IESE Business School
University of Navarra

IESE Cities in Motion

IESE Cities in Motion Index

2017

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PREFACE

For the fourth consecutive year, we are pleased to present a new edition of our IESE Cities in Motion Index (**CIMI**). Since its inception, the **CIMI** has empirically validated our conceptual model, which assesses the cities in relation to 10 key dimensions: economy, human capital, technology, the environment, international outreach, social cohesion, mobility and transportation, governance, urban planning, and public management.

Our model has emerged in response to the intensification of the urbanization process that all regions of the world, at different rates, are experiencing. Globally, two-thirds of the population are expected to reside in cities in 2050, although this level of urban population is already a reality in many geographic areas. And while this trend of agglomeration in cities has a series of positive aspects, such as innovation, wealth creation, and economic competitiveness, it also has a dark side – where great global challenges put the sustainability of cities at risk. These challenges include demographic trends (aging of the population, segregation, immigration, and refugees), economic aspects (polarization of incomes and inflation), social divisions (heterogeneous social demands, a digital divide, inequality, and poverty), and environmental impacts (energy inefficiency, waste management, and pollution).

The scope and magnitude of these challenges demonstrate the need for the world's cities to undertake a strategic review process that covers: what type of city they want to be, what their priorities are, and what process of change they will adopt in order to take advantage of the opportunities – and minimize the threats – of urbanization. We have observed with great satisfaction how various cities included in the index have used our study to carry out a comprehensive diagnosis and an initial benchmarking of other major cities through comparative analysis.

Encouraged by the positive reception our index of cities has had in various forums linked to city management, we have decided to publish the **CIMI** for another year. As in previous editions, we have tried to provide an index that is objective, comprehensive, wide-ranging and guided by the criteria of conceptual relevance and statistical rigor. The 2017 edition of the **CIMI** includes 180 cities – 73 of them capitals – representing 80 countries. The breadth of the project establishes the **CIMI** as one of the city indexes with the most widespread geographical coverage available today. Furthermore, for calculating the index, we have included 79 indicators that capture both objective and subjective data, providing a comprehensive view of each city.

Our efforts have not stopped here. Over the past year, we have issued a series of publications in the field of urban management. It is worth highlighting the start of a series of "mini-books" in English that identify good practices in each of the dimensions of the IESE Cities in Motion model. At the time of publication of this report, three books on good practices for the dimensions of the environment, mobility and transportation, and the economy are available on Amazon (for more information www.ieseinsight.com). This collection will be expanded shortly to cover the rest of our model's dimensions. Furthermore, several academic articles have been published in prestigious journals such as the California Management Review and the Harvard Deusto Business Review.*

*For a complete list of publications visit the website http://www.iese.edu/cim.

Finally, we have strengthened the presence of the IESE Cities in Motion platform on the Internet with our Twitter account (@iese_cim) and the launch of a new blog (http://blog.iese.edu/cities-challenges-and-management/). We regard our publications and the presence in cyberspace as being the ideal complements of this index to understand the cities' situation better.

We are convinced that this report will be useful to mayors, city managers and all those interest groups whose aim it is to improve the quality of life of its residents. We also hope it will be valuable for urban solutions companies, since internationalization strategies are defined increasingly at the city level instead of the country level.

We regard this project as a dynamic one. We continue to work so that future editions of the index will contain the best indicators, wider coverage and a growing analytical and predictive value. We rely on your comments to improve and we invite you to get in touch with the platform through our website: www.iese.edu/cim.

We are convinced that we can live in better cities, but this will be possible only if all the social actors – the public sector, private companies, civic organizations and academic institutions – contribute and collaborate to achieve this common goal. This report is our small contribution.

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ABOUT US

IESE Cities in Motion Strategies is a research platform launched jointly by the Center for Globalization and Strategy and IESE Business School's Department of Strategy.

The initiative connects a global network of experts in cities and specialist private companies with local governments from around the world. The aim is to promote changes at the local level and to develop valuable ideas and innovative tools that will lead to more sustainable and smarter cities.

The platform's mission is to promote the Cities in Motion model, with an innovative approach to city governance and a new urban model for the 21st century based on four main factors: a sustainable ecosystem, innovative activities, equity among citizens and connected territory.

WORKING TEAM

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INTRODUCTION: THE NEED FOR A GLOBAL VISION

Today more than ever, cities require strategic planning. Only then can they consider pathways to innovation and prioritize what is most important for their future.

The strategic planning process should be participatory and flexible, and a central aim should be established: to define a sustainable action plan that will make the metropolis unique and renowned. Just as two companies do not have the same recipe for success, each city must look for its own model on the basis of some common considerations.

Experience shows that large cities must avoid a short-term outlook and expand their field of vision. They should turn to innovation more frequently to improve the efficiency and sustainability of their services. Also, they should promote communication and ensure that residents and businesses are involved in their projects.

The time has come to practice intelligent governance that takes into account all the factors and social actors in a global vision. In fact, over the past few decades, various national and international organizations have produced studies focusing on the definition, creation and use of indicators with a variety of aims, although mainly to contribute to a diagnosis of the state of cities. In each of these studies, the definition of the indicators and their creation process are the result of the study's characteristics, the statistical and econometric techniques that best fit the theoretical model and available data, and the analysts' preferences.

Today we have a lot of "urban" indicators, although many of them are neither standardized nor consistent or comparable among cities. In fact, numerous attempts have been made to develop city indicators at the national, regional and international level. However, few have been sustainable in the medium term, as they were created for studies meant to cover the specific information needs of certain bodies, whose lifespan depended on how long the financing would last. In other cases, the system of indicators depended on a political desire in specific circumstances, so they were abandoned when political priorities or the authorities themselves changed. As for the indicators developed by international organizations, it is true that they strive for the consistency and solidity necessary to compare cities; however, for the most part, they tend to be biased or focused on a particular area (technology, the economy, and the environment, among others).

Taking all this into account, the Cities in Motion Index (**CIMI**) has been designed with the aim of constructing a "breakthrough" indicator in terms of its completeness, characteristics, comparability and the quality and objectivity of its information. Its goal is to enable measurement of the future sustainability of the world's main cities as well as the quality of life of their inhabitants.

The **CIMI** aims to help the public and governments understand the performance of 10 fundamental dimensions for a city: governance, urban planning, public management, technology, the environment, international outreach, social cohesion, mobility and transportation, human capital, and the economy. All the indicators are linked with a strategic aim that leads to a novel form of local economic development: the creation of a global city, the promotion of the entrepreneurial spirit, and innovation, among others.

Each city is unique and unrepeatable and has its own needs and opportunities, so it must design its own plan, set its priorities, and be flexible enough to adapt to changes.

Smart cities generate numerous business opportunities and possibilities for collaboration between the public and private sectors. All stakeholders can contribute, so an ecosystem network must be developed that will involve all of them: members of the public, organizations, institutions, government, universities, experts, research centers, etc.

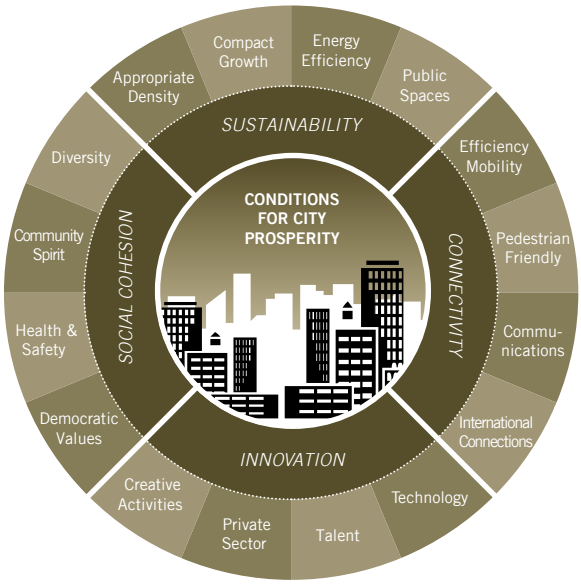
Networking has its advantages: better identification of the needs of the city and its residents, the establishment of common aims and constant communication among participants, the expansion of learning opportunities, increased transparency, and the implementation of more flexible public policies. As a report by the Organization for Economic Cooperation and Development (OECD) pointed out back in 2001, the network approach allows local policies to be focused on the public. Private enterprise also has much to gain from this system of networking: it can collaborate with the administration

in the long term, access new business opportunities, gain a greater understanding of the needs of the local ecosystem, increase international visibility, and attract talent.

Thanks to its technical expertise and its experience in project management, private enterprise, in collaboration with universities and other institutions, is suited to lead and develop smart city projects. In addition, it can provide efficiency and significant savings to public-private bodies.

Finally, it must not be forgotten that the human factor is fundamental in the development of cities. Without a participatory and active society, any strategy, albeit intelligent and comprehensive, will be doomed to failure. Beyond technological and economic development, it is the public that holds the key for cities to go from "smart" to "wise." That is the goal to which every city should aspire: that the people who live there and their leaders use all their talent to achieve progress.

To help cities identify effective solutions, we have created an index that captures 10 dimensions in a single indicator and covers 180 cities worldwide. Thanks to its broad and integrated vision of the city, the Cities in Motion Index enables the strengths and weaknesses of each city to be identified.



OUR MODEL: CITIES IN MOTION. CONCEPTUAL FRAMEWORK, DEFINITIONS AND INDICATORS

Our platform proposes a conceptual model based on the study of a large number of success stories and a series of in-depth interviews with city leaders, entrepreneurs, academics and experts linked to urban development.

Our model proposes a set of steps that include diagnosis of the situation, the development of a strategy, and its subsequent implementation – and the first step to giving a good diagnosis is to analyze the status of key dimensions.

We will now, therefore, set out the 10 key dimensions of our model, as well as the indicators used in calculating the **CIMI**.

HUMAN CAPITAL

The main goal of any city should be to improve its human capital. A city with smart governance must be capable of attracting and retaining talent, creating plans to improve education, and promoting creativity and research.

Table 1 sets out the indicators used in the human capital dimension, along with their descriptions, units of measurement, and information sources.

While human capital includes factors that make it more extensive than what can be measured with these indicators, there is international consensus that level of education and access to culture are irreplaceable components for measuring human capital. In fact, one of the pillars of human development is human capital and, taking into account that the Human Development Index published annually by the United Nations Development Program includes education and culture as dimensions, it is valid to regard these indicators as factors explaining the differences in human capital in a city.

TABLE 1. HUMAN CAPITAL INDICATORS

NO.	INDICATOR	DESCRIPTION / UNIT OF MEASUREMENT	SOURCE
1	Higher education	Proportion of population with secondary and higher education.	Euromonitor
2	Business schools	Number of business schools (top 100).	*The Financial Times*
3	Movement of students	International movement of higher-level students. Number of students.	UNESCO
4	Number of universities	Number of universities.	QS Top Universities
5	Museums	Number of museums per city.	2thinknow
6	Art galleries	Number of art galleries per city.	2thinknow
7	Expenditure on leisure and recreation	Expenditure on leisure and recreation. Expressed in millions of U.S. dollars at 2014 prices.	Euromonitor

In the case of the **CIMI**, the following are considered with a positive sign: the proportion of the population with secondary education and higher, the number of business schools, the inflow of international students in each city or country, and the number of universities.

As a measure of access to culture, account is taken of the number of museums, the number of art galleries, and expenditure on leisure and recreation, all in direct relation to the indicator. These indicators show the city's commitment to culture and human capital. Creative and dynamic cities worldwide typically have museums and art galleries open to the public and offer visits to art collections and events for the preservation of art. The existence of a city's cultural and recreation provision results in greater expenditure on these activities by the population.

SOCIAL COHESION

Social cohesion is a sociological dimension of cities defined as the degree of consensus among the members of a social group or the perception of belonging to a common situation or project. It is a measure of the intensity of social interaction within the group. Social cohesion in the urban context refers to the degree of coexistence among groups of people with different incomes, cultures, ages, and professions who live in a city. Concern about the city's social setting requires an analysis of factors such as immigration, community development, care of the elderly, the effectiveness of the health system, and public inclusion and safety.

The presence of various groups in the same space and mixing and interaction between groups are essential in a sustainable urban system. In this context, social cohesion is a state in which citizens and the government share a vision of a society based on social justice, the primacy of the rule of law, and solidarity. This allows us to understand the importance of policies that underpin social cohesion based on democratic values.

Table 2 sets out the indicators selected for this dimension, along with their descriptions, units of measurement, and information sources. This selection of indicators seeks to incorporate all the sociological subdimensions of social cohesion, based on the different variables available.

The ratio of deaths per 100,000 inhabitants and the crime rate are incorporated with a negative sign, while the health index is incorporated with a positive sign in the creation of this dimension's indicator.

Employment, meanwhile, is a fundamental aspect in societies, to the extent that, according to historical evidence, a lack of employment can break the consensus or the implicit social contract. For this reason, the unemployment rate is incorporated with a negative sign in the dimension of social cohesion. However, the ratio of female workers in the public administration is incorporated with a positive sign, since it is an indicator of gender equality in access to government jobs.

The Gini index is calculated from the Gini coefficient and measures social inequality. It assumes a value equal to zero for situations in which there is a perfectly equitable income distribution (everyone has the same income) and it assumes the value equal to 100 when the income distribution is perfectly inequitable (one person has all the income and the others none). This indicator is incorporated into the dimension with a negative sign, since a greater Gini coefficient has a negative effect on a city's social cohesion.

TABLE 2. SOCIAL COHESION INDICATORS

NO.	INDICATOR	DESCRIPTION / UNIT OF MEASUREMENT	SOURCE
8	Ratio of deaths	Ratio of death per 100,000 inhabitants.	Euromonitor
9	Crime rate	Crime rate.	Numbeo
10	Health index	Health index.	Numbeo
11	Unemployment rate	Unemployment rate (number of unemployed / labor force).	Euromonitor
12	Gini index	The Gini index varies from 0 to 100, with 0 being a situation of perfect equality and 100 that of perfect inequality.	Euromonitor
13	Price of property	Price of property as percentage of income.	Numbeo
14	Ratio of female workers	Ratio of female workers in the public administration.	International Labour Organization
15	Peace index	The Global Peace Index is an indicator that measures the peacefulness and the absence of violence in a country or region. The bottom-ranking positions correspond to countries with a high level of violence.	Centre for Peace and Conflict Studies at the University of Sydney

The peace index is an indicator that represents the degree of tranquility and peace in a country or region, as well as the absence of violence and war. It includes internal variables such as violence and crime and external ones, such as military spending and the wars in which the country is taking part. The countries at the top of the ranking are countries with a low level of violence, so the indicator has a negative relationship with the **CIMI**.

Finally, the price of property as a percentage of income is also negatively related since, when the percentage of income to be used to buy a property increases, the incentives to belong to a particular city's society decrease.

ECONOMY

This dimension includes all those aspects that promote the economic development of a territory: local economic development plans, transition plans, strategic industrial plans, and cluster generation, innovation and entrepreneurial initiatives.

The indicators used to represent the performance of cities in the economic dimension are specified in Table 3, along with their descriptions, units of measurement, and information sources.

Considering that the **CIMI** seeks to measure, via multiple dimensions, sustainability in the future of the world's main cities and the quality of life of their inhabitants, real GDP is a measure of the city's economic power and of its inhabitants' income. In addition, it is an important measure of the quality of life in cities. In numerous studies, GDP is considered the only or the most important measure of the performance of a city or country. However, in this report, it is not considered as exclusive nor as the most important measure: it is considered as one more indicator within one of the 10 dimensions of the **CIMI**. Thus, its share of the total is similar to that of other indicators. For example, a city with a high or relatively high GDP, if it does not have a good performance in other indicators, may not be in one of the top positions. In this way, a city that is very productive but has problems with transportation, inequality, weak public finance or a production process that uses polluting technology probably will not be in the top positions of the ranking.

For its part, labor productivity is a measure of the strength, efficiency and technological level of the production system, which, with regard to local and international competitiveness, will have repercussions, obviously, on real salaries, capital income, and business profits. For this reason, it is very important to consider the measure in the economic dimension, since different productivity rates can explain differences in the quality of life of a city's workers – and on the sustainability over time of the production system.

The other indicators selected as representative of this dimension enable the measurement of some aspects of the business landscape of a city, such as the number of headquarters of publicly traded companies; the entrepre-

TABLE 3. ECONOMIC INDICATORS

NO.	INDICATOR	DESCRIPTION / UNIT OF MEASUREMENT	SOURCE
16	Productivity	Labor productivity calculated as GDP/working population (in thousands).	Euromonitor
17	Time necessary to start a business	Calendar days needed to complete the procedures involved in the legal operation of a company.	World Bank
18	Ease of starting a business	The top positions in the ranking indicate a more favorable regulatory environment for creating and operating a local company.	World Bank
19	Number of headquarters	Number of headquarters of publicly traded companies.	Globalization and World Cities (GaWC)
20	Percentage of people at early business stage	Percentage of 18 to 64-year-old population who are new entrepreneurs or owners/managers of a new business (no more than 42 months).	Global Entrepreneurship Monitor
21	Entrepreneurs	Companies in an initial phase that represent a city's economic bases. They represent economic dynamism and include a high proportion of companies devoted to technology. Used per capita.	2thinknow
22	GDP	Gross domestic product in millions of U.S. dollars at 2014 prices.	Euromonitor

neurial capacity and possibilities of a city's inhabitants, represented by the percentage of people at an early business stage; entrepreneurial companies; the time required to start a business; and the ease of starting a business in regulatory terms. These indicators measure a city's sustainability capacity over time and the potential ability to improve the quality of life of its inhabitants. The time required to start a business and the ease of launching it are incorporated into the economic dimension with a negative sign, since lower values indicate a greater ease of starting businesses. The number of headquarters of publicly traded companies, the number of entrepreneurs, and the entrepreneurial possibilities of a city's inhabitants have a positive relationship, since the high values of these indicators reflect the economic dynamics of a city and the ease of starting a new business.

PUBLIC MANAGEMENT

The public management dimension encompasses all those actions aimed at improving the administration's efficiency, including the design of new organizational and management models. In this area, great opportunities open up for private initiative, which can bring greater efficiency.

In this work, public management is understood to be highly correlated with the state of public finances of a city or country. In this sense, public accounts decisively affect people's quality of life and a city's sustainability, since they determine the level of present and future taxes that must support the residents and the production system, the expected growth of the general level of prices, the possibilities of public investment in basic social infrastructure, and incentives for private investment. In addition, if the state has funding needs, because of the weakness of the public finance system, it will compete with the private sector for funds available in the financial system, which will affect investment.

The indicators that represent the public management dimension in this report are listed in Table 4, along with their descriptions, units of measurement, and sources of information.

The indicators related to the tax system, which are incorporated with a negative sign in this dimension's synthetic indicator, cover aspects of the state of public finances since the greater the relative tax burden, the weaker a city's public accounts are. The total tax rate measures the total amount of taxes and compulsory contributions paid by businesses after accounting for deductions and exemptions allowed as part of commercial profits. Excluded are taxes withheld (such as income tax for natural persons) or taxes collected and remitted to tax authorities (such as value added tax, sales tax, or goods and services tax). Similarly, sales tax has a big impact on the economy. Higher rates of sales tax can be used to finance investment in services and intelligent infrastructure.

In turn, the level of reserves is an indicator of the strength of the public finance system in the short and medium

TABLE 4. PUBLIC MANAGEMENT INDICATORS

NO.	INDICATOR	DESCRIPTION / UNIT OF MEASUREMENT	SOURCE
23	Total tax rate	This measures the total amount of taxes and compulsory contributions paid by businesses after accounting for deductions and exemptions allowed as part of commercial profits.	World Bank
24	Reserves	Total reserves in millions of current U.S. dollars.	World Bank
25	Reserves per capita	Reserves per capita in millions of current U.S. dollars.	World Bank
26	Embassies	Number of embassies and consulates per city.	2thinknow
27	Twitter	Twitter users in prominent user directories (e.g., Twellow). This includes users who define themselves as leaders (writers, activists, business leaders, journalists, etc.). In thousands of people.	2thinknow
28	Sales tax	This has a big impact on the economy. Lower rates of sales tax can be used to finance investment in services and intelligent infrastructure.	2thinknow

term, of their ability to cope with changing economic cycles, and of the strength and sustainability of the economic structure in relation to the state. Likewise, the number of embassies and consulates is an indicator of the city's international importance for global standards and is based on the embassies that foreign countries assign to the city.

The number of active Twitter users with public data in the Twellow directory are those who are considered opinion leaders (activists, prominent critics of the government, business leaders, writers, and journalists, among others). Twitter messages tend to be transmitted via opinion leaders, so global directories provide a guide to the prominence of dissenting voices and ideas within cities. In some authoritarian countries, publishing points of view and opinions as a thought leader is risky, so there will be fewer active leaders and critics in Twitter directories. This indicator is incorporated with a positive sign.

GOVERNANCE

Governance is the term commonly used to describe the effectiveness, quality and sound guidance of state intervention. Given that the citizen is the meeting point for solving all the challenges facing cities, factors such as the level of the public's participation, the authorities' ability to involve business leaders and local stakeholders, and the application of e government plans should be taken into account.

Table 5 summarizes the indicators used in the governance dimension to calculate the **CIMI**.

The strength of rights index measures the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders and thus facilitate access to loans. The values go from 0 (low) to 12 (high) and the highest ratings indicate that the laws are better designed to expand access to credit. Creating the conditions and ensuring the effective implementation of the rights of the public and companies situated in their territory is a function of national or local states that cannot be delegated. The perception of the observance of legal rights influences all aspects of life of a country or city, such as its business climate, investment incentives, and legal certainty, among others. For this reason, the strength of rights index has been incorporated with a positive sign in the creation of this dimension.

The government corruption perceptions index is a way to measure the quality of governance, since a high perception in society of corruption in public bodies is a sign that state intervention is not efficient from the point of view of the social economy, given that public services – understood in a broad sense – involve higher costs in relation to a situation with no corruption. In addition, incentives to invest or settle in countries or cities with a high perception of corruption will be lower than in others with low levels, which negatively affects the sustainability of the country or city. In the case of the **CIMI**, it is taken as an explanatory indicator of the governance dimension, with a positive sign, due to how the index is calculated by the organization Transparency International, which assigns it a value of zero for countries with a high level of corruption and 100 for very transparent countries.

TABLE 5. GOVERNANCE INDICATORS

NO.	INDICATOR	DESCRIPTION / UNIT OF MEASUREMENT	SOURCE
29	Strength of legal rights index	This index measures the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders and thus facilitate access to loans. The values run from 0 to 12, where the highest ratings indicate that the laws are better designed to expand access to credit.	World Bank
30	Corruption perceptions index	The values go from 0 = very corrupt to 100 = very transparent.	Transparency International
31	Functions of the innovation department	Number of functions of the city's innovation department (or ministry if there is one).	2thinknow
32	Range of government Web services	Range of online services for all city council users (residents or visitors). This is a measure of modern and technological municipal government. Scale from 0 to 5.	2thinknow
33	Open data platform	This describes whether the city has an open data system.	CTIC Foundation and Open World Map

Likewise, having an innovation department is a central point of any government policy. The number of functions of this department is an indicator of governments' support for these policies. Therefore, it is incorporated with a positive sign: departments with more functions reflect greater support for innovation.

The range of Web services for a city council's users, meanwhile, is a sign of the government's responsiveness to a city's technological functions and to the needs of its residents and visitors (that is, the users of a city). No city can afford to disregard commitment to the users of their city, and every city should have an optimal digital presence. This indicator is incorporated with a positive sign, since higher values reflect a greater amount of Web services for city council users.

Finally, the variable that considers whether a city's government has an open data platform is an indicator of transparency in government management, a communication channel with the public and a platform for generating new business models. The variable assumes a value of 1 if there is an open data platform and 0 otherwise. Therefore, the indicator is incorporated with a positive sign into this dimension.

ENVIRONMENT

Sustainable development of a city can be defined as development "that meets the needs of the present without compromising the ability of future generations to meet their own needs."[1]

In this respect, factors such as improving environmental sustainability through antipollution plans, support for green buildings and alternative energy, efficient water management, and policies that help counter the effects of climate change are essential for the long-term sustainability of cities.

Since the **CIMI** also seeks to measure the environmental sustainability of cities, the environment is included as one of the essential aspects of measurement. Table 6 sets out the indicators selected in this dimension, descriptions of them, their units of measurement, and the sources of the information.

The indicators selected include measurements of air pollution sources and water quality in cities, which are indicators of the quality of life of their inhabitants, as well as the sustainability of their production or urban matrix. Carbon dioxide emissions come from the burning of fossil fuels and the manufacture of cement, while methane emissions arise from human activities such as agriculture and the industrial production of methane. CO_2 and methane emissions are the main measures that are commonly used to quantify the degree of air pollution, since they are highly correlated with global warming. In fact, the decline in these indicators' values is included as a target in the Kyoto Protocol.

Other very important indicators for air pollution in cities are PM2.5 and PM10, a designation that corresponds to small particles, solid or liquid, of dust, ash, soot, metal particles, cement, or pollen, scattered in the atmosphere and whose diameter is less than 2.5 and 10 micrometers

[1] Definition used in 1987 by the UN's World Commission on Environment and Development, created in 1983.

TABLE 6. ENVIRONMENTAL INDICATORS

NO.	INDICATOR	DESCRIPTION / UNIT OF MEASUREMENT	SOURCE
34	CO_2 emissions	Carbon dioxide emissions from the burning of fossil fuels and the manufacture of cement. Measured in kilotons (kt).	World Bank
35	CO_2 emission index	CO_2 emission index.	Numbeo
36	Methane emissions	Methane emissions that arise from human activities such as agriculture and the industrial production of methane. Measured in kt of CO_2 equivalent.	World Bank
37	Percentage of the population with access to the water supply	Percentage of the population with reasonable access to an appropriate quantity of water resulting from an improvement in the water supply.	World Bank
38	PM2.5	PM2.5 measures the amount of particles in the air whose diameter is less than 2.5 µm. Annual mean.	World Health Organization
39	PM10	PM10 measures the amount of particles in the air whose diameter is less than 10 µm. Annual mean.	World Health Organization
40	Pollution index	Pollution index.	Numbeo
41	Environmental performance index	Environmental Performance Index (from 1 = poor to 100 = good).	Yale University

(µm), respectively. These particles are formed primarily by inorganic compounds such as silicates and aluminates, heavy metals, and organic material associated with carbon particles (soot). These indicators are commonly used in the indexes that seek to measure the state of environmental pollution. These indicators are complemented by the information provided by the city pollution index, which estimates the overall pollution in the city. The greatest weight is given to those cities with the highest air pollution.

Finally, the Environmental Performance Index (EPI), calculated by Yale University, is an indicator based on the measurement of two large dimensions related to the environment: environmental health and ecosystem vitality. The first is divided into three subdimensions: the effects of air pollution on human health, the effects of water quality on human health, and the environmental burden of diseases. Ecosystem vitality contains seven subdimensions: the effects on the ecosystem of air pollution, the effects on the ecosystem of water quality, biodiversity and habitat, afforestation, fish, and climate change. Given the completeness of this indicator – which covers almost all aspects related to measuring the state and evolution of the environment in a city, complemented by the other indicators that the **CIMI** incorporates – it is considered that the environmental dimension is represented proportionately.

While the indicators of PM10, PM2.5, CO_2, methane emissions, and the rate of pollution bear a negative sign, the remaining indicators have a positive effect on the environment.

MOBILITY AND TRANSPORTATION

The cities of the future have to tackle two major challenges in the field of mobility and transportation: facilitating movement through cities (often large ones) and facilitating access to public services.

Mobility and transportation – both with regard to road and route infrastructure, the vehicle fleet, and public transportation, as well as to air transportation – affect the quality of life of a city's inhabitants and can be vital to the sustainability of cities over time. However, perhaps the most important aspect is the externalities that are generated in the production system, both because of the workforce's need to commute and because of the need for an outlet for production.

Table 7 sets out the indicators selected in the dimension of mobility and transportation, along with their descriptions, units of measurement, and information sources.

The general traffic index, the index of traffic caused by commuting to work, and the inefficiency index are estimates of the traffic inefficiencies caused by long driving times and by the dissatisfaction that these situations generate in the population. These indicators, along with the number of road accidents, are a measure of the efficiency and safety of roads and public transportation, which,

if it is effective and has good infrastructure, promotes a decrease in vehicular traffic on the roads and reduces the number of accidents. All these are included with a negative sign in the calculation of the **CIMI**, since they have a negative impact on the development of a sustainable city.

The bike-sharing indicator collects information about a city's bicycle-sharing system. This system allows the movement from one location to another using bicycles available for public use. The indicator varies between 0 and 2, where 0 refers to the lack of a bicycle-sharing system in the city and 2 refers to a highly developed system. The variable is incorporated with a positive sign in the **CIMI**.

In contrast, the number of metro stations is an indicator of commitment to the development of the city and investment with respect to the population size. The means of transportation represent the public transportation options of a city. The value of this variable increases if there are more transportation options. The lack of transportation options can reduce the attractiveness of a city as a smart destination. The amount of air traffic (arrivals and departures) that a city has represents the infrastructure that it has to facilitate – i.e., commercial air routes, and, therefore, passenger circulation and transit. These three indicators are included with a positive sign because of the positive influence they have on the dimension.

URBAN PLANNING

The urban planning of a city has several subdimensions and is closely related to sustainability. Inadequate urban planning causes a reduction in the public's quality of life in the medium term and also negatively affects investment incentives, since a city without planning or inadequate planning hinders and increases the costs of logistics and workers' transportation, among other aspects.
To improve the habitability of any territory, it is necessary to take into account the local master plans and the design of green areas and spaces for public use, as well as opting for smart growth. The new urban planning methods should focus on creating compact, well-connected cities with accessible public services.

Depending on the information available, several aspects related to urban plans, the quality of health infrastructure, and housing policies are incorporated as indicators of this dimension. Table 8 sets out the available indicators included in the urban planning dimension, along with their descriptions, units of measurement, and information sources.

TABLE 7. MOBILITY AND TRANSPORTATION INDICATORS

NO.	INDICATOR	DESCRIPTION / UNIT OF MEASUREMENT	SOURCE
42	Traffic index	The traffic index is estimated by considering the time spent in traffic and the dissatisfaction this generates. It also includes estimates of CO_2 consumption and the other inefficiencies of the traffic system.	Numbeo
43	Inefficiency index	The inefficiency index is an estimate of the inefficiencies in traffic. High values represent high rates of inefficiency in driving, such as long journey times.	Numbeo
44	Number of road accidents	Number of road accidents per 100,000 inhabitants.	Euromonitor
45	Metro	Number of metro stations per city.	2thinknow
46	Flights	Number of arrival and departure flights (air routes) in a city.	2thinknow
47	Means of transportation	The means of transportation represents the public transportation options for smart cities. The value of the variable increases if there are more transportation options. The lack of transportation options can reduce the attractiveness of a city as a smart destination.	2thinknow
48	Index of traffic for commuting to work	Index of traffic considering the journey time to work.	Numbeo
49	Bike sharing	The bicycle-sharing system shows the automated services for the public use of shared bicycles that provide transport from one location to another within a city. The indicator varies between 0 and 2 according to how developed the system is.	The Bike-sharing World Map

The quality of health infrastructure refers to the percentage of the population with at least sufficient access to sanitation facilities that avoid the contact of humans, animals, and insects with excreta. For them to be effective, these facilities must be built correctly and undergo proper maintenance. This indicator is highly correlated with that of urban planning, since it can be shown that inadequate planning inevitably results in health problems in the short and medium term.

In addition, from the urban planning and housing point of view, a city with proper urban planning generally has few or no problems of overcrowding in households, since normally housing policy, in relation to the estimated growth of the urban population, is a determining factor in urban planning. For this reason, within the explanatory indicators of this dimension, the number of occupants of each household was considered with a negative sign.
The bicycle is an effective, fast, economical, healthy, and environmentally friendly means of transportation. The use of this means of transportation has a positive impact on a city's sustainable development as it does not cause pollution or use fuel, among other benefits. Considering these positive effects, two indicators related to the use of this means of mobility were incorporated in the **CIMI**. The number of cycling enthusiasts represents both a sustainable measure of transportation and a metric of the infrastructure that the city offers for this mode. Many cities that are "historically" smart cities have a certain positive correlation with a high presence of cycling. This variable is incorporated, therefore, with a positive sign. Likewise, the number of bicycle shops is a good indicator of the actual use of the bicycle (through equipment sales and repairs). This is also incorporated with a positive sign.

Another indicator considered is the number of architecture firms (small, medium, and large) that are devoted to designing projects for the city. Engineers, architects, and urban planners are key to the transformation of a city and therefore this indicator is incorporated with a positive sign in the index calculation.

INTERNATIONAL OUTREACH

Cities that want to progress must secure a privileged place in the world. Maintaining global impact involves improving the city brand and its international recognition through strategic tourism plans, the attracting of foreign investment and representation abroad.

Cities can have an international outreach to a greater or lesser extent even if they are from the same country, but this is not independent of the degree of openness nationally. This dimension seeks to include those differences and to measure the cities' international outreach.

In this respect, the following indicators have been included: arrival of international tourists, number of passengers by airline, number of hotels in a city, ranking of the most photographed places in the world according to Sightsmap, and the number of meetings and conferences that take place in a city according to data from the International Congress and Convention Association. This last indicator is important for a city's international reputation, taking into account that these events usually take place in cities with international hotels, rooms specially fitted out for such ends, good frequency of international flights, and appropriate security measures. Table 9 below summarizes these indicators, along with descriptions of

TABLE 8. URBAN PLANNING INDICATORS

NO.	INDICATOR	DESCRIPTION / UNIT OF MEASUREMENT	SOURCE
50	Percentage of the population with access to sanitation facilities	Percentage of the population with at least sufficient access to facilities for the disposal of excreta that can efficiently avoid the contact of humans, animals and insects with excreta.	World Bank
51	Number of people per household	Number of people per household.	Euromonitor
52	Bicycle shops	Number of bicycle shops per capita.	2thinknow
53	Architects	Number of architecture firms per capita.	2thinknow
54	Cycling	Cycling enthusiasts per capita. Bicycle use represents both a sustainable measure of transportation and a metric for a city's exercise and cultural aptitude. Many cities that historically are smart cities have a positive correlation with the presence of a cycling culture (weather permitting).	2thinknow

them, their units of measurement, and the source of the information.

All indicators of this dimension, except Sightsmap, are incorporated with a positive sign into the calculation of the **CIMI** since, faced with higher values of the indicators, the city has a greater impact on the world. Sightsmap is incorporated with a negative sign, since the top positions in the ranking correspond with the most photographed cities.

TECHNOLOGY

Although cities do not live on technology alone, information and communications technology (ICT) is part of the backbone of any society that wants to be called "smart."

Technology, an integral dimension of the **CIMI**, is an aspect of society that improves the present quality of life, and its level of development or spread is an indicator of the quality of life achieved in society or the potential quality of life. In addition, technological development is a dimension that allows cities to be sustainable over time and to maintain or extend the competitive advantages of their production system and the quality of employment. A technologically backward city has comparative disadvantages with respect to other cities, both from the point of view of security, education, and health, all fundamental to the sustainability of society, and from the point of view of the productive apparatus. As a consequence of this, the production functions become anachronistic. Competitiveness, without protectionism, becomes depleted, which has a negative effect on the city's capacity for consumption and investment, as well as reducing labor productivity.

The indicators selected for measuring the cities' performance in terms of the reach of technology and growth in the cities are set out in Table 10 below, along with their descriptions, units of measurement, and information sources.

The first indicator – the number of people signed up for broadband Internet – is a data item for the whole country and has a high correlation with the cities' general technological progress, since the technological development of applications and devices is necessary for the efficient use of broadband. Complementing this, the indicator corresponding to the city – which represents the number of broadband users within a city as a measure of its technological development – is incorporated. This indicator includes wireless and fixed connections. With regard to the number of IP addresses assigned to the city, this is a commercial indicator of the adoption of the Internet by the public. Internet-enabled businesses and members of the public create economic value in the economy through the use of devices and, therefore, the allocation of IP addresses. The number of wireless access points globally represents the options to connect to the Internet by businesspeople during travel. On the other hand, the number of Facebook users per capita measures the penetration of Facebook (or, in the case of China, Renren) within a city, based on actual data from Facebook. Facebook is the social media network par excellence and has high penetration rates in many global markets. Facebook has provided the data from 2015 and 2014 but algorithmic

TABLE 9. INTERNATIONAL OUTREACH INDICATORS

NO.	INDICATOR	DESCRIPTION / UNIT OF MEASUREMENT	SOURCE
55	Number of international tourists	Number of international tourists who visit the city. In thousands of people.	Euromonitor
56	Number of passengers of an airline	Number of passengers who travel with airlines. In thousands of people.	Euromonitor
57	Hotels	Number of hotels per capita.	2thinknow
58	Sightsmap	Ranking of cities according to the number of photos taken in the city and uploaded to Panoramio (community for sharing photographs online). The top positions correspond to the cities with the most photographs.	Sightsmap
59	Number of conferences and meetings	Number of international conferences and meetings in a city.	International Meeting Congress and Convention Association

estimates have been used for previous years. This indicator is incorporated with a positive sign. As for the data item on the number of mobile phones per inhabitant, this is obtained through national data, population data, and demographic information. This indicator is incorporated with a positive sign, since the greater the use of mobile telephony, the more open society is to the use of technology. The use of smartphones and their penetration are a good indicator for the use of technologies. The use of smartphones shows the number of applications that businesses and the government can put into practice. It is incorporated with a positive sign. For its part, the quality of a city council's website is an indicator that reflects the government's commitment to information technology policies. If a local government wants to promote the development of information and communications technology (ICT) among local businesses, it is necessary for the government itself to provide a good-quality online services offer, showing support for this crucial sector's strategies. Last but not least, the Innovation Cities Index (ICI) is calculated by carrying out assessments on the basis of various factors regarding technological innovation in cities, in sectors such as health, the economy in general, or the population, among others, becoming what is now the most comprehensive indicator to measure the degree of innovation development of cities, divided methodologically into three aspects: cultural assets, human infrastructure, and interconnected markets.

All the indicators of this dimension are related directly to the technological dimension. Therefore, they are incorporated with a positive sign.

TABLE 10. TECHNOLOGY INDICATORS

NO.	INDICATOR	DESCRIPTION / UNIT OF MEASUREMENT	SOURCE
60	Number of broadband subscribers	Number of broadband subscribers per country with a digital subscriber line, cable modem, or other high-speed technology, per 100 inhabitants.	World Bank
61	Broadband	Number of broadband users within a city, including wireless and fixed connections.	2thinknow
62	IP addresses	Number of IP addresses per capita.	2thinknow
63	Facebook	Number of Facebook users per capita.	2thinknow
64	Mobile phones	Number of mobile phones per capita	2thinknow
65	Quality of Web services	The quality of the city council's website measures the commitment of its information technology policy, support for the development of local businesses, and other technology initiatives. Scale from 0 to 5, the maximum corresponding to the website with the best-quality services.	2thinknow
66	Innovation index	Innovation index (Innovation Cities Index). Valuation of 0 (no innovation) to 60 (a lot of innovation).	Innovation Cities Program
67	Smartphones	Number of smartphones per capita. The use of smartphones and their penetration are a good indicator for the use of technologies.	2thinknow
68	Wi-Fi hot spot	Number of wireless access points globally. They represent the options to connect to the Internet by businesspeople while traveling.	2thinknow

LIMITATIONS OF THE INDICATORS

Appendix 1: Indicators summarizes all the used indicators, descriptions, units of measurement, and sources across each dimension.

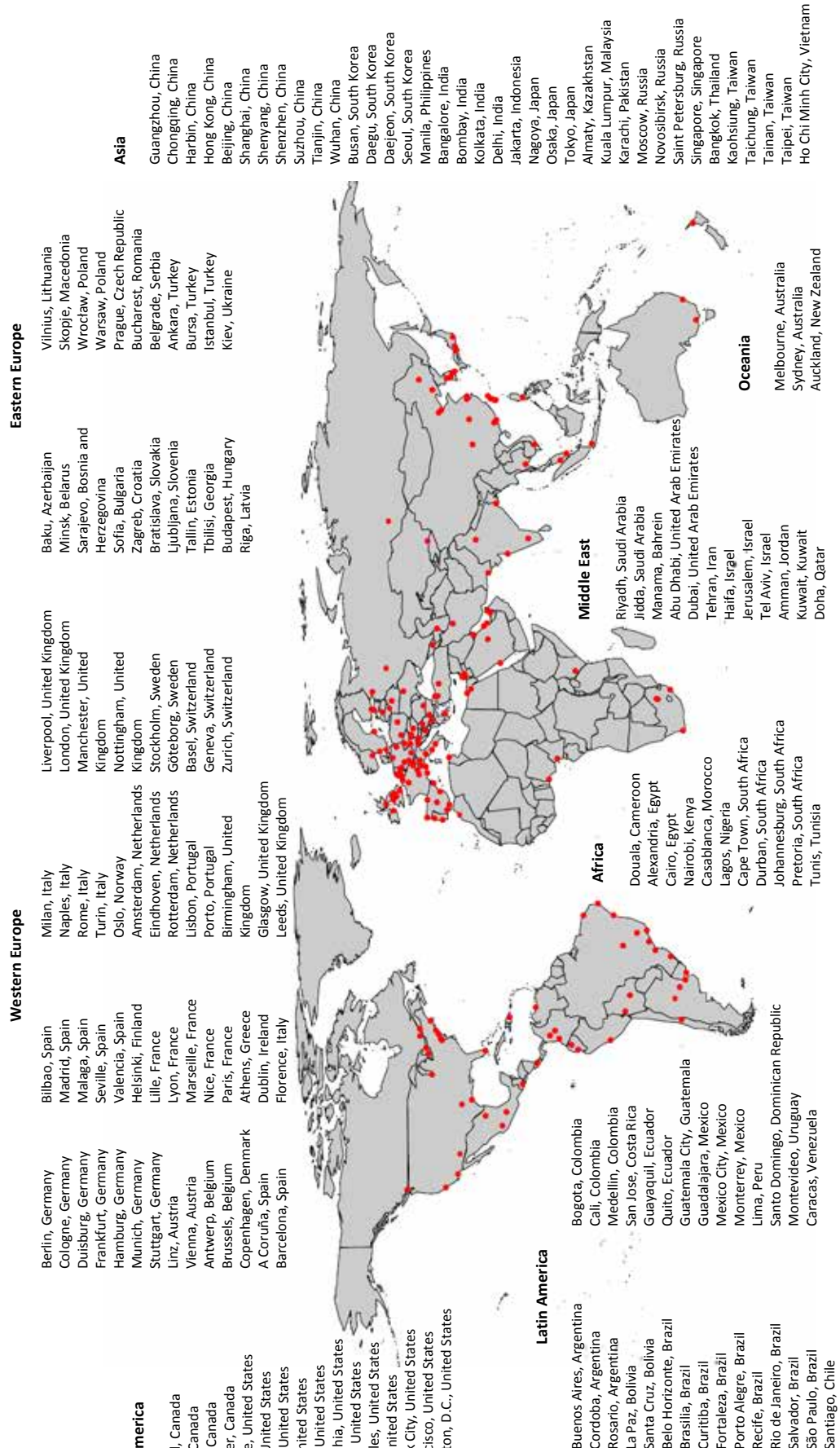
Perhaps the most significant limitation in the calculation of the **CIMI** is linked to the availability of data. Nevertheless, efforts were made to minimize the impact of this limitation. First of all, for those indicators that did not have data for the entire period under analysis, extrapolation techniques were used. For situations where the indicator values by city were nonexistent but where there were valid values by country, individual values were assigned to each city, connecting the indicator at the country level via some other variable linked theoretically at the city level. Lastly, there were cases where the indicator did not have data for a particular city or group of cities for the whole period under consideration. In this case, statistical cluster techniques were used. The scope and detail of these tools are discussed in depth in the supplementary document "Methodology and Modeling" from 2014.

With the **CIMI** platform, we continue to work to obtain more complete and accurate indicators, while we urge cities to allow access to the information they generate.

GEOGRAPHIC COVERAGE

For the calculation of this year's **CIMI**, 180 cities have been included, 73 of which are capitals, with the geographical distribution depicted in Figure 1.

FIGURE 1. GEOGRAPHICAL DISTRIBUTION OF THE CITIES INCLUDED IN THE INDEX



CITIES IN MOTION. *RANKING*

The **CIMI** is a synthetic indicator and, as such, is a function of the partial indicators available.

The model that sustains the process of creating the synthetic indicator is a weighted aggregation of partial indicators that represent each of the 10 dimensions that make up the **CIMI** theoretical model. The dimensions selected to describe the cities' situations in terms of sustainability and the quality of life of their inhabitants, in the present and in the future, are as follows: governance, urban planning, public management, technology, the environment, international outreach, social cohesion, mobility and transportation, human capital, and the economy.

The partial indicators representative of each dimension also correspond to the category of synthetic indicators, which are defined as "weighted aggregations of each of the selected indicators that represent different factors of each dimension."

Given the type of indicator that had to be calculated and the data available, for the calculation of the **CIMI**, the DP2 technique was used, this being the most widely used internationally and the most suitable. Its methodology is based on distances – that is, the difference between an indicator's given value and another value taken as a reference or target. Likewise, this technique attempts to correct the dependence among the partial indicators, which would artificially increase the indicator's sensitivity to variations in certain partial values. The correction consists of applying the same factor to each partial indicator, assuming a linearly dependent function[2].

Given the partial indicators, the factors are given by the complement of the coefficient of determination (R2) for each indicator compared with the rest of the partial indicators. The order in which the indicators of each dimension were included as well as their relative weight in the **CIMI** are as follows: economy: 1; human capital: 0.401; international outreach: 0.704; urban planning: 0.625; environment: 0.631; technology: 0.354; governance: 0.414; social cohesion: 0.526; mobility and transportation: 0.472; and public management: 0.614.

While the order in which each synthetic index of each dimension is incorporated influences the value of the **CIMI**, the sensitivity studies carried out concluded that there are no significant variations in it. More details on the methodology can be seen in the supplementary document "Methodology and Modeling" published in 2014.

Table 11 sets out the **CIMI** city ranking, with the index value and the cities grouped according to their performance, measured by the value of the synthetic indicator.

Cities with a high performance (H) are considered to be those with an index greater than 90; relatively high (RH), between 60 and 90; average (A), between 45 and 60; and low (L), below 45.

For 2016, it can be observed that 52.77% of the cities (95) have a performance rated high (H) or relatively high (RH), headed by New York City and London. With an average (A) performance, we have 57 cities (31.67%), while the performances classified as low (L) include 15.55% of the selected cities. No city gets an average low (AL) rating. Of the top 25 cities, nine are European, 11 North American, three Asian, and two from Oceania.

[2] Being linear estimates, they are necessary variables that have a normal distribution, so a log transformation was applied to some variables to obtain normality. Outlier techniques were also applied to avoid bias and overestimations of coefficients.

TABLE 11. CITY RANKING

Ranking	City	Performance	CIMI
1	New York City-USA	A	100,00
2	London-United Kingdom	A	98,71
3	Paris-France	A	91,97
4	Boston-USA	RA	88,90
5	San Francisco-USA	RA	88,46
6	Washington, D.C.-USA	RA	86,10
7	Seoul-South Korea	RA	84,91
8	Tokyo-Japan	RA	84,85
9	Berlin-Germany	RA	83,40
10	Amsterdam-Netherlands	RA	82,86
11	Toronto-Canada	RA	82,85
12	Chicago-USA	RA	82,55
13	Zurich-Switzerland	RA	82,51
14	Melbourne-Australia	RA	82,06
15	Vienna-Austria	RA	81,94
16	Sydney-Australia	RA	81,14
17	Geneva-Switzerland	RA	81,14
18	Los Angeles-USA	RA	80,82
19	Munich-Germany	RA	80,71
20	Baltimore-USA	RA	79,82
21	Vancouver-Canada	RA	79,70
22	Singapore	RA	79,22
23	Dallas-USA	RA	78,24
24	Ottawa-Canada	RA	77,78
25	Stockholm-Sweden	RA	77,76
26	Oslo-Norway	RA	77,75
27	Copenhagen-Denmark	RA	77,56
28	Madrid-Spain	RA	77,00
29	Helsinki-Finland	RA	76,91
30	Philadelphia-USA	RA	76,59
31	Montreal-Canada	RA	76,49
32	Houston-USA	RA	75,97
33	Dublin-Ireland	RA	74,47
34	Hamburg-Germany	RA	74,20
35	Barcelona-Spain	RA	74,10
36	Frankfurt-Germany	RA	74,03
37	Phoenix-USA	RA	73,66
38	Milan-Italy	RA	73,66
39	Glasgow-United Kingdom	RA	73,18
40	Brussels-Belgium	RA	72,89
41	Prague-Czech Republic	RA	71,87
42	Hong Kong-China	RA	71,69
43	Rome-Italy	RA	71,64
44	Auckland-New Zealand	RA	71,23
45	Stuttgart-Germany	RA	70,83
46	Linz-Austria	RA	70,22
47	Basel-Switzerland	RA	70,13
48	Miami-USA	RA	70,06
49	Florence-Italy	RA	70,02
50	Lyon-France	RA	70,00
51	Málaga-Spain	RA	69,71
52	Lisbon-Portugal	RA	69,42
53	Tallinn-Estonia	RA	69,25
54	Warsaw-Poland	RA	68,96
55	Liverpool-United Kingdom	RA	68,77
56	Taipei-Taiwan	RA	68,65
57	Manchester-United Kingdom	RA	68,59
58	Eindhoven-Netherlands	RA	68,55
59	Rotterdam-Netherlands	RA	68,26
60	Cologne-Germany	RA	67,81
61	Turin-Italy	RA	67,53

Ranking	City	Performance	CIMI
62	Birmingham-United Kingdom	RA	67,10
63	Valencia-Spain	RA	66,83
64	Abu Dhabi-United Arab Emirates	RA	66,67
65	Antwerp-Belgium	RA	66,51
66	Dubai-United Arab Emirates	RA	66,51
67	Budapest-Hungary	RA	65,93
68	Seville-Spain	RA	65,88
69	Nottingham-United Kingdom	RA	65,82
70	Ljubljana-Slovenia	RA	65,58
71	Vilnius-Lithuania	RA	65,44
72	Osaka-Japan	RA	65,39
73	Marseille-France	RA	65,27
74	Nice-France	RA	65,00
75	Bilbao-Spain	RA	65,00
76	Leeds-United Kingdom	RA	64,70
77	Bratislava-Slovakia	RA	64,61
78	A Coruña-Spain	RA	64,35
79	Lille-France	RA	64,10
80	Shanghai-China	RA	63,73
81	Nagoya-Japan	RA	63,71
82	Riga-Latvia	RA	63,67
83	Buenos Aires-Argentina	RA	63,32
84	Zagreb-Croatia	RA	63,22
85	Santiago-Chile	RA	62,74
86	Bangkok-Thailand	RA	62,23
87	Mexico City-Mexico	RA	62,22
88	Gothenburg-Sweden	RA	61,85
89	Moscow-Russia	RA	61,83
90	Beijing-China	RA	61,83
91	Sofia-Bulgaria	RA	61,57
92	Kuala Lumpur-Malaysia	RA	61,13
93	Naples-Italy	RA	60,99
94	Athens-Greece	RA	60,90
95	Wroclaw-Poland	RA	60,64
96	Medellín-Colombia	M	59,91
97	Duisburg-Germany	M	59,85
98	Porto-Portugal	M	59,10
99	Montevideo-Uruguay	M	59,09
100	Busan-South Korea	M	59,03
101	São Paulo-Brazil	M	58,94
102	Guangzhou-China	M	57,47
103	St Petersburg-Russia	M	57,46
104	Istanbul-Turkey	M	57,39
105	Daejeon-South Korea	M	57,29
106	Tel Aviv-Israel	M	56,86
107	Córdoba-Argentina	M	56,70
108	Jerusalem-Israel	M	56,46
109	Bucharest-Romania	M	56,10
110	Daegu-South Korea	M	56,01
111	Monterrey-Mexico	M	55,74
112	San José-Costa Rica	M	55,74
113	Bogotá-Colombia	M	55,30
114	Rio de Janeiro-Brazil	M	54,84
115	Haifa-Israel	M	54,65
116	Lima-Peru	M	54,61
117	Porto Alegre-Brazil	M	54,15
118	Shenzhen-China	M	53,96
119	Kiev-Ukraine	M	53,02
120	Jeddah-Saudi Arabia	M	52,91
121	Guadalajara-Mexico	M	52,85
122	Cali-Colombia	M	52,19

Ranking	City	Performance	CIMI
123	Almaty-Kazakhstan	M	52,18
124	Belgrade-Serbia	M	52,11
125	Tbilisi-Georgia	M	51,89
126	Wuhan-China	M	51,84
127	Minsk-Belarus	M	51,72
128	Kuwait City-Kuwait	M	51,67
129	Suzhou-China	M	51,27
130	Quito-Ecuador	M	51,05
131	Curitiba-Brazil	M	50,76
132	Doha-Qatar	M	50,55
133	Cape Town-South Africa	M	50,38
134	Sarajevo-Bosnia-Herzegovina	M	49,88
135	Salvador-Brazil	M	49,62
136	Fortaleza-Brazil	M	49,07
137	Tunis-Tunisia	M	48,75
138	Riyadh-Saudi Arabia	M	48,32
139	Rosario-Argentina	M	47,49
140	Manama-Bahrain	M	47,30
141	Kaohsiung-Taiwan	M	47,24
142	Skopje-Macedonia	M	47,21
143	Brasília-Brazil	M	47,18
144	Baku-Azerbaijan	M	47,08
145	Taichung-Taiwan	M	47,03
146	Ho Chi Minh City-Vietnam	M	46,99
147	Ankara-Turkey	M	46,76
148	Manila-Philippines	M	46,51
149	Guatemala City-Guatemala	M	46,44
150	Tainan-Taiwan	M	45,98
151	Recife-Brazil	M	45,40

Ranking	City	Performance	CIMI
152	Novosibirsk-Russia	M	45,15
153	Belo Horizonte-Brazil	B	44,98
154	Bursa-Turkey	B	44,91
155	Johannesburg-South Africa	B	44,88
156	Jakarta-Indonesia	B	44,81
157	Chongqing-China	B	44,33
158	Durban-South Africa	B	43,35
159	Mumbai-India	B	43,19
160	Guayaquil-Ecuador	B	43,08
161	Tehran-Iran	B	42,80
162	Shenyang-China	B	42,70
163	Cairo-Egypt	B	42,30
164	Tianjin-China	B	41,73
165	Pretoria-South Africa	B	41,16
166	Alexandria-Egypt	B	40,92
167	Harbin-China	B	40,63
168	Delhi-India	B	40,55
169	Santo Domingo-Dominican Republic	B	40,34
170	La Paz-Bolivia	B	39,25
171	Casablanca-Morocco	B	39,09
172	Santa Cruz-Bolivia	B	38,11
173	Caracas-Venezuela	B	38,03
174	Bangalore-India	B	37,30
175	Amman-Jordan	B	36,70
176	Douala-Cameroon	B	36,49
177	Nairobi-Kenya	B	36,26
178	Kolkata-India	B	34,54
179	Lagos-Nigeria	B	32,87
180	Karachi-Pakistan	B	32,74

CITIES IN MOTION. *RANKING* BY DIMENSION

This section sets out the ranking according to each of the dimensions that make up the index, with the overall position of the city and its position in each dimension. To facilitate a more intuitive visual observation, the darker greens represent the highest positions, and the darker reds the least favorable, via intermediate positions in yellow shades.

New York City (United States) is first in the overall ranking, driven by its performance in the dimensions of the economy (first place), technology (second place), human capital and public management (fourth place), international outreach and urban planning (fifth place), and governance (sixth place). However, it continues to be in very low positions in the dimensions of social cohesion (position 153) and environment (position 82).

U.S. cities achieve the top positions in the overall ranking. Of the 12 cities, nine are in the top 30, and New York City, Boston, and San Francisco are in the top five.

The interpretation of Table 12 is very important for the analysis of the results, since the relative position of all cities in each of the dimensions can be observed. In Figure 2, the positions of the cities on the world map can be seen. Each city is represented by a color. The more intense green shades correspond to the top positions on the **CIMI** ranking, while the worst-positioned cities are represented in red shades. A more detailed description of the ranking by dimension is provided below.

Table 13 shows the top 10 positions in the ranking for each dimension. In this way, we can visualize better the regional representativeness in the various dimensions.

HUMAN CAPITAL

The city that ranks first in this dimension is London (United Kingdom). This city stands out for being the one that has the most top-level business schools, as well as for being the one with the highest number of universities. Likewise, a high proportion of its population has secondary and higher education. Although the number one city is London, the top 10 ranking for this dimension has seven American cities, as shown in Table 13.

SOCIAL COHESION

Helsinki (Finland) is the city with the highest rating in this dimension. It is a city with a low unemployment rate, an equitable distribution of income and the highest percentage of women in government positions (more than 70%). It is worth noting that the top 10 cities in this ranking are European.

ECONOMY

The city that heads the ranking in this dimension is New York City (United States). This city achieves relatively high levels in all indicators but it stands out especially for its high GDP and number of headquarters of publicly traded companies. It is important to mention that the top 10 for this dimension has eight U.S. cities.

PUBLIC MANAGEMENT

In this case, Geneva placed first, with good values in almost all the indicators, and it stands out especially for its low sales taxes and its reserves per capita. The top 10 for this dimension is made up of five U.S. cities and four Middle Eastern cities.

GOVERNANCE

In this dimension, Ottawa (Canada) ranks first, standing out in the strength of legal rights index and the corruption perceptions index. Among the top 10 cities in this dimension's ranking, there are four Canadian cities.

ENVIRONMENT

In this dimension, the cities that are best positioned are Zurich (Switzerland) and Tallinn (Estonia). These cities are in the top of the Environmental Performance Index (EPI) and have low levels of pollution and CO_2 emissions. Eight of the cities in the top 10 for this dimension are European.

MOBILITY AND TRANSPORTATION

The city of London (United Kingdom) comes first in the ranking and stands out in almost all the dimensions. Of the top 10 cities in the ranking for this dimension, there are eight European cities.

URBAN PLANNING

In this dimension, Amsterdam (Netherlands) ranks first and is among the highest-ranking in almost all the indicators. It stands out because almost 100% of the population has access to adequate sanitation facilities and because of its low number of people per household. It is important to mention that eight European cities are in the top 10 for this dimension.

INTERNATIONAL OUTREACH

Paris (France) is the top-ranking city for this dimension and London (United Kingdom) is in second place. This is because Paris is the city with the second-highest number of international tourists and ranks first in the ranking of cities by the number of photos taken in the city and uploaded to Panoramio. It is also the city where the most international conferences and meetings are organized. London, in turn, is the city that attracts a higher number of airline passengers, which is consistent with the fact that it is one of the cities with the largest number of air routes. Of the top 10 cities for this dimension, there are six European and two Asian cities.

TECHNOLOGY

Taipei (Taiwan) is the city at the pinnacle of this ranking. This city achieves good levels in all the indicators and stands out especially for the percentage of broadband users in the city, the number of Facebook users per capita, and the number of mobile phones per capita. Of the cities that occupy the top 10 positions, there are six Asian cities and three U.S. cities.

TABLE 12 . RANKING BY DIMENSION

City	Economy	Human capital	Social cohesion	Environment	Public management	Governance	Urban planning	International outreach	Technology	Mobility and transportation	Cities in Motion
New York City-USA	1	4	153	82	4	6	5	5	2	11	1
London-United Kingdom	4	1	105	35	34	23	22	2	23	1	2
Paris-France	11	7	86	20	45	42	8	1	25	5	3
Boston-USA	3	2	76	120	8	6	27	69	17	12	4
San Francisco-USA	2	9	100	58	12	20	24	45	16	23	5
Washington, D.C.-USA	7	3	108	62	2	26	47	41	19	40	6
Seoul-South Korea	14	15	59	53	39	24	78	19	4	2	7
Tokyo-Japan	6	6	96	8	33	91	86	20	5	21	8
Berlin-Germany	54	23	10	11	42	33	7	10	63	8	9
Amsterdam-Netherlands	32	34	26	95	56	31	1	7	6	20	10
Toronto-Canada	15	32	44	37	18	2	45	43	26	51	11
Chicago-USA	8	8	121	118	11	7	35	44	10	16	12
Zurich-Switzerland	18	78	2	1	24	25	32	48	75	80	13
Melbourne-Australia	26	38	28	60	23	5	15	50	29	22	14
Vienna-Austria	46	42	12	3	87	36	19	14	46	9	15
Sydney-Australia	17	37	58	30	16	37	20	33	24	71	16
Geneva-Switzerland	25	105	14	55	1	64	4	46	33	58	17
Los Angeles-USA	5	5	126	130	13	11	36	36	15	130	18
Munich-Germany	35	33	8	18	61	32	11	34	34	10	19
Baltimore-USA	16	16	98	125	3	19	13	74	3	63	20
Vancouver-Canada	28	46	41	28	20	3	46	40	66	68	21
Singapore	21	56	75	10	19	15	88	25	30	89	22
Dallas-USA	10	11	89	102	25	12	55	61	21	108	23
Ottawa-Canada	36	55	11	42	17	1	75	77	35	95	24
Stockholm-Sweden	24	75	54	4	81	30	66	37	55	7	25
Oslo-Norway	20	20	21	22	96	77	3	58	72	18	26
Copenhagen-Denmark	31	31	6	41	162	17	29	27	53	17	27
Madrid-Spain	57	43	66	52	50	48	31	15	59	6	28
Helsinki-Finland	42	62	1	29	117	10	33	63	52	28	29
Philadelphia-USA	13	10	94	104	22	28	50	128	18	29	30
Montreal-Canada	29	54	46	65	32	8	34	52	47	90	31
Houston-USA	9	18	102	141	15	12	44	95	12	121	32
Dublin-Ireland	22	77	64	70	52	21	65	24	89	54	33
Hamburg-Germany	47	36	18	47	70	27	23	79	85	24	34
Barcelona-Spain	77	39	72	84	67	35	43	4	64	26	35
Frankfurt-Germany	41	29	56	59	80	41	49	54	58	3	36
Phoenix-USA	27	17	87	91	27	11	41	152	39	97	37

City	Economy	Human capital	Social cohesion	Environment	Public management	Governance	Urban planning	International outreach	Technology	Mobility and transportation	Cities in Motion
Milan-Italy	56	35	71	46	69	79	14	23	61	15	38
Glasgow-United Kingdom	53	40	16	57	91	18	52	93	48	59	39
Brussels-Belgium	49	68	47	89	84	34	53	30	45	30	40
Prague-Czech Republic	93	73	5	14	114	114	21	16	105	67	41
Hong Kong-China	19	22	139	108	73	13	89	31	11	37	42
Rome-Italy	78	41	115	36	60	89	16	9	60	65	43
Auckland-New Zealand	30	124	40	100	41	4	82	76	44	85	44
Stuttgart-Germany	45	70	3	33	119	59	28	124	110	52	45
Linz-Austria	55	24	27	5	163	40	61	28	71	161	46
Basel-Switzerland	34	101	4	68	37	62	57	119	146	53	47
Miami-USA	23	21	127	115	9	63	30	42	38	149	48
Florence-Italy	98	65	15	31	100	58	17	26	96	126	49
Lyon-France	64	47	24	23	94	86	39	90	65	50	50
Málaga-Spain	123	134	35	51	116	56	62	13	76	45	51
Lisbon-Portugal	71	99	60	44	92	39	58	22	86	110	52
Tallinn-Estonia	63	69	9	2	126	102	74	62	87	101	53
Warsaw-Poland	95	59	29	16	142	93	6	83	70	41	54
Liverpool-United Kingdom	50	52	20	21	128	16	91	110	149	72	55
Taipei-Taiwan	90	28	42	157	26	44	131	29	1	99	56
Manchester-United Kingdom	52	25	37	73	63	22	76	103	100	125	57
Eindhoven-Netherlands	62	94	36	81	156	38	18	87	31	109	58
Rotterdam-Netherlands	60	61	30	71	120	53	9	111	93	106	59
Cologne-Germany	59	57	48	67	138	66	56	53	112	27	60
Turin-Italy	103	109	80	17	139	50	12	92	99	32	61
Birmingham-United Kingdom	48	30	31	75	133	9	98	153	143	70	62
Valencia-Spain	111	126	39	45	105	60	54	80	78	34	63
Abu Dhabi-United Arab Emirates	12	171	53	152	6	78	150	89	13	56	64
Antwerp-Belgium	72	95	7	40	127	47	26	135	153	107	65
Dubai-United Arab Emirates	43	102	65	149	5	70	159	11	84	48	66
Budapest-Hungary	105	45	73	72	158	81	48	32	92	25	67
Seville-Spain	118	130	45	50	130	43	59	65	69	64	68
Nottingham-United Kingdom	61	50	25	24	168	22	85	158	128	87	69
Ljubljana-Slovenia	102	86	23	9	124	88	79	117	94	75	70
Vilnius-Lithuania	83	64	38	7	135	105	72	99	106	88	71
Osaka-Japan	33	27	67	76	55	104	104	72	42	129	72
Marseille-France	73	63	83	54	111	82	42	106	97	47	73
Nice-France	80	72	19	27	129	101	60	51	171	79	74

City	Economy	Human capital	Social cohesion	Environment	Public management	Governance	Urban planning	International outreach	Technology	Mobility and transportation	Cities in Motion
Bilbao-Spain	99	88	52	49	153	45	77	75	145	35	75
Leeds-United Kingdom	58	48	22	25	152	14	84	168	138	164	76
Bratislava-Slovakia	74	79	13	66	118	130	40	101	88	120	77
A Coruña-Spain	114	143	57	48	166	90	38	35	80	84	78
Lille-France	88	80	50	56	146	75	68	67	133	69	79
Shanghai-China	79	12	163	165	148	61	102	12	7	4	80
Nagoya-Japan	51	14	32	38	64	113	128	147	155	100	81
Riga-Latvia	65	74	33	26	99	111	120	78	126	78	82
Buenos Aires-Argentina	113	60	97	113	107	49	63	47	82	49	83
Zagreb-Croatia	121	100	51	6	150	84	92	107	111	94	84
Santiago-Chile	40	71	79	39	125	110	96	71	129	91	85
Bangkok-Thailand	86	104	123	161	35	157	105	3	37	57	86
Mexico City-Mexico	38	81	154	138	71	29	83	56	73	33	87
Gothenburg-Sweden	37	84	55	12	154	80	90	125	127	146	88
Moscow-Russia	70	13	164	93	65	46	115	49	113	38	89
Beijing-China	66	19	142	180	101	68	125	8	8	13	90
Sofia-Bulgaria	144	66	69	13	90	135	71	118	101	105	91
Kuala Lumpur-Malaysia	108	125	110	109	29	100	118	17	49	127	92
Naples-Italy	128	117	85	69	131	97	37	91	95	83	93
Athens-Greece	115	67	160	99	95	95	25	39	98	46	94
Wrocław-Poland	127	123	68	19	169	108	10	105	68	155	95
Medellín-Colombia	85	138	107	94	74	72	101	114	67	61	96
Duisburg-Germany	76	133	43	63	147	92	80	104	142	132	97
Porto-Portugal	91	151	17	32	151	133	73	55	161	145	98
Montevideo-Uruguay	125	150	84	77	159	52	67	108	132	74	99
Busan-South Korea	69	132	61	106	102	87	141	133	107	39	100
São Paulo-Brazil	122	76	168	85	49	118	100	38	62	55	101
Guangzhou-China	100	44	141	170	161	103	69	21	20	19	102
St Petersburg-Russia	138	26	125	83	86	65	140	66	115	81	103
Istanbul-Turkey	92	136	152	134	68	159	87	6	54	124	104
Daejeon-South Korea	81	141	70	92	149	106	51	178	119	82	105
Tel Aviv-Israel	39	129	74	80	108	73	143	134	172	116	106
Córdoba-Argentina	147	107	93	87	165	107	64	122	51	114	107
Jerusalem-Israel	96	153	103	78	123	54	113	97	116	134	108
Bucharest-Romania	120	83	77	148	62	115	99	88	109	76	109
Daegu-South Korea	82	152	70	96	155	74	70	177	79	148	110
Monterrey-Mexico	67	98	119	107	85	51	136	146	148	103	111

City	Economy	Human capital	Social cohesion	Environment	Public management	Governance	Urban planning	International outreach	Technology	Mobility and transportation	Cities in Motion
San José-Costa Rica	136	166	95	34	76	147	108	116	151	104	112
Bogotá-Colombia	68	93	157	110	53	72	94	86	104	154	113
Rio de Janeiro-Brazil	155	85	170	90	75	76	95	60	102	43	114
Haifa-Israel	89	121	78	15	170	116	134	59	170	147	115
Lima-Peru	84	118	135	137	83	55	142	64	124	118	116
Porto Alegre-Brazil	168	97	128	79	109	83	106	136	150	102	117
Shenzhen-China	94	49	146	162	177	149	81	18	27	36	118
Kiev-Ukraine	132	58	149	97	98	143	111	149	154	31	119
Jeddah-Saudi Arabia	146	179	130	135	10	152	130	151	43	98	120
Guadalajara-Mexico	75	108	109	105	121	120	133	131	168	77	121
Cali-Colombia	87	165	144	121	54	69	97	170	123	137	122
Almaty-Kazakhstan	97	90	63	114	88	164	151	174	157	44	123
Belgrade-Serbia	149	111	122	98	103	128	110	100	91	136	124
Tbilisi-Georgia	117	120	106	61	132	131	109	142	136	166	125
Wuhan-China	124	53	99	159	175	136	126	84	41	14	126
Minsk-Belarus	101	82	88	64	141	168	155	159	164	86	127
Kuwait City-Kuwait	145	156	62	111	21	129	171	112	83	162	128
Suzhou-China	129	92	113	173	178	132	2	82	32	60	129
Quito-Ecuador	107	135	118	86	38	171	161	120	160	96	130
Curitiba-Brazil	170	91	124	124	72	96	123	115	117	133	131
Doha-Qatar	44	155	49	153	14	167	168	102	176	158	132
Cape Town-South Africa	163	144	159	145	40	71	139	94	90	135	133
Sarajevo-Bosnia-Herzegovina	179	106	148	74	171	125	112	126	130	62	134
Salvador-Brazil	174	110	155	101	106	148	121	132	131	66	135
Fortaleza-Brazil	175	154	138	126	157	67	124	156	139	93	136
Tunis-Tunisia	152	170	101	112	122	138	107	161	120	156	137
Riyadh-Saudi Arabia	109	178	120	155	7	140	153	139	77	177	138
Rosario-Argentina	150	112	111	88	176	127	103	141	141	115	139
Manama-Bahrain	137	103	34	127	31	172	175	70	180	143	140
Kaohsiung-Taiwan	133	137	82	166	134	112	165	96	14	144	141
Skopje-Macedonia	116	168	151	43	112	142	117	140	162	176	142
Brasília-Brazil	162	142	137	143	58	139	127	121	159	113	143
Baku-Azerbaijan	104	89	166	122	143	163	138	155	121	73	144
Taichung-Taiwan	135	128	81	168	140	98	163	123	9	167	145
Ho Chi Minh City-Vietnam	148	159	158	128	113	123	144	73	118	123	146
Ankara-Turkey	119	131	136	142	78	154	137	144	134	140	147
Manila-Philippines	131	139	140	147	57	160	145	68	103	174	148

City	Economy	Human capital	Social cohesion	Environment	Public management	Governance	Urban planning	International outreach	Technology	Mobility and transportation	Cities in Motion
Guatemala City-Guatemala	134	175	117	103	97	121	158	162	125	165	149
Tainan-Taiwan	140	145	90	169	77	153	160	98	22	170	150
Recife-Brazil	173	148	132	144	93	134	116	166	114	150	151
Novosibirsk-Russia	142	87	116	131	160	57	166	165	158	163	152
Belo Horizonte-Brazil	169	96	134	146	137	145	132	138	156	117	153
Bursa-Turkey	130	115	91	116	173	156	157	113	169	131	154
Johannesburg-South Africa	154	146	169	150	46	94	149	150	108	153	155
Jakarta-Indonesia	126	127	165	160	36	122	174	85	50	159	156
Chongqing-China	143	162	143	176	174	109	93	81	56	119	157
Durban-South Africa	167	160	156	123	110	85	156	173	147	138	158
Mumbai-India	159	164	161	164	59	124	146	109	40	160	159
Guayaquil-Ecuador	112	169	133	151	51	166	152	171	135	173	160
Tehran-Iran	157	122	172	119	47	151	162	130	166	122	161
Shenyang-China	139	147	143	178	172	137	129	137	36	111	162
Cairo-Egypt	172	113	174	158	48	150	119	148	74	157	163
Tianjin-China	106	51	112	174	180	155	148	145	57	42	164
Pretoria-South Africa	165	114	114	140	44	158	154	175	173	179	165
Alexandria-Egypt	176	116	167	129	82	146	147	129	165	172	166
Harbin-China	151	140	143	177	179	136	122	127	28	92	167
Delhi-India	156	149	145	179	144	99	167	57	81	142	168
Santo Domingo-Dominican Republic	141	172	171	132	89	169	135	163	177	152	169
La Paz-Bolivia	160	158	147	139	79	161	179	157	122	139	170
Casablanca-Morocco	164	177	129	117	164	165	164	160	174	171	171
Santa Cruz-Bolivia	158	157	131	133	136	173	176	172	163	141	172
Caracas-Venezuela	180	119	173	136	30	174	114	164	178	112	173
Bangalore-India	166	161	104	175	167	126	170	143	137	128	174
Amman-Jordan	171	174	92	156	66	170	169	154	167	180	175
Douala-Cameroon	161	167	150	154	104	144	172	180	140	151	176
Nairobi-Kenya	153	176	177	163	43	117	173	167	144	175	177
Kolkata-India	177	163	162	167	115	119	177	169	152	178	178
Lagos-Nigeria	110	173	176	171	28	162	180	179	179	168	179
Karachi-Pakistan	178	180	175	172	145	141	178	176	175	169	180
Karachi-Paquistán	170	180	174	169	151	122	180	177	181	157	181

FIGURE 2. MAP OF CITIES IN THE CIMI RANKING

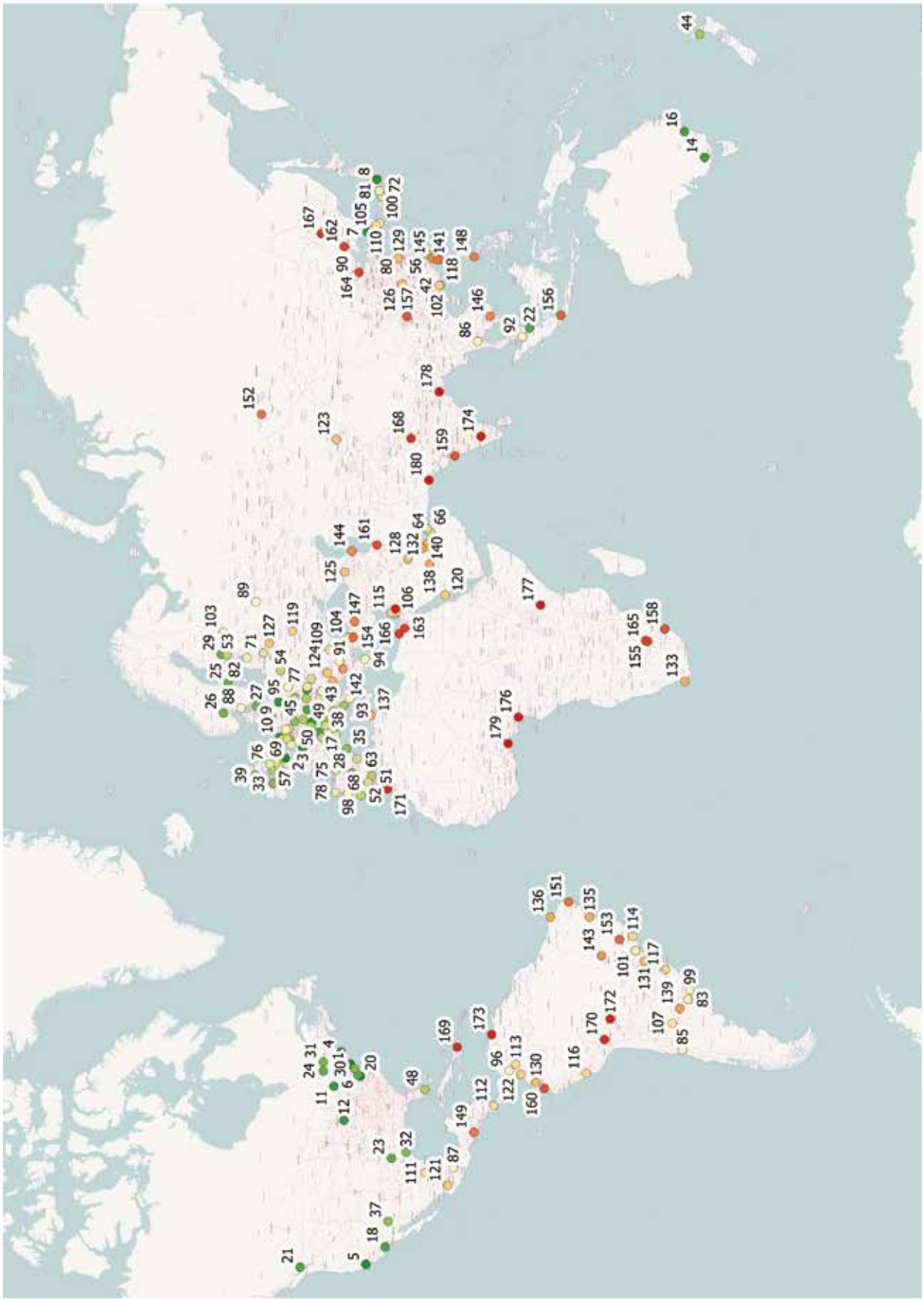


TABLE 13. TOP 10 BY DIMENSION

ECONOMY

New York City-USA	1
San Francisco-USA	2
Boston-USA	3
London-United Kingdom	4
Los Angeles-USA	5
Tokyo-Japan	6
Washington, D.C.-USA	7
Chicago-USA	8
Houston-USA	9
Dallas-USA	10

HUMAN CAPITAL

London-United Kingdom	1
Boston-USA	2
Washington, D.C.-USA	3
New York City-USA	4
Los Angeles-USA	5
Tokyo-Japan	6
Paris-France	7
Chicago-USA	8
San Francisco-USA	9
Philadelphia-USA	10

SOCIAL COHESION

Helsinki-Finland	1
Zurich-Switzerland	2
Stuttgart-Germany	3
Basel-Switzerland	4
Prague-Czech Republic	5
Copenhagen-Denmark	6
Antwerp-Belgium	7
Munich-Germany	8
Tallinn-Estonia	9
Berlin-Germany	10

ENVIRONMENT

Zurich-Switzerland	1
Tallinn-Estonia	2
Vienna-Austria	3
Stockholm-Sweden	4
Linz-Austria	5
Zagreb-Croatia	6
Vilnius-Lithuania	7
Tokyo-Japan	8
Ljubljana-Slovenia	9
Singapore	10

PUBLIC MANAGEMENT

Geneva-Switzerland	1
Washington, D.C.-USA	2
Baltimore-USA	3
New York City-USA	4
Dubai-United Arab Emirates	5
Abu Dhabi-United Arab Emirates	6
Riyadh-Saudi Arabia	7
Boston-USA	8
Miami-USA	9
Jeddah-Saudi Arabia	10

GOVERNANCE

Ottawa-Canada	1
Toronto-Canada	2
Vancouver-Canada	3
Auckland-New Zealand	4
Melbourne-Australia	5
New York City-USA	6
Chicago-USA	7
Montreal-Canada	8
Birmingham-United Kingdom	9
Helsinki-Finland	10

URBAN PLANNING

Amsterdam-Netherlands	1
Suzhou-China	2
Oslo-Norway	3
Geneva-Switzerland	4
New York City-USA	5
Warsaw-Poland	6
Berlin-Germany	7
Paris-France	8
Rotterdam-Netherlands	9
Wrocław-Poland	10

INTERNATIONAL OUTREACH

Paris-France	1
London-United Kingdom	2
Bangkok-Thailand	3
Barcelona-Spain	4
New York City-USA	5
Istanbul-Turkey	6
Amsterdam-Netherlands	7
Beijing-China	8
Rome-Italy	9
Berlin-Germany	10

TECHNOLOGY

Taipei-Taiwan	1
New York City-USA	2
Baltimore-USA	3
Seoul-South Korea	4
Tokyo-Japan	5
Amsterdam-Netherlands	6
Shanghai-China	7
Beijing-China	8
Taichung-Taiwan	9
Chicago-USA	10

MOBILITY AND TRANSPORTATION

London-United Kingdom	1
Seoul-South Korea	2
Frankfurt-Germany	3
Shanghai-China	4
Paris-France	5
Madrid-Spain	6
Stockholm-Sweden	7
Berlin-Germany	8
Vienna-Austria	9
Munich-Germany	10

"IN ORDER TO EXECUTE THE STRATEGIC PLANS, IT IS NECESSARY TO ACKNOWLEDGE THAT CITIES CANNOT DO IT ALL ALONE. THE TRANSFORMATION OF A CITY IS NOT AN INDIVIDUAL UNDERTAKING BUT INSTEAD A COLLECTIVE ENDEAVOR, SO COLLABORATION IS ESSENTIAL".

Pascual Berrone and Joan Enric Ricart

CITIES IN MOTION. REGIONAL *RANKING*

TOP 5 WESTERN EUROPE

CITY	REGIONAL POSITION	GLOBAL POSITION 2014	GLOBAL POSITION 2015	GLOBAL POSITION 2016
London, United Kingdom	1	1	2	2
Paris, France	2	4	4	3
Berlin, Germany	3	12	11	9
Amsterdam, Netherlands	4	10	10	10
Zurich, Switzerland	5	11	14	13

In Europe, the city that heads the ranking is London, which also takes second place in the world ranking. Within Europe, Paris, Berlin, and Amsterdam come next in importance. Berlin is the city that has shown the most progress in the past three years. The city of Zurich closes the regional ranking.

TOP 5 EASTERN EUROPE

CITY	REGIONAL POSITION	GLOBAL POSITION 2014	GLOBAL POSITION 2015	GLOBAL POSITION 2016
Prague, Czech Republic	1	40	43	41
Tallin, Estonia	2	55	55	53
Warsaw, Poland	3	70	63	54
Budapest, Hungary	4	66	65	67
Ljubljana, Slovenia	5	83	76	70

In Eastern Europe, the ranking is led by Prague, which also occupies significant positions in the social cohesion and environment dimensions in the overall ranking. It is followed by Tallinn and Warsaw. Closing the list of the top five cities in the region are Budapest and Ljubljana. The cities that made the most progress in the 2014-2016 period were Warsaw and Ljubljana.

As can be seen on the map, European cities enjoy good positioning globally. Most of them are in the 80 highest-ranking positions and very few are beyond the 100th position.

TOP 5 LATIN AMERICA

CITY	REGIONAL POSITION	GLOBAL POSITION 2014	GLOBAL POSITION 2015	GLOBAL POSITION 2016
Buenos Aires, Argentina	1	82	80	83
Santiago, Chile	2	88	89	85
Mexico City, Mexico	3	100	90	87
Medellín, Colombia	4	102	100	96
Montevideo, Uruguay	5	94	101	99

Buenos Aires leads the ranking among the best Latin American cities, dropping in position in the 2014-2016 period. Santiago occupies the second position, followed by Mexico City, both up three positions in the period analyzed. The cities of Medellín and Montevideo close the ranking.

As can be seen in the table and in the previous map, most of the Latin American cities occupy positions worse than position 100 in the general ranking, except for the top five mentioned previously. Latin America is one of the areas with the greatest urban concentration on the planet, so the challenges facing these cities are increasingly global, with problems common to all of them.

TOP 5 ASIA-PACIFIC

CITY	REGIONAL POSITION	GLOBAL POSITION 2014	GLOBAL POSITION 2015	GLOBAL POSITION 2016
Seoul, South Korea	1	14	8	7
Tokyo, Japan	2	9	12	8
Singapore, Singapore	3	29	28	22
Hong Kong, China	4	38	38	42
Taipei, Taiwan	5	63	59	56

Seoul leads the ranking in the Asia-Pacific region, coming in seventh globally, up seven places since 2014. It is followed by Tokyo, both in the regional ranking and at eighth place in the overall ranking. The cities of Singapore, Hong Kong and Taipei close the regional ranking. It is interesting to note that, except for Hong Kong, the other four cities that lead the region have improved their positions in the overall ranking in the 2014-2016 period.

TOP 5 MIDDLE EAST

CITY	REGIONAL POSITION	GLOBAL POSITION 2014	GLOBAL POSITION 2015	GLOBAL POSITION 2016
Abu Dhabi, United Arab Emirates	1	62	60	64
Dubai, United Arab Emirates	2	48	62	66
Tel Aviv, Israel	3	101	105	106
Jerusalem, Israel	4	104	108	108
Haifa, Israel	5	113	117	115

The Middle East ranking is headed by the city of Abu Dhabi, which is in position number 64 of the global ranking. Just one position behind is the city of Dubai. Completing the ranking of the five best in the region are Tel Aviv, Jerusalem, and Haifa. Unlike other emerging regions where the top five positions are spread among different countries, in the Middle East the top five cities are located in only two countries (the United Arab Emirates and Israel). In addition, it can be seen that all the cities in the top five have dropped positions in the global ranking for the 2014-2016 period.

TOP 5 AFRICA

CITY	REGIONAL POSITION	GLOBAL POSITION 2014	GLOBAL POSITION 2015	GLOBAL POSITION 2016
Tunis, Tunisia	1	145	145	137
Johannesburg, South Africa	2	155	155	155
Durban, South Africa	3	157	160	158
Cairo, Egypt	4	168	166	163
Pretoria, South Africa	5	154	164	165

Africa's ranking is headed by the city of Tunis, followed by the South African city of Johannesburg. Completing the list of the top five in the region are Durban, Cairo, and Pretoria. It is worth noting that, of the African cities included in the index, all of them are in the last places in the overall ranking.

TOP 5 NORTH AMERICA

CITY	REGIONAL POSITION	GLOBAL POSITION 2014	GLOBAL POSITION 2015	GLOBAL POSITION 2016
New York City, United States	1	2	1	1
Boston, United States	2	3	3	4
San Francisco, United States	3	5	5	5
Washington, D.C., United States	4	7	6	6
Toronto, Canada	5	19	20	11

In North America, the ranking is led by New York City, which also leads in the overall classification. It is followed by Boston and San Francisco, which are also in the top five of the overall ranking. Closing the list of the top five North American cities are Washington, D.C., and Toronto. Unlike previous years, this year a Canadian city is in the region's top five, occupying position 11 in the overall ranking.

As can be seen in the graphic of the region, North American cities occupy the top places in the overall ranking. In the case of the United States, nine of the 12 U.S. cities included in the study are among the top 30 in the overall ranking.

TOP 3 OCEANIA

CITY	REGIONAL POSITION	GLOBAL POSITION 2014	GLOBAL POSITION 2015	GLOBAL POSITION 2016
Melbourne, Australia	1	8	9	14
Sydney, Australia	2	17	17	16
Auckland, New Zealand	3	34	35	44

In Oceania, the ranking is led by Melbourne, which is also in the top 20 in dimensions such as governance and urban planning. It is followed in the regional ranking by the city of Sydney and this ranking closes with the city of Auckland. The two cities other than Sydney have dropped positions in the overall ranking in the 2014-2016 period.

NOTEWORTHY CASES

This section provides descriptions of some noteworthy cases. In Appendix 2 there is a graphical analysis of the 180 cities included in the **CIMI**.

ABU DHABI

It is the capital and the second most populous city of the United Arab Emirates. It ranks first in its region, above Dubai. It is a city that has experienced a great deal of development and urbanization in the past decade, with a high average income among the population. It is in position 64 in the ranking, standing out for public management, where it is in sixth place.

AMSTERDAM

Capital of the Netherlands, this is the country's largest city and a major financial and cultural center, with an international impact. This city is in 10th place in the ranking and fourth in its region. It has a good performance in all of the dimensions and it stands out especially for urban planning, where it is in top place. In technology and international outreach, it is in the top 10.

BARCELONA

It is in position 35 in the ranking, being the second best-placed Spanish city, behind Madrid. While it has dropped places overall, it is the best-placed Spanish city for international outreach, ranking fourth.

BOSTON

The capital and most populous city of the Commonwealth of Massachusetts and one of the oldest cities in the United States, Boston is considered the region's economic and cultural center. It is in fourth place in the ranking and second in the region. Likewise, it is in the top 10 for the dimensions of economy, human capital, public management, and governance.

BUENOS AIRES

This is the capital and the most populous city of the Argentine Republic. It is also the most-visited city in South America and has the second highest number of skyscrapers in the region. In the general ranking, it is in 83rd place and it is number one in its region. It is the best-placed city of the Latin American region, beating Santiago (Chile) and Mexico City (Mexico). It stands out in the region for the governance dimension and international outreach.

GENEVA

Geneva is the second most populous city in Switzerland, which hosts the highest number of international organizations in the world. It is in 17th place in the overall ranking and is first in the dimension of public management. It also stands out in urban planning and social cohesion.

HELSINKI

This is the capital and the most populous city of Finland. Helsinki is the largest political, financial and research center as well as one of the most important cities of northern Europe. About 70% of foreign companies that operate in Finland set up in Helsinki or its surroundings. It is in 29th place in the ranking and is in top place for social cohesion.

LONDON

The capital of England and the United Kingdom, London is the largest city and urban area of Great Britain. It is a nerve center in the field of the arts, commerce, education, entertainment, fashion, finance, the media, research, tourism, and transportation. For this reason, London takes second place in the ranking, with high levels in almost all the dimensions. It stands out in the dimensions of human capital and mobility and transportation, with top place in the ranking. However, it is in the top five in the international outreach and economy dimensions. It underperforms in social cohesion, reaching only position 105.

MADRID

It is Spain's highest-placed city in the ranking. It stands out in the dimensions of mobility and transportation, in sixth place, and in international outreach, in position 15.

MELBOURNE

Melbourne is in 14th place in the general ranking, being the top city in its region. It stands out in the dimensions of governance and urban planning. It is a city with low poverty and crime rates and high levels of health and education, both public and private. It is the city that shows the most homogeneity in all the dimensions of the **CIMI**.

NEW YORK CITY

New York City is one of the three largest and most populous urban agglomerations in the world and is the second largest urban concentration in North America after Mexico City. New York City is in the top position in the ranking. It is the world's most important economic center, ranking first in this dimension. Likewise, it is in second place in technology and is in the top five in the dimensions of human capital, public management, urban planning, and international outreach.

PARIS

The French capital is the world's most popular tourist destination, with more than 42 million foreign tourists a year. Europe's main business district is found here, hosting the head office of almost half of big French companies, as well as the headquarters of 20 of the 100 biggest companies in the world. It is in third place in the ranking and is first for international outreach. Likewise, it excels in human capital, urban planning, mobility and transportation, and the economy.

SAN FRANCISCO

This city is the fourth most populous city in the state of California. It is the most important cultural, financial, and transportation hub of the San Francisco Bay Area. Tourism is the most important activity of San Francisco's economy. It is in fourth place in the overall ranking and second in the economy dimension. It also stands out in human capital and public management. It is the third city in the regional ranking.

SEOUL

The capital of South Korea is one of the world's largest metropolitan areas. Headquarters to some of the world's biggest companies – such as Samsung, LG Group, Hyundai, and Kia Motors, among others – it is in seventh place in the ranking and is first in its region. It stands out in mobility and transportation (second) and technology (fourth). In addition, it is in the top 20 in the dimensions of the economy, human capital, and international outreach.

TAIPEI

It is the capital and the most populous city of Taiwan. It ranks first in the technology dimension and is in 56th place in the overall ranking. It is known as the Asian Silicon Valley since it is in this city that most of the world's technology is manufactured. It is a city that makes a living from exporting chips and computers to the rest of the world.

ZURICH

Zurich is the main city in Switzerland and is the country's financial engine and cultural center. It was chosen as the city with the world's highest quality of life in 2006 and 2008, currently being in second place. It is in 13th place in the **CIMI** ranking and in first place in the environment dimension. It also comes in second in the social cohesion dimension.

EVOLUTION OF THE CITIES IN MOTION INDEX

A city's evolution is vitally important in understanding the focus of its development target. Therefore, this section sets out the evolution of the past three years of the **CIMI** for the top 50 cities in the ranking of 2016.

The results show a certain stability in the top seven positions. The first and second positions in the ranking varied between New York City and London between 2014 and 2016. The third and fourth positions varied between Paris and Boston throughout the period, while San Francisco has held onto fifth place since 2014.

It is interesting to analyze the evolution of cities such as Toronto, which climbed nine positions from 2015 and 2016. Its progress is reflected in the position that it occupies in the general ranking for social cohesion, the environment, and urban planning. Another city that has evolved very favorably is Singapore, which rose seven places in the 2014-2016 period. This evolution is also due to advances in the general ranking for social cohesion and the environment. Finally, the city of Milan also shows a positive evolution, rising 12 places in the ranking. This is explained in particular by its improved performance in the dimensions of social cohesion and urban planning.

As for the rest of the cities, they were fairly stable throughout the period except for Auckland, which had a worse performance in the period, falling 10 places in the ranking. This variation is explained in particular by its worse performance in the environment dimension, particularly pollution levels and CO_2.

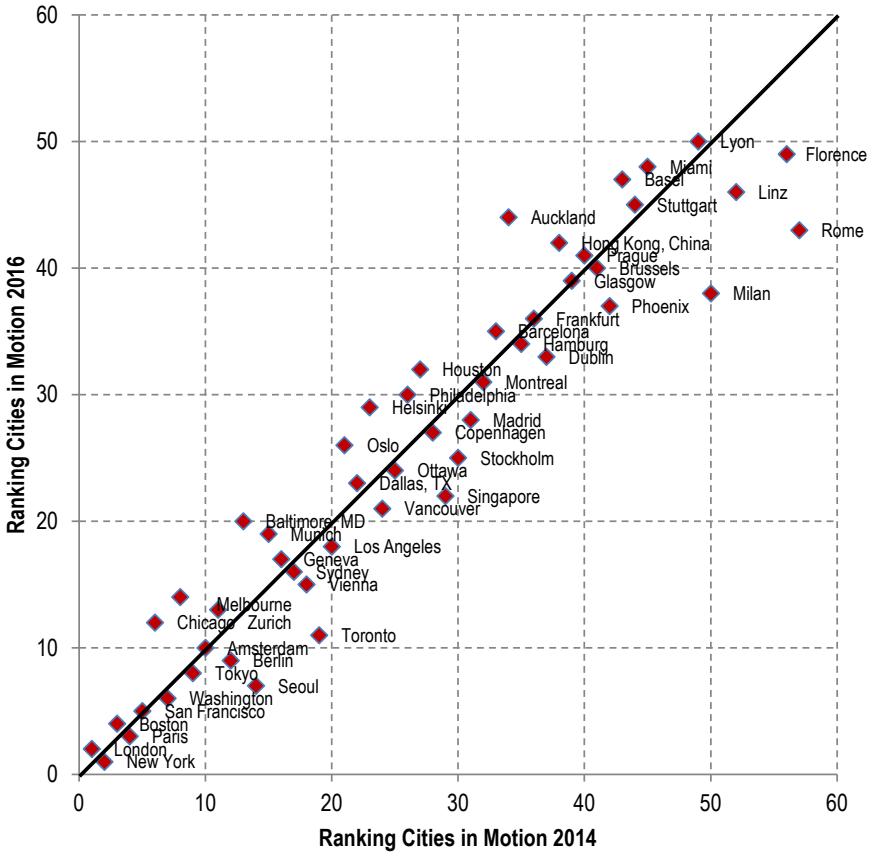
Table 14 sets out the evolution of the index during the past three years for the top 50 cities in the 2016 ranking.

TABLE 14. EVOLUTION OF THE INDEX FOR THE TOP 50 CITIES IN THE 2016 RANKING

City	2014	2015	2016	2014-2015	2015-2016
New York-USA	2	1	1	1	0
London-United Kingdom	1	2	2	-1	0
Paris-France	4	4	3	0	1
Boston-USA	3	3	4	0	-1
San Francisco-USA	5	5	5	0	0
Washington-USA	7	6	6	1	0
Seoul-South Korea	14	8	7	6	1
Tokyo-Japan	9	12	8	-3	4
Berlin-Germany	12	11	9	1	2
Amsterdam-Netherlands	10	10	10	0	0
Toronto-Canada	19	20	11	-1	9
Chicago-USA	6	7	12	-1	-5
Zurich-Switzerland	11	14	13	-3	1
Melbourne-Australia	8	9	14	-1	-5
Vienna-Austria	18	18	15	0	3
Sydney-Australia	17	17	16	0	1
Geneva-Switzerland	16	15	17	1	-2
Los Angeles-USA	20	16	18	4	-2
Munich-Germany	15	13	19	2	-6
Baltimore, MD-USA	13	19	20	-6	-1
Vancouver-Canada	24	23	21	1	2
Singapore-Asia Pacific	29	28	22	1	6
Dallas, TX-USA	22	24	23	-2	1
Ottawa -Canada	25	25	24	0	1
Stockholm-Sweden	30	27	25	3	2
Oslo-Norway	21	21	26	0	-5
Copenhagen-Denmark	28	22	27	6	-5
Madrid-Spain	31	32	28	-1	4
Helsinki-Finland	23	26	29	-3	-3
Philadelphia-USA	26	30	30	-4	0
Montreal-Canada	32	29	31	3	-2
Houston-USA	27	31	32	-4	-1
Dublin-Ireland	37	33	33	4	0
Hamburg-Germany	35	37	34	-2	3
Barcelona-Spain	33	34	35	-1	-1
Frankfurt-Germany	36	36	36	0	0
Phoenix-USA	42	42	37	0	5
Milan-Italy	50	40	38	10	2
Glasgow-United Kingdom	39	39	39	0	0
Brussels-Belgium	41	41	40	0	1
Prague-Czech Republic	40	43	41	-3	2
Hong Kong, China	38	38	42	0	-4
Rome-Italy	57	54	43	3	11
Auckland-New Zealand	34	35	44	-1	-9
Stuttgart-Germany	44	44	45	0	-1
Linz-Austria	52	53	46	-1	7
Basel-Switzerland	43	49	47	-6	2
Miami-USA	45	46	48	-1	-2
Florence-Italy	56	48	49	8	-1
Lyon-France	49	47	50	2	-3

Figure 3 sets out the positions in 2014 and 2016 for the top 50 cities in the ranking. Those cities that show a positive evolution are below the 45 degree angle formed by the diagonal line, while the cities whose evolution was not positive are above that line. For example, Auckland, as mentioned previously, shows a clearly negative evolution since it was in 34th place in the ranking in 2014 and moved to 44th place in 2016. In contrast, Milan shows a positive evolution, going from position 50 to 38 in 2016.

FIGURE 3



CITIES IN MOTION COMPARED WITH OTHER INDEXES

In this section we conduct a comparative study of the **CIMI** and other indexes. Table 15 shows a comparison of the **CIMI** index with other city indexes from various organizations. While the indexes under consideration vary in terms of methodology and indicators, all agree that a city is more powerful, prosperous, and competitive if it manages to develop in its various dimensions. From the economy and finance, via the ease of creating businesses, the quality of life, and the use of high technology, to its cultural importance, which could be the promotion of music and fashion. It can be seen that the cities of New York and London appear in the top 10 of six of the nine indexes compared. In addition, Paris appears in the top 10 in seven of the nine indexes. These three cities are characterized by strong economic and financial power and they likewise stand out in the dimensions of human capital, international outreach, and mobility and transportation, as we have been able to verify through the **CIMI**.

The cities of Amsterdam, Boston, San Francisco, Seoul, Tokyo, and Washington, D.C., also appear frequently in other rankings among the 10 most prosperous cities in the world or those with the best quality of life. The only city that does not appear among the top 10 cities considered by other indexes is the city of Berlin. This difference is due to the fact that our index has a higher number of dimensions (and, hence, indicators) and greater geographical coverage than most of the rankings considered. On the other hand, most of the cities that occupy the top positions in other rankings but are not in the top 10 of the **CIMI** are found in the top 25 of our index.

None of the cities that make up the top 10 of the **CIMI** is in the top positions of the Quality of Living Ranking (Mercer) or the Global Liveability Ranking (*The Economist*). However, four cities in the top 10 of these indexes are in the top 20 positions of the **CIMI**.

TABLE 15. COMPARISON WITH OTHER INDEXES. TOP 10

City ranking	CIMI 2016 (IESE)	Global Cities Index 2016 (A.T. Kearney)	City Prosperity Index 2015 (United Nations)	Global Financial Centres Index-2016 (Z/Yen)	Global City Competitiveness Index- 2014 (The Economist)	Global Metro Monitor Map-2014 (Brookings)	Global Power City Index- 2016 (MMF)	Cities Opportunities Ranking 2016	Quality of Living Index 2016 (Mercer)	Global Liveability Ranking 2016 (The Economist)
1	New York City	London	Oslo	London	New York City	Tokyo	London	London	Vienna	Melbourne
2	London	New York City	Copenhagen	New York City	London	New York City	New York City	Singapore	Zurich	Vienna
3	Paris	Paris	Stockholm	Singapore	Singapore	Los Angeles	Tokyo	Toronto	Auckland	Vancouver
4	Boston	Tokyo	Helsinki	Hong Kong	Hong Kong	Seoul	Paris	Paris	Munich	Toronto
5	San Francisco	Hong Kong	Paris	Tokyo	Tokyo	London	Singapore	Amsterdam	Vancouver	Calgary
6	Washington, D.C.	Los Angeles	Vienna	San Francisco	Sydney	Paris	Seoul	New York City	Dusseldorf	Adelaide
7	Seoul	Chicago	Melbourne	Boston	Paris	Osaka	Hong Kong	Stockholm	Frankfurt	Perth
8	Tokyo	Singapore	Montreal	Chicago	Stockholm	Shanghai	Amsterdam	San Francisco	Geneva	Auckland
9	Berlin	Beijing	Toronto	Zurich	Chicago	Chicago	Berlin	Hong Kong	Copenhagen	Helsinki
10	Amsterdam	Washington, D.C.	Sydney	Washington, D.C.	Toronto	Moscow	Vienna	Sydney	Basel	Hamburg

CITIES IN MOTION: A DYNAMIC ANALYSIS

To assess the growth trends and potential of cities, we have created a graph that seeks to capture these aspects. Figure 5 sets out the current position of each city in the **CIMI** index (horizontal axis) and the trend (vertical axis). As a measure to calculate the trend, the change in terms of number of positions in the **CIMI** ranking between 2014 and 2016 has been used. This assumes that the cities in the top part of the graph are those that have gained position and those in the bottom part of the graph are those that have lost position. The cities in the center of the graph are those that have not experienced significant changes of location in the years analyzed.

The graph area has been divided into four quadrants of cities, namely: consolidated, challenging, potential, and vulnerable.

The first group, that of consolidated cities (bottom right quadrant), includes cities that have a middle to high overall position but have maintained their position throughout the period or even lost position somewhat. It is made up of cities from different geographical regions: Baltimore, Chicago, and Philadelphia from North America; London, Zurich, and Geneva representing Europe, together with the Nordic capitals Oslo and Helsinki; Melbourne and Auckland from Oceania; and Dubai and Bangkok representing Asia.

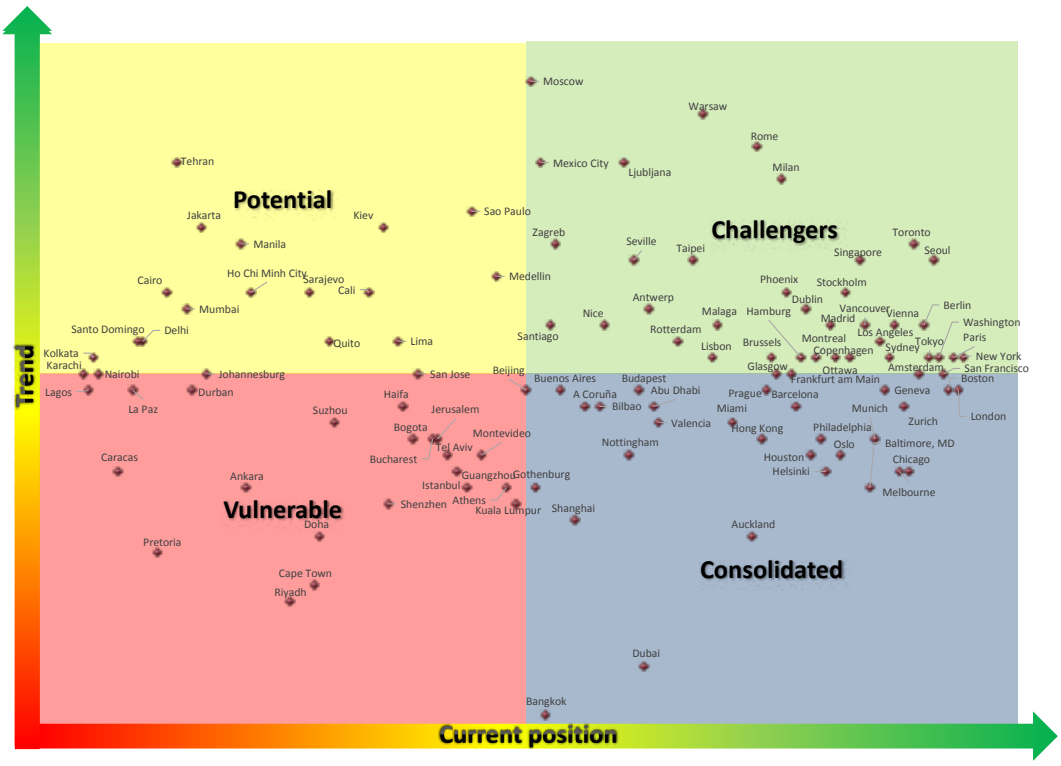
The challenger cities are the second group that can be observed in the graph (top right quadrant). It is made up of cities that have improved their positions in the index at a fast rate and are already in the middle to high area. In this quadrant we can find cities such as Milan, Toronto, and Rome.

The third group is of cities with great potential and is made up of those that, despite their current position, are in the middle to low area of the index and are evolving positively at great speed (top left quadrant). In that quadrant, we can find cities such as Tehran, Jakarta, and Kiev, Latin American capitals such as Quito, Lima, and Santo Domingo, and Asian cities such as Ho Chi Minh City.

The last group of cities includes those that are in a vulnerable position (bottom left quadrant). This is a group that is growing at a slower pace than the rest and is in the middle to low position of the classification. It is made up of cities such as Ankara, Pretoria, Caracas, and Riyadh.

Complementing Figure 4 is an analysis of variance of the dimensions concerning the cities. That is, the aim is to understand not only how much they have grown but also

FIGURE 4



how they have done so. To do this, the variation of the different dimensions was calculated for each of the cities that are set out in Figure 5. Cities in the bottom of the graph below have similar positions in all dimensions and therefore show a more homogeneous distribution. The cities in the top stand out in one or more dimensions but in others they are in a relatively low position. This information, combined with the position of each city, allows us to identify four categories of cities.

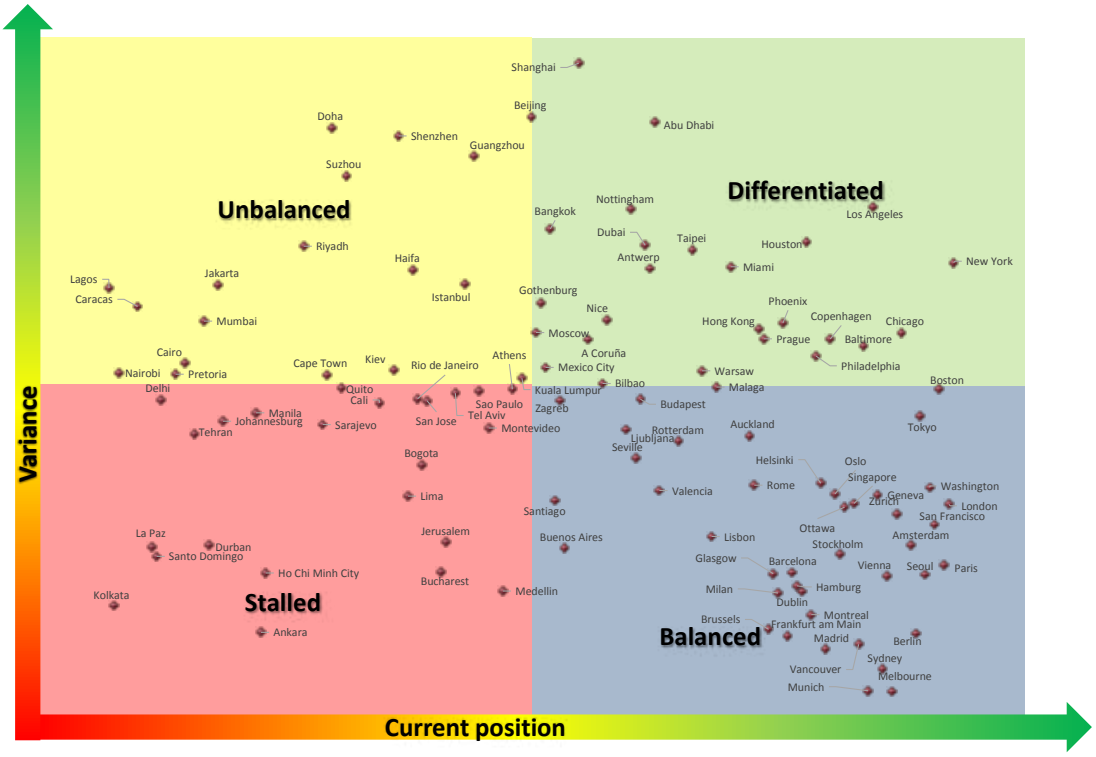
The first category is that of "balanced" cities (bottom right quadrant): those cities that are in the upper middle part of the table and have relatively high values in all the dimensions. Within this category are cities such as Dublin, Montreal, Barcelona, Madrid, Sydney, Paris, Melbourne, Seoul, and Stockholm.

The second category consists of the "differentiated" cities (top right quadrant) – that is, those cities that are in high positions in the ranking and that get exceptional results in several dimensions but relatively poor ones in others. An example is New York City, which is among the top positions in eight of 10 dimensions but among the worst positions in social cohesion. Another example is the city of Los Angeles, which ranks among the top positions in economy, human capital, public management, governance, technology, urban planning, and international outreach, but in the last positions for environment, social cohesion, and mobility and transportation. In this category we find cities such as Taipei, Abu Dhabi, and Houston.

The third quadrant (top left quadrant) corresponds to "unbalanced" cities – that is, cities that are in bottom positions of the table but stand out in one dimension. For example, the cities of Doha, Jakarta, and Suzhou, which in most of the dimensions are in positions beyond 100. However, they stand out in the public management dimension. In this category we also find cities such as Shenzhen, Guangzhou, and Riyadh.

In the last quadrant (bottom left quadrant) are "stagnant" cities, which achieve poor results in (almost) all the dimensions. An example is the city of Ankara, which is below position 100 in nine of the 10 dimensions. In this category we find cities such as Kolkata, Ho Chi Minh City, and Santo Domingo.

FIGURE 5



RECOMMENDATIONS AND CONCLUSIONS

The **CIMI** synthetic index allows us, through an objective calculation methodology, to compile a ranking of cities taking into account various aspects. The 10 dimensions analyzed offer a broad and holistic vision of what a city represents, while allowing greater understanding of its composition and its evolution over time.

The results of the index and our experience of using it to assess different cities allow us to make the following recommendations and reach some significant conclusions:

- **Cities need to define their identity and establish a strategic plan**. One of the most important (and most difficult) questions a city has to ask itself is: What kind of city do you want in the future? The answer to this question will not only define the identity of the city but also set out the path of transformation that it must travel to achieve that identity. That is, it must consider what its strategic plan will be. A sound strategic plan will prevent changes that veer away from the city's identity as circumstances or governments change. Strategic plans must be unique and individual for each city. This means that cities must escape the one-size-fits-all approach. The **CIMI** makes clear that there is no single model of success. The cities that top the ranking are not identical but prioritize various dimensions. (See the graphical analysis appendix.) There are various ways through which a city can succeed in getting to the top of the index.

- **The first step is a good diagnosis**. One of the first activities in any strategic definition is to understand the place in which we find ourselves. In this regard, the **CIMI** can be used as a diagnostic tool to carry out a first assessment of the current status of the city in the 10 dimensions of our model. The **CIMI** allows a quick snapshot to be taken of the cities, identifying their strengths and pointing out places where there is room for improvement.

- **The benchmark as the beginning of change**. The ability to compare 180 cities in 10 different dimensions allows us to identify those that perform best in the different areas of the city. In this sense, cities that find themselves lagging behind or stagnant in one or more dimensions can study the best cities in each category to identify the best practices that allow them to perform better. This comparison will allow cities to start moving in the right direction. That said, it must be borne in mind that, while the challenges facing cities are global, their effects are local. Therefore, the benchmark should serve as a source of inspiration rather than as a road map for action.

- **Need for an overview**. The **CIMI** makes clear that it is not enough to be good in only one dimension. There are cities that are at the top of the ranking in some dimensions. This is the case of Riyadh, Haifa, Istanbul, and Porto, which do relatively well in the dimensions of public management, the environment, international outreach, and social cohesion, respectively, but in the general ranking are located in positions 138, 115, 104, and 98. These are the cities that we have called "unbalanced" in the analysis of variance. The recommendation for these cities is that, if they seek to play in the big leagues, they should be capable of reaching acceptable minimums in the dimensions as a whole. This message must also reach those cities that understand technology as the main (or only) ingredient of a smart city and do not take into account other critical dimensions that define the urban situation. If they do not see the whole picture, it will be difficult for them to become smart.

- **The CIMI is not a "beauty contest."** It has surprised us how many cities included in the index are more concerned about their position in the ranking than the analysis that can be derived from it. Our perspective is that the value of the **CIMI** lies not only in its ability to identify strengths and weaknesses but also in its temporal component, which enables identification of the direction in which each city is moving. In this regard, our recommendation to urban managers is that they pay more attention to the trend (dynamic analysis) than to the position.

- **Collaboration as the cornerstone of success**. Our experience tells us that the cities that do best in the ranking understand fully that the challenges facing cities are too big to be tackled individually. Collaboration is needed between different social partners, whether these be public, private, educational institutions, or nonprofit organizations. This collaboration can take on various formats (from PPP to collaborative economy structures) but they are essential for achieving long-term success. The notion of collaboration and cooperation should be extended within city councils themselves, where there are often "silos" that prevent people from seeing the relationships and the possible synergies that can occur among the 10 dimensions of our conceptual model. In addition, collaboration must be fluid between residents and the administration because otherwise any solutions that might be adopted will not be efficient when it comes to responding to the real needs of the community.

- **There are many good cities but the perfect city does not exist**. It is very difficult for a city to maximize all the dimensions. Even those cities in the top positions of the rankings have weak points. For example, cities such as London and New York have a long way to go in the social cohesion dimension. These cities have been classified as *"differentiated"* cities and we recommend that they make the most of the advantages they have in the dimensions where they are leaders in order to progress in the positions where they are lagging behind. For example, a city can make the most of its technological leadership to improve its environmental dimension. In addition, for the cities that we have classified as "balanced" (e.g., Melbourne, Munich, Sydney, and Vancouver), the main recommendation is that they should not rest on their laurels. Despite their more harmonious growth, they still have room for improvement.

- **Change is slow for most cities**. While our temporal analysis of the **CIMI** indicates that there are cities capable of making great progress in a relatively short time and of moving to higher positions quickly (Moscow, Warsaw, Rome, and Toronto), in general it shows us that, for most of the cities, a city's position in the ranking does not change significantly from one year to the next. This is due, to a large extent, to the time that projects of any magnitude need to crystallize. Therefore, when seeking to generate changes needed to become smart and sustainable, cities should adopt long-term policies as soon as possible, especially those cities that are the worst placed and that we have called *"stagnant"* in our analysis. There are many cities that still have problems when it comes to dealing with the major challenges of cities, including: the lack of collaboration between public and private bodies, civic institutions, and the public; the impossibility of promoting new business models that provide financing for new businesses; and a shortsighted vision of smart cities.

The urbanization process is one of the most significant challenges of the 21st century. As the world population moves toward cities, existing problems grow and new ones are generated that, in addition, are influenced profoundly by the globalization process. This trend means a closer relationship between global dynamics and cities, generating local impacts: effects on the economy, demographics, social divisions, or environmental impacts.

Despite these challenges, cities and their leaders should understand the positive aspect that cities have. From our perspective, the city offers a much more delimited sphere of action, which enables work to be done more directly for people's benefit. However, urban managers must take a step back and analyze their problems, try to discover what other cities do, and learn what good practices are being carried out elsewhere in the world. The day-to-day management of a city makes it difficult for cities to ask themselves how to promote the positive effects of the urbanization process and how to reduce the negative externalities. That is why, from the IESE Cities in Motion platform, we aim to create awareness and generate innovative tools to achieve smarter governments. With this index, we hope to have contributed to this goal.

APPENDIX 1: INDICATORS

NO.	INDICATOR	DESCRIPTION / UNIT OF MEASUREMENT	DIMENSION / CLUSTER	SOURCE
1	Higher education	Proportion of population with secondary and higher education.	Human capital	Euromonitor
2	Business schools	Number of business schools (top 100).	Human capital	*The Financial Times*
3	Movement of students	International movement of higher-level students. Number of students.	Human capital	UNESCO
4	Number of universities	Number of universities.	Human capital	QS Top Universities
5	Museums	Number of museums per city.	Human capital	2thinknow
6	Art galleries	Number of art galleries per city.	Human capital	2thinknow
7	Expenditure on leisure and recreation	Expenditure on leisure and recreation. Expressed in millions of U.S. dollars at 2014 prices.	Human capital / country cluster	Euromonitor
8	Ratio of deaths	Ratio of death per 100,000 inhabitants.	Social cohesion	Euromonitor
9	Crime rate	Crime rate.	Social cohesion	Numbeo
10	Health index	Health index.	Social cohesion	Numbeo
11	Unemployment rate	Unemployment rate (number of unemployed / labor force).	Social cohesion	Euromonitor
12	Gini index	The Gini index varies from 0 to 100, with 0 being a situation of perfect equality and 100 that of perfect inequality.	Social cohesion	Euromonitor
13	Price of property	Price of property as percentage of income.	Social cohesion	Numbeo
14	Ratio of female workers	Ratio of female workers in the public administration.	Social cohesion	International Labour Organization
15	Peace index	The Global Peace Index is an indicator that measures the peacefulness and the absence of violence in a country or region. The bottom-ranking positions correspond to countries with a high level of violence.	Social cohesion	Centre for Peace and Conflict Studies at the University of Sydney
16	Productivity	Labor productivity calculated as GDP/working population (in thousands).	Economy	Euromonitor
17	Time required to start a business	Number of calendar days needed so a business can operate legally.	Economy	World Bank
18	Ease of starting a business	Ease of starting a business. Top positions in the ranking indicate a more favorable regulatory environment for creating and operating a local company.	Economy	World Bank
19	Number of headquarters	Number of headquarters of publicly traded companies.	Economy	Globalization and World Cities (GaWC)
20	Percentage of people at early business stage	Percentage of 18 to 64-year-old population who are new entrepreneurs or owners/managers of a new business (no more than 42 months).	Economy	Global Entrepreneurship Monitor

NO.	INDICATOR	DESCRIPTION / UNIT OF MEASUREMENT	DIMENSION / CLUSTER	SOURCE
21	Entrepreneurs	Companies in an initial phase that represent a city's economic bases. They represent economic dynamism and include a high proportion of companies devoted to technology. Used per capita.	Economy	2thinknow
22	GDP	Gross domestic product in millions of U.S. dollars at 2014 prices.	Economy	Euromonitor
23	Total tax rate	This measures the total amount of taxes and compulsory contributions paid by businesses after accounting for deductions and exemptions allowed as part of commercial profits.	Public management	World Bank
24	Reserves	Total reserves in millions of current U.S. dollars.	Public management	World Bank
25	Reserves per capita	Reserves per capita in millions of current U.S. dollars.	Public management	World Bank
26	Embassies	Number of embassies per city.	Public management	2thinknow
27	Twitter	Twitter users in prominent user directories (e.g., Twellow). This includes users who define themselves as leaders (writers, activists, business leaders, journalists, etc.). In thousands of people.	Public management	2thinknow
28	Sales tax	Sales tax. This has a big impact on the economy. Lower rates of sales tax can be used to finance investment in services and intelligent infrastructure.	Public management	2thinknow
29	Strength of legal rights index	The strength of legal rights index measures the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders and thus facilitate access to loans. The values run from 0 to 12, where the highest ratings indicate that the laws are better designed to expand access to credit.	Governance	World Bank
30	Corruption perceptions index	Corruption perceptions index. The values go from 0 (very corrupt) to 100 (very transparent).	Governance	Transparency International
31	Functions of the innovation department	Number of functions of the city's innovation department (or ministry if there is one).	Governance	2thinknow
32	Range of government Web services	Range of online services for all city council users (residents or visitors). This is a measure of modern and technological municipal government. Scale from 0 to 5.	Governance	2thinknow
33	Open data platform	This describes whether the city has an open data system.	Governance	CTIC Foundation and Open World Map
34	CO_2 emissions	Carbon dioxide emissions from the burning of fossil fuels and the manufacture of cement. Measured in kilotons (kt).	Environment	World Bank
35	CO_2 emission index	CO_2 emission index.	Environment	Numbeo

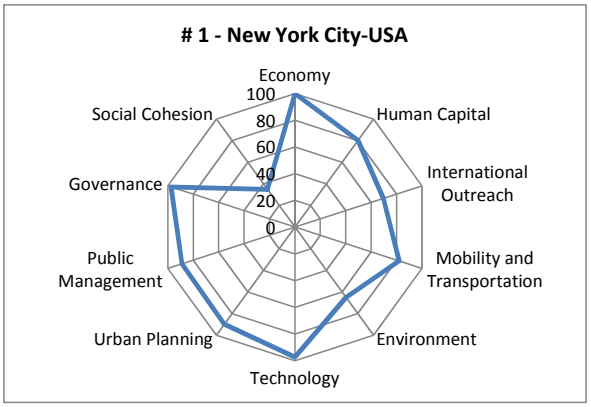
NO.	INDICATOR	DESCRIPTION / UNIT OF MEASUREMENT	DIMENSION / CLUSTER	SOURCE
36	Methane emissions	Methane emissions that arise from human activities such as agriculture and the industrial production of methane. Measured in kt of CO_2 equivalent.	Environment	World Bank
37	Percentage of the population with access to the water supply	Percentage of the population with reasonable access to an appropriate quantity of water resulting from an improvement in the water supply.	Environment	World Bank
38	PM2.5	PM2.5 measures the amount of particles in the air whose diameter is less than 2.5 µm. Annual mean.	Environment	World Health Organization
39	PM10	PM10 measures the amount of particles in the air whose diameter is less than 10 µm. Annual mean.	Environment	World Health Organization
40	Pollution index	Pollution index.	Environment	Numbeo
41	Environmental performance index	Environmental Performance Index (from 1 = poor to 100 = good).	Environment	Yale University
42	Traffic index	The traffic index is estimated by considering the time spent in traffic and the dissatisfaction this generates. It also includes estimates of CO_2 consumption and the other inefficiencies of the traffic system.	Mobility and transportation	Numbeo
43	Inefficiency index	The inefficiency index is an estimate of the inefficiencies in traffic. High values represent high rates of inefficiency in driving, such as long journey times.	Mobility and transportation	Numbeo
44	Number of road accidents	Number of road accidents per 100,000 inhabitants.	Mobility and transportation	Euromonitor
45	Metro	Number of metro stations per city.	Mobility and transportation	2thinknow
46	Flights	Number of arrival and departure flights (air routes) in a city.	Mobility and transportation	2thinknow
47	Means of transportation	The means of transportation represents the public transportation options for smart cities. The value of the variable increases if there are more transportation options. The lack of transportation options can reduce the attractiveness of a city as a smart destination.	Mobility and transportation	2thinknow
48	Index of traffic for commuting to work	Index of traffic considering the journey time to work.	Mobility and transportation	Numbeo
49	Bike sharing	The bicycle-sharing system shows the automated services for the public use of shared bicycles that provide transport from one location to another within a city. The indicator varies between 0 and 2 according to how developed the system is.	Mobility and transportation	Bike-Sharing World Map

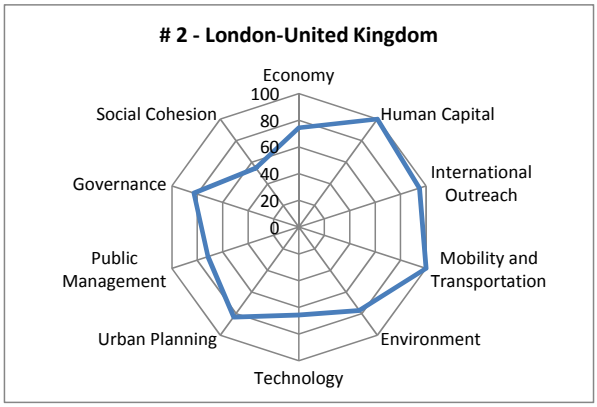
NO.	INDICATOR	DESCRIPTION / UNIT OF MEASUREMENT	DIMENSION / CLUSTER	SOURCE
50	Percentage of the population with access to sanitation facilities	Percentage of the population with at least sufficient access to facilities for the disposal of excreta that can efficiently avoid the contact of humans, animals and insects with excreta.	Urban planning	World Bank
51	Number of people per household	Number of people per household.	Urban planning	Euromonitor
52	Bicycle shops	Number of bicycle shops per capita.	Urban planning	2thinknow
53	Architects	Number of architecture firms per capita.	Urban planning	2thinknow
54	Cycling	Cycling enthusiasts per capita. Bicycle use represents both a sustainable measure of transportation and a metric for a city's exercise and cultural aptitude. Many cities that historically are smart cities have a certain correlation with the presence of a significant cycling culture (weather permitting).	Urban planning	2thinknow
55	Number of international tourists	Number of international tourists who visit the city. In thousands of people.	International outreach	Euromonitor
56	Number of passengers of an airline	Number of passengers who travel with airlines. In thousands of people.	International outreach	Euromonitor
57	Hotels	Number of hotels per capita.	International outreach	2thinknow
58	Sightsmap	Ranking of cities according to the number of photos taken in the city and uploaded to Panoramio (community for sharing photographs online). The top positions correspond to the cities with the most photographs.	International outreach	Sightsmap
59	Number of conferences and meetings	Number of international conferences and meetings in a city.	International outreach	International Congress and Convention Association
60	Number of broadband subscribers	Number of broadband subscribers per country with a digital subscriber line, cable modem or other high-speed technology, per 100 inhabitants.	Technology	World Bank
61	Broadband	Number of broadband users within a city, including wireless and fixed connections.	Technology	2thinknow
62	IP addresses	Number of IP addresses per capita.	Technology	2thinknow
63	Facebook	Number of Facebook users per capita.	Technology	2thinknow
64	Mobile phones	Number of mobile phones per capita.	Technology	2thinknow
65	Quality of Web services	The quality of the city council's website measures the commitment of its information technology policy, support for the development of local businesses and other technology initiatives. Scale from 0 to 5, the maximum corresponding to the website with the best-quality services.	Technology	2thinknow
66	Innovation index	Innovation index (Innovation Cities Index). Valuation of 0 (no innovation) to 60 (a lot of innovation).	Technology	Innovation Cities Program

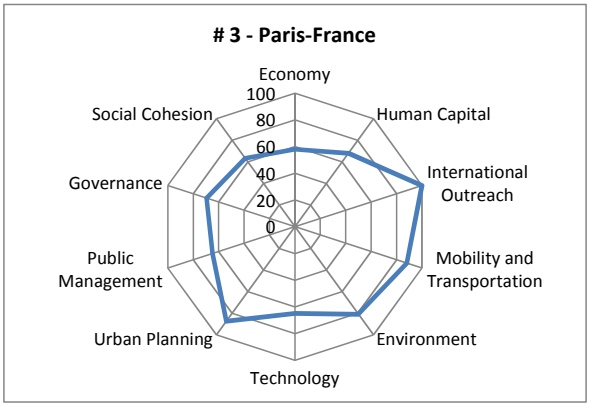
NO.	INDICATOR	DESCRIPTION / UNIT OF MEASUREMENT	DIMENSION / CLUSTER	SOURCE
67	Smartphones	Number of smartphones per capita. The use of smartphones and their penetration are a good indicator for the use of technologies.	Technology	2thinknow
68	Wi-Fi hot spot	Number of wireless access points globally. These represent the options to connect to the Internet of people on business trips.	Technology	2thinknow
69	Disposable income	Disposable income (annual average). Decile 1. Expressed in U.S. dollars.	City cluster	Euromonitor
70	Disposable income	Disposable income (annual average). Decile 2. Expressed in U.S. dollars.	City cluster	Euromonitor
71	Disposable income	Disposable income (annual average). Decile 5. Expressed in U.S. dollars.	City cluster	Euromonitor
72	Disposable income	Disposable income (annual average). Decile 7. Expressed in U.S. dollars.	City cluster	Euromonitor
73	Disposable income	Disposable income (annual average). Decile 9. Expressed in U.S. dollars.	City cluster	Euromonitor
74	Population	Number of inhabitants.	City/country cluster	Euromonitor
75	Percentage of population employed	Percentage of population employed.	Country cluster	Euromonitor
76	Expenditure on education per inhabitant	Expenditure on education per inhabitant. Expressed in millions of U.S. dollars at 2014 prices.	Country cluster	Euromonitor
77	Expenditure on medical and health services per inhabitant	Expenditure on medical and health services per inhabitant. Expressed in millions of U.S. dollars at 2014 prices.	Country cluster	Euromonitor
78	Expenditure on hospitality and catering services per inhabitant	Expenditure on hospitality and catering services per inhabitant. Expressed in millions of U.S. dollars at 2014 prices.	Country cluster	Euromonitor
79	Expenditure on housing per inhabitant	Expenditure on housing per inhabitant. Expressed in millions of U.S. dollars at 2014 prices.	Country cluster	Euromonitor

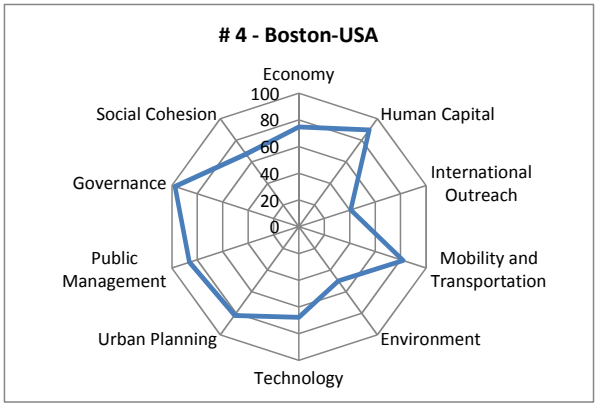
APPENDIX 2: GRAPHICAL ANALYSIS. PROFILES OF 180 CITIES

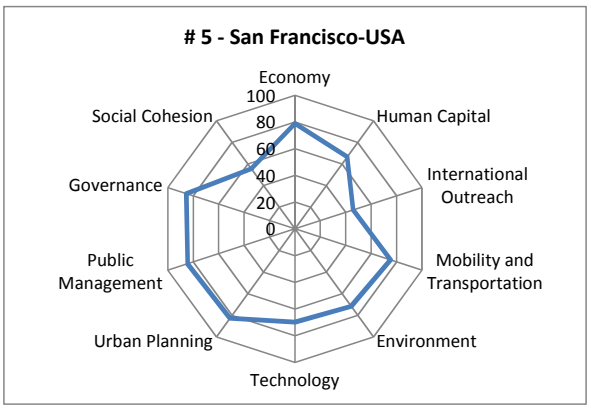
Below is a graphical analysis of the 180 cities included in the CIMI, based on the 10 key dimensions. These radar charts aim to facilitate interpretation of each city's profile, identifying the values of the various dimensions. At the same time, they enable comparisons of two or more cities at a glance.

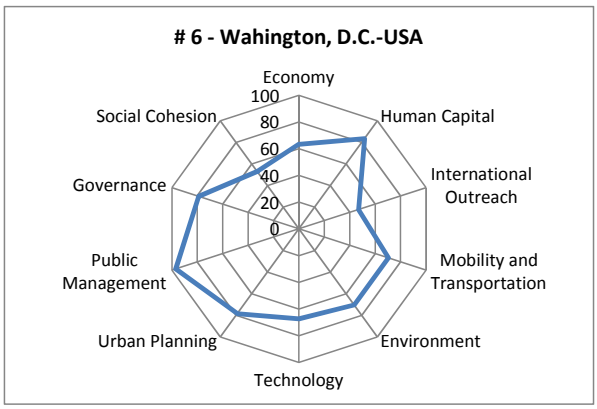


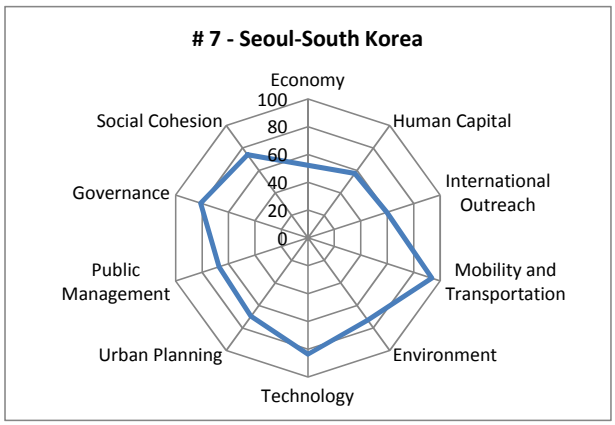








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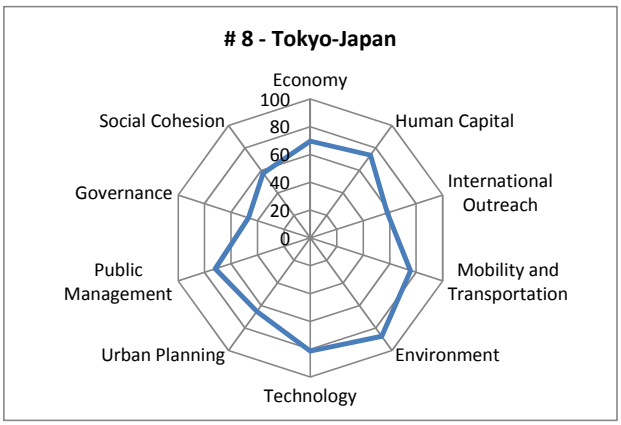
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9 - Berlin-Germany
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Human Capital
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Urban Planning
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10 - Amsterdam-Netherlands
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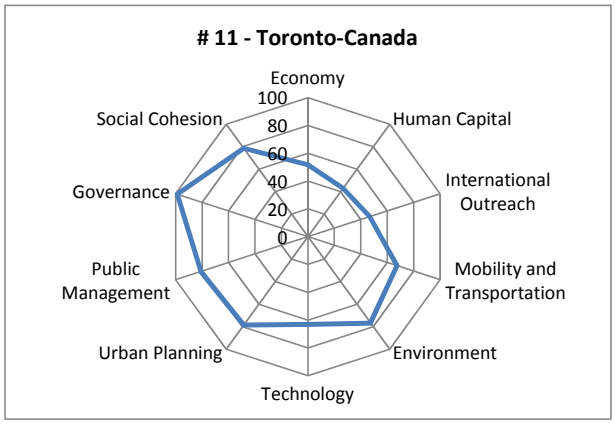
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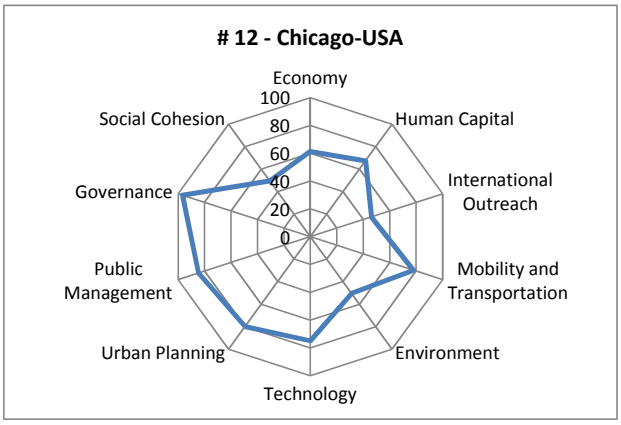
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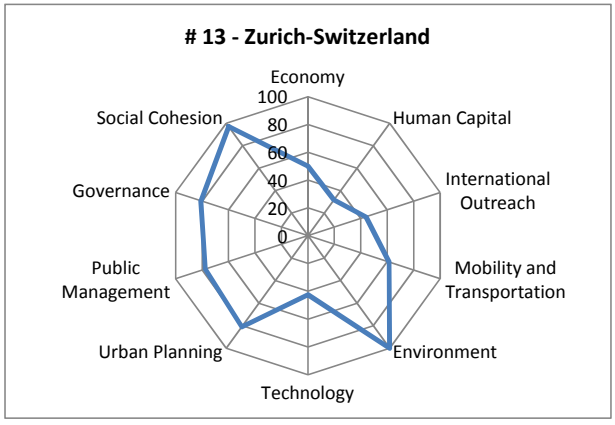
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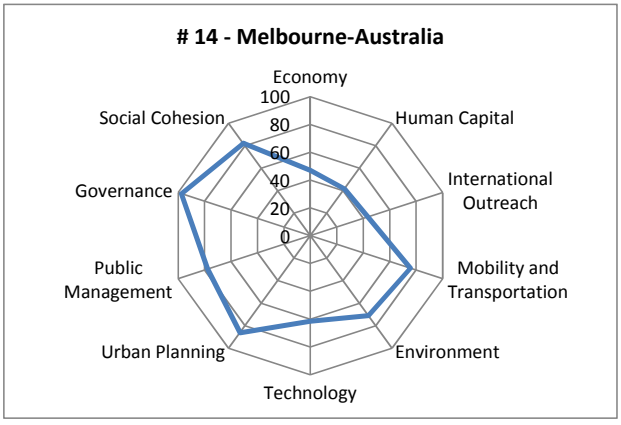
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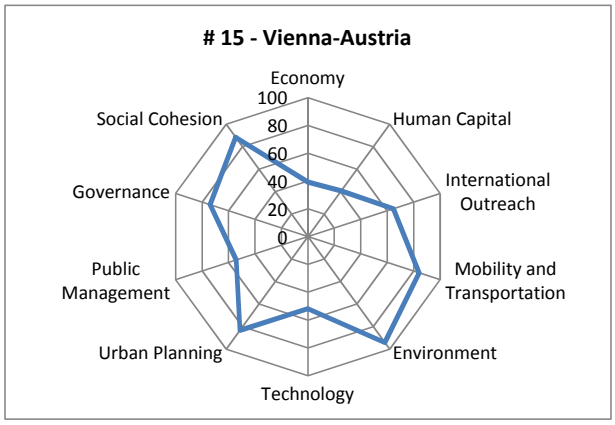
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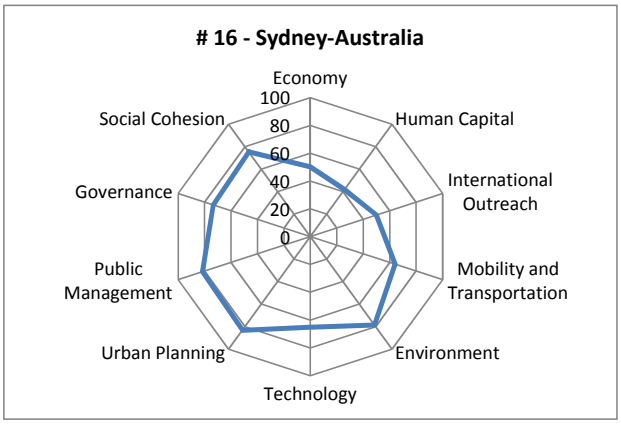
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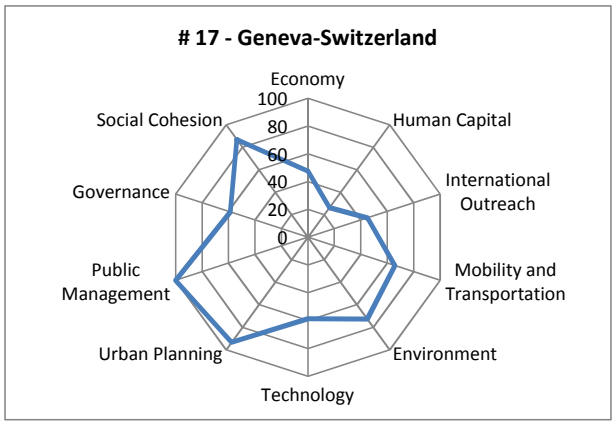
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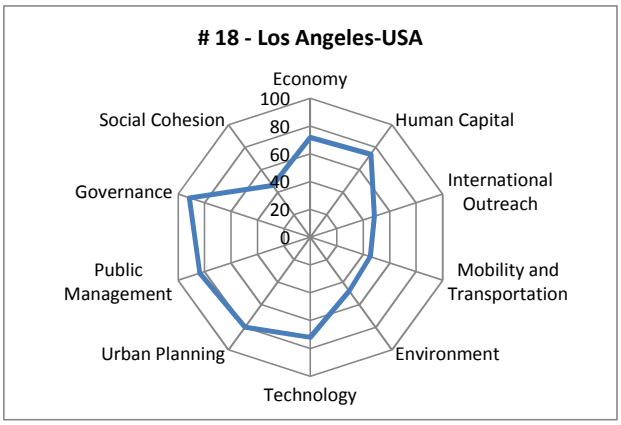
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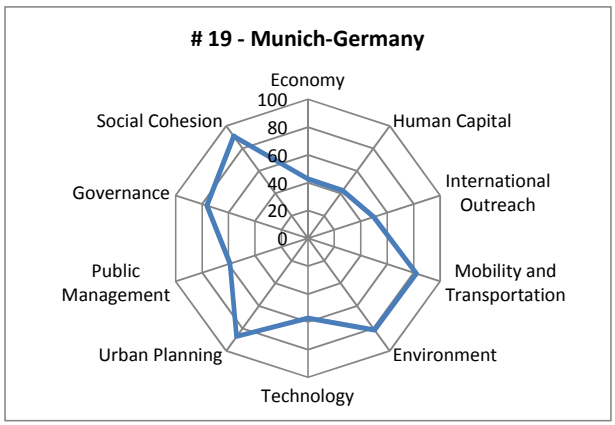
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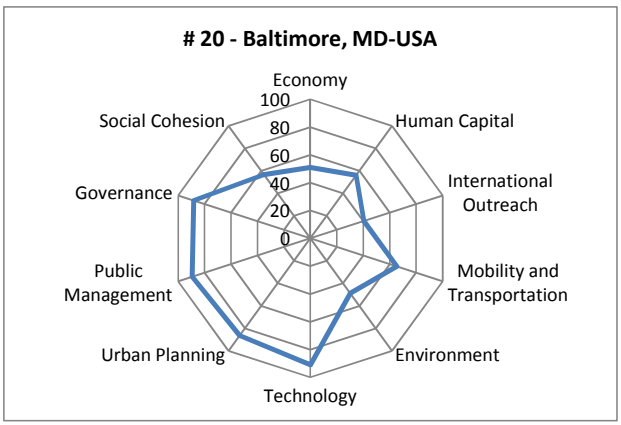
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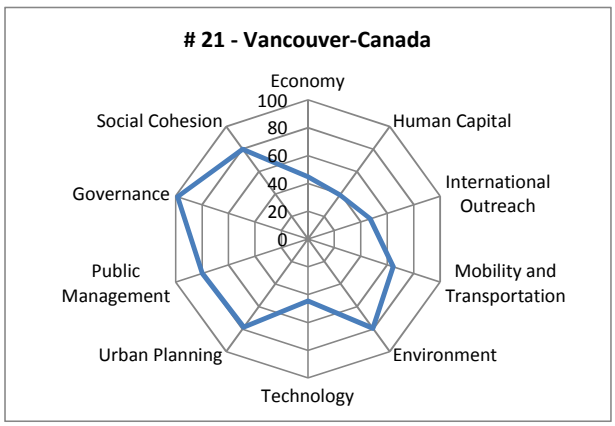
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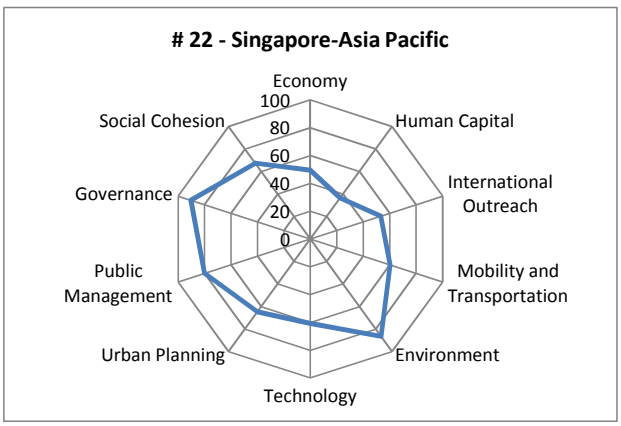
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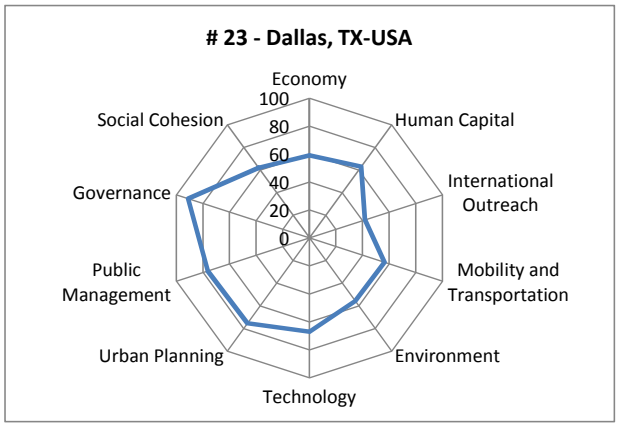
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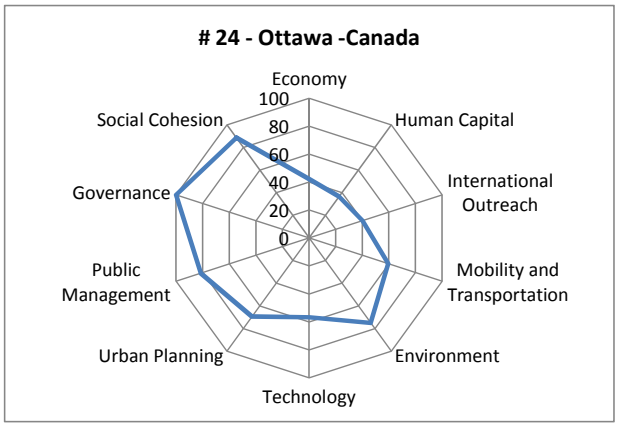
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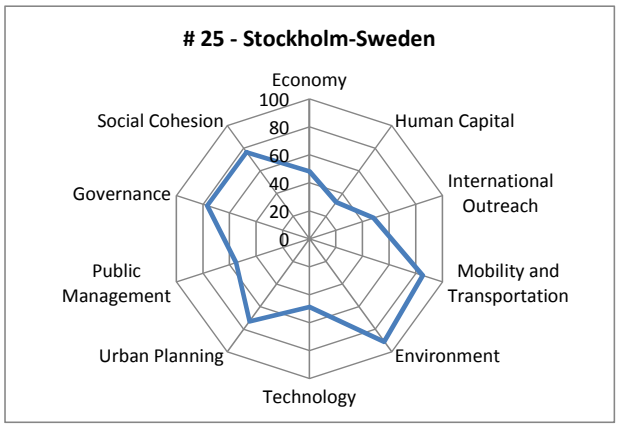
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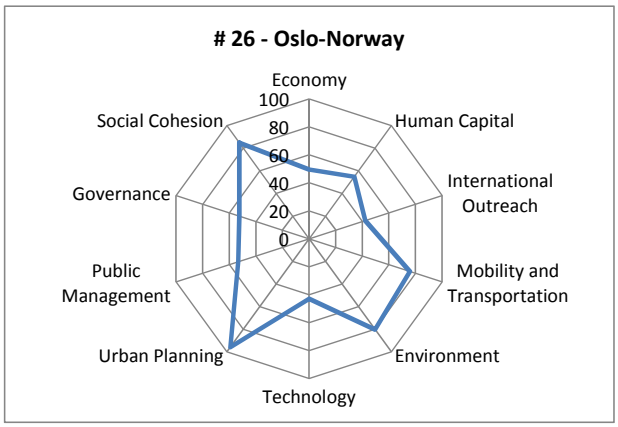
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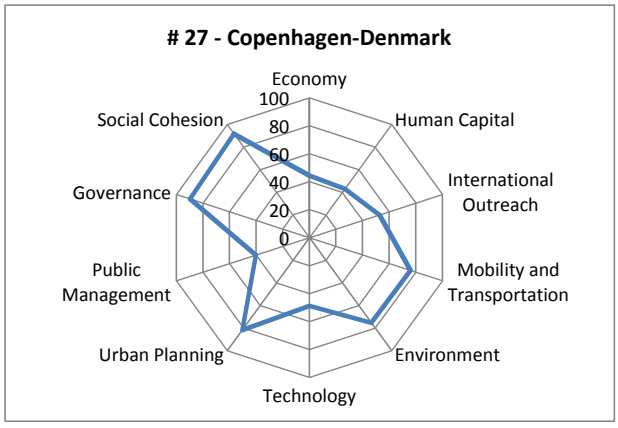
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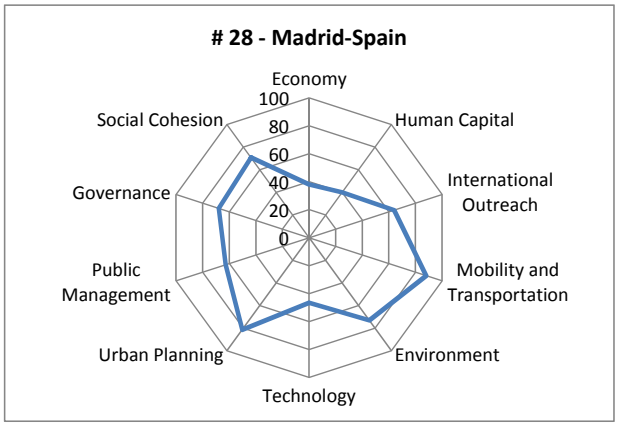
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29 - Helsinki-Finland
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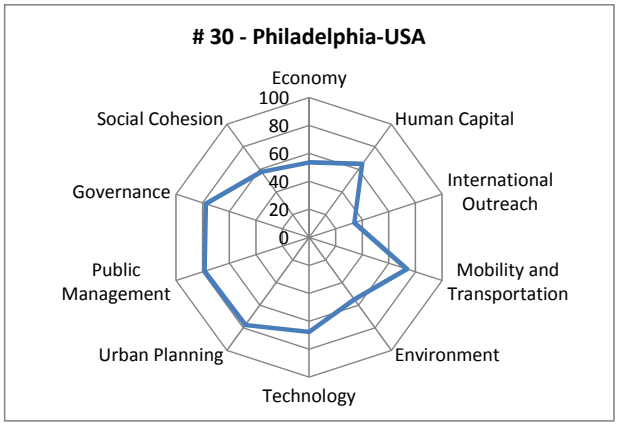
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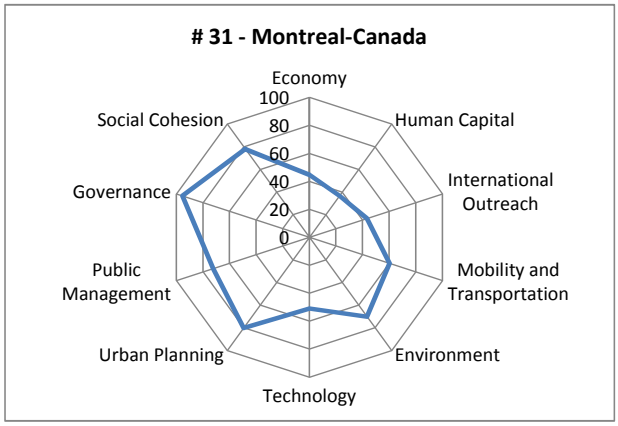
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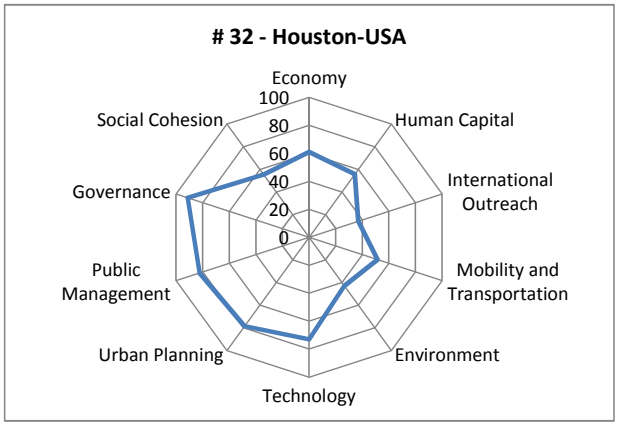
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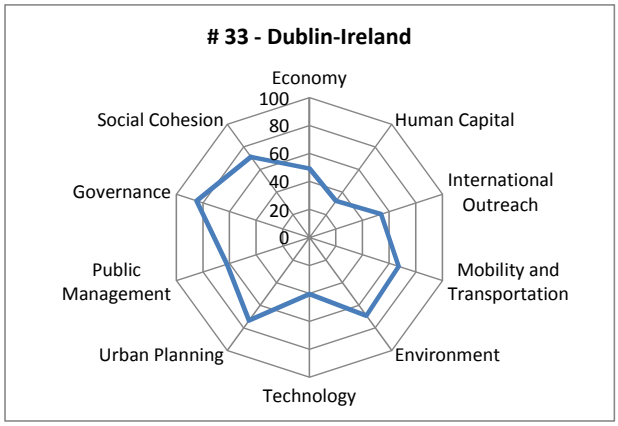
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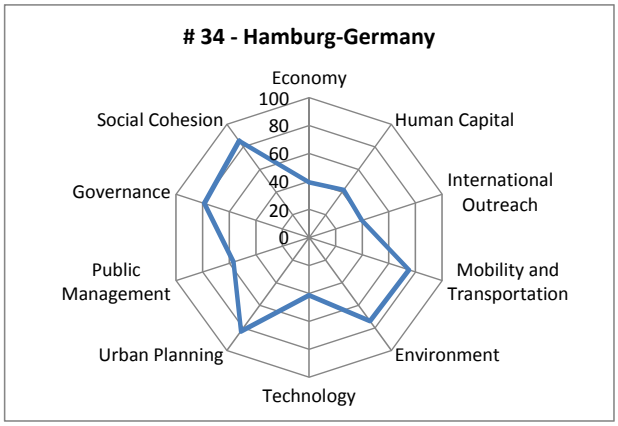
34 - Hamburg-Germany
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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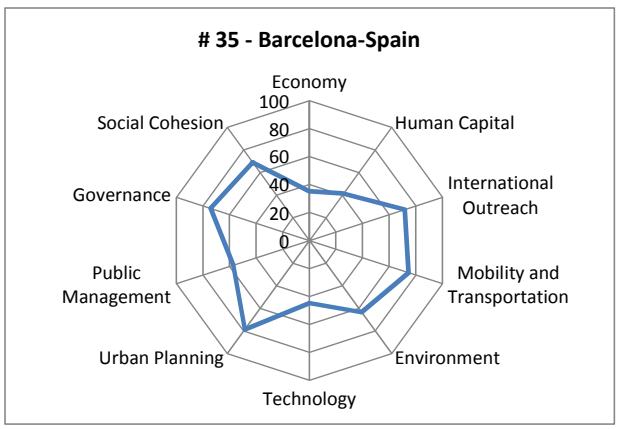
35 - Barcelona-Spain
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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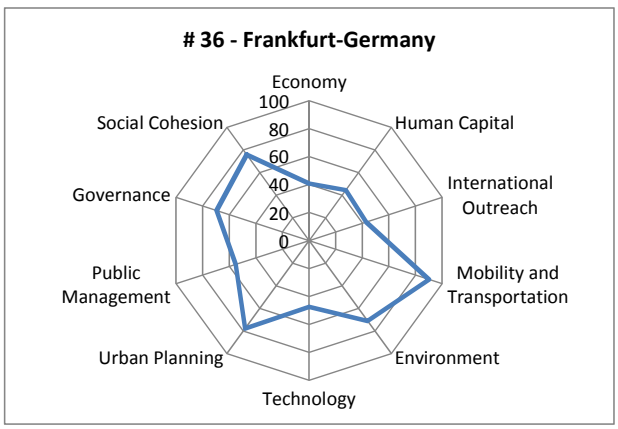
36 - Frankfurt-Germany
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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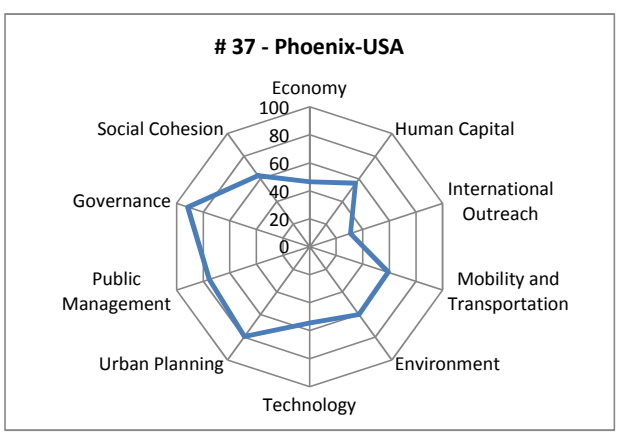
37 - Phoenix-USA
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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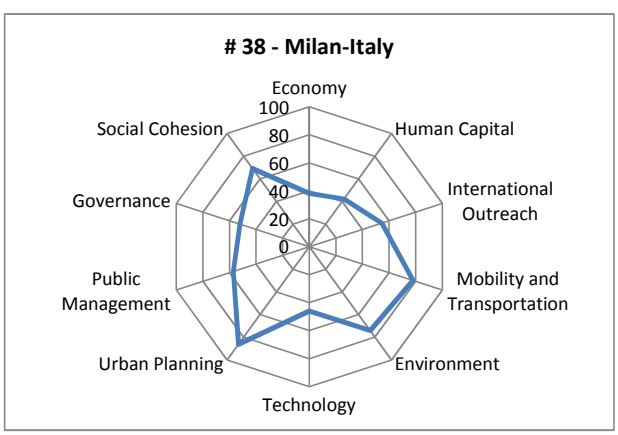
38 - Milan-Italy
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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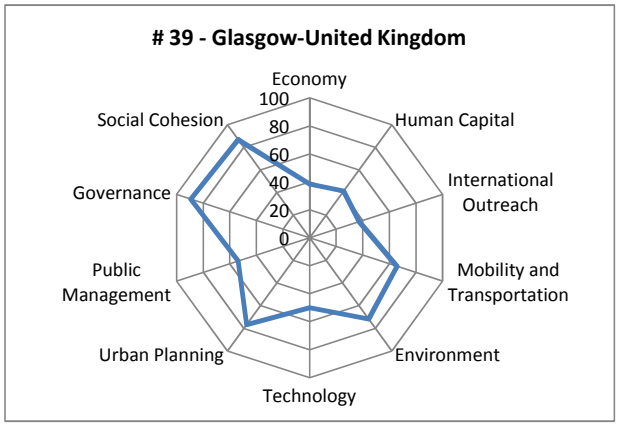
39 - Glasgow-United Kingdom
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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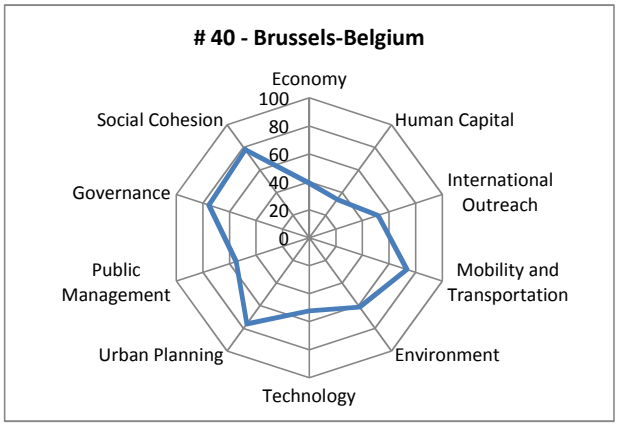
40 - Brussels-Belgium
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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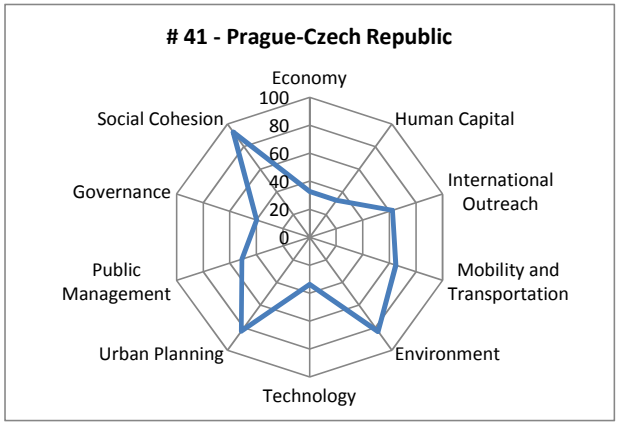
41 - Prague-Czech Republic
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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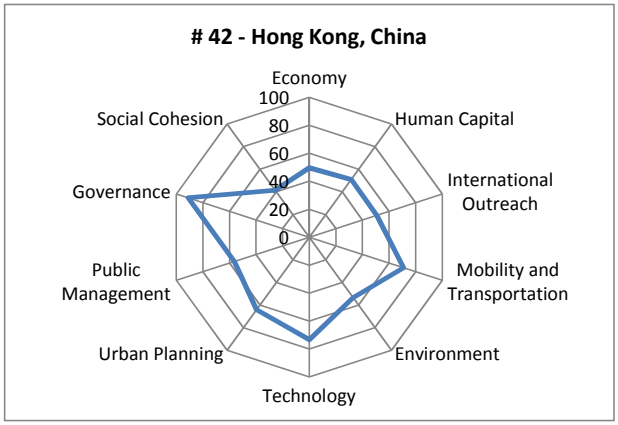
42 - Hong Kong, China
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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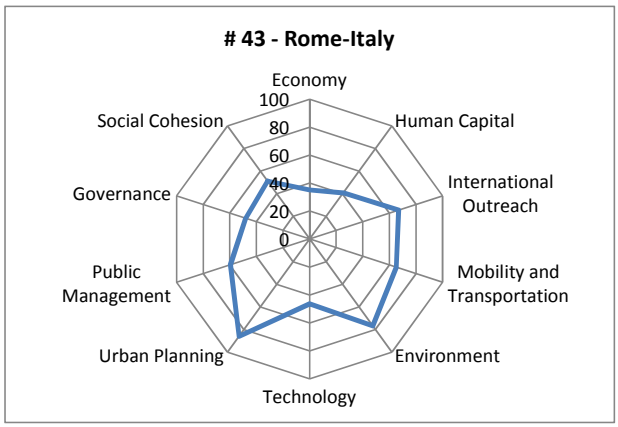
43 - Rome-Italy
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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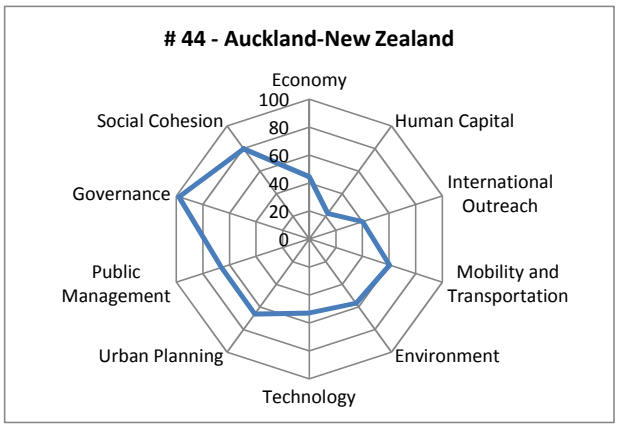
44 - Auckland-New Zealand
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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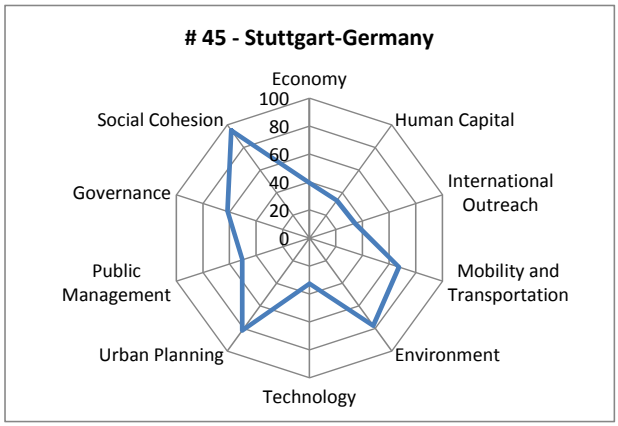
45 - Stuttgart-Germany
Economy
Human Capital
International Outreach
Mobility and Transportation
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Technology
Urban Planning
Public Management
Governance
Social Cohesion
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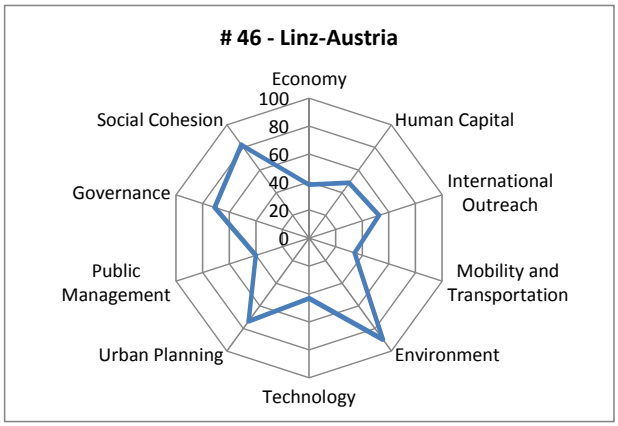
46 - Linz-Austria
Economy
Human Capital
International Outreach
Mobility and Transportation
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Technology
Urban Planning
Public Management
Governance
Social Cohesion
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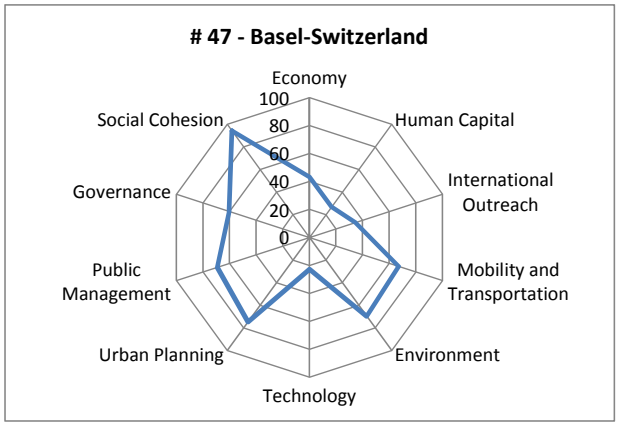
47 - Basel-Switzerland
Economy
Human Capital
International Outreach
Mobility and Transportation
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Technology
Urban Planning
Public Management
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Social Cohesion
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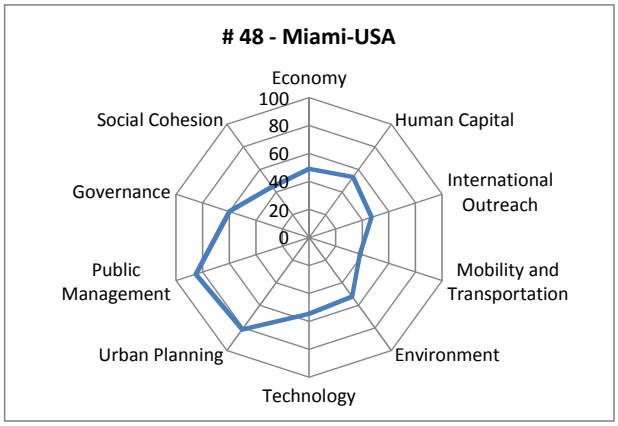
48 - Miami-USA
Economy
Human Capital
International Outreach
Mobility and Transportation
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Technology
Urban Planning
Public Management
Governance
Social Cohesion
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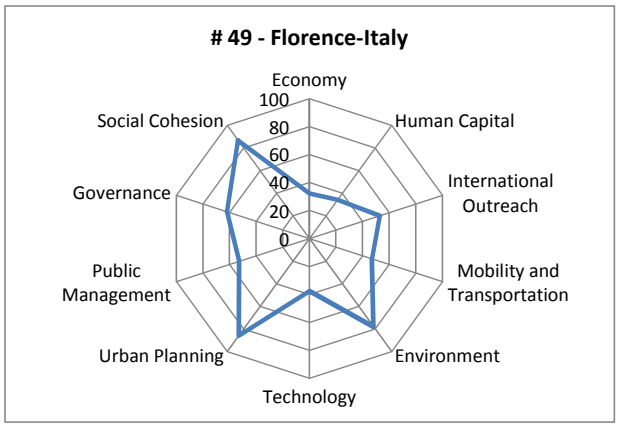
49 - Florence-Italy
Economy
Human Capital
International Outreach
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Technology
Urban Planning
Public Management
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Social Cohesion
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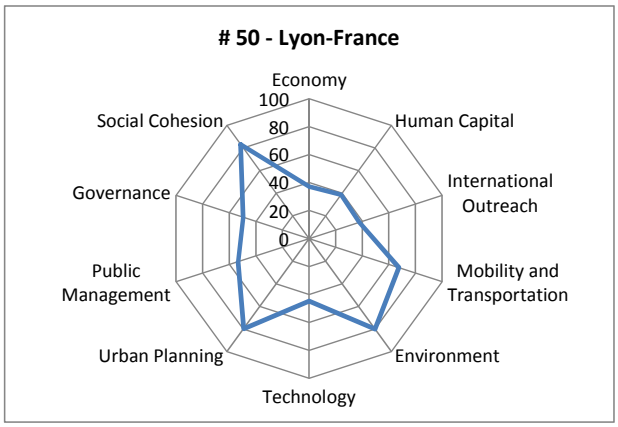
50 - Lyon-France
Economy
Human Capital
International Outreach
Mobility and Transportation
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Technology
Urban Planning
Public Management
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Social Cohesion
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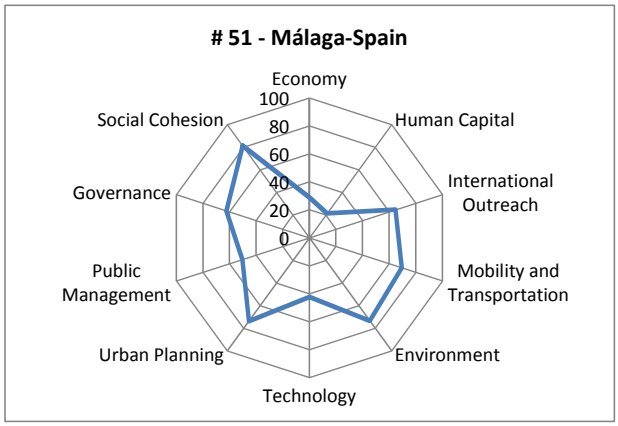
51 - Málaga-Spain
Economy
Human Capital
International Outreach
Mobility and Transportation
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Technology
Urban Planning
Public Management
Governance
Social Cohesion
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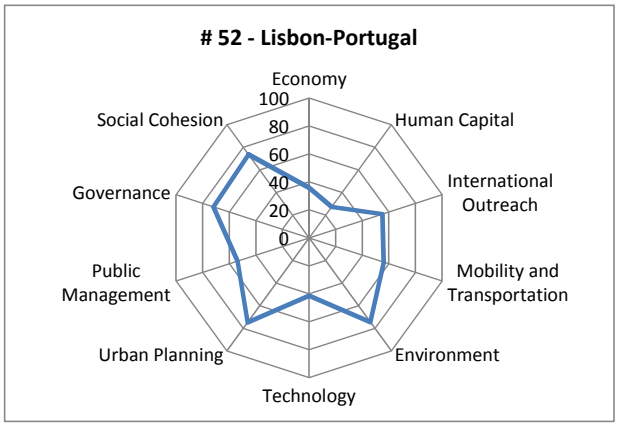
52 - Lisbon-Portugal
Economy
Human Capital
International Outreach
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Technology
Urban Planning
Public Management
Governance
Social Cohesion
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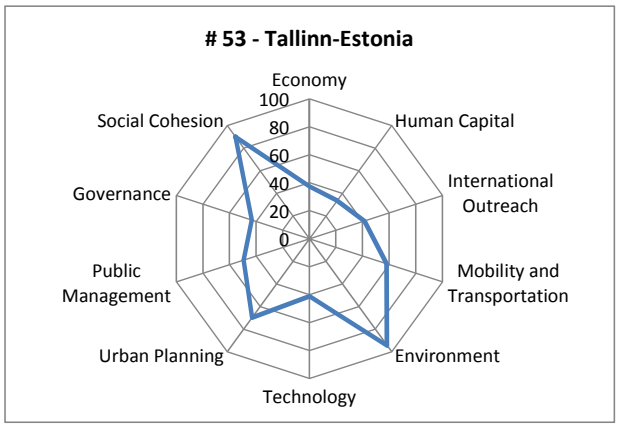
53 - Tallinn-Estonia
Economy
Human Capital
International Outreach
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Technology
Urban Planning
Public Management
Governance
Social Cohesion
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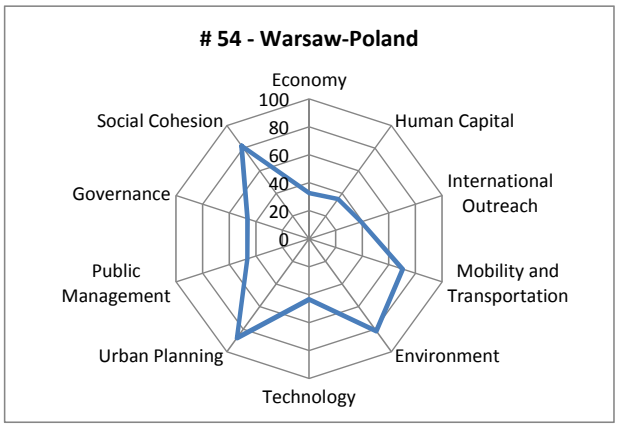
54 - Warsaw-Poland
Economy
Human Capital
International Outreach
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Technology
Urban Planning
Public Management
Governance
Social Cohesion
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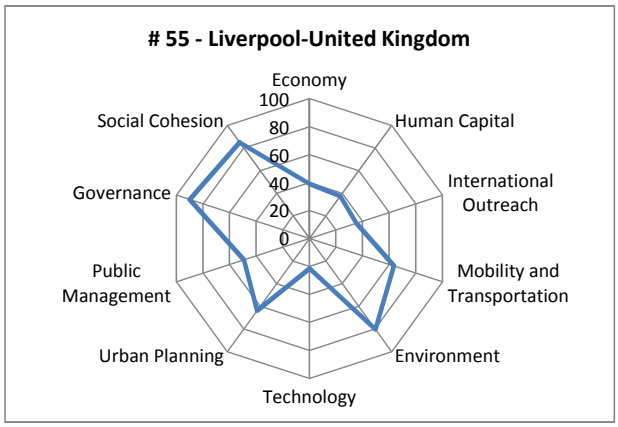
55 - Liverpool-United Kingdom
Economy
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International Outreach
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Urban Planning
Public Management
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Social Cohesion
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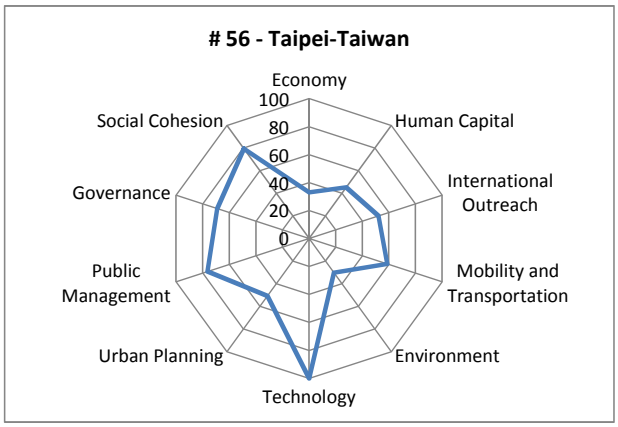
56 - Taipei-Taiwan
Economy
Human Capital
International Outreach
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Technology
Urban Planning
Public Management
Governance
Social Cohesion
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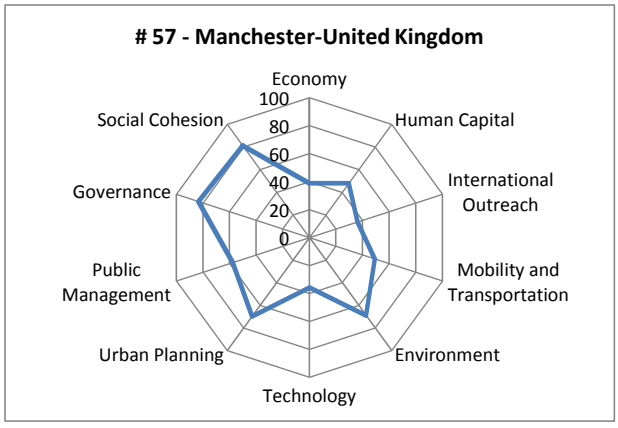
57 - Manchester-United Kingdom
Economy
Human Capital
International Outreach
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Urban Planning
Public Management
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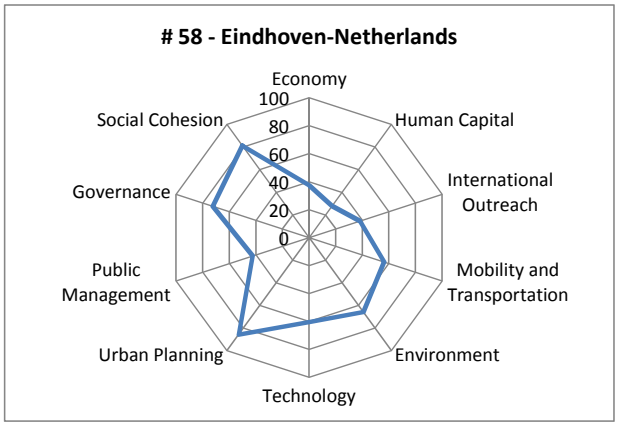
58 - Eindhoven-Netherlands
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
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Social Cohesion
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59 - Rotterdam-Netherlands
Economy
Human Capital
International Outreach
Mobility and Transportation
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Urban Planning
Public Management
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Social Cohesion
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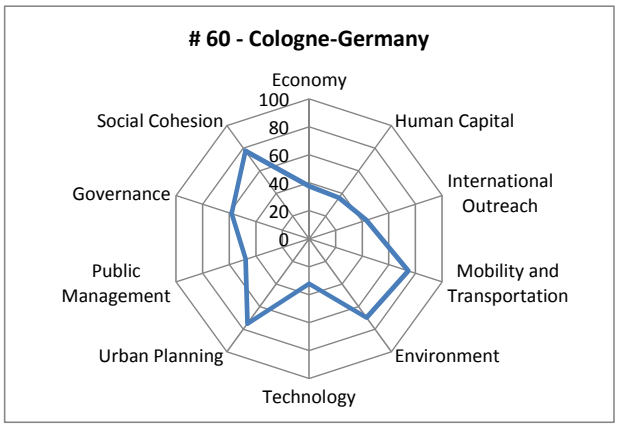
60 - Cologne-Germany
Economy
Human Capital
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Technology
Urban Planning
Public Management
Governance
Social Cohesion
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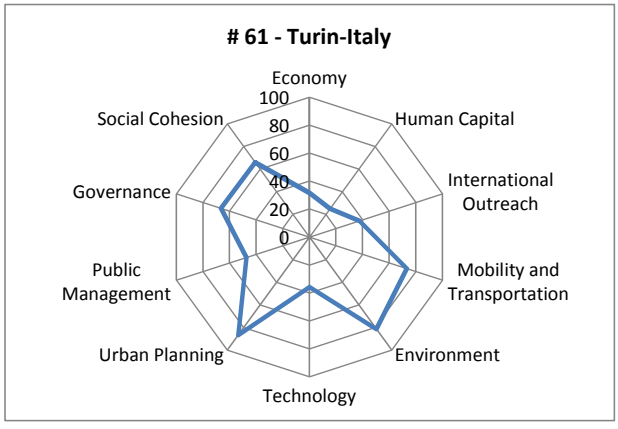
61 - Turin-Italy
Economy
Human Capital
International Outreach
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Technology
Urban Planning
Public Management
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Social Cohesion
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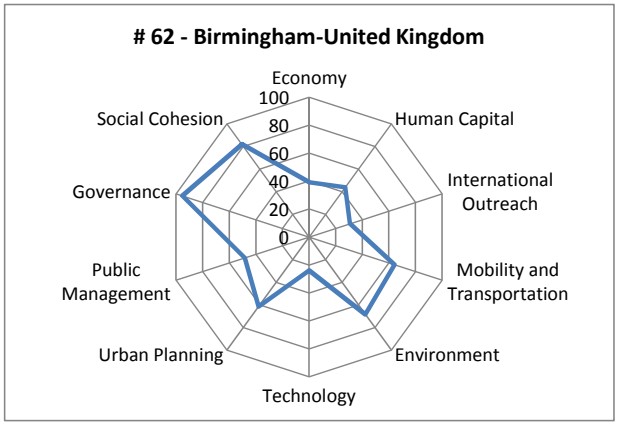
62 - Birmingham-United Kingdom
Economy
Human Capital
International Outreach
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Urban Planning
Public Management
Governance
Social Cohesion
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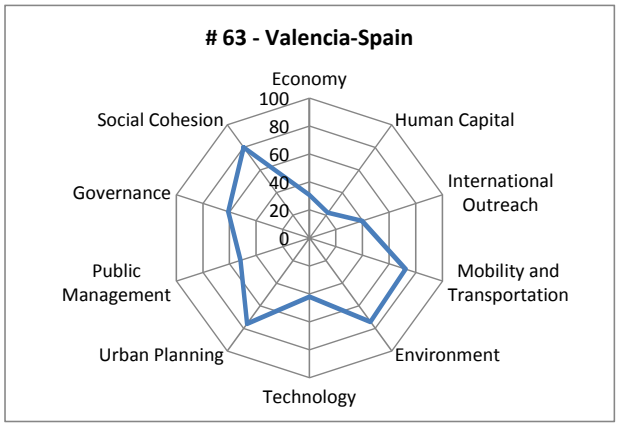
63 - Valencia-Spain
Economy
Human Capital
International Outreach
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Technology
Urban Planning
Public Management
Governance
Social Cohesion
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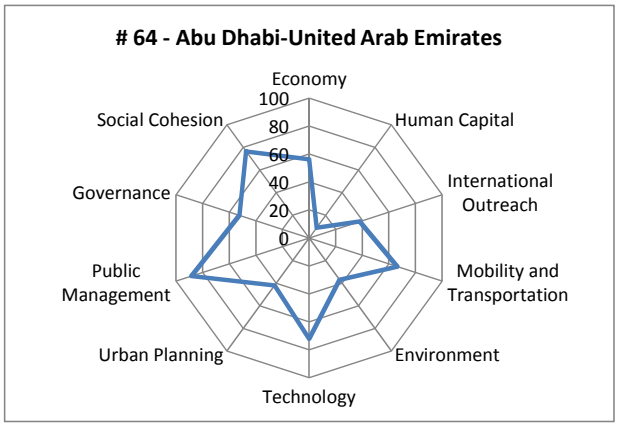
64 - Abu Dhabi-United Arab Emirates
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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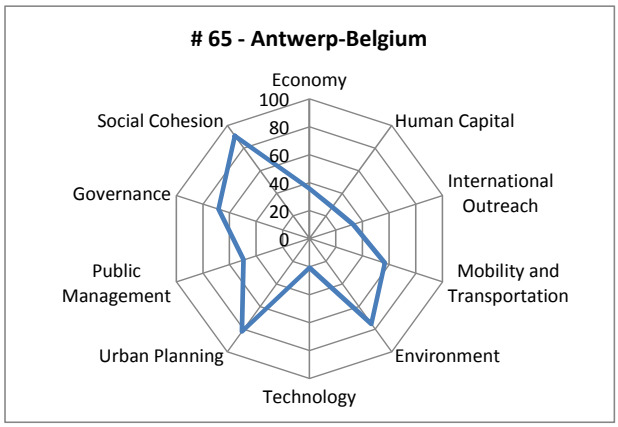
65 - Antwerp-Belgium
Economy
Human Capital
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Technology
Urban Planning
Public Management
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Social Cohesion
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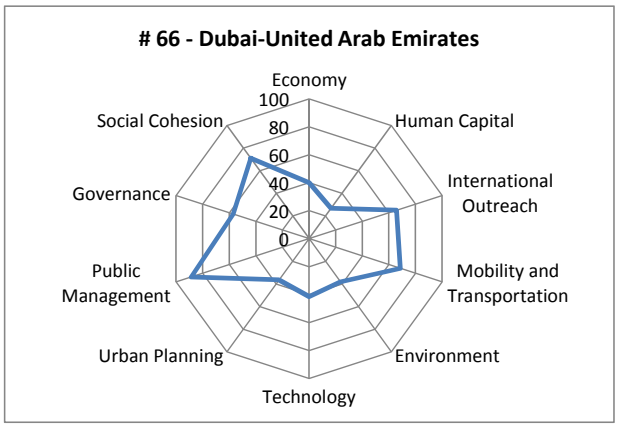
66 - Dubai-United Arab Emirates
Economy
Human Capital
International Outreach
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Urban Planning
Public Management
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Social Cohesion
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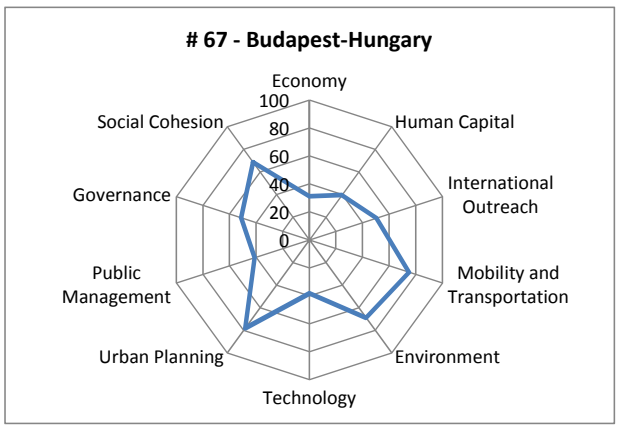
67 - Budapest-Hungary
Economy
Human Capital
International Outreach
Mobility and Transportation
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Urban Planning
Public Management
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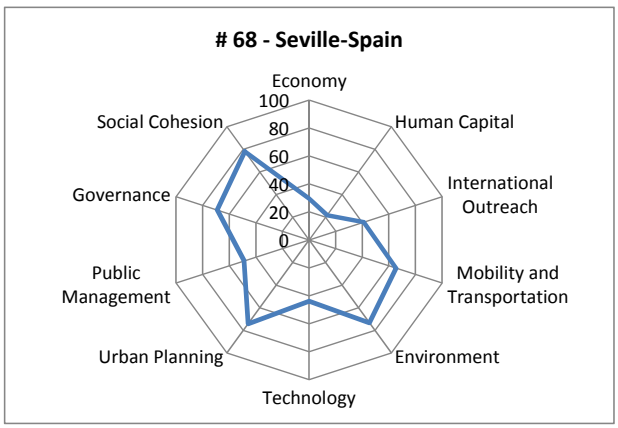
68 - Seville-Spain
Economy
Human Capital
International Outreach
Mobility and Transportation
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Technology
Urban Planning
Public Management
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Social Cohesion
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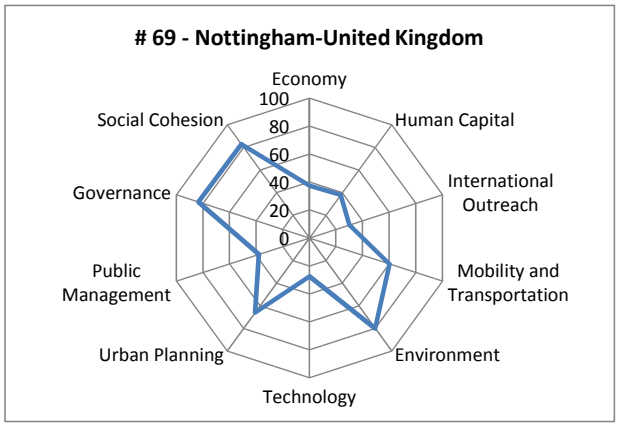
69 - Nottingham-United Kingdom
Economy
Human Capital
International Outreach
Mobility and Transportation
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Technology
Urban Planning
Public Management
Governance
Social Cohesion
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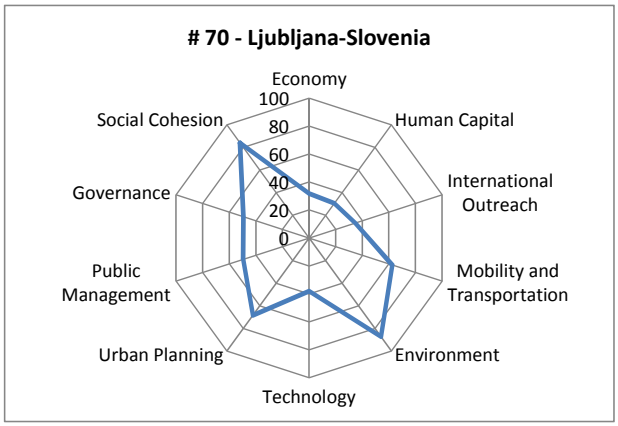
70 - Ljubljana-Slovenia
Economy
Human Capital
International Outreach
Mobility and Transportation
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Technology
Urban Planning
Public Management
Governance
Social Cohesion
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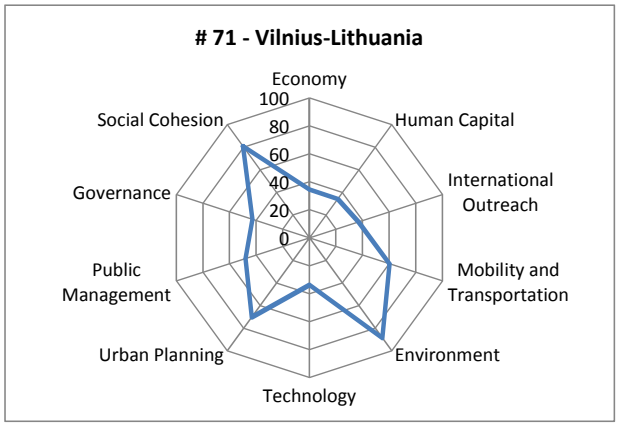
71 - Vilnius-Lithuania
Economy
Human Capital
International Outreach
Mobility and Transportation
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Urban Planning
Public Management
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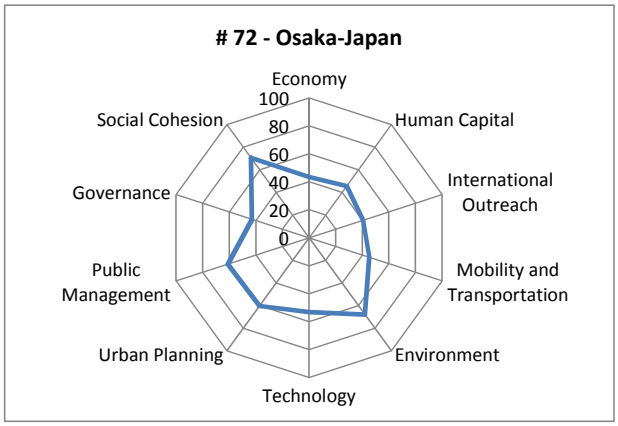
72 - Osaka-Japan
Economy
Human Capital
International Outreach
Mobility and Transportation
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Urban Planning
Public Management
Governance
Social Cohesion
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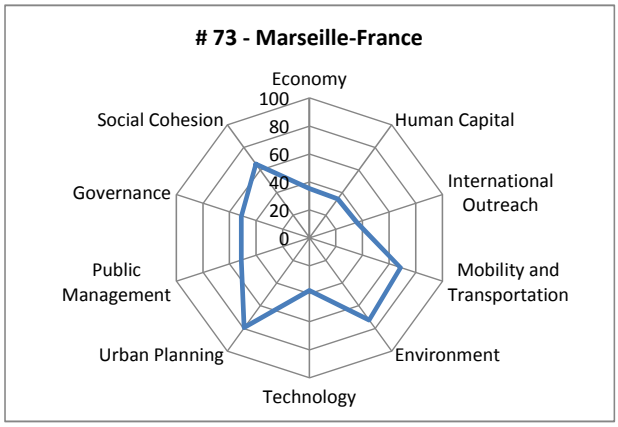
73 - Marseille-France
Economy
Human Capital
International Outreach
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Urban Planning
Public Management
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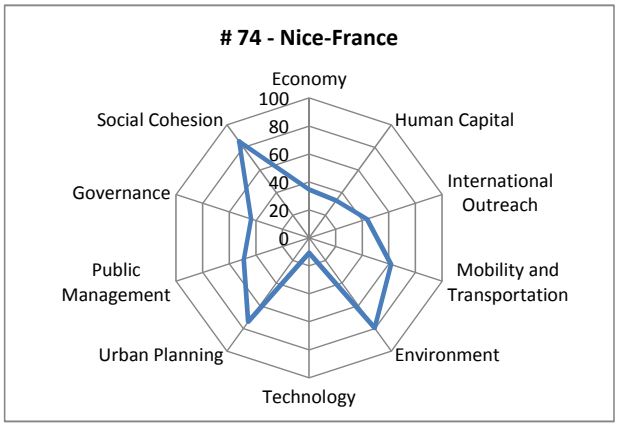
74 - Nice-France
Economy
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International Outreach
Mobility and Transportation
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Public Management
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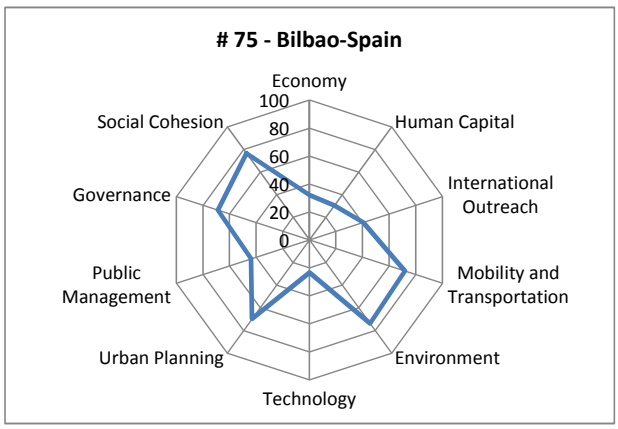
75 - Bilbao-Spain
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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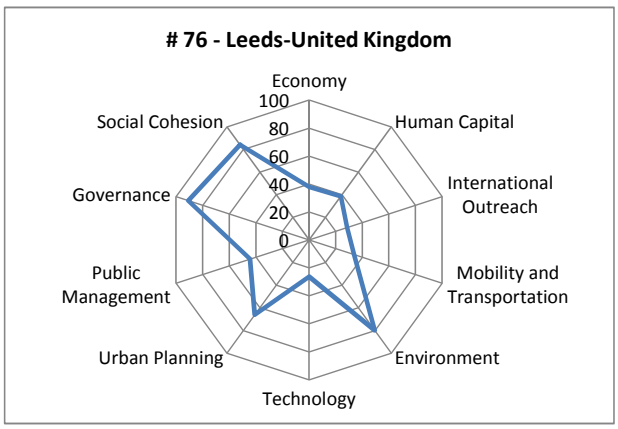
76 - Leeds-United Kingdom
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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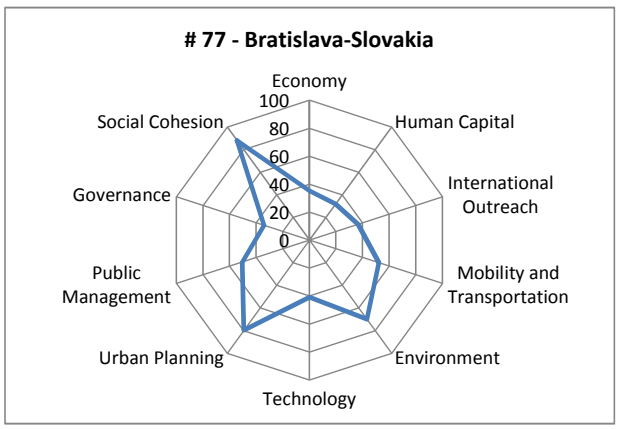
77 - Bratislava-Slovakia
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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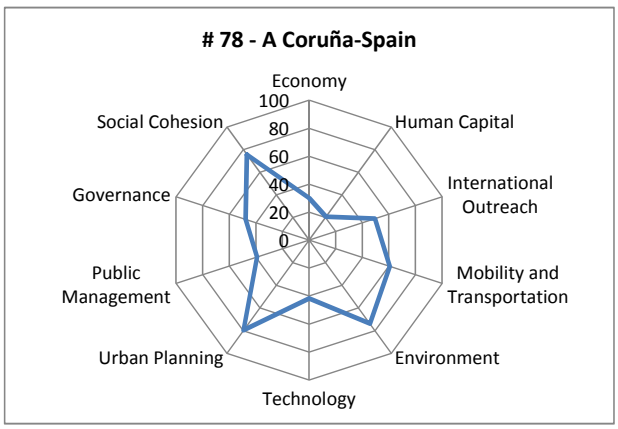
78 - A Coruña-Spain
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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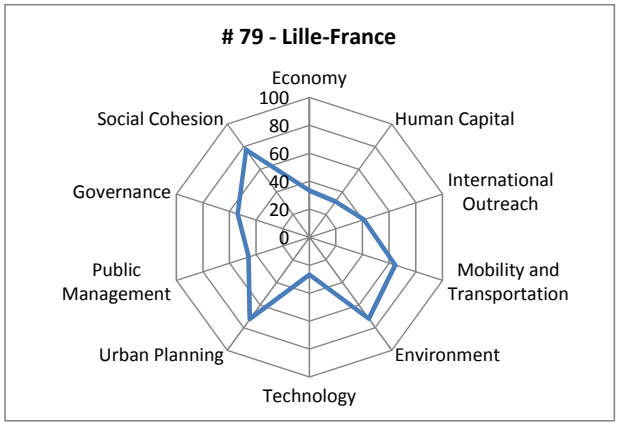
79 - Lille-France
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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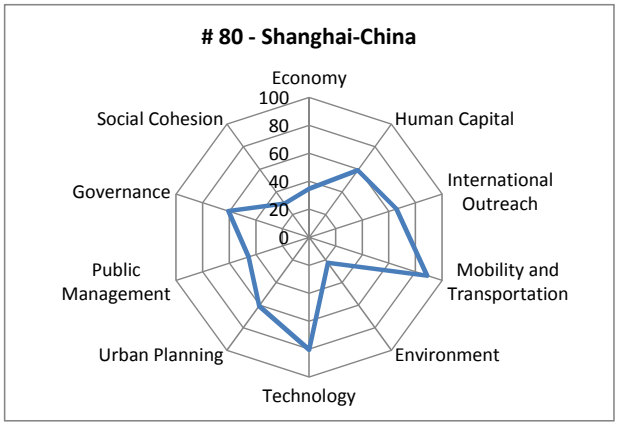
80 - Shanghai-China
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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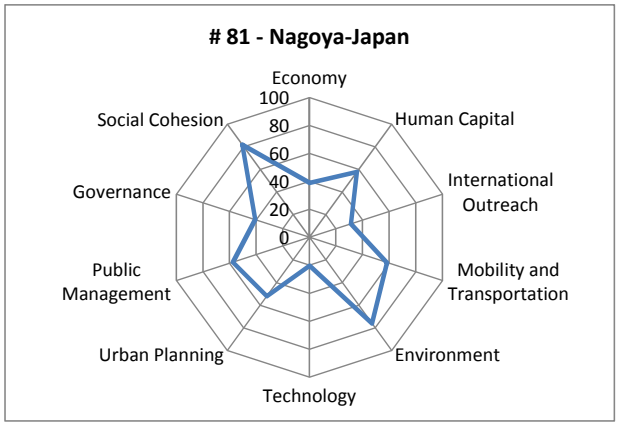
81 - Nagoya-Japan
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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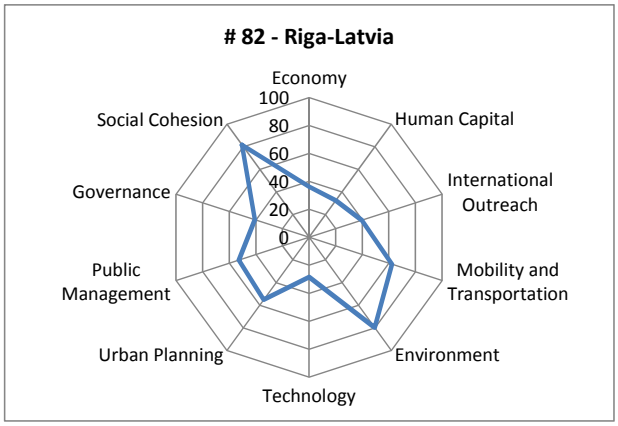
82 - Riga-Latvia
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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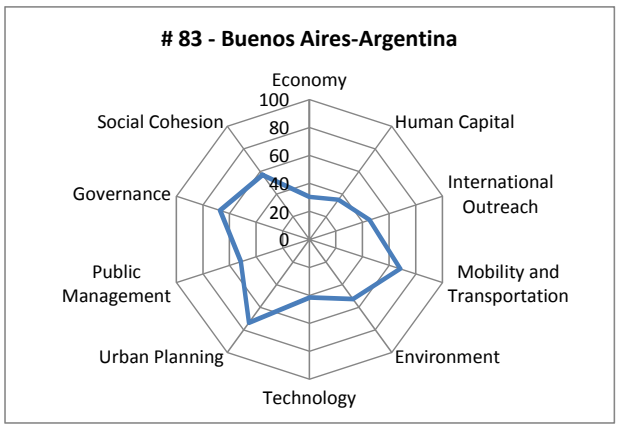
83 - Buenos Aires-Argentina
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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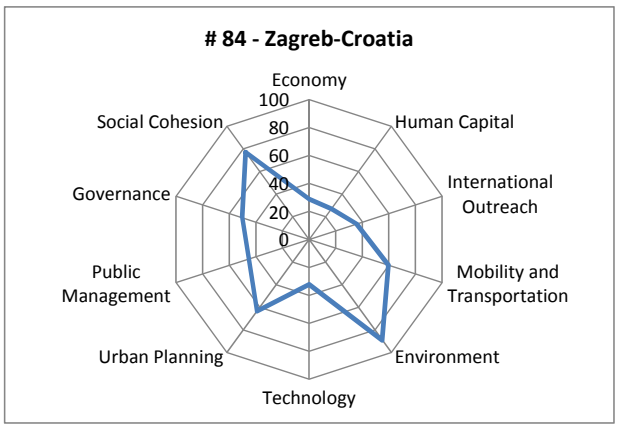
84 - Zagreb-Croatia
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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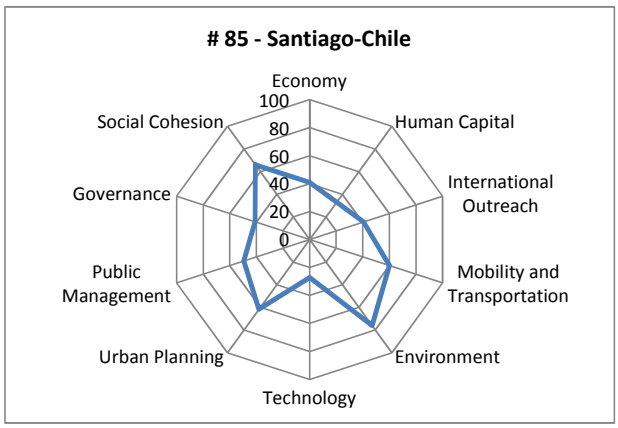
85 - Santiago-Chile
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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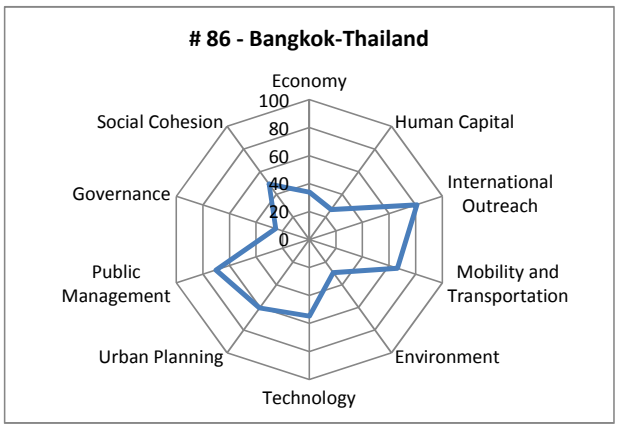
86 - Bangkok-Thailand
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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87 - Mexico City-Mexico
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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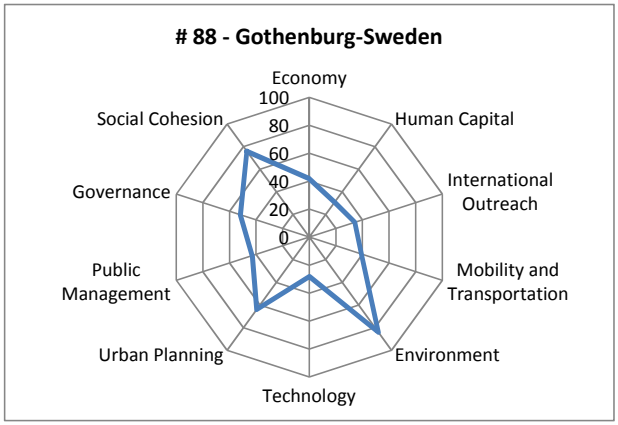
88 - Gothenburg-Sweden
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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89 - Moscow-Russia
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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90 - Beijing-China
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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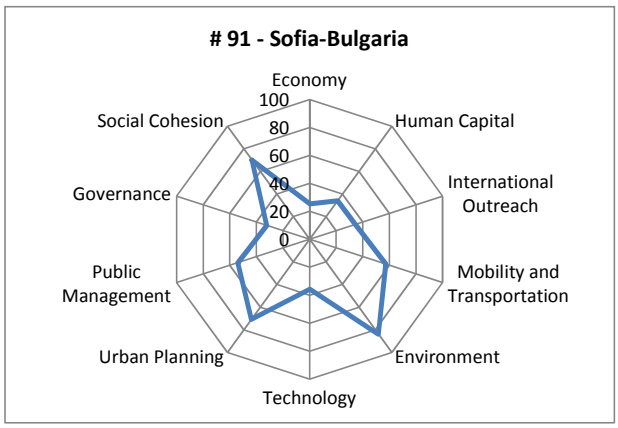
91 - Sofia-Bulgaria
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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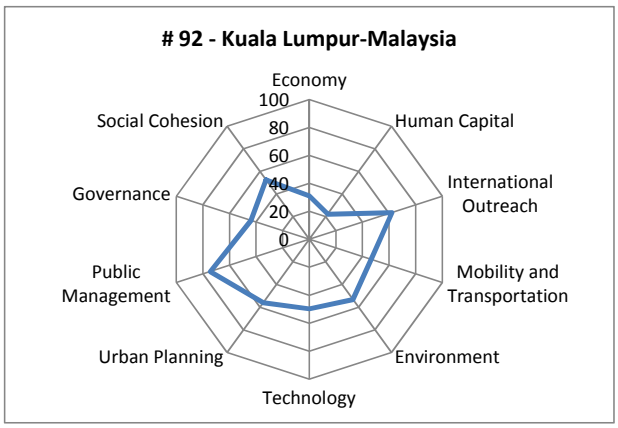
92 - Kuala Lumpur-Malaysia
Economy
Human Capital
International Outreach
Mobility and Transportation
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Technology
Urban Planning
Public Management
Governance
Social Cohesion
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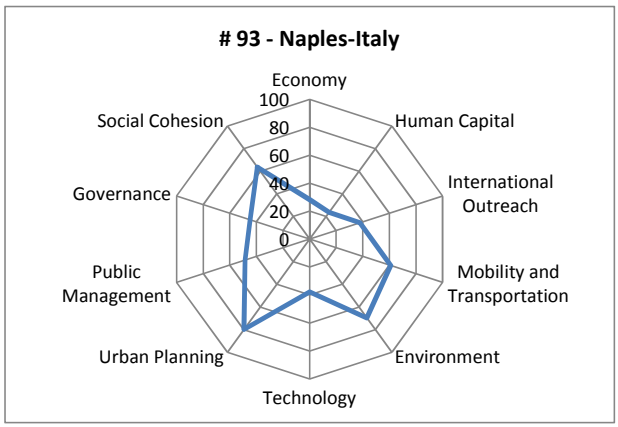
93 - Naples-Italy
Economy
Human Capital
International Outreach
Mobility and Transportation
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Technology
Urban Planning
Public Management
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Social Cohesion
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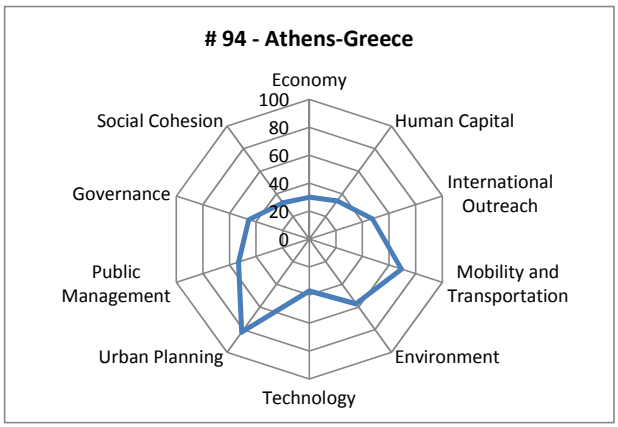
94 - Athens-Greece
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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95 - Wrocław-Poland
Economy
Human Capital
International Outreach
Mobility and Transportation
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Technology
Urban Planning
Public Management
Governance
Social Cohesion
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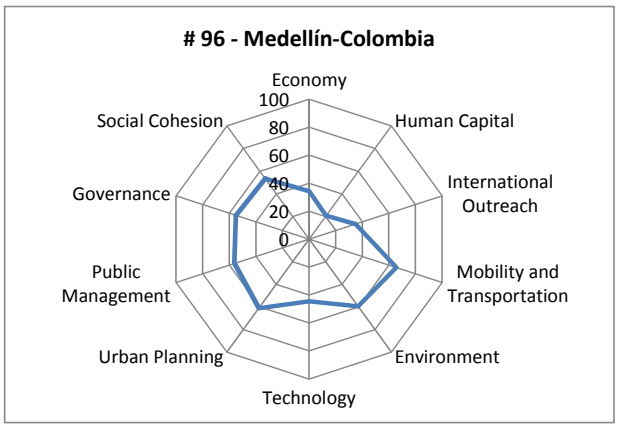
96 - Medellín-Colombia
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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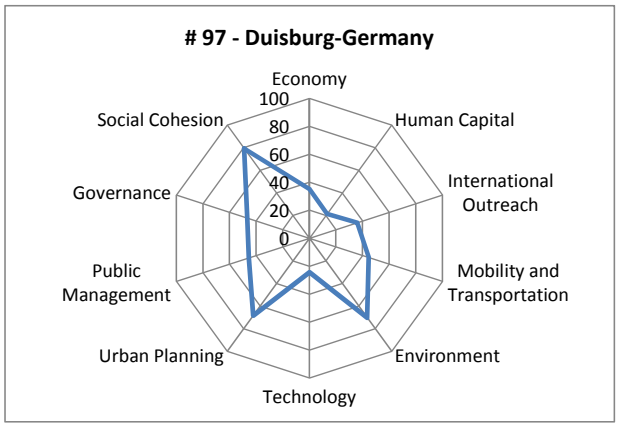
97 - Duisburg-Germany
Economy
Human Capital
International Outreach
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Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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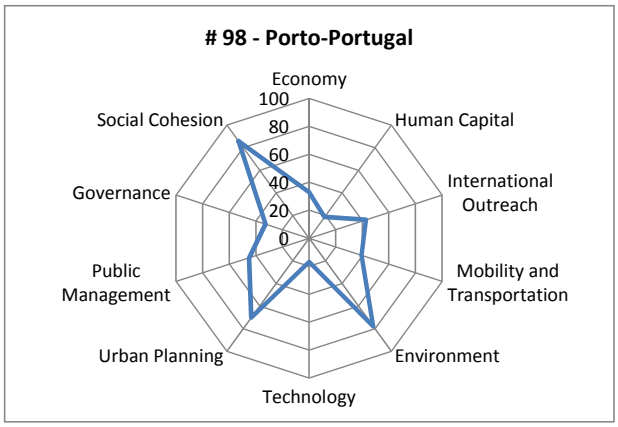
98 - Porto-Portugal
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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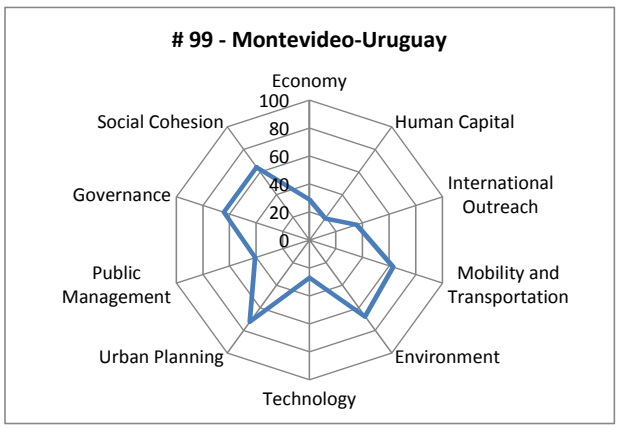
99 - Montevideo-Uruguay
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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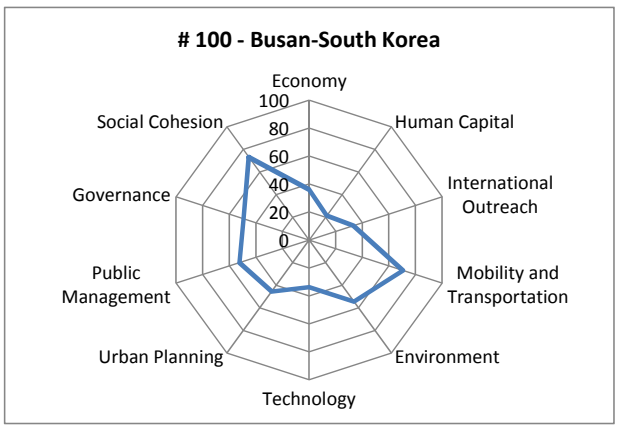
100 - Busan-South Korea
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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101 - São Paulo-Brazil
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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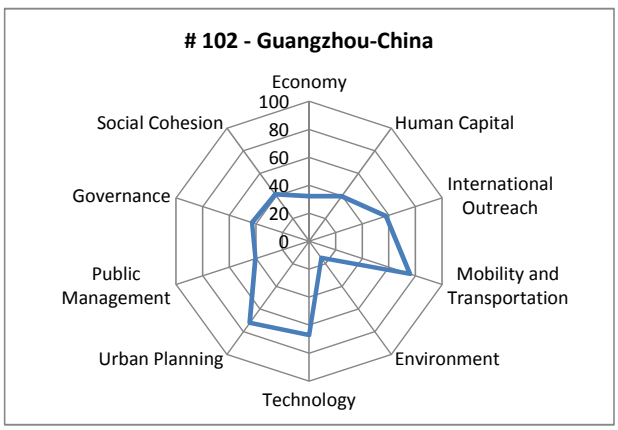
102 - Guangzhou-China
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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103 - St Petersburg-Russia
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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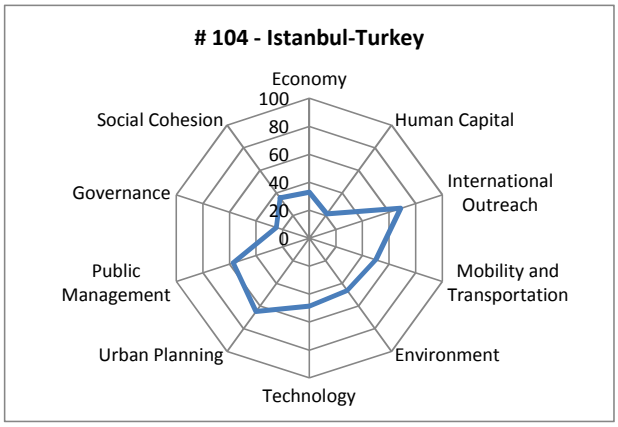
104 - Istanbul-Turkey
Economy
Human Capital
International Outreach
Mobility and Transportation
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Technology
Urban Planning
Public Management
Governance
Social Cohesion
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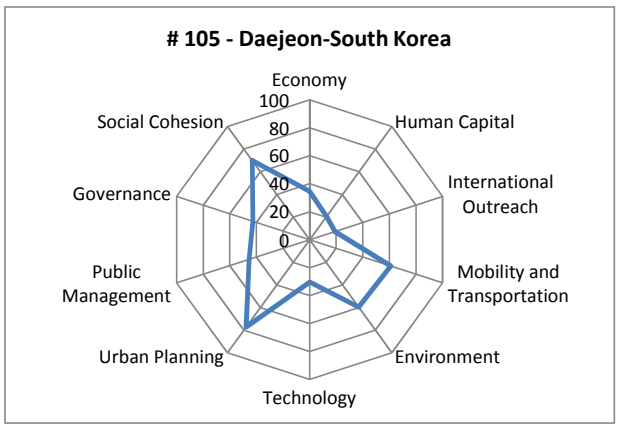
105 - Daejeon-South Korea
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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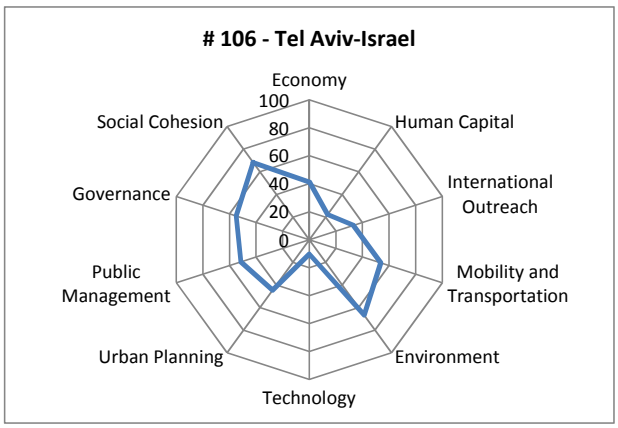
106 - Tel Aviv-Israel
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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107 - Córdoba-Argentina
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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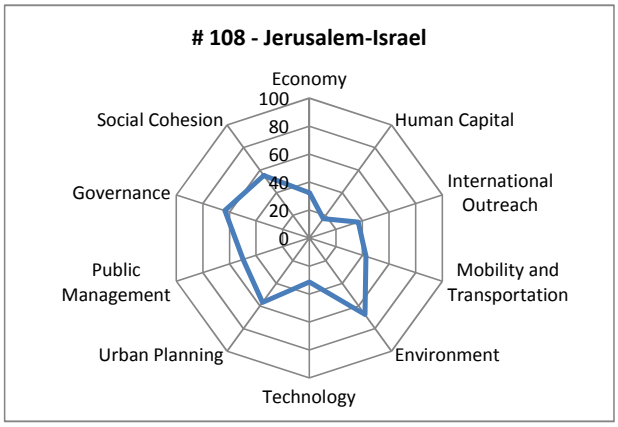
108 - Jerusalem-Israel
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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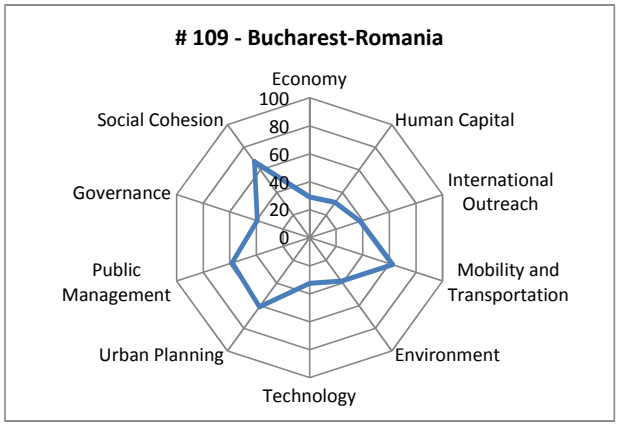
109 - Bucharest-Romania
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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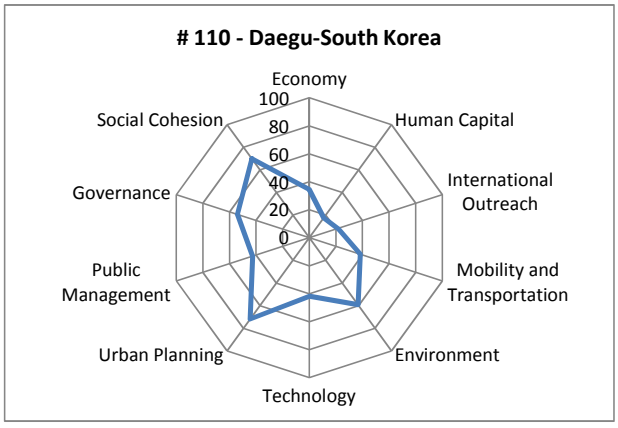
110 - Daegu-South Korea
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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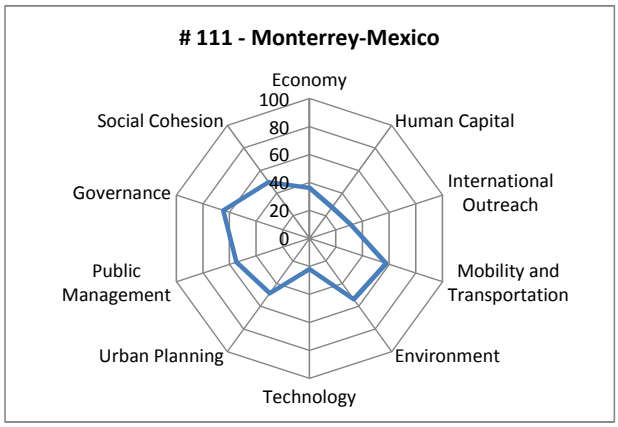
111 - Monterrey-Mexico
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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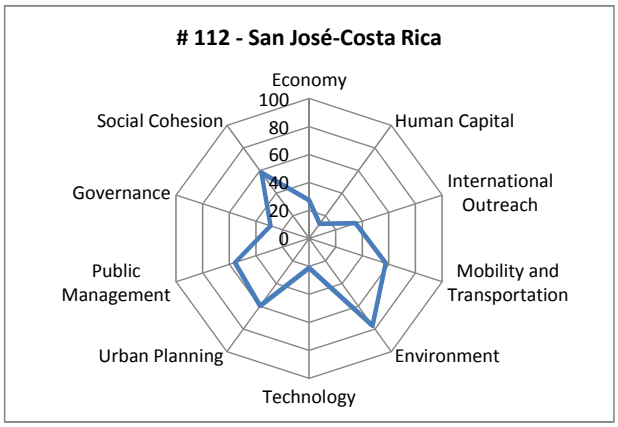
112 - San José-Costa Rica
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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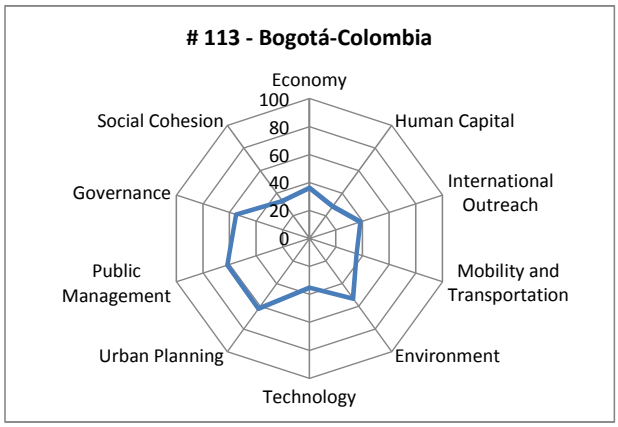
113 - Bogotá-Colombia
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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114 - Rio de Janeiro-Brazil
Economy
Human Capital
International Outreach
Mobility and Transportation
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Technology
Urban Planning
Public Management
Governance
Social Cohesion
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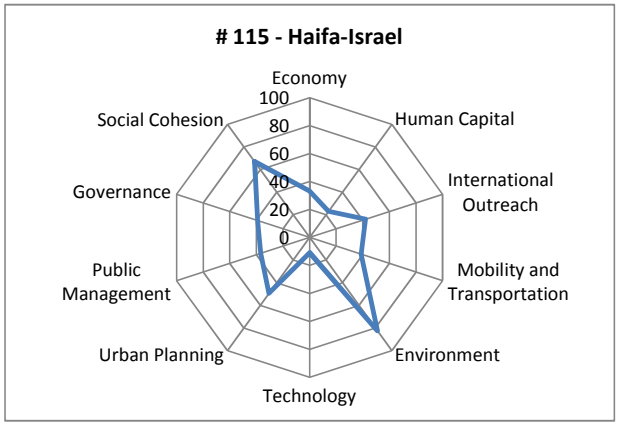
115 - Haifa-Israel
Economy
Human Capital
International Outreach
Mobility and Transportation
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Technology
Urban Planning
Public Management
Governance
Social Cohesion
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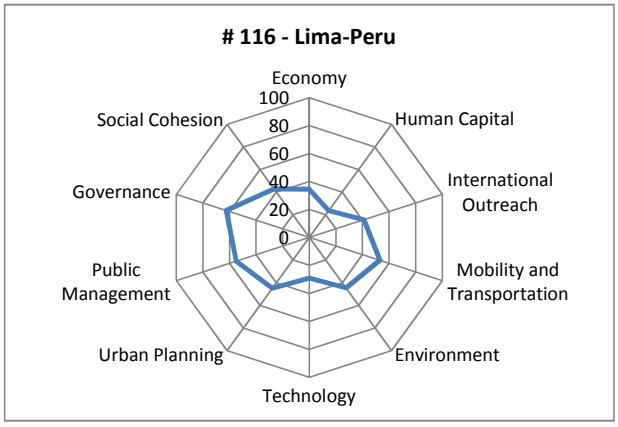
116 - Lima-Peru
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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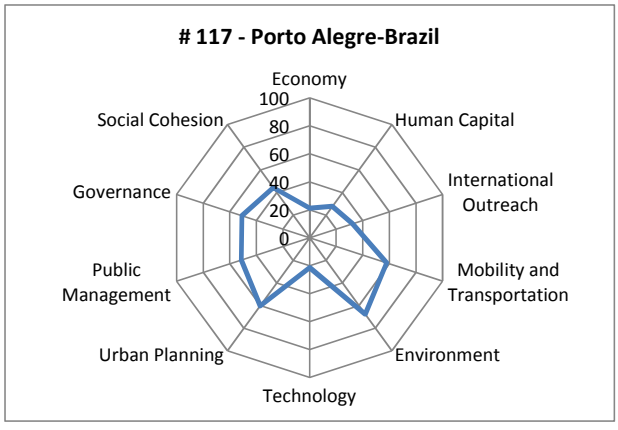
117 - Porto Alegre-Brazil
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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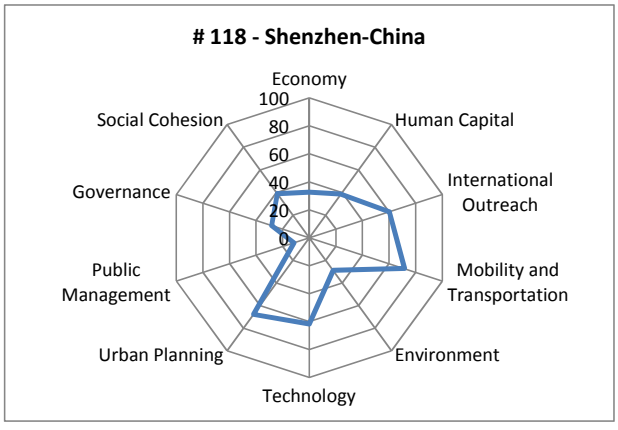
118 - Shenzhen-China
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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119 - Kiev-Ukraine
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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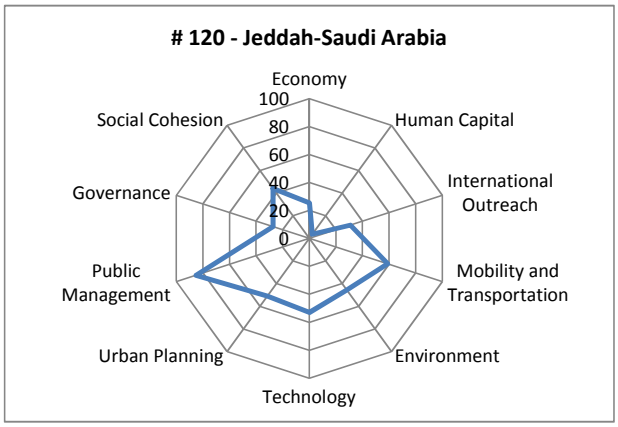
120 - Jeddah-Saudi Arabia
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
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Urban Planning
Public Management
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Social Cohesion
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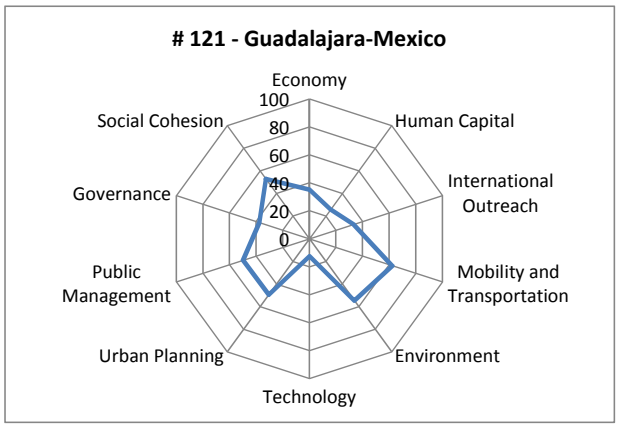
121 - Guadalajara-Mexico
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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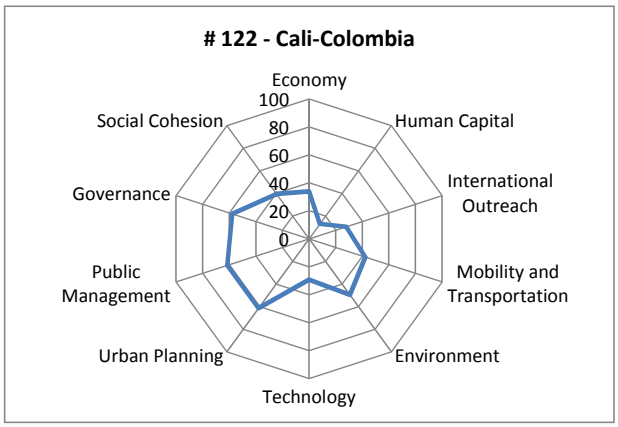
122 - Cali-Colombia
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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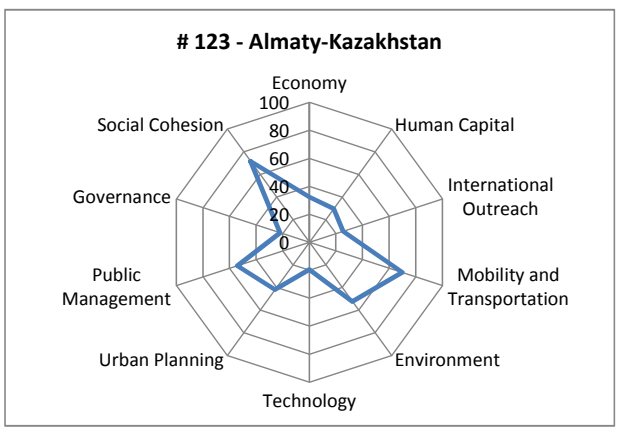
123 - Almaty-Kazakhstan
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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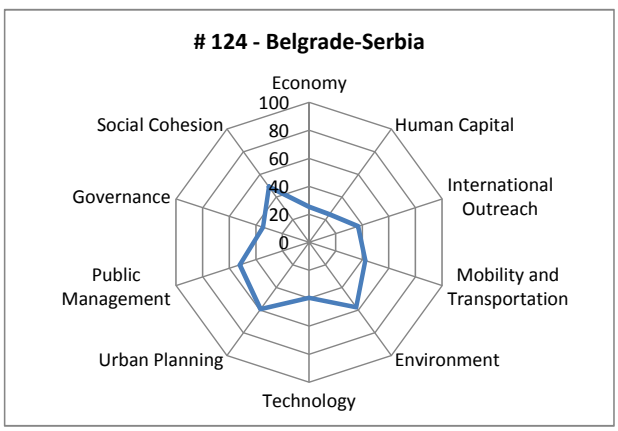
124 - Belgrade-Serbia
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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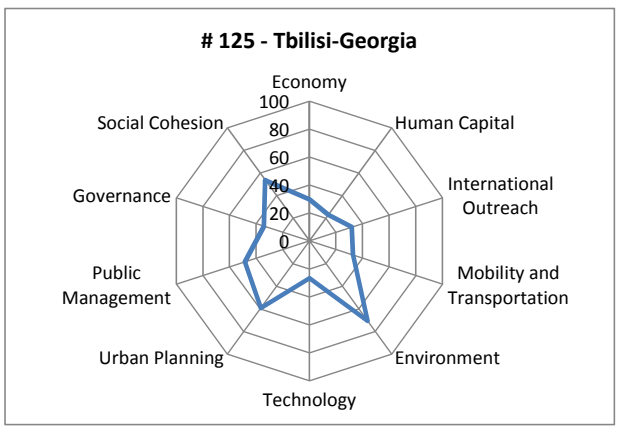
125 - Tbilisi-Georgia
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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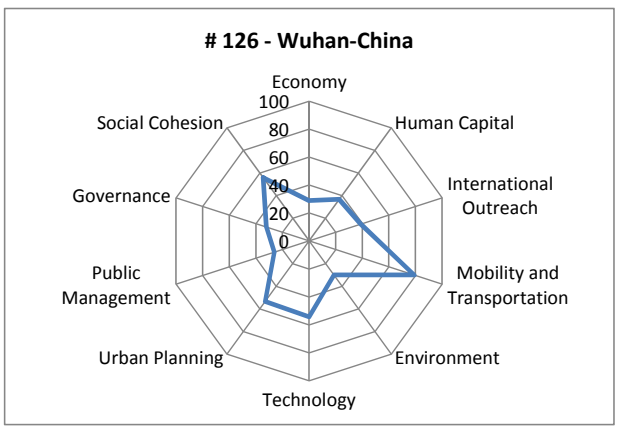
126 - Wuhan-China
Economy
Human Capital
International Outreach
Mobility and Transportation
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Technology
Urban Planning
Public Management
Governance
Social Cohesion
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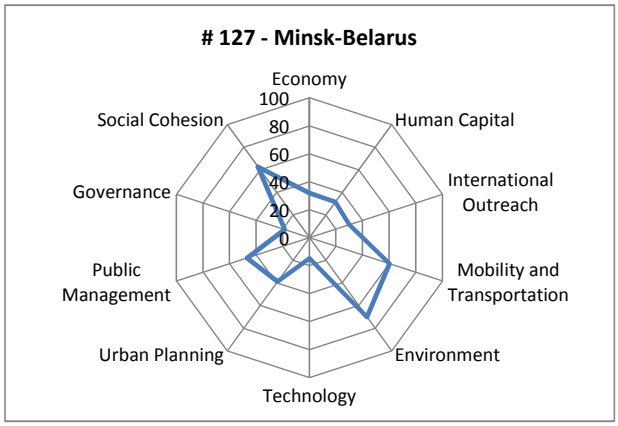
127 - Minsk-Belarus
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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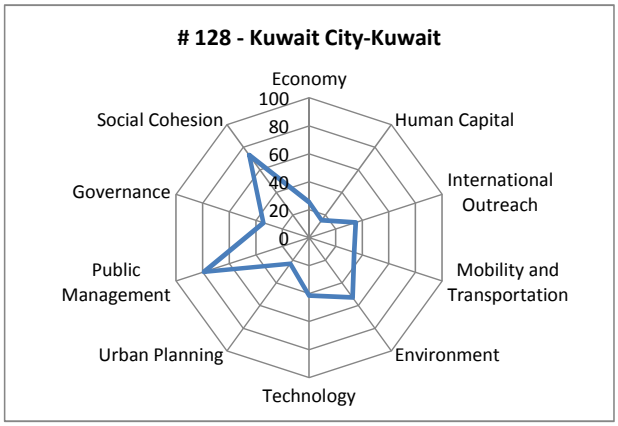
128 - Kuwait City-Kuwait
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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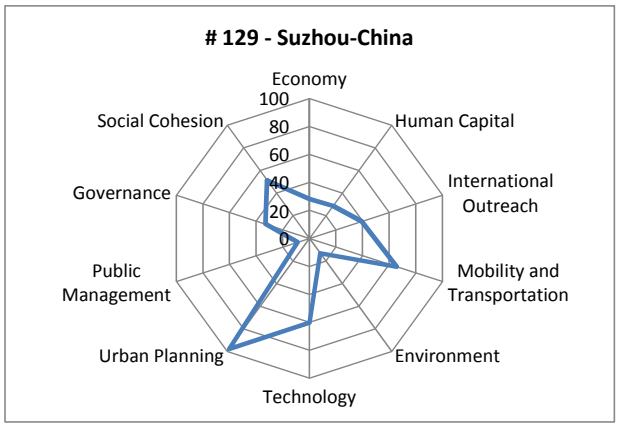
129 - Suzhou-China
Economy
Human Capital
International Outreach
Mobility and Transportation
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Technology
Urban Planning
Public Management
Governance
Social Cohesion
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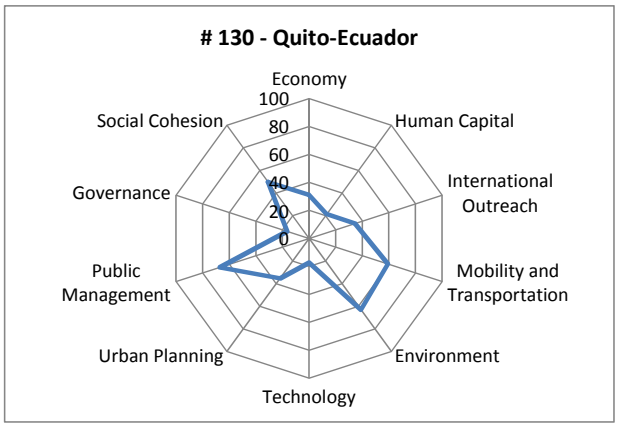
130 - Quito-Ecuador
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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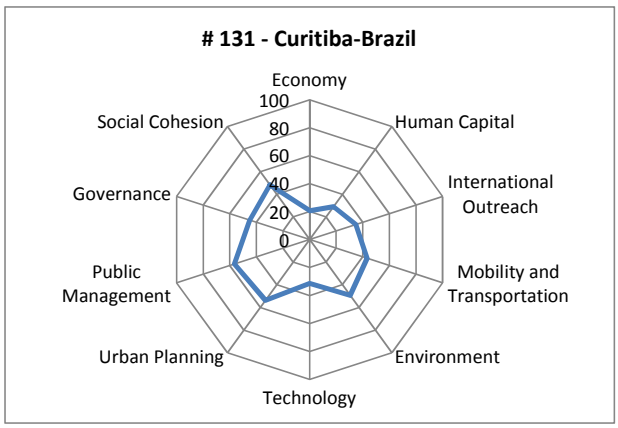
131 - Curitiba-Brazil
Economy
Human Capital
International Outreach
Mobility and Transportation
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Technology
Urban Planning
Public Management
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Social Cohesion
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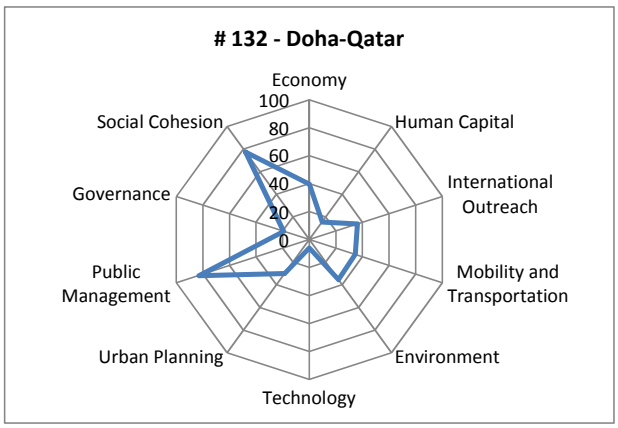
132 - Doha-Qatar
Economy
Human Capital
International Outreach
Mobility and Transportation
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Urban Planning
Public Management
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Social Cohesion
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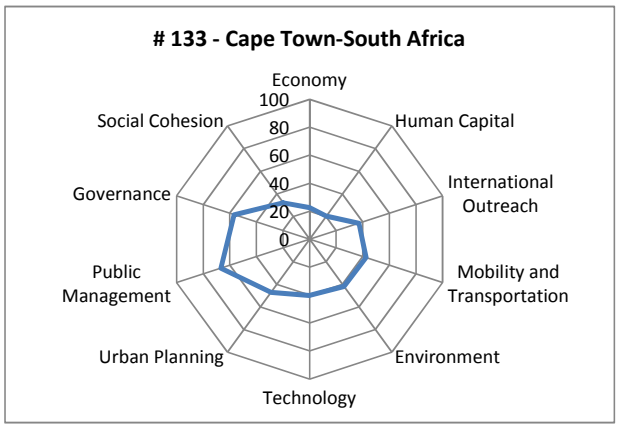
133 - Cape Town-South Africa
Economy
Human Capital
International Outreach
Mobility and Transportation
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Urban Planning
Public Management
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Social Cohesion
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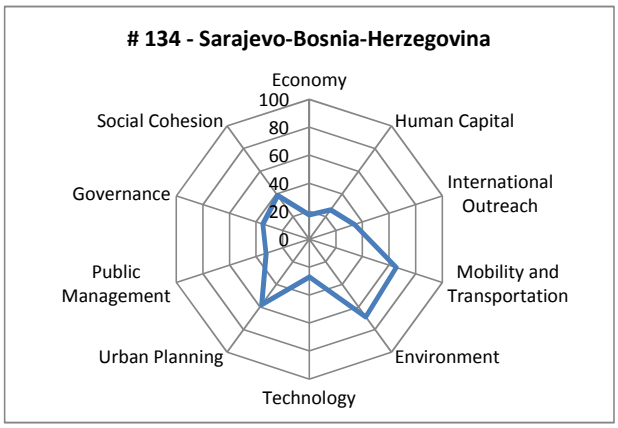
134 - Sarajevo-Bosnia-Herzegovina
Economy
Human Capital
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Mobility and Transportation
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Technology
Urban Planning
Public Management
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Social Cohesion
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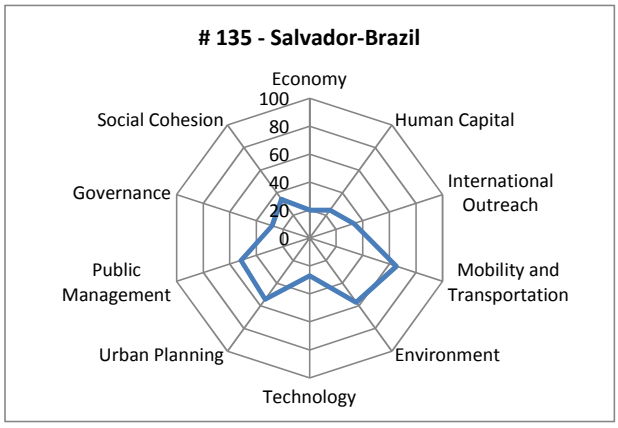
135 - Salvador-Brazil
Economy
Human Capital
International Outreach
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Technology
Urban Planning
Public Management
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Social Cohesion
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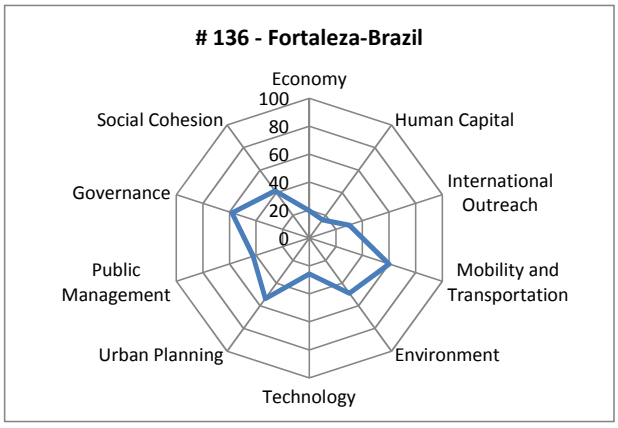
136 - Fortaleza-Brazil
Economy
Human Capital
International Outreach
Mobility and Transportation
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Technology
Urban Planning
Public Management
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Social Cohesion
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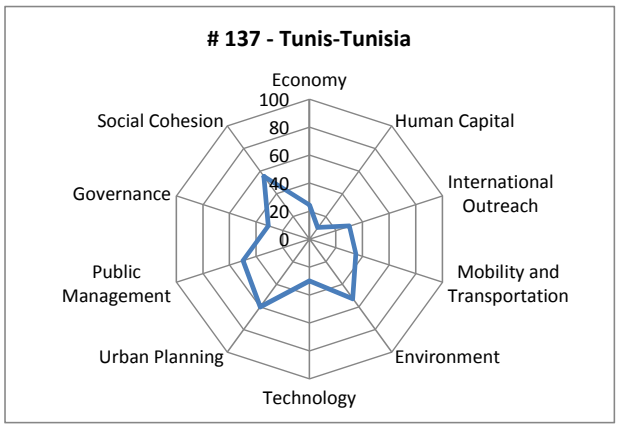
137 - Tunis-Tunisia
Economy
Human Capital
International Outreach
Mobility and Transportation
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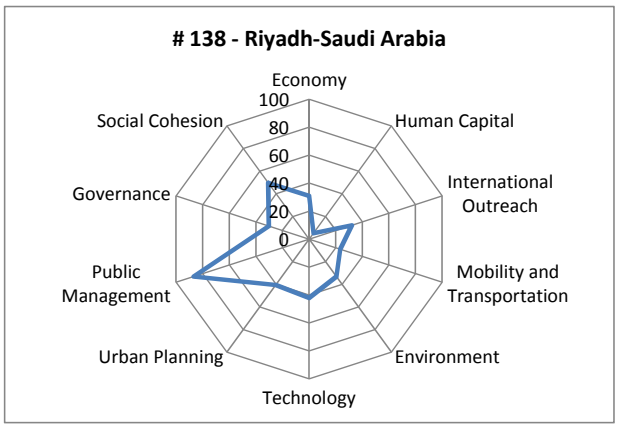
138 - Riyadh-Saudi Arabia
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
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Social Cohesion
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139 - Rosario-Argentina
Economy
Human Capital
International Outreach
Mobility and Transportation
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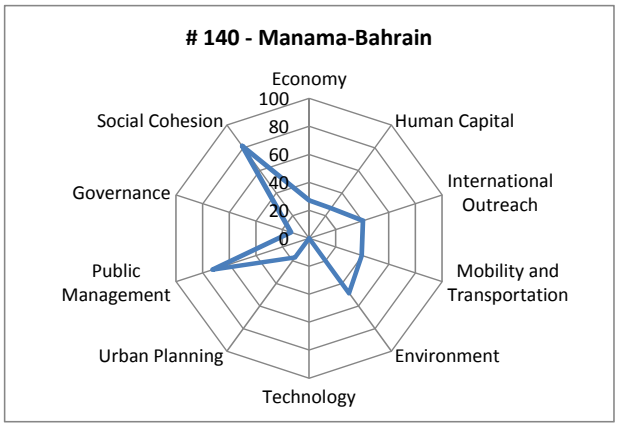
140 - Manama-Bahrain
Economy
Human Capital
International Outreach
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Urban Planning
Public Management
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Social Cohesion
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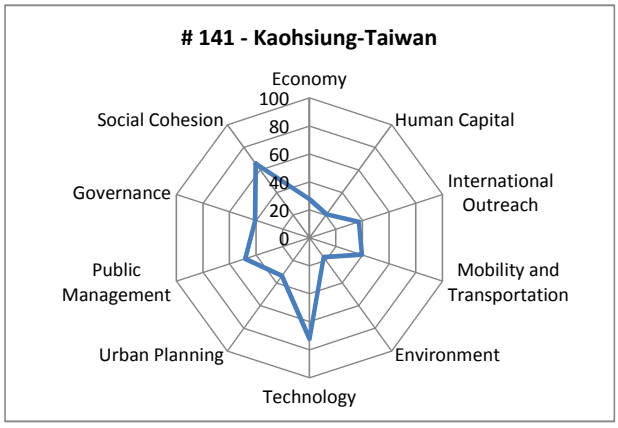
141 - Kaohsiung-Taiwan
Economy
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Urban Planning
Public Management
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Social Cohesion
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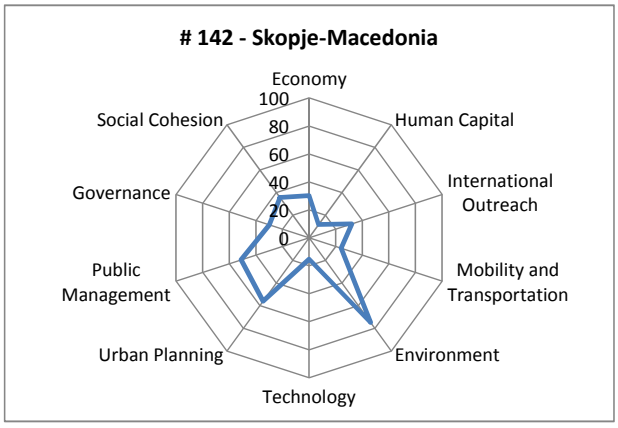
142 - Skopje-Macedonia
Economy
Human Capital
International Outreach
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Urban Planning
Public Management
Governance
Social Cohesion
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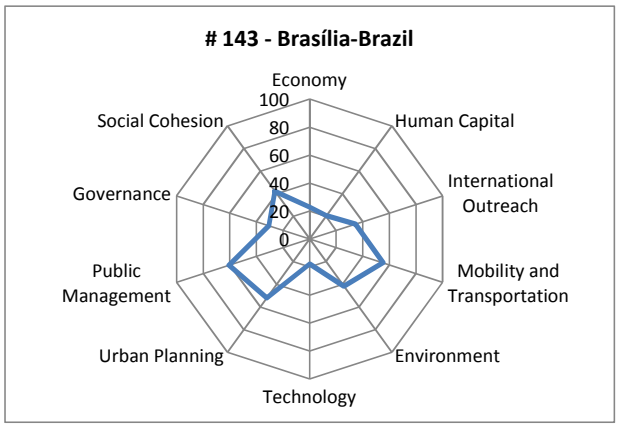
143 - Brasília-Brazil
Economy
Human Capital
International Outreach
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Urban Planning
Public Management
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Social Cohesion
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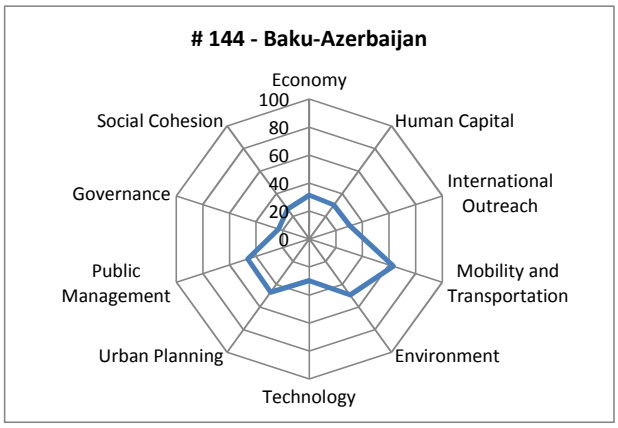
144 - Baku-Azerbaijan
Economy
Human Capital
International Outreach
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Social Cohesion
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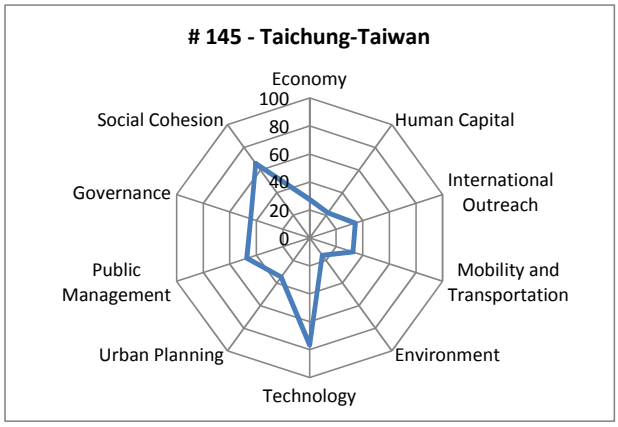
145 - Taichung-Taiwan
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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146 - Ho Chi Minh City-Vietnam
Economy
Human Capital
International Outreach
Mobility and Transportation
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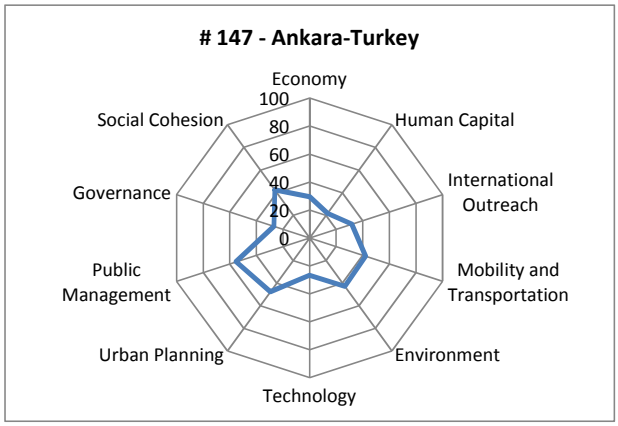
147 - Ankara-Turkey
Economy
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Urban Planning
Public Management
Governance
Social Cohesion
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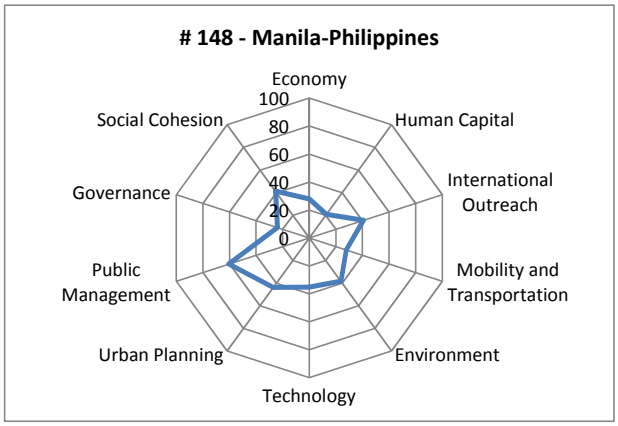
148 - Manila-Philippines
Economy
Human Capital
International Outreach
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Urban Planning
Public Management
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Social Cohesion
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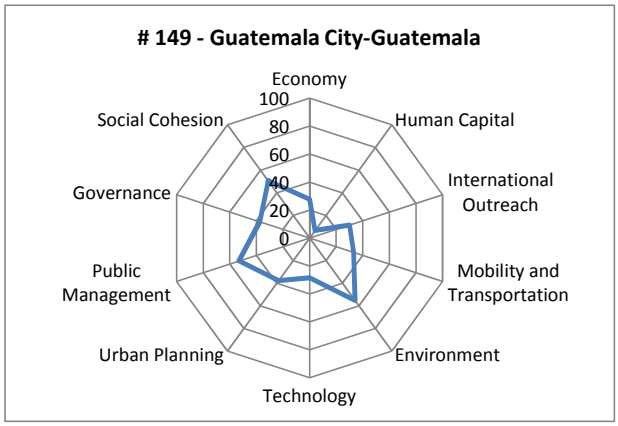
149 - Guatemala City-Guatemala
Economy
Human Capital
International Outreach
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Public Management
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Social Cohesion
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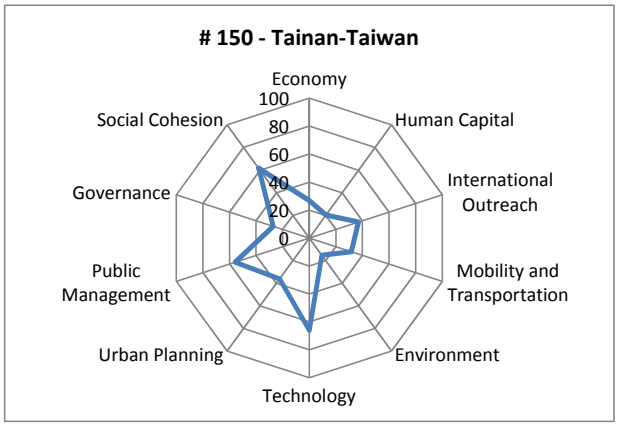
150 - Tainan-Taiwan
Economy
Human Capital
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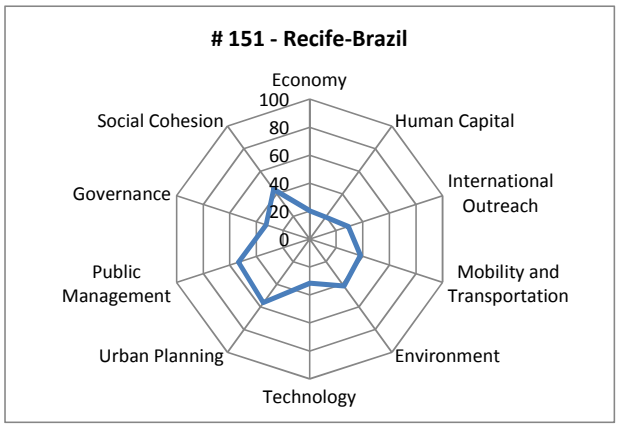
151 - Recife-Brazil
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
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Social Cohesion
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152 - Novosibirsk-Russia
Economy
Human Capital
International Outreach
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Technology
Urban Planning
Public Management
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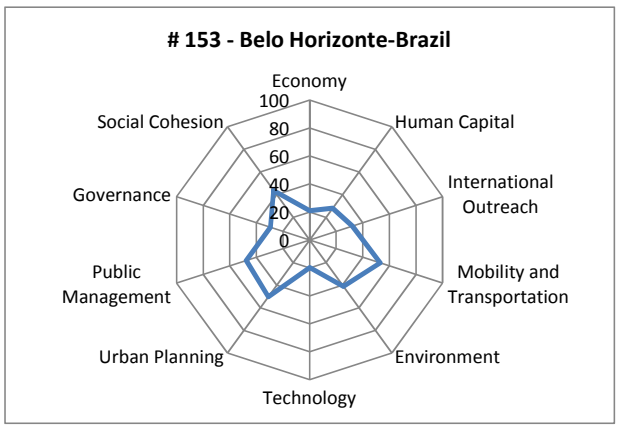
153 - Belo Horizonte-Brazil
Economy
Human Capital
International Outreach
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Urban Planning
Public Management
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Social Cohesion
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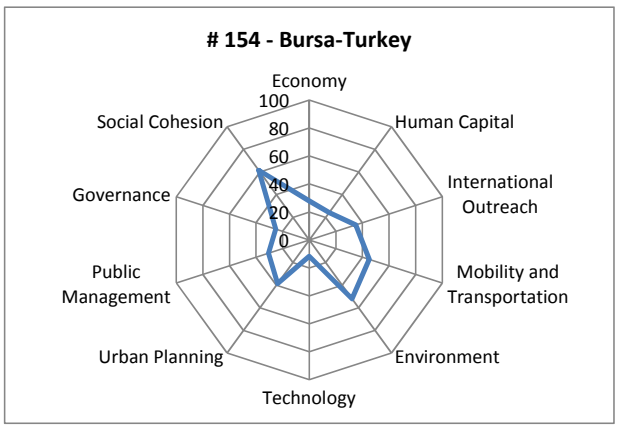
154 - Bursa-Turkey
Economy
Human Capital
International Outreach
Mobility and Transportation
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Urban Planning
Public Management
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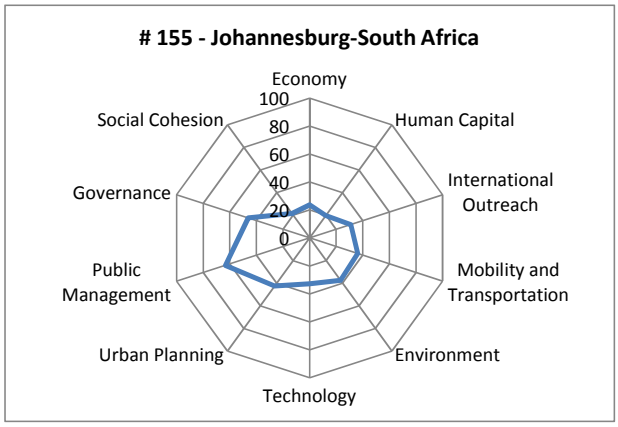
155 - Johannesburg-South Africa
Economy
Human Capital
International Outreach
Mobility and Transportation
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Technology
Urban Planning
Public Management
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156 - Jakarta-Indonesia
Economy
Human Capital
International Outreach
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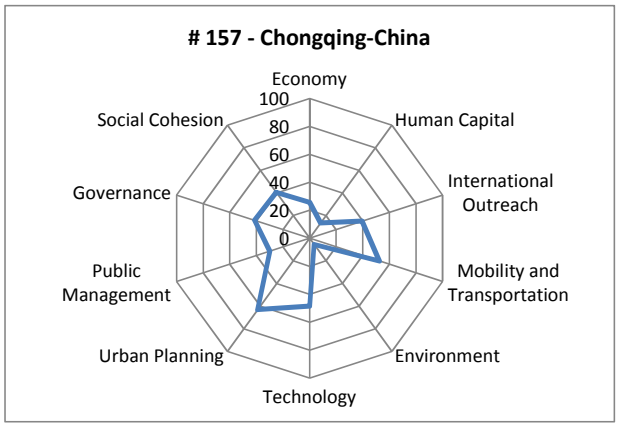
157 - Chongqing-China
Economy
Human Capital
International Outreach
Mobility and Transportation
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Public Management
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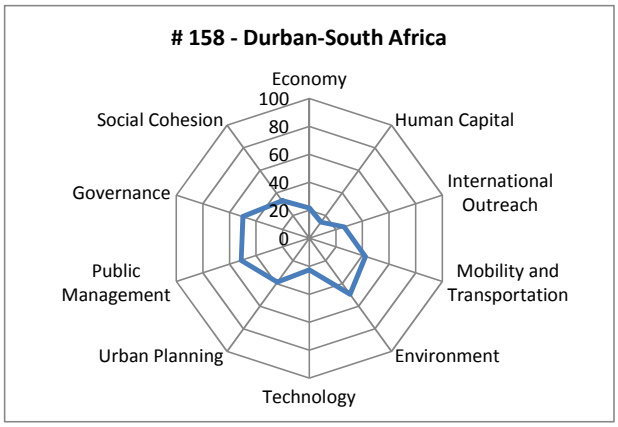
158 - Durban-South Africa
Economy
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International Outreach
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Urban Planning
Public Management
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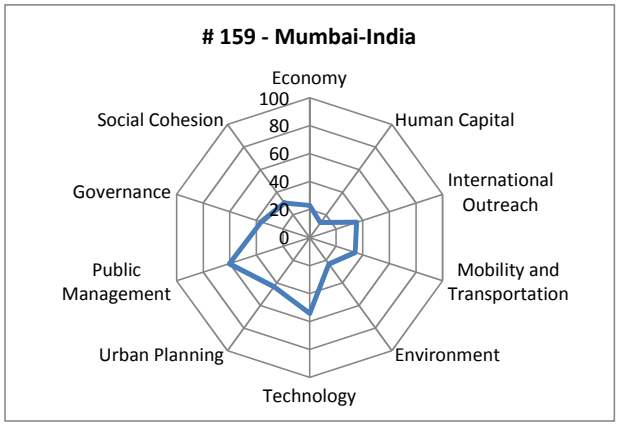
159 - Mumbai-India
Economy
Human Capital
International Outreach
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Technology
Urban Planning
Public Management
Governance
Social Cohesion
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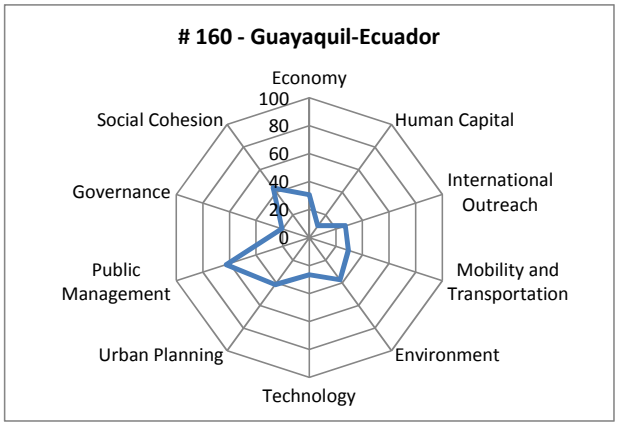
160 - Guayaquil-Ecuador
Economy
Human Capital
International Outreach
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Technology
Urban Planning
Public Management
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Social Cohesion
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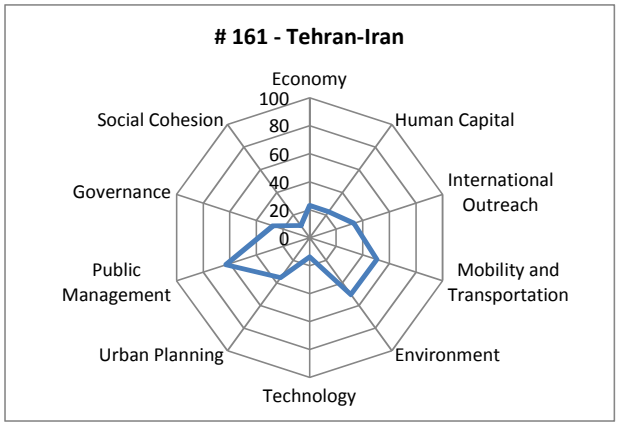
161 - Tehran-Iran
Economy
Human Capital
International Outreach
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Technology
Urban Planning
Public Management
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Social Cohesion
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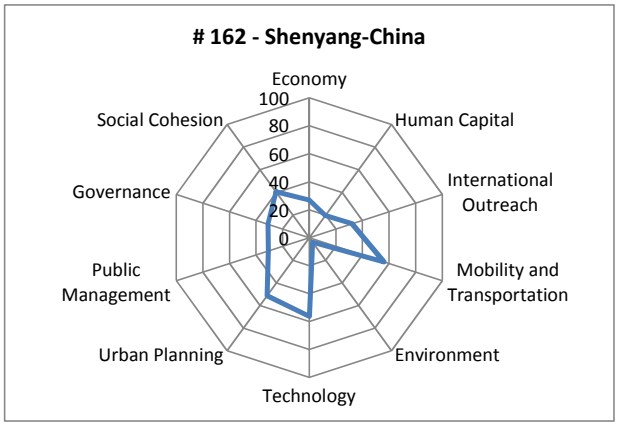
162 - Shenyang-China
Economy
Human Capital
International Outreach
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Technology
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Public Management
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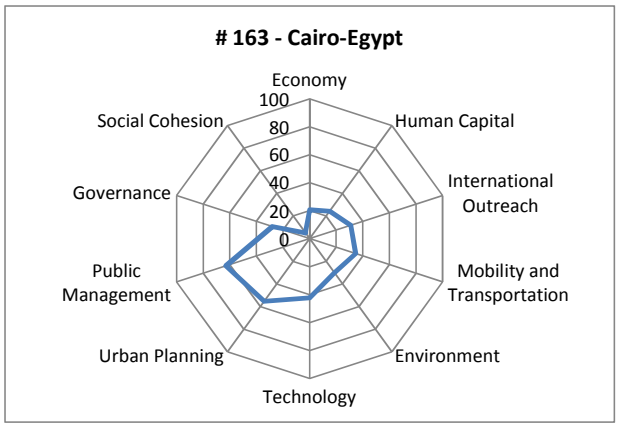
163 - Cairo-Egypt
Economy
Human Capital
International Outreach
Mobility and Transportation
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Technology
Urban Planning
Public Management
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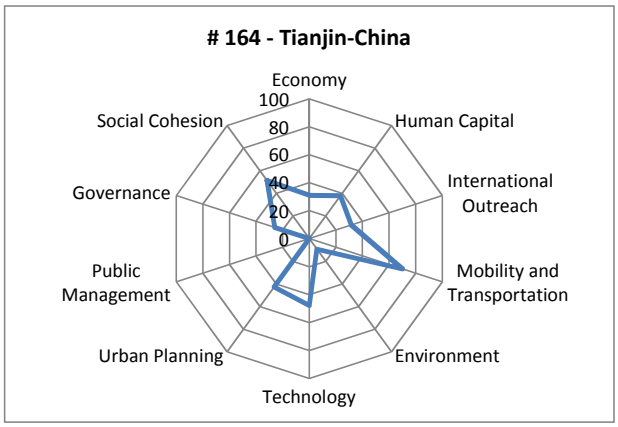
164 - Tianjin-China
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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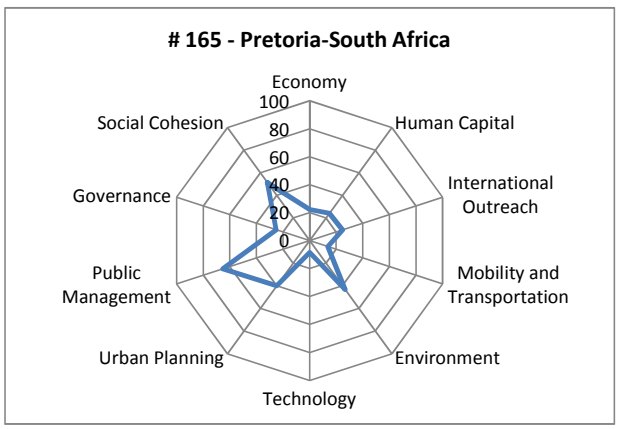
165 - Pretoria-South Africa
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
100
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166 - Alexandria-Egypt
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
100
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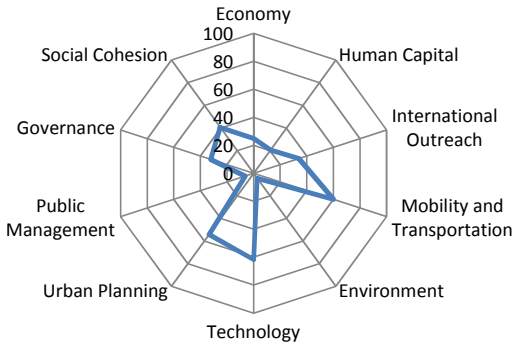
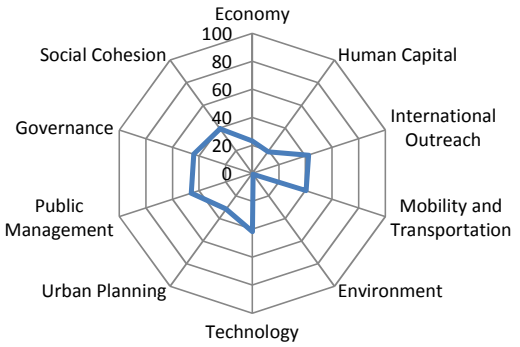
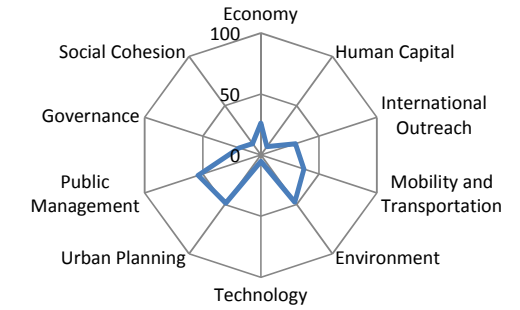
 # 167 - Harbin-China



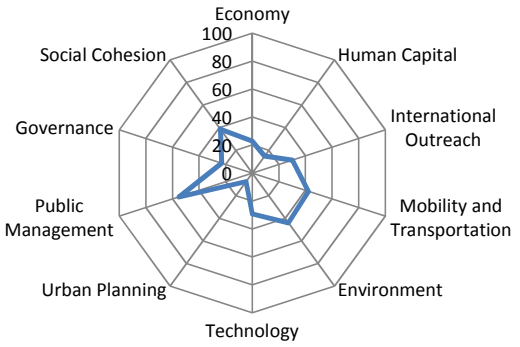
 # 168 - Delhi-India



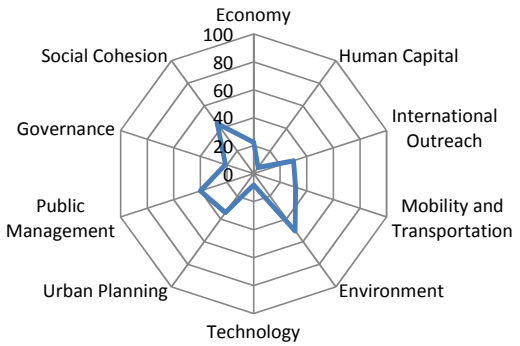
 # 169 - Santo Domingo-Dominican Republic



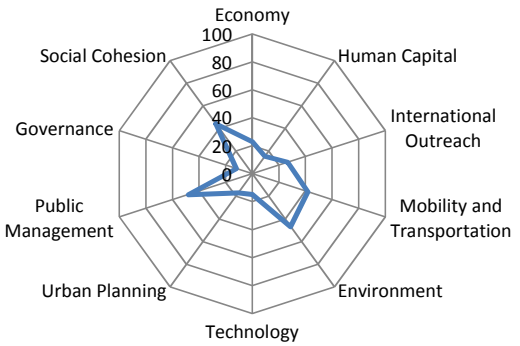
 # 170 - La Paz-Bolivia



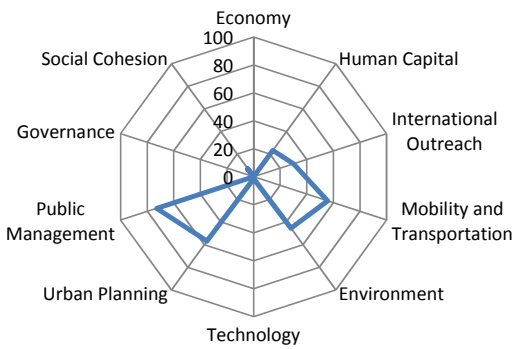
 # 171 - Casablanca-Morocco



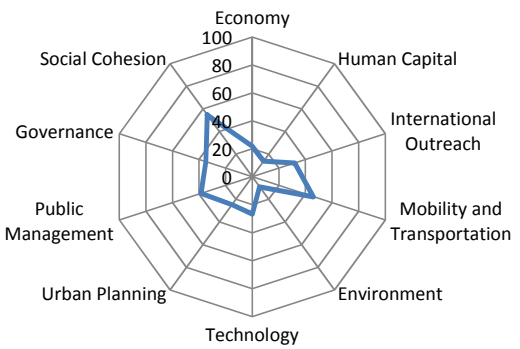
 # 172 - Santa Cruz-Bolivia

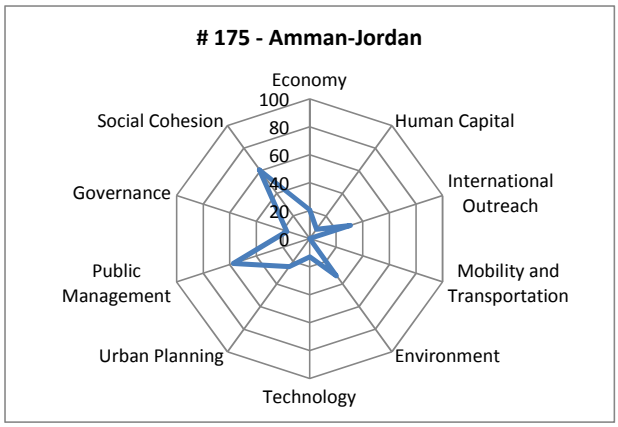


 # 173 - Caracas-Venezuela



 # 174 - Bangalore-India




175 - Amman-Jordan
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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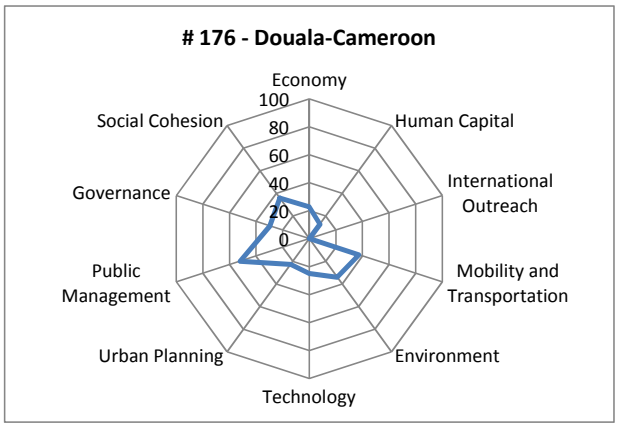
176 - Douala-Cameroon
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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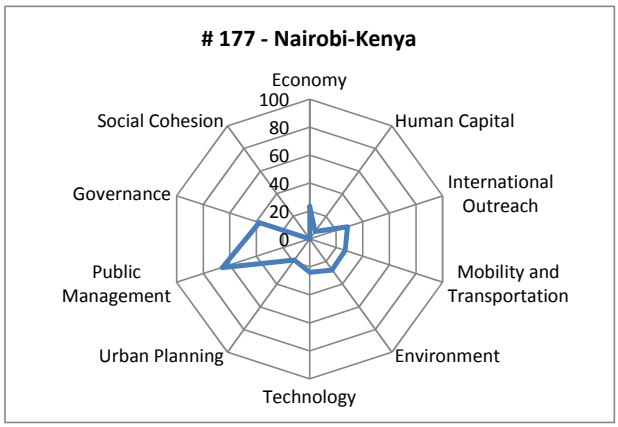
177 - Nairobi-Kenya
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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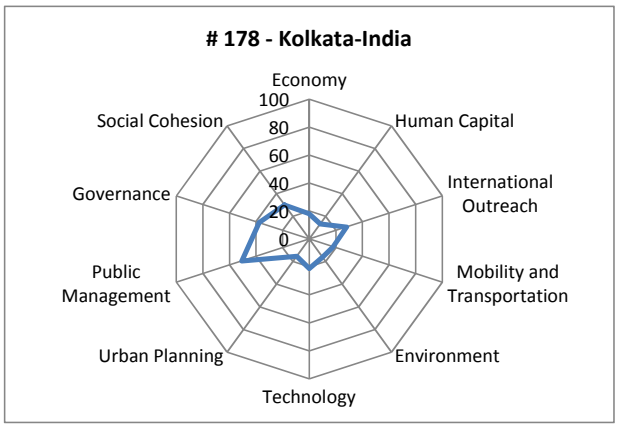
178 - Kolkata-India
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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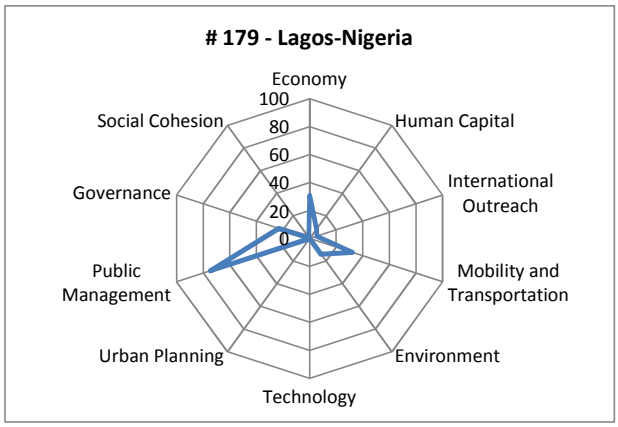
179 - Lagos-Nigeria
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
Urban Planning
Public Management
Governance
Social Cohesion
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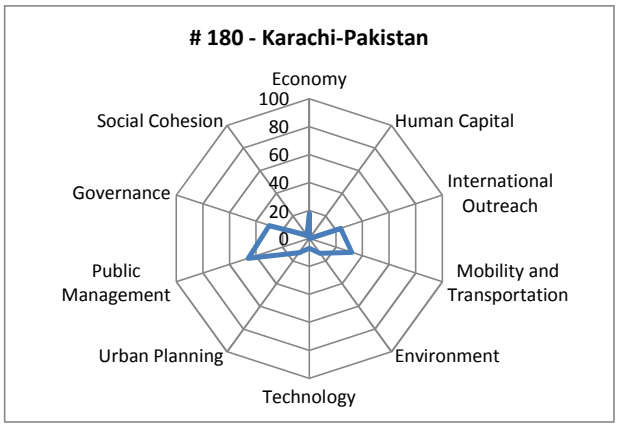
180 - Karachi-Pakistan
Economy
Human Capital
International Outreach
Mobility and Transportation
Environment
Technology
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Governance
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