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Key Highlights

‘Benchmarking the Future World of Cities’ is the third paper in a groundbreaking series exploring the latest trends in city benchmarking and performance. This latest report by JLL and The Business of Cities takes a deeper look at the new and different ways cities are categorised and compared. It appraises the ‘state of the art’ of city performance management and looks ahead to the future ways in which cities may be compared and how cities themselves can make the most of city indices.

Business and Financial Powerhouses

- The geography of the global financial sector is in flux. The global powerhouses of London and New York may have consolidated their leadership, but many other contenders are appearing. ‘Emerging World Cities’ are becoming recognised financial centres, with Shanghai ranking highly and Istanbul making rapid progress. Mid-sized cities, such as Amsterdam and Berlin, are gaining global specialisms in FinTech, even as their traditional finance sectors contract.
- Seoul is a standout city across multiple indices. Despite being relatively unheralded, Seoul possesses the business and talent ingredients to join the ‘Big Six’ leading global cities (comprising Hong Kong, London, New York, Paris, Singapore and Tokyo).
- Indices equate competitiveness with a mix of overlapping factors: cost advantage, investment-friendliness or long-run productivity. They need careful interpretation to distil the different implications for investors, residents and workers.

‘High Quality of Life’ Cities

- Liveability is the most popular and hotly debated area of city rankings. Indices on the topic underline the contrast between objective data and subjective perception. In particular, despite (or because of) extraordinary demand and appetite for the ‘Big Six’, they are penalised for their ageing infrastructure, deficient housing supply and unaffordability.
- The top performers for ‘quality of life’ have remained remarkably stable since the Global Financial Crisis. A group of 15-20 cities – led by Vienna, Zurich, Copenhagen, Melbourne and Vancouver – have sustained the best mix of prosperity, infrastructure, safety, services and lifestyle. They now devise similar strategies to preserve their ‘quality’ brand while making themselves more open to entrepreneurs and innovators.
- Some ‘quality of life’ indices suffer from anecdotalism, Western bias, failure to cover the metropolitan scale, and a lack of sensitivity to the needs of different ‘customers’ in cities. Addressing these limitations will make them much more applicable and useful.

Knowledge and Innovation Hubs

- The innovation economy is urbanising exponentially. Many cities find that their capacity to leverage their knowledge assets and foster innovation is now critical to their success. San Francisco, Boston, Toronto and Berlin lead the way – combining specialised knowledge industries, strong educational institutions and supportive living conditions. Austin and Amsterdam are also effectively leveraging their entrepreneurial cultures and provide good access to finance and space conducive to innovation sectors.
• There is a strong correlation between world-class universities and innovation ecosystems. Yet cities such as Tel Aviv and Seattle have built advanced innovation economies through more commercial platforms.

• Non-Western cities are often overlooked in these indices despite an explosion of investment and activity in innovation sectors. Beijing, Shenzhen, Bangalore, Nairobi and Lagos are among the cities changing the landscape of innovation beneath the radar.

Infrastructure - the Backbone of City Competitiveness

• Mid-sized European cities excel in terms of transport infrastructure, while American cities underperform. Singapore is a global leader because its highly integrated city planning and management has pre-empted challenges that other cities are more reactive towards.

• ‘Emerging World Cities’ are making progress. The infrastructure of Shanghai and Beijing rivals the ageing systems of more established cities, while Istanbul and Kuala Lumpur have also invested in significant infrastructure improvement programmes.

• Infrastructure indices tend to rely on scale and coverage of infrastructure networks rather than their quality, smartness or rate of reinvestment. Finer-grained comparison on these factors is much sought after.

The Rise of ‘Green Cities’

• Copenhagen, Rotterdam, Stockholm, Helsinki and Berlin lead a group of cities that excel in terms of environmental governance and solutions around waste and resource management.

• Cities such as Singapore, Tokyo, Shenzhen, Guangzhou and Curitiba stand out in their respective regions for their longer-term initiatives around sustainability.

• Mechanisms for implementation are more important in measures of cities’ environmental and resilience policy. Sensor technologies and big data are starting to aid indices’ quest to assess the world’s clean, green and resilient cities.

The Power of Brand

• Global surveys, reviews and social media confirm that London, Paris and New York have stronger global brands and reputations than their Asian competitors. But megacities such as Shanghai, Tokyo and Seoul are starting to edge up the table.

• A group of dedicated ‘visitor destinations’ includes cities such as Rome, Mecca and Bangkok. They share the strategic challenge of building business and investor brands to complement tourism. Meanwhile ‘New World Cities’ are gaining a foothold in specialist markets such as sport, retail and conventions.

Culture, Lifestyle and Openness

• Cultural assets and amenities are big drivers of city dynamics. Top cities remain concentrated in Europe and North America. Berlin, Amsterdam, Madrid and Barcelona sustain vibrant art, museum and fashion scenes, while San Francisco, Austin and Denver are performing well in North America.

• Rio de Janeiro, Sao Paulo and Taipei are more surprising cultural hotspots as they increase investment in the cultural economy.
• Rankings of the most ‘open’ or most ‘culturally rich’ are value-laden. Culture, tolerance, openness and diversity are distinct concepts that city indices are beginning to separate out in order to understand the ingredients that make cities appealing.

The Emerging Science of Cities

• Benchmarking cities is becoming more global than ever, with increasing coverage by and of emerging economies. For example, Shanghai is now one of the top 10 most frequently-ranked cities, while Beijing, Istanbul, Sao Paulo and Mumbai make the top 20.

• City indices span a vast range of topics, but there are several gaps which need to be filled, notably:
  • City governance (fiscal empowerment, city leadership and institutional framework);
  • Housing (especially affordability, supply and demand);
  • Equality and social justice;
  • Social diversity; and
  • Investment returns and capacity.

• Cities can rise up or fall down certain indices because of changes in competition, data and methodology. For cities that rely on indices to provide profile and momentum, there are many ways they can improve their positions. These include: making cost-effective changes to real performance; creating strategies to change audience perceptions; proactively engaging with index producers; challenging and correcting the indices; and creating new rankings, including collaboration with other groups of peer cities.

• The growth of city indices will continue in the next period. But there are three imperatives for city index development to address if it is to make a meaningful contribution to the emerging science of cities:
  1. Greater clarity about what is being measured and how;
  2. Comparing functional geographies rather than political units;
  3. New or expanded indices to address key gaps in comparative analysis.
**Introduction:**

Benchmarking the Future World of Cities

The world’s cities – there are now 500 with over a million inhabitants – have never been so widely benchmarked and compared. This ‘metropolitan century’, with all its risks and opportunities, creates fierce demand to understand how and why cities grow and develop, succeed or wane.

In 2015, JLL and The Business of Cities published two groundbreaking papers on the latest trends in city benchmarking and city performance. The first revealed that there are now over 200 city benchmarks and indices in circulation worldwide, produced in every one of the major continents. The second, ‘Globalisation and Competition: The New World of Cities’, explained how performance metrics are highlighting the emergence of distinct ‘types’ of city, from ‘Established World Cities’ to ‘Emerging World Cities’ and ‘New World Cities’, each with their own set of strengths and strategic imperatives, and each with a different model of success.

This report takes a deeper look into the diverse categories against which cities are now evaluated, and the evolving ways in which indices and benchmarking studies measure them. The focus here is on the different ways that cities are now categorised and what is new, and consequently on the issues that remain less well addressed by city benchmarking studies and indices.

**Niches:** The niches in which cities are compared highlight the many dimensions of city life that appear to be worthy of comparison and the distinct specialisations cities are acquiring to compete and position themselves in the new world of cities. Whether they are ‘High Quality of Life’ cities, ‘Specialised Technology Centres’, ‘New Gateway Cities’ or others, cities are learning that they need to leverage their key assets and build a strategy around them. A bird’s-eye view of over 200 indices helps us understand that cities are now competing with a range of other similar cities in increasingly mature and specialised networks and value chains.

**The Established Priorities: Measuring City Competitiveness and Liveability** | Surveys progress in the areas of well-established interest – competitiveness and quality of life.

**Built Assets: Comparing Cities’ Infrastructure and Resilience** | Looks at the latest trends in comparing the built environment of cities, and assesses how close we are to a comprehensive comparison of infrastructure, resilience and sustainability.

**The Quest for Profile: Image, Brand and Culture in City Indices** | Reviews the potential of indices that measure image, reputation and destination power, as more cities look to specialise and compete.

**New Needs:** At the same time, this report also reflects on the ‘state of the art’ of indices. It highlights where indices have made progress, but also where they can be misleading and incomplete, and where they could become more illuminating than they currently are. In 2016, city indices have never been so widely used, and yet they are imperfect and sometimes divisive. This report takes stock of how far city indices have come, and what will be needed in the next generation of rankings and benchmarks.

**An Emerging Science of Cities: Faultlines and New Directions** | Observes some of the methodological difficulties with city indexing and also discusses the themes and focuses that city indices might develop in the future.
Broad Types of Globalising Cities

- **Established World Cities**
  - High Quality of Life
  - Specialised Centres

- **Emerging World Cities**
  - Port & Airport Cities
  - Visitor Destinations

- **New World Cities**
  - Knowledge Hub
  - Re-emerging Capital Cities
  - New Gateway Cities

The Established Priorities: Measuring City Competitiveness and Liveability

Economic and Financial Performance

Few things are now so closely tracked as the capacity of cities to achieve economic and business growth. 31 indices featured in this category in 2015 – up from just 10 in 2010. Indices in this genre are regularly updated, given the dynamic character of corporate perception and investor attractiveness. Consultancies are very active in providing market intelligence, while universities, research institutions and chambers of commerce also participate in order to advocate for policy reform. In the U.S., online magazines are another key vehicle for ranking cities, focused on economic performance and business attraction.

These studies help understand the evolution of cities' business environments, investment patterns, financial services, tax and regulatory systems, and talent profiles. The perception of senior executives immersed in daily decision-making about the relative location advantages of cities remains a critical mechanism to generate insight; however, there are also new examples of external expert appraisal of cities' approaches to compete for business and investment.

Leading financial centres face stiff competition

In terms of global financial services, the indices highlight that the geographies of the global financial sector are in flux. London and New York may have consolidated their leadership through becoming first-movers in FinTech, but many other contenders for prime positions are appearing. San Francisco has emerged as one of the top 10 global centres according to Z/Yen, up from 17th six years ago, and Osaka has also witnessed similar success largely thanks to having the second highest stock market capitalisation after New York. Emerging World Cities’ are becoming recognised financial centres for the first time. Shanghai reaches joint 5th place in the Xinhua-Dow Jones Index, and Istanbul is making rapid progress, partly at the expense of Moscow. There are also signs that medium-sized cities, such as Amsterdam and Berlin, are starting to develop into global specialists in FinTech, even as their traditional finance sectors contract.
A strong focus on business services in U.S. cities

It is striking that many American cities have a very large share of their economies comprised of business services and financial services, including cities without a strong international presence such as Philadelphia and Columbus. This highlights the fact that these cities have relatively mature and diversified corporate economies, and smaller manufacturing and government sectors. Nevertheless, their economic competitiveness depends on improving global reach, which is why more than 20 U.S. metropolitan areas have begun active international trade and investment programmes in the past five years. San Diego and Denver are prominent examples of cities stepping up their approach to business clusters, global relationships and infrastructure capability.
### Top 10 Cities for Business and Investment Activity

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<tbody>
<tr>
<td>London</td>
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<td>Toronto</td>
<td>18</td>
<td>17</td>
<td>-</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>Shanghai</td>
<td>9</td>
<td>7</td>
<td>8</td>
<td>92</td>
<td>5</td>
</tr>
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</table>


When evaluating performance across a range of benchmarks, Seoul is a surprise breakthrough city – the South Korean capital has improved eight places since 2010 in Mori’s Global Power City Index, thanks to its network of internationalising firms, strong human capital and shift to quality-oriented growth. It also broke into the top 10 ‘cities of the future’ for economic potential in Asia Pacific in 2014. Meanwhile, Zurich continues to punch above its weight despite its small size, especially in indices that prioritise quality and productivity over scale.
Seoul: The Next ‘Established World City’?

Currently there are only six fully-established mature global cities (the ‘Big Six’) that combine scale of business and investment activity with quality, appeal and cultural depth. Seoul is the next candidate to join them, catching up rapidly with Tokyo as East Asia’s most advanced economy.

Seoul’s network of highly successful domestic firms, a proactive education policy and a shift to quality-oriented growth has seen it climb the international rankings relatively unnoticed. The city has all the ingredients necessary to break into the ‘Big Six’ leading global cities in the near future.

**Seoul’s Diverse Strengths**

- Established among the 10 most important global business cities
- In the top 20% for knowledge assets
- In the top 10 for university quality and reach
- Among the top 15 most visited cities
- Rated in the top 15% for internal and external transport.
Improving ‘Emerging World Cities’

Among emerging economies, Bogota and Medellin stand out as regional improvers due to stable post-conflict governance, improved business brands and investments in transport. Bogota is now ranked as the 5th best city to do business in across Latin America, up from 8th just two years ago, while Medellin has jumped to 15th from 20th. Santiago continues to make progress as an attractive destination for different types of investors. These cities’ slightly smaller scale, less fragmented governance and more competitive business environments are all providing them with an edge compared to established megacities, making them popular with mobile employees and start-ups. Elsewhere, Istanbul, Shenzhen and Guangzhou each feature among the top 20 in more than one business competitiveness study. Meanwhile, as the nearshoring trend persists, Warsaw and Prague continue to grow their outsourcing economies impressively.

What does competitiveness really mean?

The major challenge for indices that measure commercial performance in cities relates to the concept of competitiveness itself. For some indices, business attraction is oriented around how competitive a city is on cost — for workers, for companies and for office space. For others, the concern is how promising a location is for different types of investment. These factors are by no means correlated.

Moreover, the weighting between cities’ short-term opportunity and long-term success is not always made clear to index audiences. Those who read and analyse indices have to distil the different messages their data reveals.
Liveability and the ‘High Quality of Life’ Cities

There are more indices covering ‘quality of life’ than any other topic, with 40 different examples. Interest in ‘liveability’ is high among companies wanting to know about staff relocation costs, academics trying to develop objective measures, city governments seeking to improve their day-to-day services, and lifestyle magazines keen to highlight new location hotspots. Indices vary from wide-ranging statistical studies to single measures of ‘walkability’ and surveys about city ‘vibe’. Although many indices aim to appeal to a specific short-term audience (e.g. expats, tourists and students), there is an increasing push to consult long-term residents on their perspective too.

Liveability is the theme whose meaning has been most widely and publicly debated. While indices converge on ‘objective measures’ such as health, safety or education outcomes, many find it harder to capture the cultural depth or ‘buzz’ of a city, or the other incentives that motivate people to ‘sample’ or stay in a city.

The ‘High Quality of Life’ Cities

<table>
<thead>
<tr>
<th>No. of Cities</th>
<th>Vienna</th>
<th>Zurich</th>
<th>Melbourne</th>
<th>Vancouver</th>
<th>Sydney</th>
<th>Copenhagen</th>
<th>Auckland</th>
<th>Berlin</th>
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<th>Stockholm</th>
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<tr>
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<td>230</td>
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<td>63</td>
<td>25</td>
<td>143</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>10</td>
<td>30</td>
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<tr>
<td>EIU Liveability Ranking 2015</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>10</td>
<td>10</td>
<td>2</td>
<td>14</td>
<td>2</td>
</tr>
<tr>
<td>Global Liveable Cities Index 2016</td>
<td>2</td>
<td>10</td>
<td>2</td>
<td>13</td>
<td>-</td>
<td>12</td>
<td>7</td>
<td>3</td>
<td>16</td>
<td>-</td>
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<tr>
<td>Monocle Quality of Life Survey 2015</td>
<td>-</td>
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<tr>
<td>Numbeo Quality of Life Index 2016</td>
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</table>

Source: Mercer Quality of Living Survey, 2016; EIU Liveability Ranking, 2015; Global Liveable Cities Index, 2016; Monocle, 2015; Numbeo, 2016
The top performers in core quality of life indices have stayed remarkably stable since the Global Financial Crisis. In comprehensive overviews, small to medium-sized Nordic, Central European, Canadian and Australian cities have consistently combined infrastructure, public safety, local services and lifestyle appeal most effectively.

Central European cities, for instance, are prominent for low crime rates and excellent median incomes as well as rich ‘high’ cultural scenes. In Australia, outdoor lifestyle and outstanding climates are critical assets, while Canadian cities benefit from a perceived lower threat of terrorism combined with very strong health and education systems.

**Imperatives for ‘High Quality of Life’ cities**

This consistent performance has given rise to cities that have become specialised as ‘High Quality of Life’ cities. Auckland, Melbourne, Vancouver and Vienna all robustly embody these qualities. They attract many tourists relative to their size, but are also seen as eye-catching cities to ‘sample’ whether as a student, investor, innovator or event attendee. These cities’ distinct set of assets and patterns of demand means they have to make sure they preserve their ‘quality’ brand while becoming more open to entrepreneurs and innovators.

Their imperatives usually relate to:

- **Growing entrepreneurship** among existing residents, new migrants or future mobile innovators.
- **Improving sustainability** to protect the liveability brand from being undermined by environmental degradation and to find new ways to be smart.
- **Preserving affordability** by increasing housing supply and targeting underdeveloped areas for social regeneration.
- **Building scale** through attractive medium-high density redevelopment and creating critical mass in new sub-centres.

**What liveability really tells us about city performance**

Mature ‘Established World Cities’ such as London, New York and Paris consistently rank lower in liveability measures. Ageing infrastructure, low housing supply, growing unaffordability and moderate records for public health and safety all mean that these cities will not gain recognition as ‘highly liveable’ any time soon.

Changes in quality of life rankings tend to be very slow as investments can take decades to yield measurable citywide effects. But some cities are making rapid progress. Berlin excels in indices which value work-life balance, creativity and nightlife, in addition to more conventional indicators. Tokyo is showing how to provide excellent infrastructure and services at the megacity scale. In the United States, Washington DC and San Francisco are leading players due to their jobs performance and public transport.

In ‘Emerging World Cities’, Buenos Aires and Santiago are also improving steadily because of their cultural assets combined with improvements in quality of life, especially in their central districts. In China, Wuxi has become a leader among medium-sized cities and, along with Xiamen, has significantly lower congestion than others. In India, it is Chennai’s investment in metro rail systems that is driving change, while Bangalore has made significant improvements in its housing.
The challenge of measuring liveability

However, there are risks of confusion given the wide discrepancies in scores for certain cities; Singapore, for example, ranks 26th in Mercer’s 2016 Quality of Living Survey but 49th in EIU’s equivalent, among a similar basket of cities. In the latter study, even though the city is one of only seven to receive a maximum score for infrastructure, it is rated extremely poorly for cultural and environmental performance, well below Quito and Johannesburg, and surprisingly badly for education, primarily because of poor private school ratings. Tokyo is twice ranked in the top 5 but also appears as low as 43rd, on account of its high costs and its ‘sociocultural environment’.

For many, the capacity of cities to offer surprise, eccentricity and unpredictability is not captured by indices, with the result that ‘boring’ cities can appear as the most liveable. These discrepancies mean a number of concerns have arisen about the quality or applicability of city quality of life indices.

These include:

• **Western bias** in the attributes being measured and the stakeholders being consulted. There is still a tendency to interview expats of Western firms and those who speak English over other audiences, while the standards cities are judged on often reflect the lower-density profile of Western cities rather than the higher-density model of Asian cities. This is compounded by a failure to take different stages of development into account; as a result, many developing cities are unfairly penalised for deficits that they cannot be expected to have completely solved yet.

• **The geography under consideration**, whether central city, citywide or metropolitan. Often cities with very high quality of life in their central city have much lower liveability towards the fringes, but this can be missed, resulting in unrealistic expectations and ‘cognitive dissonance’ among citizens, visitors and investors.

• **Lack of measures for investment in key infrastructure** such as health, utilities or digital systems. ‘Healthy cities’ are increasingly emerging as a key theme, due to variations between cities’ life expectancies and the effects of air quality, obesity, inactivity and other public health issues; yet some indices in this area are fragmented or anecdotal in their approach.

• **The absence of measures to reflect the appeal of social and cultural diversity**.

• **Liveability for whom?** Hong Kong and Stockholm have fallen down some liveability rankings because of civil unrest, but for many residents or potential ‘customers’ these events may be marginal to their preferences. Similarly, other cities have relatively limited public amenities but are much more accessible and affordable for lower-income residents. Indices have yet to provide a comprehensive breakdown of liveability for different segments and different ‘customers’ of the city.

Global Knowledge Flows and Innovation Hubs

The innovation economy is urbanising exponentially. Disruptors such as big data and the sharing economy are transforming business models and workplace needs, and lowering barriers for more cities to foster entrepreneurship. As additional sectors become traded globally – from software to life sciences to clean technology – many cities are finding that their capacity to leverage their knowledge assets and foster innovation is critical to their success.

Two related groups of indices span this area: those focused on universities and labour force credentials, and those which examine start-ups and commercial and R&D innovation. Although the original focus of many indices
was the quality of the labour market for global firms, there is now much more interest in how capable cities are at supporting digital and technology clusters, given the impact these sectors have in shaping demand. These indices highlight not just skills, but also a conducive set of hard and soft factors, including good access to capital and to mentorship.

Some elements of the knowledge and innovation economy are easier to evaluate than others. Indices which measure talent pools and innovation systems are common; however, those focused specifically on science and technology capability are rare because of data availability and comparability issues.

Beyond the ‘Established World Cities’, a number of medium-sized cities combine quality institutions, specialised industry knowledge and a capacity to incubate ideas that generate value. San Francisco, Boston, Toronto and Berlin stand out. Their institutional depth and networks, along with their supportive regulatory and living conditions, have enabled these cities to become truly world-class centres of innovation.

There is generally a strong correlation between world-class universities and innovation ecosystems. But cities such as Tel Aviv and Seattle have built advanced innovation economies through more commercial processes, and are now able to attract major companies and talent. Many other science and technology centres are prominent, including Munich, Copenhagen and Austin, all of which have diversified economies and a broader quality of life appeal.

Austin has emerged as the standout tech city in North America and perhaps the world since 2012. The Texan city comes top of more than one global study and is first in the Kauffman Index of start-up activity in the United States. The city’s key advantages are its young educated demographic who have access to a very short commute to the key employment districts, low transport costs, and relatively affordable office rents. Other cities that are emerging as important North American tech destinations are Miami, which has a very high density of entrepreneurship, and Denver, where higher-value market opportunities have been growing rapidly.
Global Top 20 Start-up Ecosystems and University Performance

In Europe, the 2015 European Digital City Index highlights the strong performance of Amsterdam, in 2nd place after London, because of its very high availability of early and late-stage funding, combined with a healthy supply of co-working spaces and an entrepreneurial ethos of trust and risk.\textsuperscript{16} By contrast, Berlin performs worse than expected (7th) due to slow internet speeds, the high cost of broadband, modest local demand and a relatively small business support ecosystem. Nordic cities, including Stockholm (3rd), Helsinki (4th) and Copenhagen (5th), are also particularly strong. The first two benefit from significant state support for innovation and exceptional levels of local talent, while Copenhagen comes out on top as a creative city and a liveable hub attracting key talent.

*Aggregate score reflects cumulated appearance of a top 200 university in each city, based on QS, Times Higher Education and Shanghai Jiao Tong University rankings.

Source: Business of Cities, 2016; Compass Global Start-Up Ecosystem Ranking; JLL, 2016
Inadvertent index bias against non-Western tech cities?

Although one of the defining trends of the post-2008 period is the rise of companies born in the emerging world, recognition of their cities’ capacity to support innovation has been quite slow to appear in global indices.

In Asia, only Singapore stands out for its innovation economy and agile government. It is rated the most innovative city in the Asia Pacific region because it meets Western standards of business environment, university institutions and infrastructure platform. However, many of Asia’s other leading centres have invested in the creation of a productive high-value knowledge economy over two or three development cycles. Investment in Chinese start-ups exploded in 2015. The major cities of Beijing, Shanghai and Shenzhen are establishing themselves as go-to centres, supported by much improved investment in R&D. In India, Bangalore leads the way followed by Mumbai and Gurgaon. Beijing, Tokyo and Seoul all boast positions among the top 5 fastest growing cities globally in venture capital deals.

Yet these transformative developments are only just beginning to register on the radar of global indices of innovation, technology and entrepreneurship. Indices created in Europe and North America often exclude emerging cities from consideration or are unable to find requisite data. Despite the improving record of educational attainment and corporate innovation in cities like Shanghai, Beijing, Moscow, Istanbul and Bangalore, the networks of those institutions producing indices do not always extend to these emerging economies.

Cities in Africa are also overlooked in global indices, despite their own booming tech sectors driven by strong mobile adoption rates (43% growth in mobile broadband adoption in 2013-2014 alone) and new investment opportunities. While North African cities have the highest university and educational attainment, which is what indices favour for measuring purposes, Sub-Saharan African cities have recorded important tech growth. Nairobi is home to major breakthrough ideas such as M-Pesa and innovation districts like iHub. Addis Ababa has iceaddis, a similar platform to iHub, while Accra runs the Meltwater Entrepreneurial School of Technology as a training and investment centre for tech entrepreneurs. Dakar and Johannesburg are rolling out free Wi-Fi hotspots.

The spread of purpose-built satellite cities and suburban campuses, such as Konza Techno City in Nairobi, Yabacon Valley in Lagos and the Diamniadio Tech Park near Dakar, counters the urbanising trend of innovation in North America and Europe. Nevertheless, these developments offer opportunities for state-of-the-art ICT investments. They help to decongest centres and create new possibilities for cities to reshape their spatial character for a more productive and inclusive economy.

The changing landscape of tech innovation is one of the next big areas for indices to track and understand. Lagos, Dhaka and Delhi are now among the top 5 fastest improving cities for ICT take-up according to Ericsson, even though they lag on more traditional digital economy indicators. Others, such as Moscow and Sao Paulo, demonstrate robust start-up ecosystems despite being overlooked in traditional measures of university and graduate concentration.
3

Built Assets:
Comparing Cities’ Infrastructure and Resilience

Infrastructure and Transport

Infrastructure systems are the backbone of city competitiveness and long-term success. It is therefore surprising that there are fewer than 10 indices specifically dedicated to infrastructure and transport. There are also seven major comprehensive studies which include this area as a sub-category. Arthur D. Little’s Urban Mobility Index remains the only in-depth global study of transport capacity.

Medium-sized European cities are the outstanding performers here. Their size and relative compactness makes systems manageable, affordable and comfortable. Copenhagen, Oslo, Vienna, Stockholm and Barcelona all stand out. Their strength contrasts sharply with American cities which underperform.

Singapore achieves the highest rank of any major business hub because of its highly integrated city management, which includes combined land use, economic development and infrastructure planning. The city has comprehensively solved major infrastructure challenges, such as housing and water collection, and continues to rise up infrastructure rankings. The infrastructure platforms of other ‘Established World Cities’ also continue to be competitive, partly because measures favour quantity over quality, and partly because of their strong modal share of public transport.
Top 15 Cities for Internal Transportation

<table>
<thead>
<tr>
<th>Number of Cities</th>
<th>Mori Global Power City Index: ‘Accessibility’</th>
<th>Toronto Region Board of Trade - Scorecard on Prosperity: ‘Travel to Work’</th>
<th>Arthur D. Little Urban Mobility Index 2.0</th>
<th>IESE Cities in Motion: ‘Mobility and Transportation’</th>
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<tr>
<td>Paris</td>
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</table>

Source: Mori Global Power City Index, 2015; Toronto Region Board of Trade, 2015; Arthur D. Little Urban Mobility Index, 2014; IESE Cities in Motion, 2015
Indices highlight that a great deal remains to be done to deliver more integrated and efficient transport networks, with global car dependency still at a high level. ‘Emerging World Cities’ in particular will have the chance to leapfrog stages of infrastructure development and deploy smart, integrated systems as they grow and redevelop. The progress of ‘Emerging World Cities’ is closely tied to the rate of investment in upgrading their urban systems. Istanbul and Kuala Lumpur stand out for significant recent infrastructure programmes. Kuala Lumpur has actively reshaped its transport network and has jumped from 21st to 12th in five years in the Global Power City Index. Istanbul is also noted for its proactive transport investments such as its third airport and new metro lines, which will make it the region’s premier logistics platform. Meanwhile, Shanghai and Beijing tend to be the highest-ranked cities in the BRICS economies.

Ageing infrastructure in New York (16th for infrastructure safety), London (25th), Paris (26th) and Hong Kong (40th) has made their systems more vulnerable. Newer and still incomplete systems in Santiago (24th), Istanbul (27th) and Shanghai (30th) can match established peers, despite having less than half of their per capita GDP. Toronto, Montreal and Melbourne are prominent for their younger and more robust infrastructure systems.
The ‘smart city’ indices

The initial interest around the concept of ‘smart cities’ has led to a flurry of different attempts to create new ‘smart city’ measures. The concept itself, however, has no agreed definition and is evaluated through many different lenses. Although the idea refers to the application of advanced ICT to monitor and modify infrastructure systems and social behaviour, few cities have developed smart systems in a comprehensive way, which has made data comparison difficult.

Smart city indices are often subsets of comprehensive studies, where ICT use is a proxy for city ‘smartness’. Others – like the Shanghai Academy of Social Sciences – cover everything from e-governance to e-commerce, digital creativity and intelligent transport. Recent attempts to deploy user-generated data are promising – such as the Human Cities Index that employs smartphone data to track exercise activity levels in cities, and the TomTom and INRIX traffic indices.

A major project undertaken by Singapore, under the aegis of its ‘Smart Nation’ vision, will see a new global benchmark for smart cities created. The project also aims to help develop standardised and comparable measurements globally.

Infrastructure: hard or soft?

There is little consensus on how to approach and define ‘infrastructure’. Most studies assess transport, housing, energy grids and waste management. Individual transport studies address the scale, coverage and comfort of public transport systems, although some rate global connections via air and sea as equally important, which often changes the results dramatically. There is a tendency to rely on measuring outcomes (existing rail and road coverage, accidents) rather than inputs (investment, policies). Few depend on subjective appraisal.

In future, infrastructure indices will have to confront the challenge of amassing datasets at the metropolitan geography, which are still widely in short supply - leading to distorted results in cities where the quality and range of infrastructure is variable. The age, robustness and rate of reinvestment in infrastructure will become of increasing concern to citizens and investors alike, and finer-grained comparative detail on these factors will also be required.
Environment and Sustainability Indices and the Rise of ‘Green Cities’

Despite the growing global attention given to issues of sustainability, urban benchmarks in this category are rare. Many pioneering early studies, including that of Siemens, found comparable data collection to be very challenging. As a result, recent indices have either focused on single issues (e.g. air quality, carbon emissions), or moved towards assessing resilience and emergency response. Private sector consultancies, infrastructure providers and universities lead the way in comparative rankings in this area.

Smaller European cities are clear leaders because of their relative compactness, higher densities and active policy innovation. Copenhagen and Rotterdam are frequently referenced as the ‘greenest cities’, with the former aiming to become carbon free in the coming decades. Stockholm and Helsinki are also prominent, as is Berlin. This group are praised for their environmental governance and solutions around waste and resource management. Today, they are making bold steps in terms of high-quality densification at scale, and are well-placed to leverage the efficiency benefits of the sharing economy. By contrast, policies in ‘Established World Cities’ are widely seen as well-intentioned but lacking either in ambition or mechanisms for implementation.23

Although progress towards environmental sustainability is slower across Asia, cities such as Singapore, Tokyo and now Shenzhen and Guangzhou are the high performers in the region.24 In Latin America it is Curitiba that stands out for its long-term sustainable efforts, having pioneered the Bus Rapid Transit system, and pedestrian and commuter-friendly planning.

Social and Environmental Performance

Source: Arcadis Sustainable Cities Index, 2015; JLL, 2016
Green, sustainable, resilient or ecological?

After some relatively barren years, environmental indices of cities are set to grow again as sensor technologies and data-gathering techniques improve. Owing to cross-border data challenges, many indices have sought to compare policy, leadership and governance of environmental issues, rather than statistical outcomes. This has shone important light on the different strategies cities adopt and the ingredients for their effective implementation.

Currently, the terminology of choice in this field varies according to institutional bias and imperatives, and definitions continue to overlap. There is no fully agreed set of ideas and outcomes as to what constitutes a ‘green’, ‘resilient’ or ‘sustainable’ city. The success of the Paris COP21, however, promises to offer renewed impetus to the quest to measure city performance in this area.
The measurement of ‘image’ and ‘brand appeal’ of cities has become increasingly popular. These studies help cities assess their progress in the way they position themselves, plus they also provide insight for companies making all kinds of location decisions.

One of the most favoured tools remains perception surveys. These are open to cultural biases as they often draw disproportionately from Western audiences, and may rely on unrepresentative samples within countries. Attempts to develop more objective measures include analyses of social media and the range of amenities.

Large global surveys are accompanied by many informal rankings, often opinion-based reviews or small-scale surveys found in lifestyle magazines or travel guides. Measures also focus on the quality of city shopping, architecture, food or neighbourhood atmosphere. While frequently informal or incomplete, they can help paint a picture of the changing tastes and perspectives of global ‘customers’.
### Leading Cities in Brand and Image Indices

<table>
<thead>
<tr>
<th>No. of Cities</th>
<th>City RepTrak Top Line Report</th>
<th>Anholt-GfK Roper City Brands Index (Aggregate)</th>
<th>Saffron: The World City Business Brand Barometer</th>
<th>EIU Hotspots: &quot;Global Appeal&quot;</th>
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</table>

Note: The rankings for the Anholt-GfK Roper City Index are based on aggregated scores of each of the six different sub-categories included in the survey. This methodology differs from the overall methodology used by the index to calculate final rankings.

Source: City RepTrak, 2015; Anholt-GfK Roper, 2015; Saffron, 2015; EIU Hotspots, 2012
Among the ‘Big Six’, the Western trio of **London**, **New York** and **Paris** have a better ‘image’ than the Asian ‘Established World Cities’ of **Hong Kong**, **Tokyo** and **Singapore**. The leading trio’s image is an integral part of their identity as the world’s foremost global cities. They come out with higher cultural activity, entertainment and ‘vibe’ scores. London, in particular, saw a record number of visitors in 2014 and 2015, building on the success of the 2012 Olympics and the impact on its brand. **Shanghai** has also climbed nine places in City RepTrak’s ranking of the world’s most reputable cities since 2014. Other Asian centres are also improving, with **Tokyo** having risen upwards of 20 places in a recent update, and with **Seoul** and **Singapore** not far behind.²⁵

**The emergence of ‘Visitor Destination’ cities**

Another type of city is also visible: the ‘Visitor Destination’ which leverages a mixture of climate and quality of life (e.g. **Sydney**, **Barcelona**) and culture (e.g. **Rome**, **Vienna**, **Venice**) to project global renown. These cities’ global image significantly exceeds their overall index performance.²⁶ Others have strong regional influence but may lack a global presence (e.g. **Bangkok**, **Mecca**). For these cities, tourism and visitors have become the bedrocks of their economic and competitive success.

**City Perceptions**

* Perceptions among citizens of seven nationalities

* Source: Anholt-GfK Roper City Index, 2015
## Destination Power - Top 10 Cities

### Visitors

<table>
<thead>
<tr>
<th>City</th>
<th>Euromonitor: Top City Destination Rankings 2015</th>
<th>MasterCard Global Destination Cities Index 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangkok</td>
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### Conferences

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<th>ICCA Country and City Rankings 2015</th>
<th>UIA Rankings 2015</th>
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<td>11=</td>
</tr>
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<td>London</td>
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</tr>
</tbody>
</table>

For ‘Visitor Destinations’ the major strategic challenge is to build business and investor brands to complement tourism. This process is important to competitiveness as it helps these cities to diversify and build other higher-value industries, as Barcelona has done in recent years.

Source: MasterCard Global Destination Cities Index, 2015; Brookings Global Metro Monitor; JLL, 2016
Image, identity, reputation, visitor experience or pulling power?

A handful of well-researched and well-resourced indices continue to lead the way in tracking city brand and visitor popularity. Most image-oriented indices are still premised on big opinion surveys, although data-led measures of brand strength also feature. In terms of destination popularity, indices have stuck to their established methodologies; however, diverging results do put pressure on them to create more integrated datasets. For example, indices of city events and congresses draw on different databases, while visitor number indices vary because of definitional disagreement about what counts as an international visitor. For analysts these discrepancies can reveal new insights, but for the everyday consumer they pose the risk of confusion.

More and more indices seek to specialise in revealing new global trends. We now know much more about the changing urban geography of sport, cuisine, retail and conventions, and the way perceptions evolve over time. This can be very helpful for ‘New World Cities’ and ‘Emerging World Cities’ as they look to gain a foothold in specialist markets. The next step for indices is to build a picture about cause and effect, which can point to the impact of city projects, reforms, events and other strategies.

Culture, Openness and Lifestyle

Cultural assets and amenities are measured in a range of studies of artistic scenes, fashion industries, event attractiveness, surveys of tolerance and start-up ecosystems. Most cover single issues, rather than the full range of city culture. Lifestyle magazines, industry-specific publications, NGOs and research institutes are active publishers, many seeking to cater to younger creative audiences. They usually rely on subjective studies and appraise the intangible value of a city’s ‘vibe’, culinary offering or lifestyle. Others use qualitative indicators to assess a city’s diversity policy or legal framework, or depend on data such as museum footfall. Some indices even employ a sentiment analysis of traditional and digital media to measure the ‘buzz’ surrounding a city’s creative industries.

What these indices show is the absence of a clear link between a city’s global economic importance and cultural offering. Smaller secondary centres with a legacy of artistic and cultural activity are just as likely to act as major creative hubs as large global cities.

Moving upwards: ‘Emerging World Cities’

Although fragmented data militates against a precise picture, a notable trend across the individual indices is the improving profile of ‘Emerging World Cities’. **Shanghai, Beijing, Taipei, Rio de Janeiro and Mexico City** are all drawing attention as a result of rising education attainment, growing disposable incomes and efforts to invest in the cultural economy.

While the Chinese megacities perform well in terms of major museum exhibitions, frequency of cultural events and increasingly on the culinary scene, surprises lie elsewhere. **Rio de Janeiro** and **Sao Paulo** are major museum hotspots thanks to their enthusiasm for modern art and the large crowds visiting the Centro Cultural do Brasil, which places them among the leading ‘Emerging World Cities’ for attendance alongside **Taipei**.
Museum Attendance

Totals based on yearly attendance at largest museums in each city
Source: The Art Newspaper, 2015

Cities not usually associated with a strong cultural sector have also been noted for their efforts at the policy level. Macau, for instance, through its ‘Creative Macau’ programme, has established a successful film and graphic design talent base. Jakarta’s digital creative economy is said to be taking off, while Sao Paulo’s efforts to harness the work of graffiti artists has also been praised.
Culture, Lifestyle and Openness

<table>
<thead>
<tr>
<th></th>
<th>EIU Hotspots:</th>
<th>Mori Global Power City Index:</th>
<th>A.T. Kearney Global Cities Index:</th>
<th>Martin Prosperity Institute: Creative and Diverse – Ranking Global Cities</th>
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</tbody>
</table>

Source: EIU Hotspots, 2012; Mori Global Power City Index, 2015; A.T. Kearney Global Cities Index, 2015; Martin Prosperity Institute, 2015

Still at the top: European and North American cities

The top cities still remain concentrated in Europe and North America. Berlin, Amsterdam, Madrid and Barcelona continue to sustain their vibrant art, museum and fashion scenes. Cities’ historic and cultural legacies are important drivers, as are active start-up scenes and tolerant cultures. This sees many U.S. and Canadian cities, including San Francisco, Austin, Denver, Seattle, Ottawa and Vancouver, all doing well in the rankings. Meanwhile, Atlanta, Dallas and Houston have all made significant gains since 2012. Elsewhere, Tokyo’s relative lack of diversity acts as a break on its knowledge and cultural sectors.

Openness, tolerance, diversity or inclusion?

The measurement and weighting of which cities are most ‘open’ or most ‘culturally rich’ remains highly value-laden. The indices that focus on these questions are principally based in Western countries, and the measures are often designed for a very specific audience with particular habits and preferences. So far, indices on this theme have yet to produce a convincing and comprehensive case for what counts as entertainment or culture, beyond narrow quantitative measures.

Inclusion, tolerance, openness and diversity are different concepts often with quite distinct meanings. Many cities have some attributes but not others. A number of cities have statistical diversity, for example, but have major challenges around segregation and exclusion, socially and economically. In future it will be imperative for city indices to separate out these ideas and provide a more nuanced understanding. Failure to do so will mean that indices risk missing out on understanding the diverse cultural factors that make cities appealing to different people around the world.
5

An Emerging Science of Cities: Faultlines and New Directions

The ‘State of the Art’ of City Indices

As cities and nations prepare for the future, they encourage the emergence of a ‘science of cities’ through which to understand it.

This science of cities is slow to emerge and is increasingly interdisciplinary and intergovernmental. It moves from the local to the global and back again to try to understand people, organisations, urban metabolism, land and infrastructure, and uses this understanding to model the future and be purposeful towards it.

This science recognises that cities are made up of complex systems and operate as wider ‘systems of cities’. It also tries to grasp not only the quantitative and measurable flows of people and money, but the more intangible and subjective feelings of city attachment, well-being and brand that shape how we feel about cities and the choices people make about them.
Data and city indices

The measurement of cities through comparative indices can form an important part of this emerging science of how cities work and what makes them succeed (and fail). Today, with 200 city indices and rising, the sheer range of indices and the datasets they cover is remarkable. Nearly half use multiple sources, combining global datasets with other private or more specialised metrics. Some are derived from perception surveys, including many of the more generally cited and popular indices. City indices harness the progress of the wider pursuit of a science of cities and offer a popular and accessible way to communicate key insights about the ‘metropolitan century’ to the wider public. In this respect they have an important second-order role to play in shaping perceptions as well as the performance of cities.

City Indices and Benchmarks: Data Sources

| Analysis of available local, national or international data | 77 |
| Aggregated data from complex different sources | 83 |
| Combined data and perception analysis | 17 |
| Perception surveys | 17 |
| Expert judging panel | 14 |

The geography of city indices

Benchmarking cities is more genuinely global than ever. Although the U.S. and UK lead the way in city index development, organisations in countries as varied as Peru, India, Poland and the Philippines have created indices looking at cities. The result is that over 200 cities feature in more than 10 indices, and some even appear in more than 100 indices.

Scope of City Indices

| Global | 127 |
| Regional/Continental | 23 |
| National | 58 |
Origin of City Indices

Prevalence of cities

Although a clear majority of indices are still created in developed countries, the balance of cities these indices cover is more even. Shanghai, while still an ‘Emerging World City’, is among the top 10 most frequently ranked cities, and Beijing, Istanbul and Mumbai are all among the top 20. There are five African cities in the top 100 most measured which, although far below what their demography merits, is a sign that indices have become more diverse.
Resolving incoherence in indices

One reason why city indices create confusion and controversy is the wide variation in results between different indices that purport to address the same theme. Depending on who you consult, Singapore and Tokyo are either among the world’s ‘most liveable’ cities or several rungs ‘down the ladder’. Although these discrepancies allow those whose job it is to promote cities to hand-pick their preferred index according to the story it tells, they do not help the analysis of city liveability. Often indices have to be carefully unpacked and distilled for their core insights. They present different models of urban or metropolitan success.

On the one hand, there is a widespread tendency for different indices to rely on the same datasets, creating the perception of more correlation between different studies than actually exists. On the other hand, indices also adopt wildly diverse methodologies to compare cities against the same theme or aspect of urban life. Some prefer to consult experts and participants ‘on the ground’, while others rely purely on data. Both are imperfect approaches and can on occasion lead to misleading or counter-intuitive outcomes (e.g. New York a ‘low quality of life’ city, or Hong Kong a ‘low innovation city’). We have summarised below some of the key issues in how data and interpretation differences lead to variability.

Consistency of City Indices

<table>
<thead>
<tr>
<th></th>
<th>Correlation across indices</th>
<th>Reliance on same datasets across indices</th>
<th>Reasons for discrepancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Activity and Friendliness</td>
<td>Medium-High</td>
<td>Low</td>
<td>• executive opinion vs raw market and deal data</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• weighting on taxation and democratic process</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• metropolitan vs city data</td>
</tr>
<tr>
<td>Knowledge and Innovation</td>
<td>Medium</td>
<td>Medium-High</td>
<td>• population growth vs population quality</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• foreign talent vs domestic educational systems</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• weighting of higher education rankings</td>
</tr>
<tr>
<td>Quality of Life</td>
<td>Low</td>
<td>Medium</td>
<td>• expat vs resident needs (schools, housing, leisure)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• perception (Western and non-Western) vs metrics</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• weighting of security risks</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• national vs local data</td>
</tr>
<tr>
<td>Sustainability and Smartness</td>
<td>High</td>
<td>High</td>
<td>• emphasis on threats vs quality of policy and strategy</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• weighting on outputs vs inputs</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• project-led or whole city-led</td>
</tr>
<tr>
<td>Culture and Diversity</td>
<td>Low</td>
<td>Low</td>
<td>• weighting on free speech</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• criteria for ‘vibrancy’ (restaurants vs sport vs international cultural institutions)</td>
</tr>
<tr>
<td>Image, Brand and Destination</td>
<td>Medium-High</td>
<td>Low</td>
<td>• residents, investors or visitor audiences</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• different ‘brand’ elements under scrutiny (trust vs excitement)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• varied congresses and conventions data</td>
</tr>
<tr>
<td>Infrastructure and Transport</td>
<td>Medium</td>
<td>Low</td>
<td>• weighting on external connections or just internal mobility</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• emphasis on digital infrastructure vs commuter transport infrastructure</td>
</tr>
</tbody>
</table>

Getting the spatial scale right

The silence of indices on governance highlights another critical issue – geography. Most indices continue to draw data almost exclusively from the central city, even though the city itself usually only comprises a fraction of the wider functional geography of the urban area. The City of Sydney, for example, only accounts for 3% of the 5 million person metropolitan area, while even citywide governments in New York and Tokyo only cover 40% of their urban regions. This is a major challenge for the science of understanding cities, especially as the gaps between inner cities and their peripheral areas become larger. It is likely that some cities are currently measured as more liveable and much more sustainable than their real urban situation actually warrants.

<table>
<thead>
<tr>
<th>Data Sources for Indices</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indices that use performance data</td>
<td>170</td>
</tr>
<tr>
<td>Indices that use some metropolitan data</td>
<td>35</td>
</tr>
<tr>
<td>Indices that use city-level data</td>
<td>135</td>
</tr>
</tbody>
</table>


A lack of agreed definitions and terminologies for cities means some important trends can get missed. In many regions, cities that are very close to each other, or very well linked by rail transport, are effectively combining into ‘dual-city’, ‘tri-city’ or even ‘four city’ metropolitan areas with all the agglomeration assets of more conventional monocentric cities like London and New York. Copenhagen-Malmo and Johannesburg-Tschwane are two examples of pairs of cities that are usually measured separately. The Netherlands’ four largest cities, the ‘G4’ of Amsterdam, Rotterdam, Utrecht and The Hague, are all so well-connected that they effectively form part of the same global city region of the Randstad, but are much less visible when measured by themselves. Similarly, the competitive assets of the large urban industrial belts of the Ruhr in Germany and the Pearl River Delta in China, which are formed of six or more cities, do not fit neatly into the categories created by city indices.

Although index producers increasingly recognise the limitations of failing to grasp the metropolitan geography, the challenges around even defining a common metropolitan scale, let alone collecting and integrating data from extra local authorities, are immense. As a result, there is no major shift yet towards metropolitan-level indices. However, as the OECD and World Bank make progress on the proper definitions of functional urban areas, this should allow ambitious and well-resourced indices to create more systematic comparative datasets.
The Future of City Indices

City indices span nearly everything for which good comparable data and opinion can be found. There are, though, still several important omissions in the coverage of city indices that leave our understanding of cities incomplete. These range across a wide spectrum of aspects of city life, many of which are becoming more important.

City governance, resourcing and leadership

The institutional frameworks of cities are often critical in their performance across a wide range of indicators, but comparative indices are still absent. Some comprehensive indices, including IESE Cities in Motion and EIU Hotspots, feature a limited number of indicators dedicated to the subject, yet only where data is easily available or broad judgement possible. Others, like the Global Liveable Cities Index, have made some effort to compare governance, but results within nations are often almost identical. There is reluctance for many organisations to define ‘good’ and ‘bad’ governance, due to the debates and controversies that surround it and the value judgements that may be at play.

There are at least five dimensions of governance that remain to be fully compared:

- **Institutional framework** and capacity for strategic progression as a Metropolitan Area, including the number of municipalities, the extent of their collaboration, and the maturity of the long-term strategic planning process.

- **Leadership** – the quality, consistency and variety, including the role of civic and business leaders.

- **Vertical relationships** – how much support cities enjoy from their national or higher-tier governments is a critical driver of success but has yet to receive comparative attention.

- **Fiscal empowerment, investment and sustainability** – how far city governments are able to generate the resources they need to provide services to citizens and business and to invest in infrastructure and resilience. There is almost no study of cities’ fiscal autonomy, budgetary capacity, flexibility to use financial tools, or investment needs relative to their infrastructure and growth. The complex overlap of financial flows between different tiers of government and across different jurisdictions makes data composition and comparison very challenging.

- **Systems of cities**. Most indices measure individual cities, but we know that regional systems are very important when other cities are located nearby, and that national systems of cities are key for longer-term development. Indices do not yet properly study the relationships of cities to their neighbours, whether cities can escape the constraints of their regional or national geography, or what kinds of national systems of cities are most conducive to good long-term performance (e.g. asymmetric like the UK and Argentina, or more balanced like Germany and Canada). The indices do not yet benchmark national policy frameworks for cities.

One major attempt at benchmarking governance has recently emerged. A collaboration between LSE Cities, UN-Habitat and UCLG has led to a study of major governance attributes across 78 cities.\(^2\) It includes an overview of government structure, taxation sources and planning instruments. However, there is no assessment of the quality of planning, transparency or rates of investment. Nonetheless, it offers a promising insight into different governance models, and highlights the critical challenge of diminishing public investment and unpredictable resources for cities as diverse as **Toronto**, **Addis Ababa** and **Madrid**. It also emphasises the fact that economic development and educational responsibilities are only held at the city level in a minority of cases.
Housing

Despite the severe pressure faced by many growing cities such as London, New York and Paris and the housing affordability crises that affects them, or the prevalence of slums in Mumbai, Delhi and Manila, neither the supply, demand, size or quality of housing is properly studied in any city index. This is a major omission given intense population growth in cities. Reasons for this gap include the dissimilar ways cities track their own housing completions and approvals rates, and the constantly moving targets set by different political administrations. Not all cities have the same housing and population demands, too. Even so, comparative work on which cities are making progress, and why, would be widely welcomed.

Equality and social justice

There is much debate and concern about which are the most equal and unequal cities, but this has yet to be properly modelled, despite some promising efforts by UN-Habitat. The idea of using Gini coefficients for cities is much discussed but not fully developed. Similarly, the experiences of different genders or ethnic/racial groups has yet to be adequately mapped into a city index, which leaves important gaps in our comparative understanding of city life. Perceived trade-offs between competitiveness and inclusion, or between efficient decision-making and democratic participation, are not addressed by the city indices in any meaningful way. However, there promises to be more activity in this area, with Brookings’ US Metro Monitor now ranking cities on economic inclusion for the first time, and other new studies focusing on affordability for young people.

Social diversity and openness

Apart from simple numbers around racial profiling or place of birth, there are few robust measures of social diversity, tolerance, openness, inclusiveness and conviviality in cities. So far, comparison of cities in this area either takes place through opinion surveys or through proxy measures that relate to languages, crime, festivals and cultural bodies. Attitudes and customs towards diversity, segregation and the ingredients of dynamic and vibrant cities all deserve to be compared more extensively in future.

Investment returns and capacity in cities

There is growing interest in the variety of returns that external investors can expect to receive from their investment in different cities. Investors tend to crowd investment into the same groups or types of cities without substantial understanding of the different returns available. There is a demand for wider measures of how a broader range of cities can participate in investment portfolios.
How do Cities Improve their Positions in City Indices?

Strong imperative for city leaders to improve positioning

It is very common for cities to find that their performance in some city indices is counter-intuitive to their own perception and experience. For example, a highly attractive city can find itself well down the rankings for quality of life, or an emerging megacity may appear to make very little infrastructure progress despite huge changes ‘on the ground’.

As we have described in this report, reasons for surprising or disappointing results are many. A city can be penalised by national datasets that do not credit outstanding urban areas with their superior records for crime, health or education. Or a city that excels at providing services for residents or niche visitors may not receive credit from indices that focus too heavily on certain high-value customers. Others may suffer from negative impressions among surveyed audiences who are not familiar with the city.

Cities that are in a cycle of investment and improvement may also struggle to see their progress recognised. They can be victims of old or rigid datasets which fail to update regularly or take into account the changing relevance of different facets of the city. There can also be odd or opaque weightings applied in indices that do not reflect the priorities of the full range of ‘customers’ cities seek to serve.

These many factors highlight the complexity of tracking city performance, and the need to understand context carefully. A city can rise up or fall down certain rankings because of changes in the number of cities featured, or changes in the balance between advanced and emerging cities, and these changes in coverage can colour how a city appears to perform. New data and new approaches to gathering data are constantly being devised, and the effect of these can be sudden and jarring for cities which rely on indices to provide profile and momentum.
Five-step Process to Improving a City’s Index Performance

1. Improve Real Performance on Key Metrics
2. Change Audience Perceptions
3. Engage Index Producers
4. Challenge and Correct the Indices
5. Create New Rankings
1. **Improve Real Performance on Key Metrics**

The first immediate task is to identify the areas of real performance deficit, and address gaps through a mix of policies, reforms and infrastructure investment. All enhancements will ultimately have the effect of creating a better and more appealing city, but from an indices perspective some areas have more impact than others. Currently cities that make sizeable improvements in educational attainment, airport-CBD travel time, and broadband network coverage tend to achieve big ranking improvements as comparative data for these areas are easy to assemble and responsive to change. On the other hand, large stand-alone projects, or upgrades to public space or building efficiency, take longer to show up on the radar of indices because they are less widely measured, less easily compared and have a limited net effect on the whole city, even if they do change perception and opinion.

2. **Change Audience Perceptions**

Cities that look to move up city indices often have to work actively to change perceptions among the global audiences that sway so many studies. This involves highlighting what the world has misunderstood about a city’s offer, so that the city receives the benefit of the doubt when experts or everyday citizens are asked for their view. At present, cities such as Barcelona, Zurich and Sydney get the benefit of the doubt, whereas Brussels, Moscow and Chicago do not, and this has a direct effect on the city rankings which themselves shape opinion. Strategies to overcome mistrust and confusion are an important aspect of city leadership.

3. **Engage Index Producers**

The next steps cities can take entail a more proactive engagement with the production of city indices itself. Cities can supply better and more up-to-date data to index developers whose own research capacity is often stretched. It is common for indices to use data that is as much as five years out of date, or to use national data in the absence of city data. More recent, accurate and relevant information would be welcomed by many indices’ creators, and can also influence opinion in cases where the authors’ subjective assessment plays a part.

4. **Challenge and Correct the Indices**

Cities can challenge the indices directly in cases where the data provides a clear disadvantage to them. This is usually most effective if cities provide a solution and make the case for methodology change, in partnership with other cities.

5. **Create New Rankings**

Cities and city leadership bodies can even participate in the creation of new rankings, as Dubai, Singapore and Toronto have done in recent years. This can help to highlight a city’s strengths internationally.
As city leaders and promotional authorities come under greater pressure to demonstrate progress and drive new sources of demand to cities, we can expect a growing number of cities to experiment in all of these five areas over the next few years. With the added impetus of more and better data, the next cycle of city indices promises to be more customised and more specialised than ever.

The imperatives of city index development

The rapid growth of city indices over recent years suggests that they will continue to develop in the next period. Observation of the city indices in 2016 indicates that there are three imperatives that city index development should address if it is to make a meaningful contribution to the emerging science of cities:

- Greater clarity about what is actually being measured, and greater precision in definition of standards and methods.
- Continued shift towards functional geographies rather than political units as the basis for comparison.
- Evolution of new indices, or extension of existing indices to address key gaps in the current comparative analysis.
Footnotes

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