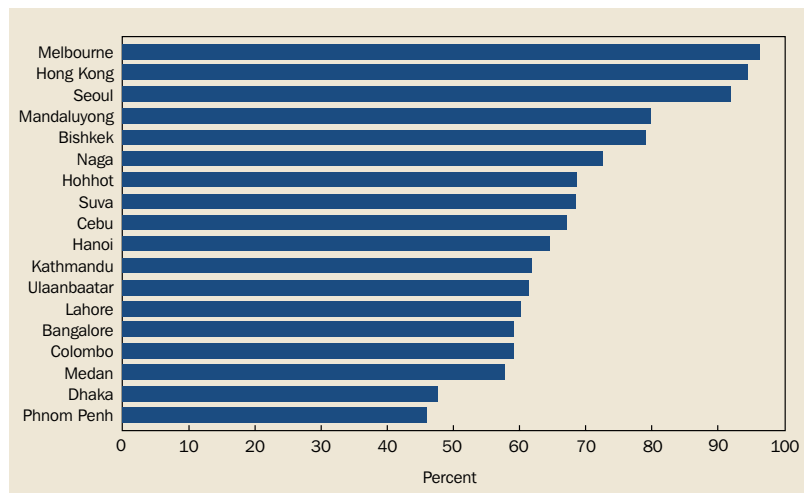


Figure 5.1. Cities Ranked by CDI

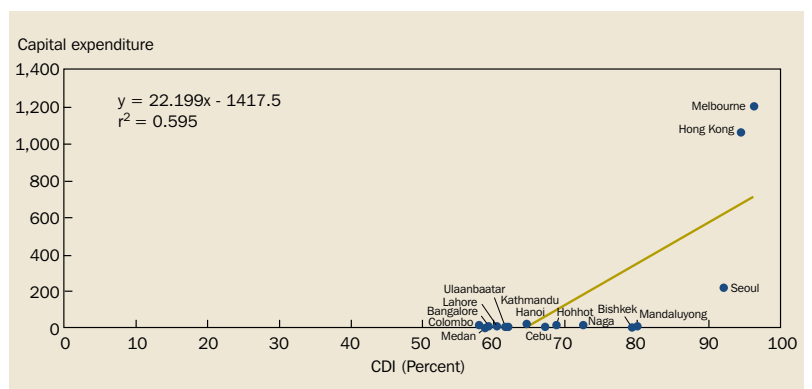


Figure 5.2. CDI vs. Local Government Capital Expenditures

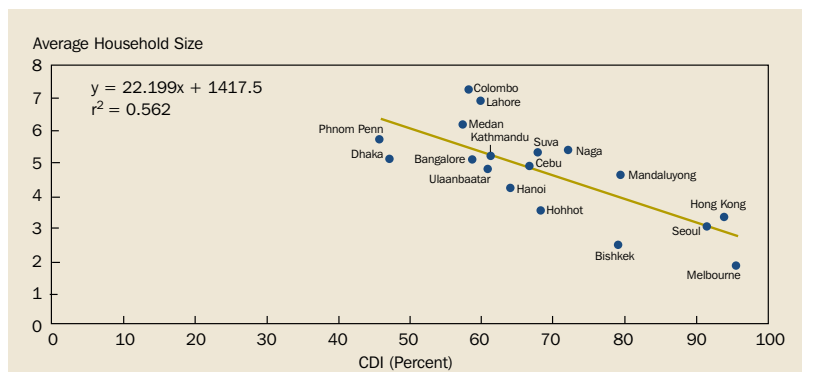


Figure 5.3. CDI vs. Household Size

ing would be very large. Investments in alternative and more profitable commercial land uses in the city core would almost certainly accelerate the outward spread of these cities.

That eight of the CDB cities are already located in larger urban agglomerations than Melbourne raises important questions on the likely demand for land for residential

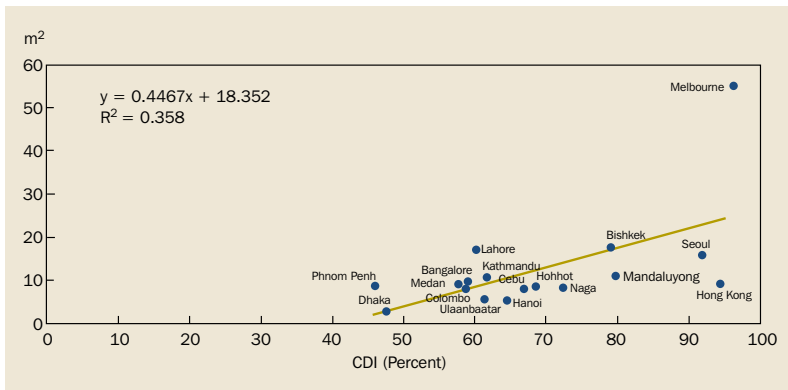


Figure 5.4. CDI vs. Floor Area per Person

expansion and how this can be embedded in an overall land-use strategy for large urban regions. And while these questions have to be related to a wide range of other indicators to guide strategic thinking concerning individual city housing policy planning, even in this simple form they provide valuable comparative input for policy purposes.

### City Clusters

Following the first set of analyses, a second set of comparative analyses has been carried out by dividing the cities into four main socio-economic groupings. This form of analysis is useful in

- *providing insights* that do not emerge in the individual comparison of cities used in the preceding form of analysis; and
- *identifying major policy needs* within groups of cities.

For example, the prime requirement of those cities in transition to a market economy may be to develop systems of revenue generation that can help improve the city land management system. Poor cities need to increase their productivity and introduce policies of poverty reduction. Four main socio-economic groupings of cities are identified:

- *High-ranked cities* include Melbourne, Hong Kong, and Seoul. This group is clearly distinguished from the other cities because it has the highest city product, the first three rankings in the CDI, the highest connectivity, the highest level of service, and a high level of transparency in governance.

- *Medium-ranked cities* include Mandaluyong, Suva, Cebu, and Naga. This group is characterized by cities that appear quite diverse but are all in the middle range of the CDI ranking, and are in market economies with less connectivity, and medium levels of service delivery. Within this grouping, Mandaluyong and Naga may be regarded as the cities that are closest to the high-ranked city group, although in both cases this situation is explained in part by their location in the core of a wider urban agglomeration. Naga is a small regional town.

- *Transitional cities* include Bishkek, Hanoi, Ulaanbaatar, and Hohhot. These are characterized by being in societies that have recently experienced various forms of socialism and planned economy. They are labeled transitional to indicate they are to varying degrees attempting to develop a more mixed economy with some degree of privatization of economic activities and, in some cases, individual use of land under various long-term leases. This historical experience of socialism has left these cities with higher levels of service provision, but their economic structure is becoming increasingly dualistic as the process of opening their economies to global forces continues. These cities present a distinctive set of strategic policy needs if they are to reach the performance levels of high-ranked cities.

- *Low-ranked cities* include Bangalore, Colombo, Dhaka, Kathmandu, Lahore, Medan, and Phnom Penh. This group represents the poorest cities in the CDB. They have the lowest CDI, greater proportions of people living in poverty, the largest share of employment in the informal sector, weakest provision of services, and generally weaker systems of urban management.

### City Holograms

Comparing a particular sector such as urban management or the prevalence of poverty in two or more cities allows comparisons that

may prove valuable in identifying common sets of policy needs between groups of similar cities. However, since policies have to be developed for individual cities, it is important to compare them as indicators profiles to achieve these goals. Cities are complex institutions where administrators are faced with immense difficulties in trying to identify pressure points for policy intervention. One approach is to carry out a form of cluster analysis that ranks a set of data for an individual city in a diagrammatic form called a hologram.

In using the cities database, four national context variables were selected for each of the cities: urbanization level of the country, HDI rank, GNP per capita (1999), and national population size. There were two city context indicators: CDI and density. In addition, 31 indicators were divided into sectors relevant to ADB's urban sector policies (see Table 5.2).

The assumptions underlying the selection of these indicators are as follows:

- *Sector A: Demographic Indicators A*  
Demography includes the population size of the city, rate of population increase, and rate of household formation. Smaller city size and lower rates of population increase and household formation place less pressure upon city governments. In developed countries, the decline of city populations, if not associated with an increase in the nonresidential tax base, causes severe problems for city governments. It is also true that declining populations often leave the most dependent populations (the aged, the poor) dominant.
- *Sector B: Demographic Indicators B*  
City demographic vital statistics include life expectancy at birth, percent of population below 15 years of age, and child mortality. It is assumed that a lower life expectancy at birth, higher rates of infant mortality, and a larger proportion of people under the age of 15 indicate that the city lacks the social infrastructure, income, and livability that would lower these indicators of the city's

**Table 5.2. Hologram Indicators**

NATIONAL CONTEXT VARIABLE	
1.	Urbanization level
2.	HDI rank
3.	GNP per capita
4.	National population size
CITY CONTEXT INDICATORS	
1.	CDI
2.	Density
SECTOR A. DEMOGRAPHIC INDICATORS A	
1.	City size
2.	Annual rate of population increase
3.	Annual household formation rate (percent)
SECTOR B. DEMOGRAPHIC INDICATORS B	
4.	Life expectancy at birth
5.	Proportion of total population 0-14 years of age
6.	Child mortality (the probability that a child will die before five years as a percentage)
SECTOR C. ECONOMIC CHARACTERISTICS AND PRODUCTIVITY	
7.	City product per capita (1998 \$)
8.	City product (PPP adjusted) per capita (\$)
9.	GDP per capita 1997 (same as Indicator 8)
SECTOR D. ECONOMIC CHARACTERISTICS—EMPLOYMENT/COMPETITION	
10.	Informal population (percent of total city population)
11.	Secondary employment (percent of employed population)
12.	Services employment (total of consumer, producer, social)
13.	Cost of business stay (overnight in \$)
14.	No. of international flights per month
15.	Cost of commercial land (\$ per square meter)
SECTOR E. POVERTY	
16.	Percent of households below poverty line
17.	Percent of households below poverty line (\$1 a day; same as Indicator 16)
18.	Percent of total work force unemployed
19.	Percent of household expenditure on food
SECTOR F. SOCIAL INFRASTRUCTURE	
20.	School children per classroom (primary)
21.	Persons (city population) per hospital bed
22.	Percent of housing in compliance with local government regulations
23.	Floor area per person (square meters)
SECTOR G. SUSTAINABILITY, PHYSICAL INFRASTRUCTURE, AND GOVERNANCE	
24.	Water household connections
25.	Electricity household connections
26.	Sewerage household connections
27.	Automobiles per 1,000 population
28.	Local government employees per 1,000 population
29.	Local government wages as percentage of recurring budget
30.	Source of local government revenue (proportion from taxes)
31.	Source of local government revenue (proportion from transfers)

The advantage of the hologram is simply that it enables visual assessment of the various performance indexes for a particular city to be quickly ascertained.

health. That is, the city is not providing an environment which can sustain the city population.

■ *Sector C: Economic Characteristics and Productivity*

Economic productivity includes city product per capita, city product (PPP-adjusted) per capita in Table 5.2, and city GDP per capita. It is assumed that cities with higher incomes measured in a variety of ways can provide livelihoods and economic well-being for their populations. It is also recognized that incomes are not equally distributed between various income groups who live in the city, but this issue of income distribution is difficult to relate clearly to the level of city development. For example, there is now much evidence in the context of some of the most seriously impacted cities in the recent financial crisis (Bangkok, Jakarta and Seoul) that income inequality has increased (McGee and Scott 2000). At the same time, social safety net projects have created employment that has been used to improve the environmental condition of these cities.

■ *Sector D: Economic Characteristics—Employment/Competition*

Employment and competition includes percent as informal population, percent in secondary employment, percent in services, cost of overnight stay, number of international flights a month, and cost per square meter of prime commercial land. It is assumed that cities with more people in the services sector, attracting investment, and having good global connectivity suggest developed cities. It is also assumed that higher prices of commercial land reflect economic attractiveness of the city.

■ *Sector E: Poverty*

Poverty includes poverty level estimated by the city, percent of households below one dollar a day, percent unemployed, and percent of household expenditure on food. These are standard measures of poverty except for unemployment. It is assumed that the greater the levels of poverty, the more priority will have to be

given in urban strategy to creating livelihoods and reducing poverty.

■ *Sector F: Social Infrastructure*

Social infrastructure includes primary school children per classroom, persons per hospital bed, proportion of housing in compliance, and floor area per person in square meters. It is assumed that higher ratios of school children per room, persons per hospital bed, and low floor areas per person, are evidence of poor provision of social infrastructure and crowding. The proportion of housing in compliance with city regulations gives a good indication of the system of housing provision and provides a tax base for city administrations.

■ *Sector G: Sustainability, Physical Infrastructure, and Governance*

Urban sustainability and governance indicators include the percent of households connected to water, percent of households connected to electricity, percent of households connected to sewerage, ratio of automobiles per population, local government employees per 1,000 population, percent of wages in recurrent budget, percent of local government revenues contributed by taxes, and percent of local government revenue contributed by transfers.

Within each of these sectors, the indexes have been ranked on a scale from 1 to 4 and then presented as a hologram. The ranking and methodology are presented in Appendix 6. The advantage of the hologram is simply that it enables visual assessment of the various performance indexes for a particular city to be quickly ascertained. It should be stressed that the aim is to illustrate the process of creating livable cities as involving a series of activities that do not always operate together. The process of creating livable, effective, and sustainable cities is multifaceted. The result presents a cross-sectoral view of these processes at a particular time, which can be seen more as assemblages in which different sectors interact, contradict, and facilitate the overall programs. The city can be seen in all its complexity in a simple and clear manner.

### III. DATA COMPARISONS

The existence of such a large database provides opportunity to select a particular group of indicators for analysis in a particular policy response. City administrators wishing to use the CDB may consider the following examples.

#### Comparing Urban Indicators: The Example of Poverty Indicators

One of the main goals of ADB's urban programs is to reduce urban poverty. This example of city indicators comparison uses urban indicators that measure dimensions of poverty in these cities including

- *percent of households below the poverty line;*
- *percent of households below the poverty line—\$1 day;*
- *percent of women-headed households in poverty;*
- *percent of household expenditure on food;*
- *city density (persons per hectare);*
- *floor area per person in square meters;*
- *expenditure on poverty reduction per poor person;*
- *percent of city population who walk;* and
- *measures, such as education and health built into the CDI index.*

The problems of defining urban poverty should be carefully analyzed. Recent applied policy research on measuring urban poverty argues that most estimates of urban poverty level are too low because they are based on income-based poverty lines and pay little attention to the nonfood based expenditures incurred by households living in urban areas (A. Jonsson and D. Satterthwaite 2000).

In the present cities database, measuring poverty rests primarily on income data and therefore is presumably subject to the same kind of measurement problems. Several measures are helpful for comparing the poverty situation in the four main groupings of cities. For example, while the estimates are lacking data for Melbourne, there is a more accurate reflection of the poverty level than the standard \$1 a day measurements. In most cases, poverty lines in the cities analyzed are higher than the annual \$352, which suggests

that the CBD accounts for the higher costs of living in cities. The exceptions are the transitional cities of Bishkek, Hanoi, Hohhot, and Ulaanbaatar where there have been significant levels of subsidy in infrastructure and services. Kathmandu is the only city where the poverty line falls below the standard estimate.

This approach is illustrated by a scattergram of the relationships between the CDI and the proportion of households below the poverty line as estimated by the CDB (see Figure 5.5).

The approach also shows a generally clear relationship between the CDI and poverty level. Hong Kong and Seoul which are ranked 2 and 3 on the CDI index have the lowest proportions of people living in poverty. Dhaka, ranked 16 on the CDI, has the highest proportion of households living in poverty. Hanoi and Colombo appear to have lower proportions living in poverty than the CDI index would suggest, but the majority of cities cluster in the middle part of the scattergram, indicating a good relationship with the CDI.

A second example is presented using the same vertical axis of the CDI and the horizontal axis of the \$1 a day indicator (see Figure 5.6).

This exhibits a rather different pattern with three clusters of cities. Melbourne, Seoul, and Hong Kong, with higher CDIs, and the lowest CDI city, Phnom Penh, remain the same, but there is reordering of the smaller cities like Suva with lower proportions of households in poverty. The cluster of middle-ranked cities remains very much the same. Generally this analysis supports the

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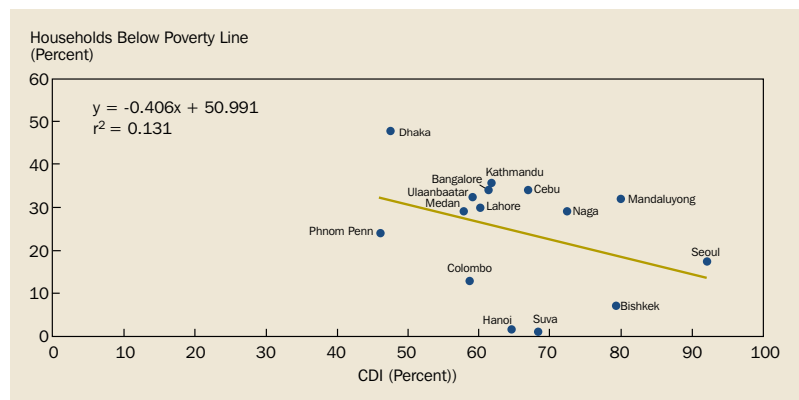


Figure 5.5. CDI vs. Households Below Poverty Line

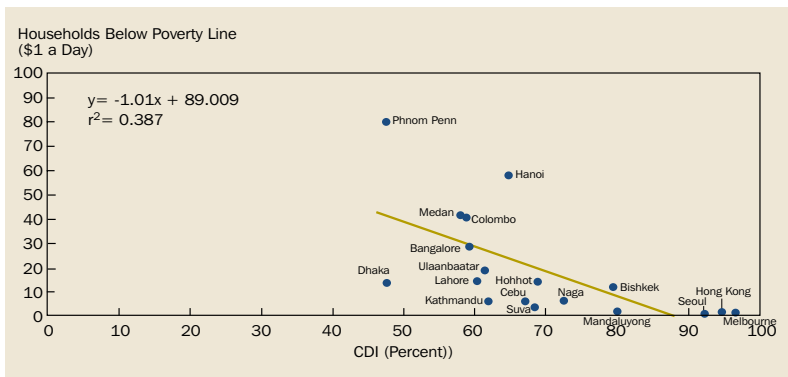


Figure 5.6. CDI vs. \$1 a Day

view that poverty is more extensive in the lower CDI ranked cities.

### Comparing City Clusters

Cities tend to cluster together in reflecting common historical experience, their position on the development trajectory, and the severity of problems they face in city management. To test this assertion, a set of bar graphs has been produced that compare the four city clusters' performance in a number of variables that are almost identical to the variables used in the hologram analysis in the next section. The initial diagram shows the relative position between the city clusters in the CDI. The clustering of cities is shown in Figure 5.7.

This indicates the CDI fits well with the city clusters chosen according to the outlined criteria. Sample bar graphs are presented for most of these variables.

#### Demographic Indicators A: City Size, Annual Rate of Population Increase, and Annual Household Formation Rate

Rates of city increase are greatest in the low-ranked city cluster (5 percent per year) and least in the medium cities (2 percent), which is surprising since it is below the rate of national population increase in these countries (see Figure 5.8). Wealthy cities are higher (2.3 percent) because of the high rate of increase in Melbourne. Transitional cities are increasing at 3.3 percent per annum. The Hanoi data show this to be 1 percent less than the census figures, although this variation may

be explained by boundary readjustments (see McGee 2000).

City size is not a good indicator of differences between city clusters, because of the lack of uniformity in city definition for comparison (see Figure 5.9).

Women-headed households are higher in transitional societies (see Figure 5.10), but the figures are affected by the cities of Hanoi and Phnom Penh, where the sex ratios are very unevenly balanced in favor of women (reflecting the deaths of males in war).

#### Demographic Indicators B

Life expectancy at birth is relatively undifferentiated between the city clusters, which indicates that health improvements (reduction

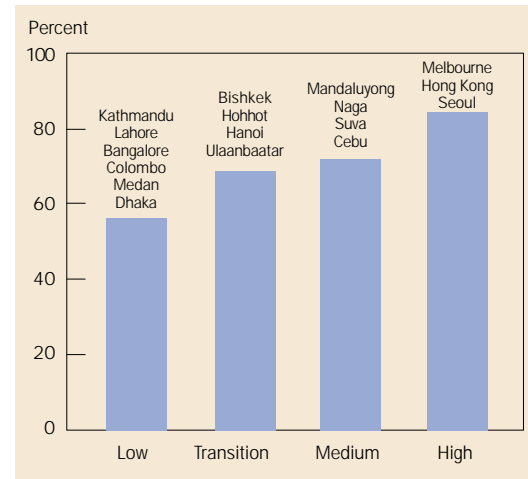


Figure 5.7. Clustering Analysis of CDI

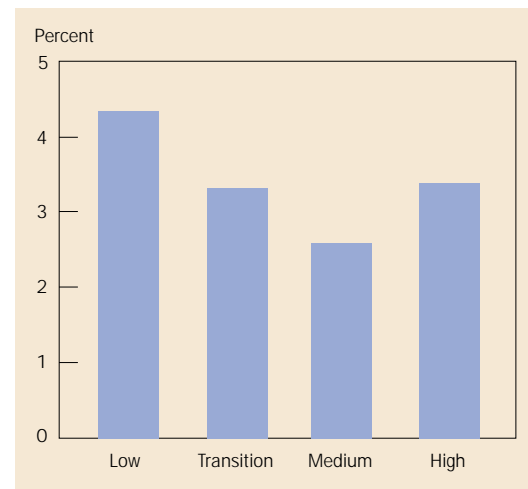


Figure 5.8. Rate of Population Increase

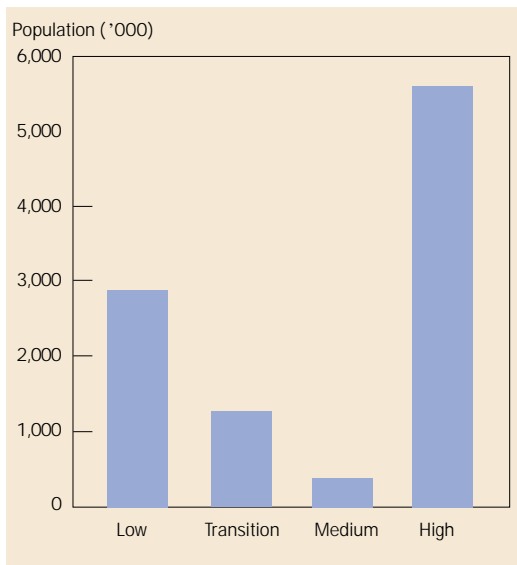


Figure 5.9. City Size

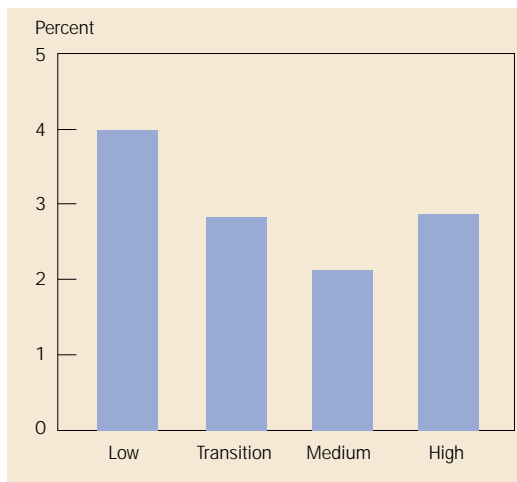


Figure 5.10. Women-Headed Households

in child mortality rates) are evening out differences between city clusters (see Figure 5.11). This suggests that provision for the aging of city populations will become a challenge not only in wealthier cities but also in poorer cities.

City product per capita is the most sharply contrasted variable between the wealthy and other city clusters (see Figure 5.12). It indicates the gains that the cities in developing countries will have to make to reach the levels of income that will provide adequate infrastructure and livability.

**Economic Characteristics—Productivity A**  
Households below the poverty line are most

frequent in poor and medium-income cities (see Figure 5.13). The lower figures in transitional cities can be explained by the role of subsidies, for example, low household rents.

**Economic Characteristics—Employment and Competition B**

Informal employment is high in poorer cities (see Figure 5.14). In contrast, there is an insignificant number of informal jobs in highly developed cities, partly due to their strict regulations against informal employment.

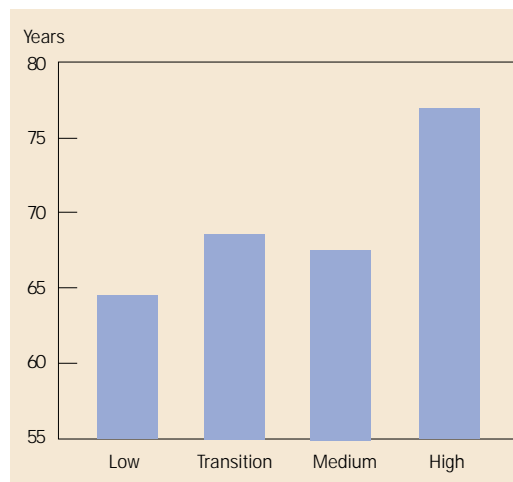


Figure 5.11. Life Expectancy at Birth

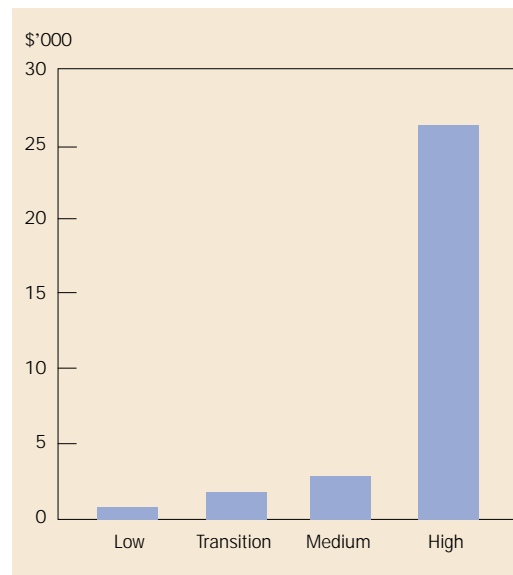


Figure 5.12. City Product

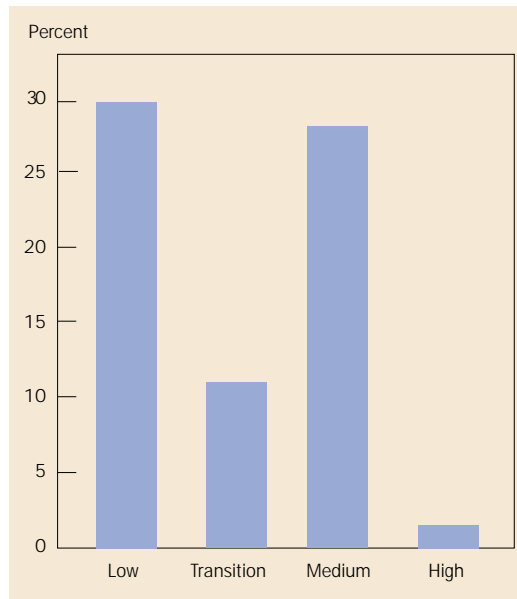


Figure 5.13. Households Below Poverty Line

### Poverty

Food costs constitute the biggest household expenditure item among the transitional, low, and medium-developed cities, as against large expenditures on housing and taxes in highly developed cities (see Figure 5.15).

### Social Infrastructure

Social infrastructure, for example, hospital beds, is not well developed in poorly developed cities, suggesting that more investment is needed to improve delivery and access to services (see Figure 5.16).

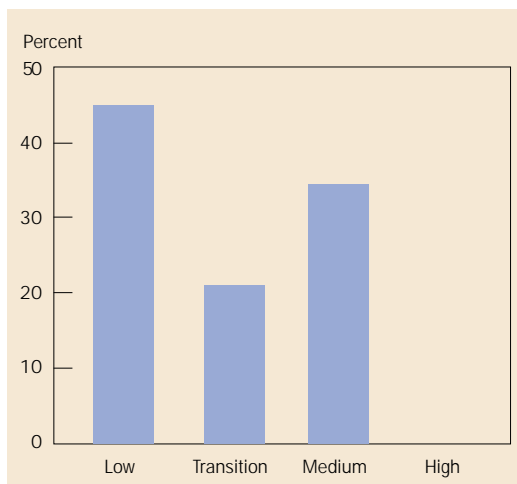


Figure 5.14. Informal Employment

### Sustainability—Physical Infrastructure and Governance

The number of Internet hosts per 1,000 population is greatest in wealthy cities and lowest in transitional societies (see Figure 5.17). Medium- and low-income cities are relatively

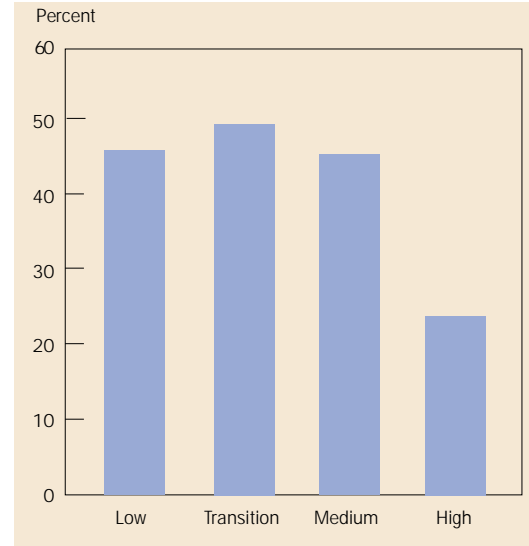


Figure 5.15. Household Expenditure on Food

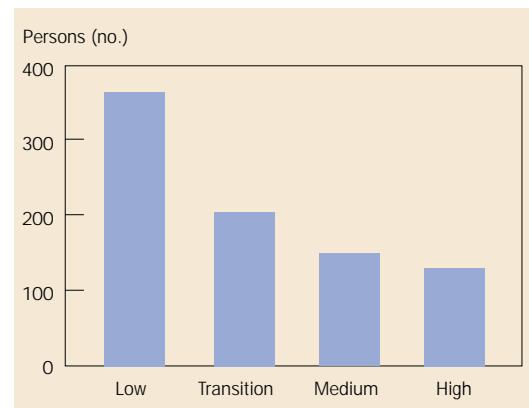


Figure 5.16. Persons per Hospital Bed

little differentiated. The same generalization is true of international flight connections.

Use of automobiles and public transport for getting to work is highest in wealthy cities (see Figure 5.18). Walking is a major mode of transportation in poor cities.

The budgetary management of cities in the CDB is made more complicated by budgetary policies at the national and local levels in city clusters. Therefore, the medium-ranked cities show a high propor-

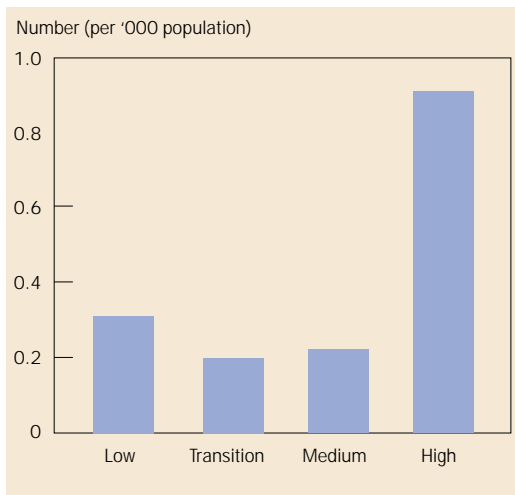


Figure 5.17. Internet Hosts

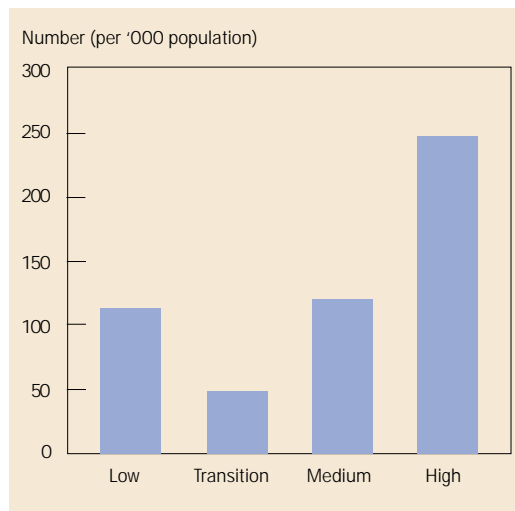


Figure 5.18. Automobile Ownership

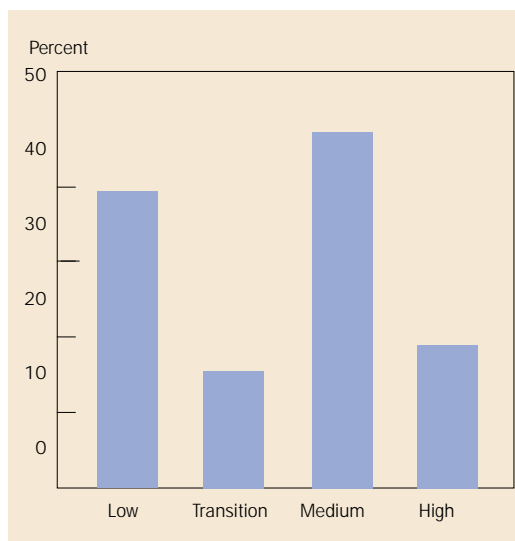


Figure 5.19. Source of Revenue Transfers

tion of budgetary revenues coming from transfers (see Figure 5.19). This reflects that three of the four cities are in the Philippines, which has enacted a decentralization policy (1991) that includes transfers of national revenues to the local level. The proportion of wages in the budget appears to be greater in the low-ranked cluster, except for the transitional societies where wages are low and supported by subsidies for accommodation.

### Comparing City Holograms

The final type of city analysis involves holograms. They provide a cross-sectoral picture of each city in its totality. Examples of city holograms have been chosen to represent a range of cities as measured by the CDI and context indicators. The 31 indicators are each internally ranked from 1 to 4 to reflect their baseline performance under ADB's various goals for achieving more livable, productive, and sustainable cities. These rankings are called levels. In the following analysis, Level 4 cities have the lowest ranking on the scales and therefore have the most need for programs designed to achieve ADB's goals. Level 2 and 3 cities are characterized by sectoral unevenness in attaining these goals. Level 1 cities have largely reached ADB's urban sector goals.

#### Level 4 Example: Dhaka City

Dhaka City, located in Bangladesh, is one of the poorest cities in the world, ranked 150 in the HDI with a large rapidly growing population, with a low level of urbanization and low GDP per capita. The hologram for Dhaka shows the city scores among the lowest in the CDB for the required level of performance for achieving ADB's urban sector goals (see Figure 5.20).

- Analysis by sector indicates the following:
- *Sectors A and B: Population Characteristics.* With 6.5 million residents (1), Dhaka is the third largest city in the CDB and is growing rapidly from natural increase (2) and migration (3). This growth rate is further accentuated by increased life expectancy (4) with a high proportion of the population under 15 years old (5), although child mortality remains high (6).

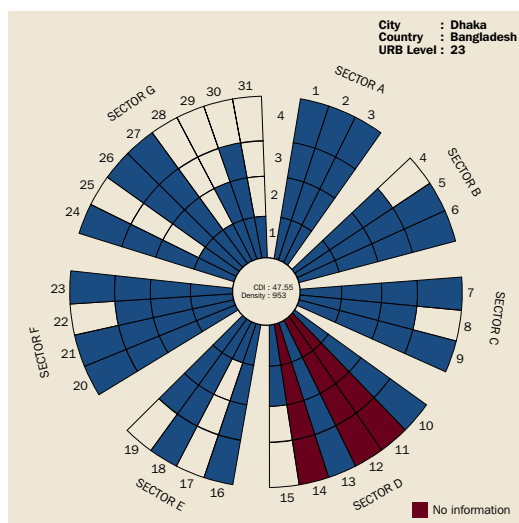


Figure 5.20. Hologram for Dhaka

- Sectors C and D: City Economic Characteristics.** The city product per capita (7) ranks tenth in the 18-city database and is almost two thirds greater than the country's GDP per capita. These figures are also reflected in the city product per capita (PPP) (8) and the GDP per capita (9). Dhaka has a high proportion of its working population in the informal sector (10) and although information on employment in secondary and service sectors is unavailable, it has one of the highest proportions of employment in the informal sector, which is generally small-scale and household-based with low productivity. Indicators of international competitiveness indicate that the cost of stay (13) is in the middle range of the CDB. The price of commercial land per square meter is among the highest in the lower ranked cities, which would appear to indicate considerable demand and very limited new land. While there is no information on international flights, their frequency would be low compared to the high-ranked cities.
- Sector E: Poverty.** Poverty indicators vary considerably but the overall level of poverty is the highest in the 18-city database. It is estimated that 48 percent of households fall below the poverty line (16). Household expenditure on food (19) is generally high, reflecting low incomes.

- Sector F: Social Infrastructure.** Given the number of people living in Dhaka and low incomes, investment in social infrastructure is inadequate. The number of children per classroom and the number of people per hospital bed are among the highest ratios in the CDB (20) (21). The city is crowded with a density of 953 persons per square kilometer; the highest of any in the city database. This is reflected in the high ratio of people per square meter of housing space (23) and the high percentage of housing not complying with city regulations (47 percent) (22).

- Sector G: Physical Infrastructure and Governance.** Despite the low level of income of most of the city population and the poor quality of the built environment, Dhaka has a mix of service provisions. The proportion of households connected to piped sewerage is below 25 percent, while two thirds of households are connected to water. The transportation situation is indicated by the ratio of automobiles per 1,000 population being 2 (27) and walking being the major mode of transportation to work. Indicators on governance show a high degree of labor intensity (28 and 29). It is assumed that more intensive labor systems reflect a less effectively managed administration. From a budgetary point of view Dhaka receives about 50 percent of its revenue from taxes and transfers.

The accompanying hologram reflects Dhaka's general low level of performance in achieving goals of increased livability, productivity, and sustainability. The policy implications of this assemblage of indicators suggest a multifaceted policy approach is needed, involving poverty reduction, measures to accelerate the city's economic growth and productivity, and improved social and physical infrastructure linked to broader national policies. Dhaka's city indicator profile analysis shows there is already substantial effort in some sectors.

### Level 3 Example: Ulaanbataar

The capital of Mongolia falls into that cluster of transitional cities that are now emerging

from a phase of socialist administration and this affects the levels of development as shown in the hologram (see Figure 5.21).

Analysis by sector indicates the following:

- **Sectors A and B: Demographic Features.** With its population of 725,000 (1) Ulaanbaatar fits into the median group of city sizes in the CDB and is experiencing a rapid population increase of 4.5 percent per annum (2), although the household formation rate is only half of this (3). This indicates the increase is due either to household size increasing or rapid in-migration. Life expectancy at birth (4), percentage of population under 15 years (5), and infant mortality (6) indicate a population that is growing fast and demographic transition to lower fertility only recently beginning.
- **Sectors C and D: Economic Characteristics.** Ulaanbaatar's city product (7), city product (PPP) (8), and GDP per capita (9) are similar to the poorest cities in the CDB. However, it has a different employment structure with a higher proportion of workers in secondary industry (11), reflecting in part the collapse of the manufacturing sector during the 1990s. There appears to be a lower proportion in the informal sector than in other poor cities although employment in services is quite high (12), presumably indicating greater government employment. Some half of all housing is in com-

pliance. Ulaanbaatar has very limited international connectivity with fewer than 50 international flights a month (14).

- **Sector E: Poverty.** The consultant's estimate of the poverty level indicates that 34.1 percent of households fall below the poverty line (16), but the standard \$1 a day measure places this much lower at 18.7 percent (17). Official unemployment is in single figures, but actual rates, taking into account nonregistered people, are much higher. The high share of household expenditure on food indicates the generally low levels of income among the city population (19).
- **Sector F: Social Infrastructure.** With the exception of school children per classroom (20), Ulaanbaatar has a high level of social infrastructure provision, which reflects the emphasis of the socialist period on high standards of health and education (21,22). However, floor area per person is very low and reflects overcrowding (23) and a high proportion of people living in apartments.
- **Sector G: Physical Infrastructure and Governance.** With the exception of water (24), Ulaanbaatar has a high level of provision of physical infrastructure for its inhabitants living in apartments (25,26). Also the measures of governance indicate a relatively low reliance upon labor intensive methods. Sources of budget revenue are predominantly taxes (64.4 percent) (30).

In conclusion, the accompanying hologram indicates a very mixed performance in this city in achieving ADB's sector goals. In addition, the data may not be totally adequate. The high proportion of housing not in compliance with city regulations (48 percent) indicates there are substantial numbers of households living in informal residential areas. This reflects the large number of Mongolians from the countryside who live in ger and informal structures on the fringes of the city distinguished from the apartments of the Soviet style central city. Strategic priorities might be set to enable this population to build their own housing in these areas. From a strategic view, this assemblage of indicators

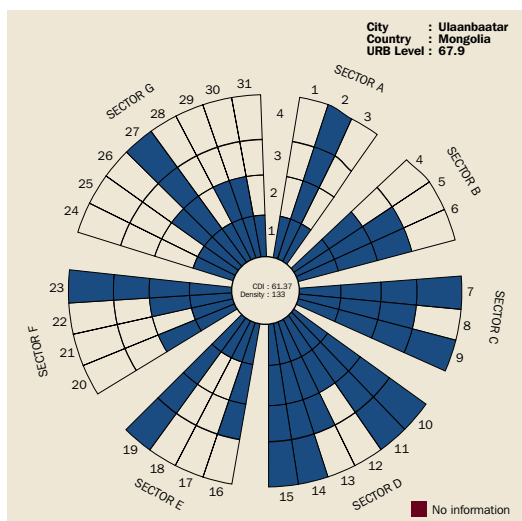


Figure 5.21. Hologram for Ulaanbaatar

suggests the need to carefully select sectoral priorities for urban development.

### Level 2 Example: Cebu City

Cebu City is typical of the larger secondary cities in Asia (see Figure 5.22). These cities play crucial roles as articulators of the networks of trade and administration that form an important role in regional development. Cebu City, with a population of 655,000, is a medium-sized city in the CDB (1) growing rather slowly at only 1.6 percent (2). The household formation rate is much higher (3) indicating there is still a high rate of natural increase and net migration. This slow rate of growth is partly attributable to the population decentralizing to the suburbs beyond the city boundaries, and possibly by the increase in numbers of single migrants aged 15–25 years. The high rates of natural increase in the Philippines are indicated by the substantial proportion of people under 15 years of age (5), although life expectancy (4) and infant mortality (5) are dropping rapidly and approaching the levels of wealthy cities.

Analysis by sector indicates the following:

- *Sectors C and D: Economic Characteristics.* Cebu City product (7) is in the top quartile of the figure for CBDs, although it is below that of Mandaluyong in Metro Manila. Cebu's figure represents a low level compared to the Level 1 cities. It has a high proportion of its population in the informal sector (10) and a low proportion in industry (11). Unfortunately, no data is available on services employment.
- *Sector E: Poverty.* Cebu reveals almost the same pattern as Ulaanbataar, with over one third of the households living below the poverty line (16) and high levels of household expenditure on food (19).
- *Sector F: Social Infrastructure.* The data indicate pressure on the education sector (20) and a moderate level of hospital bed provision (21). A high degree of overcrowding (23) is notable given the city's low density.
- *Sector G: Physical Infrastructure and Governance.* With the exception of electricity provision (25), Cebu has a low level of physical infrastructure provision

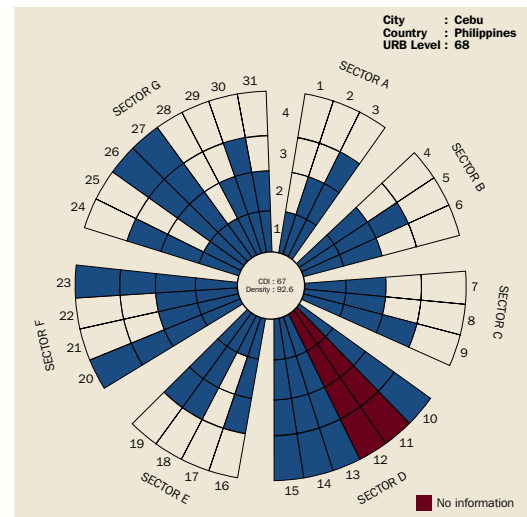


Figure 5.22. Hologram for Cebu

(24, 26) and a low level of automobile ownership (27). Approximately 80 percent of the government budget is received from taxes and transfers (almost equally divided between the two).

In conclusion, Cebu has a very mixed assemblage of indicators. Similar to Ulaanbataar, this suggests that sector priorities should be established, particularly for physical infrastructure. As a growing center performing a major role as a regional center, Cebu needs to build upon this role. Improving city infrastructure will assist this process.

### Level 1 Example: Melbourne City

The City of Melbourne is the historical core and CBD of the Melbourne urban area, and a major city of over three million people in a highly industrialized country (see Figure 5.23). Australia is currently ranked 15th on the HDI and has been losing ground somewhat to other Organisation for Economic Cooperation and Development (OECD) countries in GDP, because of its reliance on “old economy” resources and agriculture exports. For similar reasons, Melbourne has been steadily losing ground to Sydney for most of the last century in international connectivity, but still retains a key role as a manufacturing and financial center. The city has only 55,000 people but is one of the fastest growing local government areas in Australia. This is due to changes in regulations that have

permitted rapid residential conversion of commercial buildings and changing demographics and tastes in favor of smaller households and inner city living. One- and two-person households are the norm.

Analysis by sector indicates the following:

- **Sectors C and D: Economic Characteristics.** Melbourne has the highest CDI, city product, and average income of the sample. As expected of a city center, most employment is in the consumer and producer service area.
- **Sector E: Poverty.** In common with most developed cities, income inequality has been increasing since the 1980s and this has resulted in higher levels of poverty as locally defined. Good services for the homeless are maintained in the center. However, petty crime and drug-related crime levels are fairly high (the proportion of crime reported is also high compared with most developing countries).
- **Sector F: Social Infrastructure.** There is a heavy concentration of educational and hospital facilities in the city center. Recent changes in state government priorities have resulted in perceived falls in service. However, against most measures of service provision Melbourne is the highest in the sample. Only Hong Kong has a higher proportion of tertiary graduates.
- **Sector G: Physical Infrastructure and Governance.** Melbourne's infrastructure is uniformly of a high quality (though

aging somewhat), and the high level of income and capital and recurrent expenditure by local government ensures that this will continue. State governments are powerful in Australia and provide many local services. The state government recently dismissed all local governments as part of a consolidation strategy, but in general, local government is democratic and transparent.

In conclusion, Melbourne ranks at or near the top on most social indicators and has a high level of resources under the local government.

City holograms of the other cities are shown on the following pages.

#### IV. TOWARDS SUSTAINABLE CITIES

The CDB offers an excellent set of baseline data for comparing the performance of cities in achieving the targets of creating more livable, efficient, and sustainable cities. The data analysis shows the indicators can be used to measure

- *performance in different urban subsectors* such as infrastructure provision or urban poverty reduction between cities;
- *performance of the city in its totality* by using holograms; and
- *contextual elements of the cities* as represented by the socio-economic groupings.

It must be stressed that these approaches are new to developing countries; creating databases is not yet as developed as are national censuses or fertility surveys. In fact, most cities do not have any part of their administration charged with developing this form of database. Even in Hong Kong, which is among the wealthiest and most developed of the cities in the CDB, it was reported that data had to be generated from many sources and in some cases could not be obtained. There seems only limited agreement on which indicators of urban performance are best measures of performance, particularly in sectors such as urban management and governance. This indicates that more research is

The CDB offers an excellent set of baseline data for comparing the performance of cities in achieving the targets of creating more livable, efficient, and sustainable cities.

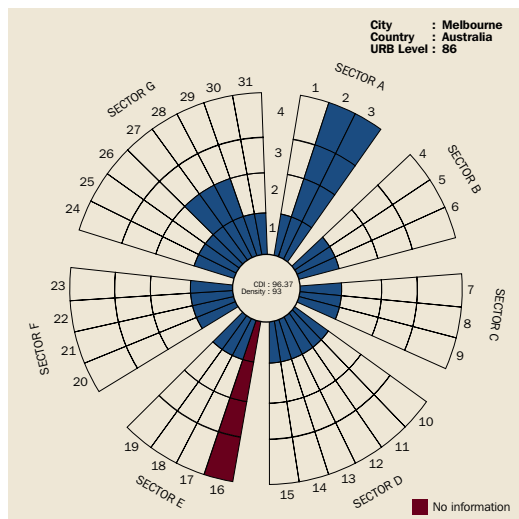


Figure 5.23. Hologram for Melbourne

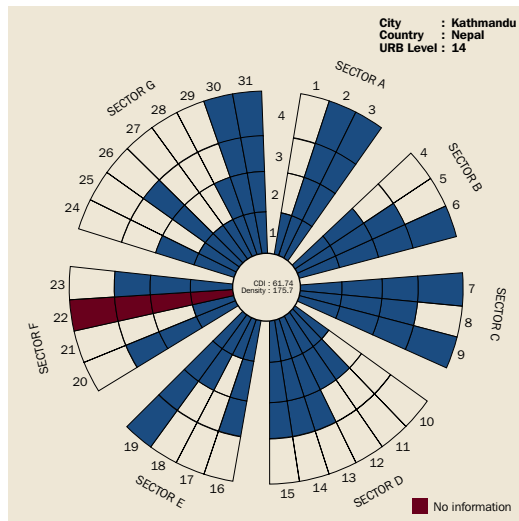


Figure 5.24. Hologram for Kathmandu

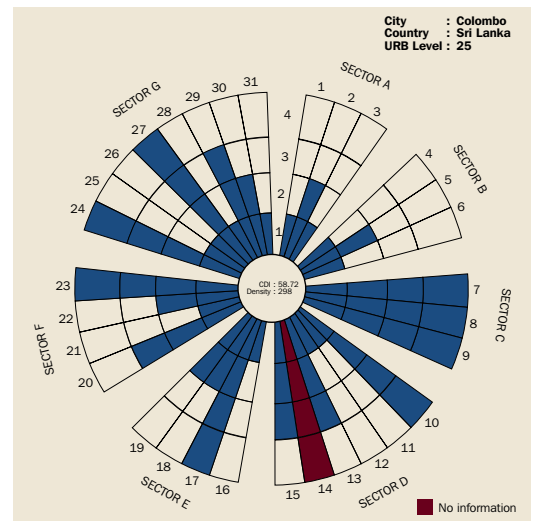


Figure 5.27. Hologram for Colombo

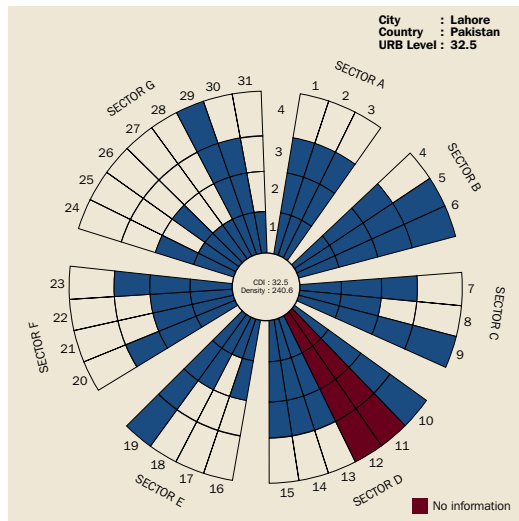


Figure 5.25. Hologram for Lahore

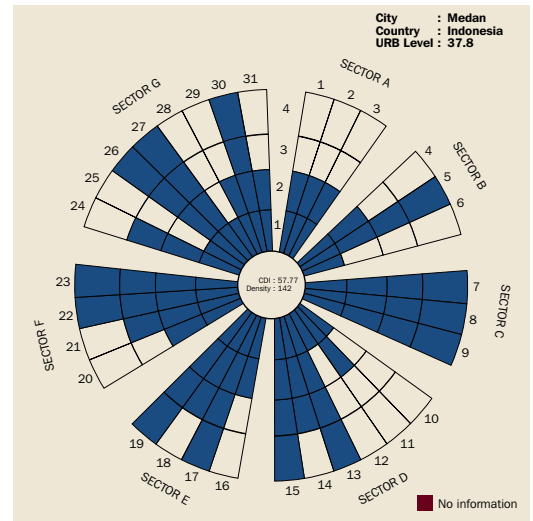


Figure 5.28. Hologram for Medan

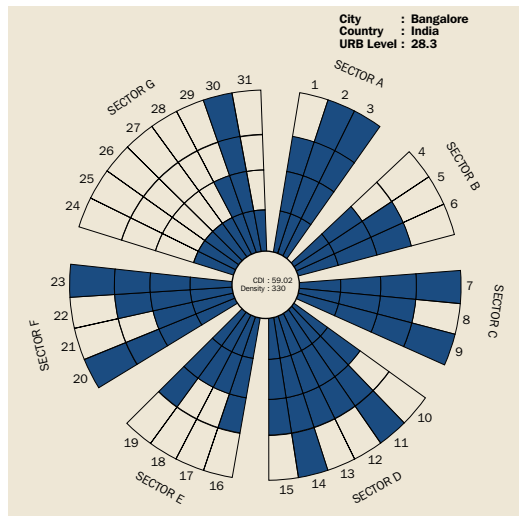


Figure 5.26. Hologram for Bangalore

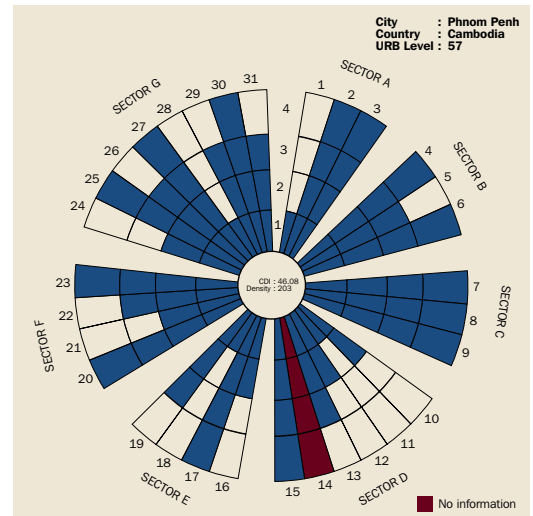


Figure 5.29. Hologram for Phnom Penh

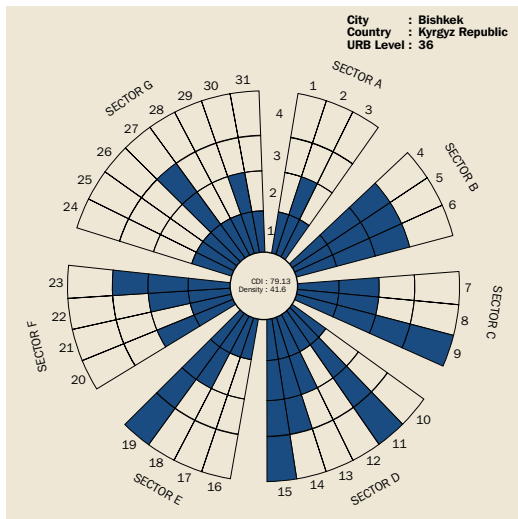


Figure 5.30. Hologram for Bishkek

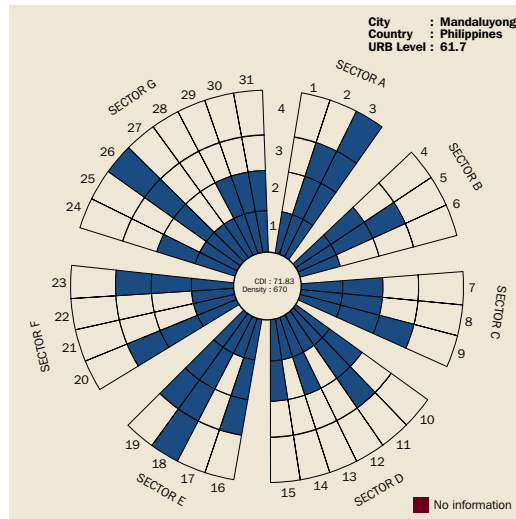


Figure 5.33. Hologram for Mandaluyong

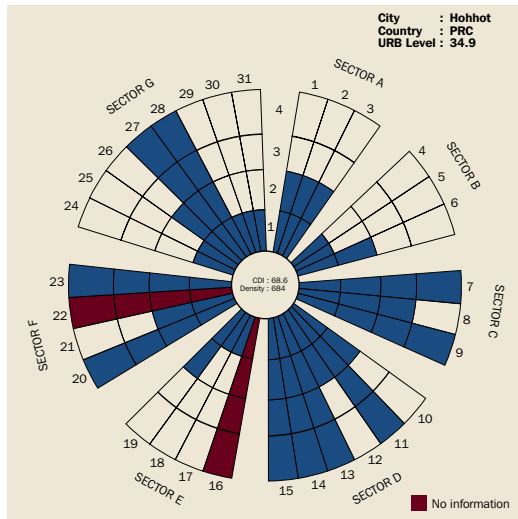


Figure 5.31. Hologram for Hohhot

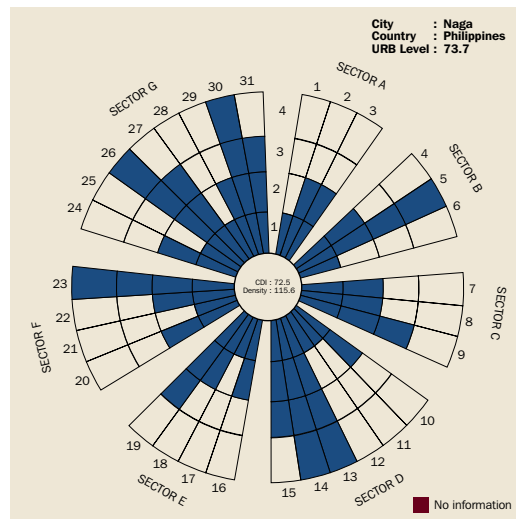


Figure 5.34. Hologram for Naga

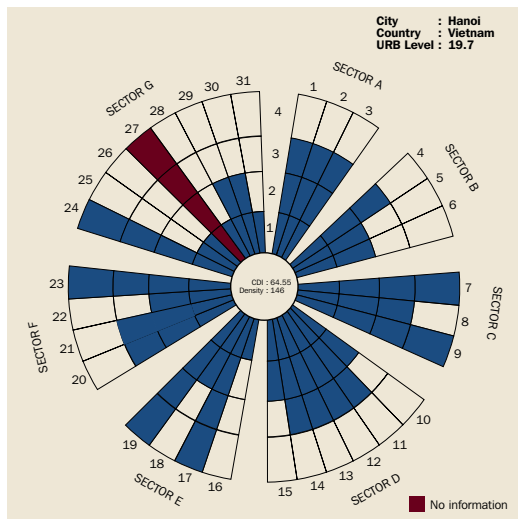


Figure 5.32. Hologram for Hanoi

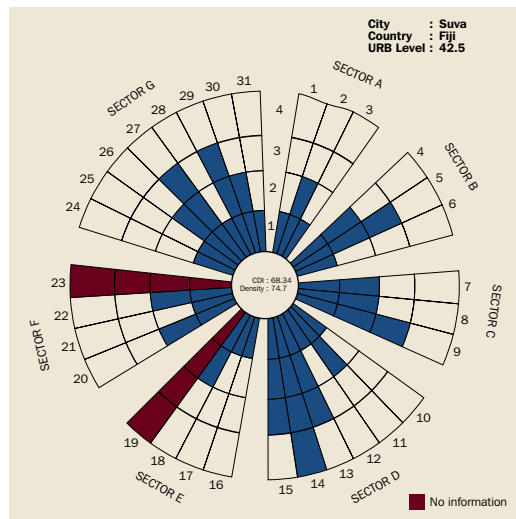


Figure 5.35. Hologram for Suva

The most important conclusion to be drawn from the comparative analysis is that there is a pronounced clustering of cities with similarities in the severity and range of urban problems related to economic productivity, poverty alleviation, social and physical infrastructure provision, and efficiency of urban administrations.

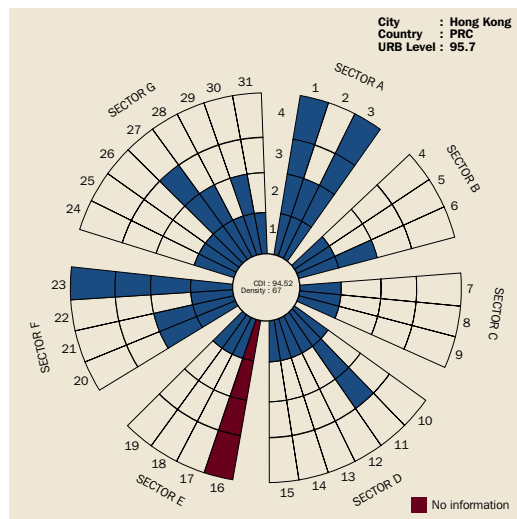


Figure 5.36. Hologram for Hong Kong

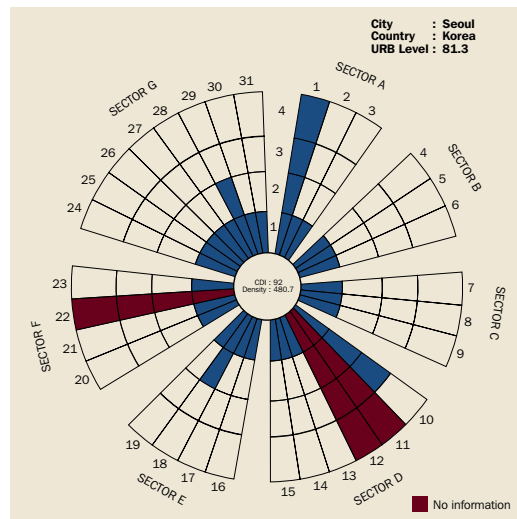


Figure 5.37. Hologram for Seoul

needed into the practical application of these indicators if they are to be fully used as an effective system of information management.

The most important conclusion to be drawn from the comparative analysis is that there is a pronounced clustering of cities with similarities in the severity and range of urban problems related to economic productivity, poverty alleviation, social and physical infrastructure provision, and efficiency of urban administrations. However, the analysis is dominated by the severity of problems in the poorer cities of the region, many of which are located in countries at low levels of urbanization. Consequently, as urbanization increases, there will be increasing prob-

lems unless there is successful policy intervention. It is apparent that the historical experience of socialism in the transitional societies poses particular constraints on development. The middle ranking cluster of cities has very different mixes of urban problems, depending on the size of the cities and their regional importance. The lessons from the wealthier cities suggest that when development occurs, there is a need to develop policies based on an understanding of the structural and territorial changes as well. For example, in Seoul and Melbourne, while automobile ownership is among the highest in the CDB (more than 61 percent), 43 percent of the population still uses public transport for travelling to work. This suggests that for the poorer cities, particularly the poorer megacities, investment in public transport systems should be a priority. Neither wealthy or poor cities can continue to be competitive if they lack efficient transportation systems (see Gakenheimer 1994).

Given the urban transition presently occurring in Asia, it is clear that the numbers of people that will be involved will be much larger than in any other region and at an unprecedented scale. Most existing urban administrative units have limited capacity for solving the challenges brought by this urban transformation. It is hoped that using the CDB urban indicators will strengthen the ability of Asia's developing cities to measure performance, identify problem areas for policy attention, and assist in urban management and the delivery of services.

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**Terrence Gary McGee** is a Professor of Institute of Asian Research Department of Geography in the University of British Columbia Vancouver, Canada. He was the Director of the Institute of Asian Research of the University of British Columbia during 1978-1992 and 1995-1998. Professor McGee has carried out research in Asia over the last 40 years focusing on urban management, the development of small-scale enterprises in urban economies, and the structure of labor markets. He has done extensive research in Malaysia, Indonesia, Philippines, Hong Kong and Guangdong, Singapore and several Pacific island countries, and has consulted for a number of international funding agencies. Professor Terry McGee is author of over 200 books, articles, and publications.