

IESE Cities in Motion Index

2022



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Motion

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CONTENTS

Foreword	05
About Us	08
Working Team	08
Introduction: The Need for a Global Vision	09
Our Model: Cities in Motion—Conceptual Framework, Definitions and Indicators	11
Limitations of the Indicators	23
Geographic Coverage	23
Cities in Motion: Ranking	26
Cities in Motion: Ranking by Dimension	28
Cities in Motion: Regional Distribution	40
Cities in Motion: Regional Ranking	43
Stand-Out Cities	51
Cities in Motion: Evolution	64
Cities in Motion Versus Other Indexes	67
Cities in Motion: City Ranking by Population Size	68
Cities in Motion: Analysis of Dimensions in Pairs	72
Cities in Motion: A Dynamic Analysis	79
Recommendations and Conclusions	81
Appendix 1. Indicators	83
Appendix 2. Graphical Analysis of the Profiles of the 183 Cities	90

Foreword

We are pleased to present the eighth edition of the Cities in Motion Index (**CIMI**) for the year 2022. Last year, for the first time in our history, we were unable to publish our ranking. This was because one of our main data providers decided to change its data collection methodology. Combined with the effects of the COVID-19 pandemic, this change made it impossible for us to evaluate the new information satisfactorily. With these issues now resolved, we present this new edition of the **CIMI**, which once again aims to evaluate a selection of cities in relation to what we consider nine key dimensions: economy, human capital, technology, environment, international profile, social cohesion, mobility and transportation, governance and urban planning.

In addition to long-standing challenges facing cities, including aging populations, heterogeneous social demands, the digital divide, and environmental problems (energy inefficiency, waste management and pollution), there are now new challenges arising from the recent pandemic and the economic and social consequences of the war in Ukraine (unemployment, inflation, segregation, migration and poverty). The scope and magnitude of these issues pose new challenges for the sustainability of cities. In this context, the concept of *urban resilience* (i.e., the ability of cities to overcome adverse circumstances) seems more important than ever.

To meet these challenges, all the world's cities need to undertake a process of strategic review and consider what kind of cities they want to be, what their priorities will be going forward, and where they currently stand. Our index aims to offer a platform for comprehensive initial diagnosis of the cities considered and, through comparative analysis, serve as a first point of reference for other cities.

As in previous editions, we have taken on the challenge of creating an index of cities that is superior to existing ones—one that is objective, broad in its scope and coverage, and guided by the principles of conceptual relevance and statistical rigor. Previous editions of the index had a major media impact and were very well received in various forums related to city management. This positive response has encouraged us to continue working to improve it. In our presentations, we receive many recommendations and suggestions, and we have tried to take such input into account in this new edition. The most significant changes in this year's index include the following:

- **Greater geographic coverage.** We have increased the number of cities included in the ranking by nine (5%) with respect to the 2020 edition. The **CIMI** now covers a total of 183 cities (85 of which are capitals), and 92 countries are represented. New cities in Africa, Oceania, the Middle East and the Americas have been included. Thanks to this effort, the **CIMI** is now one of the indexes offering the widest geographic coverage.
- **More indicators.** We have increased the number of indicators that measure the nine relevant dimensions of a city by 11%, to a total of 112. The new indicators are intended to provide a more precise assessment of the situation of the cities included in the **CIMI**.
- **New indicators that reflect the changes cities are undergoing.** New indicators included in this edition include *artificial intelligence projects*, *electric vehicle charging stations*, and *climate vulnerability*. These variables are intended to capture advances and challenges facing 21st-century cities.
- **Combination of objective and subjective indicators.** In making the calculations for our index, we have used quantitative variables that capture both objective and subjective data. This approach enables us to offer a broader vision of cities that takes into account the views of their citizens.

Unlike other editions, where changes of position were due to variations in multiple dimensions, in this edition, the reordering of positions is explained largely by the economy dimension. The pandemic has had a significant impact on both GDP levels and GDP growth prospects and is the main factor behind changes in the rank of individual cities. A case in point is Dublin, which was one of the few cities to experience economic growth in 2020 and is projected to achieve double-digit growth this year. This explains why the Irish capital moved up from 40th place in 2019 to 33rd in 2020 and 18th in 2021.

In light of this factor—and the introduction of new cities and variables, as well as methodological changes—we remind the reader that the rankings for different years are not directly comparable, given that these factors result in variations that do not necessarily reflect the trajectory of cities over time. In order to study the evolution of individual cities, in each edition, we analyze the trend for each one by calculating the index for the last three years, which enables us to make more meaningful comparisons.

It is also important to bear in mind limitations related to the data used. One problem is that some indicators are only available at the country level and must be considered approximate at the city level. In addition, there are variables that may underestimate the impact of a given dimension due to regulatory issues or specific factors that come into play in a particular city. The variables are intended as an approximation of the reality of cities; in no case do they fully capture their multidimensionality and complexity. Caution should therefore be exercised when interpreting the results of this report.

This year, we will once again make the **CIMI Calculator** available on our website. The calculator allows users to enter the data for any city (for the variables included in this index) and shows the position the city would occupy in the ranking based on this input. This practical tool is useful both for cities that are already included in the ranking and wish to see what changes occur with more up-to-date variable values and for those that are not included in the **CIMI** but would like to see where they would rank. The new version of the calculator will be available shortly on our website.

We would also like to inform our readers that the work of the IESE Cities in Motion platform has not been limited to ranking cities. We have continued to publish our series of mini-books in English, in which we identify best practices in each dimension of the IESE Cities in Motion model. This year we have published two new volumes on urban technology and others on city governance, in addition to the volumes on the environment, mobility and transportation, economics, social cohesion and international profile. All these books are available on Amazon. The collection will soon be expanded with a volume on best practices in urban planning.

We are also continuing our work on a series of academic articles. This year we have published a study in the prestigious international academic journal *Research Policy*, where we evaluate the conditions under which digital platforms can successfully deliver their stakeholder value propositions in cities. We have also published a study in the journal *Business Research Quarterly*, in which we discuss the importance of smart governance in achieving the UN's Sustainable Development Goals (SDGs) in 128 cities. Finally, we have published the results of another study on present and future mobility in Europe in the journal *Papeles de Economía Española*, in which we discuss challenges and possible courses of action as regards European transportation and mobility. These studies are in addition to those previously published in prestigious international journals such as *Strategy Science*, *Academy of Management Discoveries*, *Academy of Management Journal*, *California Management Review* and *Harvard Deusto Business Review*. We also invite readers to browse our collection of case studies on cities at the IESE Insight Knowledge Portal (www.iesepublishing.com). This teaching material has enabled us to strengthen our courses related to cities in both IESE programs and those delivered in collaboration with other schools and institutions.

We hope that this report will be useful for mayors, city managers, and all stakeholders whose aim is to improve the quality of life of citizens, as well as to companies involved in urban solutions, given that internationalization strategies are increasingly defined at the city rather than the country level.

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

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About Us

IESE Cities in Motion 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 on cities and specialized private companies with local governments around the world. Our goal is to promote changes at the local level and develop valuable ideas and innovative tools to make cities more sustainable and smarter.

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

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ment, mobility and transportation, urban planning, international profile and technology. All of the indicators come together around a strategic purpose, leading to a different kind of economic and social development that entails the creation of a global city and the promotion of entrepreneurship, innovation and social justice, among other outcomes.

Each city is unique and inimitable. Each has its own needs and opportunities. Cities must therefore design their own plan, set their own priorities, and be flexible enough to adapt to changes.

Smart cities generate numerous business opportunities and possibilities for public-private sector collaboration. All stakeholders have a role to play, so a networked ecosystem that involves all of them—citizens, organizations, institutions, governments, universities, companies, experts, research centers and non-profit entities—must be developed.

Working within a network has certain advantages. Such an approach makes it possible to better identify the needs of a city and its residents, set common goals, ensure ongoing communication among participants, increase learning opportunities, strengthen transparency, and apply more flexible public policies.

Private enterprise also has much to gain from a networked system of this kind, which enables private actors to engage in long-term collaboration with public authorities, access new business opportunities, better understand the needs of the local ecosystem, increase their international visibility, and attract talent.

Thanks to its technical expertise and experience in project management, private enterprise (in collaboration with universities and other institutions) is ideally suited to lead and carry out smart city projects. Private-sector actors can help public-private entities achieve greater efficiency and significant savings.

Finally, we must not overlook the key role that the human factor plays in the development of cities. In the absence of an active, participatory society, any strategy, however smart and comprehensive, will be doomed to failure. Beyond technological and economic development, it is citizens who hold the key to making cities progress from being “smart” to being “wise.” This is precisely the goal that every city should pursue—to get local residents and leaders to deploy all their talents in the pursuit of progress.

To help cities identify effective solutions, we have created an index that integrates nine dimensions into a single indicator and covers 183 cities around the world. Thanks to its broad, integrated vision, the **CIMI** makes it possible to identify the strengths and weaknesses of each city.



9 DIMENSIONS



92 COUNTRIES



183 CITIES



85 CAPITALS

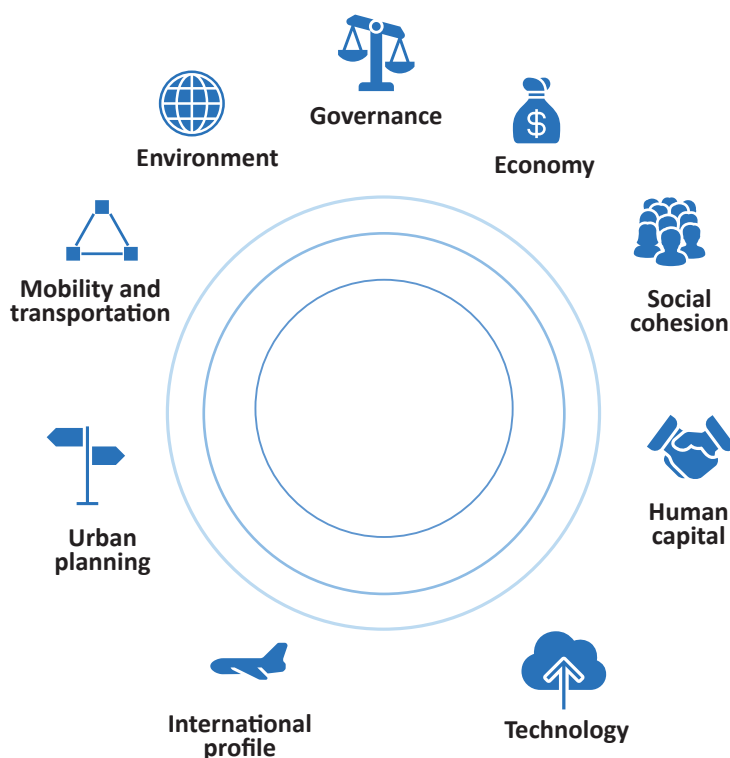


114 INDICATORS

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 in-depth interviews with city leaders, business people, academics and experts involved in city development.

The model proposes a set of steps that span diagnosis of the existing situation, the development of a strategy, and its subsequent implementation. The first step in making a good diagnosis is to analyze the situation with respect to the key dimensions. In the following sections, we will describe each of these dimensions and the indicators used to calculate the **CIMI**.



Human capital

The main objective 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 fostering creativity and research.

Table 1 shows the indicators used for the human capital dimension, a description of each one, the units of measurement, and the information sources used.

Although human capital includes factors that make it broader than what can be measured using these indicators, there is an international consensus that level of education and access to culture are essential components for measuring it. One of the pillars of human development is this capital. Moreover, given that the Human Development Index (HDI), published annually by the United Nations Development Program (UNDP), includes education and culture as dimensions, there is a sound basis for taking these indicators as explanatory of differences in a city’s human capital.

To define this dimension, the **CIMI** includes the 10 variables listed in **Table 1**. Most of the variables are incorporated into the index with a positive sign due to their contribution to the development of human capital. Private expenditure on education per capita is an exception.

To measure access to culture, the number of museums, art galleries and theaters, as well as consumer expenditure on leisure and recreation, are considered. These indicators reflect a city’s commitment to culture and human capital. Cities that are considered creative and dynamic on a global scale typically have museums and art galleries that are open to the public, offer visits to art collections, and take action to conserve such collections. The presence of cultural and recreational offerings in a city increases spending on these activities by the population.

Finally, expenditure on education per capita represents what each citizen pays to attain an adequate level of education. A high figure indicates that state expenditure on education is insufficient, and that citizens must therefore bear this cost to attain an adequate education. That is why this variable is included with a negative sign.



Social cohesion

In recent decades, rapid urbanization has led to segregation of social groups, with little or no social mixing. This pattern of urbanization has negative impacts on urban areas, leading to social fragmentation in cities.

This phenomenon is more evident in urban settings in developing countries, where the division built into the spatial configuration of cities is immediately apparent. However, it is also becoming a major challenge in urban areas of developed countries, where social and economic differences are accentuated by social conflicts.

Table 1. Human Capital Indicators

No.	Indicator	Description / Unit of measurement	Source
1	Secondary and higher education	Proportion of population with secondary and higher education.	Euromonitor
2	Schools	Number of public and private schools in a city.	OpenStreetMap
3	Business schools	Number of business schools in the city included in the <i>Financial Times</i> TOP 100.	<i>Financial Times</i>
4	Expenditure on education	Annual private expenditure on education per capita.	Euromonitor
5	Expenditure on leisure and recreation	Consumer expenditure on leisure and recreation as a percentage of GDP.	Euromonitor
6	Expenditure on leisure and recreation per capita	Annual consumer expenditure on leisure and recreation per capita.	Euromonitor
7	Student mobility	International flow of mobile students at the tertiary level. Number of students.	UNESCO
8	Museums and art galleries	Number of museums and art galleries in a city.	OpenStreetMap
9	Number of universities	Number of TOP 500 universities.	QS Top Universities
10	Theaters	Number of theaters in a city.	OpenStreetMap

With the COVID-19 pandemic, these differences have become even more pronounced and have particularly affected the most vulnerable people in urban areas. Many cities measure their intelligence only in terms of technological advances. However, the number of cities that include social cohesion as a key element for their development is growing. In their smart city strategies, cities such as New York and Tokyo have included concrete actions that allow them to be inclusive, taking into account the diversity of citizens and the needs of each social group.

Social cohesion is a sociological dimension of cities that can be defined as “the degree of consensus of the members of a social group” or “the perception of belonging to a common project or situation.” It is a measure of the intensity of social interaction within a group.

In the urban context, social cohesion refers to the level of social harmony between groups of people who live in the same city but differ in terms of their income, culture, age or occupations. Concern for a city’s social environment requires that we consider factors such as immigration, community development, care for the elderly, health system efficiency, and public safety and inclusion. In the age of COVID-19, particular emphasis is placed on evaluating and measuring the efficiency and universality of health systems, and the hope is that the health crisis has served to better understand the importance of these systems and strengthen them.

The presence of various groups in the same space, and mixing and interaction between them, are essential in a

state in which citizens and the government have a shared vision of a model of society based on social justice, the primacy of the rule of law, and social solidarity. This underscores the importance of policies that promote and strengthen social cohesion based on democratic values.

Table 2 shows the indicators selected to analyze this dimension, a description of each one, the units of measurement, and the information sources used. The selected indicators are intended to incorporate all the sociological sub-dimensions of social cohesion, bearing in mind the variables available.

Within the group of variables used, death rate per 100,000 inhabitants and crime rate are both incorporated with a negative sign when this dimension is generated. The Health Care Index and the number of hospitals (public and private) and health centers in a city are added with a positive sign, given that access and coverage provided by basic social services contribute to strengthening social cohesion.

Employment is fundamental to any society. Indeed, history shows that its scarcity can break the implicit consensus or social contract. The unemployment rate is therefore incorporated with a negative sign in the social cohesion dimension. The rate of female employment in the public sector is incorporated with a positive sign, given that it is an indicator of gender equality in access to government jobs.

The Gini Index is calculated based on the Gini coefficient and measures social inequality. A value of 0 expresses perfectly equality of income distribution (everyone has

Table 2. Social Cohesion Indicators

No.	Indicator	Description / Unit of measurement	Source
11	Female-friendly	This variable indicates whether a city provides a friendly environment for women (on a scale of 1 to 5). Cities with a value of 1 have a more hostile environment for women; those with a value of 5 are very female-friendly.	Nomad List
12	Hospitals	Number of public and private hospitals in a city. Includes health centers.	OpenStreetMap
13	Crime rate	Estimation of the general level of crime in a city.	Numbeo
14	Slavery Index	The variable represents the national government's response to situations of slavery in the country. The countries that rank highest are the ones dealing with the problem most effectively.	Walk Free Foundation
15	Happiness Index	Countries with a higher value are those where the level of overall happiness is higher.	World Happiness Index
16	Gini Index	Index values range from 0 to 100. A value of 0 expresses perfect equality of income distribution, and 100, maximal inequality.	Euromonitor
17	Global Peace Index	This index measures the level of peace/violence in a country or region. Countries with a high level of violence rank lowest.	Centre for Peace and Conflict Studies, University of Sydney
18	Health Care Index	Estimation of the overall quality of the health care system, health care professionals, equipment, personnel, costs, etc.	Numbeo
19	LGBT-friendly	This variable indicates whether a city provides a friendly environment for the LGBT community (on a scale of 1 to 5). Cities with a value of 1 have a more hostile environment for this community; those with a value of 5 are very LGBT-friendly.	Nomad List
20	Price of property	Property price as a proportion of income. Calculated as the ratio of the average price of a home to average annual disposable household income.	Numbeo
21	Female employment rate	Rate of female employment in the public sector. Value from 0 to 1.	International Labor Organization
22	Death rate	Death rate per 100,000 city inhabitants.	Euromonitor
23	Unemployment rate	Unemployment rate (unemployed/labor force).	Euromonitor
24	Murder rate	Murder rate per 100,000 city inhabitants.	Nomad List
25	Suicide rate	Suicide rate per 100,000 city inhabitants.	Nomad List
26	Terrorism	Number of terrorist incidents in a city in the last three years.	Global Terrorism Database, University of Maryland
27	Racial tolerance	Index of racial tolerance in a city.	Nomad List

the same income); a value of 100 expresses maximal inequality (one person has all the income and all the others have none). This indicator is included in the dimension with a negative sign since a higher index value has a negative effect on social cohesion in a city.

The price of property as a percentage of income is also negatively related to the **CIMI**, given that as the proportion of income that must be spent to buy a property increases, the incentives to belong to the society of a given city decrease.

As for happiness, it is increasingly seen as an appropriate measure of social progress and has become a goal of government policy. According to the World Happiness Report, people say they are happy if they have a stable job and good health, and when wealth is more evenly distributed within the country or city where they live. To represent this level of satisfaction, the Happiness Index is included in the **CIMI**. This variable is incorporated with a

positive sign since countries that are “happier” (i.e., with high values in the index) are those that pay particular attention to freedom, employment, health, income and good governance. Therefore, the happiness of a country or a city is also likely to be reflected in greater social harmony.

Slavery is considered a crime. The proportion of people in slavery in a country is therefore incorporated into the ranking with a negative sign, given that slavery does not contribute to the development of a just and socially cohesive city.

The terrorism variable, which reflects the number of terrorist incidents that have occurred in a city in the last three years, is included with a negative sign as such incidents represent a threat to social peace in a city.

The female-friendly variable is intended to measure the degree to which cities are spaces where women can pursue their lives and move about freely and safely. Cities

are assigned to categories, scored from 1 to 5, where the highest score corresponds to the cities that are most female-friendly. This variable is therefore included in the index with a positive sign.

The variables suicide rate and murder rate are included in the index with a negative sign to reflect their impact on this dimension. The higher the murder rate, the more insecure a city is; and the higher the suicide rate, the less attractive it is to live in.

This year, two new variables have been added: LGBT-friendly and racial tolerance. These variables represent how welcoming a city is to diversity. Both are incorporated with a positive sign. In each case, the higher the value, the greater the level of tolerance.



Economy

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

Table 3 shows the indicators used to represent a city's performance in this dimension, a brief description of each one, their units of measurement, and the information sources used.

The **CIMI** aims to measure, via multiple dimensions, the future sustainability of the world's major cities and the quality of life of their inhabitants, and real GDP is a measure of a city's economic power and the income of its inhabitants. In fact, in numerous studies, GDP is considered the only (or most important) measure of the performance of a city or country. However, in this report it is not considered the sole or most significant measure, but rather one more indicator for one of the nine dimensions of the **CIMI**. It is therefore assigned a weight similar to that of other indicators. If a city with a high or relatively high GDP does not perform well on other indicators, it may not hold one of the top positions in the ranking. Thus, a city that is highly productive but has problems related to transportation, inequality, weak public finances, or a production process that uses polluting technology will probably not hold one of the top positions in the ranking. The variable projected annual GDP growth serves as a measure of a city's future progress.

Labor productivity is a measure of the strength, efficiency and technological level of the production system. As regards local and international competitiveness, productivity will naturally have an impact on real wages, capital income and business profits (which is why it is very important to consider this factor in the economy dimension: different productivity levels can explain differences in the quality of life of workers). Labor productivity will also affect the sustainability of the production system over time.

Table 3. Economy Indicators

No.	Indicator	Description / Unit of measurement	Source
28	Ease of starting a business	Top positions in the ranking are held by cities that have a more favorable regulatory environment for setting up and operating a local business.	World Bank
29	Mortgage	Mortgage as a percentage of income is the monthly mortgage cost as a proportion of household income (the lower the better).	Numbeo
30	Motivation of individuals to undertake early-stage entrepreneurial activity	The percentage of opportunity-driven early-stage entrepreneurs divided by the percentage of necessity-driven early-stage entrepreneurs.	Global Entrepreneurship Monitor
31	Number of headquarters	Number of headquarters of publicly traded companies.	Globalization and World Cities (GaWC)
32	GDP	Gross domestic product in millions of USD.	Euromonitor
33	Estimated GDP	Projected GDP growth for the next year.	Euromonitor
34	GDP per capita	Gross domestic product per capita.	Euromonitor
35	Purchasing power	Purchasing power in buying goods and services in the city (based on the average salary), compared to that of New York City residents. If local purchasing power is 40, this means that inhabitants with an average salary can afford to buy 60% less goods and services than New York City residents with an average salary.	Numbeo
36	Productivity	Labor productivity calculated as GDP/employed population (in thousands).	Euromonitor
37	Hourly wage in USD	Hourly wage in the city (in USD).	Euromonitor
38	Time required to start a business	Number of calendar days needed to complete the procedures to legally operate a business.	World Bank

Other indicators selected to represent this dimension enable us to measure aspects of a city's business landscape. These include the number of headquarters of publicly traded companies; the entrepreneurial capacity and opportunities available to inhabitants, represented by the percentage of entrepreneurs who launch their activity due to a personal motivation to improve their lives; the time required to start a business; and the ease of setting up a business (in terms of regulatory requirements). These indicators measure a city's capacity for sustainability over time and its potential to improve the quality of life of its inhabitants. The time required to start a business and the ease of starting a business are incorporated into the economy dimension with a negative sign given that lower values indicate that it is easier to start a business. The number of headquarters of publicly traded companies, the entrepreneurial capacity and opportunities available to a city's inhabitants, and the number of entrepreneurs all have a positive bearing on this dimension; high values for these indicators point to a city's economic dynamism and the ease of setting up and running new businesses.

The mortgage as a percentage of household income variable is incorporated to supplement the information captured by the private property price variable. It is intended to measure how affordable a 20-year mortgage (set at this term for the purposes on this report) is for a middle-income family. The higher the percentage of household income that goes to mortgage payments, the worse a family's financial situation will be. The variable is therefore incorporated with a negative sign.

Finally, the variables hourly wage and purchasing power in buying goods and services in the city (compared to the purchasing power of New York City residents) are incorporated with a positive sign as higher values for these indicators reflect a better employment situation.



Governance

“Governance” is the term commonly used to refer to the effectiveness, quality and proper orientation of state intervention. Given that citizens have a central role to play in solving all the challenges cities face, factors such as the level of citizen participation, the ability of authorities to engage business leaders and local actors, and implementation of e-government plans must be considered. This dimension also encompasses all actions aimed at improving the efficiency of public administration, including the design of new organizational and management models. In this area, significant opportunities open up for private initiative, which can deliver greater efficiency.

In this study, we consider governance as highly correlated with the state of a city or country's public finances. Public accounts have a very significant impact on the quality of life of the population and the sustainability of a city as they determine the level of present and future taxes to be paid by citizens and the production system. They also affect expected growth of the general price level, scope for public investment in basic social infrastructure, and incentives for private investment. Moreover, if the state needs financing, it will compete with the private sector for funds available in the financial system, which will affect investment.

Table 4 shows the indicators that represent the governance dimension in this report, a description of each one, the units of measurement, and the information sources used.

Cities that have ISO 37120 certification are committed to improving the services they offer and quality of life. ISO 37120 establishes smart city standards based on 100 indicators and aims to provide a benchmark for comparing all cities on equal terms. This variable is incorporated with a positive sign.

The number of research offices and the number of government buildings show how responsive the local government is to the needs of citizens in terms of dealing with queries and carrying out administrative, regulatory and other functions. These variables are included with a positive sign in the **CIMI** calculation. Similarly, the number of embassies and consulates (i.e., the number of embassies foreign countries assign to a city) is an indicator of its international importance by global standards.

Percentage of public sector employment—in education, defense, health and other areas—is a variable incorporated into this dimension with a positive sign, given that it is an indicator of human capital in the public sector.

The E-Government Development Index (EGDI) incorporates the access characteristics, such as the infrastructure and educational levels, to reflect how a country is using information technologies to promote access and inclusion of its citizens. It is a measure composed of four important dimensions of e-government, which are included as independent variables this year. These variables (included with a positive sign) are: provision of online services, telecommunication connectivity, the ability of individuals to use available e-government services, and the development status of telecommunication infrastructure (by the government). The E-Participation Index, which supplements these four variables and measures the means used by each country to involve its citizens in decision-making, is also included this year.

Table 4. Governance Indicators

No.	Indicator	Description / Unit of measurement	Source
39	Bitcoin legal	Whether or not Bitcoin is legal in the city.	Nomad List
40	ISO 37120 certification	Whether or not the city has ISO 37120 certification. Certified cities are committed to improving urban services and quality of life. This variable is coded from 0 to 6. The highest value is assigned to the cities that have been certified for the longest time. A value of 0 is assigned to cities that are not certified.	World Council on City Data (WCCD)
41	Government buildings	Number of government buildings and premises in a city.	OpenStreetMap
42	Embassies	Number of embassies in a city.	OpenStreetMap
43	Public sector employment	Percentage of employed population working in public administration and defense; education; health; community, social and personal service activities; and other activities.	Euromonitor
44	E-Participation Index	This index supplements the EGDl and focuses on the use of online services to facilitate provision of information by governments to citizens (“e-information sharing”), interaction with stakeholders (“e-consultation”), and engagement in decision-making processes (“e-decision-making”).	United Nations
45	Human Capital Index	The E-Government Development Index (EGDI) is a composite measure of three important dimensions of e-government: provision of online services, telecommunication connectivity and human capacity. This variable captures the human capacity component.	United Nations
46	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 index ranges from 0 (low) to 12 (high), with higher scores indicating that these laws are better designed to expand access to credit.	World Bank
47	Telecommunication Infrastructure Index	The E-Government Development Index (EGDI) is a composite measure of three important dimensions of e-government: provision of online services, telecommunication connectivity and human capacity. This variable captures the development status of telecommunication infrastructure (by the government).	United Nations
48	Corruption Perceptions Index	Countries with values close to 0 are perceived as very corrupt and those with values close to 100 are perceived as very transparent.	Transparency International
49	Online Service Index	The E-Government Development Index (EGDI) is a composite measure of three important dimensions of e-government: provision of online services, telecommunication connectivity and human capacity. This variable reflects the scope and quality of e-government services.	United Nations
50	Research offices	Number of research and technology offices in a city.	OpenStreetMap
51	Open data platform	Whether or not the city has an open data system.	CTIC Foundation and Open World Bank
52	Democracy Index	The top-ranked countries are the ones considered most democratic.	Economist Intelligence Unit
53	Reserves	Total reserves in millions of current USD. City-level estimate according to population.	World Bank
54	Reserves per capita	Reserves per capita in millions of current USD.	World Bank



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. Index values range from 0 to 12, with higher scores indicating that laws are better designed to expand access to credit. Establishing appropriate conditions and ensuring enforcement of the rights of citizens and companies based in their territory are functions of national or local governments and cannot be delegated. The perception that legal rights are enforced influences all aspects of the life of a country or city, including the business climate, incentives for investment, and legal security, among others. This index has therefore been incorporated with a positive sign when creating the indicator for this dimension.

The Corruption Perceptions Index serves to measure the quality of governance. A high societal perception of corruption in public bodies indicates that state intervention is not efficient from the standpoint of the social economy (because public services, broadly understood, entail higher costs than they would in the absence of corruption). Moreover, incentives to invest or settle in countries or cities with a high perception of corruption will be lower than in others with low levels of perceived corruption, which has a negative impact on sustainability. For the **CIMI**, this index is used as an explanatory indicator for the governance dimension. Transparency International assigns a value of 0 to countries with high levels of corruption and 100 to those that are highly transparent, so this variable is incorporated with a positive sign.

The Democracy Index shows the level of democracy in a country as reflected in its electoral system, freedom of expression, government functioning, and political participation and culture. Values are included with a negative sign since the countries in the top positions are the ones considered most democratic.

The variable that assesses whether the government of a city has an open data platform is an indicator of transparency in management by the local executive and the existence of a channel for communicating with citizens and a platform for generating new business models. A value of 1 is assigned if the city has an open data platform; otherwise, a value of 0 is assigned. The indicator is therefore incorporated into this dimension with a positive sign.

The level of reserves (total and per capita) is an indicator of the short- and medium-term strength of public finances, the ability to cope with changing economic cycles, and the soundness and sustainability of the economic structure as regards the state. This variable is incorporated with a positive sign.

Finally, in view of the widespread use of virtual currency, this year the variable Bitcoin legal (with a positive sign) is included to indicate whether or not a city has legalized the use of Bitcoin.



Environment

In relation to cities, sustainable development can be defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” Improving environmental sustainability through anti-pollution plans, support for green buildings and alternative energies, efficient water and waste management, and policies that help counteract the effects of climate change are essential to ensure the sustainability of cities over time.

Since the **CIMI** also aims to measure environmental sustainability, the environment is included as one of the key dimensions for quantitative assessment. **Table 5** shows the indicators selected for this dimension, a brief description of each one, their units of measurement, and the information sources used.

The indicators selected include measures of air pollutants and water quality in cities (clear indicators of the quality of life of their inhabitants) and of the sustainability of a city’s production and urban development structure.

CO₂ emissions are generated by the use of fossil fuels and the manufacture of cement, while methane emissions are produced by human activities such as agriculture and industrial production. These two types of emissions are the main measures commonly used to quantify the level of air pollution, given that these gases are closely linked to the greenhouse effect. In fact, reducing the values of these indicators is one of the objectives of the Kyoto Protocol.

Other key indicators for measuring air pollution in cities are PM_{2.5} and PM₁₀, which are small particles (solid or

Table 5. Environment Indicators

No.	Indicator	Description / Unit of measurement	Source
55	CO ₂ emissions	Carbon dioxide emissions from the use of fossil fuels and the manufacture of cement. Measured in kilotons (kt).	World Bank
56	Methane emissions	Methane emissions caused by human activities such as agriculture and industrial methane production. Measured in kt of CO ₂ equivalent.	World Bank
57	Environmental Performance Index	Environmental Performance Index (from 1 = poor to 100 = good).	Yale University
58	CO ₂ Emission Index	Index of CO ₂ emissions.	Numbeo
59	Pollution Index	Index of pollution.	Numbeo
60	PM ₁₀	A measure of particles in the air with a diameter of less than 10 µm. Annual mean.	Global Residence Index
61	PM _{2.5}	A measure of particles in the air with a diameter of less than 2.5 µm. Annual mean.	IQAir
62	Percentage of population with access to water supply	Percentage of the population with reasonable access to an adequate amount of water from improved water sources.	World Bank
63	Renewable water resources	Renewable water sources per capita.	FAO
64	Solid waste	Average amount of municipal solid waste generated annually per person (kg/year).	Waste Management for Everyone
65	Climate vulnerability	Risk to the city due to climate change.	National Geographic

liquid) of dust, ash, soot, metal, cement and pollen dispersed in the atmosphere, with a diameter of 2.5 µm or less in the case of PM_{2.5} and 10 µm or less in the case of PM₁₀. Such particles are mainly composed of inorganic compounds such as silicates and aluminates, heavy metals, and organic material associated with carbon particles (soot). These indicators are commonly used in indexes that aim to measure environmental pollution. They are supplemented by information provided by a city's pollution index, which estimates overall pollution. The greatest weight is given to the cities with the most polluted air.

The Environmental Performance Index (EPI), calculated by Yale University, is an indicator based on the measurement of two major dimensions related to the environment, namely, environmental health and ecosystem vitality. The former is divided into three sub-dimensions: effects of air pollution on human health, water quality, and the environmental burden of disease. Ecosystem vitality, in turn, encompasses seven sub-dimensions that take account of the effects on the ecosystem of air pollution, water quality, biodiversity and habitat, deforestation, fisheries, agriculture and climate change. Given that this indicator is very comprehensive (covering almost all factors related to measuring the status and evolution of a city's environment and supplemented by the other indicators included in the **CIMI**), we believe the environment dimension is represented in a proportionate manner in the index.

Water is a renewable resource that has a highly important role to play in dealing with climate change and its devastating effects. The variable total renewable water sources per capita takes account of both internal and external renewable surface water resources and represents the resources that a country has available to ensure a sustainable future. Water is also a vital resource for the population. Therefore, the variable percentage of population with access to water supply is considered a critical element in the development of a city. Both variables are incorporated with a positive sign in the calculation of the index.

Given the prevalence of poor solid waste management, the average amount of municipal solid waste (garbage) generated annually per person (kg/year) in a city represents potential harm to its inhabitants and the environment. In many cities, poor waste management poses an additional health risk to people who work with waste materials. The variable is therefore incorporated into the index with a negative sign.

This year, the climate vulnerability variable, which is calculated by National Geographic and measures how vulnerable a city is to climate change, has been added to the index. This variable takes into account current temperatures in a city and the temperature projected for the year 2070. Indicator values range from 1 to 5, with the highest value assigned to the most vulnerable cities.



Mobility and transportation

Cities of the future face two major challenges in the area of mobility and transportation: facilitating travel (often over large territories) and access to public services.

Mobility and transportation (in terms of road and route infrastructure, the vehicle fleet, public transit and air transport) affect the quality of life of a city's inhabitants and can be key to its sustainability over time. However, perhaps the most important issues to consider are the externalities generated in the production system, whether due to the need of the labor force to commute or the need to distribute production.

Table 6 shows the indicators used for the mobility and transportation dimension, a description of each one, the units of measurement, and the information sources used.

Variables related to bicycle, moped and scooter rental services (collected by the New Urban Mobility Alliance, NUMO) capture the impact of micromobility in cities. These three variables are binary and indicate the presence or absence of these services in a city. They are incorporated into the index with a positive sign.

The indexes for time in traffic (considered in exponential terms), traffic commute time, and traffic inefficiency are estimates of traffic dysfunction caused by long driving times and the dissatisfaction that these situations generate in the population. These indicators enable us to measure the safety of roads and public transit, which, if it is effective and has good infrastructure, contributes to reducing vehicular road traffic and the number of accidents. They are all included with a negative sign in the calculation of the **CIMI** as they have a negative impact on the development of a sustainable city.

The bike sharing indicator captures information regarding the bicycle sharing system in a city, which allows residents to get around using public bicycles. Indicator values range from 0 to 8, where 0 indicates the absence of such a system in a city and 8 denotes the presence of a highly developed system. This indicator is incorporated into the **CIMI** with a positive sign.

The number of metro stations and the length of the subway system are indicators of a commitment to city development and investment in relation to the size of the population. Similarly, the number of air routes (inbound) and the presence of high-speed rail represent the level of development in mobility. A highly developed city will favor the incorporation of new commercial air routes

Table 6. Mobility and Transportation Indicators

No.	Indicator	Description / Unit of measurement	Source
66	Bicycle rental	Whether or not the city has a bicycle rental system.	NUMO
67	Moped rental	Whether or not the city has a moped rental system.	NUMO
68	Scooter rental	Whether or not the city has a scooter rental system.	NUMO
69	Bicycles per household	Percentage of bicycles per household.	Euromonitor
70	Bike sharing	Shows automated services for public use of shared bicycles that provide transportation from place to place in a city. Indicator values range from 0 to 8 according to how developed the system is.	Bike-Sharing World Map
71	Metro stations	Number of metro stations in a city.	Metrobits (metrobits.org)
72	Traffic Inefficiency Index	This index is an estimate of traffic inefficiencies. High values represent high driving inefficiencies, such as long travel times.	Numbeo
73	Traffic Commute Time Index	An index based on the time it takes to commute to work (in minutes).	Numbeo
74	Exponential Traffic Index	This index is estimated by considering time spent in traffic. It is assumed that travel time dissatisfaction increases exponentially beyond 25 minutes.	Numbeo
75	Length of metro system	Length of the metro system in a city.	Metrobits (metrobits.org)
76	High-speed train	Binary variable that shows whether the city has a high-speed train or not.	OpenRailwayMap
77	Vehicles in the city	Number of commercial vehicles in a city.	Euromonitor
78	Flights	Number of inbound flights (air routes) in a city.	OpenFlights

and the movement and transit of passengers in different modes of transportation. These indicators are included with a positive sign in the calculation of the index due to their positive effect in this dimension.

The variable vehicles in the city (number of commercial vehicles) is included with a negative sign due to its negative effect on traffic and traffic congestion. Conversely, the variable percentage of bicycles per household is included with a positive sign given its positive effect on traffic.



Urban planning

Urban planning in cities has always been considered a driver of development and poverty reduction. Today, it is a collective exercise that must involve all stakeholders, including citizens, civil society organizations, the public and the private sector, multilateral agencies and academia.

Urban planning, in turn, is closely related to sustainability. To improve the livability of any territory, it is important to take into account local master plans and the design of green areas and spaces for public use while also focusing on smart growth. New urban planning methods should focus on creating compact, well-connected cities with accessible public services.

Based on the information available, several points related to urban development plans, the quality of health infrastructure, and housing policy are included as indicators for this dimension. **Table 7** shows the indicators included in this dimension, a description of each one, the units of measurement, and the information sources used.

Bicycles are an efficient, fast, economical, healthy and environmentally friendly mode of transportation. Their use has a positive impact on a city's sustainable development because they do not pollute or use fuel, among other benefits. Given this positive effect, the **CIMI** incorporates the number of bike-rental or bike-sharing points, based on docking stations where they can be picked up and dropped off (the number of bicycle stations). Cities that have historically been labeled as "smart" tend to have high bicycle use. This variable is therefore incorporated with a positive sign.

The quality of sanitation services indicator refers to the percentage of the urban population with improved sanitation facilities that are not shared with other households. This indicator is highly correlated with urban planning since it can be shown that poor planning inevitably leads to sanitation problems in the short and medium term.

Also, from an urban planning and housing perspective, a city with proper urban planning generally presents few or no problems of household overcrowding because housing policy, in relation to the estimated growth of the urban population, is a determining factor in urban planning. Therefore, within the explanatory indicators of this dimension, the number of occupants in each household is included with a negative sign.

The number of completed buildings and the percentage of high-rises contribute to creating compact, organized cities. These variables are incorporated into the index with a positive sign.

Table 7. Urban Planning Indicators

No.	Indicator	Description / Unit of measurement	Source
79	Bike Advance	Whether or not a city has a bike sharing system.	The Bike Share Map
80	Buildings	The number of completed buildings in a city. The count includes structures such as high-rises, towers and low-rise buildings, but excludes other miscellaneous structures and buildings of different statuses (under construction, proposed, etc.).	Skyscraper Source Media
81	Bicycle stations	Bicycle station locations in a city.	Bike-Sharing World Map
82	Electric charging stations	Electric car charging points in a city.	OpenStreetMap
83	Number of people per household	Average number of people per household.	Euromonitor
84	Percentage of the urban population with adequate sanitation services	Percentage of the urban population that uses at least basic sanitation services—that is, improved sanitation facilities that are not shared with other households.	World Bank
85	Artificial intelligence (AI) projects	Whether or not a city has AI projects.	AI Localism
86	High-rises	Percentage of buildings classified as high-rises. A high-rise is a multi-floored building of at least 12 stories or 35 m in height (115 feet).	Skyscraper Source Media



Due to increasing use of electric cars, this year a variable that captures information on charging stations for vehicles of this kind in a city has been added.

AI is now playing a key role in improving the development of cities. Among other benefits, it is helping local authorities collect information about city inhabitants, thereby facilitating efficient management of resources. For example, a city that uses AI to reduce traffic problems is in a good position to solve its mobility problems. AI tools make it possible to collect traffic information in real time, predict traffic jams, improve mobility, and decongest key areas.

In light of these positive impacts, the number of AI projects underway in a city has been included in the calculation of the **CIMI** for the first time this year (with a positive sign).



International profile

Cities that want to make progress must achieve a prominent position in the world. To maintain a high profile globally, they must improve their brand and level of international recognition through strategic tourism plans, by attracting foreign investment, and by ensuring that they are represented abroad.

Cities in the same country can vary in terms of the strength of their international profile, but a city's global stature is not independent of the degree of openness at the national level. This dimension is intended to reflect

such differences and measure the international profile of cities.

To this end, we have included the following indicators: airports, number of passengers per airport, number of hotels in a city, and number of meetings and congresses held (based on data from the International Congress and Convention Association, ICCA). This last of these indicators is important in relation to a city's international profile, given that events of this kind are generally held in cities with international hospitality services, specially equipped venues, frequent international flights, and adequate security measures. Given when the index was calculated, it should be noted that values for this indicator do not reflect the impact of the COVID-19 pandemic on events of this kind. The data source (ICCA) is working to incorporate these modifications in the near future.

Table 8 shows the indicators for this dimension, a description of each one, their units of measurement, and the information sources used.

The higher the values for these indicators, the stronger a city's profile in the world. Therefore, all the indicators for this dimension are incorporated into the calculation of the **CIMI** with a positive sign. The Restaurant Price Index variable compares the price of restaurants in a city with prices in New York. As an indicator of international culinary variety, this variable is incorporated with a positive sign.

Table 8. International Profile Indicators

No.	Indicator	Description / Unit of measurement	Source
87	Number of passengers per airport	Annual number of passengers per airport in thousands.	Euromonitor
88	Hotels	Number of hotels per capita.	OpenStreetMap
89	Restaurant Price Index	The Restaurant Price Index compares the price of meals and drinks in restaurants and bars in a city to prices in New York City.	Numbeo
90	McDonald's	Number of McDonald's establishments in a city.	OpenStreetMap
91	Number of congresses and meetings	Number of international congresses and meetings held in a city.	International Congress and Convention Association



Technology

Though not the only important issue for cities, information and communication technologies (ICT) are part of the backbone of any society that aims to achieve “smart” status.

Technology, a dimension included in the **CIMI**, is an aspect of society that improves quality of life in the present, while the level of development or extent of ICT use is an indicator of current or potential quality of life. Technological development also allows cities to be sustainable over time and to maintain or further develop the competitive advantages of their production system and the quality of employment. A technologically backward city has comparative disadvantages with respect to others, in terms of security, education and health (all key to the sustainability of a society) and also with respect to its production system. If a city falls short in this dimension, production functions become outdated and, in the absence of protective measures, competitiveness is undermined, which has a negative impact on a city’s consumption and investment capacity and reduces labor productivity.

The indicators selected to measure the performance of cities in terms of the extent and growth of technology use are presented in **Table 9** below.

The indicators that represent the number of Twitter and LinkedIn users are combined in a variable called social media, which is incorporated into the **CIMI** with a positive sign since it shows the degree to which a city’s inhabitants are connected with technology.

The variables percentage of households with Internet, mobile phone penetration rate, and subscriptions to fixed telephony and broadband services show the degree of technological development in a city, given that these services provide households and businesses with the means required to make efficient use of technology.

The Innovation Cities Index (ICI) is calculated by considering various factors related to technological innovation in cities, in sectors such as health, the economy in general, and the broader population. The ICI, which has become the most comprehensive indicator for measuring the degree of innovation development in cities, is methodologically divided into three aspects or dimensions: cultural assets, human infrastructure and networked markets.

Table 9. Technology Indicators

No.	Indicator	Description / Unit of measurement	Source
92	Mobile broadband	Active mobile broadband subscriptions.	International Telecommunication Union
93	Innovation Cities Index	The Innovation Cities Index (ICI) is a ranking of leading cities in innovation.	2thinknow
94	Internet	Percentage of households with Internet access.	Euromonitor
95	LTE/WiMAX	Percentage of the population covered by at least an LTE/WiMAX mobile network.	Euromonitor
96	Computers/PCs	Percentage of households with a personal computer.	Euromonitor
97	Mobile phone penetration rate	Number of mobile phones per 100 inhabitants.	International Telecommunication Union
98	Social media	Registered Twitter users in a city (in thousands of individuals) + number of registered LinkedIn members in the city.	Twitter and LinkedIn
99	Broadband subscriptions	Broadband subscriptions per 100 inhabitants.	International Telecommunication Union
100	Telephony	Percentage of households with some kind of telephone service.	Euromonitor
101	Internet speed	Fixed-line Internet speed in megabytes per second (country).	World Population Review
102	Mobile speed	Mobile speed in megabytes per second (country).	World Population Review
103	WiFi hotspots	Total number of WiFi hotspots. This variable represents options for connecting to the Internet in a city.	WiFi Map app



The total number of WiFi hotspots represents the connectivity options available to a city's inhabitants when they are away from home. This variable shows a city's level of commitment to technological development.

Together with those described above, the variables percentage of households with some type of telephone service, percentage of households with personal computers, Internet speed and mobile speed are intended to show the degree of technology penetration in a city. All these variables are incorporated into this dimension with a positive sign.

Finally, the LTE/WiMAX variable reflects the percentage of the population covered by at least an LTE/WiMAX mobile network. This variable is intended to more precisely capture the use of new technologies in cities and is incorporated into this dimension with a positive sign.

There is also a group of variables (see rows 104 to 114 of **Appendix 1**) that are related to population and to expenditure and income in cities. These variables were used in the analysis to group the cities into clusters for estimation purposes.

Limitations of the Indicators

The geographic coverage and breadth of the **CIMI** dimensions pose certain challenges and problems, and the results should therefore be interpreted with caution. One of the most significant limitations of the indicators used to calculate the **CIMI** is data availability and comparability. It would be ideal to have data directly from original sources

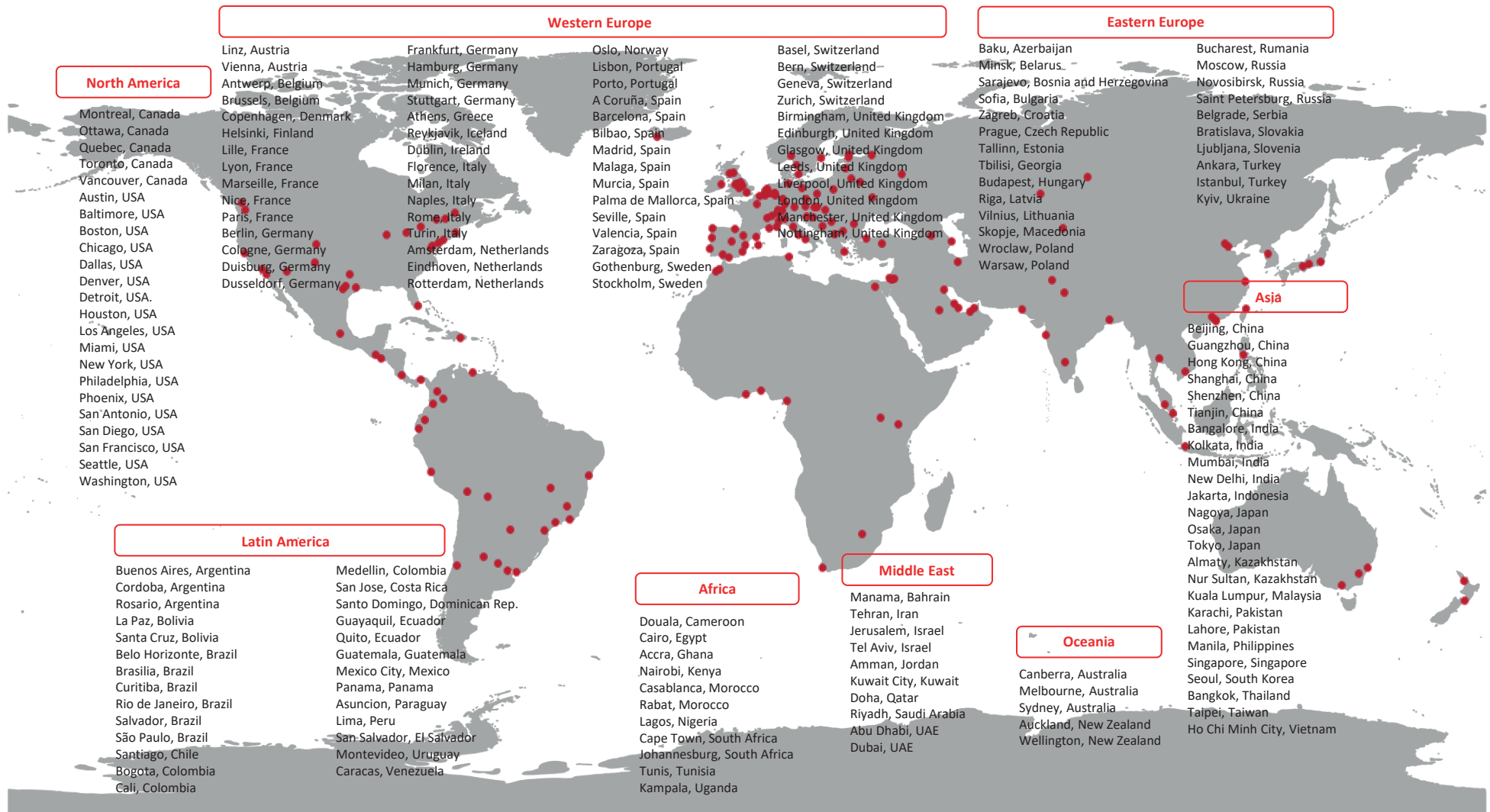
and for those data to be directly comparable. However, this is not feasible and we must rely on secondary data sources. Such sources have the advantage of offering indicators that are similar across cities, but they may not provide the desired level of precision. Moreover, the number of variables we include may not be sufficient to capture the complexity of each dimension, and the associated data are sometimes incomplete. We have tried to minimize the impact of these limitations. Thus, in developing the index, when data for a particular indicator were not available for the entire period analyzed, extrapolation techniques were used. When indicator values were available at the country level but not at the city level, individual values were assigned to each city by establishing a relationship to the values at the country level based on another variable, linked in theory to the city level. Finally, when data were not available for a given city or group of cities for the entire period considered, statistical clustering techniques were used. The scope and details of these tools are explained in detail in the supplementary report *IESE Cities in Motion Index: Metodología y modelización* (2014). A list of all the indicators used can also be found in **Appendix 1**.

At the **CIMI** platform, we continue working to obtain more comprehensive and accurate indicators. We also urge cities to allow access to the information they generate, given that analysis of such information will facilitate progress on aspects of cities where there is room for improvement.

Geographic Coverage

For the calculation of the **CIMI**, 183 cities have been included, 85 of which are national capitals. Their geographic distribution is shown in **Figure 1** below.

Figure 1. Geographic Distribution of Cities Included in the Index





Cities in Motion. Ranking

The **CIMI** is a composite indicator—a function based on the partial indicators available.

This composite indicator was created through the weighted aggregation of partial indicators representing each of the nine dimensions that make up the theoretical model that underpins the **CIMI**. The dimensions selected to describe the situation of cities in terms of sustainability and the quality of life of their inhabitants, both in the present and in the future, are as follows: governance, urban planning, technology, environment, international profile, social cohesion, human capital, mobility and transportation, and economy.

The partial indicators that represent each dimension are also composite indicators, which are defined as “weighted aggregations of each of the selected indicators representing various factors related to each dimension.”

Given the type of indicator and the data available, the DP2 method—the most widely used procedure internationally and, in our view, the most appropriate one for this analysis—was used to calculate the **CIMI**. The methodology is based on distance—that is, the difference between a given indicator value and another value taken as a benchmark or target. The method also seeks to correct dependence between partial indicators, which would artificially increase the sensitivity of an indicator to variations in certain partial values. The correction entails applying the same factor to each partial indicator on the assumption that there is a linear dependence function between them.

Given the partial indicators, the factors are given by the complement of the coefficient of determination (R^2) for each indicator with respect to the rest of the partial indicators. The order in which the indicators for each

dimension were included and their relative weight in the **CIMI** are as follows: economy (1.000), human capital (0.508), international profile (0.533), urban planning (0.430), environment (0.333), technology (0.646), governance (0.726), social cohesion (0.538), and mobility and transportation (0.508).

While the order in which the composite index for each dimension is incorporated does influence the **CIMI** value, sensitivity studies carried out indicate that there are no significant variations in the index. For further details on the methodology applied, see the supplementary publication *IESE Cities in Motion Index: Metodología y modelización* (mentioned above).

Table 10 shows the **CIMI** ranking of the cities and their index value. The cities are also grouped according to their performance, based on composite indicator values. The cities are classified by performance as follows: high (H) for cities with an index value over 90; relatively high (RH) for those in the 60–90 range; medium (M) for those in the 45–60 range; and low (L) for cities with an index value below 45.

For 2021, the performance of 31.69% (58) of the cities is classified as H or RH, and the top three cities are London, New York and Paris (in that order). The performance of 30.60% (56) of the cities is classified as M, and those classified as L account for 36.61% (67) of the selected cities. Finally, two cities (1.10%)—Karachi and Lagos—score very low this year. The category of cities with high or relatively high performance consists mostly of European and North American cities and capitals, while the low-performance category is mostly made up of African, Middle Eastern and Latin American cities.

Table 10. Ranking of Cities

Ranking	City	Performance	ICIM	Ranking	City	Performance	ICIM
1	London - United Kingdom	A	100.00	62	Warsaw - Poland	M	59.48
2	New York - USA	A	98.25	63	Dubai - United Arab Emirates	M	59.15
3	Paris - France	RA	84.99	64	Düsseldorf - Germany	M	59.09
4	Tokyo - Japan	RA	80.30	65	Rome - Italy	M	59.03
5	Berlin - Germany	RA	76.42	66	Glasgow - United Kingdom	M	59.01
6	Washington - USA	RA	74.27	67	Brussels - Belgium	M	58.67
7	Singapore - Singapore	RA	73.33	68	Baltimore - USA	M	58.62
8	Amsterdam - Netherlands	RA	73.03	69	Leeds - United Kingdom	M	58.48
9	Oslo - Norway	RA	73.01	70	Wellington - New Zealand	M	57.26
10	Copenhagen - Denmark	RA	71.47	71	Nottingham - United Kingdom	M	57.14
11	Munich - Germany	RA	71.33	72	Tallinn - Estonia	M	56.64
12	Seoul - South Korea	RA	71.22	73	Antwerp - Belgium	M	56.63
13	Chicago - USA	RA	70.22	74	Detroit - USA	M	56.38
14	Zurich - Switzerland	RA	69.96	75	Santiago - Chile	M	56.23
15	Vienna - Austria	RA	69.20	76	Marseille - France	M	56.16
16	San Francisco - USA	RA	69.03	77	Quebec - Canada	M	55.90
17	Hamburg - Germany	RA	69.00	78	Lisbon - Portugal	M	55.79
18	Dublin - Ireland	RA	68.42	79	Phoenix - USA	M	55.69
19	Rotterdam - Netherlands	RA	68.40	80	Nagoya - Japan	M	55.54
20	Helsinki - Finland	RA	68.12	81	San Antonio - USA	M	55.28
21	Toronto - Canada	RA	67.88	82	Osaka - Japan	M	55.26
22	Los Angeles - USA	RA	67.83	83	Nice - France	M	55.07
23	Seattle - USA	RA	67.69	84	Lille - France	M	54.77
24	Boston - USA	RA	67.37	85	Budapest - Hungary	M	54.63
25	Stockholm - Sweden	RA	66.84	86	Valencia - Spain	M	54.60
26	Hong Kong - China	RA	66.67	87	Bratislava - Slovakia	M	53.82
27	Madrid - Spain	RA	66.49	88	Linz - Austria	M	53.81
28	Bern - Switzerland	RA	66.14	89	Las Vegas - USA	M	53.66
29	Basel - Switzerland	RA	65.59	90	Duisburg - Germany	M	52.95
30	Houston - USA	RA	65.19	91	Tel Aviv - Israel	M	52.53
31	Barcelona - Spain	RA	65.13	92	Istanbul - Turkey	M	52.00
32	Manchester - United Kingdom	RA	64.81	93	Malaga - Spain	M	51.01
33	Reykjavik - Iceland	RA	64.73	94	Riga - Latvia	M	50.75
34	Taipei - Taiwan	RA	64.64	95	Seville - Spain	M	50.73
35	Edinburgh - United Kingdom	RA	63.67	96	Vilnius - Lithuania	M	50.68
36	Sydney - Australia	RA	63.41	97	Turin - Italy	M	49.78
37	Beijing - China	RA	63.20	98	Moscow - Russia	M	49.75
38	Melbourne - Australia	RA	63.07	99	Ljubljana - Slovenia	M	49.56
39	Lyon - France	RA	62.84	100	Wroclaw - Poland	M	49.53
40	Canberra - Australia	RA	62.62	101	Zagreb - Croatia	M	49.19
41	Frankfurt - Germany	RA	62.33	102	Guangzhou - China	M	48.29
42	Miami - USA	RA	62.30	103	Buenos Aires - Argentina	M	48.25
43	Prague - Czech Republic	RA	62.26	104	Florence - Italy	M	48.24
44	Cologne - Germany	RA	61.84	105	Kuala Lumpur - Malaysia	M	48.07
45	Montreal - Canada	RA	61.78	106	Palma de Mallorca - Spain	M	48.04
46	Dallas - USA	RA	61.38	107	A Coruña - Spain	M	48.04
47	Geneva - Switzerland	RA	61.36	108	Zaragoza - Spain	M	48.03
48	Stuttgart - Germany	RA	61.19	109	Shenzhen - China	M	47.42
49	Eindhoven - Netherlands	RA	61.06	110	Bilbao - Spain	M	47.31
50	Ottawa - Canada	RA	60.87	111	Bucharest - Romania	M	47.23
51	Birmingham - United Kingdom	RA	60.77	112	Murcia - Spain	M	46.05
52	Austin - USA	RA	60.74	113	Porto - Portugal	M	45.88
53	Gothenburg - Sweden	RA	60.60	114	Abu Dhabi - United Arab Emirates	M	45.76
54	Denver - USA	RA	60.59	115	Mexico City - Mexico	B	44.75
55	Vancouver - Canada	RA	60.48	116	Jerusalem - Israel	B	44.10
56	Shanghai - China	RA	60.41	117	Kyiv - Ukraine	B	43.92
57	Milan - Italy	RA	60.33	118	Bangkok - Thailand	B	43.62
58	San Diego - USA	RA	60.18	119	Sofia - Bulgaria	B	43.41
59	Auckland - New Zealand	M	59.84	120	Panama - Panama	B	43.13
60	Philadelphia - USA	M	59.79	121	Athens - Greece	B	42.44
61	Liverpool - United Kingdom	M	59.66	122	Naples - Italy	B	41.90

Table 10. Ranking of Cities (Continued)

Ranking	City	Performance	ICIM	Ranking	City	Performance	ICIM
123	Ankara - Turkey	B	41.44	154	San Jose - Costa Rica	B	28.85
124	Belgrade - Serbia	B	41.42	155	Quito - Ecuador	B	28.66
125	Doha - Qatar	B	40.29	156	La Paz - Bolivia	B	28.59
126	Montevideo - Uruguay	B	39.77	157	San Salvador - El Salvador	B	28.49
127	Tbilisi - Georgia	B	38.77	158	Tunis - Tunisia	B	28.23
128	Minsk - Belarus	B	38.71	159	Brasilia - Brazil	B	28.16
129	Almaty - Kazakhstan	B	38.56	160	Santa Cruz - Bolivia	B	28.03
130	São Paulo - Brazil	B	36.43	161	Amman - Jordan	B	27.59
131	Saint Petersburg - Russia	B	35.98	162	Mumbai - India	B	27.47
132	Bogota - Colombia	B	35.58	163	Rabat - Morocco	B	27.46
133	Rosario - Argentina	B	35.40	164	Johannesburg - South Africa	B	27.22
134	Ho Chi Minh City - Vietnam	B	35.31	165	Asuncion - Paraguay	B	26.98
135	Cordoba - Argentina	B	34.93	166	Bangalore - India	B	26.85
136	Rio de Janeiro - Brazil	B	34.42	167	Guayaquil - Ecuador	B	26.45
137	Tianjin - China	B	34.08	168	Tehran - Iran	B	26.45
138	Medellin - Colombia	B	33.93	169	Salvador - Brazil	B	26.05
139	Nur Sultan - Kazakhstan	B	33.88	170	Casablanca - Morocco	B	25.81
140	Baku - Azerbaijan	B	33.80	171	Nairobi - Kenya	B	25.50
141	Cape Town - South Africa	B	33.61	172	Belo Horizonte - Brazil	B	24.07
142	Novosibirsk - Russia	B	33.44	173	Guatemala City - Guatemala	B	23.87
143	Lima - Peru	B	32.88	174	Kolkata - India	B	21.88
144	Santo Domingo - Dominican Republic	B	31.84	175	Douala - Cameroon	B	21.00
145	Kuwait City - Kuwait	B	31.29	176	Manila - Philippines	B	20.87
146	Sarajevo - Bosnia-Herzegovina	B	31.05	177	Cairo - Egypt	B	20.29
147	Skopje - Macedonia	B	30.97	178	Kampala - Uganda	B	17.97
148	Cali - Colombia	B	29.89	179	Caracas - Venezuela	B	15.50
149	Delhi - India	B	29.72	180	Lahore - Pakistan	B	15.34
150	Riyadh - Saudi Arabia	B	29.68	181	Accra - Ghana	B	13.98
151	Manama - Bahrain	B	29.67	182	Karachi - Pakistan	MB	11.48
152	Jakarta - Indonesia	B	29.48	183	Lagos - Nigeria	MB	4.65
153	Curitiba - Brazil	B	28.89				



Cities in Motion: Ranking by Dimension

This section presents a ranking of cities according to the dimensions of the index, including each city's overall position and its rank in each dimension. The dark green shading corresponds to top positions in the **CIMI** ranking, and the dark red shading is used to indicate the bottom-ranking cities. Intermediate positions are shaded in yellow tones.

The ranking is headed by London and New York, two highly developed and smart cities. This year, London (UK) tops the overall ranking thanks to its performance in the dimensions of human capital (rank #1), international profile (#1), urban planning (#1), governance (#2), and mobility and transportation (#4). However, the city does not perform as well in the dimensions of social cohesion (rank #25) and environment (#17). Although London does not occupy a top position in these dimensions, it shows a marked improvement with respect to its rank in previous editions of the index. This progress reflects work being done to make it a smart city in all respects and improve its overall position.

For its part, New York City (USA) ranks second overall thanks to its performance in the dimensions of economy (rank #1), mobility and transportation (#1), urban planning (#2), human capital (#3) and international profile (#3). The city performs poorly in social cohesion (rank #121) and environment (#105), areas that the city's leaders are working to improve by 2050.

Paris ranks third overall. The city performs very well in international profile (rank #2), mobility and transportation (#3), and human capital (#5). It also ranks in the top 20 in the economy and governance dimensions.

Table 11 shows the rank, overall and by dimension, of the 183 cities included in the index. This table is very important when it comes to analyzing the results as it shows the relative position of each city in each of the dimensions. **Figure 2** (below the table) shows the location of the cities on a world map.

Table 11. Ranking by Dimension

City	Cities in Motion	Economy	Human capital	Social cohesion	Environment	Governance	Urban planning	International profile	Technology	Mobility and transportation
London - United Kingdom	1	7	1	25	17	2	1	1	18	4
New York - USA	2	1	3	121	105	10	2	3	6	1
Paris - France	3	9	5	67	49	17	34	2	27	3
Tokyo - Japan	4	2	10	41	25	9	112	6	9	62
Berlin - Germany	5	94	7	40	21	3	5	14	39	7
Washington - USA	6	11	4	73	131	8	9	41	7	37
Singapore - Singapore	7	20	40	31	78	24	26	4	4	58
Amsterdam - Netherlands	8	38	35	48	14	40	13	18	10	20
Oslo - Norway	9	25	18	21	2	11	33	37	28	33
Copenhagen - Denmark	10	46	45	4	3	20	23	25	22	31
Munich - Germany	11	62	39	8	18	48	8	42	42	11
Seoul - South Korea	12	21	8	68	76	6	22	19	25	41
Chicago - USA	13	10	13	103	118	34	25	10	13	56
Zurich - Switzerland	14	17	25	13	22	16	69	31	23	49
Vienna - Austria	15	77	34	83	11	22	11	20	87	8
San Francisco - USA	16	5	28	101	132	46	14	33	5	121
Hamburg - Germany	17	83	12	43	29	37	6	58	57	13
Dublin - Ireland	18	6	93	49	42	70	56	29	121	65
Rotterdam - Netherlands	19	56	76	39	38	42	4	90	14	28
Helsinki - Finland	20	41	63	10	7	21	20	46	49	42
Toronto - Canada	21	48	36	55	65	36	3	23	47	113
Los Angeles - USA	22	4	6	72	161	12	36	11	8	179
Seattle - USA	23	8	68	82	102	32	17	49	12	81
Boston - USA	24	12	2	78	120	15	59	43	29	109
Stockholm - Sweden	25	37	47	60	6	30	80	39	16	19
Hong Kong - China	26	24	23	158	101	27	27	7	1	69
Madrid - Spain	27	80	51	36	68	25	46	17	40	6
Bern - Switzerland	28	39	79	6	26	1	70	73	37	34
Basel - Switzerland	29	19	91	20	28	5	92	45	51	53
Houston - USA	30	3	46	93	148	49	30	32	11	138
Barcelona - Spain	31	109	33	71	67	28	15	24	48	10
Manchester - United Kingdom	32	34	31	37	39	69	28	66	61	43
Reykjavik - Iceland	33	79	85	19	1	87	135	60	80	64

Table 11. Ranking by Dimension (Continued)

City	Cities in Motion	Economy	Human capital	Social cohesion	Environment	Governance	Urban planning	International profile	Technology	Mobility and transportation
Taipei - Taiwan	34	69	15	1	80	4	52	67	68	27
Edinburgh - United Kingdom	35	42	11	2	10	62	106	47	62	103
Sydney - Australia	36	52	19	11	52	18	119	13	43	128
Beijing - China	37	28	37	66	173	68	32	16	50	2
Melbourne - Australia	38	61	16	12	70	13	82	15	44	120
Lyon - France	39	32	57	52	53	80	48	111	54	21
Canberra - Australia	40	35	9	3	8	29	130	97	71	83
Frankfurt - Germany	41	71	41	54	27	64	57	56	55	18
Miami - USA	42	22	14	110	152	51	49	21	17	54
Prague - Czech Republic	43	121	32	45	15	65	41	35	30	29
Cologne - Germany	44	95	22	29	51	58	37	82	63	17
Montreal - Canada	45	72	50	32	50	83	10	40	73	117
Dallas - USA	46	13	21	90	121	53	146	38	33	39
Geneva - Switzerland	47	27	98	42	55	19	90	44	35	104
Stuttgart - Germany	48	75	52	14	16	109	44	105	66	23
Eindhoven - Netherlands	49	57	107	9	13	44	50	102	26	59
Ottawa - Canada	50	74	55	7	23	33	19	86	103	89
Birmingham - United Kingdom	51	33	49	23	30	66	77	104	99	61
Austin - USA	52	23	24	76	113	50	40	93	20	55
Gothenburg - Sweden	53	54	69	53	4	73	68	77	41	72
Denver - USA	54	14	38	99	136	56	60	48	15	70
Vancouver - Canada	55	73	96	30	35	93	12	54	75	94
Shanghai - China	56	40	29	47	163	121	109	9	53	5
Milan - Italy	57	66	20	91	81	91	66	28	90	16
San Diego - USA	58	16	30	74	125	14	102	50	21	76
Auckland - New Zealand	59	60	64	26	32	39	75	61	74	68
Philadelphia - USA	60	15	17	107	134	43	43	69	19	119
Liverpool - United Kingdom	61	49	58	16	19	74	74	96	78	91
Warsaw - Poland	62	105	62	86	72	7	24	64	76	26
Dubai - United Arab Emirates	63	100	143	27	156	60	7	12	2	98
Düsseldorf - Germany	64	87	72	28	40	85	71	95	67	14
Rome - Italy	65	88	66	102	91	26	47	22	102	24
Glasgow - United Kingdom	66	64	59	15	20	63	62	71	83	112

Table 11. Ranking by Dimension (Continued)

City	Cities in Motion	Economy	Human capital	Social cohesion	Environment	Governance	Urban planning	International profile	Technology	Mobility and transportation
Brussels - Belgium	67	59	110	112	60	35	61	51	94	15
Baltimore - USA	68	26	61	140	108	45	18	87	46	66
Leeds - United Kingdom	69	36	53	24	43	72	96	115	91	88
Wellington - New Zealand	70	84	26	5	5	38	138	118	60	77
Nottingham - United Kingdom	71	55	48	17	31	75	85	114	89	118
Tallinn - Estonia	72	82	80	22	9	86	73	98	70	85
Antwerp - Belgium	73	76	104	46	64	98	54	83	119	25
Detroit - USA	74	29	27	138	143	57	21	88	31	102
Santiago - Chile	75	58	75	100	75	71	55	59	109	47
Marseille - France	76	43	101	58	69	81	95	110	88	45
Quebec - Canada	77	78	88	18	36	52	45	119	96	110
Lisbon - Portugal	78	122	125	69	61	84	39	26	56	36
Phoenix - USA	79	18	60	95	135	61	94	53	34	114
Nagoya - Japan	80	44	105	57	24	112	104	134	36	78
San Antonio - USA	81	31	42	124	107	54	58	81	38	107
Osaka - Japan	82	63	97	84	37	67	105	74	24	87
Nice - France	83	47	102	79	62	92	100	78	92	63
Lille - France	84	45	113	56	46	90	84	122	97	84
Budapest - Hungary	85	107	43	122	71	77	29	62	116	51
Valencia - Spain	86	125	109	50	47	41	65	107	59	32
Bratislava - Slovakia	87	128	70	51	33	88	51	131	126	35
Linz - Austria	88	102	84	34	12	119	81	113	124	48
Las Vegas - USA	89	30	77	143	130	55	53	63	32	130
Duisburg - Germany	90	113	81	35	34	107	86	121	98	57
Tel Aviv - Israel	91	51	134	33	87	78	87	75	86	127
Istanbul - Turkey	92	67	89	136	119	97	76	8	112	122
Malaga - Spain	93	134	74	77	59	110	108	125	82	22
Riga - Latvia	94	119	65	105	45	158	38	126	128	52
Seville - Spain	95	133	99	81	58	104	64	133	100	40
Vilnius - Lithuania	96	85	67	141	44	101	63	130	113	93
Turin - Italy	97	99	83	109	85	123	78	99	120	38
Moscow - Russia	98	91	44	134	146	103	91	30	81	60
Ljubljana - Slovenia	99	98	95	59	48	116	101	106	114	124

Table 11. Ranking by Dimension (Continued)

City	Cities in Motion	Economy	Human capital	Social cohesion	Environment	Governance	Urban planning	International profile	Technology	Mobility and transportation
Wroclaw - Poland	100	110	73	111	82	94	31	149	106	92
Zagreb - Croatia	101	70	78	104	66	59	124	117	115	115
Guangzhou - China	102	65	140	63	164	157	103	65	45	12
Buenos Aires - Argentina	103	160	56	128	79	31	35	34	131	135
Florence - Italy	104	106	82	127	84	125	107	89	107	46
Kuala Lumpur - Malaysia	105	68	114	85	142	135	120	36	117	67
Palma de Mallorca - Spain	106	135	112	65	59	120	79	100	77	106
A Coruña - Spain	107	127	115	80	41	117	83	150	52	95
Zaragoza - Spain	108	123	106	70	59	127	154	135	95	30
Shenzhen - China	109	50	145	108	158	170	113	79	65	9
Bilbao - Spain	110	129	132	75	57	118	88	127	79	73
Bucharest - Romania	111	93	100	125	89	124	111	94	93	71
Murcia - Spain	112	131	120	64	63	132	89	153	85	96
Porto - Portugal	113	137	139	62	56	79	141	109	69	90
Abu Dhabi - United Arab Emirates	114	81	156	44	172	96	72	84	3	105
Mexico City - Mexico	115	117	54	116	167	82	42	55	148	79
Jerusalem - Israel	116	86	144	87	83	113	122	80	123	151
Kyiv - Ukraine	117	149	86	173	92	47	16	138	135	108
Bangkok - Thailand	118	136	108	113	145	149	174	5	84	125
Sofia - Bulgaria	119	146	90	144	86	76	134	136	105	50
Panama - Panama	120	53	149	94	104	150	125	85	164	99
Athens - Greece	121	101	87	179	94	128	150	52	58	74
Naples - Italy	122	118	118	132	88	156	136	108	122	97
Ankara - Turkey	123	90	116	133	114	111	131	155	147	75
Belgrade - Serbia	124	92	94	145	90	130	165	124	111	140
Doha - Qatar	125	104	180	38	159	169	67	92	64	86
Montevideo - Uruguay	126	171	128	96	54	100	117	128	132	132
Tbilisi - Georgia	127	97	131	146	116	106	157	164	129	82
Minsk - Belarus	128	172	92	142	77	89	127	162	138	80
Almaty - Kazakhstan	129	103	124	135	129	141	93	167	149	123
São Paulo - Brazil	130	151	123	147	126	122	133	27	127	177
Saint Petersburg - Russia	131	124	71	151	150	23	183	76	110	101
Bogota - Colombia	132	116	103	174	100	102	181	68	130	149

Table 11. Ranking by Dimension (Continued)

City	Cities in Motion	Economy	Human capital	Social cohesion	Environment	Governance	Urban planning	International profile	Technology	Mobility and transportation
Rosario - Argentina	133	159	130	139	73	136	123	160	141	167
Ho Chi Minh City - Vietnam	134	157	138	115	139	148	143	91	125	126
Cordoba - Argentina	135	165	142	126	74	139	145	156	144	133
Rio de Janeiro - Brazil	136	169	122	175	110	95	97	70	143	157
Tianjin - China	137	96	141	88	180	171	156	142	104	44
Medellin - Colombia	138	115	146	155	95	138	172	148	146	141
Astana - Kazakhstan	139	148	151	130	111	143	115	158	152	137
Baku - Azerbaijan	140	126	133	117	133	168	161	152	140	146
Cape Town - South Africa	141	155	119	176	103	137	116	103	137	172
Novosibirsk - Russia	142	140	117	162	149	114	155	177	134	111
Lima - Peru	143	89	126	154	153	153	158	129	166	173
Santo Domingo - Dominican Republic	144	120	160	118	127	162	129	163	171	153
Kuwait City - Kuwait	145	156	181	97	154	154	110	151	101	152
Sarajevo - Bosnia-Herzegovina	146	167	136	159	99	165	149	174	155	100
Skopje - Macedonia	147	150	148	149	115	126	173	175	136	129
Cali - Colombia	148	112	158	148	97	133	182	180	151	160
Delhi - India	149	108	153	169	176	108	144	57	162	131
Riyadh - Saudi Arabia	150	132	173	131	160	142	175	145	72	147
Manama - Bahrain	151	138	179	61	165	177	99	139	150	155
Jakarta - Indonesia	152	154	135	114	162	105	168	72	133	181
Curitiba - Brazil	153	173	162	156	93	129	164	171	153	143
San Jose - Costa Rica	154	142	165	150	122	99	166	123	139	182
Quito - Ecuador	155	178	127	89	128	176	139	144	168	159
La Paz - Bolivia	156	153	157	119	98	175	151	179	175	154
San Salvador - El Salvador	157	139	159	177	124	160	114	168	161	144
Tunis - Tunisia	158	158	166	129	138	152	153	181	163	145
Brasilia - Brazil	159	166	168	163	141	115	148	154	157	134
Santa Cruz - Bolivia	160	152	150	98	96	180	167	170	176	150
Amman - Jordan	161	170	169	153	151	145	98	132	167	164
Mumbai - India	162	114	170	168	171	140	171	116	159	116
Rabat - Morocco	163	143	182	137	144	174	159	176	108	166
Johannesburg - South Africa	164	145	129	181	155	161	152	120	142	165
Asuncion - Paraguay	165	168	152	106	106	164	178	165	170	139

Table 11. Ranking by Dimension (Continued)

City	Cities in Motion	Economy	Human capital	Social cohesion	Environment	Governance	Urban planning	International profile	Technology	Mobility and transportation
Bangalore - India	166	111	155	123	175	131	177	112	165	175
Guayaquil - Ecuador	167	179	163	92	112	173	163	159	169	148
Tehran - Iran	168	174	121	180	147	147	121	147	145	171
Salvador - Brazil	169	175	147	164	123	159	147	172	160	163
Casablanca - Morocco	170	141	175	157	157	179	160	161	118	158
Nairobi - Kenya	171	144	171	160	140	151	118	146	180	180
Belo Horizonte - Brazil	172	176	161	167	117	134	176	173	156	170
Guatemala City - Guatemala	173	147	164	161	170	167	128	143	179	169
Kolkata - India	174	130	167	171	169	144	162	169	174	178
Douala - Cameroon	175	180	174	120	137	182	140	140	182	161
Manila - Philippines	176	164	137	172	177	155	169	101	158	176
Cairo - Egypt	177	181	154	170	166	178	132	141	154	174
Kampala - Uganda	178	163	183	152	174	172	142	166	177	162
Caracas - Venezuela	179	182	111	183	109	166	179	137	181	136
Lahore - Pakistan	180	161	178	165	179	183	126	183	178	142
Accra - Ghana	181	183	177	166	168	146	170	157	173	156
Karachi - Pakistan	182	162	176	182	181	181	137	182	172	168
Lagos - Nigeria	183	177	172	178	178	163	180	178	183	183

Figure 2. Map of Cities in the CIMI Ranking

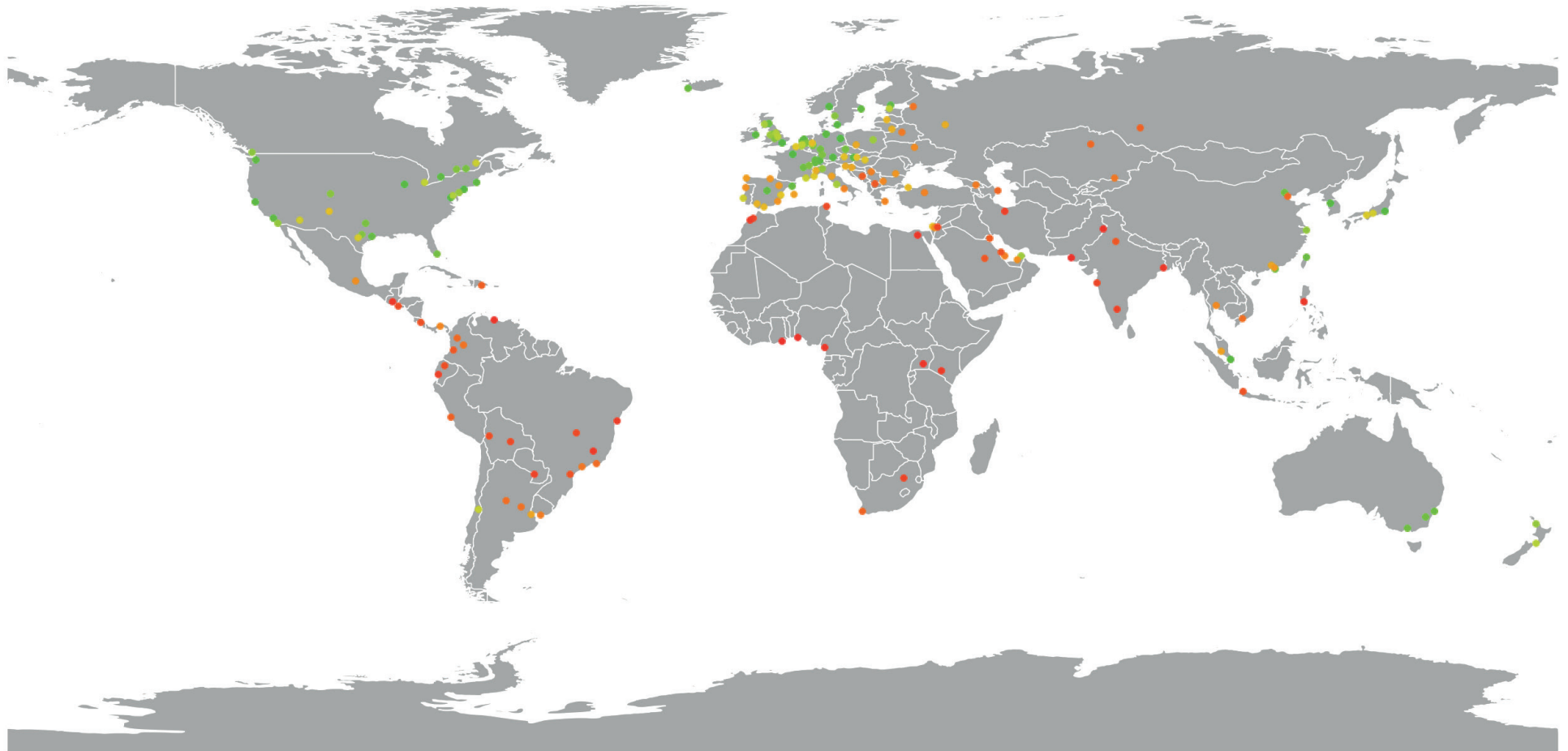


Table 12 shows the top 10 positions in the ranking for each dimension. This makes it easier to see the extent to which particular regions are represented in each dimension.

Table 12. Top 10 by Dimension

		
ECONOMY	HUMAN CAPITAL	SOCIAL COHESION
1 New York - USA	1 London - United Kingdom	1 Taipei - Taiwan
2 Tokyo - Japan	2 Boston - USA	2 Edinburgh - United Kingdom
3 Houston - USA	3 New York - USA	3 Canberra - Australia
4 Los Angeles - USA	4 Washington - USA	4 Copenhagen - Denmark
5 San Francisco - USA	5 Paris - France	5 Wellington - New Zealand
6 Dublin - Ireland	6 Los Angeles - USA	6 Bern - Switzerland
7 London - United Kingdom	7 Berlin - Germany	7 Ottawa - Canada
8 Seattle - USA	8 Seoul - South Korea	8 Munich - Germany
9 Paris - France	9 Canberra - Australia	9 Eindhoven - Netherlands
10 Chicago - USA	10 Tokyo - Japan	10 Helsinki - Finland

Although the indexes are not comparable from one edition to the next, New York City (USA) continues to lead the ranking in this dimension, particularly because of its high GDP and the number of headquarters of publicly traded companies. While its indicator values make the city hard to beat at the moment, Tokyo and other American cities are not far behind.

The top 10 in this dimension includes six US cities, mainly due to their high GDP per capita and the growth they have experienced in recent years. Tokyo, Dublin, London and Paris also hold top positions in the economy dimension. Dublin's strong GDP growth during the period 2019–21 has positioned it as the second-ranked city in Europe and made it stand out strongly in this dimension.

It is important to stress the great variability shown by some cities in this dimension for the period analyzed. The COVID-19 effect caused ups and downs from one year to the next in both growth forecasts and GDP. This directly affects the ranking for this dimension.

The top position in the human capital dimension is held by London (UK), which has achieved this status because it has the largest number of top-level business schools and the largest number of universities in the world's top 500. The city also has a large number of secondary schools (both public and private), a high proportion of people with secondary and higher education, and a wide range of cultural offerings in theaters, museums and art galleries.

American cities also perform well in this dimension, with four in the top 10, along with three European and two Asian cities.

Taipei leads this year's social cohesion ranking. The city stands out especially for its high tolerance for diversity. Taipei creates a very friendly environment for women, the LGBT community and racial diversity. Over the last few years, the Expat Insider survey has ranked Taipei as the most expat-friendly city in the world: 94% of expats rate the overall friendliness of local residents positively (compared to 62% globally).

Copenhagen and Wellington are also in the top 10 in this dimension. These cities were ranked among the top 10 in the 2021 Liveability Index (produced by the Economist Intelligence Unit). They also have one of the highest happiness scores in the world and the highest rating as a favorable environment for women to pursue their lives. In this dimension, six of the top 10 cities are European. No US cities stand out in this ranking.

Table 12. Top 10 by Dimension (Continued)

 ENVIRONMENT	 GOVERNANCE	 URBAN PLANNING
<ol style="list-style-type: none"> 1 Reykjavik - Iceland 2 Oslo - Norway 3 Copenhagen - Denmark 4 Gothenburg - Sweden 5 Wellington - New Zealand 6 Stockholm - Sweden 7 Helsinki - Finland 8 Canberra - Australia 9 Tallinn - Estonia 10 Edinburgh - United Kingdom 	<ol style="list-style-type: none"> 1 Bern - Switzerland 2 London - United Kingdom 3 Berlin - Germany 4 Taipei - Taiwan 5 Basel - Switzerland 6 Seoul - South Korea 7 Warsaw - Poland 8 Washington - USA 9 Tokyo - Japan 10 New York - USA 	<ol style="list-style-type: none"> 1 London - United Kingdom 2 New York - USA 3 Toronto - Canada 4 Rotterdam - Netherlands 5 Berlin - Germany 6 Hamburg - Germany 7 Dubai - United Arab Emirates 8 Munich - Germany 9 Washington - USA 10 Montreal - Canada

Once again, this year, the city of Reykjavik (Iceland) leads the ranking in this dimension, followed by Oslo (Norway) and Copenhagen (Denmark). These cities rank very highly on the Environmental Performance Index (EPI) and have low pollution rates. The Icelandic capital also stands out for its water and renewable energy sources. This is another dimension in which no US city ranks high.

The top position in this dimension is occupied by Bern (Switzerland), which performs well in the Corruption Perceptions Index, reserves per capita, and number of embassies. The top 10 for this ranking includes three other Western European and two US cities.

This year, London ranks first in urban planning, taking the top position from New York, which is relegated to second place. The English city stands out for having a large number of electric car charging stations, its AI projects, and its infrastructure, with a large number of buildings and high-rises and a very advanced system for bicycle rental/shared use. It is also noteworthy that four of the top 10 cities in this dimension are North American, and two—Toronto and Montreal—are Canadian.

Table 12. Top 10 by Dimension (Continued)

		
INTERNATIONAL PROFILE	TECHNOLOGY	MOBILITY AND TRANSPORTATION
<ol style="list-style-type: none"> 1 London - United Kingdom 2 Paris - France 3 New York - USA 4 Singapore - Singapore 5 Bangkok - Thailand 6 Tokyo - Japan 7 Hong Kong - China 8 Istanbul - Turkey 9 Shanghai - China 10 Chicago - USA 	<ol style="list-style-type: none"> 1 Hong Kong - China 2 Dubai - United Arab Emirates 3 Abu Dhabi - United Arab Emirates 4 Singapore - Singapore 5 San Francisco - USA 6 New York - USA 7 Washington - USA 8 Los Angeles - USA 9 Tokyo - Japan 10 Amsterdam - Netherlands 	<ol style="list-style-type: none"> 1 New York - USA 2 Beijing - China 3 Paris - France 4 London - United Kingdom 5 Shanghai - China 6 Madrid - Spain 7 Berlin - Germany 8 Vienna - Austria 9 Shenzhen - China 10 Barcelona - Spain

London is the top city in this dimension, while Paris and New York rank second and third, respectively. London stands out for its large number of hotels and the number of international meetings held in the city. It also has the highest number of airline passengers, which is consistent with its status as the city with the largest number of air routes. Paris shows very similar performance to the British capital in terms of the number of hotels and is one of the cities where most international meetings are held.

This year's top 10 for this dimension includes cities that had not previously attained this level. It is important to bear in mind the effect of the pandemic. Not all countries were affected equally. Many that previously occupied top positions were affected by restrictions related to COVID-19, the gradual opening of borders, and other pandemic-related factors.

Hong Kong ranks first in the technology dimension this year, followed by Dubai. Hong Kong stands out in terms of the number of mobile phones per capita (99.8% of the city's population has at least one). Similarly, 99.3% of the population is covered by at least an LTE/WiMAX mobile network.

In second place is Dubai, which has been a test city for automation technology since 2017. Drones, robots and autonomous vehicles are part of everyday life in the city, which stands out for the high level of mobile connectivity of its inhabitants and the number of WiFi hotspots.

New York is the top-ranked city in this dimension. It has a highly developed subway system, with the largest number of stations. The city also has a good system for bicycle, scooter and moped rental, and ranks fifth in number of inbound air routes. Beijing and Paris rank second and third, respectively. Beijing stands out for its great subway system, which is among the world's best in terms of length and the number of stations. For its part, Paris is second in number of inbound air routes and has a well-developed bicycle sharing system. Six European cities, including Madrid and Barcelona, hold top 10 positions in this ranking.



“City resilience will take on unprecedented significance in urban agendas, but it can only be achieved if all social actors—the public sector, private companies, civic organizations and academic institutions—contribute and collaborate to reach this shared goal.”

Pascual Berrone

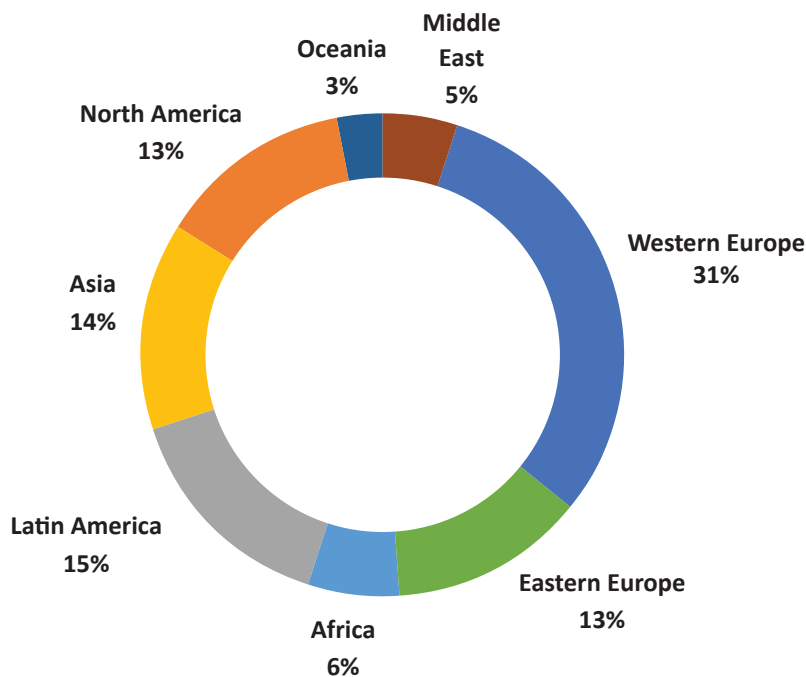


Cities in Motion: Regional Distribution

In this section, we discuss the index results by geographic region. One of the limitations of our index is that it does not provide equal coverage for all regions. This is mainly due to the limited information available for certain regions in the case of cities that are not capitals or that do not have a significant population. Despite this limitation, each new edition of the **CIMI** aims to expand its coverage in order to achieve greater balance if new information is available.

In this regard, **Figure 3** shows the extent to which each region is represented in the ranking. As this chart shows, 31% of the cities covered are in Western Europe, which is the most represented region, followed by Latin America (15% of the cities), and Asia and Eastern Europe (13% in each case). Nine new cities have been included this year, including two in Africa (Kampala and Accra), one in the Middle East (Tehran), Canberra (the Australian capital), and Nur-Sultan in Asia. These additions are intended to

Figure 3. Percentage of Cities in Each Geographic Region in the CIMI



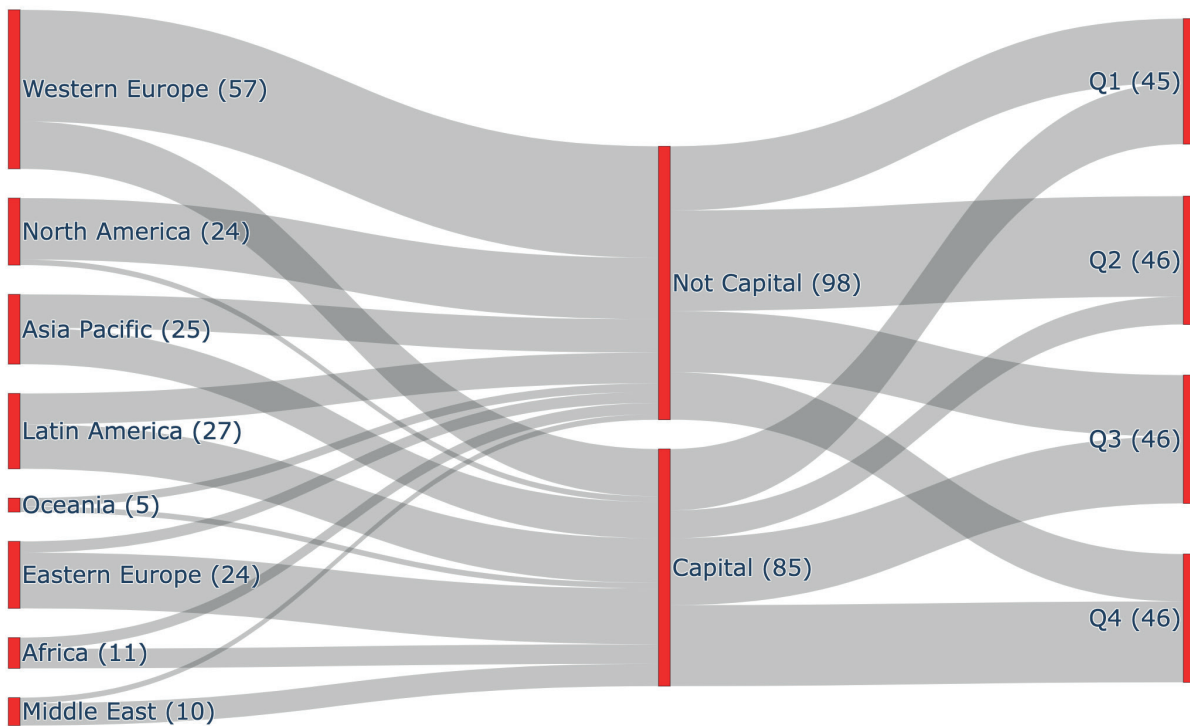
increase representation of some of the regions included the index and expand its coverage.


Figure 4 below shows the distribution of cities by geographic region (left), whether or not they are capitals of a country (center), and their position in the ranking (right). For the grouping by position in the ranking, the cities are classified as Q1, Q2, Q3 or Q4. The Q1 group is composed of the top 25% of cities in the ranking, and the Q4 group is composed of the worst-performing 25%. The most represented region is Western Europe, with 57 cities, 33% of those included in the ranking. It is followed

by Latin America, with 27 (15% of the total), and Eastern Europe and Asia, with 24 and 25 cities respectively (13% and 14% of the total). As the chart shows, most of the cities in Western Europe and North America are not country capitals. In contrast, most of Eastern European and Middle Eastern cities included in the ranking are capitals.

Finally, the cities that are not country capitals are most represented in the Q2 group, which is made up of those that occupy positions 46 to 91 in the **CIMI** ranking.

Figure 4. Type of City by Region and Rank



An aerial, top-down view of a city street. The street is marked with a grid of white lines, and the ground is a mix of light and dark grey. Numerous people are walking in various directions across the street. The lighting is bright, creating strong shadows. The overall scene is a busy urban environment.

“The current health crisis reminds us that cities are about people and therefore about human development. This crisis will change people’s real needs, and cities will have to change their urban policies and strategies accordingly.”

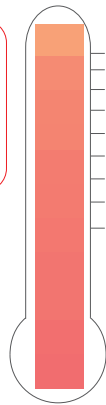
Joan Enric Ricart

Cities in Motion. Regional Ranking

Below we present a series of tables that show the top 5 cities in each region and their evolution in the overall ranking over the last three years. The accompanying maps show the location of each city in that region. The colors indicate each city's overall rank.

Top 5 Africa

- 01- Cape Town
- 02- Tunis
- 03- Rabat
- 04- Johannesburg
- 05- Casablanca
- 06- Nairobi
- 07- Douala
- 08- Cairo
- 09- Kampala
- 10- Accra
- 11- Lagos

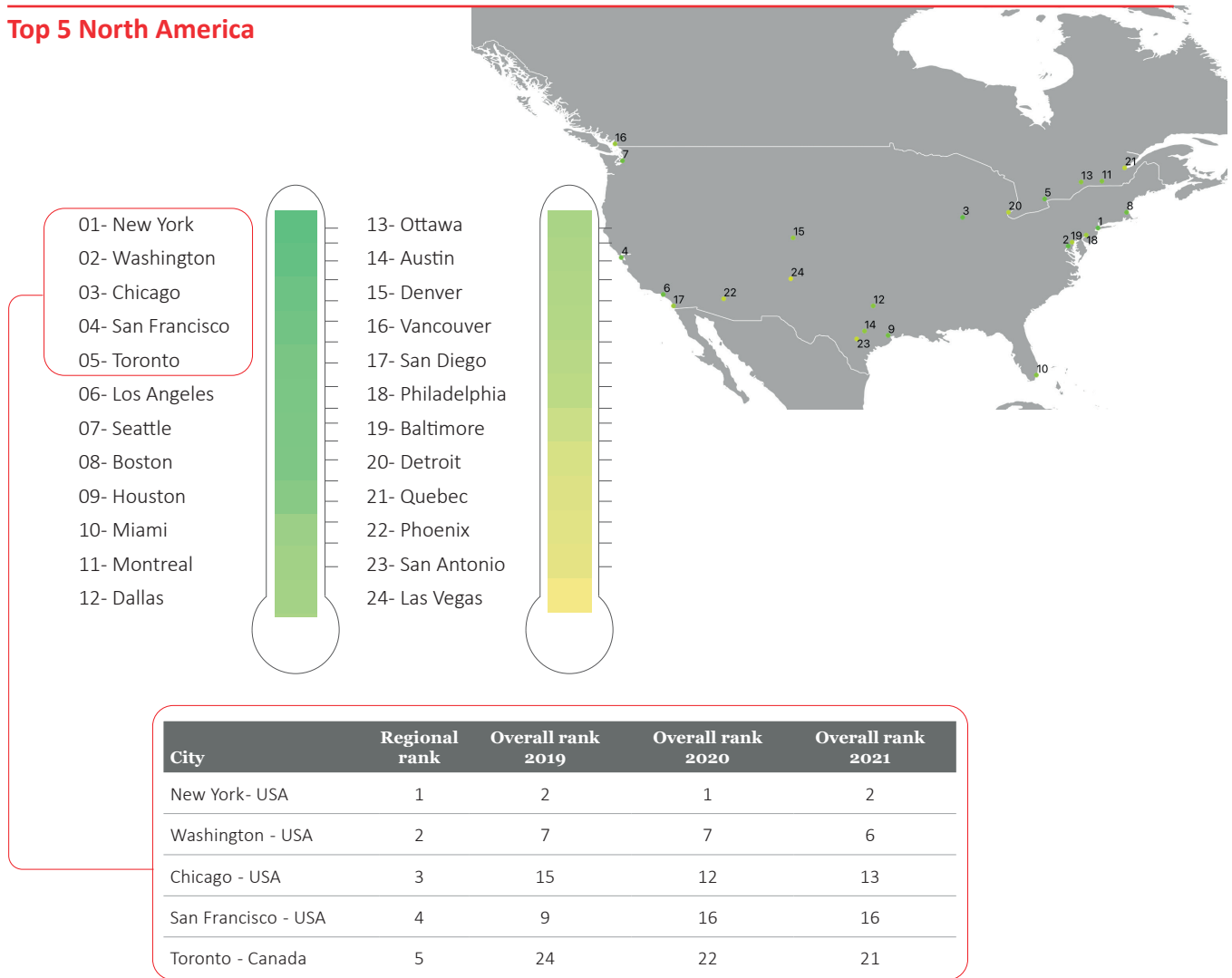


City	Regional rank	Overall rank 2019	Overall rank 2020	Overall rank 2021
Cape Town - South Africa	1	142	133	141
Tunis - Tunisia	2	152	158	158
Rabat - Morocco	3	161	165	163
Johannesburg - South Africa	4	162	162	164
Casablanca - Morocco	5	164	168	170

Cape Town tops the ranking for Africa, followed by Tunis. Rabat, Johannesburg and Casablanca occupy the remaining top 5 positions. All the African cities included in the index are at the bottom of the overall ranking. This year, two new cities, Accra and Kampala, were added to increase representation of the Africa region.

Although the Africa region was not as badly affected by the pandemic as initially expected, the health crisis has had very serious consequences in economic, political and social terms, and the region will need to make an even greater effort to improve its current situation.

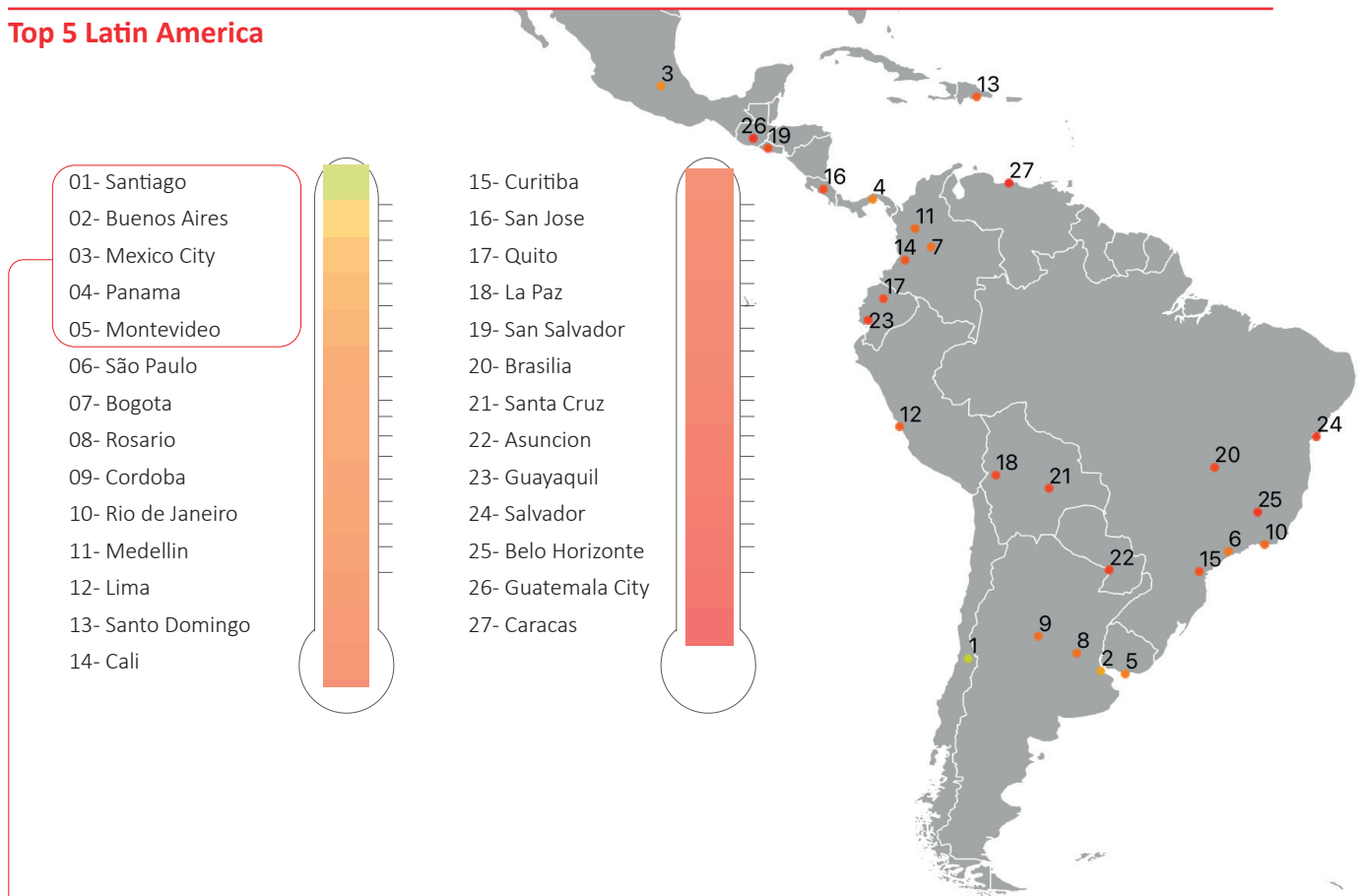
Top 5 North America



New York tops the ranking for North America and ranks second overall. It is followed this year by Washington, which ranks sixth overall, ahead of Chicago, which ranks 13th. The regional top 5 is rounded out by San Francisco and the Canadian city of Toronto.

As the table above shows, North American cities occupy prominent positions in the overall ranking. This year, three new US cities (Austin, Detroit and Las Vegas) have been added to the ranking, bringing the total to 19. All of them rank highly, especially in the economy dimension, where they are in the top 30.

Top 5 Latin America



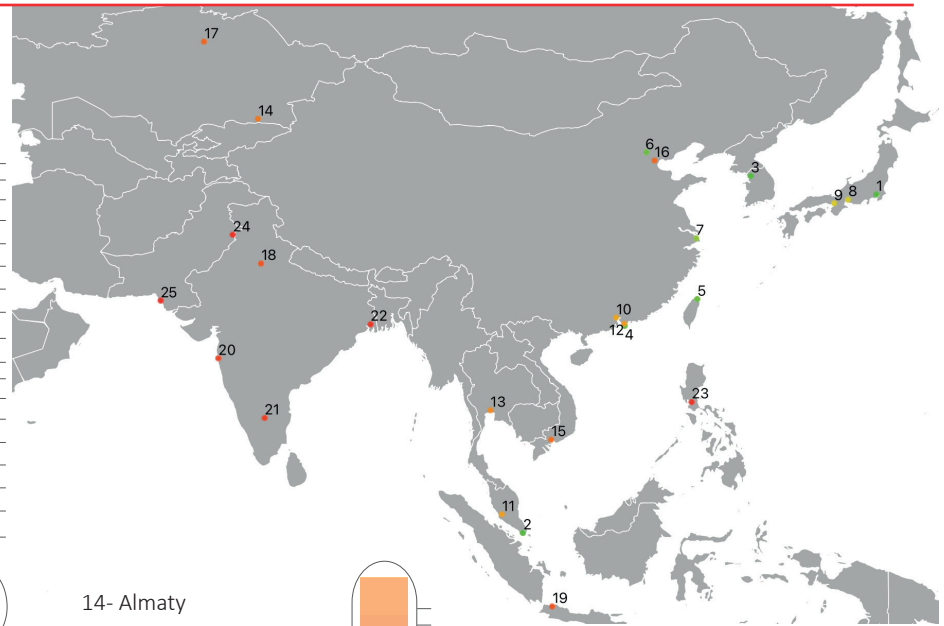
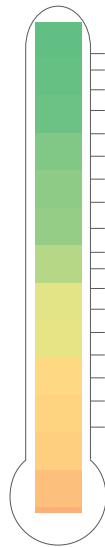
City	Regional rank	Overall rank 2019	Overall rank 2020	Overall rank 2021
Santiago - Chile	1	92	95	75
Buenos Aires - Argentina	2	113	111	103
Mexico City - Mexico	3	119	120	115
Panama - Panama	4	128	142	120
Montevideo - Uruguay	5	120	119	126

Over the years, two cities have vied for the top position in the regional ranking for Latin America. In the current edition, Santiago (Chile) outperforms Buenos Aires (Argentina) in mobility and transportation, social cohesion, and especially in the economy dimension, where the Argentine capital's poor performance places it well below Santiago. Buenos Aires performs better than Santiago in governance, urban planning and international profile. Mexico City, Panama and Montevideo also perform well in the region ranking.

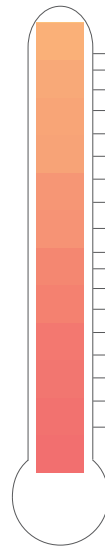
As the table above shows, most of the Latin American cities do not occupy top positions in the overall ranking. Santiago is the exception. Latin America is one of the regions with the highest urban concentration on the planet, so the challenges facing these cities are increasingly global, and there are problems they all share, particularly in the wake of the pandemic.

Top 5 Asia Pacific

- 01- Tokyo
- 02- Singapore
- 03- Seoul
- 04- Hong Kong
- 05- Taipei
- 06- Beijing
- 07- Shanghai
- 08- Nagoya
- 09- Osaka
- 10- Guangzhou
- 11- Kuala Lumpur
- 12- Shenzhen
- 13- Bangkok



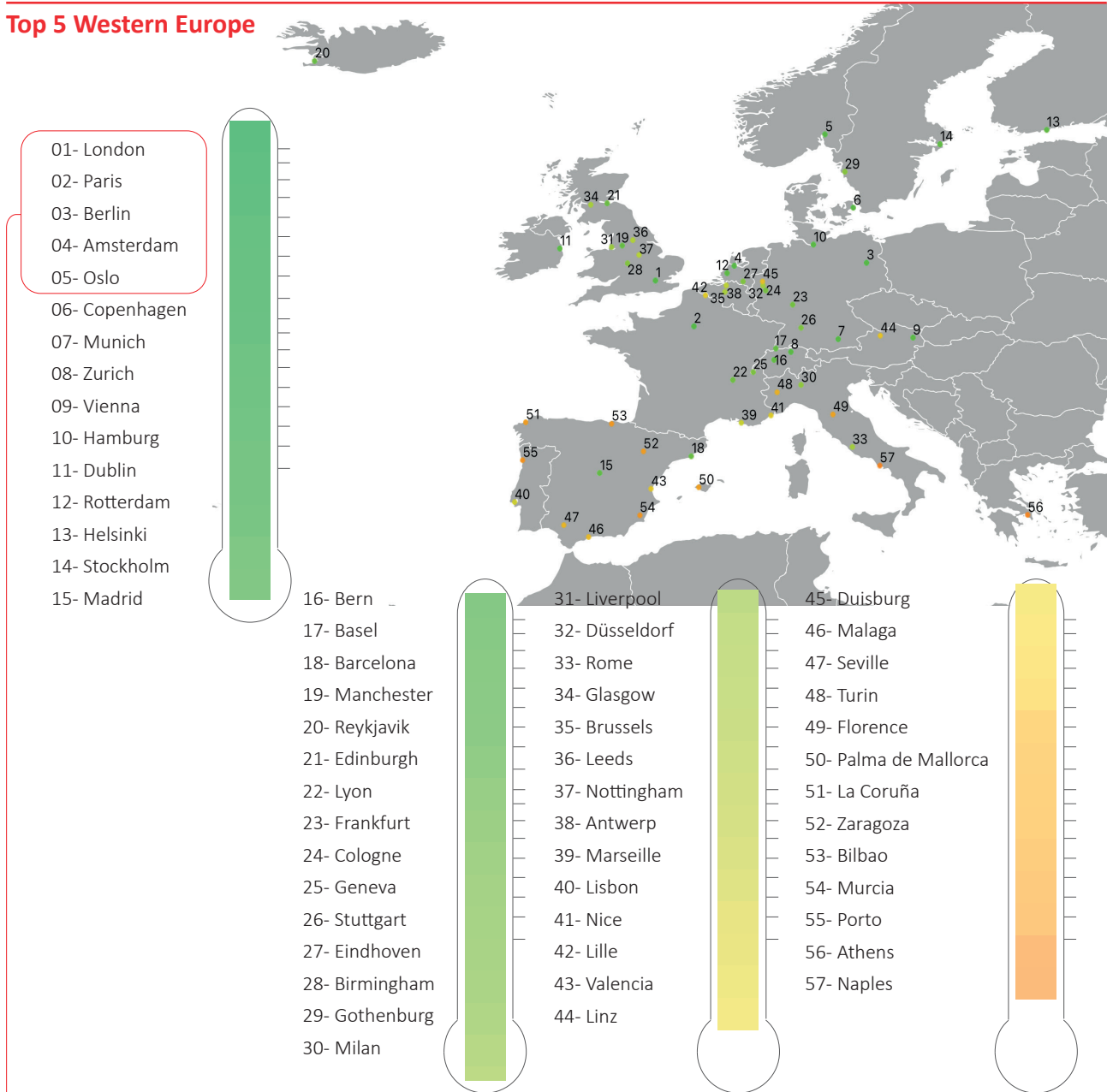
- 14- Almaty
- 15- Ho Chi Minh City
- 16- Tianjin
- 17- Nur Sultan
- 18- Delhi
- 19- Jakarta
- 20- Mumbai
- 21- Bangalore
- 22- Kolkata
- 23- Manila
- 24- Lahore
- 25- Karachi



City	Regional rank	Overall rank 2019	Overall rank 2020	Overall rank 2021
Tokyo - Japan	1	4	3	4
Singapore - Singapore	2	16	11	7
Seoul - South Korea	3	8	6	12
Hong Kong - China	4	30	20	26
Taipei - Taiwan	5	33	26	34

Tokyo leads the ranking for the Asia region and ranks fourth overall. The Japanese capital performs particularly well in the dimensions of economy (rank #2), international profile (#6) and governance and technology (#9). The second ranked city in the region is Singapore, which ranks seventh overall. The city-state performs particularly well in the dimensions of technology and international profile, where it ranks fourth in each case. Seoul, Hong Kong and Taipei occupy the remaining positions in the regional top 5.

Top 5 Western Europe

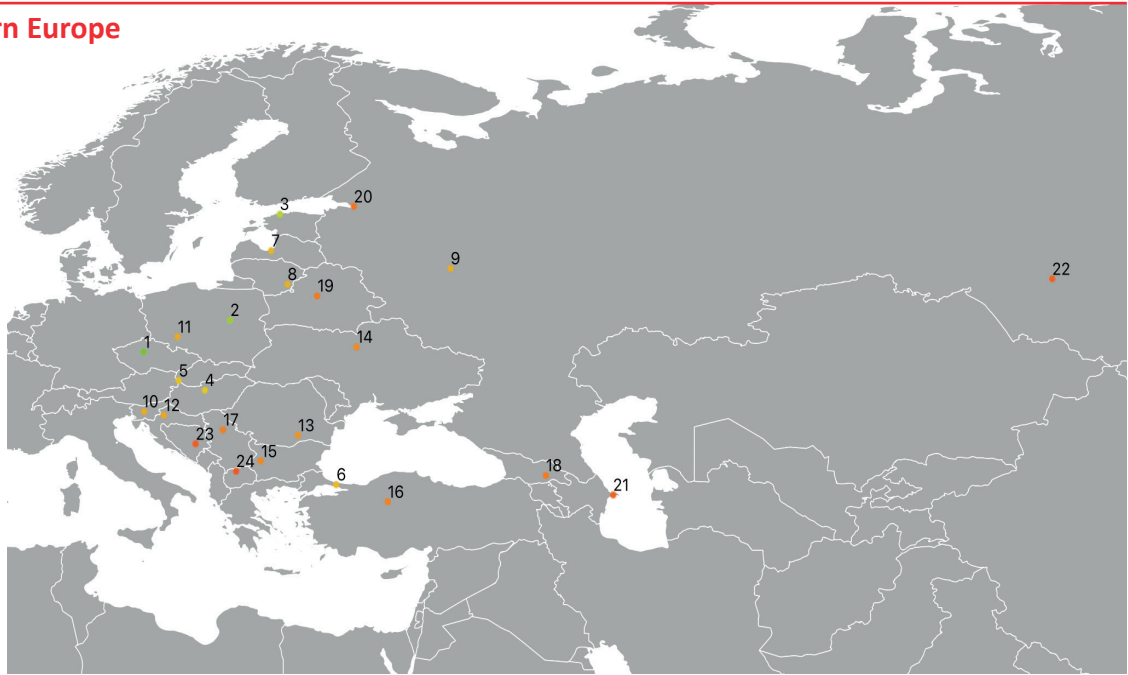


City	Regional rank	Overall rank 2019	Overall rank 2020	Overall rank 2021
London - United Kingdom	1	1	2	1
Paris - France	2	3	4	3
Berlin - Germany	3	5	5	5
Amsterdam - Netherlands	4	6	8	8
Oslo - Norway	5	14	9	9

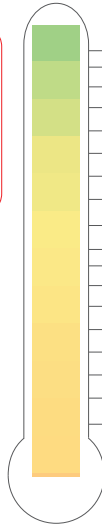
London tops the European ranking and occupies first place in the world ranking. This year, the next three spots go to Paris, Berlin and Amsterdam, which occupy second, third and fourth place, respectively. Oslo occupies the last position among the regional leaders this year. As the table above shows, all the cities in the regional top 5 rank in the overall top 10.

As the map shows, most of the Western European cities perform well in the overall ranking.

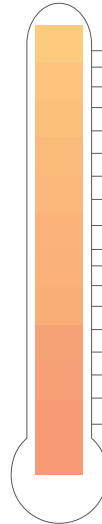
Top 5 Eastern Europe



- 01- Prague
- 02- Warsaw
- 03- Tallinn
- 04- Budapest
- 05- Bratislava
- 06- Istanbul
- 07- Riga
- 08- Vilnius
- 09- Moscow
- 10- Ljubljana
- 11- Wroclaw
- 12- Zagreb



- 13- Bucharest
- 14- Kyiv
- 15- Sofia
- 16- Ankara
- 17- Belgrade
- 18- Tbilisi
- 19- Minsk
- 20- Saint Petersburg
- 21- Baku
- 22- Novosibirsk
- 23- Sarajevo
- 24- Skopje

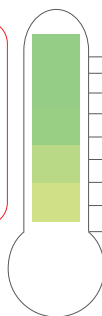


City	Regional rank	Overall rank 2019	Overall rank 2020	Overall rank 2021
Prague - Czech Republic	1	37	50	43
Warsaw - Poland	2	60	54	62
Tallinn - Estonia	3	73	70	72
Budapest - Hungary	4	71	68	85
Bratislava - Slovakia	5	90	79	87

The ranking for Eastern Europe is led by Prague. In addition to being the top city at the regional level, Prague is in the top 30 in the dimensions of environment (rank #15), mobility and transportation (#29), and technology (#30). Warsaw, Tallinn, Budapest and Bratislava occupy the remaining top positions in the regional ranking.

Top 3 Oceania

- 01- Sydney
- 02- Melbourne
- 03- Canberra
- 04- Auckland
- 05- Wellington

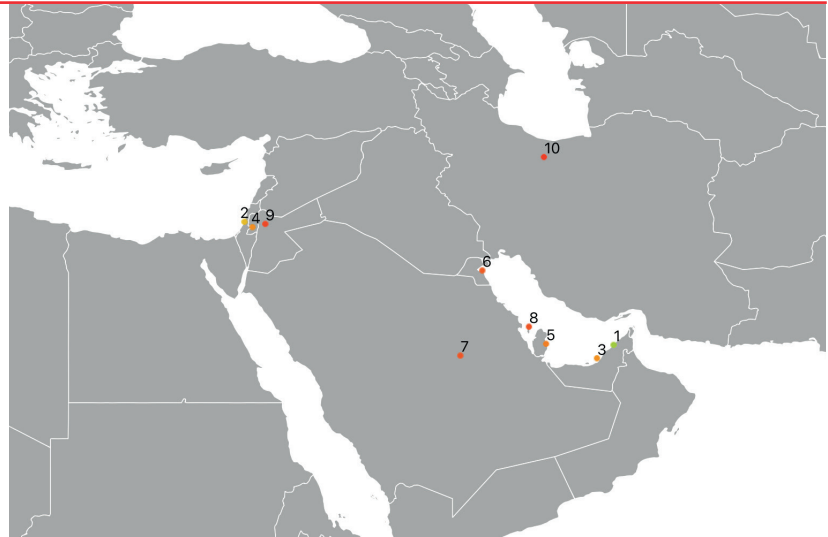
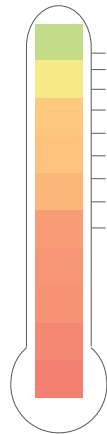


City	Regional rank	Overall rank 2019	Overall rank 2020	Overall rank 2021
Sydney - Australia	1	27	23	36
Melbourne - Australia	2	38	30	38
Canberra - Australia	3	48	38	40

The Oceania ranking is led by Sydney, which ranks in the overall top 20 in four dimensions: social cohesion (rank #11), international profile (#13), governance (#18) and human capital (#19). This year, the top 3 are all Australian cities. This edition of the index includes the capital, Canberra, which performs very well in social cohesion, environment and human capital, taking the third podium position for the region.

Top 5 Middle East

- 01- Dubai
- 02- Tel Aviv
- 03- Abu Dhabi
- 04- Jerusalem
- 05- Doha
- 06- Kuwait City
- 07- Riyadh
- 08- Manama
- 09- Amman
- 10- Tehran



City	Regional rank	Overall rank 2019	Overall rank 2020	Overall rank 2021
Dubai - United Arab Emirates	1	69	67	63
Tel Aviv - Israel	2	88	88	91
Abu Dhabi - United Arab Emirates	3	109	104	114
Jerusalem - Israel	4	115	116	116
Doha - Qatar	5	124	124	125

Dubai tops the Middle East ranking and ranks 63rd overall. The city stands out for its strong performance in the dimensions of technology (rank #2), urban planning (#7) and international profile (#12). It is followed by Tel Aviv, Abu Dhabi, Jerusalem and Doha, which take the remaining top 5 positions for the region.

Stand-Out Cities



Stand-Out Cities

In this section, we present individual analyses of a series of cities that occupy prominent positions in the overall ranking or in one of the dimensions.

The tables show the evolution of each city in the overall ranking, the dimensions in which it performs especially well, the position it holds within its region, and its classification by performance.

The bar chart shows the number of positions the city would have to advance in each dimension to reach first place. This analysis makes it possible to visualize a city's strengths and weaknesses and identify the dimensions where work could be done to improve its performance.



BARCELONA

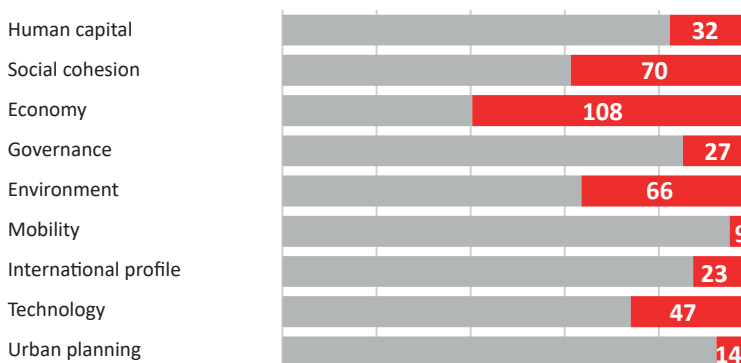
Barcelona ranks second among Spanish cities and 31st overall. The city stands out in the dimensions of mobility and transportation and urban planning, where it ranks among the top 15. According to the Index of Sustainable Mobility in Spanish Cities (Spanish acronym: IMSCE), Barcelona's mobility system ranks second (after Madrid). The city stands out for being among the top 5 in the dimensions of physical structure of the territory, availability of mobility services, demand for mobility services, and management and governance. In a study of the city's seven Integrated Public Transit Areas conducted by the IMSCE to evaluate interaction between Barcelona and surrounding municipalities, the Catalan capital was found to be the best-connected city with respect to its metropolitan area.

31	18	10	RH
CIMI rank	Regional CIMI	Mobility and transportation	Classification by performance

Evolution of CIMI rank over the last three years

	2019	2020	2021
Rank	26	34	31

Positions that Barcelona would have to gain to be a leader in each dimension





CAPE TOWN

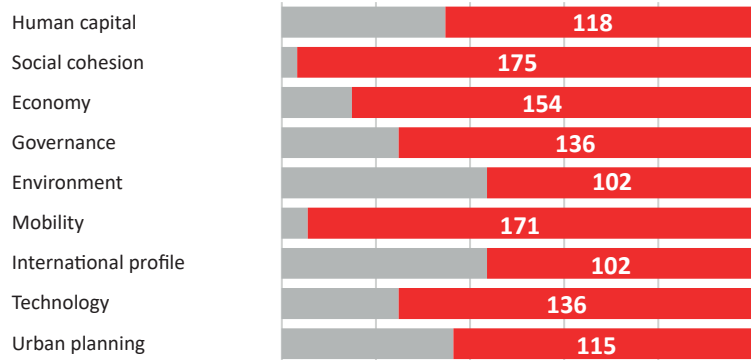
Cape Town ranks 141st overall and is the leader in its region, where it performs especially well in the dimensions of international profile, environment and urban planning. It is the second largest city in South Africa by population. Despite the city’s limitations, it has always been interested in creative innovations. The *Smart City Playbook*—a report documenting the best practices of cities around the world (produced by Machina Research and sponsored by Nokia)—named Cape Town the smartest city in Africa, noting its potential to make progress by applying IoT (Internet of Things) technology. Finally, South Africa has seven active ports, including Cape Town, which ranks second in importance (after Durban).

141	1	B
CIMI rank	Regional CIMI	Classification by performance

Evolution of CIMI rank over the last three years

	2019	2020	2021
Rank	142	133	141

Positions that Cape Town would have to gain to be a leader in each dimension





COPENHAGUEN

Copenhagen is the capital of Denmark and the country's most populous city. The city ranks 10th overall (fourth in social cohesion and third in the environment dimension). It was rated the safest city in the Safe Cities Index 2021 thanks to its low crime rate, relatively narrow wealth gap, and high level of social cohesion. Seventy-five percent of the city's inhabitants get around on foot, by bicycle or on public transit. The Danish capital has set the goal of achieving carbon neutrality and becoming one of the healthiest cities by 2025. In order to cut emissions, it has been promoting the use of bicycles for personal transportation for many years and working to reduce pollutant emissions.

10	3	4	RH
CIMI rank	Environment	Social cohesion	Classification by performance

Evolution of CIMI rank over the last three years

	2019	2020	2021
Rank	12	13	10

Positions that Copenhagen would have to gain to be a leader in each dimension

Human capital	44
Social cohesion	3
Economy	45
Governance	19
Environment	2
Mobility	30
International profile	24
Technology	21
Urban planning	22



DUBAI

Dubai is one of the seven emirates that make up the United Arab Emirates. The city leads the ranking for its region and is among the top 15 in the dimensions of technology (rank #2), urban planning (#7) and international profile (#12). As one of the main epicenters for research and development (R&D) in emerging sectors, Dubai has been called the “city of the future.” The city is home to a thriving community of start-up incubators and accelerators, as well as regulatory sandboxes for developing and testing new models for technology businesses. It has an ecosystem of facilities to enable innovation by companies in all sectors. A range of long-term, forward-looking strategies have been deployed, integrating AI, blockchain, 3D printing and IoT technologies.

63	1	2	M
CIMI rank	Regional CIMI	Technology	Classification by performance

Evolution of CIMI rank over the last three years

	2019	2020	2021
Rank	69	67	63

Positions that Dubai would have to gain to be a leader in each dimension

Human capital	142
Social cohesion	26
Economy	99
Governance	59
Environment	155
Mobility	97
International profile	11
Technology	1
Urban planning	6



DUBLIN

Dublin is Ireland’s capital and largest city. It has a service-driven economy, with services accounting for around 80% of business activity. Companies such as Google, Amazon, Facebook and Salesforce, among others, are headquartered in the capital. The city has been one of the biggest beneficiaries of Brexit-related relocations, and in 2020 employment at multinational companies reached a record high. Dublin ranks sixth in the economy dimension and 18th overall.

18	11	6	RH
CIMI rank	Regional CIMI	Economy	Classification by performance

Evolution of CIMI rank over the last three years

	2019	2020	2021
Rank	40	33	18

Positions that Dublin would have to gain to be a leader in each dimension

Human capital	92
Social cohesion	48
Economy	5
Governance	69
Environment	41
Mobility	64
International profile	28
Technology	120
Urban planning	55



LONDON

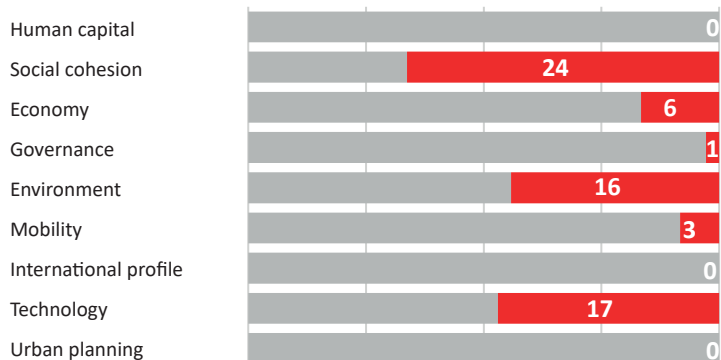
London, the capital of the United Kingdom, is the largest city in the country and one of the largest in Europe. It is also one of the world's leading economies and the most important in the country, among other reasons, because it contributes around 20% of the national GDP. The British capital hosts more start-ups than any other city in the world. The city recently launched the Smarter London Together project, which is intended to serve as a flexible digital master plan for making London the smartest city in the world. The city ranks well in almost all dimensions: first in human capital, urban planning and international profile; fourth in mobility and transportation; and seventh in economy. It performs worst in the social cohesion dimension (rank #25).

1	1	H
CIMI rank	Regional CIMI	Classification by performance
1	1	1
International profile	Human capital	Urban planning

Evolution of CIMI rank over the last three years

	2019	2020	2021
Rank	1	2	1

Positions that London would have to gain to be a leader in each dimension





MADRID

Madrid is the capital of Spain and the country's most populous city. It is also the top Spanish city in the overall ranking, where it holds 27th place. The city ranks high in the dimensions of mobility and transportation (rank #6), and international profile (#17). The Sustainable Mobility Ordinance (approved in October 2018) establishes a regulatory framework under which the entire territory of Madrid will become a low emission zone and mandates a set of measures to promote sustainable travel in the city. It also introduces a series of incentives aimed at promoting sustainable mobility in order to reduce greenhouse gas emissions and improve air quality in the Community of Madrid. Grants will cover up to 50% of the purchase price of electric vehicles, up to a maximum that varies according to the vehicle type (electric motorcycles, mopeds, bicycles and scooters).

27	15	6	RH
CIMI rank	Regional CIMI	Mobility and transportation	Classification by performance

Evolution of CIMI rank over the last three years

	2019	2020	2021
Rank	23	32	27

Positions that Madrid would have to gain to be a leader in each dimension

Human capital	50
Social cohesion	35
Economy	79
Governance	24
Environment	67
Mobility	5
International profile	16
Technology	39
Urban planning	45



NEW YORK

New York is considered a global city given its worldwide influence on media, politics, education and leisure. In this edition, New York ranks second overall. However, it is the top-ranked city in the dimensions of economy and mobility and transportation, second in urban planning, and third in human capital and international profile. Social cohesion and the environment are weak points that remain to be addressed. In relation to the environment dimension, in mid-2019, with the aim of reducing environmental pollution, the municipality of New York approved a new regulation that requires large buildings, which account for about half of pollution in the city, to cut their greenhouse gas emissions by 40% by 2030 and continue making further reductions so that they emit 80% less polluting gases by 2050. These are the most ambitious emissions reduction targets ever set by a city.

2	1	A
CIMI rank	Regional CIMI	Classification by performance
1	1	2
Economy	Mobility and transportation	Urban planning

Evolution of CIMI rank over the last three years

	2019	2020	2021
Rank	2	1	2

Positions that New York would have to gain to be a leader in each dimension

Human capital	2
Social cohesion	120
Economy	0
Governance	9
Environment	104
Mobility	0
International profile	2
Technology	5
Urban planning	1



SANTIAGO

Santiago ranks 75th overall, is the leader in the Latin America region, and stands out in the dimensions of urban planning, economy and international profile. The Government of Chile created the “Sé Santiago Smart City” program with the aim of activating and coordinating the generation of solutions around mobility, security and environment for Greater Santiago (the capital and suburbs), using digital technologies in a smart city framework. The city is currently in the second phase of the program (the consolidation stage), which includes seven flagship projects: Waste Management Center, Water Consortium, Circular Economy Consortium, Accelerator and International Coordination Nodes, Quality Seal for Delivery, Electromobility Development Center, and Data Smart City Project.

75	1
CIMI rank	Regional CIMI
47	M
Mobility and transportation	Classification by performance

Evolution of CIMI rank over the last three years

	2019	2020	2021
Rank	92	95	75

Positions that Santiago would have to gain to be a leader in each dimension

Human capital	74
Social cohesion	99
Economy	57
Governance	70
Environment	74
Mobility	46
International profile	58
Technology	108
Urban planning	54



SEOUL

Seoul, the capital of South Korea, ranks 12th overall and is among the top 25 in the dimensions of economy, human capital, governance, urban planning, international profile and technology. Information technology and electronics industries have been gradually replacing traditional mainstays such as textile and garment manufacturing, machinery and chemicals. Some of the world's largest companies such as Samsung, LG Group, Hyundai, Kia Motors, Ssangyong, Daelim, Lotte and Pantech Curitel are based in Seoul. The city's main exports are electronic products, automobiles and machinery. Seoul is also the country's finance center: Major banks—including Citigroup, HSBC, Deutsche Bank, Goldman Sachs, JP Morgan Chase, Santander Group, UBS and ING Group—have offices in the city.

12	3	6	RH
CIMI rank	Regional CIMI	Governance	Classification by performance

Evolution of CIMI rank over the last three years

	2019	2020	2021
Rank	8	6	12

Positions that Seoul would have to gain to be a leader in each dimension

Human capital	7
Social cohesion	67
Economy	20
Governance	5
Environment	75
Mobility	40
International profile	18
Technology	24
Urban planning	21



SYDNEY

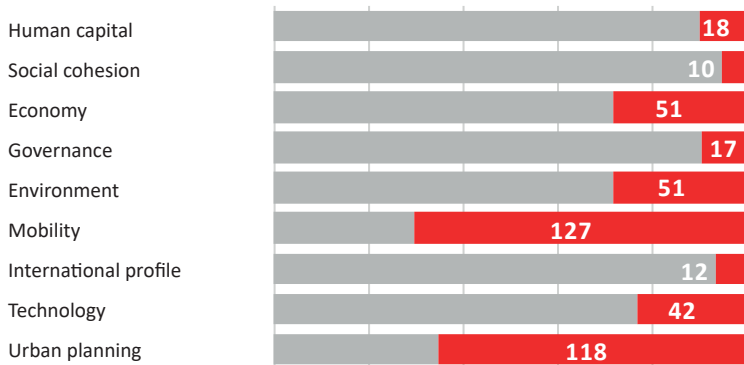
Sydney ranks 36th overall and first in its region. The city performs particularly well in the dimensions of social cohesion and international profile. In 2008, the city government published Sustainable Sydney 2030, a strategic plan based on the vision of making the city as green, global and connected as possible by 2030. The plan came to life after residents, visitors, workers and businesses were asked what kind of city they wanted. Respondents said they wanted a city that cares about the environment, has a strong economy, supports the arts, and connects its citizens to each other and to the rest of the world. Public consultation is currently underway to build the 2030–50 vision.

36	1	11	RH
CIMI rank	Regional CIMI	Social cohesion	Classification by performance

Evolution of CIMI rank over the last three years

	2019	2020	2021
Rank	27	23	36

Positions that Sydney would have to gain to be a leader in each dimension





TOKYO

Tokyo ranks fourth overall and second in the economy dimension. The city ranks sixth in international profile, ninth in governance and technology, and 10th in human capital. It is also the leading city in its region. The Japanese capital is one of the smartest cities in the world, offering its inhabitants an excellent quality of life, which is reflected in the various technologies the city deploys in its impressive infrastructure, the range of different forms of transportation on offer, and its environmentally friendly practices. In the world's largest city, urban planning is a challenging task. To make any changes, geospatial thinking is required, and Tokyo is committed to mobility and connectivity. Since 2016, the city has been working on the construction of a new train station which will be the departure point for a maglev train that will travel at up to 500 kilometers per hour. It is anticipated that the first phase, to be completed by 2027, will connect 70 million people.

4	1	2	RH
CIMI rank	Regional CIMI	Economy	Classification by performance

Evolution of CIMI rank over the last three years

	2019	2020	2021
Rank	4	3	4

Positions that Sydney would have to gain to be a leader in each dimension

Human capital	9
Social cohesion	40
Economy	1
Governance	8
Environment	24
Mobility	61
International profile	5
Technology	8
Urban planning	111



Cities in Motion. Evolution

The way a city is being transformed is of vital importance when it comes to understanding the goal it is working towards in terms of development. Accordingly, **Table 13** shows the evolution of the index over the last three years for the top 50 cities in the **CIMI 2021** ranking.

The results show a certain stability, especially in the top positions. However, from 17th place on, some cities show abrupt changes in both directions over the period. Almost all these ups and downs are due to variations in the economy dimension. From 2019 to 2020, many cities show sharp economic declines, probably due to the COVID-19 pandemic. They then begin to recover, albeit at a slow pace, the following year. Cities that exhibit this pattern include Barcelona, which fell eight places from 2019 to 2020 and then moved up three places from 2020

to 2021. The Catalan capital has a GDP growth forecast of -11.1% for the period 2019–20 but a positive forecast of 4.6% for 2020–21, resulting in the observed changes in its ranking over the period considered. Another example is Manchester, which has a GDP growth forecast of -10.4% for 2020 and a positive growth forecast of 6.8% for 2021. The same pattern holds for cities such as Reykjavik, Sydney and Seattle, among others.

However, there are cities that show a positive trend over the entire 2019–21 period, including Dublin, where the evolution is particularly noteworthy. In this case, the GDP growth forecast almost triples from 2019 to 2021, from 5.6% to 14.6%, and the city's GDP per capita grows by almost 20%. This growth enables the city to move up 22 places from 2019 to 2021.

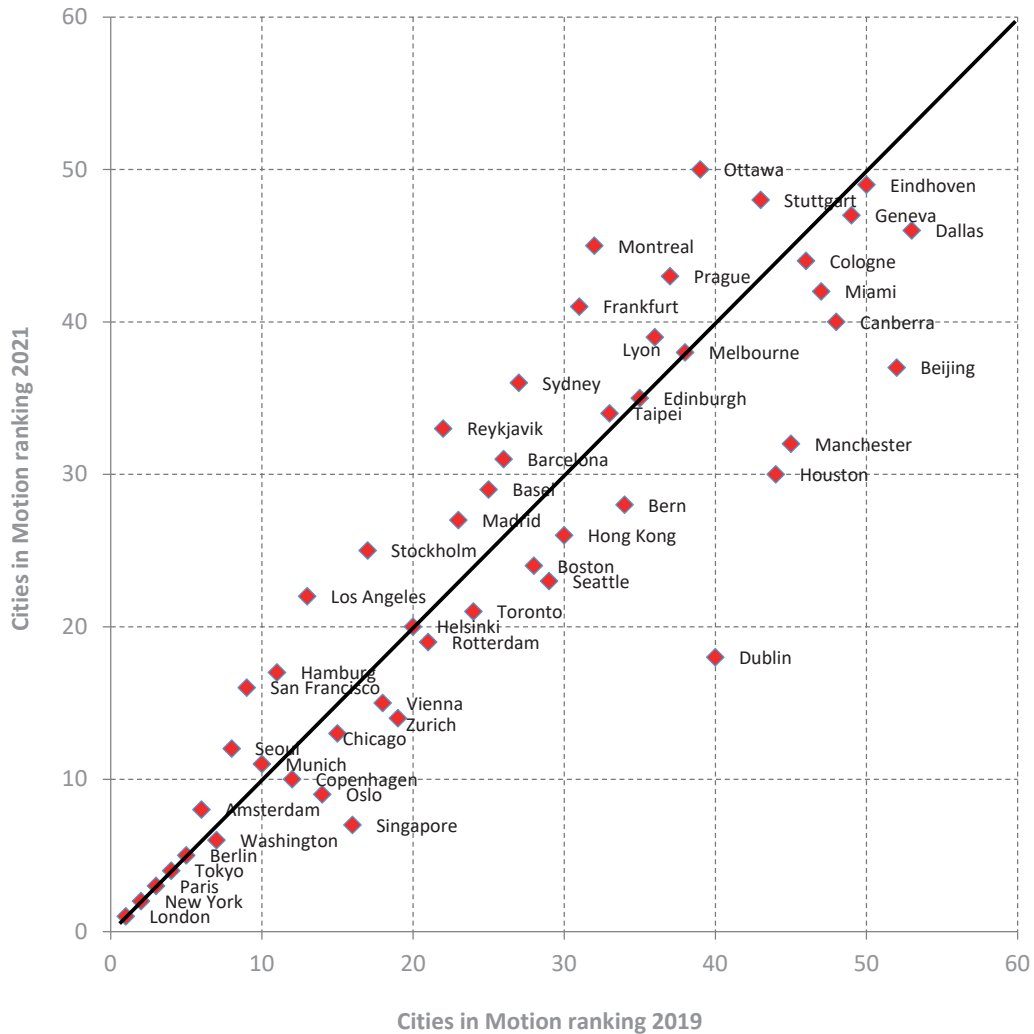
Table 13. Evolution of the Index for the Top 50 Cities in the 2021 Ranking (Last Three Years)

City	2019	2020	2021	2019-2020	2020-2021
London - United Kingdom	1	2	1	↓	↑
New York - USA	2	1	2	↑	↓
Paris - France	3	4	3	↓	↑
Tokyo - Japan	4	3	4	↑	↓
Berlin - Germany	5	5	5	→	→
Washington - USA	7	7	6	→	↑
Singapore - Singapore	16	11	7	↑	↑
Amsterdam - Netherlands	6	8	8	↓	→
Oslo - Norway	14	9	9	↑	→
Copenhagen - Denmark	12	13	10	↓	↑
Munich - Germany	10	10	11	→	↓
Seoul - South Korea	8	6	12	↑	↓
Chicago - USA	15	12	13	↑	↓
Zurich - Switzerland	19	17	14	↑	↑
Vienna - Austria	18	19	15	↓	↑
San Francisco - USA	9	16	16	↓	→
Hamburg - Germany	11	14	17	↓	↓
Dublin - Ireland	40	33	18	↑	↑
Rotterdam - Netherlands	21	21	19	→	↑
Helsinki - Finland	20	18	20	↑	↓
Toronto - Canada	24	22	21	↑	↑
Los Angeles - USA	13	25	22	↓	↑
Seattle - USA	29	36	23	↓	↑
Boston - USA	28	31	24	↓	↑
Stockholm - Sweden	17	15	25	↑	↓
Hong Kong - China	30	20	26	↑	↓
Madrid - Spain	23	32	27	↓	↑
Bern - Switzerland	34	28	28	↑	→
Basel - Switzerland	25	27	29	↓	↓
Houston - USA	44	49	30	↓	↑
Barcelona - Spain	26	34	31	↓	↑
Manchester - United Kingdom	45	59	32	↓	↑
Reykjavik - Iceland	22	24	33	↓	↓
Taipei - Taiwan	33	26	34	↑	↓
Edinburgh - United Kingdom	35	40	35	↓	↑
Sydney - Australia	27	23	36	↑	↓
Beijing - China	52	39	37	↑	↑
Melbourne - Australia	38	30	38	↑	↓
Lyon - France	36	55	39	↓	↑
Canberra - Australia	48	38	40	↑	↓
Frankfurt - Germany	31	29	41	↑	↓
Miami - USA	47	52	42	↓	↑
Prague - Czech Republic	37	50	43	↓	↑
Cologne - Germany	46	46	44	→	↑
Montreal - Canada	32	35	45	↓	↓
Dallas - USA	53	42	46	↑	↓
Geneva - Switzerland	49	47	47	↑	→
Stuttgart - Germany	43	44	48	↓	↓
Eindhoven - Netherlands	50	58	49	↓	↑
Ottawa - Canada	39	43	50	↓	↓

Figure 5 below shows the positions held by the top 50 cities in the 2019 and 2021 rankings. The cities that show a positive evolution are below the 45-degree angle formed by the diagonal line, while those that did not move in a positive direction are above the line. Here we can see the evolution of the cities shown in **Table 13** in

graphic form. The ones that suffered a sharp drop over this period (and therefore appear above the diagonal line) are Reykjavik, Sydney, Ottawa and Montreal. Conversely, Dublin, Manchester, Houston and Beijing are some of the cities that showed a significant positive evolution over the same period.

Figure 5. Evolution of the Top 50 Cities in the Ranking (2019–21)



Cities in Motion Versus Other Indexes

In this section, we compare the **CIMI** and other indexes. **Table 14** shows the top 10 cities in this ranking (2021) and the top 10 in six other indexes. Cities that appear in the **CIMI** top 10 are shown with shading.

Although the rankings considered vary in their methodology and indicators, they are all based on the understanding that a city is more powerful, prosperous and competitive if it is able to develop in different dimensions: from the economy and finance to cultural relevance (which can be measured through the promotion of music and fashion), the ease of setting up a new business, quality of life, and the use of high technology. As a result, all the **CIMI** top 10 cities, with the exception of Washington and Oslo, appear repeatedly in the top 10 of the other indexes considered.

The city-state of Singapore, which ranks seventh in the **CIMI**, is in the top 10 of three of the five rankings we looked at. It also stands out for its strong performance in the dimensions of international profile, technology

and economy. Other cities, such as New York, London, Paris and Tokyo, frequently appear in the top 10 most prosperous cities or those with the best quality of life in the world. Tokyo, in particular, appears in all the rankings considered, with the exception of the Livability Ranking (published by the Economist Intelligence Unit), which does not include the city in its top 10 this year but has in previous editions.

Unlike many of the indexes with which it is compared, the **CIMI** has a wide geographical coverage, in addition to considering a total of 183 cities, and every year an effort is made to increase coverage of underrepresented regions.

Finally, once again, the top two positions in the Global Cities Index, the Global Financial Centres Index (Z/Yen) and the Global Power City Index (MMF) are occupied by the same cities that hold the top two positions in the **CIMI** (in the same or reverse order).

Table 14. Comparison With Other Indexes (Top 10)

City rank	2022 CIMI (IESE)	Global Cities Index 2021 (A.T. Kearney)	Global Financial Centres Index 2022, GFCI (Z/Yen)	Global Power City Index 2021 (MMF)	Liveability Ranking 2022 (EIU)	Sustainable Cities Index 2022 The Arcadis
1	London	New York	New York	London	Vienna	Oslo
2	New York	London	London	New York	Copenhagen	Stockholm
3	Paris	Paris	Hong Kong	Tokyo	Zurich	Tokyo
4	Tokyo	Tokyo	Shanghai	Paris	Calgary	Copenhagen
5	Berlin	Los Angeles	Los Angeles	Singapore	Vancouver	Berlin
6	Washington	Beijing	Singapore	Amsterdam	Geneva	London
7	Singapore	Hong Kong	San Francisco	Berlin	Frankfurt	Seattle
8	Amsterdam	Chicago	Beijing	Seoul	Toronto	Paris
9	Oslo	Singapore	Tokyo	Madrid	Amsterdam	San Francisco
10	Copenhagen	Shanghai	Shenzhen	Shanghai	Osaka	Amsterdam

Cities in Motion: City Ranking by Population Size

Below we rank the cities included in the **CIMI** in relation to others in the same population category. To this end, the 183 cities included in the index have been classified by population. The classification takes into account various sources consulted, including *The Economist* and the United Nations. **Table 15** shows the various categories and the number of **CIMI** cities included in each one.

Table 15. Classification of Cities by Population

Category		Number of cities
Less than 600,000	Smallest cities	9
600,000 to 1,000,000	Small cities	17
1 to 5 million	Medium-sized cities	98
5 to 10 million	Large cities	25
Over 10 million	Megacities	34

RANKING OF SMALLEST CITIES

The top 5 ranking of *smallest cities*—defined for the purposes of this analysis as those with a population of less than 600,000—is led by Bern, which ranks 28th overall. Bern’s performance in the overall ranking is quite similar to that of other comparably-sized cities, which rank between 30th and 40th, with the exception of Wellington, which ranks 70th this year. In second place is Basel, while Reykjavik, Canberra and Wellington—cities that stand out for their strong performance in the environment and social cohesion dimensions—take the remaining top 5 places.

Top 5 cities with pop. under 600,000

City	Regional rank	Overall rank 2019	Overall rank 2020	Overall rank 2021
Bern - Switzerland	1	34	28	28
Basel - Switzerland	2	25	27	29
Reykjavik - Iceland	3	22	24	33
Canberra - Australia	4	48	38	40
Wellington - New Zealand	5	63	48	70

RANKING OF SMALL CITIES

The table below shows the top 5 *small cities*, defined as those with a population of between 600,000 and 1,000,000. This ranking is led by Edinburgh, followed by Geneva and Eindhoven, while Nottingham and Quebec City hold the two remaining top 5 places. The first four stand out for their performance in social cohesion and environment.

Top 5 cities with pop. 600,000 to 1,000,000

City	Regional rank	Overall rank 2019	Overall rank 2020	Overall rank 2021
Edinburgh - United Kingdom	1	35	40	35
Geneva - Switzerland	2	49	47	47
Eindhoven - Netherlands	3	50	58	49
Nottingham - United Kingdom	4	75	80	71
Quebec - Canada	5	72	77	77

RANKING OF MEDIUM-SIZED CITIES

Below we present the top 5 *medium-sized cities*, defined as those with a population of between one and five million. This ranking is led by Amsterdam, followed by Oslo, Copenhagen, Munich and Zurich, which rank among the top 15 cities overall and stand out in almost all dimensions, occupying very similar positions.

Top 5 cities with pop. 1 to 5 million

City	Regional rank	Overall rank 2019	Overall rank 2020	Overall rank 2021
Amsterdam - Netherlands	1	6	8	8
Oslo - Norway	2	14	9	9
Copenhagen - Denmark	3	12	13	10
Munich - Germany	4	10	10	11
Zurich - Switzerland	5	19	17	14

RANKING OF LARGE CITIES

Berlin leads the ranking of *large cities*, defined as those with a population of between five and 10 million. It is followed by Washington, Singapore and Chicago, while Toronto holds the fifth position.

Top 5 cities with pop. 5 to 10 million

City	Regional rank	Overall rank 2019	Overall rank 2020	Overall rank 2021
Berlin - Germany	1	5	5	5
Washington - USA	2	7	7	6
Singapore - Singapore	3	16	11	7
Chicago - USA	4	15	12	13
Toronto - Canada	5	24	22	21

RANKING OF MEGACITIES

The ranking of *megacities* includes those with a population of over 10 million. This group is led by London, followed by New York, Paris, Tokyo and Seoul, which are among the top 20 in the overall ranking and stand out in most dimensions, with the exception of social cohesion and environment, where New York performs poorly.

Top 5 cities with pop. over 10 million

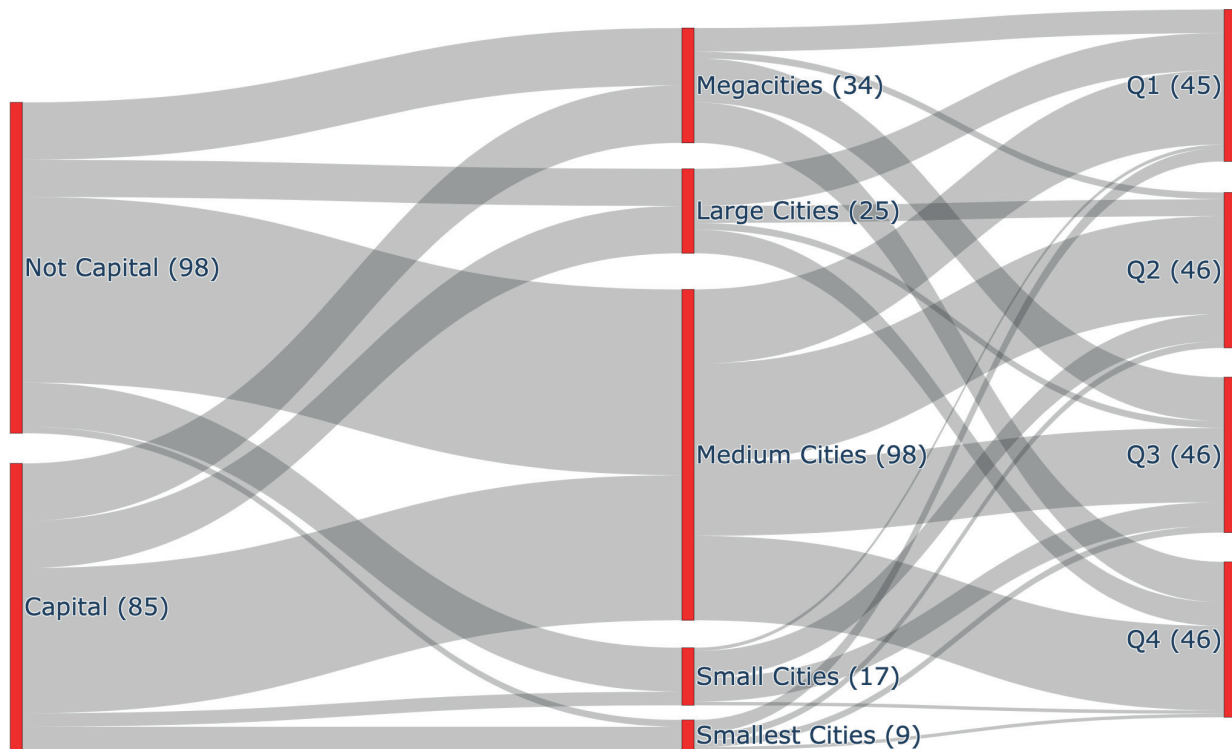
City	Regional rank	Overall rank 2019	Overall rank 2020	Overall rank 2021
London - United Kingdom	1	1	2	1
New York - USA	2	2	1	2
Paris - France	3	3	4	3
Tokyo - Japan	4	4	3	4
Seoul - South Korea	5	8	6	12

Figure 6 below shows the distribution of cities according to whether or not they are country capitals (left), the size of their population (center), and their position in the ranking (Q1 to Q4, right). This figure is based on the same classification by rank used in **Figure 4** and incorporates the classification of cities by population size defined in this section.

The diagram shows the high proportion of *medium-sized cities* in the ranking, which are distributed equally between the group of capital and non-capital cities.

As for the performance of the cities, in the Q1 group (those that rank first to 45th overall), there is a high proportion of cities classified as *medium-sized*, followed by a significant group of those classified as *large cities*. Similarly, in the top 45 of the overall ranking, we find a notable proportion of *smallest cities*, including Reykjavik, Basel and Bern (which rank in the top 5 for this population category).

Figure 6. Type of City by Size and Rank



Cities in Motion: Analysis of Dimensions in Pairs

In this section, we analyze the position of cities with respect to two dimensions simultaneously to see if there is any relationship between them. Cities are also considered according to their population, based on the classification described in the previous section.

It is important to note that in this edition of the index (as mentioned in previous sections) all analyses involving the economy dimension have been disrupted due to the effects of the COVID-19 pandemic.

Figure 7 shows the dimensions of economy (on the y-axis) and social cohesion (on the x-axis). As one can observe, cities with populations of under 600,000 (*smallest cities*) perform very well in the social cohesion dimension and

are located on the right side of the chart. In this position, we find cities such as Quebec, Reykjavik and Wellington. In contrast, those classified as *megacities* appear on the left side of the chart, which corresponds to poor performance in this dimension. Here we find New York, Detroit, Las Vegas and Hong Kong, among others. The upper part of the chart shows the cities that perform well in the economy dimension, including Tokyo, New York, Los Angeles, San Francisco, London and Paris. At the other extreme, in the lower area, we find the cities that rank lowest in this dimension, including Guayaquil, Quito, Douala and Accra. Caracas occupies a position at the bottom of both rankings and therefore appears in the lower left corner of the chart.

Figure 7

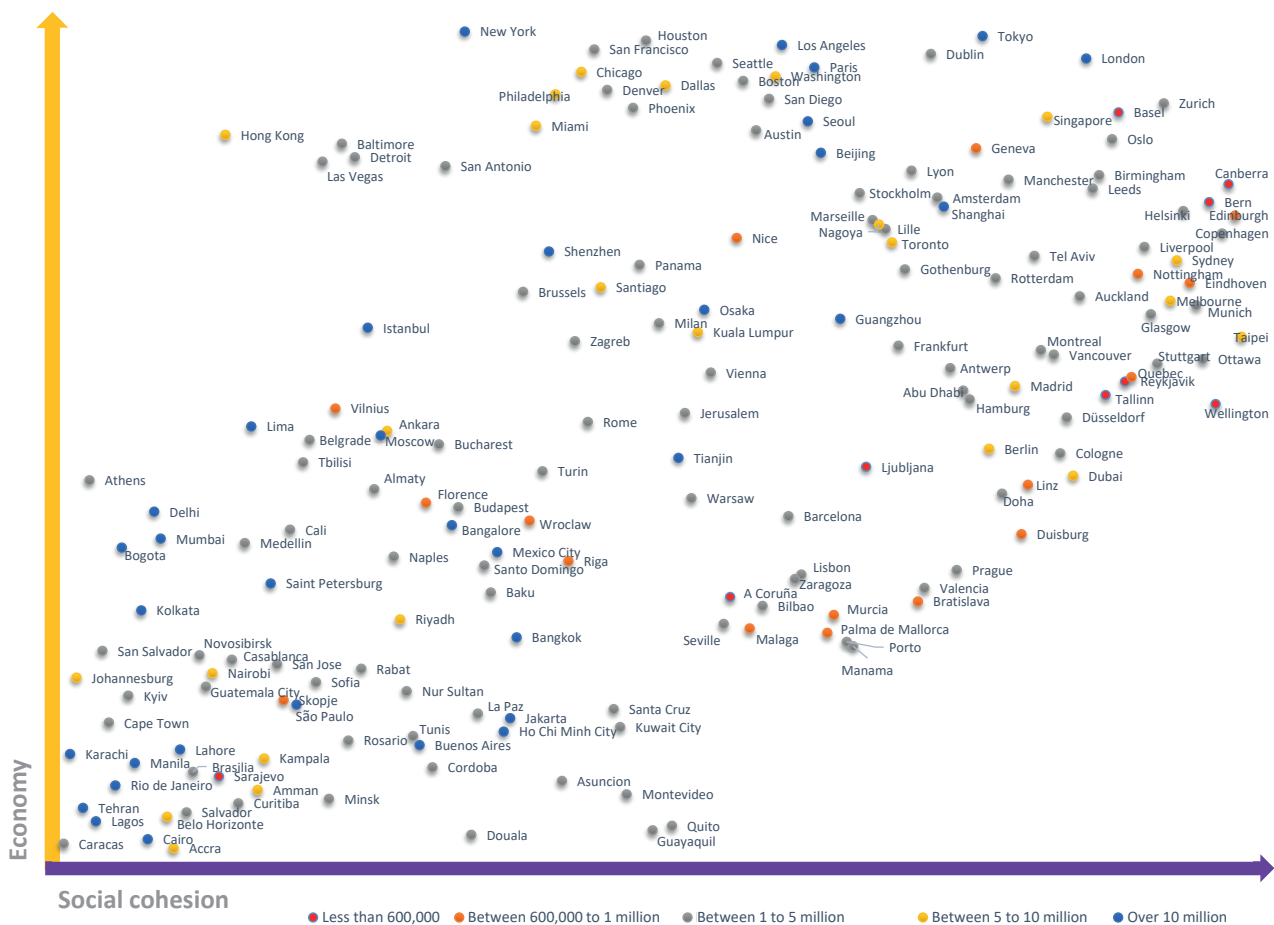


Figure 8 focuses on the economy and environment dimensions. The former is shown on the y-axis and the latter on the x-axis.

In the upper left area of the chart are several Asian and American cities that stand out for their strong performance in the economy dimension but perform poorly in the environment dimension. This suggests that a high level of economic development may be detrimental to environmental well-being if cities fail to take environmental considerations into account when pursuing economic development. In the lower left corner, we find cities that perform poorly in both of these dimensions, including Lagos, Cairo, Accra, Kampala and Manila. The lower right area shows cities

with a low level of economic development but good environmental performance. In this group, we find several Latin American cities, including Buenos Aires, Rosario, Cordoba and Montevideo, among others. In this case, one might conclude that cities with a lower level of economic development do a better job of preserving the environment. Finally, the cities that appear in the upper right area are those that perform well in both dimensions. In this group, we find a large number of European cities, including Zurich, Basel, London, Oslo and Dublin; Asian cities, such as Tokyo; and cities in Oceania, such as Canberra. These cities demonstrate that it is possible to break the tension between economy and environment.

Figure 8

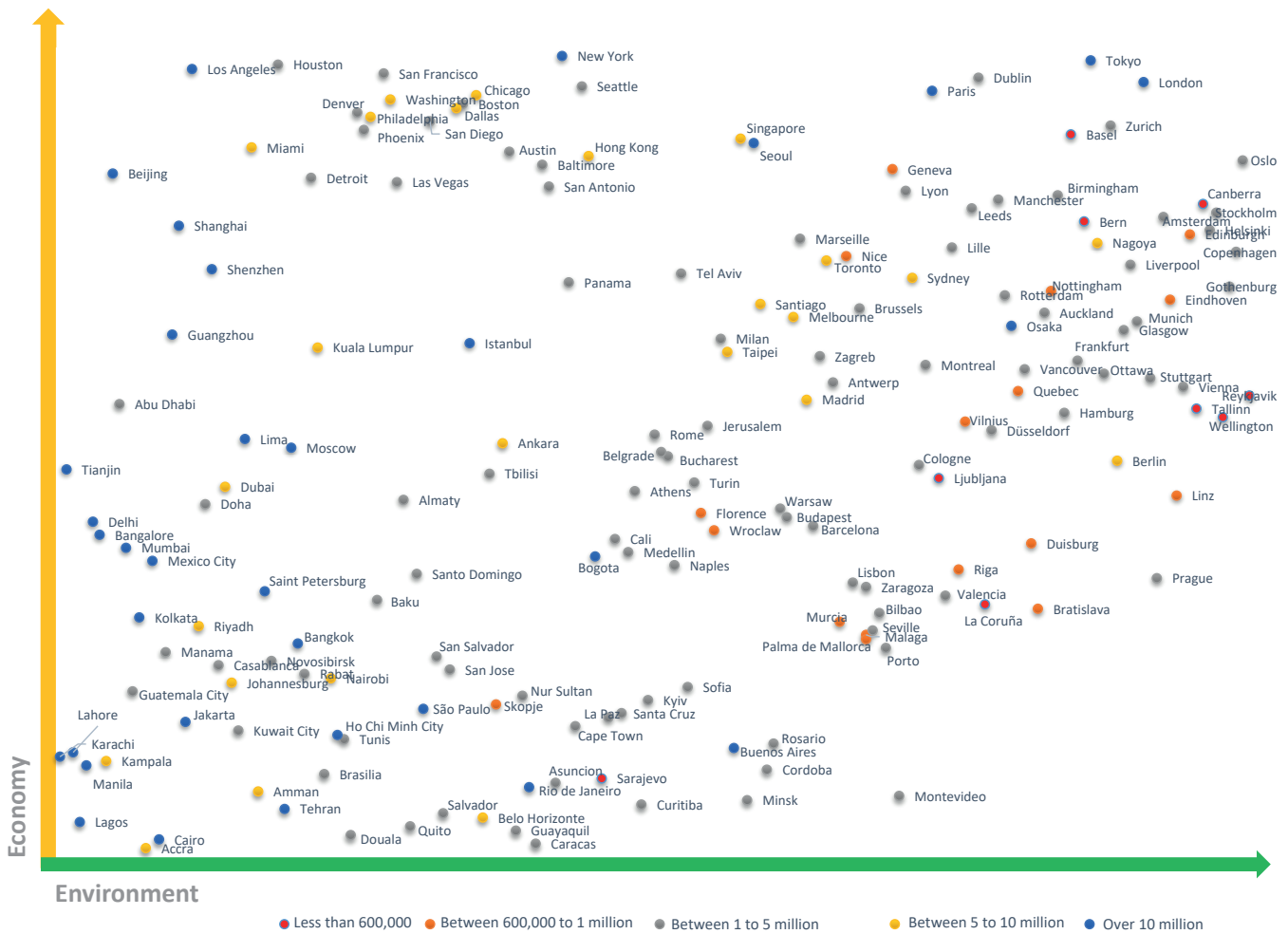


Figure 9 shows the mobility and transportation dimension (y-axis) and the environment dimension (x-axis). In the upper left area are cities that perform well in the former dimension but poorly in the latter. This is the case of Asian cities such as Beijing, Shanghai, Shenzhen and Guangzhou, and some North American cities, such as Miami. In the upper right area, we find the cities that perform well in both dimensions, including Swiss and Scandinavian cities such as Stockholm, Oslo and Vienna. German cities also perform well in both dimensions, as

do other European cities such as London and Paris. In the lower left area are cities with a low level of development in both mobility and transportation and in the environment dimension, the main examples being Lagos and Calcutta. Cities such as Manila, Lahore and Karachi are also in this group. Finally, in the lower right area, we find the group of cities that perform well in the environment dimension but poorly in mobility and transportation. Few cities fall into this category. Two of the most notable cases are Rosario and Montevideo.

Figure 9

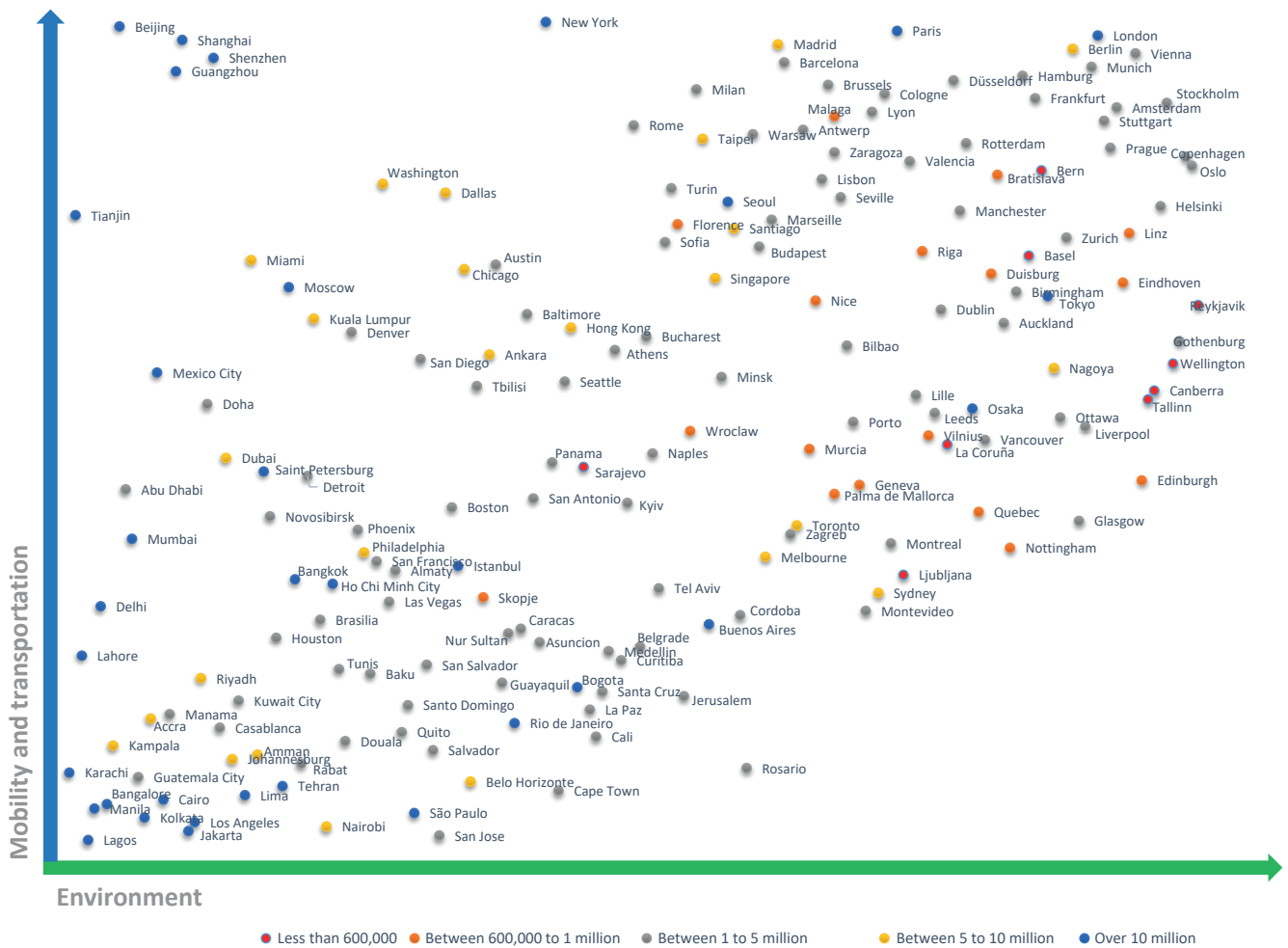


Figure 10 shows the relationship between the economy and human capital dimensions. As the chart shows, cities that perform well in the economy dimension are also well positioned in human capital. These cities, which appear in the upper right area of the chart, include US cities such as Boston, New York, Chicago and Los Angeles; European cities such as London and Paris; and cities in Asia and Oceania, such as Tokyo, Seoul and Canberra. All of the cities in this part of the chart show good performance in both dimensions. Conversely, there are a large number

of cities that perform poorly in both of these dimensions, including Douala, Accra, Lagos and Guayaquil. In other words, cities that perform poorly in the economy dimension are unlikely to perform well in human capital and vice versa, though there are exceptions, as in the case of Buenos Aires, which ranks relatively well in human capital but poorly in the economy dimension. Conversely, Tel Aviv, Shenzhen and Panama perform relatively well in the economy dimension but rather poorly in human capital.

Figure 10

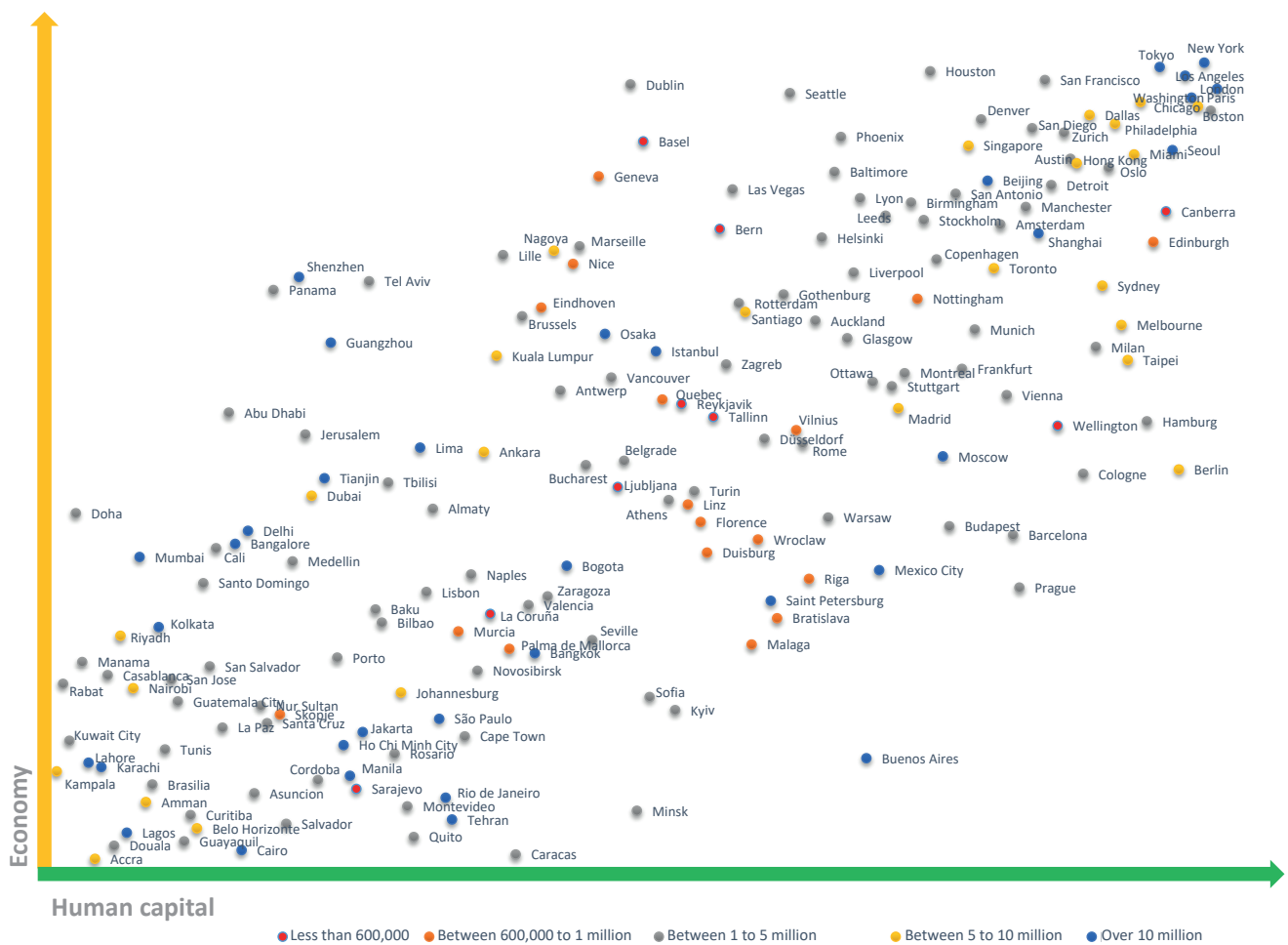


Figure 11 shows the relationship between the dimensions of technology and social cohesion. Broadly speaking, cities with larger populations perform well in technology but poorly in social cohesion. This holds true for cities such as Hong Kong, Las Vegas, Detroit and Baltimore. In the upper right area, we find the cities that achieve good performance in both dimensions. This group includes Copenhagen, Abu Dhabi, Dubai, Singapore and

Tokyo. Furthermore, the *smallest cities* (i.e., those with a population of less than one million) show relatively good performance in social cohesion. This is the case of Eindhoven, Edinburgh, Bern and Wellington.

Finally, in the lower left quadrant we find the cities that perform poorly in both dimensions, including Lagos, Calcutta, Karachi and Caracas, which are in emerging countries.

Figure 11

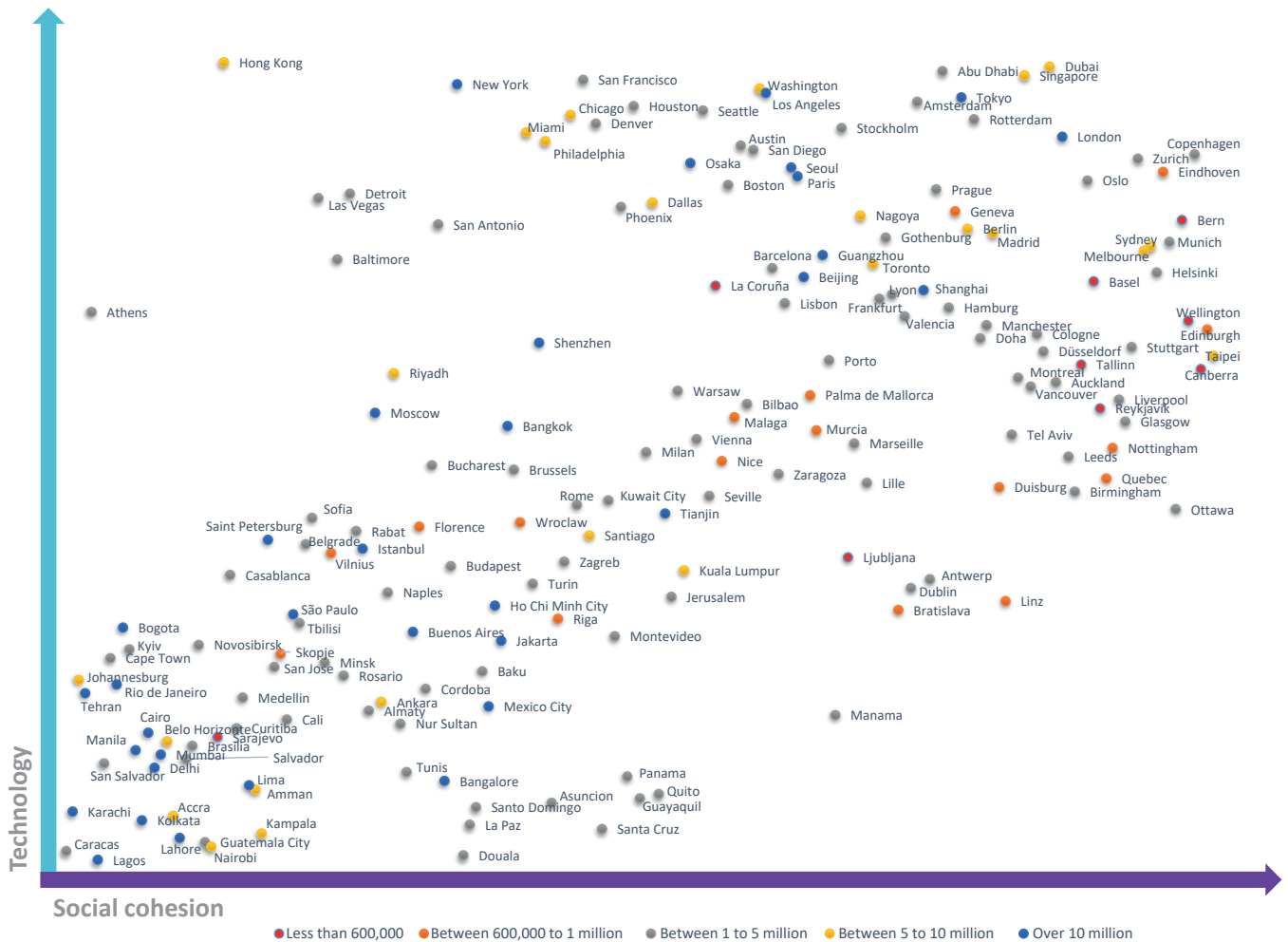


Figure 12 shows the relationship between the economy and international profile dimensions. In this case, a pattern was generally observed: Cities either performed well in both dimensions or poorly in both. This suggests a relationship between these two dimensions. Good performance in the economy dimension could translate into a stronger international profile; or conversely, poor performance in the economy dimension results in a lower international profile. In previous editions of the index this relationship was more evident. However, this year we find a group of cities that perform poorly in the economy dimension but well in international profile. This

group includes some Brazilian cities, such as São Paulo and Rio de Janeiro, as well as Buenos Aires and Bangkok, which do not have good positions in the economy dimension but nevertheless show good performance in international profile. Cities that perform well in both dimensions include North American cities such as New York, Los Angeles, Chicago and San Francisco; European cities such as Paris, London and Dublin; and Asian cities such as Tokyo, Seoul, Singapore and Hong Kong. Cities that perform poorly in both dimensions include Lagos, Accra and the Brazilian cities of Belo Horizonte, Salvador and Curitiba.

Figure 12

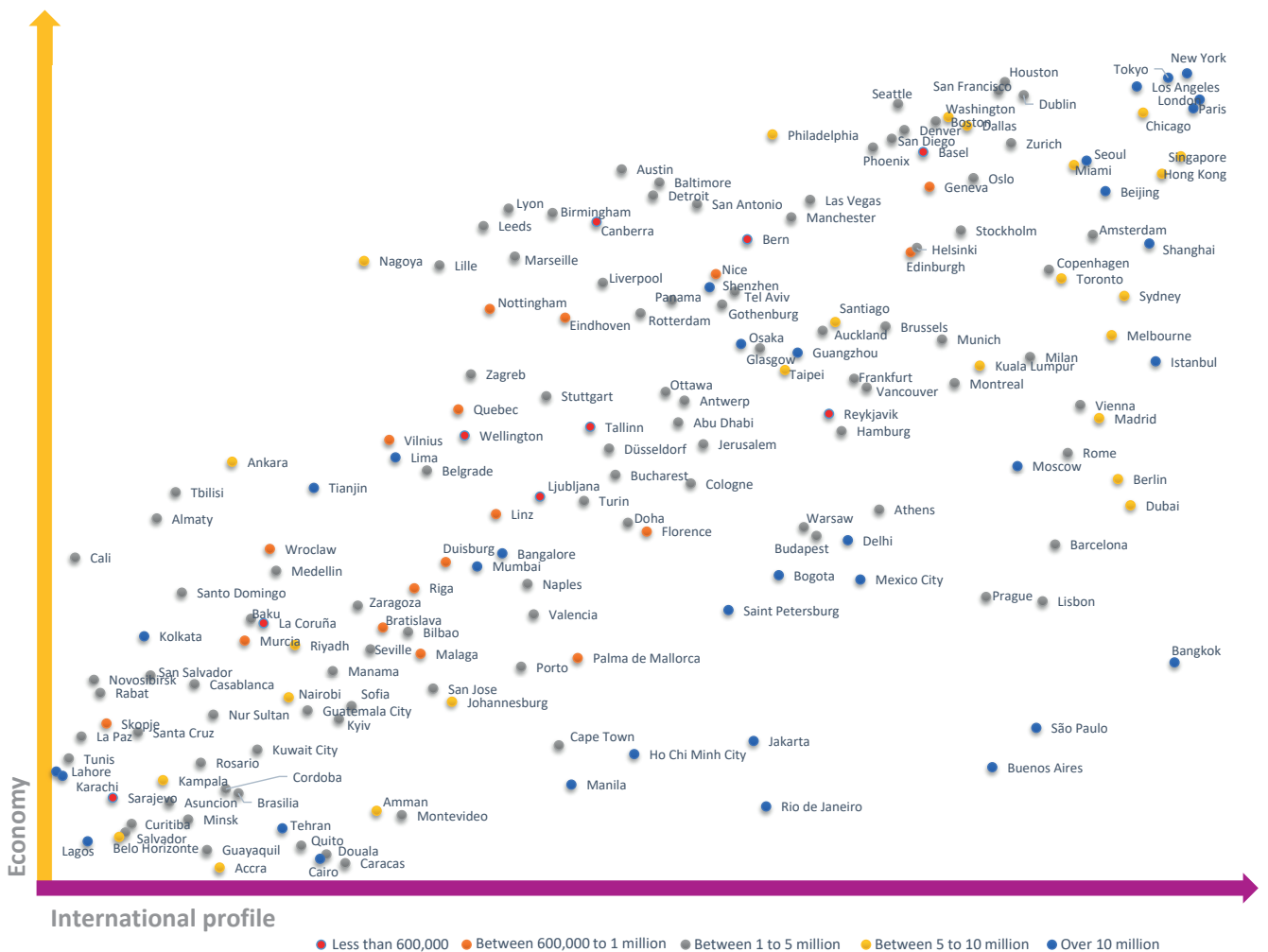
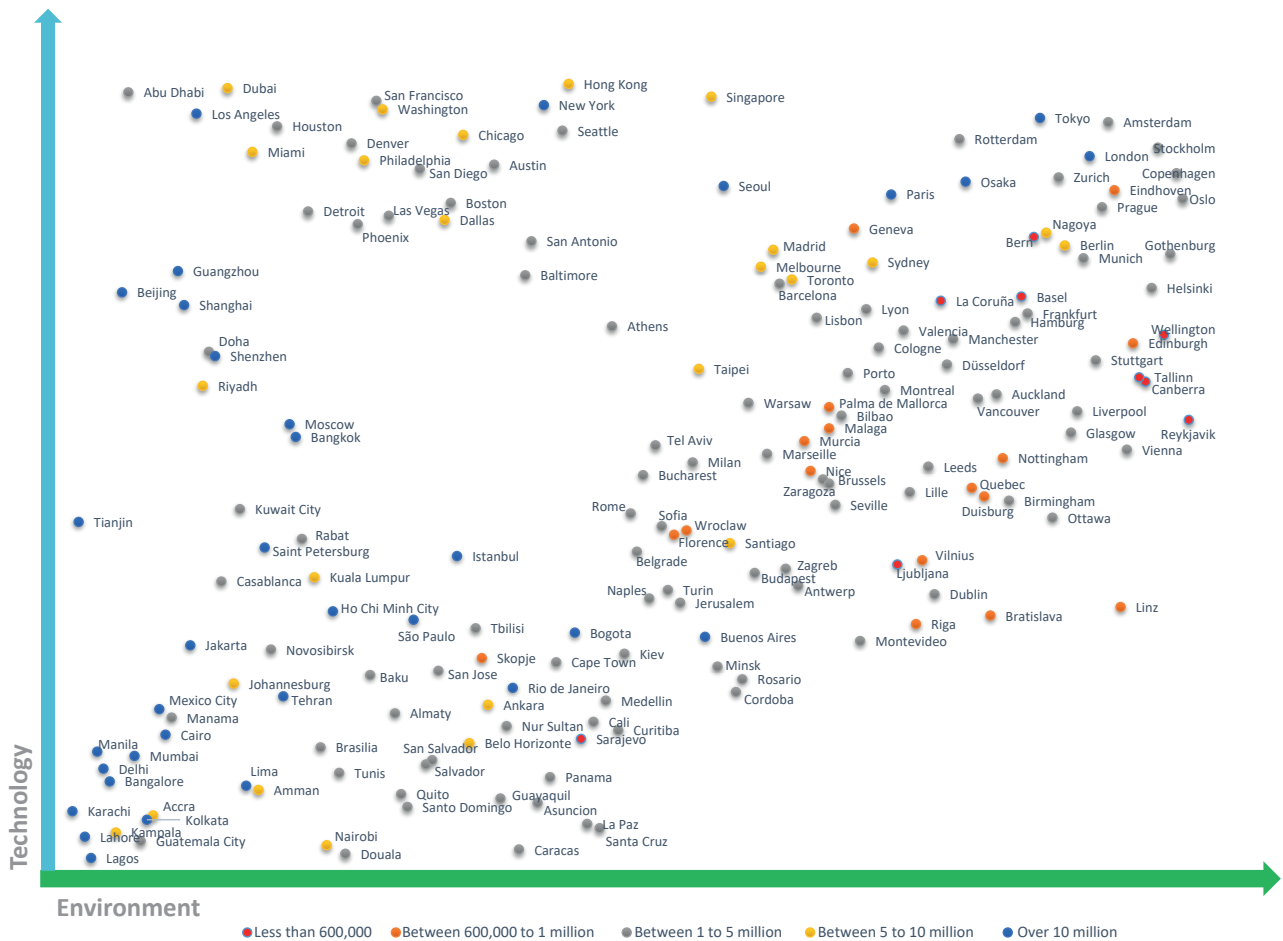


Figure 13 focuses on the relationship between the technology and environment dimensions. Here we find four groups situated in the four quadrants of the chart. In the upper left quadrant are the cities that perform well in technology but not in the environment dimension, including US cities such as Los Angeles, Houston, Miami and Philadelphia, and Middle Eastern cities such as Dubai and Abu Dhabi. In the lower left quadrant are the cities that perform poorly in both dimensions, including

Lahore, Lagos, Karachi and Kampala. In the upper right quadrant are those that perform well in both dimensions. European cities such as London, Copenhagen, Stockholm, Zurich, Eindhoven and Amsterdam account for the largest proportion of this group. Finally, in the group of cities with poor performance in technology but good performance in the environment dimension, we find some South American cities, such as Montevideo, as well as Linz, Riga and Bratislava.

Figure 13



Cities in Motion: A Dynamic Analysis

To evaluate growth trends and the potential of the cities, we have created a chart that aims to capture these points. **Figure 14** shows the current position of each of the cities included in the **CIMI** index (x-axis) and their trend (y-axis). We calculated the second value based on the change (in terms of positions) that the cities included in the ranking underwent from 2019 to 2021. The cities in the upper part of the chart are the ones that have gained positions; those in the bottom half are the ones that have fallen in the ranking. The cities around the middle level are the ones whose position in the ranking did not change significantly over the years analyzed.

The area of the chart has been divided into four quadrants according to the type of city: consolidated, challengers, high-potential and vulnerable.

The first group, the consolidated cities (lower right quadrant), includes those that have a mid-to-high position in the overall ranking but either do not change over the period or drop one or more places. This group is made up of cities from different geographic regions. Cities that dropped several places include Reykjavik,

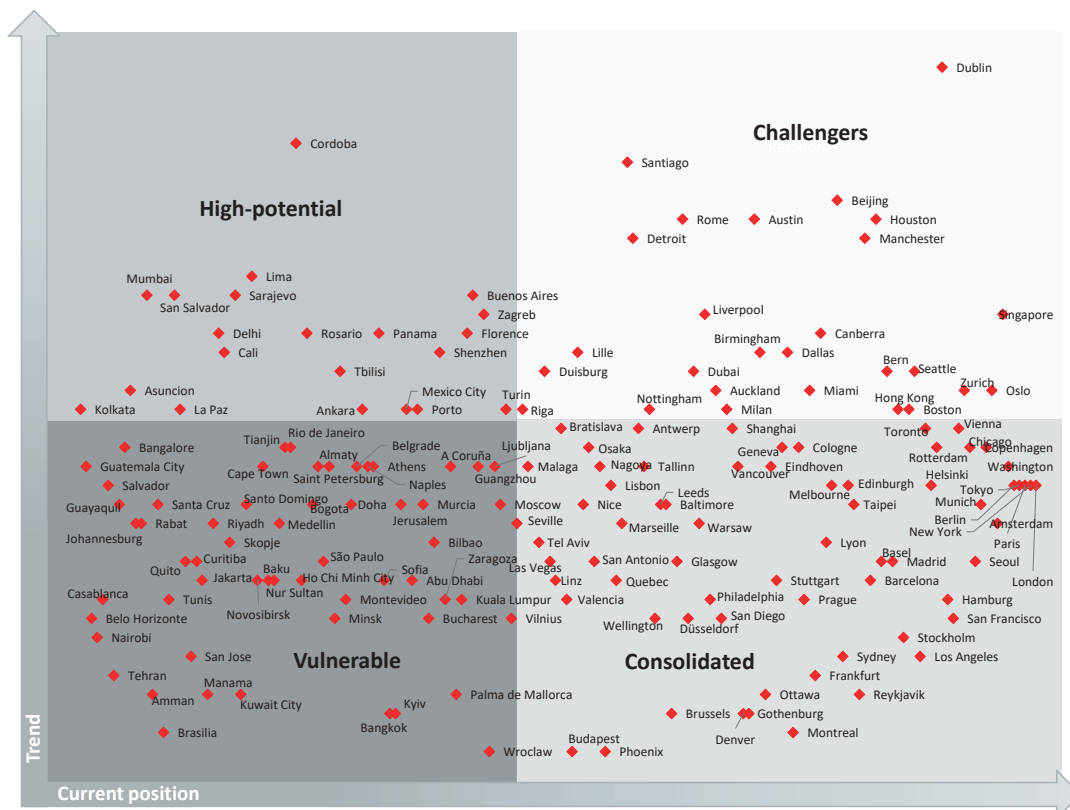
Frankfurt, Ottawa and Montreal. The cities at mid-level on the right side of the chart are the ones that hold good positions in the ranking and whose rank has remained fairly stable. This is the case, for example, of London, Paris, Berlin, Copenhagen and Helsinki (Europe); Tokyo (Asia); and New York, Chicago and Washington (North America).

The second group (upper right quadrant) is made up of challenger cities—that is, cities that are rapidly improving their position and that already occupy a mid-to-high position in the ranking. Cities in this group include Dublin, Beijing, Austin, Houston and Singapore.

The third group is made up of high-potential cities that currently hold a mid-to-low position in the index but are advancing very quickly (upper left quadrant). This group includes cities such as Sarajevo, Zagreb, New Delhi and Shenzhen. There are also Latin American cities, including Cordoba, Rosario, Buenos Aires, Lima, San Salvador and Panama, and some European cities such as Porto and Turin.

The last group includes cities that occupy a vulnerable position (lower left quadrant), are growing at a slower pace than the rest, and hold mid-to-low positions in the ranking. This is the case of Kuwait City, Brasilia, Amman and Kyiv, among others.

Figure 14



The information presented in the figure above is supplemented with an analysis of variance with respect to the dimensions considered. In other words, the aim is not only to understand how much cities have grown, but also how they have grown. To this end, the variation across the nine dimensions was calculated for each of the cities shown in **Figure 15** below. The cities at the bottom of the chart occupy similar positions in all the dimensions and therefore have a more homogeneous distribution, either because they are stalled or because they are balanced. In contrast, those at the top stand out in one or more dimensions but occupy a relatively low position in others. This information, combined with the rank of each city, allows us to identify four categories.

The first (lower right quadrant) is made up of what we call *balanced* cities—that is, cities positioned in the mid-upper part of the chart that present relatively high values in all the dimensions. This category includes London, Amsterdam, Copenhagen, Oslo, Zurich, Manchester, Madrid and Frankfurt.

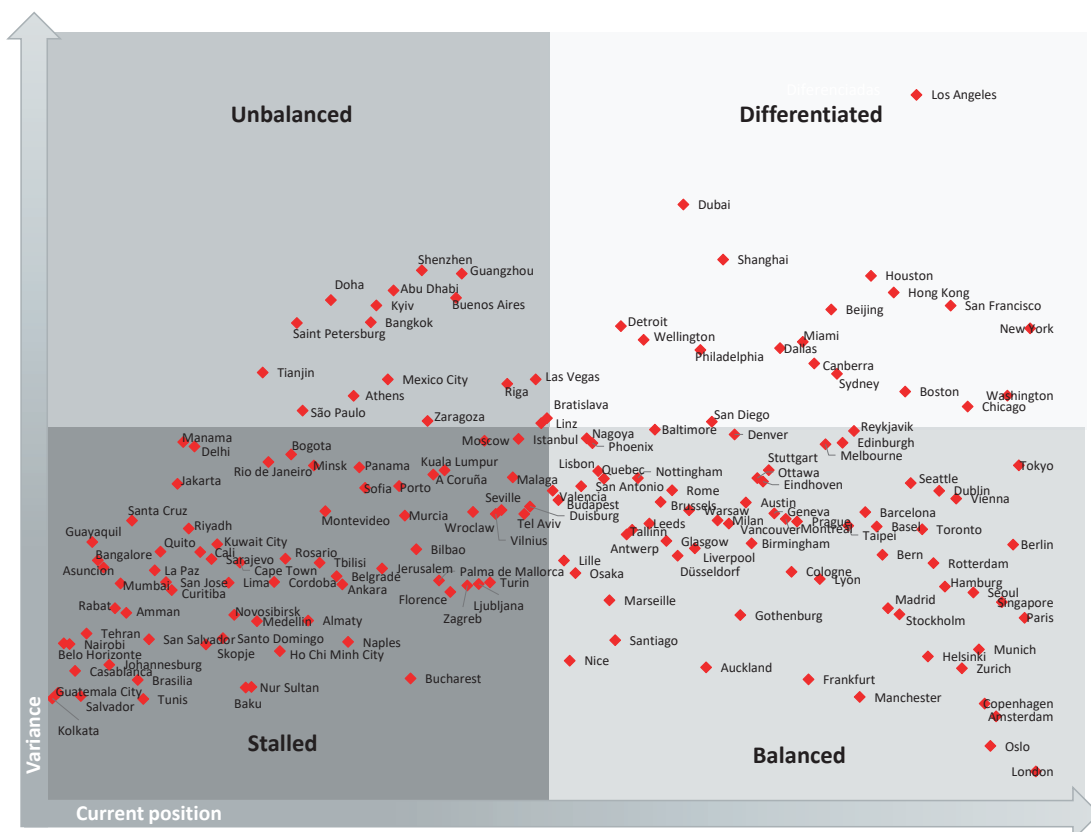
The second category (upper right quadrant) is made up of what we call *differentiated* cities—that is, cities that occupy high positions in the ranking and obtain very good results in several dimensions but relatively poor results in others. Los Angeles, for example, ranks among the top cities in economy, human capital and governance,

but near the bottom in environment and mobility and transportation. It is the city with the greatest variability across dimensions. Another example is New York, which ranks at the top in seven of the nine dimensions but very low in social cohesion and environment. Other cities in this category include Houston, San Francisco, Shanghai and Dubai.

The third (upper left) quadrant corresponds to cities that we call *unbalanced*—that is, cities that are at the bottom of the ranking but stand out in a particular dimension. This is the case of Abu Dhabi, Shenzhen, Guangzhou and Buenos Aires, which, though they rank below 100th in many dimensions, stand out in one or more areas. For example, Abu Dhabi stands out in technology (rank #3), Shenzhen and Guangzhou perform well in mobility and transportation (#9 and #12, respectively), and Buenos Aires ranks 30th in governance, urban planning and international profile. Other cities in this category include Bangkok, Saint Petersburg and Tianjin.

Finally, the fourth group (lower left quadrant) is made up of what we call *stalled* cities, which perform poorly in all, or almost all, of the dimensions analyzed. An example is Nur-Sultan, which ranks below 100th place in all nine dimensions. Other examples include Baku, Bucharest, Salvador and Tunis.

Figure 15





Recommendations and Conclusions

The **CIMI** composite index provides a ranking that takes into account various aspects of cities. The dimensions analyzed offer a broad, integrative view of what a city represents and provide a better understanding of their composition and evolution over time.

This year's results cannot be interpreted in isolation; rather, they must be understood in the current context of economic and social uncertainty at the global level. The impact of the COVID-19 health crisis is reflected in many of the dimensions. However, the effects of the war in Ukraine on the real economy, society and even the environment are yet to be seen. With these points in mind, we offer the following conclusions and recommendations:

Impact of COVID-19. Economic and social recovery in the wake of the pandemic is probably one of the most important challenges facing our generation. Indeed, our index shows that the COVID-19 crisis has significantly affected many of the dimensions considered in our urban model. The clearest effect has been on the economy. Cities have dealt with the pandemic quite differently in terms of levels of lockdown, policies to help the most vulnerable businesses and citizens, and recovery policies. But the health crisis has also affected many other aspects of cities, such as their international profile. Cities that depend heavily on tourism have been particularly affected, since the number of international passengers has fallen drastically in recent years. Given the importance of cities in this area, they must work tirelessly to regenerate conditions that facilitate a recovery which is effective, lasting and, most importantly, driven by a sense of solidarity.

The importance of human capital. Our index shows that cities with high levels of human capital appear to be more resilient to crises. This observation should be reflected in the priorities of city managers, who will have to focus on long-term education policies. This point seems particularly relevant in the context of the social phenomenon known as the “Great Resignation,” a trend that has seen millions of people voluntarily give up their jobs and that poses a major challenge for cities (and the companies based in them), which will have to invest in new areas of specialization and training, design new ways of working, and improve working conditions to ensure that their human capital has the desired positive impact.

Resilience as a new urban paradigm. Until relatively recently, the concept of urban resilience was used only in reference to natural disaster scenarios. However, the COVID-19 pandemic has shown that the ability of cities to overcome adverse circumstances will be part of strategic thinking on the urban agenda. This is very relevant in the current economic environment, which is characterized by great uncertainty due to the war in Ukraine. In this regard, we believe it is essential to build a new form of urban resilience, which can be achieved by combining strong infrastructure with agile, efficient governance.

The SDGs as a frame of reference. Unfortunately, both the pandemic and the war in Ukraine have had a negative impact on the progress that had been made on the SDG 2030 Agenda. For example, levels of extreme poverty have increased, as have levels of pollution. The world's cities play a key role in achieving these global goals. It is therefore essential that they adopt the SDGs as a frame of reference and identify the areas where they can have the greatest impact. For example, given that a large fraction of global emissions come from transportation and that these emissions have serious negative effects on people, cities must be able to gauge this impact and design policies that promote sustainable mobility. The SDGs can help them identify priority areas that require

the highest level of investment, time and effort. To this end, cities need to carry out an in-depth diagnosis. The **CIMI** can serve as a good diagnostic tool for initial assessment of a city's current situation with respect to the nine dimensions covered by our model. The index can also be used to take a quick x-ray of a city in order to identify both strengths and dimensions where there is room for improvement.

Collaboration as a key mechanism in urban transformation. The challenges posed by the current environment and the great uncertainties reflected in forecasts require that cities redefine their strategies to adapt to this new scenario. Cities that are able to bring together different social actors—the public sector, private companies, civic organizations and academic institutions—will be better positioned to achieve success in a shorter time frame. Our experience at **IESE Cities in Motion** and the associated **PPP for Cities** platform (www.pppcities.org) has taught us that the challenges we face are too big to solve in isolation and that addressing them effectively requires collaboration

between different social actors. Cooperation may entail different formats (from PPPs to citizen participation structures), but whatever form it takes, collaborative work is essential for long-term success. The notions of *collaboration* and *cooperation* should be central to the debate around social and economic recovery, and the goal should be to break down silos that keep us from seeing relationships and possible synergies between social actors.

In short, cities face major challenges, and tackling them will require city managers who are able to lead by example, guided by the principles of justice and collaboration and by a vision of the future that includes all citizens. This is the only way to achieve urban environments that are not only viable, but also more livable, just and resilient. In short, we will need city managers who apply the concept of *smart governance*, which includes accurate diagnosis, a clear vision, and a multidimensional approach to managing challenges. We trust that this report will help cities achieve better governance, which will undoubtedly translate into greater well-being for their citizens.

Appendix 1. Indicators

No.	Indicator	Description / Unit of measurement	Source	Dimension
1	Secondary and higher education	Proportion of population with secondary and higher education.	Euromonitor	Human capital
2	Schools	Number of public and private schools in a city.	OpenStreetMap	Human capital
3	Business schools	Number of business schools in the city included in the <i>Financial Times</i> TOP 100.	<i>Financial Times</i>	Human capital
4	Expenditure on education	Annual private expenditure on education per capita.	Euromonitor	Human capital
5	Expenditure on leisure and recreation	Consumer expenditure on leisure and recreation as a percentage of GDP.	Euromonitor	Human capital
6	Expenditure on leisure and recreation per capita	Annual consumer expenditure on leisure and recreation per capita.	Euromonitor	Human capital
7	Student mobility	International flow of mobile students at the tertiary level. Number of students.	UNESCO	Human capital
8	Museums and art galleries	Number of museums and art galleries in a city.	OpenStreetMap	Human capital
9	Number of universities	Number of TOP 500 universities.	QS Top Universities	Human capital
10	Theaters	Number of theaters in a city.	OpenStreetMap	Human capital
11	Female-friendly	This variable indicates whether a city provides a friendly environment for women (on a scale of 1 to 5). Cities with a value of 1 have a more hostile environment for women; those with a value of 5 are very female-friendly.	Nomad List	Social cohesion
12	Hospitals	Number of public and private hospitals in a city. Includes health centers.	OpenStreetMap	Social cohesion
13	Crime rate	Estimation of the general level of crime in a city.	Numbeo	Social cohesion
14	Slavery Index	The variable represents the national government's response to situations of slavery in the country. The countries that rank highest are the ones dealing with the problem most effectively.	Walk Free Foundation	Social cohesion
15	Happiness Index	Countries with a higher value are those where the level of overall happiness is higher.	World Happiness Index	Social cohesion
16	Gini Index	Index values range from 0 to 100. A value of 0 expresses perfect equality of income distribution, and 100, maximal inequality.	Euromonitor	Social cohesion
17	Global Peace Index	This index measures the level of peace/violence in a country or region. Countries with a high level of violence rank lowest.	Centre for Peace and Conflict Studies, University of Sydney	Social cohesion
18	Health Care Index	Estimation of the overall quality of the health care system, health care professionals, equipment, personnel, costs, etc.	Numbeo	Social cohesion
19	LGBT-friendly	This variable indicates whether a city provides a friendly environment for the LGBT community (on a scale of 1 to 5). Cities with a value of 1 have a more hostile environment for this community; those with a value of 5 are very LGBT-friendly.	Nomad List	Social cohesion

No.	Indicator	Description / Unit of measurement	Source	Dimension
20	Price of property	Property price as a proportion of income. Calculated as the ratio of the average price of a home to average annual disposable household income.	Numbeo	Social cohesion
21	Female employment rate	Rate of female employment in the public sector. Value from 0 to 1.	International Labor Organization	Social cohesion
22	Death rate	Death rate per 100,000 city inhabitants.	Euromonitor	Social cohesion
23	Unemployment rate	Unemployment rate (unemployed/labor force).	Euromonitor	Social cohesion
24	Murder rate	Murder rate per 100,000 city inhabitants.	Nomad List	Social cohesion
25	Suicide rate	Suicide rate per 100,000 city inhabitants.	Nomad List	Social cohesion
26	Terrorism	Number of terrorist incidents in a city in the last three years.	Global Terrorism Database, University of Maryland	Social cohesion
27	Racial tolerance	Index of racial tolerance in a city.	Nomad List	Social cohesion
28	Ease of starting a business	Top positions in the ranking are held by cities that have a more favorable regulatory environment for setting up and operating a local business.	World Bank	Economy
29	Mortgage	Mortgage as a percentage of income is the monthly mortgage cost as a proportion of household income (the lower the better).	Numbeo	Economy
30	Motivation of individuals to undertake early-stage entrepreneurial activity	The percentage of opportunity-driven early-stage entrepreneurs divided by the percentage of necessity-driven early-stage entrepreneurs.	Global Entrepreneurship Monitor	Economy
31	Number of headquarters	Number of headquarters of publicly traded companies.	Globalization and World Cities (GaWC)	Economy
32	GDP	Gross domestic product in millions of USD.	Euromonitor	Economy
33	Estimated GDP	Projected GDP growth for the next year.	Euromonitor	Economy
34	GDP per capita	Gross domestic product per capita.	Euromonitor	Economy
35	Purchasing power	Purchasing power in buying goods and services in the city (based on the average salary), compared to that of New York City residents. If local purchasing power is 40, this means that inhabitants with an average salary can afford to buy 60% less goods and services than New York City residents with an average salary.	Numbeo	Economy
36	Productivity	Labor productivity calculated as GDP/employed population (in thousands).	Euromonitor	Economy
37	Hourly wage in USD	Hourly wage in the city (in USD).	Euromonitor	Economy
38	Time required to start a business	Number of calendar days needed to complete the procedures to legally operate a business.	World Bank	Economy

No.	Indicator	Description / Unit of measurement	Source	Dimension
39	Bitcoin legal	Whether or not Bitcoin is legal in the city.	Nomad List	Governance
40	ISO 37120 certification	Whether or not the city has ISO 37120 certification. Certified cities are committed to improving urban services and quality of life. This variable is coded from 0 to 6. The highest value is assigned to the cities that have been certified longest. A value of 0 is assigned to cities that are not certified.	World Council on City Data (WCCD)	Governance
41	Government buildings	Number of government buildings and premises in a city.	OpenStreetMap	Governance
42	Embassies	Number of embassies in a city.	OpenStreetMap	Governance
43	Public sector employment	Percentage of employed population working in public administration and defense; education; health; community, social and personal service activities; and other activities.	Euromonitor	Governance
44	E-Participation Index	This index supplements the EGDI and focuses on the use of online services to facilitate provision of information by governments to citizens ("e-information sharing"), interaction with stakeholders ("e-consultation"), and engagement in decision-making processes ("e-decision-making").	United Nations	Governance
45	Human Capital Index	The E-Government Development Index (EGDI) is a composite measure of three important dimensions of e-government: provision of online services, telecommunication connectivity and human capacity. This variable captures the human capacity component.	United Nations	Governance
46	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 index ranges from 0 (low) to 12 (high), with higher scores indicating that these laws are better designed to expand access to credit.	World Bank	Governance
47	Telecommunication Infrastructure Index	The E-Government Development Index (EGDI) is a composite measure of three important dimensions of e-government: provision of online services, telecommunication connectivity and human capacity. This variable captures the development status of telecommunication infrastructure (by the government).	United Nations	Governance

No.	Indicator	Description / Unit of measurement	Source	Dimension
48	Corruption Perceptions Index	Countries with values close to 0 are perceived as very corrupt and those with values close to 100 are perceived as very transparent.	Transparency International	Governance
49	Online Service Index	The E-Government Development Index (EGDI) is a composite measure of three important dimensions of e-government: provision of online services, telecommunication connectivity and human capacity. This variable reflects the scope and quality of e-government services.	United Nations	Governance
50	Research offices	Number of research and technology offices in a city.	OpenStreetMap	Governance
51	Open data platform	Whether or not the city has an open data system.	CTIC Foundation and Open World Bank	Governance
52	Democracy Index	The top-ranked countries are the ones considered most democratic.	Economist Intelligence Unit	Governance
53	Reserves	Total reserves in millions of current USD. City-level estimate according to population.	World Bank	Governance
54	Reserves per capita	Reserves per capita in millions of current USD.	World Bank	Governance
55	CO ₂ emissions	Carbon dioxide emissions from the use of fossil fuels and the manufacture of cement. Measured in kilotons (kt).	World Bank	Environment
56	Methane emissions	Methane emissions caused by human activities such as agriculture and industrial methane production. Measured in kt of CO ₂ equivalent.	World Bank	Environment
57	Environmental Performance Index	Environmental Performance Index (from 1 = poor to 100 = good).	Yale University	Environment
58	CO ₂ Emission Index	Index of CO ₂ emissions.	Numbeo	Environment
59	Pollution Index	Index of pollution.	Numbeo	Environment
60	PM ₁₀	A measure of particles in the air with a diameter of less than 10 µm. Annual mean.	Global Residence Index	Environment
61	PM _{2.5}	A measure of particles in the air with a diameter of less than 2.5 µm. Annual mean.	IQAir	Environment
62	Percentage of population with access to water supply	Percentage of the population with reasonable access to an adequate amount of water from improved water sources.	World Bank	Environment
63	Renewable water resources	Renewable water sources per capita.	FAO	Environment
64	Solid waste	Average amount of municipal solid waste generated annually per person (kg/year).	Waste Management for Everyone	Environment
65	Climate vulnerability	Risk to the city due to climate change.	National Geographic	Environment

No.	Indicator	Description / Unit of measurement	Source	Dimension
66	Bicycle rental	Whether or not the city has a bicycle rental system.	NUMO	Mobility and transportation
67	Moped rental	Whether or not the city has a moped rental system.	NUMO	Mobility and transportation
68	Scooter rental	Whether or not the city has a scooter rental system.	NUMO	Mobility and transportation
69	Bicycles per household	Percentage of bicycles per household.	Euromonitor	Mobility and transportation
70	Bike sharing	Shows automated services for public use of shared bicycles that provide transportation from place to place in a city. Indicator values range from 0 to 8 according to how developed the system is.	Bike-Sharing World Map	Mobility and transportation
71	Metro stations	Number of metro stations in a city.	Metrobits (metrobits.org)	Mobility and transportation
72	Traffic Inefficiency Index	This index is an estimate of traffic inefficiencies. High values represent high driving inefficiencies, such as long travel times.	Numbeo	Mobility and transportation
73	Traffic Commute Time Index	An index based on the time it takes to commute to work (in minutes).	Numbeo	Mobility and transportation
74	Exponential Traffic Index	This index is estimated by considering time spent in traffic. It is assumed that travel time dissatisfaction increases exponentially beyond 25 minutes.	Numbeo	Mobility and transportation
75	Length of metro system	Length of the metro system in a city.	Metrobits (metrobits.org)	Mobility and transportation
76	High-speed train	Binary variable that shows whether the city has a high-speed train or not.	OpenRailwayMap	Mobility and transportation
77	Vehicles in the city	Number of commercial vehicles in a city.	Euromonitor	Mobility and transportation
78	Flights	Number of inbound flights (air routes) in a city.	OpenFlights	Mobility and transportation
79	Bike Advance	Whether or not a city has a bike sharing system.	The Bike Share Map	Urban planning
80	Buildings	The number of completed buildings in a city. The count includes structures such as high-rises, towers and low-rise buildings, but excludes other miscellaneous structures and buildings of different statuses (under construction, proposed, etc.).	Skyscraper Source Media	Urban planning
81	Bicycle stations	Bicycle station locations in a city.	Bike-Sharing World Map	Urban planning

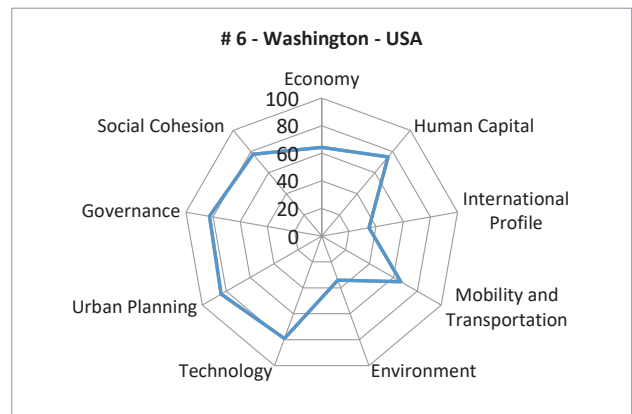
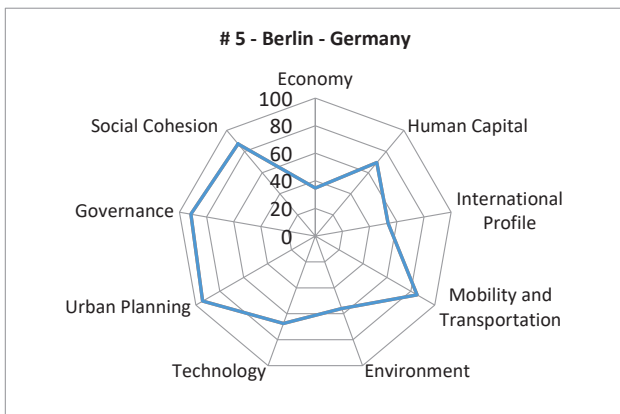
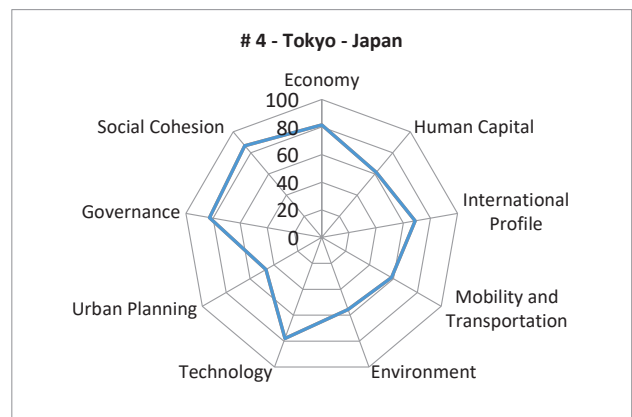
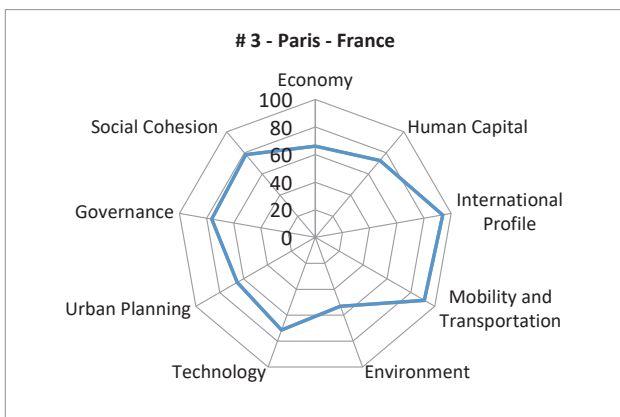
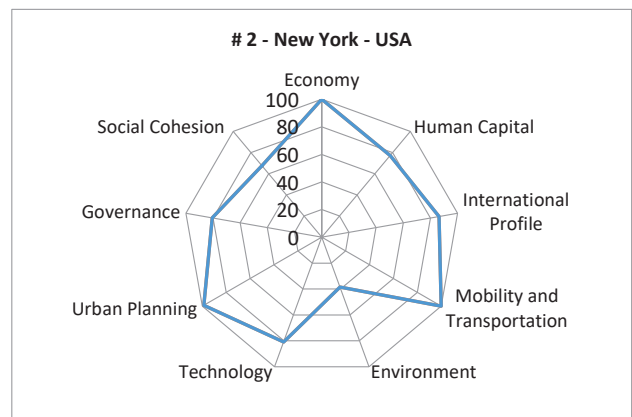
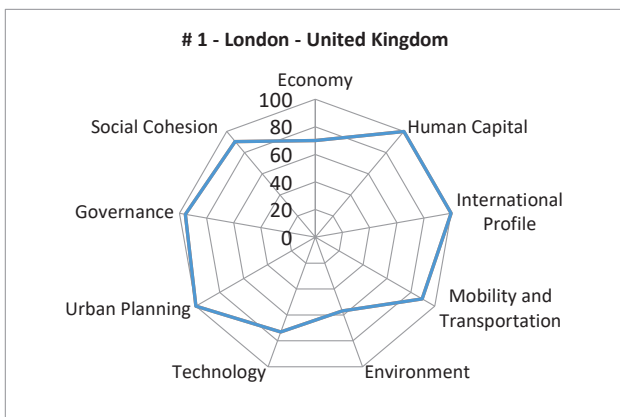
No.	Indicator	Description / Unit of measurement	Source	Dimension
82	Electric charging stations	Electric car charging points in a city.	OpenStreetMap	Urban planning
83	Number of people per household	Average number of people per household.	Euromonitor	Urban planning
84	Percentage of the urban population with adequate sanitation services	Percentage of the urban population that uses at least basic sanitation services—that is, improved sanitation facilities that are not shared with other households.	World Bank	Urban planning
85	Artificial intelligence (AI) projects	Whether or not a city has AI projects.	AI Localism	Urban planning
86	High-rises	Percentage of buildings classified as high-rises. A high-rise is a multi-floored building of at least 12 stories or 35 m in height (115 feet).	Skyscraper Source Media	Urban planning
87	Number of passengers per airport	Annual number of passengers per airport in thousands.	Euromonitor	International profile
88	Hotels	Number of hotels per capita.	OpenStreetMap	International profile
89	Restaurant Price Index	The Restaurant Price Index compares the price of meals and drinks in restaurants and bars in a city to prices in New York City.	Numbeo	International profile
90	McDonald's	Number of McDonald's establishments in a city.	OpenStreetMap	International profile
91	Number of congresses and meetings	Number of international congresses and meetings held in a city.	International Congress and Convention Association	International profile
92	Mobile broadband	Active mobile broadband subscriptions.	International Telecommunication Union	Technology
93	Innovation Cities Index	The Innovation Cities Index (ICI) is a ranking of leading cities in innovation.	2thinknow	Technology
94	Internet	Percentage of households with Internet access.	Euromonitor	Technology
95	LTE/WiMAX	Percentage of the population covered by at least an LTE/WiMAX mobile network.	Euromonitor	Technology
96	Computers/PCs	Percentage of households with a personal computer.	Euromonitor	Technology
97	Mobile phone penetration rate	Number of mobile phones per 100 inhabitants.	International Telecommunication Union	Technology
98	Social media	Registered Twitter users in a city (in thousands of individuals) + number of registered LinkedIn members in the city.	Twitter and LinkedIn	Technology

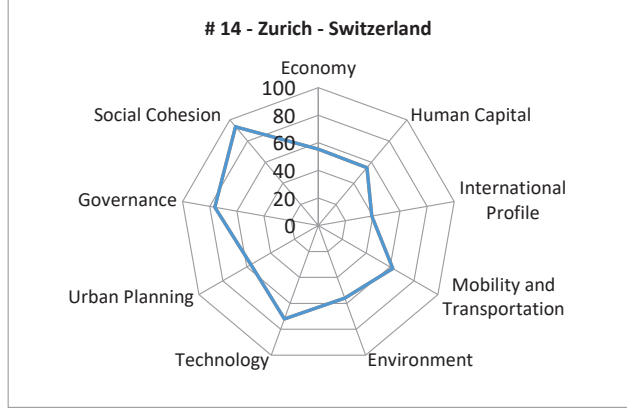
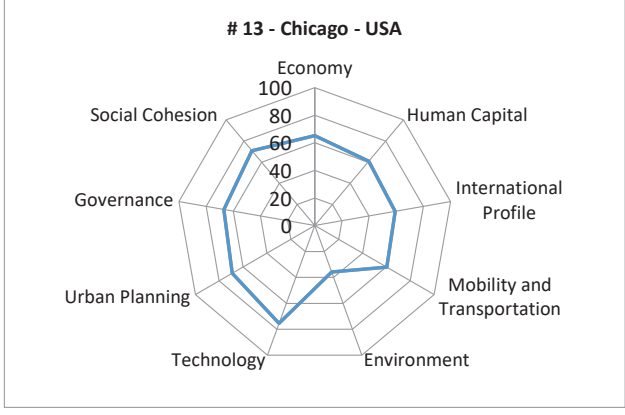
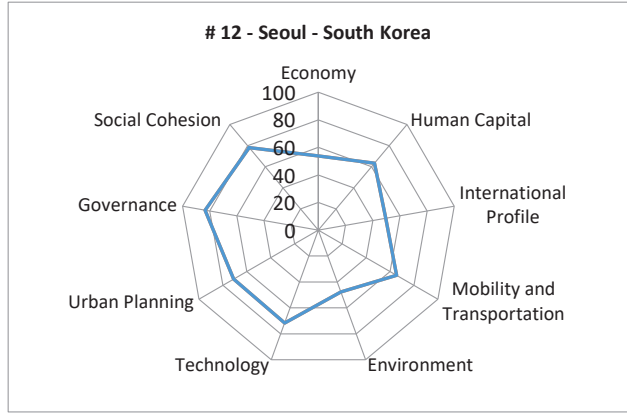
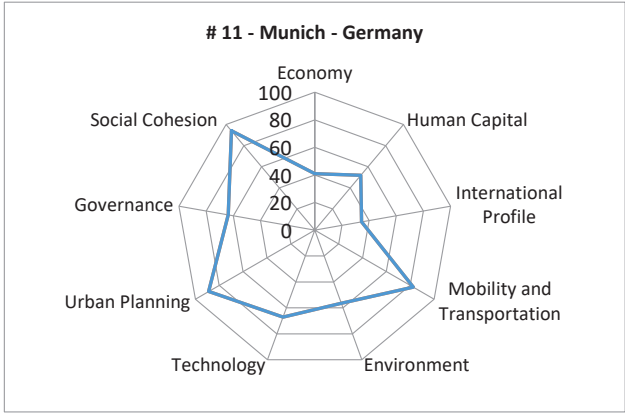
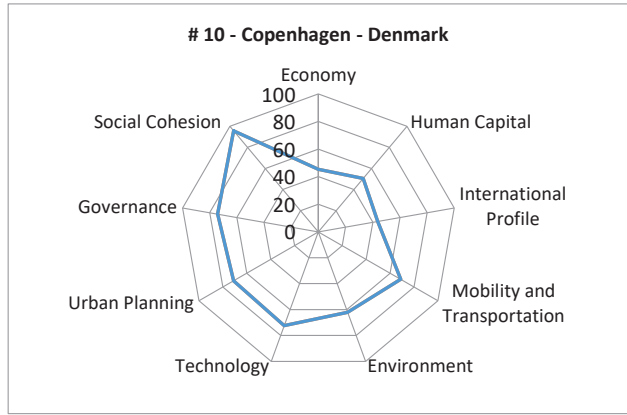
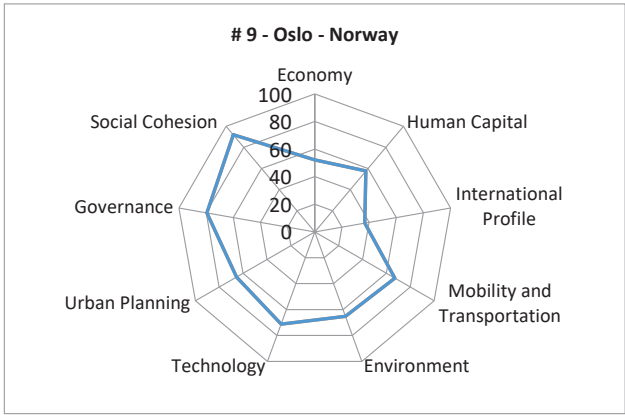
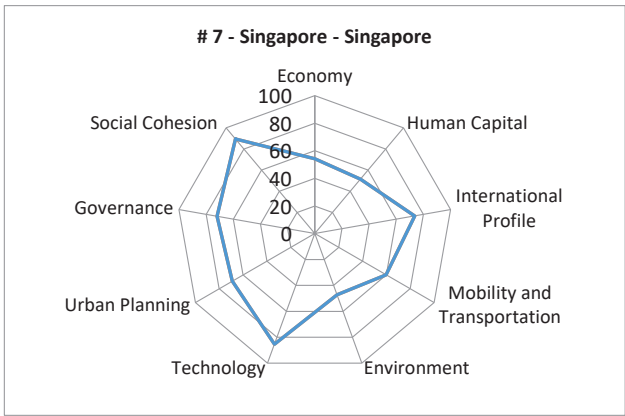
No.	Indicator	Description / Unit of measurement	Source	Dimension
99	Broadband subscriptions	Broadband subscriptions per 100 inhabitants.	International Telecommunication Union	Technology
100	Telephony	Percentage of households with some kind of telephone service.	Euromonitor	Technology
101	Internet speed	Fixed-line Internet speed in megabytes per second (country).	World Population Review	Technology
102	Mobile speed	Mobile speed in megabytes per second (country).	World Population Review	Technology
103	WiFi hotspots	Total number of WiFi hotspots. This variable represents options for connecting to the Internet in a city.	WiFi Map app	Technology
104	Population	Number of inhabitants.	Euromonitor	City/country cluster
105	Percentage of population employed	Percentage of population employed.	Euromonitor	Country cluster
106	Expenditure on education per inhabitant.	Private expenditure on education per inhabitant.	Euromonitor	Country cluster
107	Expenditure on medical and health services per inhabitant	Private expenditure on medical and health services per inhabitant.	Euromonitor	Country cluster
108	Expenditure on hotel and catering services per inhabitant	Consumer expenditure on hotel and catering services per inhabitant.	Euromonitor	Country cluster
109	Expenditure on housing per inhabitant	Consumer expenditure on housing per inhabitant.	Euromonitor	Country cluster
110	Disposable income	Disposable income (annual average). Decile 1. In USD.	Euromonitor	City cluster
111	Disposable income	Disposable income (annual average). Decile 2. In USD.	Euromonitor	City cluster
112	Disposable income	Disposable income (annual average). Decile 5. In USD.	Euromonitor	City cluster
113	Disposable income	Disposable income (annual average). Decile 7. In USD.	Euromonitor	City cluster
114	Disposable income	Disposable income (annual average). Decile 9. In USD.	Euromonitor	City cluster

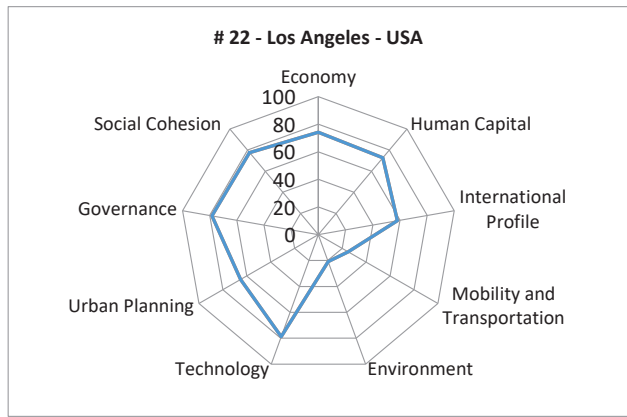
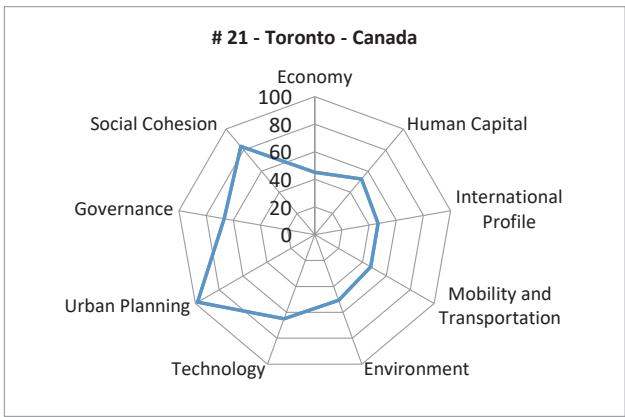
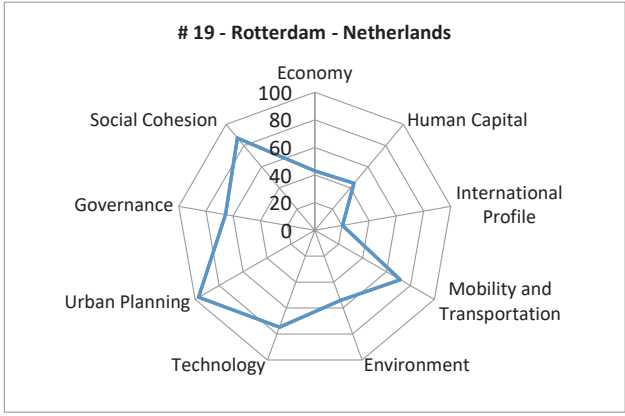
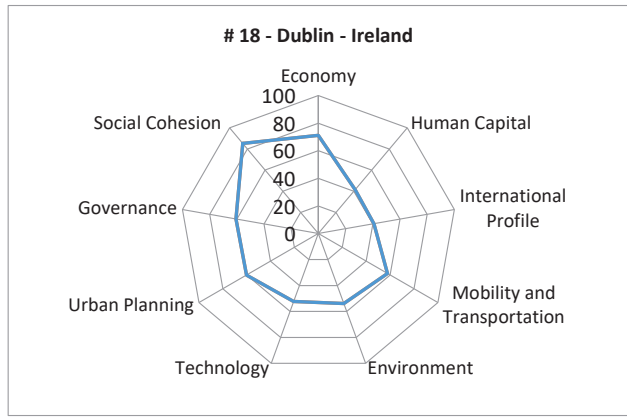
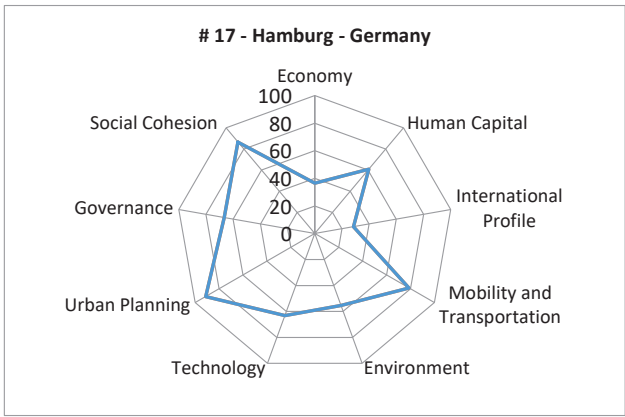
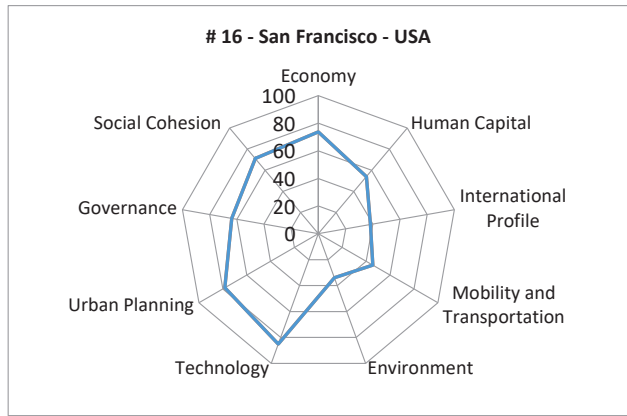
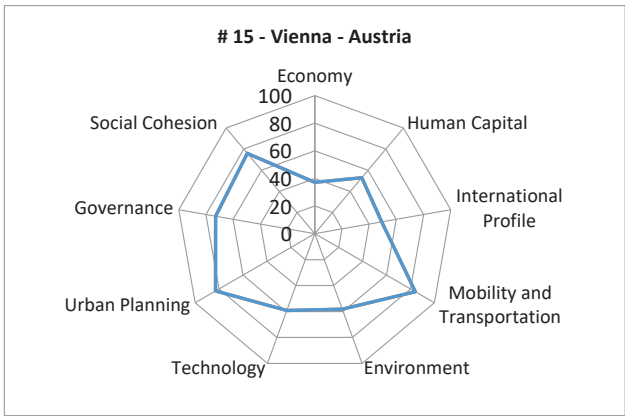
Appendix 2. Graphical Analysis of the Profiles of the 183 Cities

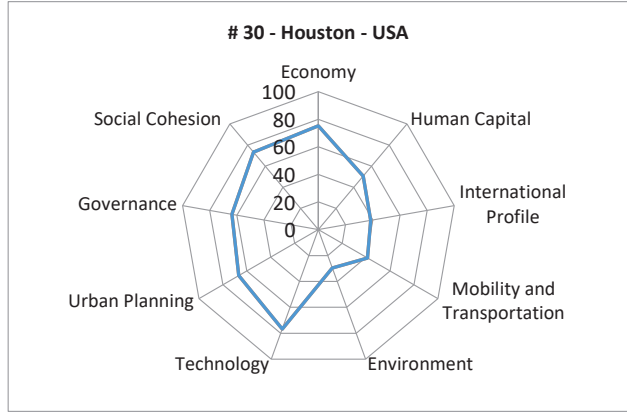
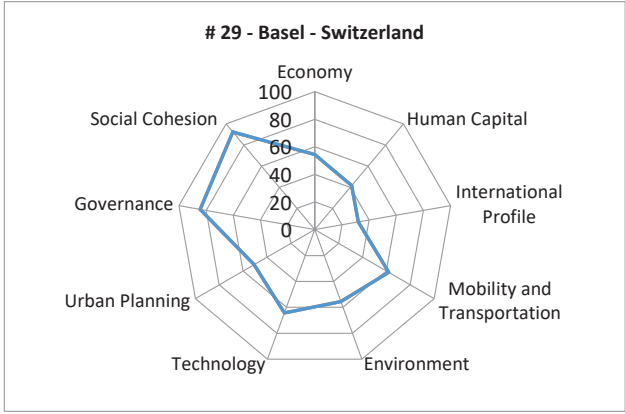
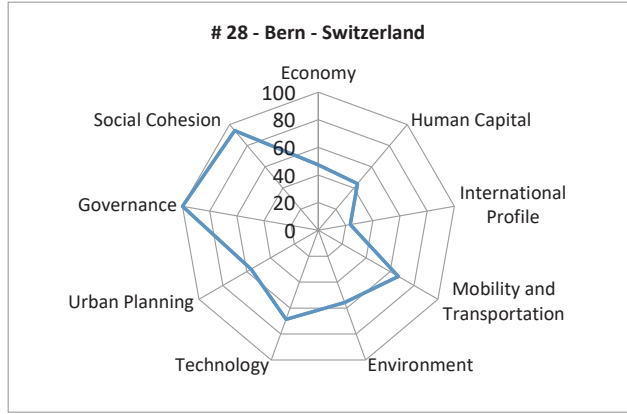
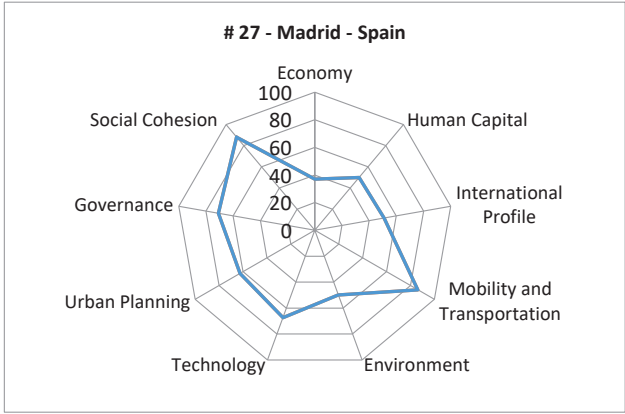
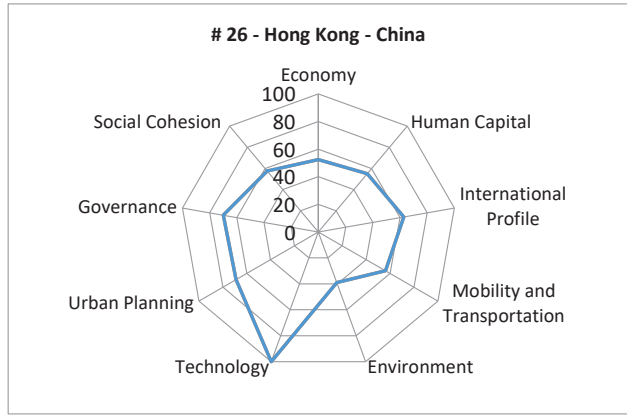
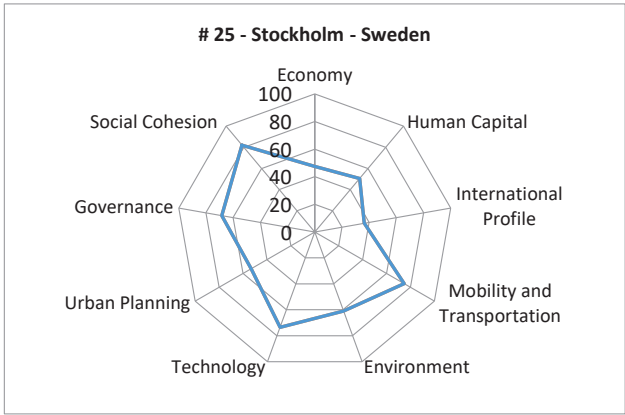
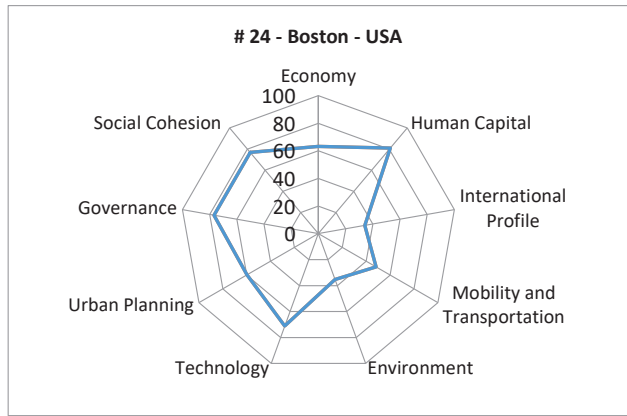
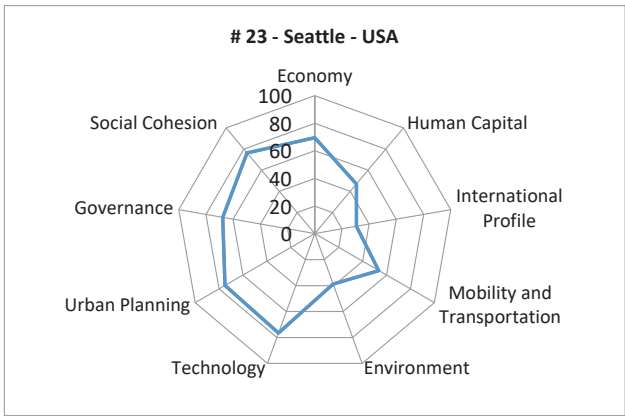
Below we present a graphical analysis of the 183 cities included in the **CIMI**, based on the nine key dimensions. These radar charts, ordered according to each city's position in the ranking, are intended to facilitate interpreta-

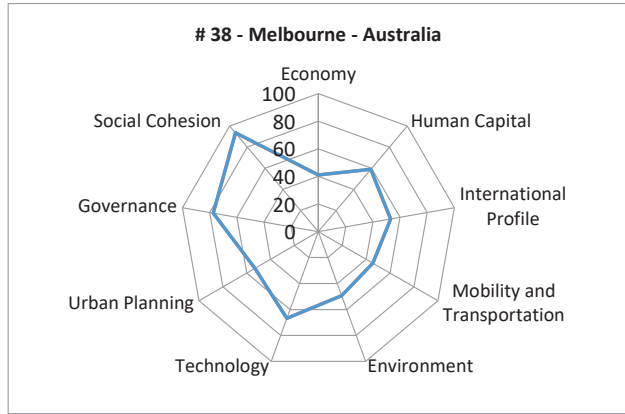
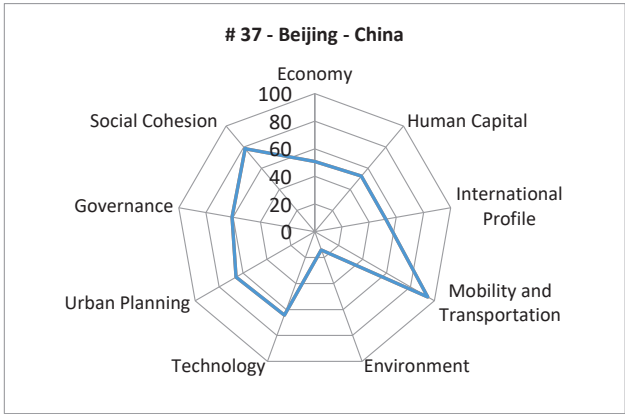
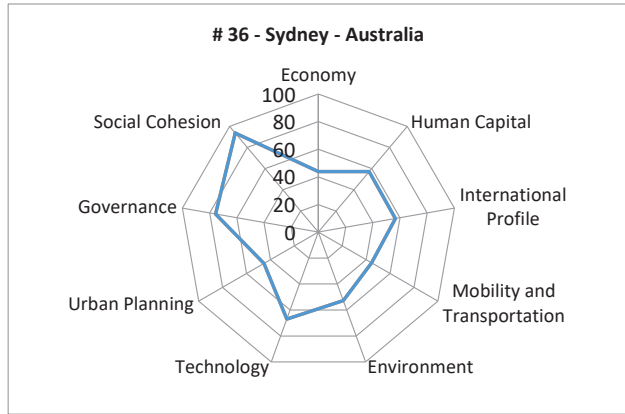
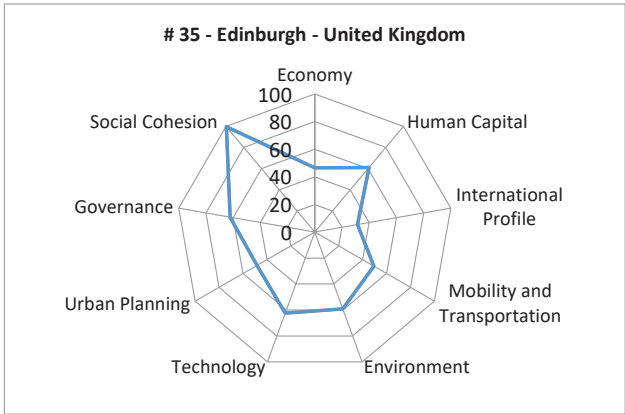
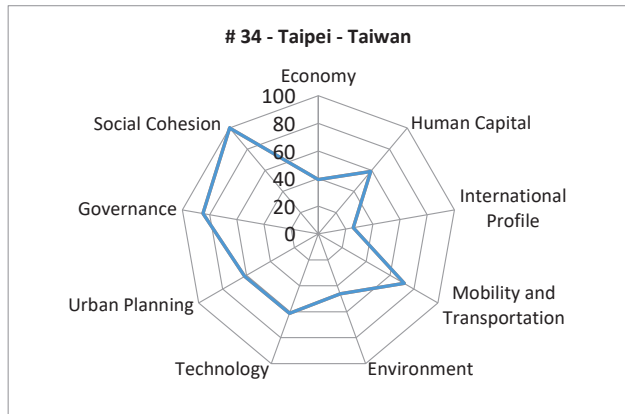
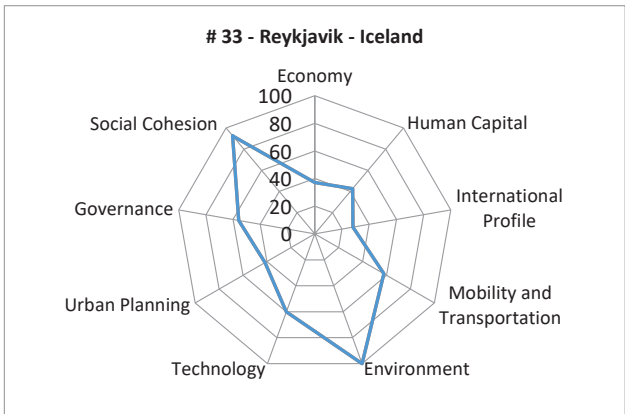
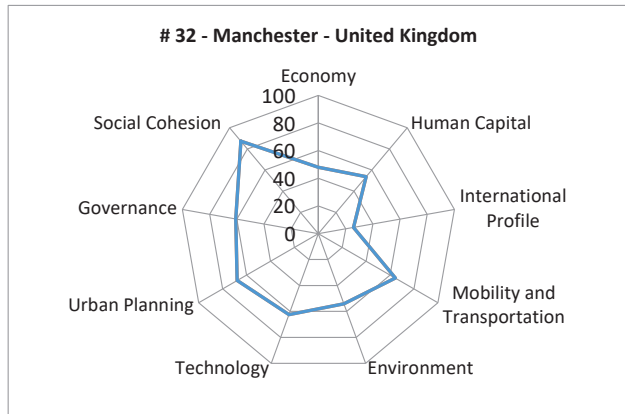
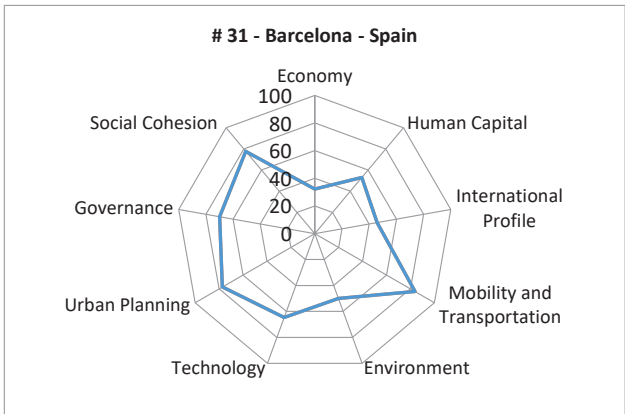
tion of the profile of each city by showing the values for each dimension. They also enable comparison of two or more cities at a glance.

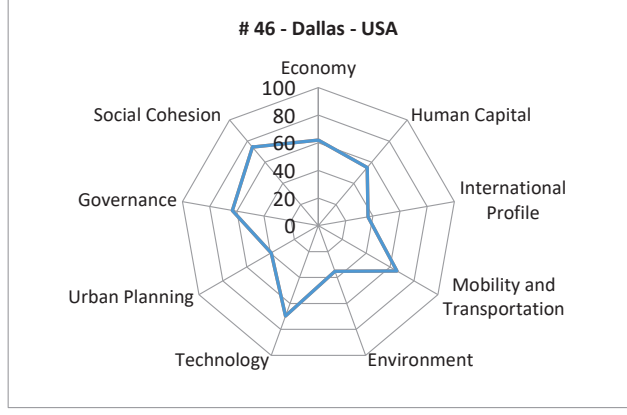
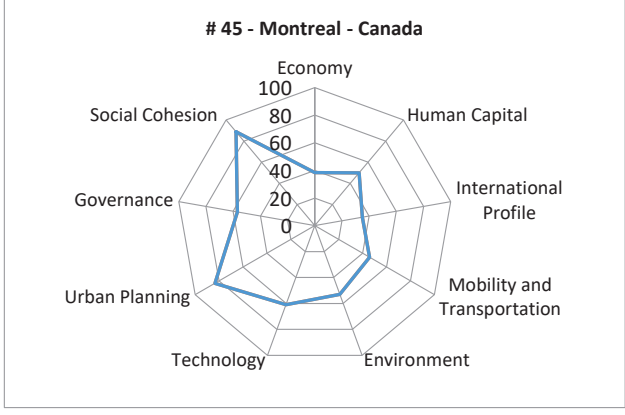
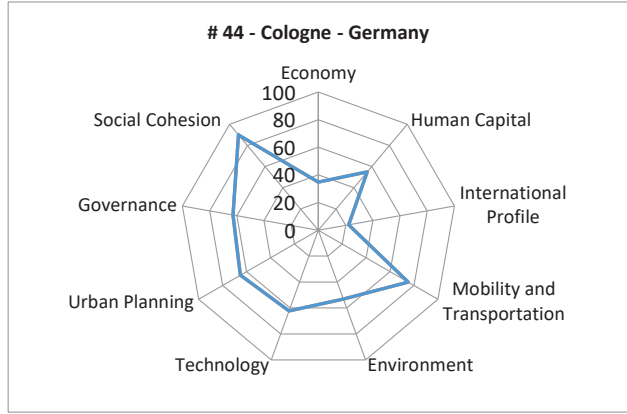
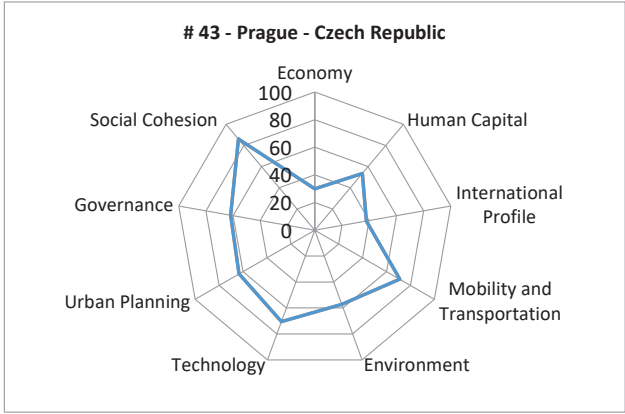
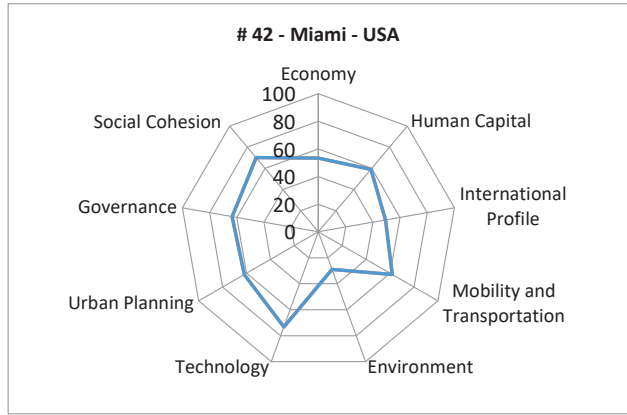
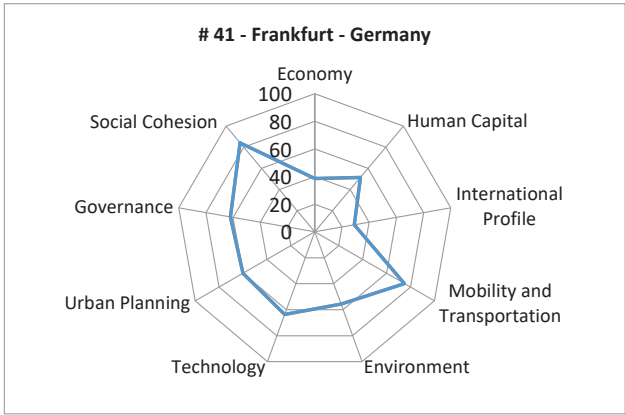
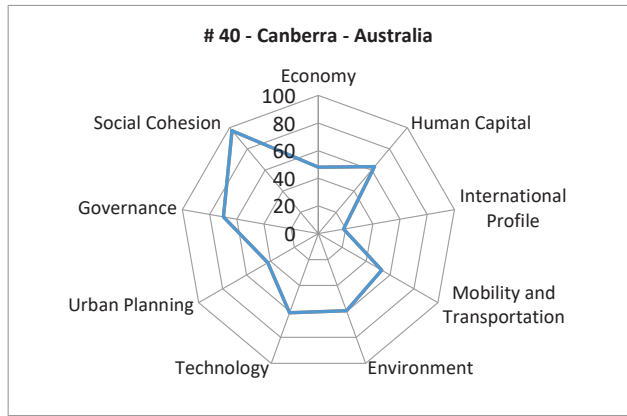
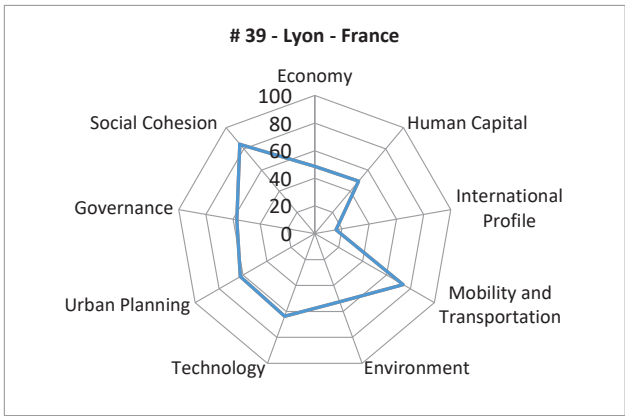


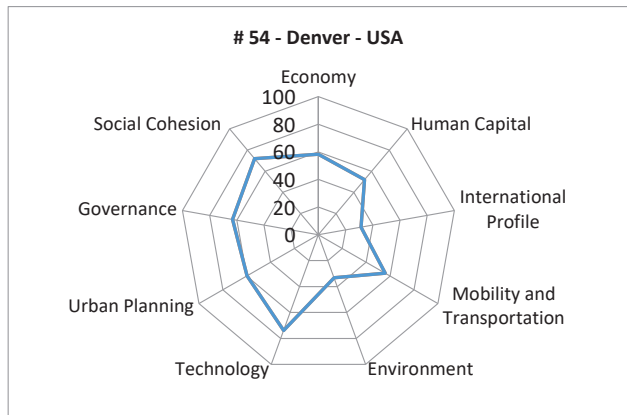
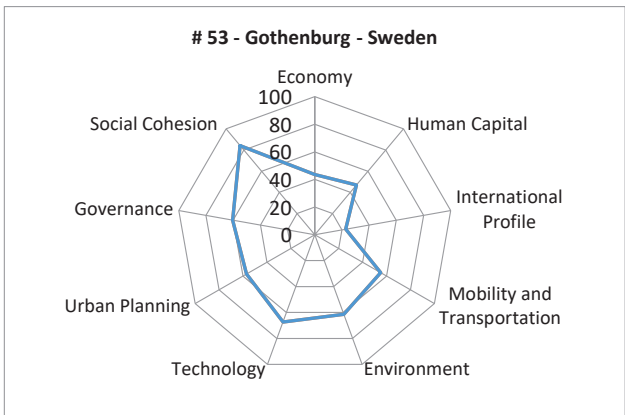
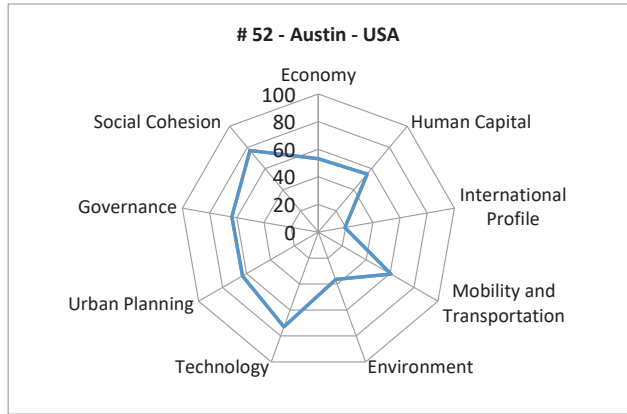
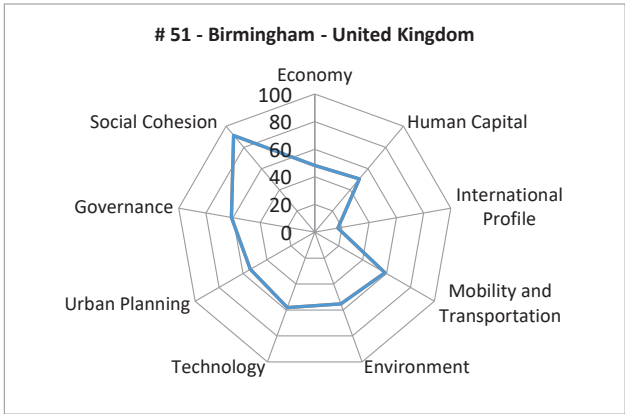
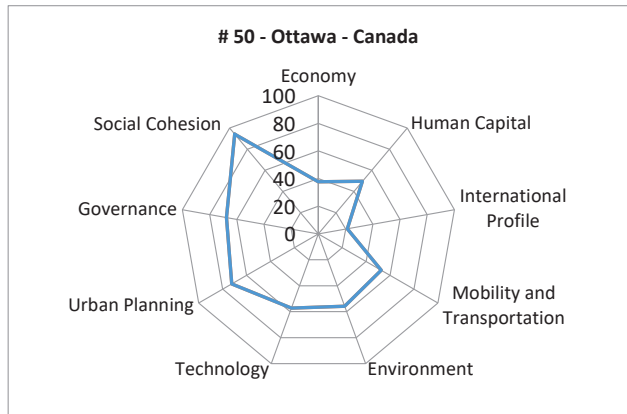
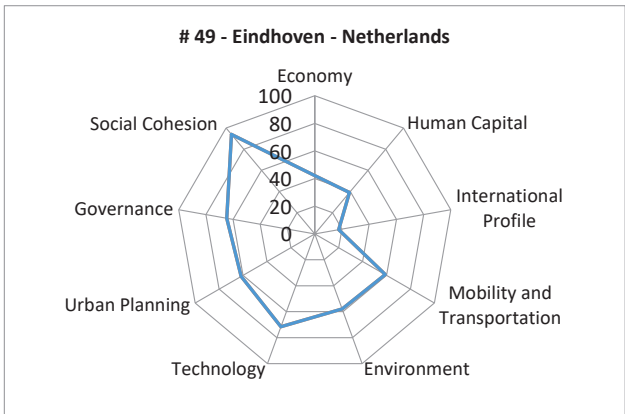
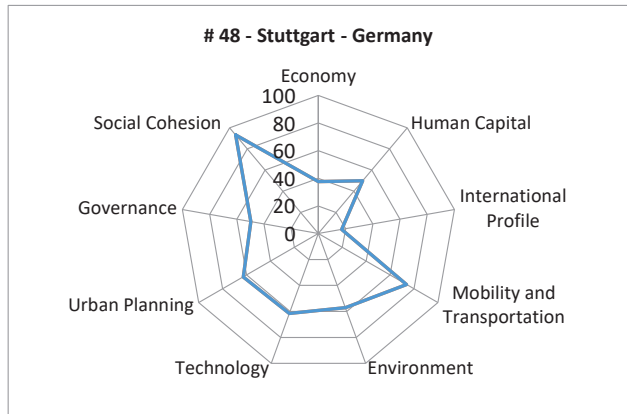
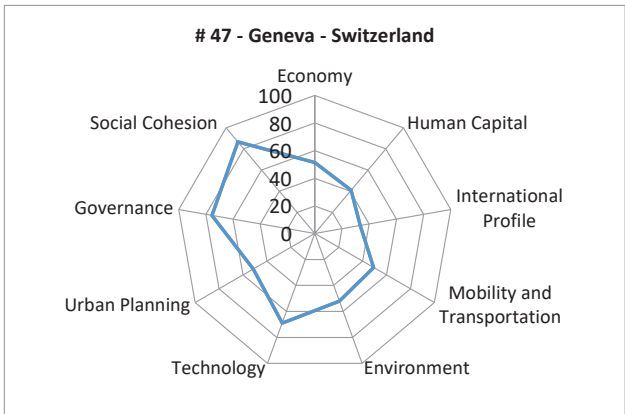


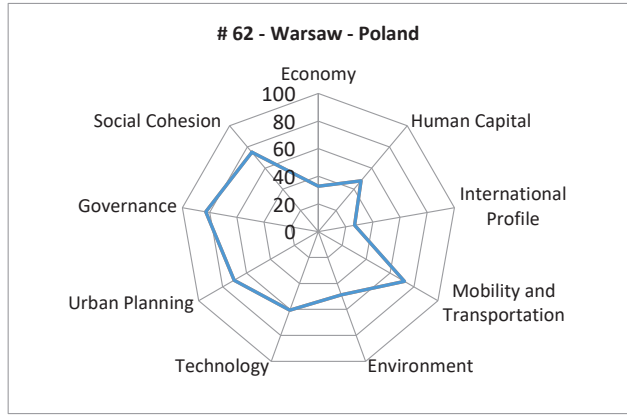
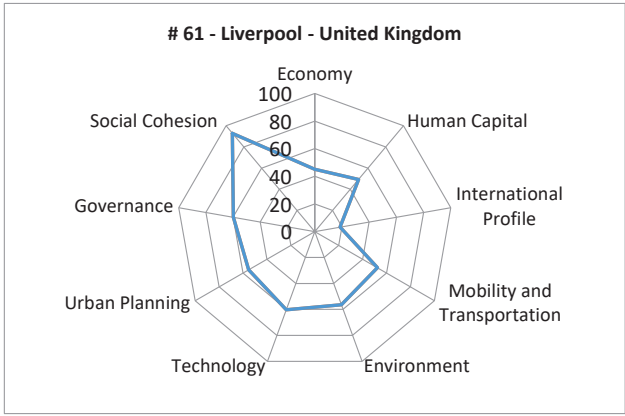
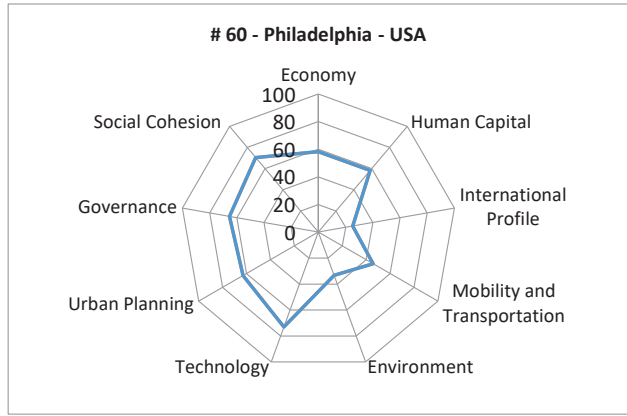
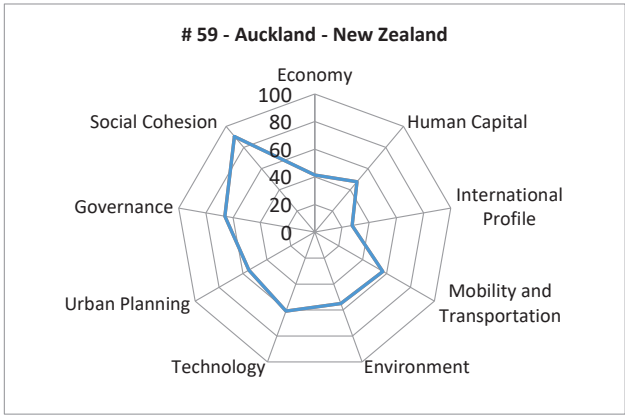
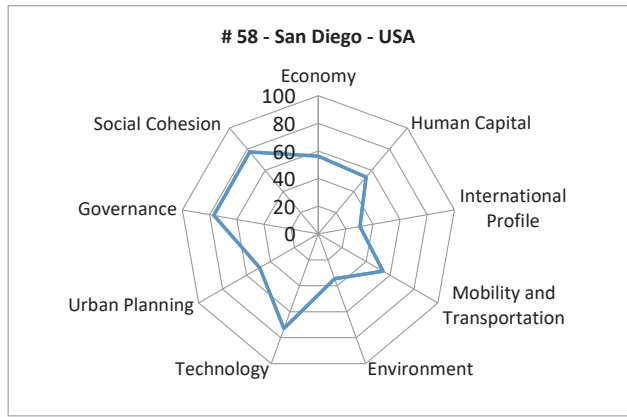
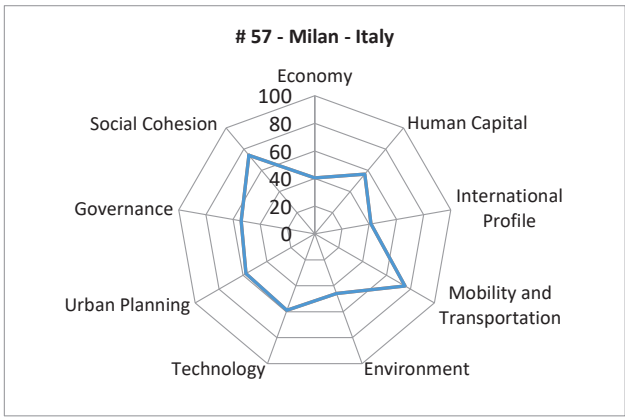
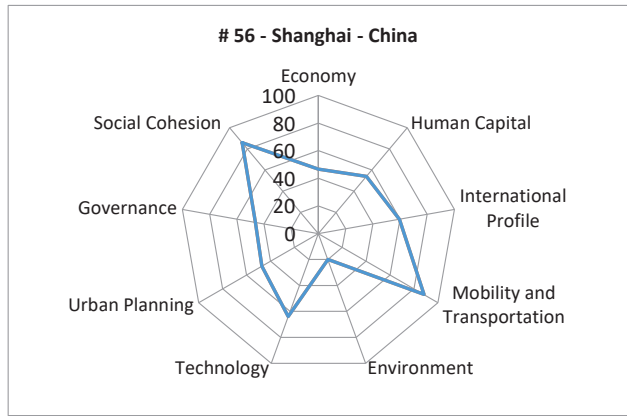
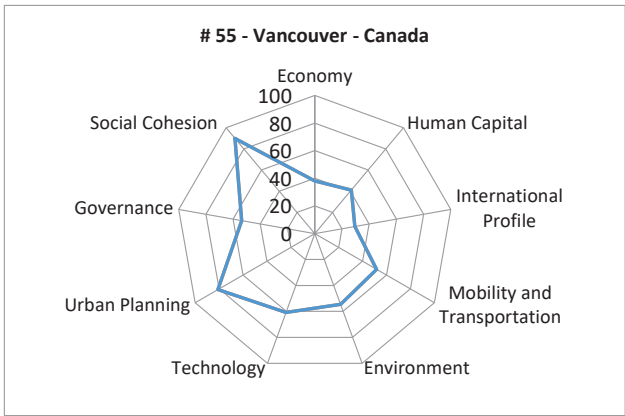




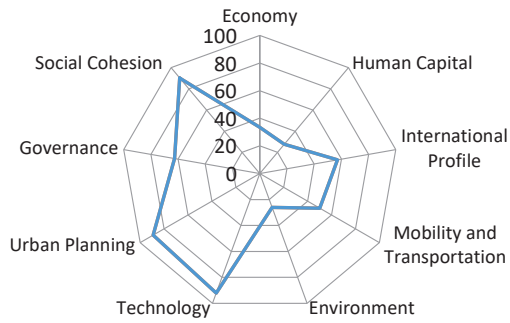




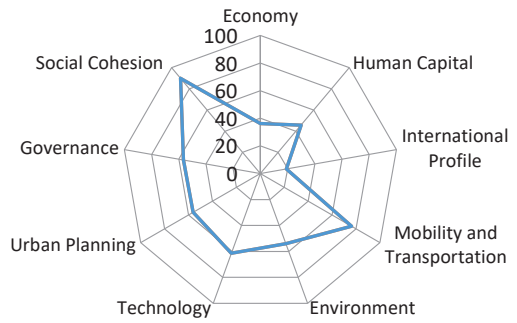




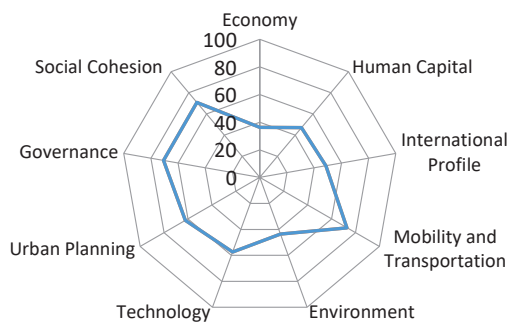
63 - Dubai - United Arab Emirates



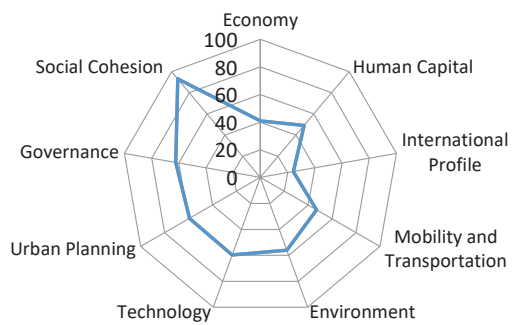
64 - Düsseldorf - Germany



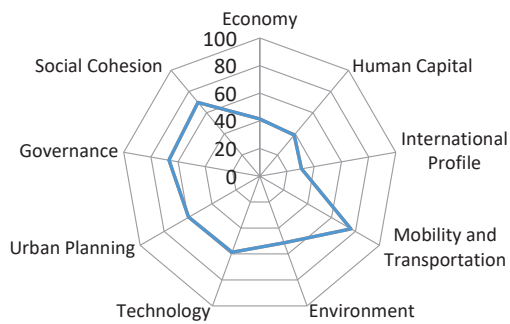
65 - Rome - Italy



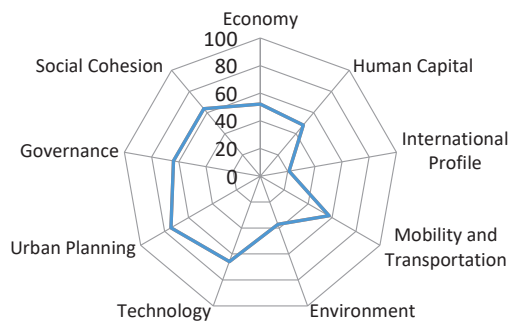
66 - Glasgow - United Kingdom



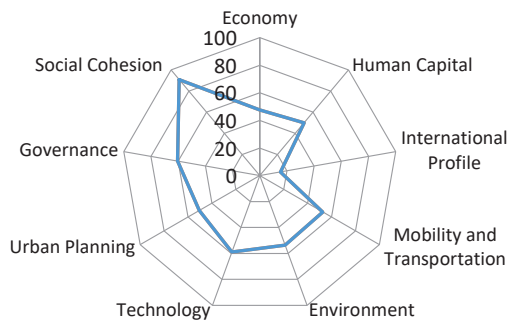
67 - Brussels - Belgium



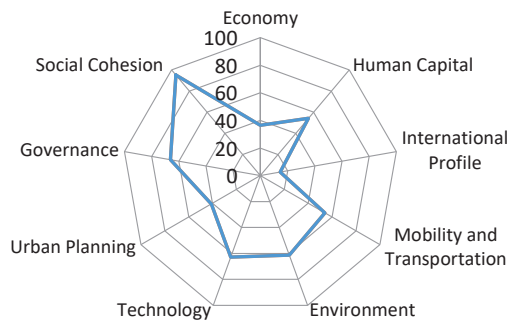
68 - Baltimore - USA



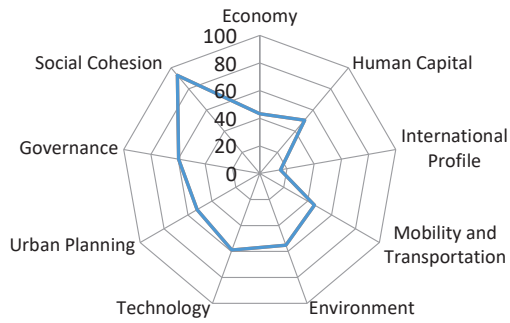
69 - Leeds - United Kingdom



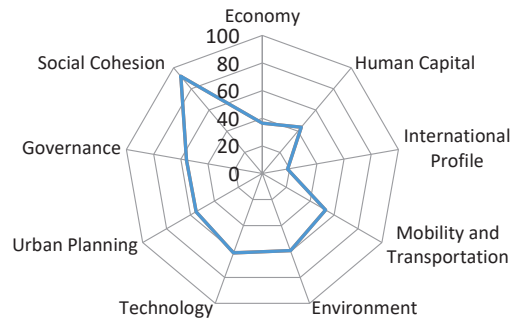
70 - Wellington - New Zealand



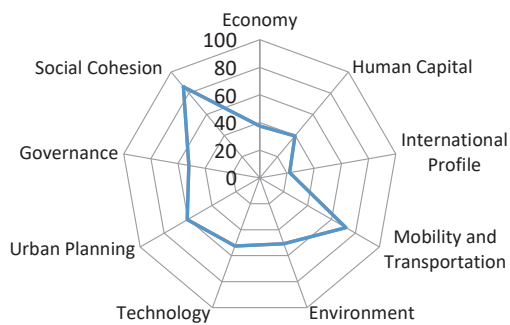
71 - Nottingham - United Kingdom



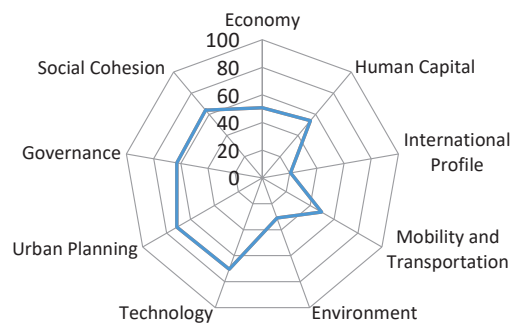
72 - Tallinn - Estonia



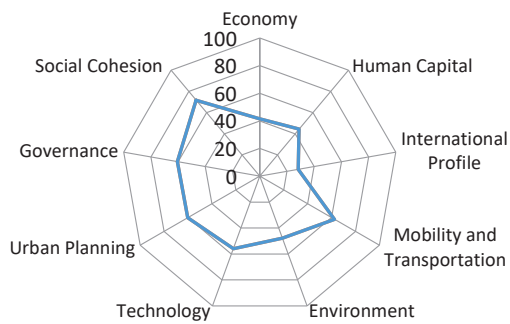
73 - Antwerp - Belgium



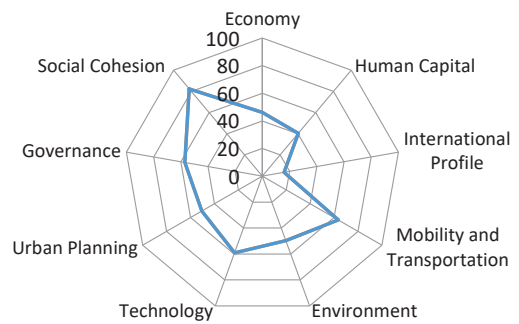
74 - Detroit - USA



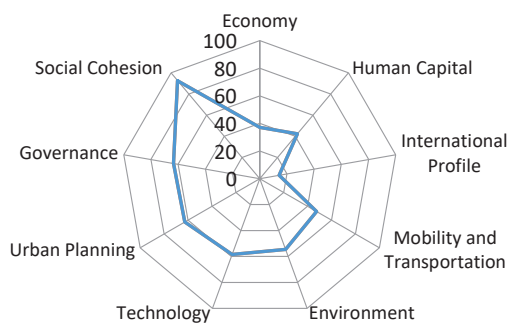
75 - Santiago - Chile



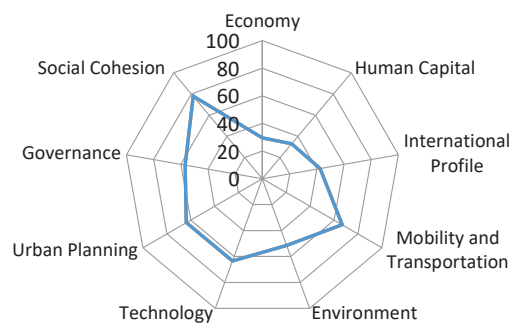
76 - Marseille - France

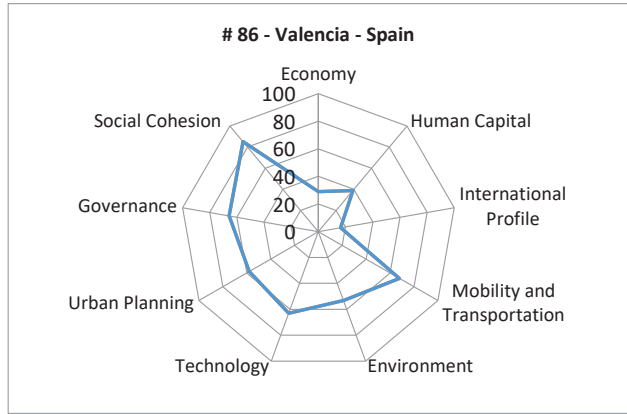
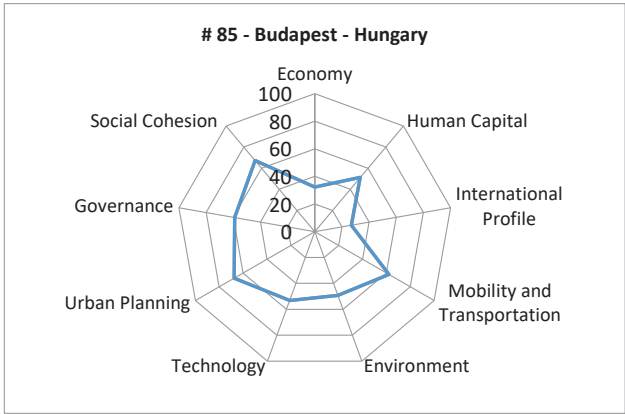
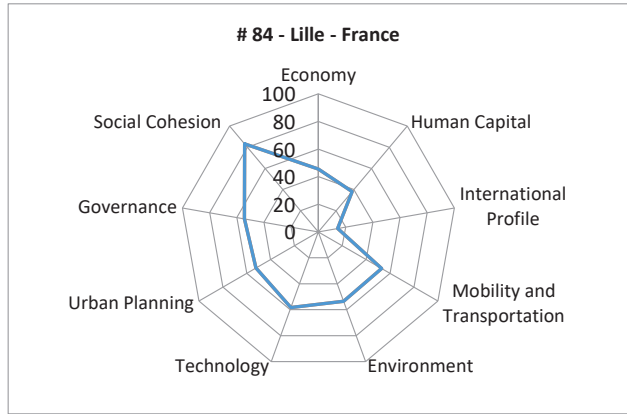
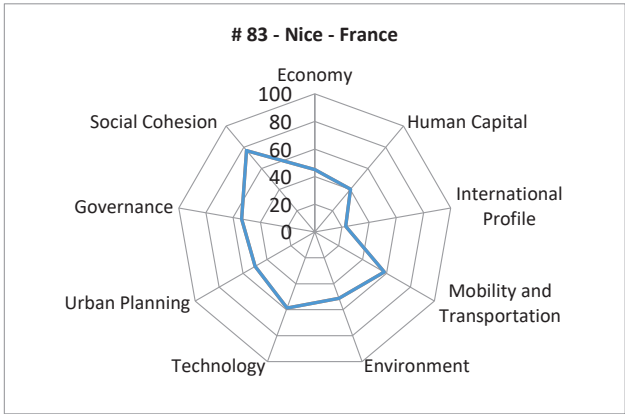
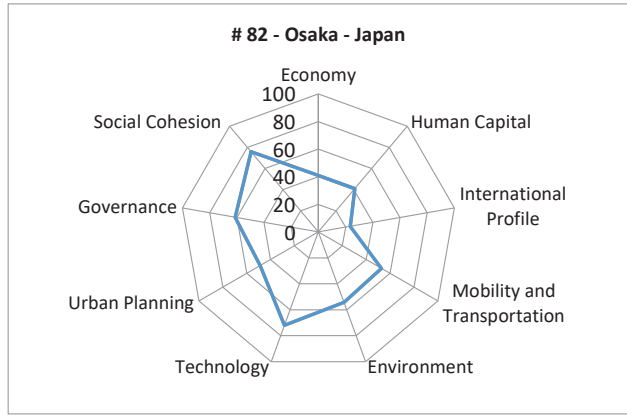
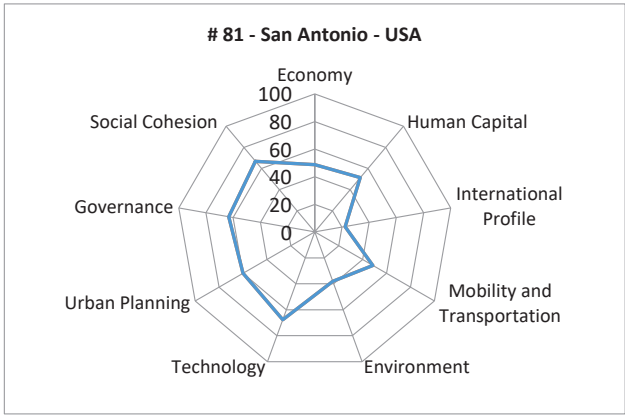
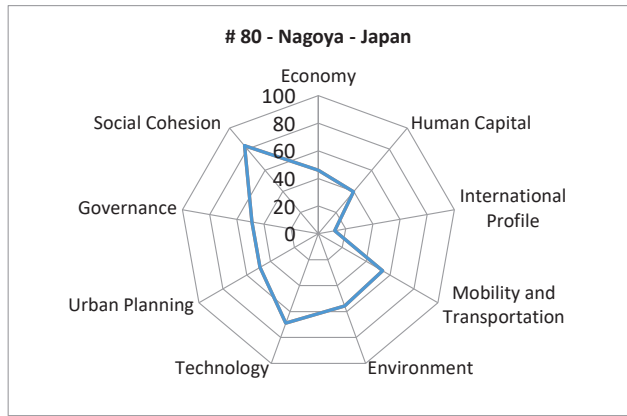
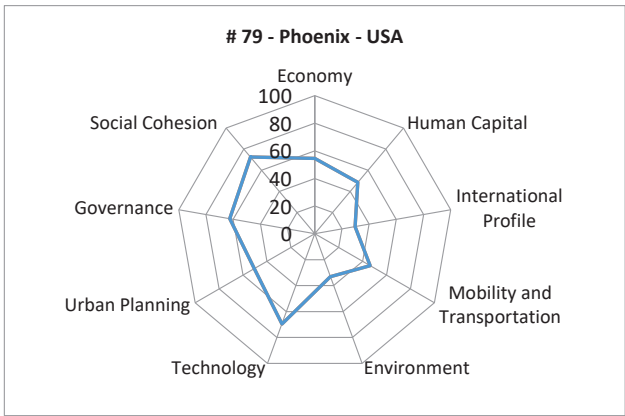


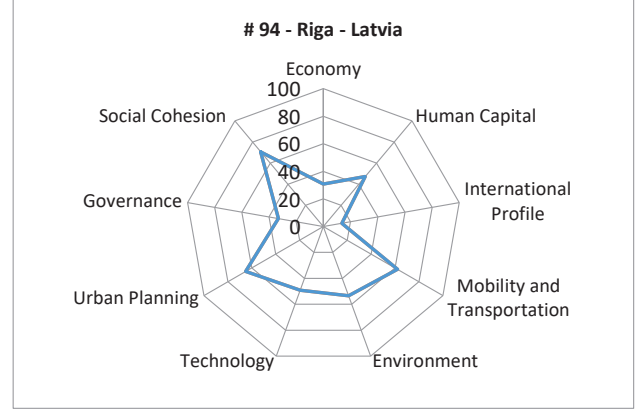
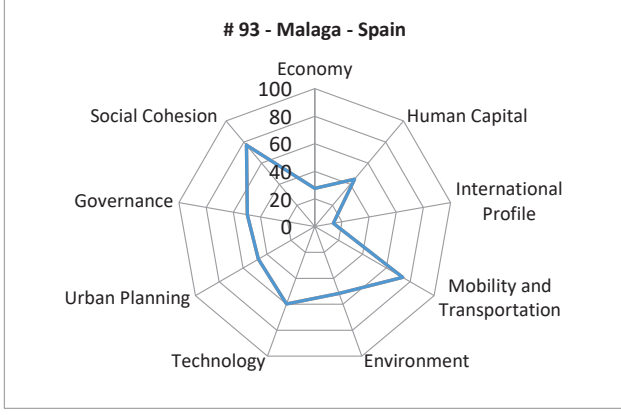
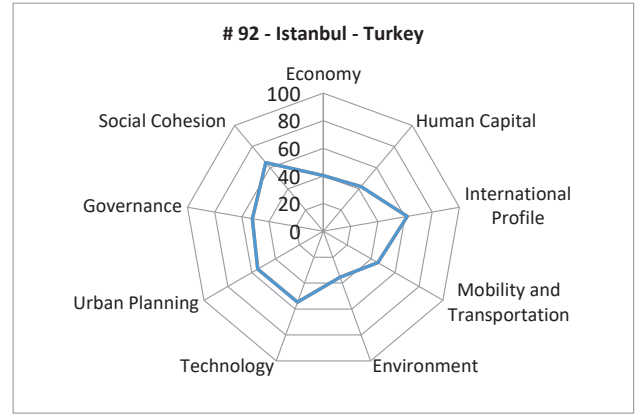
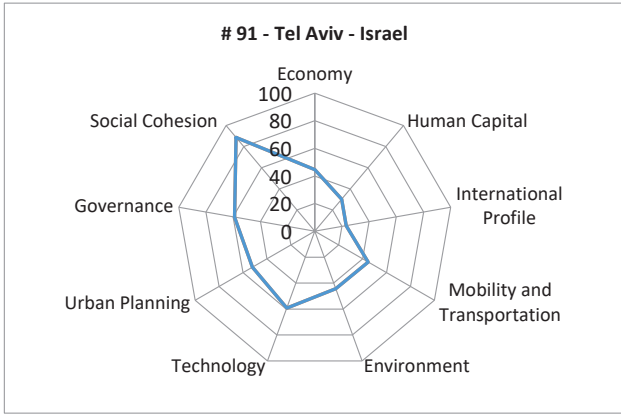
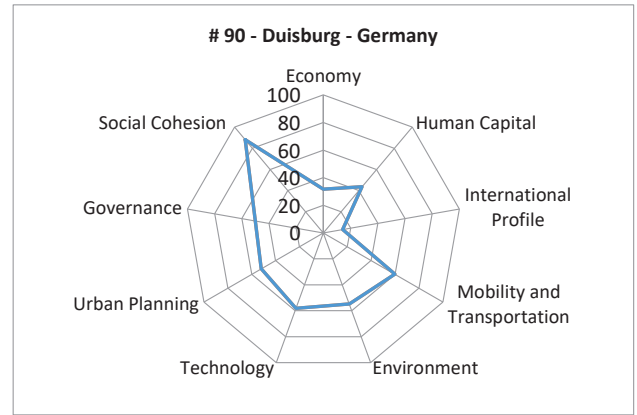
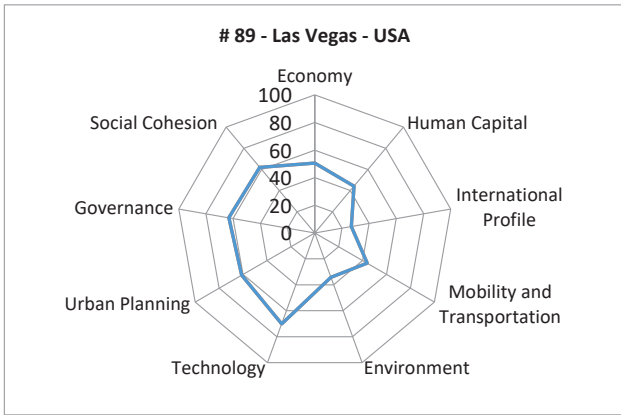
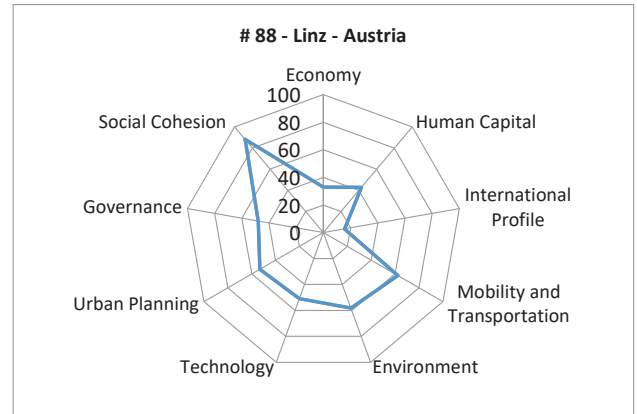
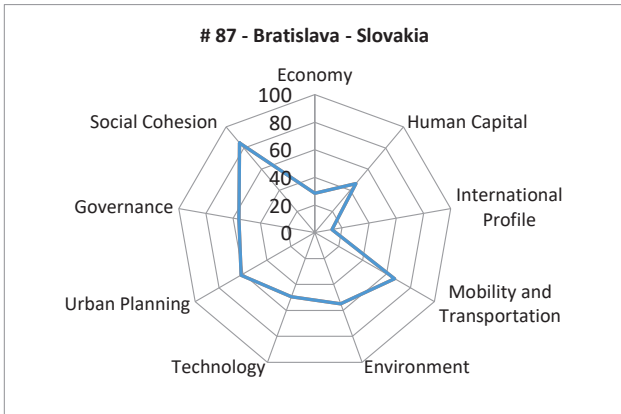
77 - Quebec - Canada

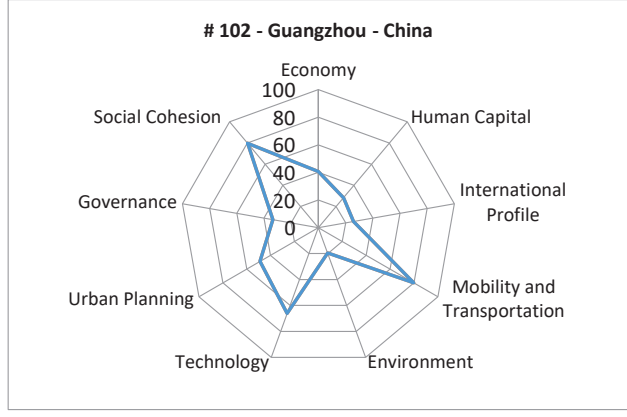
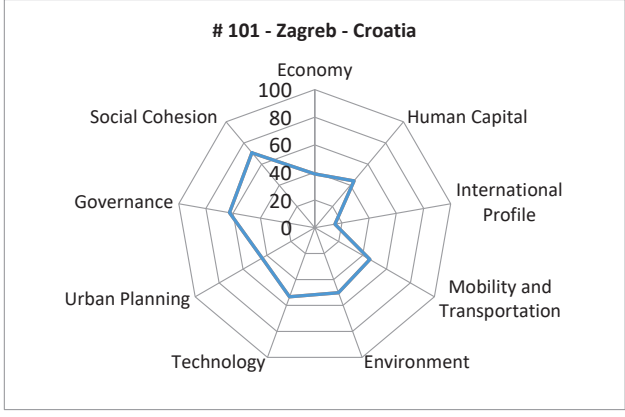
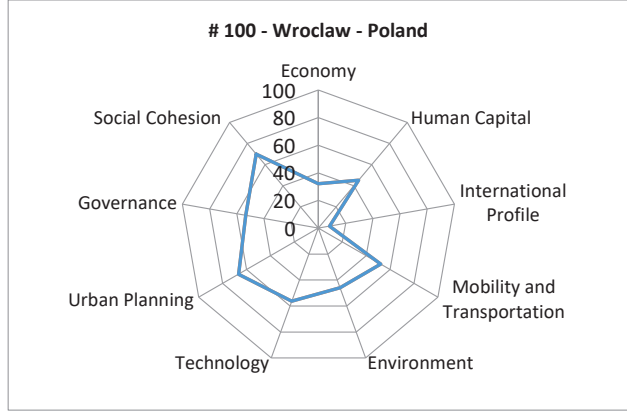
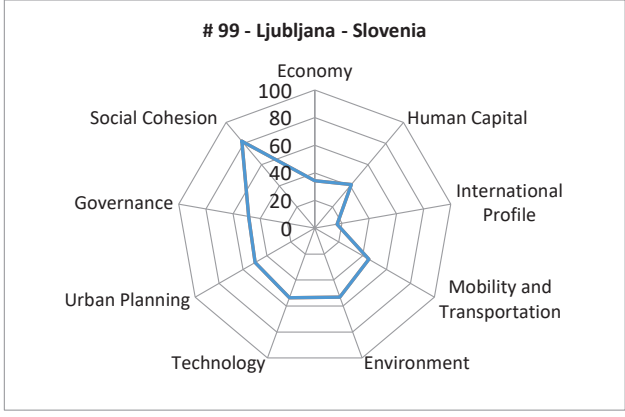
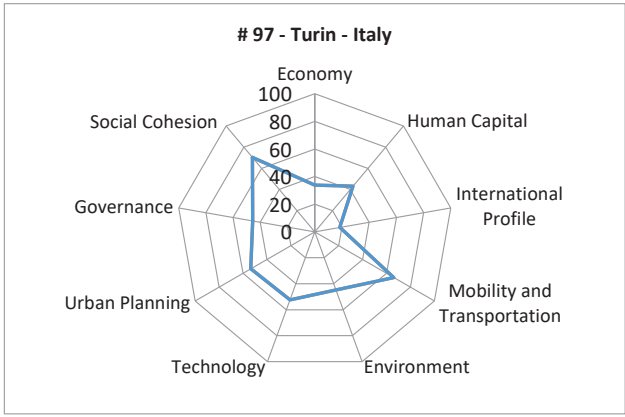
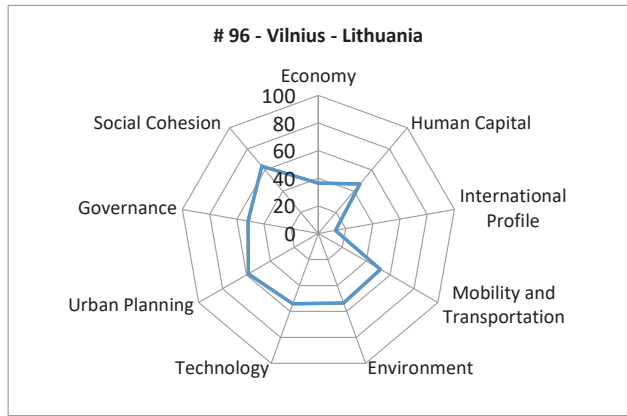
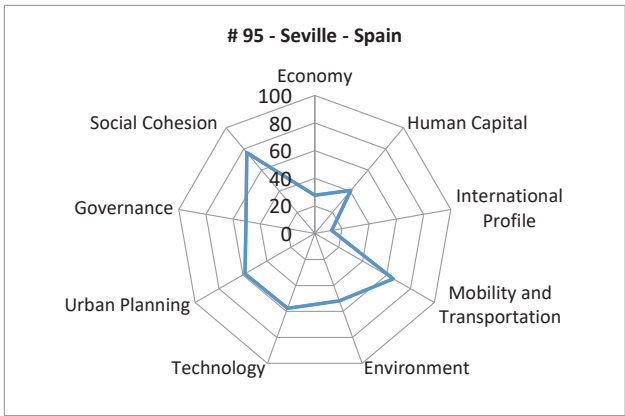


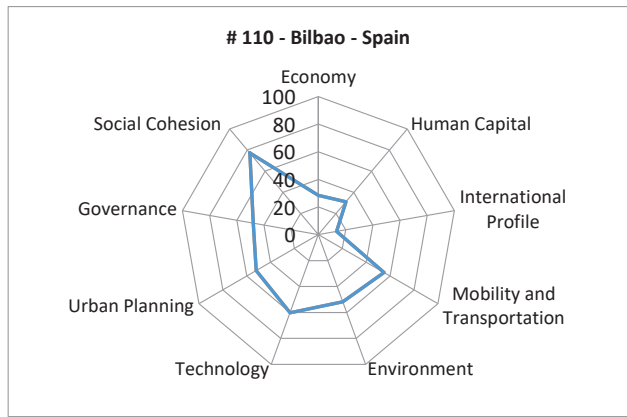
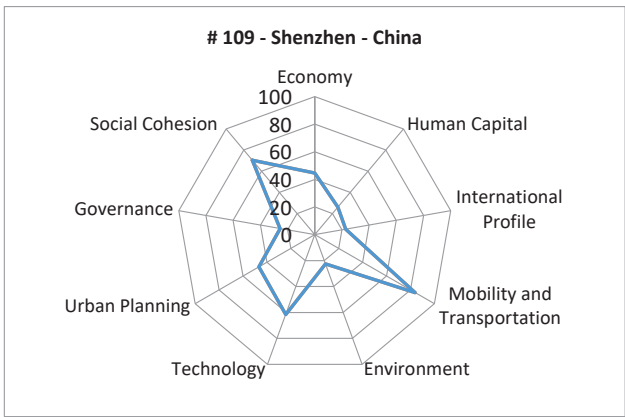
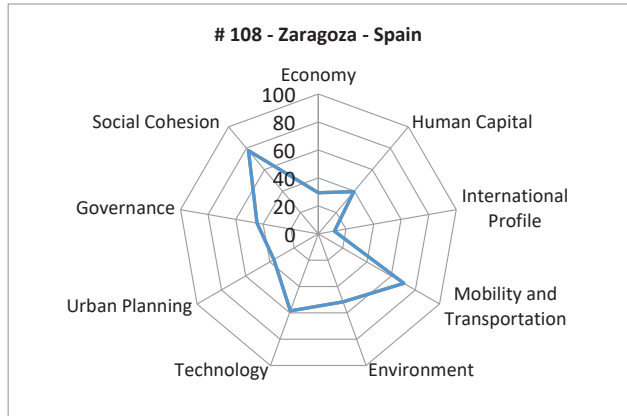
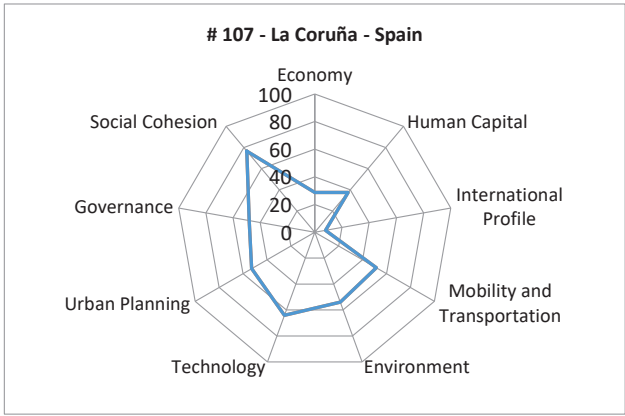
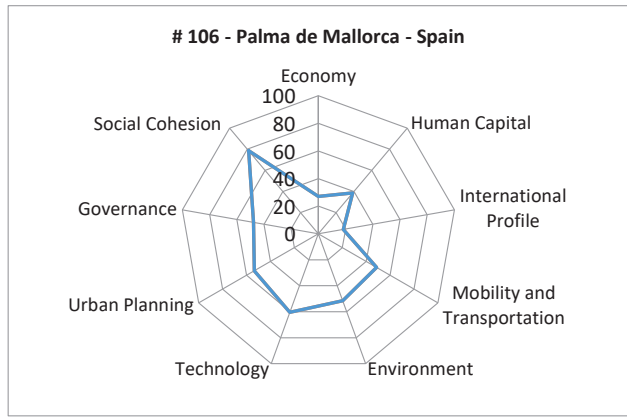
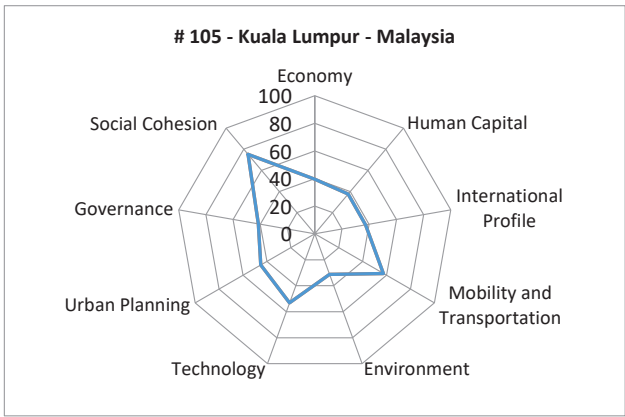
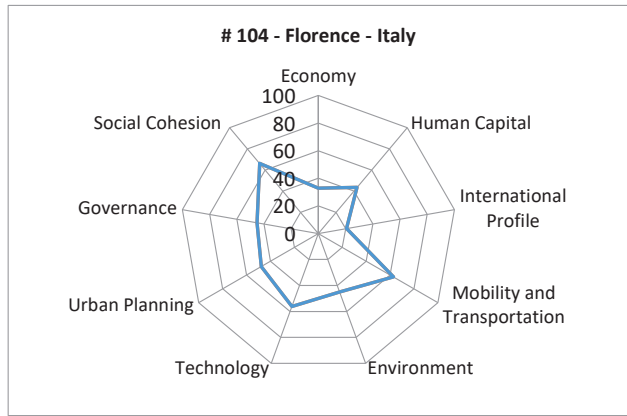
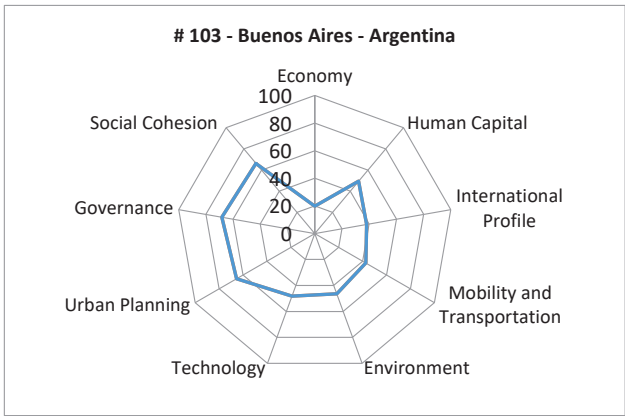
78 - Lisbon - Portugal

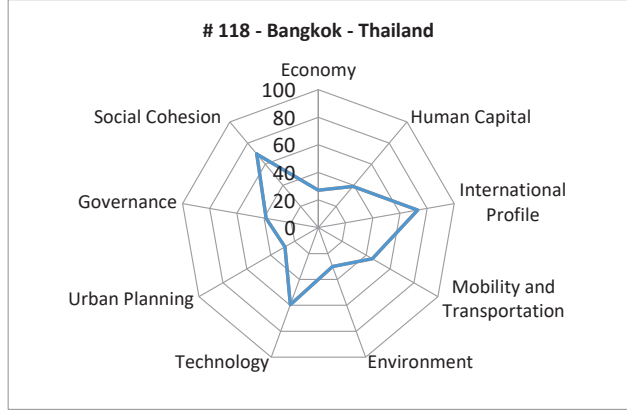
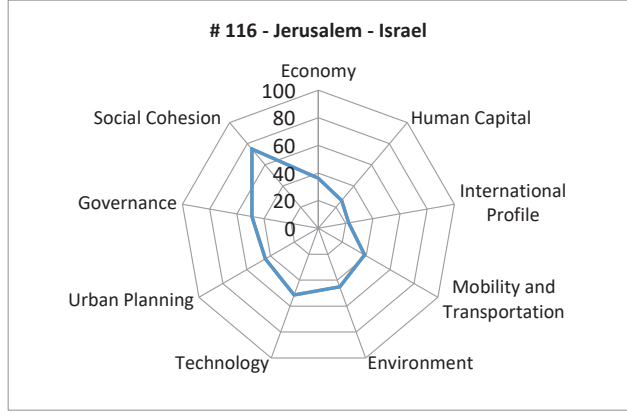
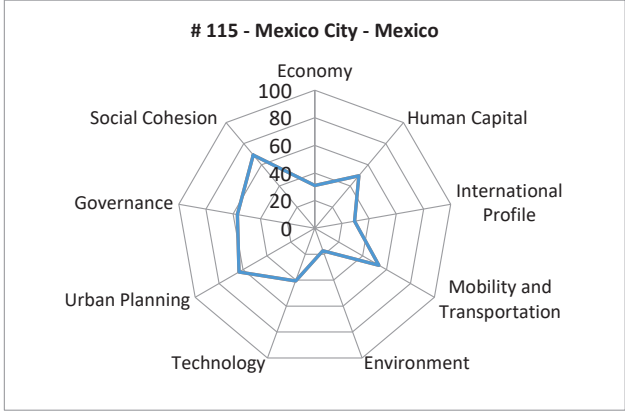
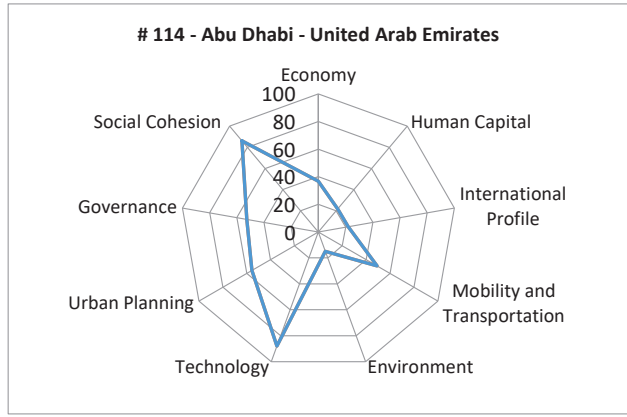
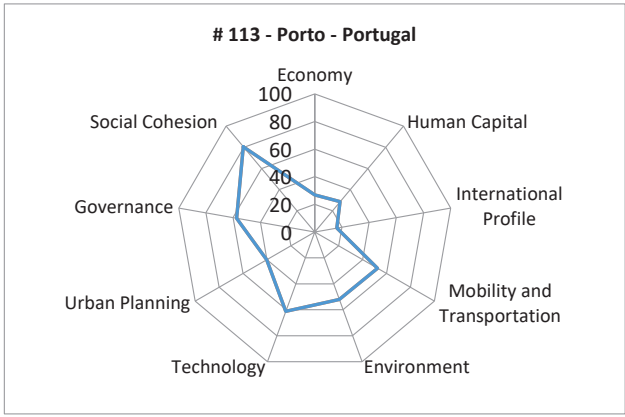
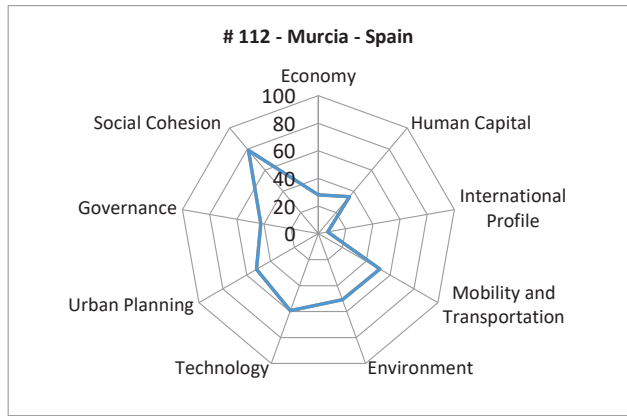
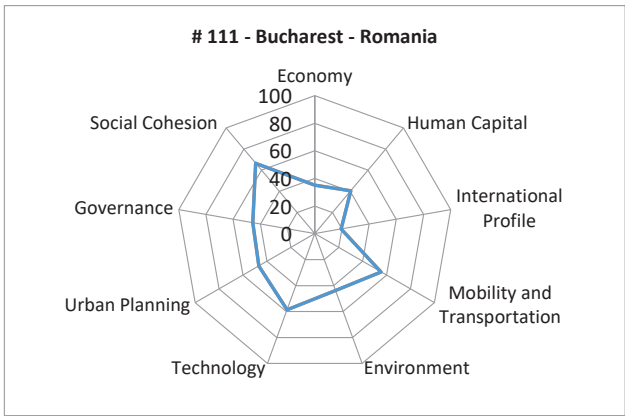


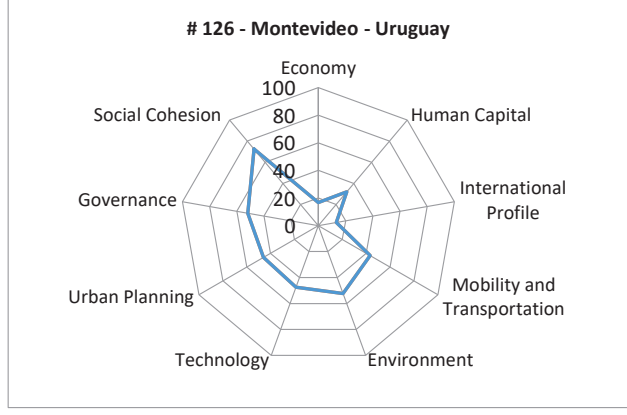
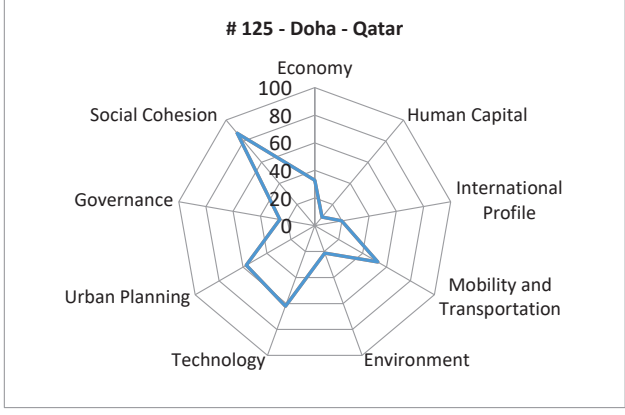
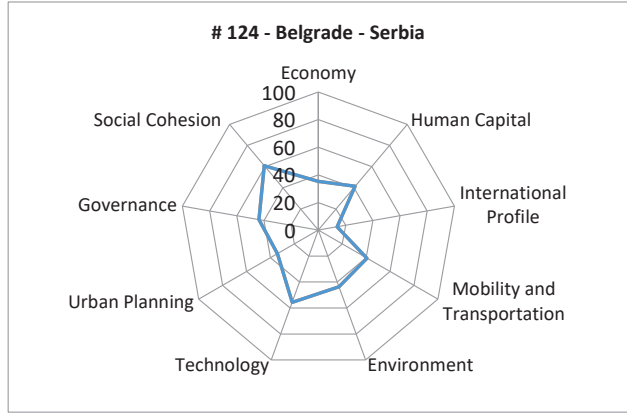
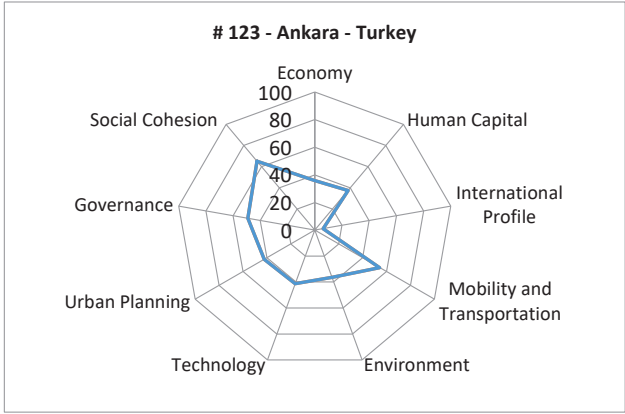
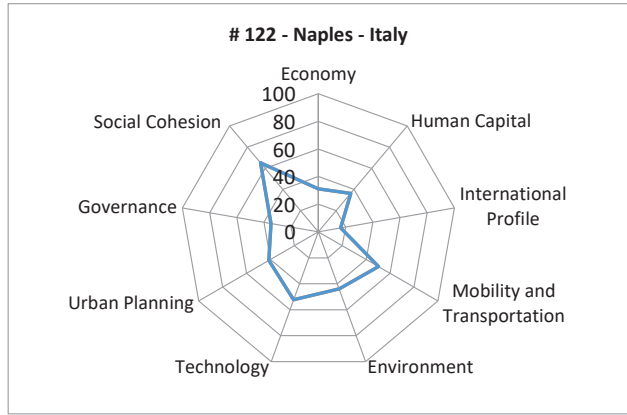
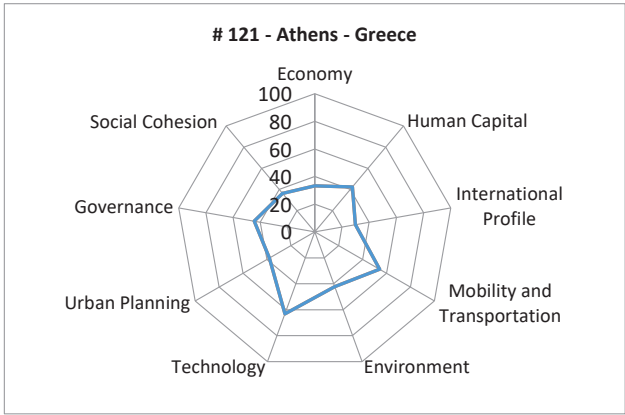
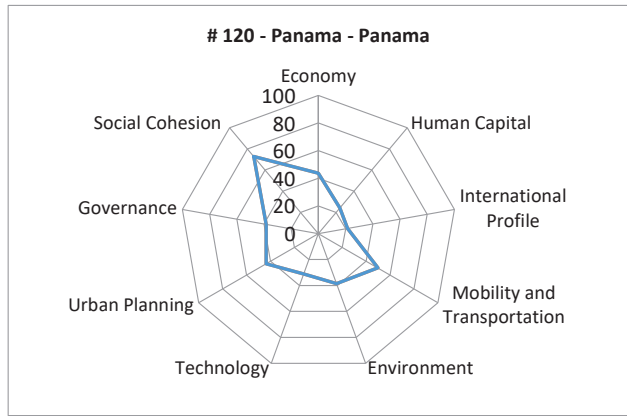
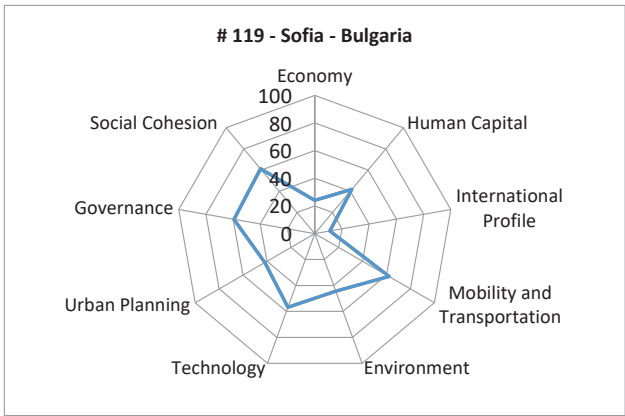


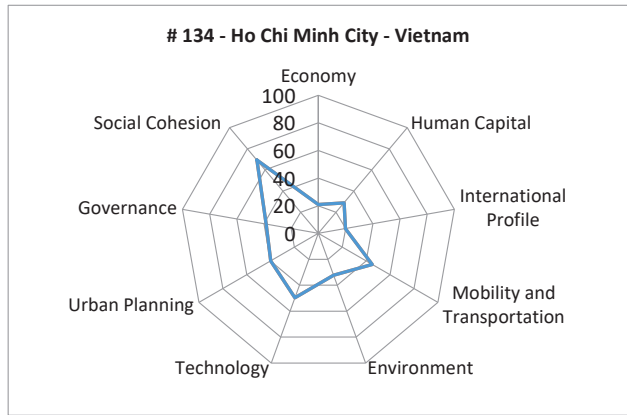
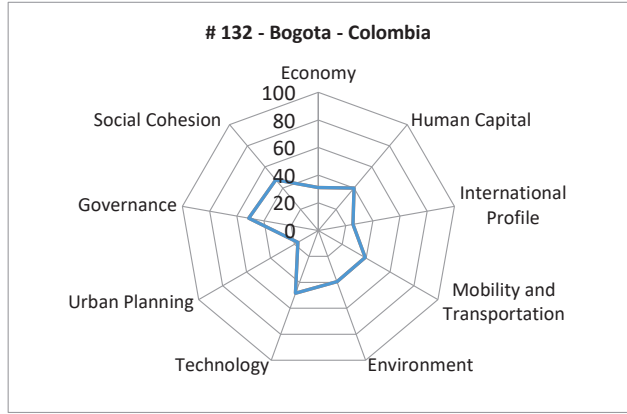
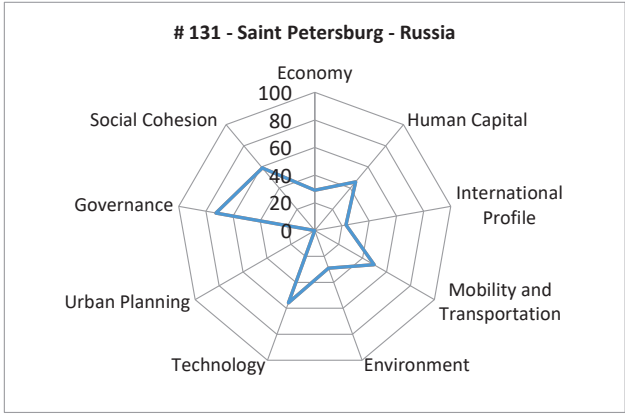
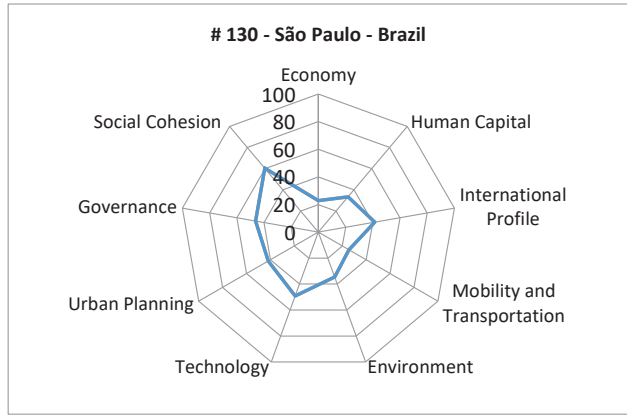
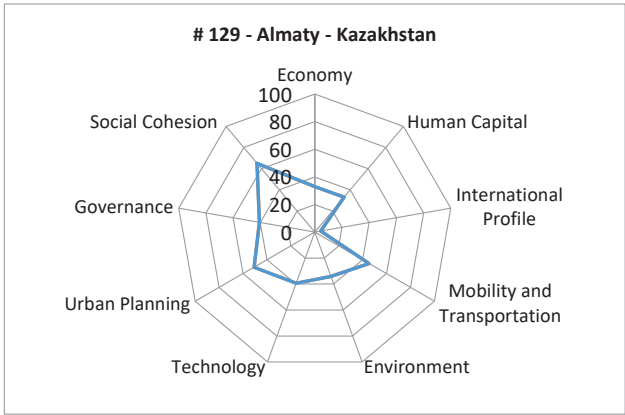
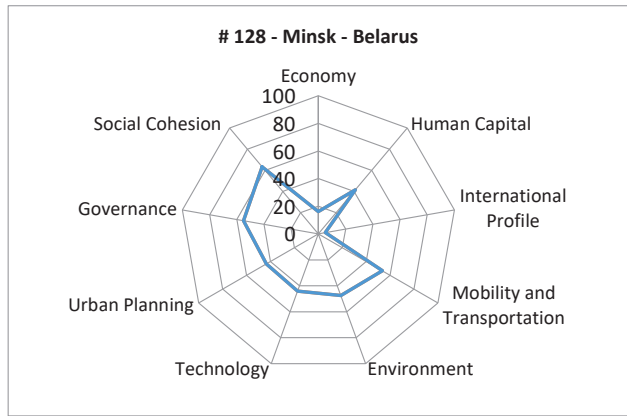
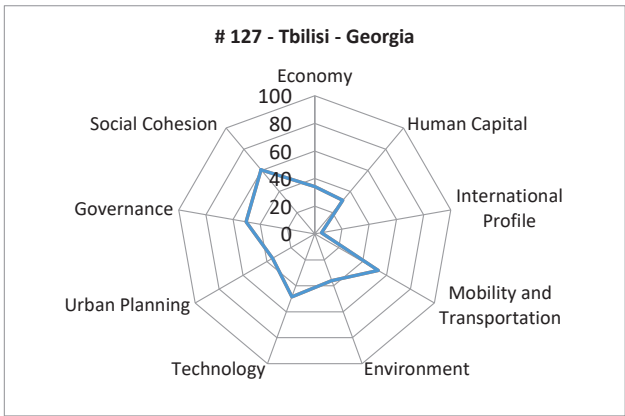


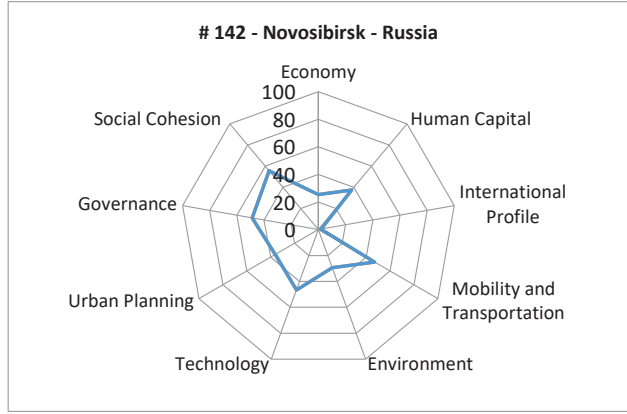
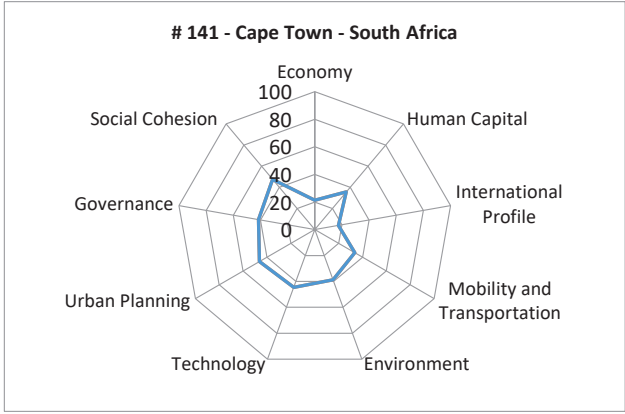
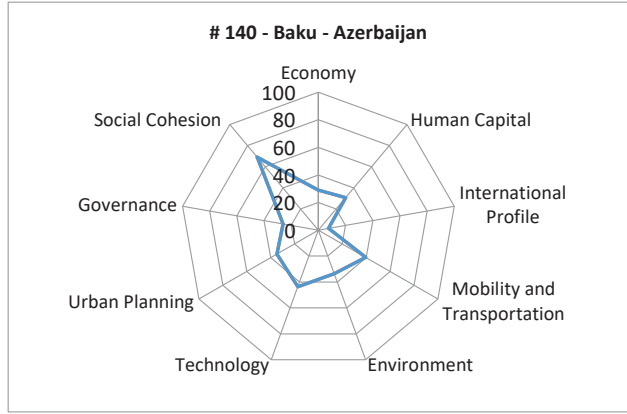
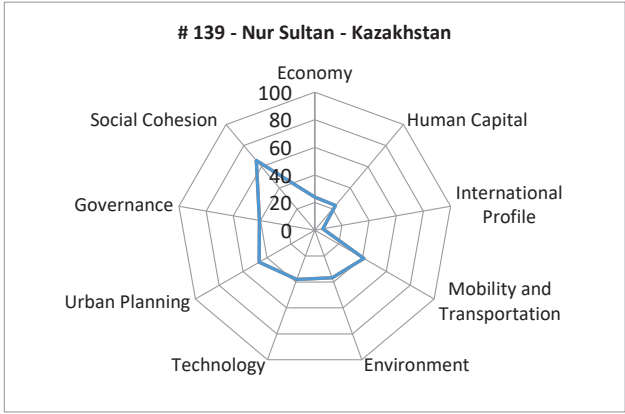
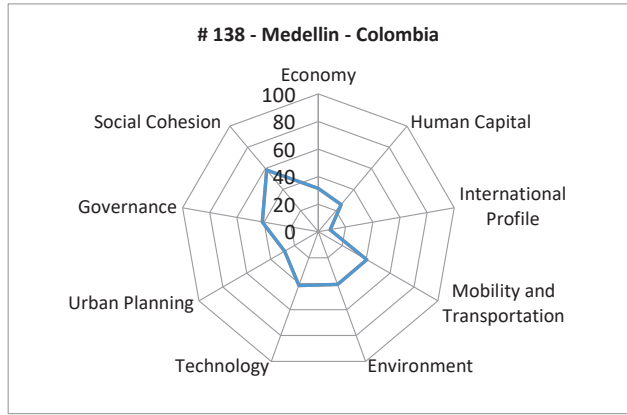
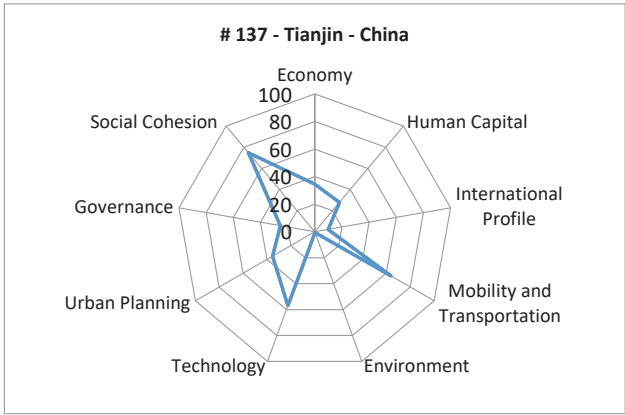
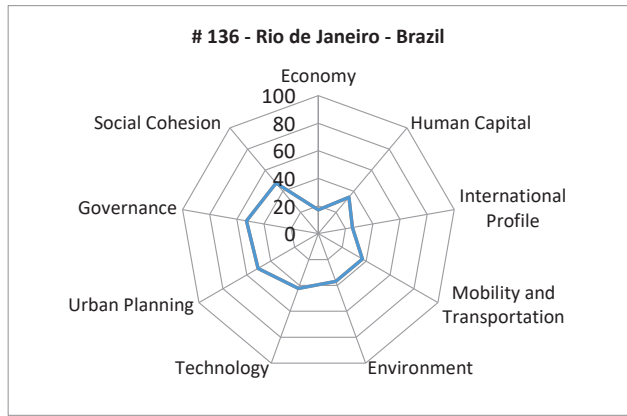
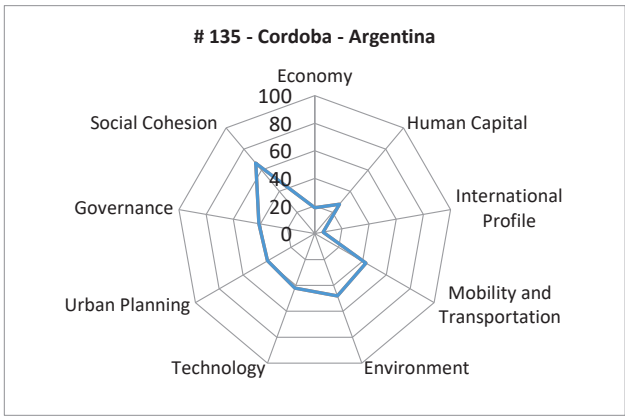


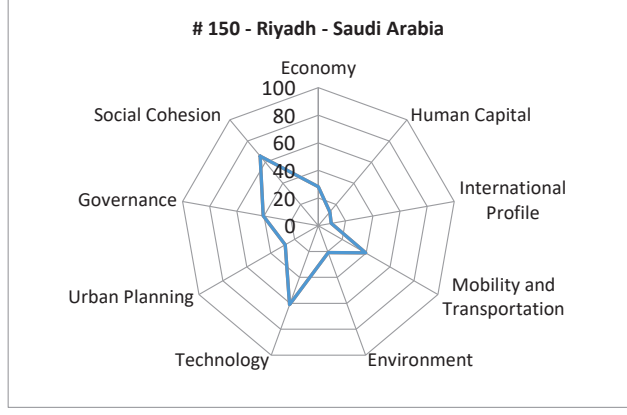
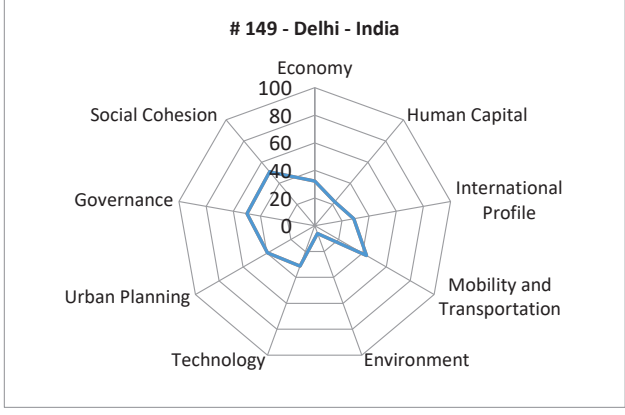
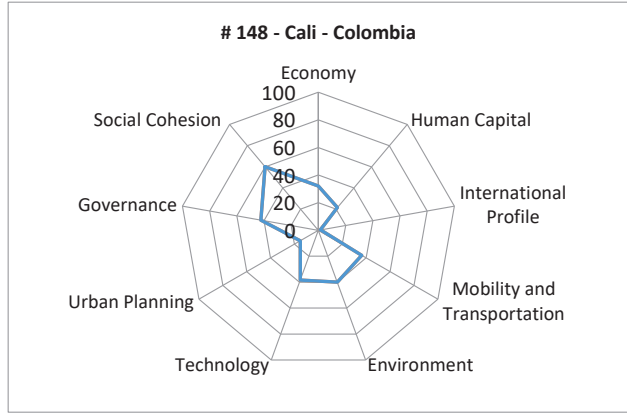
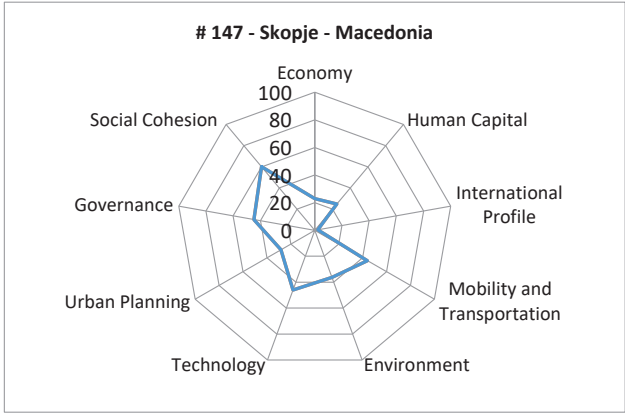
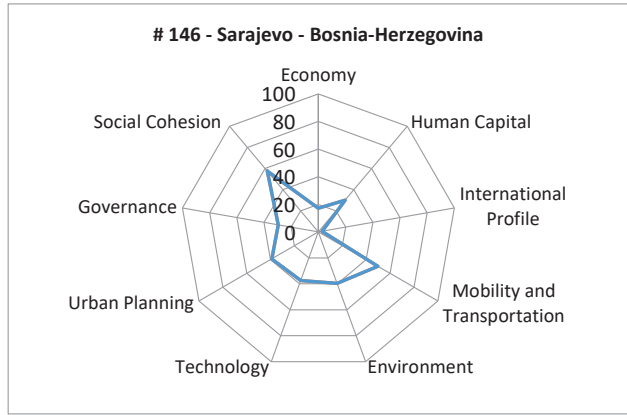
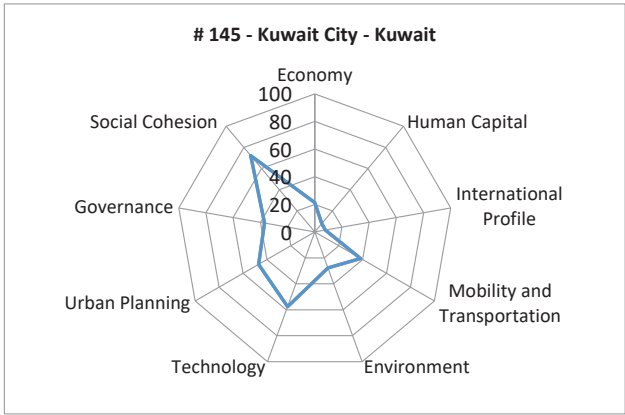
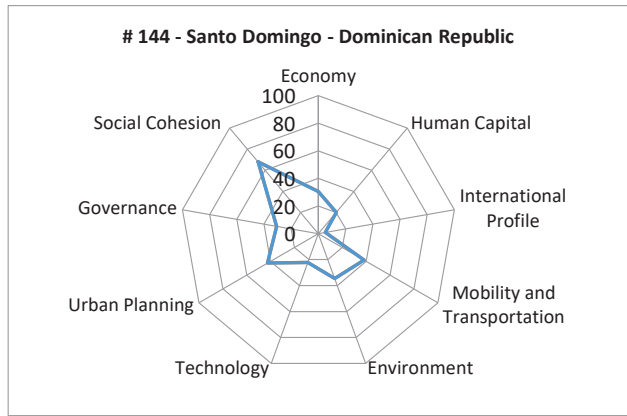
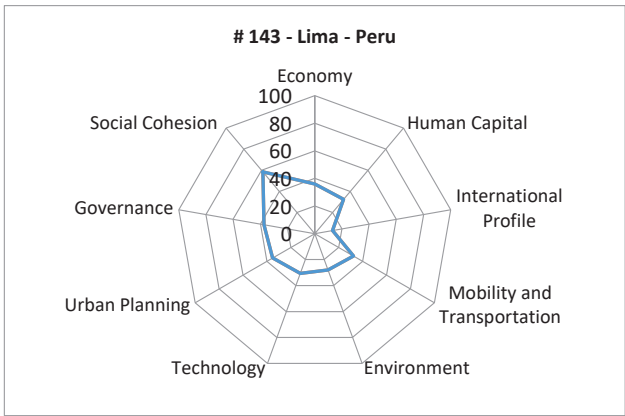


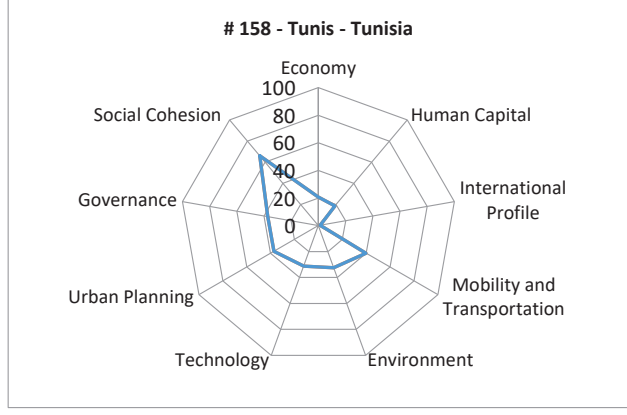
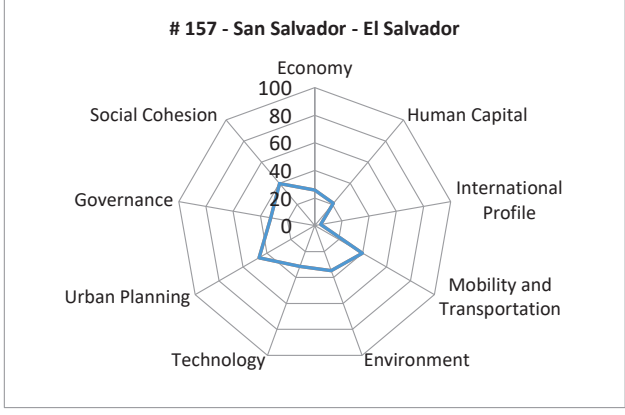
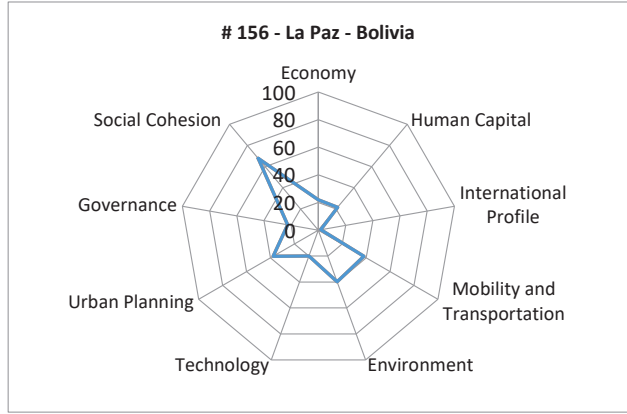
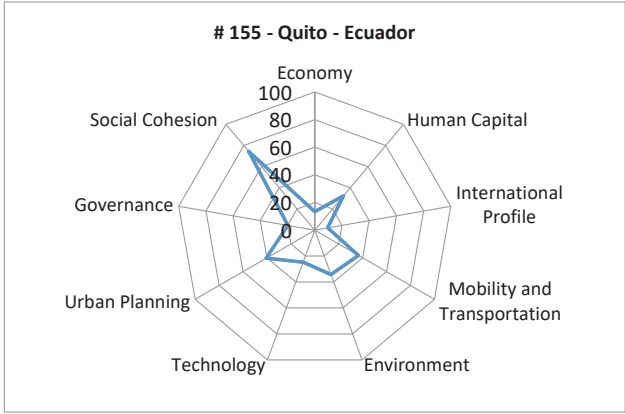
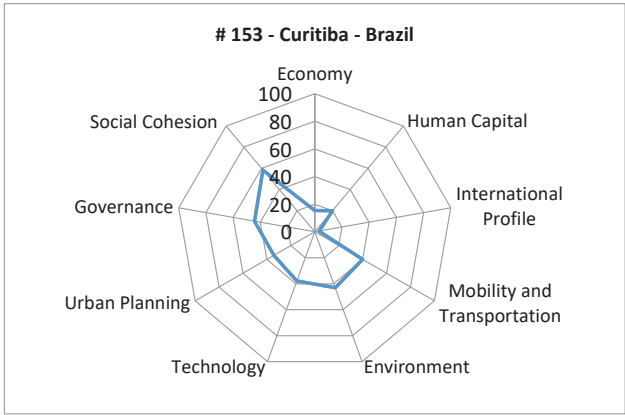
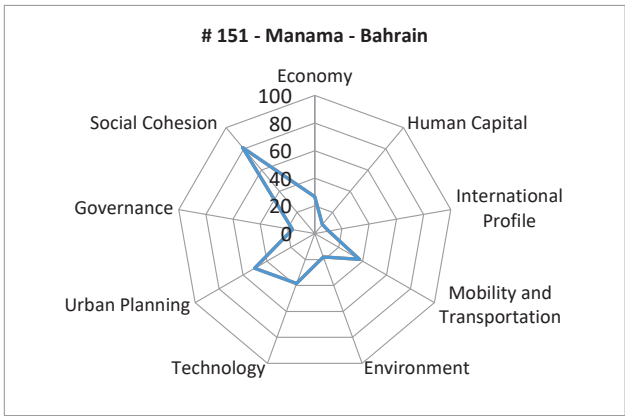


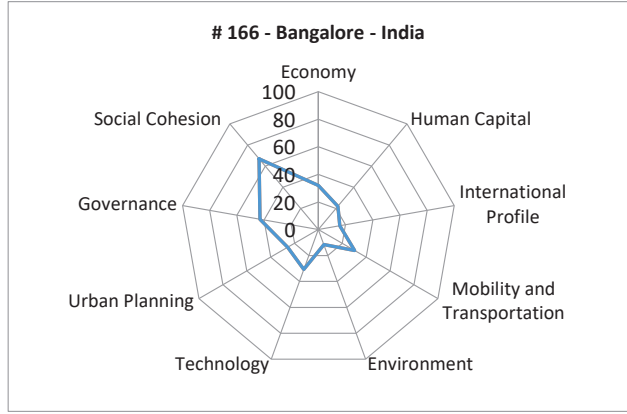
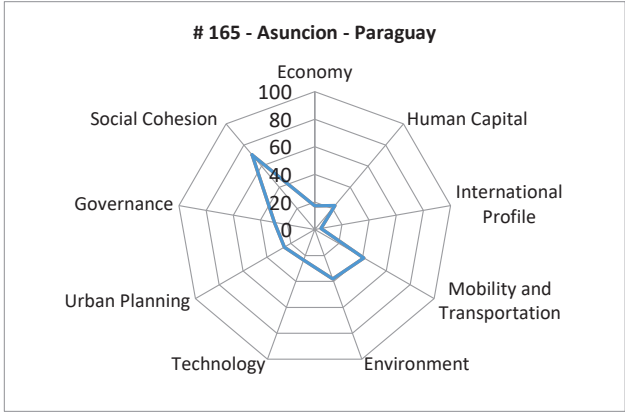
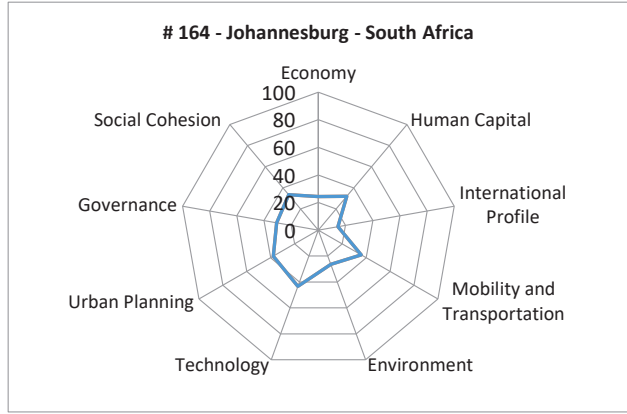
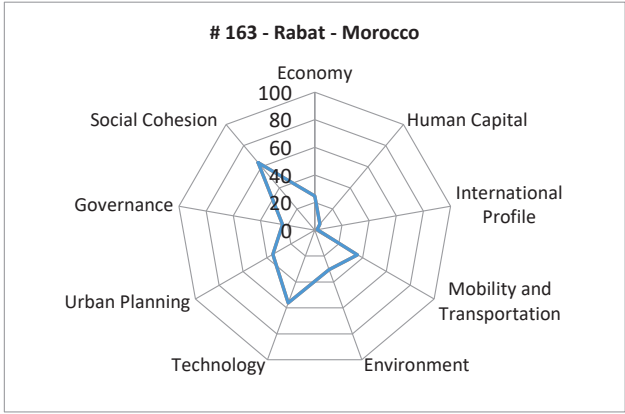
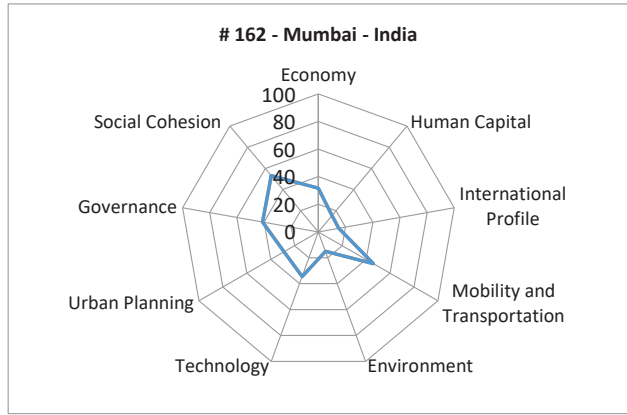
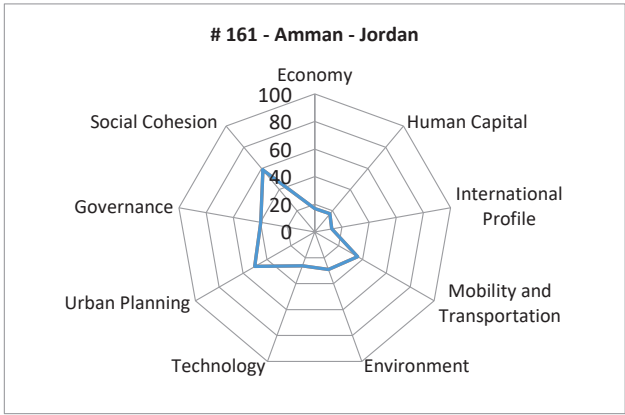
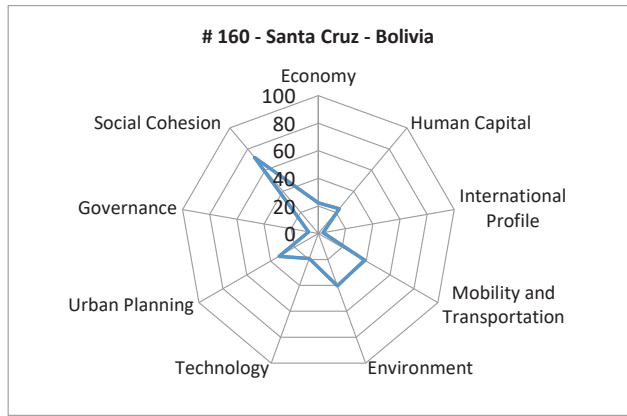
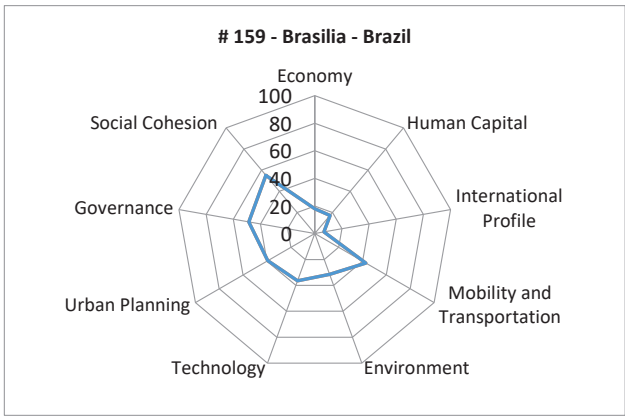


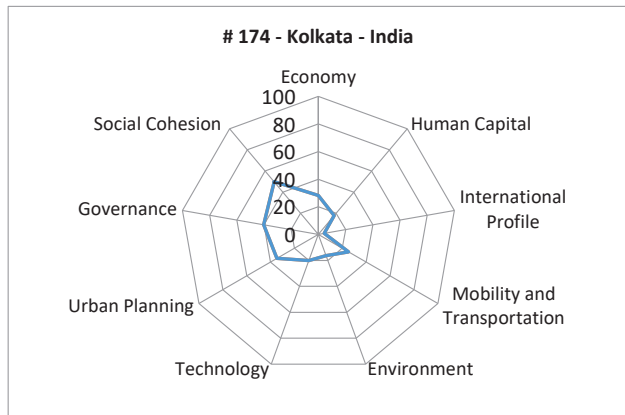
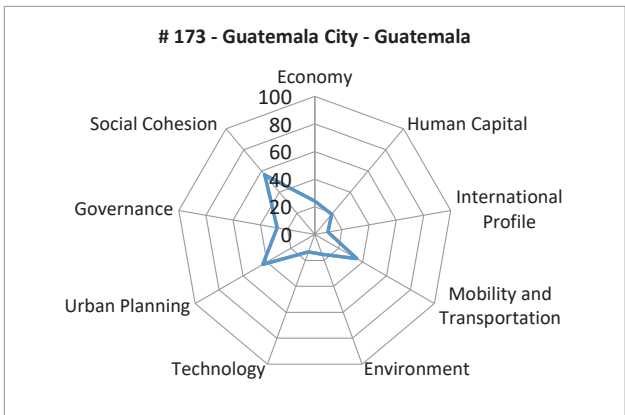
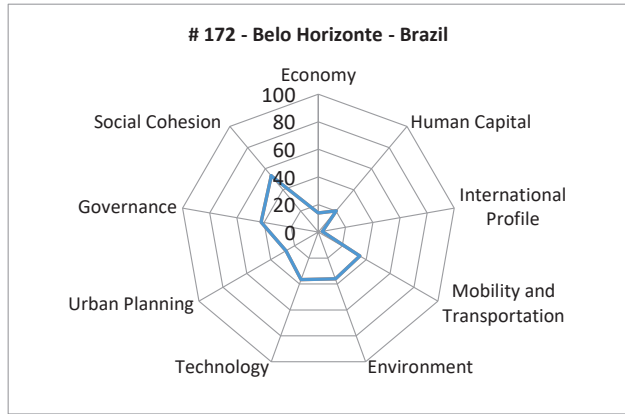
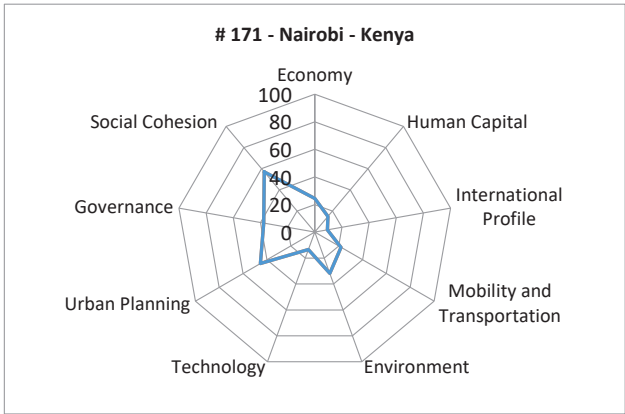
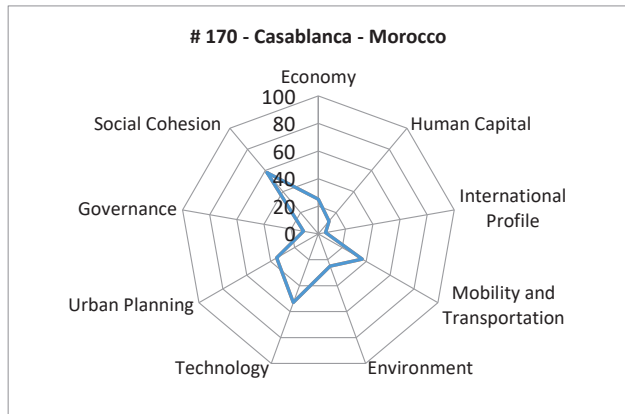
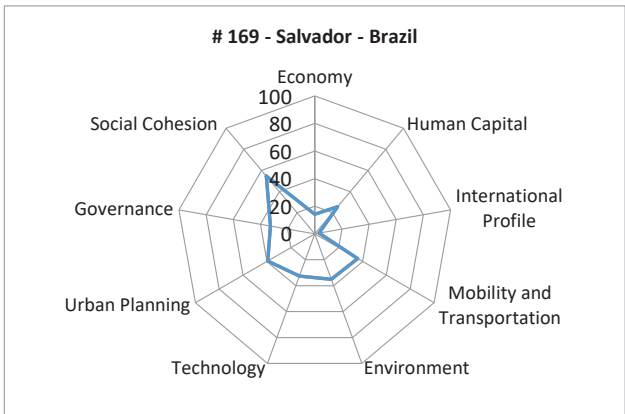
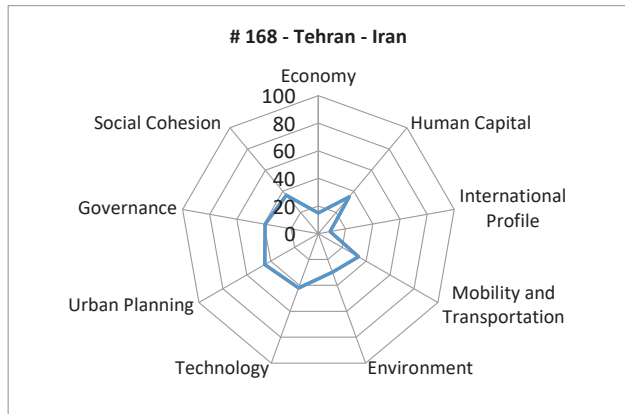
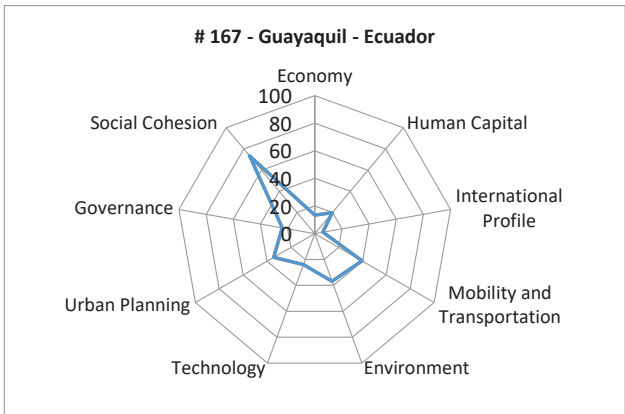




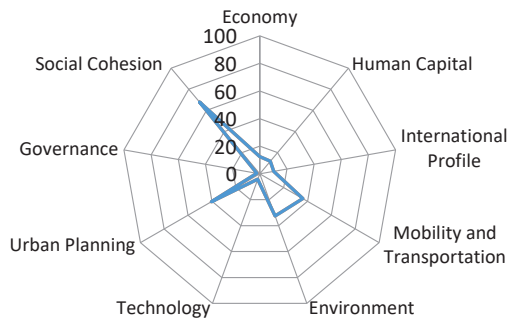




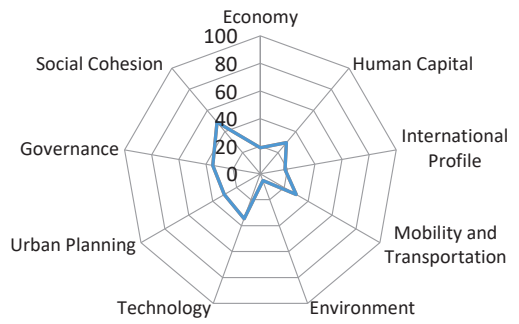




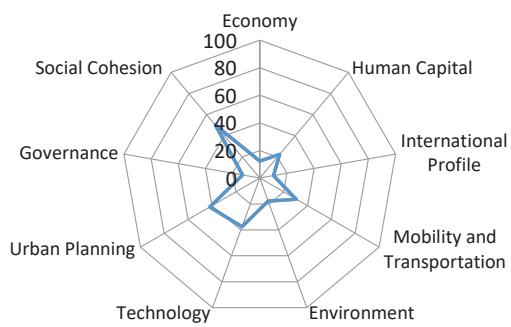
175 - Douala - Cameroon



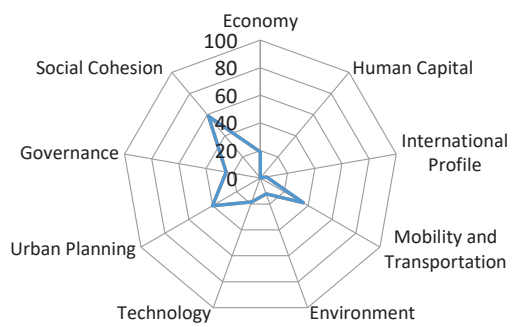
176 - Manila - Philippines



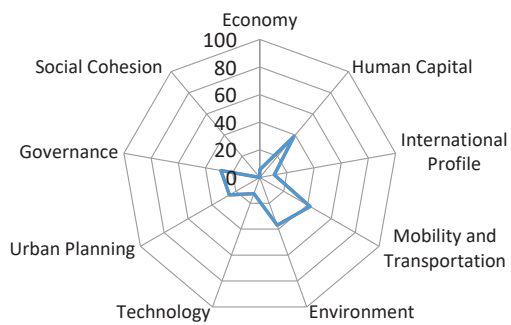
177 - Cairo - Egypt



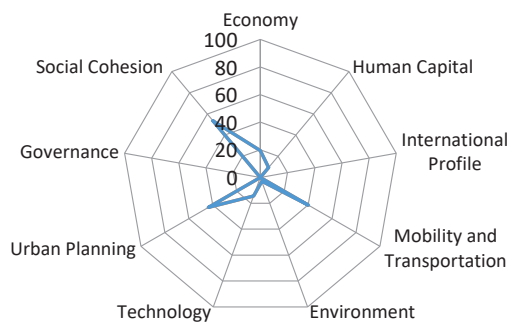
178 - Kampala - Uganda

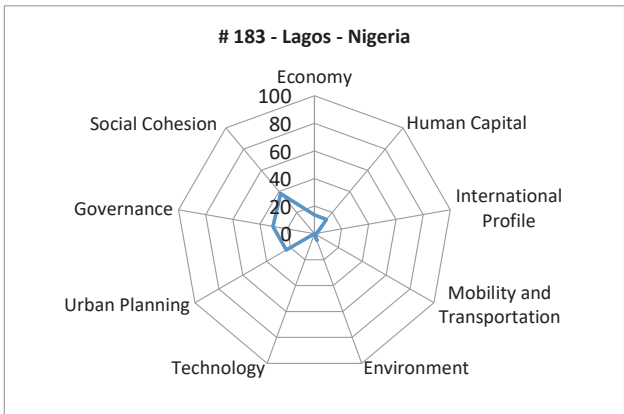
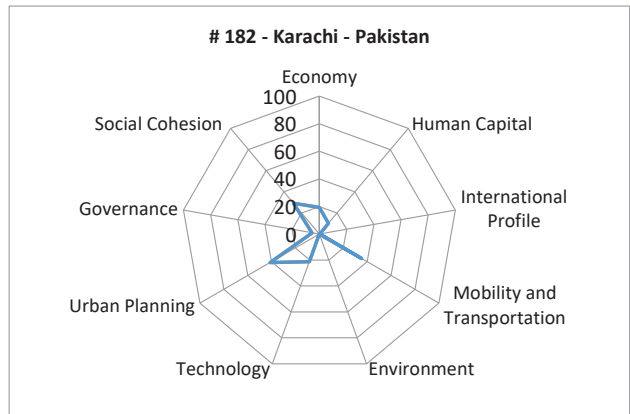
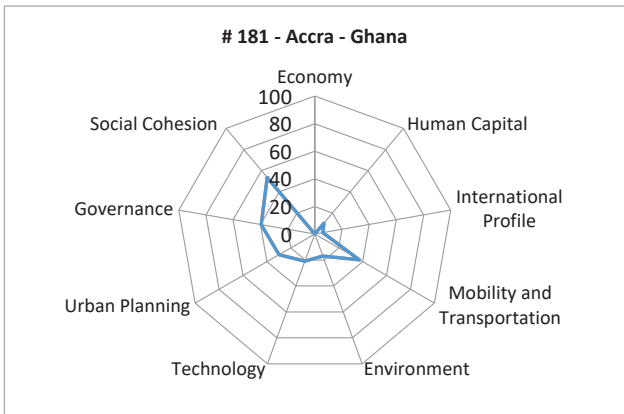


179 - Caracas - Venezuela



180 - Lahore - Pakistan





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