

PwC

Cities of Opportunity research

Building better cities

Scoring selected cities in APEC on social and economic quality dimensions

April 2015

DRAFT for discussion



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APEC cities project: the key aims

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Overarching goals of the project

1. **Measuring urban success** in APEC cities through the lens of **livability, sustainability and competitiveness** by evaluating the **essential assets** of a city and the **quality of urban life**.

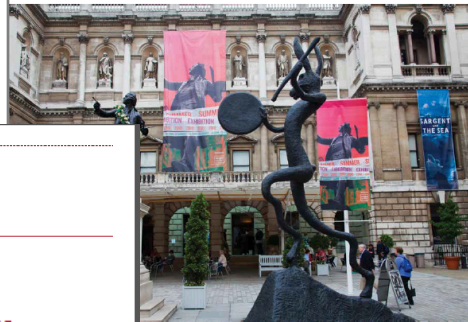
2. Demonstrating that a balance of **social and economic qualities (SEQ)** are the basis for creating **opportunity** in cities.

3. Creating a **bespoke scoring tool** to stimulate discussion and action on urban development in the Asia-Pacific region.



Where we're coming from...

| | | | | |
|--------------|--------------|-------------|---------------|-----------|
| Beijing | Istanbul | Mexico City | New York | Shanghai |
| Bratislava | Jakarta | Moscow | Paris | Singapore |
| Buenos Aires | Johannesburg | Mumbai | Sao Paulo | Stockholm |
| Chicago | Kuala Lumpur | Nairobi | San Francisco | Sydney |
| Dubai | London | Seoul | Sao Paulo | Tokyo |
| Hong Kong | Los Angeles | Taipei | Shanghai | Toronto |



Cities of Opportunity 6

Beijing | Istanbul | Jakarta | Mexico City | Moscow | Mumbai | São Paulo |



From Moscow to São Paulo

Emerging 7 Cities Report 2014

A *Cities of Opportunity* special edition




MOSCOW
URBAN FORUM

March 2015

Into Africa

The continent's
Cities of Opportunity



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From the globally-recognised *Cities of Opportunity* report, to our latest ground-breaking publications on *emerging cities*, we have been conducting *industry-leading thought leadership* on cities for over a decade – helping the world's great cities understand what *social and economic approaches* work best for people and economies in a rapidly urbanising world.

The cities to study

What criteria have we used to select the cities and *which cities* fit the bill?

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Criteria for city selection

1. Is the city located in one of the 21 APEC economies?

2. Is it a capital city?

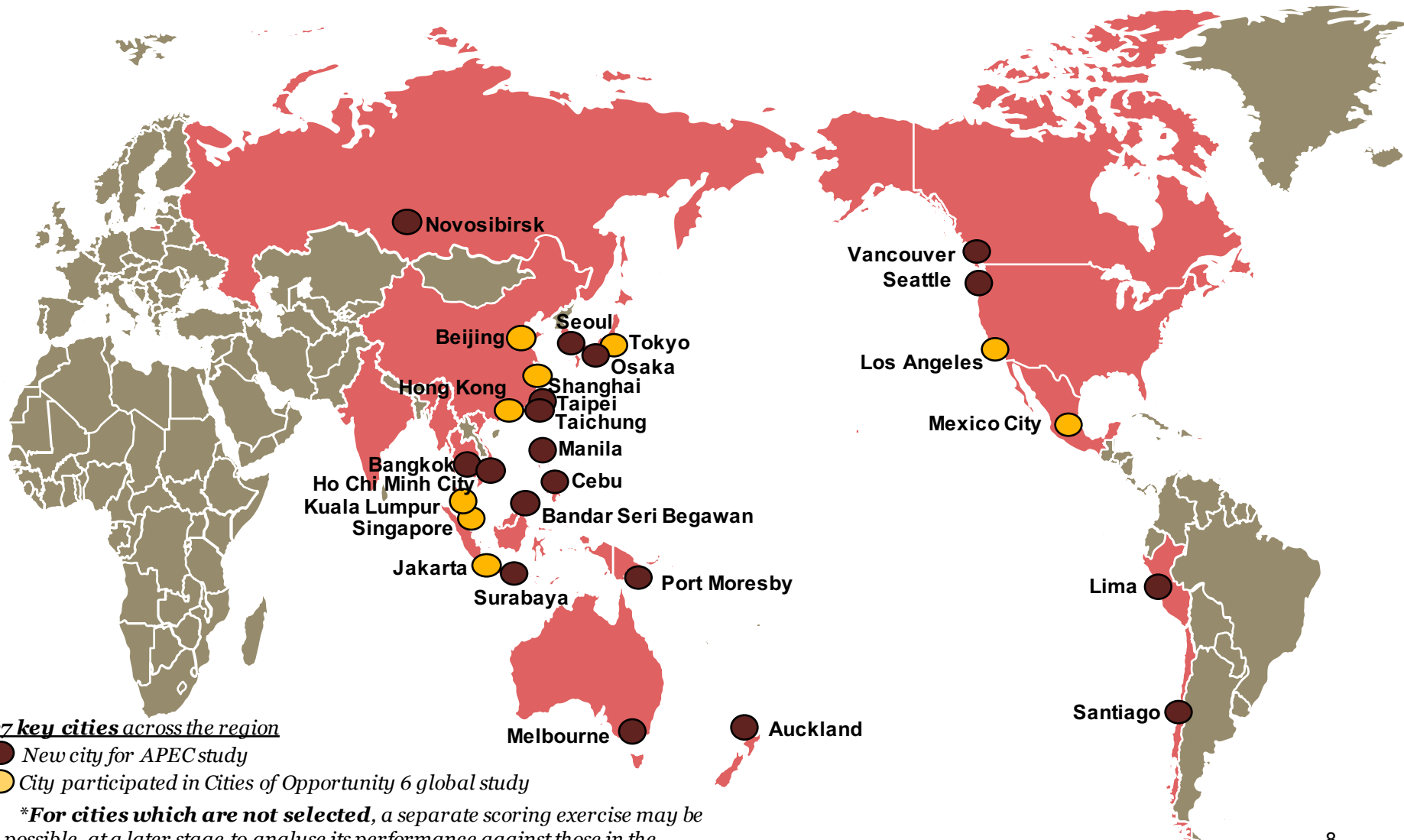
3. Is the city a 'Pacific Rim' coastal hub?

4. What are the city's prospects for growth?

5. Is enough robust data available to measure the city's performance?

.....
This study will bring together a diverse group of cities representing all 21 of the APEC economies. All are vital geographic and economic access points to markets and will exhibit various strengths and weaknesses of 21st century urban infrastructure.
.....

Cities meeting the criteria



27 key cities across the region

● New city for APEC study

● City participated in Cities of Opportunity 6 global study

**For cities which are not selected, a separate scoring exercise may be possible at a later stage to analyse its performance against those in the report, subject to the availability of data.*

Assessing the cities

The key question to address at the outset of this research is ***‘What makes a livable, sustainable and competitive city?’***

3



Assessing the cities: development of the variables

Our perspective on:

Livability...

The quality of life in a city reflects accessibility to various needs and services and contributes to overall well-being. Each publication has its own formula that generally includes ratings that represent each city's access to affordable housing, cost of living, quality of education and healthcare, and amount of cultural amenities among the many other components that determine a city's livability. The measure should reflect how the city is meeting the needs of the individuals actually living there.

Sustainability...

Sustainability is both difficult to define and to implement as public policy, with cities varying so widely in terms of geography, demographics and development. For our purposes, because our 'Livability' and 'Competitiveness' dimensions capture quality of life as well as economic participation metrics, we define sustainability strictly as care for environment and respect for ecological as well as developmental constraints. This recognises that 'environmental limits' exist and give thought towards the future and the precautionary principle.

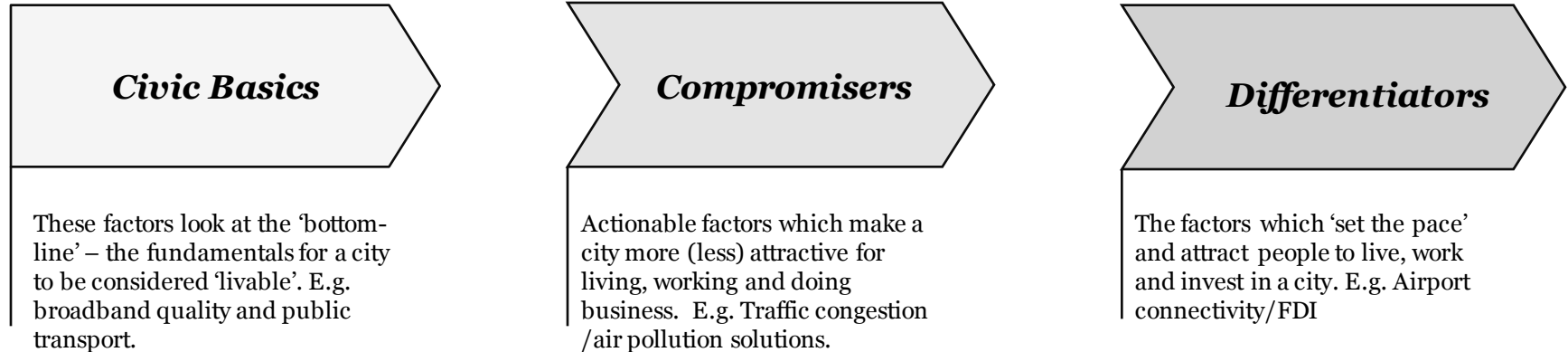
Competitiveness...

Competitiveness reflects how attractive a city is relative to other locations for talent and investment. Cities want to be considered the 'most livable' - a title that can attract new business and investment, boost local economies and real estate markets, and foster community involvement and pride.



Assessing the cities: development of the variables and indicators for the research

Three stages of progression...








Which will feed into five key indicators...



With the global **Cities of Opportunity methodology** as a guide, and having reviewed the relevant academic literature, we have identified a range of indicators and metrics that we believe capture the **core elements of a livable, sustainable and competitive city**.

The major categories defined

| <i>Culture and society</i>  | <i>Infrastructure</i>  | <i>Health & welfare</i>  | <i>Sustainability</i>  | <i>Economics</i>  |
|---|--|--|--|---|
| Literacy and enrollment* | Broadband quality | Health system performance* | Air pollution | Ease of doing business** |
| Percent age of population with higher education | Public transport systems | Hospital bed density* | Water risk | Cost of living |
| World university Rankings | Mass transit coverage | Physician density* | Thermal comfort | GINI Index* |
| Innovation Cities Index | Housing | Crime | Natural disaster risk | Purchasing Power |
| Middle-class population growth | Access to electricity | Political environment | Recycled waste | Attracting FDI |
| Cultural vibrancy | Traffic congestion | Corruption Perception Index* | Public park space | Productivity |
| Percentage of foreign-born residents | Airport to CBD access | | | Rate of real GDP growth |
| International tourists | Airport connectivity | | | |
| | Hotel rooms | | | |

Key:

- Civic Basics
- Compromisers
- Differentiators

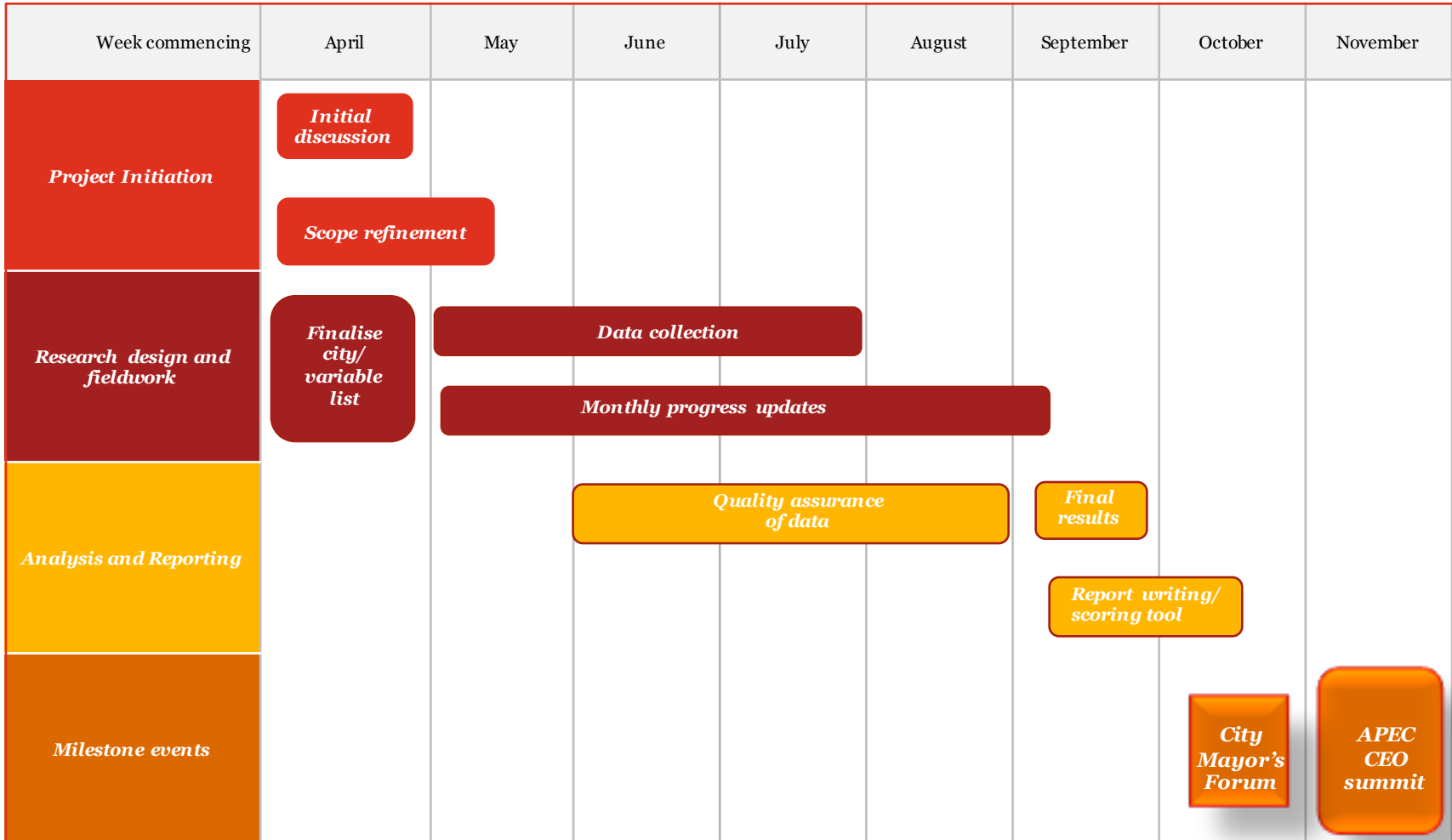
The research is based on publically available information supported by a comprehensive and robust analysis. A scoring methodology will be designed to enable transparency and simplicity for readers, as well as allowing comparability across all cities. In the event that the desired data is unavailable, we will place the city based on further open-source research and consultation with subject matter experts.

* Country level information

**Published as country-level information but based on data from the most populous city

Guideline timings

We will work closely with you to devise an appropriate timeframe so that the research programme is aligned with your business needs. This is an estimate in advance of starting work and we will keep you informed of our progress and any proposed changes to the timetable.



Thank you.



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Appendix 1: Variable definitions

Culture & society

Literacy & enrollment*

Measurement of a country's ability to generate, adopt and diffuse knowledge. The World Bank's Knowledge Index is derived by averaging a country's normalized performance scores on variables in three categories—education and human resources, the innovation system, and information and communications technology. The variables that compose the education and human resources elements are adult literacy rate, secondary education enrollment and tertiary education enrollment.

Source: World Bank
Knowledge Economy Index
(KEI)

Country-level

Civic Basics

Percent of population with higher education

Number of people who have completed at least a university-level education divided by the total population. A university-level education is set equivalent to a Bachelor's degree or higher from a US undergraduate institution.

Source: Local city sources

City-level

Differentiators

Culture & society

World university rankings

The Times Higher Education World University Rankings 2013-2014 powered by Thomson Reuters are the only global university performance tables to judge world class universities across all of their core missions - teaching, research, knowledge transfer and international outlook. The top universities ranking employs 13 carefully calibrated performance indicators to provide the most comprehensive and balanced comparisons available, which are trusted by students, academics, university leaders, industry and governments.

Source: Times Higher Education World University Rankings

City-level

Differentiators

Innovation Cities Index

The 2thinknow Innovation Cities™ index is comprised of 331 cities selected from 1,540 cities based on basic factors of health, wealth, population, geography. The selected cities had data extracted from a city benchmarking data program on 162 indicators. Each of the benchmarking data were scored by analysts using best available qualitative analysis and quantitative statistics. (Where data was unavailable, national or state estimates were used). Data was then trend balanced against 21 global trends. The final index had a zeitgeist (analyst confidence) factor added and the score reduced to a three-factor score for Cultural Assets, Human Infrastructure and Networked Markets.

Source: 2thinknow Innovation Cities™ Index

City-level

Differentiators

Culture & society

Middle-class population growth

Each city receives an index score relative to the best-performing city according to the projected rate of growth (%) and absolute growth in the city's middle-class population from 2012-2015.

Source: Canback & Company

City-level

Differentiators

Cultural vibrancy

Weighted combination of city rankings based on the quality and variety of restaurants, theatrical/musical performances, and cinemas within each city; whether the city recently has been given a “zeitgeist” or the spirit of the times ranking; and the number of museums with an online presence in each city. The “zeitgeist” rankings take into account cultural, social and economic considerations.

Source: Mercer Quality of Living report, Hub Culture Zeitgeist rankings & Artcyclopedia

City-level

Differentiators

Culture & society

Percentage of foreign-born residents*

Estimates from the UN Department of Economic and Social Affairs for international migrant stock by destination and origin for the mid-point (1 July) of 2013. The estimates are based on official statistics on the foreign-born or the foreign population, classified by country of origin. Most of the statistics utilised to estimate the international migrant stock were obtained from population censuses. Additionally, population registers and nationally representative surveys provided information on the number and composition of international migrants.

Source: United Nations

Country-level

Differentiators

International tourists

The total annual international tourist arrivals for a city collected by Euromonitor International. Euromonitor's figures include travelers who pass through a city, as well as actual visitors to the city.

Source: Eurmonitor (Local City Source where not available)

City-level

Differentiators

Infrastructure

Broadband quality

Based on millions of recent test results from Pingtest.net, this global broadband index from Ookla compares and ranks consumer broadband connection quality around the globe. Quality is reported in R-Factor, an industry-standard measurement for connection quality — crucial for applications that require a steady connection such as VOIP and online gaming. The value is the mean R-Factor over the past 30 days. Only tests taken within 300 miles of the server are eligible for inclusion in the index.

Source: Ookla

City-level

Civic Basics

Public transport systems

Reflects the efficiency, reliability and safety of public transport networks as defined and rated by the Mercer Quality of Living reports 2013. Cities also received additional points for each multi-modal transport system available to the public including: subway, bus/bus rapid transit, taxi, light rail, tram/trolley/streetcar, commuter rail and bike share systems. Each city received a tenth of a point for the modes of transport available within the city to differentiate between the 1-10 scores awarded by Mercer. Cities that had a fully operational Bus Rapid Transit (BRT) system received an additional 0.05 points. Ferry systems were excluded to not penalize land-locked cities for their absence.

Source: Local city sources

City-level

Civic Basics

Infrastructure

Mass transit coverage

Ratio of kilometers of mass transit track to every 100 square kilometers of the developed and developable portions of a city's land area. A city's developable land area is derived by subtracting green space and governmentally protected natural areas from total land area.

Source: Local city sources

City-level

Civic Basics

Housing

Measure of availability, diversity, cost and quality of housing, household appliances and furniture, as well as household maintenance and repair. This measure is based on the Mercer Quality of Living report 2013.

Source: Mercer Quality of Living report

City-level

Civic Basics

Infrastructure

Traffic congestion

Measure of traffic congestion and congestion policies for each city scored on the level of congestion as well as the modernity, reliability and efficiency of public transport. Assessment based on Mercer Quality of Living reports 2013.

Source: Mercer Quality of Living report

City-level

Compromisers

Airport to CBD access

A measure of the ease of using public transit to travel between a city's central business district and the international terminal of its busiest airport. Cities are separated into categories according to whether a direct rail link exists, the number of transfers required, or whether there is a public express bus route to the airport. Cities with direct rail links are preferred to those with express bus services. Rail links with the fewest transfers are ranked higher than those with more. Within these categories, cities are ranked according to the cost of a one-way adult weekday trip and the length of the trip, with each factor weighted equally.

Source: Local city sources

City-level

Differentiators

Infrastructure

Access to electricity

Percentage of population in a city's metropolitan area with access to electricity.

Source: United Nations

City-level

Civic Basics

Airport connectivity

The number of international routes served by the airports servicing a city as identified by World Airport Codes.

Source: Local city sources

City-level

Differentiators

Infrastructure

Hotel rooms

A count of all hotel rooms within each city.

Source: Local city sources

City-level

Differentiators

Health & welfare

Health system performance*

Measurement of a country's health system performance made by comparing healthy life expectancy with healthcare expenditures per capita in that country, adjusted for average years of education (years of education is strongly associated with the health of populations in both developed and developing countries). PwC Global Healthcare adapted methodology from the 2001 report "Comparative efficiency of national health systems: cross-national econometric analysis".

Source: PwC Global Healthcare team

Country-level

Civic Basics

Health & welfare

Crime

Weighted combination of the Mercer Quality of Living report 'crime score' (50%), Intentional homicide rate per 100,000 of the city population (30%) and the Numbeo Crime Index which is an estimation of the overall crime level in each city based on how safe citizens feel (20%).

Source: Mercer Quality of Living report, Numbeo, United Nations Office on Drugs and Crime

City-level

Compromisers

Political environment

Measure of a nation's relationship with foreign countries, internal stability, law enforcement, limitations on personal freedom and media censorship. Data is from the 2013 Mercer Quality of Living Reports.

Source: Mercer Quality of Living report

City-level

Compromisers

Health & welfare

Hospital bed density*

The number of hospital beds per 1,000 people; this serves as a general measure of inpatient service availability. Hospital beds include inpatient beds available in public, private, general, and specialized hospitals and rehabilitation centres. In most cases, beds for both acute and chronic care are included. Because the level of inpatient services required for individual countries depends on several factors - such as demographic issues and the burden of disease - there is no global target for the number of hospital beds per country.

Source: World Bank

Country-level

Civic Basics

Physicians density*

The number of medical doctors (physicians), including generalist and specialist medical practitioners, per 1,000 of the population. Medical doctors are defined as doctors that study, diagnose, treat, and prevent illness, disease, injury, and other physical and mental impairments in humans through the application of modern medicine.

Source: World Bank

Country-level

Civic Basics

Health & welfare

Corruption Perception Index*

A measure of perceived levels of corruption in the public sector at a national level. Data is sourced from Transparency International's Corruption Perception Index.

Source: Transparency International

Country-level

Compromisers

Sustainability

Recycled waste

Percentage of municipal solid waste diverted from landfill.

Source: Local city sources

City-level

Differentiators

Sustainability

Air pollution

Combination of measures of PM10 outdoor air pollution levels from the World Health Organisation (WHO) and the Numbeo Pollution Index of pollution in each city. The WHO's Public Health and Environment database provides annual mean concentrations of particulate matter 10 micrometers (PM10) in diameters or less which reflect the degree to which urban populations are exposed to this matter. The Numbeo Pollution Index is generated via survey based data. Numbeo attributes the biggest weight to air pollution, then to water pollution/accessibility, as the two main pollution factors. A small weight is given to other pollution types.

Source: World Health Organization & Numbeo

City-level

Civic Basics

Public park space

Proportion of a city's land area designated as public recreational and green spaces to the total land area. Excludes undeveloped rugged terrain or wilderness that is either not easily accessible or not conducive to use as public open space.

Source: Local city sources

City-level

Differentiators

Sustainability

Water risk

Water risks in a city related to quality, quantity and regulatory risk. Quality risks are defined as the exposure to changes in water quality that may impact on industrial production systems, resulting in the need for further investment or an increase in the operational costs of water treatment. Risks related to quantity are defined as the exposure to changes in water quantity (e.g. droughts or floods) that may impact a company's direct operations, supply chains and/or logistics. Regulatory risk refers to the unpredictability of regulations within the business environment. These risks arise when an unexpected change in water-related law or regulation increases a business' operating costs, reduces the attractiveness of an investment or changes its competitive landscape.

Source: World Resources Institute

City-level

Civic Basics

Thermal comfort

A thermal comfort score was created for each city by calculating the average deviation from optimal room temperature (72 degrees Fahrenheit). January, April, July and October heat indices were calculated for each city using an online tool that integrates average high temperature and corresponding relative evening humidity during each month. A final thermal comfort score was derived by first taking the difference between a city's heat index for each month and optimal room temperature and then averaging the absolute values of these differences.

Source: World Meteorological Organization, Weatherbase & NOAA

City-level

Civic Basics

Sustainability

Natural Disaster Risk

Risk of natural disasters occurring in or near a city. Counted hazards include hurricanes, droughts, earthquakes, floods, landslides and volcanic eruptions.

Source: Civitas

City-level

Civic Basics

Economics

Attracting FDI

Combined variable ranking the number of greenfield (new job-creating) projects, plus the total USD value of greenfield capital investment activities in a city that are funded by foreign direct investment (FDI). Data provided by fDi Intelligence.

Source: fDi intelligence

City-level

Differentiators

Productivity

Productivity is calculated by dividing the gross domestic product (GDP) in 2013 US dollars by employment in the city. Data provided by Oxford Economics.

Source: Oxford Economics

City-level

Differentiators

Rate of real GDP growth

2012-2014 gross domestic product (GDP) percentage growth rate in real terms expressed in 2013 US dollars. Data provided by Oxford economics.

Source: Oxford Economics

City-level

Differentiators

Economics

Ease of doing business**

Each city receives a score based on the Doing Business 2014 report, published by the World Bank. The report is a measure of business regulations and their enforcement across 189 economies. The report reflects each economy's performance across 10 areas: starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting minority investors, paying taxes, trading across borders, enforcing contracts and resolving insolvency.

Source: World Bank

City-level

Civic Basics

Cost of Living

A relative measure of the price of consumer goods by location, including groceries, restaurants, transportation and utilities. The CPI measure does not include accommodation expenses such as rent or mortgage.

Source: Numbeo

City-level

Civic Basics

Economics

GINI Index *

The GINI index measures the extent to which the distribution of income or consumption expenditure among individuals or households within an economy deviates from a perfectly equal distribution. A GINI index of zero indicates perfect equality while an index of 100 implies perfect inequality.

Source: World Bank

Country-level

Civic Basics

Purchasing Power

Domestic purchasing power is measured by an index of net hourly wages (where New York = 100) excluding rent prices. Net hourly wages divided by the cost of the entire basket of goods and services excluding rent. The basket of goods relates to 122 goods and services. Data sourced from UBS Prices and Earning report 2012.

Source: UBS Prices and Earning report

City-level

Civic Basics