The Role of Cities in Modelling Prosperity

April 5, 2024

citiIQ®

A system that objectively and comprehensively measures the health and wellbeing of a city or town

Global Headquarters: Toronto, Canada

www.citiiq.com

Agenda

1. The Global Landscape
2. The Importance of a City Strategy
3. The Role of Data Science
4. The CitiIQ Measurement System

750M City dwellers (30%)

World population **1950**
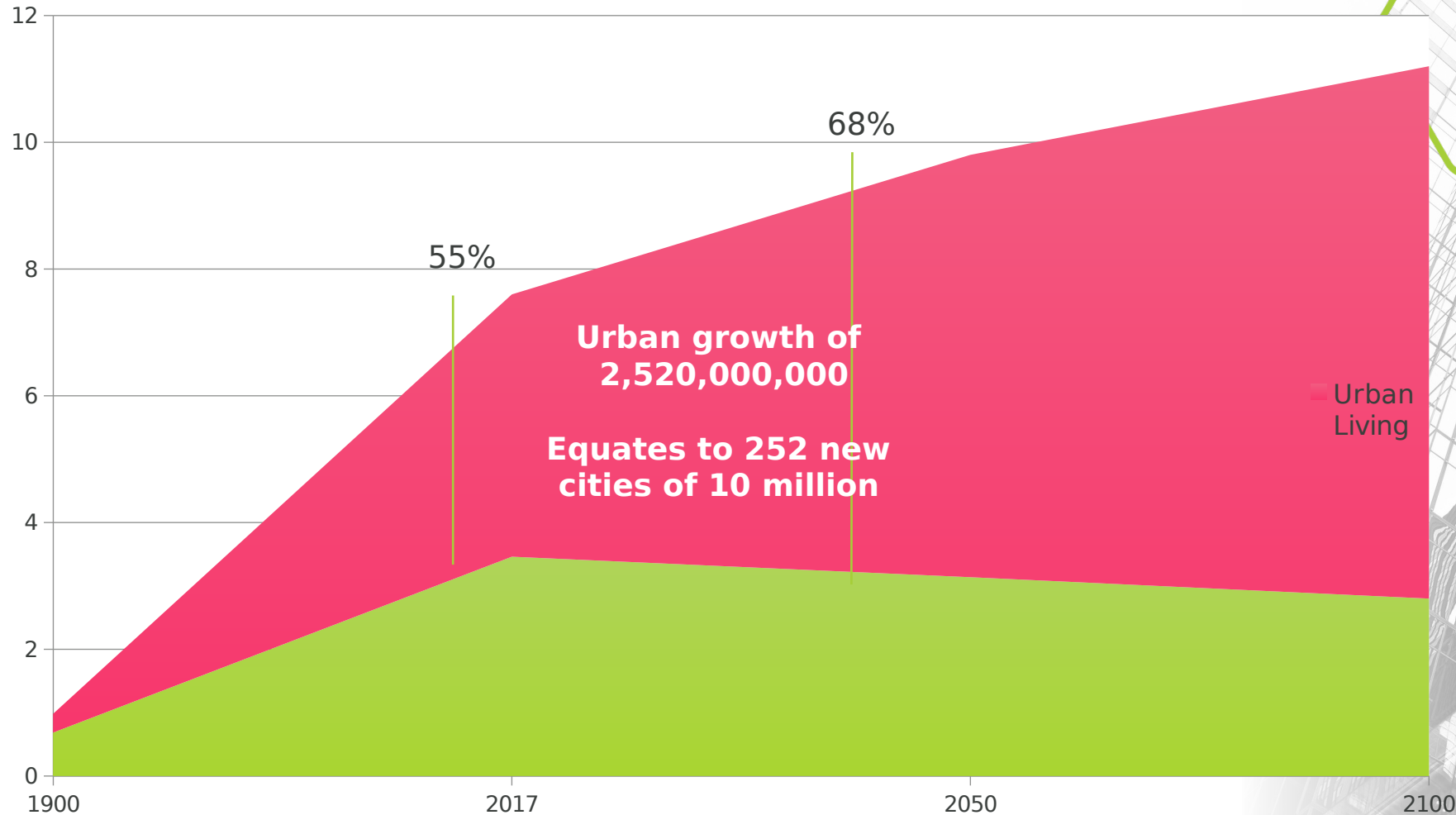
2.5B

6.8B City dwellers (70%)

A Global Shift

In 1950, only 30% of the world's population lived in cities.

A century later, that will be flipped. By 2050, it is expected that 70% of all people will live in cities, and just 30% will live in rural areas.

It's been a boom to global growth and the economy. In fact, McKinsey estimates that the top 600 urban centers generate an incredible 60% of the world's total GDP.

World population **2050** (projected)

Source:
UN DESA
report (2015)

9.7B

Global Population Growth (billions)

12

10 — 68%

8 — 55%

Urban growth of
2,520,000,000

6 — Urban Living

Equates to 252 new
cities of 10 million

4

2

0

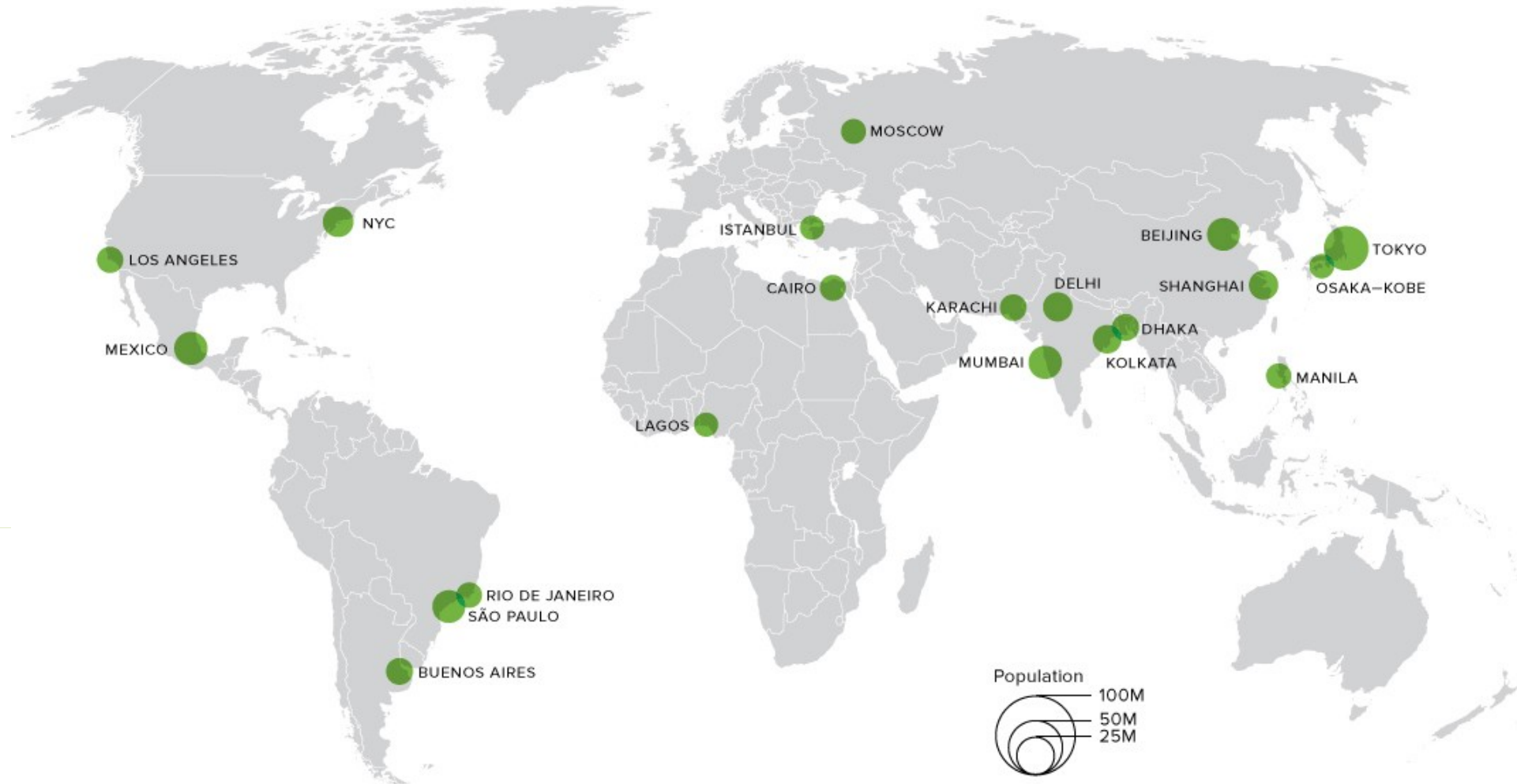1900   2017   2050   2100

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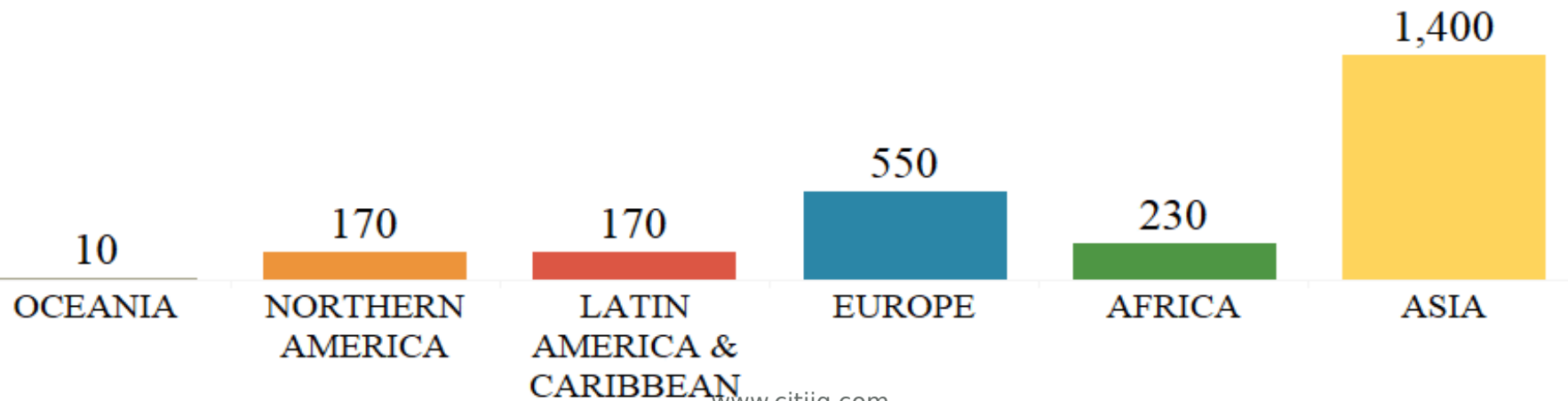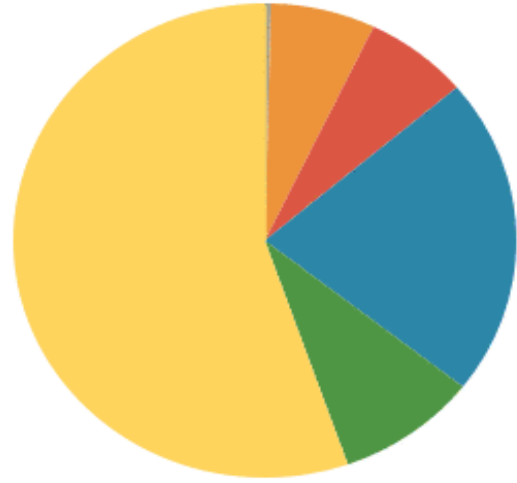# THE WORLD'S 20 MOST POPULOUS MEGACITIES (2010 - 2100)

A total of 13 African cities will surpass New York in size over the next 80 years
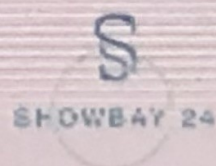
2010 TOP 20 CITIES BY POPULATION

MOSCOW

NYC

LOS ANGELES

ISTANBUL

BEIJING

TOKYO

MEXICO

CAIRO

SHANGHAI

OSAKA–KOBE

KARACHI

DELHI

DHAKA

MUMBAI

KOLKATA

LAGOS

MANILA

RIO DE JANEIRO
SÃO PAULO

BUENOS AIRES

Population
100M
50M
25M

Population in millions by region **1950**

Share of world population   **2.5B**

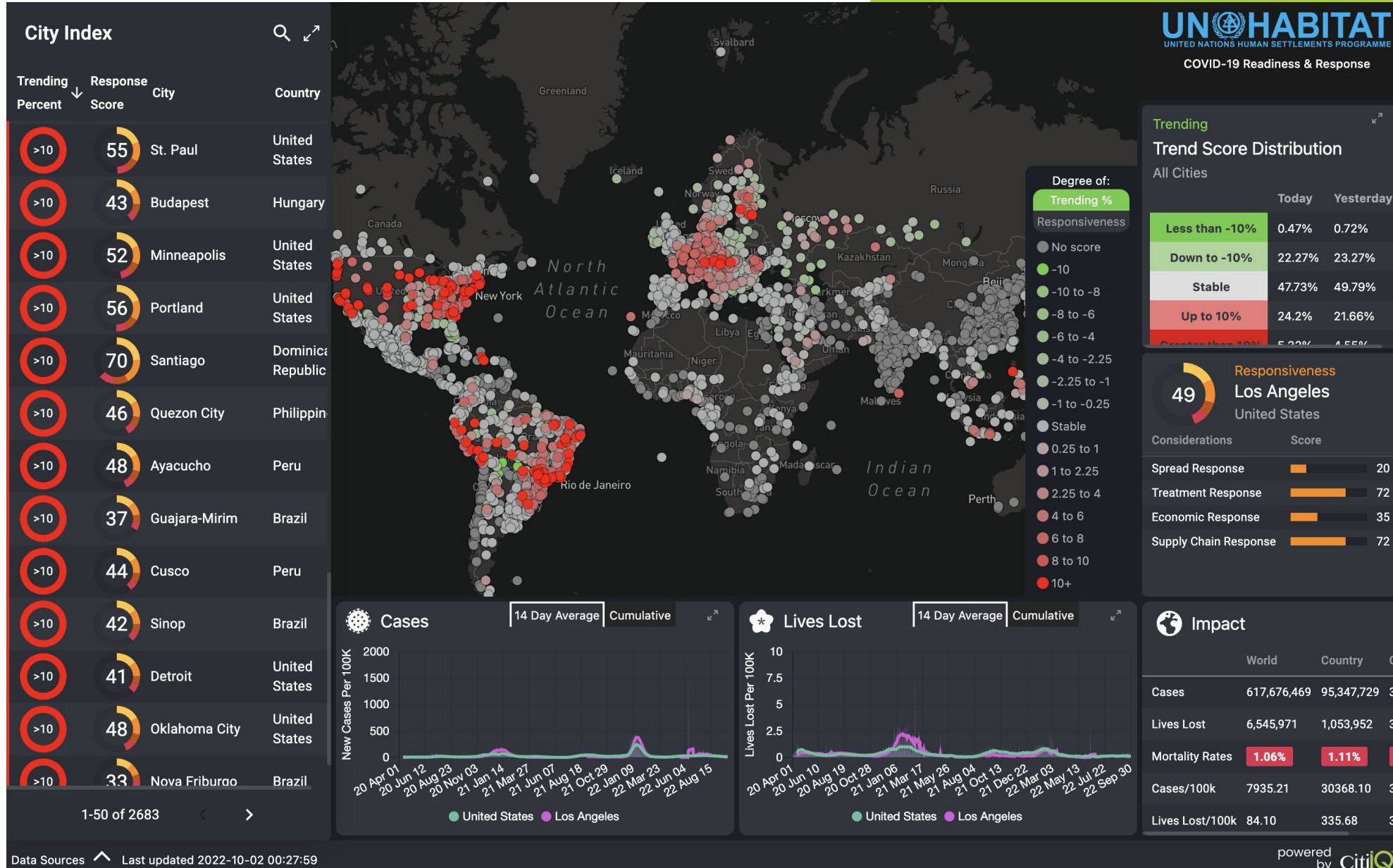| 10	170	170	550	230	1,400
OCEANIA	NORTHERN AMERICA	LATIN AMERICA & CARIBBEAN	EUROPE	AFRICA	ASIA
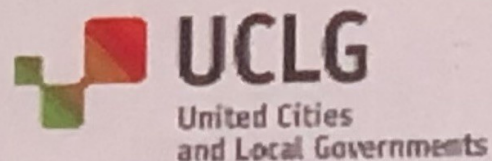
UN-Habitat Covid-19 Tracker

- Using CitiIQ data collection techniques, monitored the impact of Covid-19

- Tracked Covid cases, deaths, and recoveries

- Daily updates for over 2,600 cities

"Our Promise is in Peril"

Leave no on behind. That defining principle of the 2030 Agenda for Sustainable Development is a shared promise by every country to work together to secure the rights and well-being of everyone on a healthy, thriving planet. **But halfway to 2030, that promise is in peril. The Sustainable Development Goals (SDGs) are disappearing in the rear-view mirror – and with them the hope and rights of current and future generations. A fundamental shift is needed** – in commitment, solidarity, financing and action – to put the world on a better path. And it is needed now.

> **"** The SDG Summit in September must be a moment of unity to provide a renewed impetus and accelerated actions for reaching the SDGs."

ANTÓNIO GUTERRES, United Nations Secretary-General

LOCALIZING THE SDGs

" is the process of defining, implementing and monitoring strategies at the local level for achieving global, national, and subnational sustainable development goals."

The SDGs are global in their ambition, but their achievement will depend on local action and local leadership.

NEW URBAN AGENDA

H III

City Strategies

Circular City

- Builds on the principles of the Circular Economy
- Model of production and consumption that prioritizes reusing and recycling to reduce waste and increase sustainability.
- A circular city applies these principles to the implementation of infrastructure, services and products – making a durable, adaptable, and sustainable city.

Smart City

- Increases the efficiency of a city using technological instruments and sensors
- The collected data helps inform the management of city assets, resources and services – and increases collaboration
- Result is a more efficient city which maximizes citizen wellbeing.

15-Minute City

- Promotes access-oriented urban transformations.
- Intends for all residents to be within a 15-minute walk or bike ride to key necessities like transport, public services, and entertainment.
- 15-minute city encourages sustainability and improved livability.

Measurement

- Data measurement is essential to every city strategy.
- Measurement enables effective monitoring and evaluation of city projects and progress in sustainable development.
- The most beneficial city measurement strategies will prioritize a broad range of priorities and considerations.

NEOM

NEOM.COM

Using Data Science to help Cities

…you can only manage well

what you measure well

Cit**iQ**

Thesis:

If: **Cities will continue to face the extreme challenges arising from a dramatic urban surge;**

and if: **Resources will be chronically finite;**

and if: **The hope of ¾ of the worlds' people depends upon the *management of* their cities;**

and if: **We can only manage well, what we measure well;**

Then: *It has never been more important to establish a practical, comparable, framework to measure the health and wellbeing of our cities!*

CitiIQ®

Key Attributes of CitiIQ

- Standard scoring algorithm for the world

- Recognizes that human needs are the same for a small town or large city anywhere in the world

- Normalizes data to scores out of 100

- A framework for comparability

- Human Centric - uses non-linear aggregation

- Comprehensive/Interdependent - measures all 4 City Infrastructures

4 City Infrastructures

1. **Economic** Infrastructure:
   Creating a **Competitive** City

2. **Environmental** Infrastructure:
   Creating a **Livable** City

3. **Cultural** Infrastructure:
   Recognizing a city's **Heritage** and **Endowments**

4. **Social** Infrastructure:
   Creating a **Hopeful** and **Resilient** People

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Methodology

INDICATOR		CONSIDERATION		DIMENSION		CitiIQ SCORE
INDICATOR						
INDICATOR						
INDICATOR						

1	35	5	1

107

35 Primary Considerations of any city

BASIC EDUCATION

CHILDREN + YOUTH

COLLABORATION

CONNECTIVITY + COMMUNICATION

EXCELLENCE

EFFICIENCY

EMPLOYMENT

ENERGY SUPPLY

ENTERTAINMENT

ENVIRONMENTAL STEWARDSHIP

ETHICAL COMPASS

FAIR + JUST SYSTEM

FAMILY

GENDER EQUALITY

FOOD SECURITY

HEALTHY LIFESTYLE

HIGHER EDUCATION

HOPE

INNOVATION + ENTREPRENEURSHIP

INVESTMENT

MOBILITY + TRANSPORTATION

POLITICAL STABILITY

PUBLIC HEALTH

PUBLIC WELFARE

QUALITY OF LIFE

RESILIENT INFRASTRUCTURE

SAFETY + SECURITY

SHELTER + HOUSING

SOCIAL ISOLATION

TALENT POOL

TOURISM

TRADE

URBAN DESIGN

WASTE MANAGEMENT

WATER SUPPLY

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A Hierarchy of Needs with 5 Dimensions

DESTINY

LIVABILITY

OPPORTUNITY

COMPETITIVENESS

BASIC NEEDS

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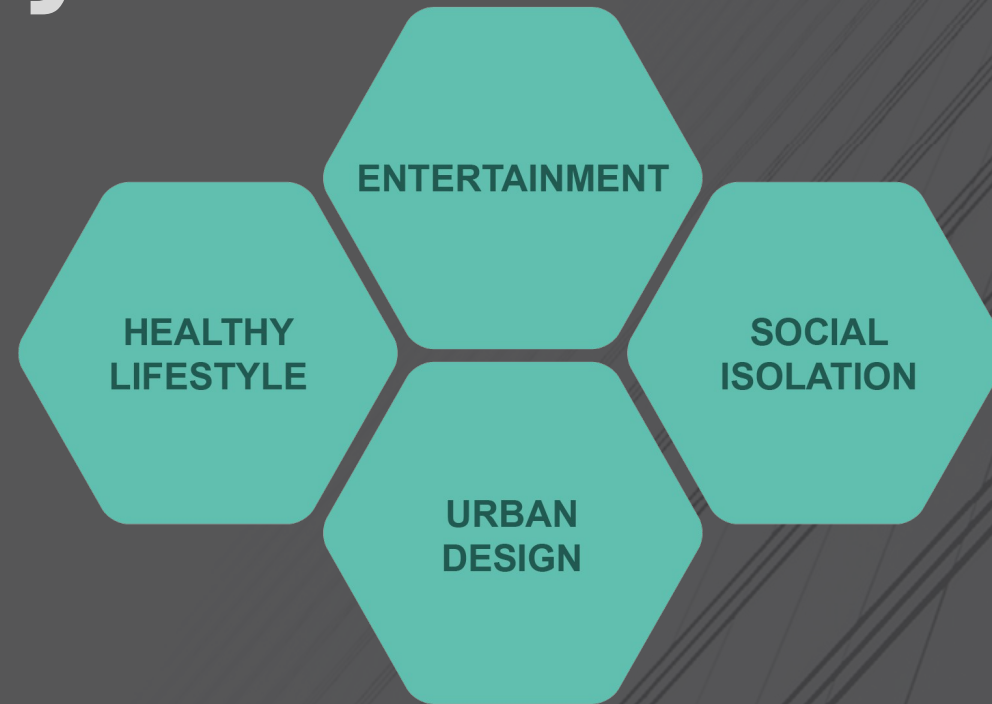35 Considerations arranged by dimension

Basic Needs

Opportunity

- TALENT POOL
- INNOVATION + ENTREPRENEURSHIP
- HIGHER EDUCATION
- GENDER EQUALITY
- CHILDREN + YOUTH

107 Indicators

- Access to Education
- Adolescent Motherhood
- Affordability of Dining
- Affordability of Entertainment
- Air Quality
- Airport Throughput
- Annual Economic Growth
- Arts and Culture Community
- Availability of Nursing Personnel
- Balanced Distribution of Age Demographic
- Basic Internet Connection
- Business Start-Up Time
- Child Labour
- Child Nutrition
- City Restaurants
- Communications Infrastructure
- Commute Time
- Consumer Confidence
- Corruption
- Cost of Borrowing
- Cost of Living
- Credit Rating
- Current Account Balance

- Dedicated Cycleways
- Developed Business Climate
- Distribution of Gross Domestic Product
- Domestic and International Security
- Energy Network Efficiency
- Entertainment Reputation
- Female Political Representation
- Food Supply Reliability
- Foreign Investment
- Freedom of Speech
- Global Prominence
- Government Fiscal Independence
- Green Space
- Greenhouse Gas Emissions
- Healthcare Personnel
- Healthy Population Weight
- High-Capacity Public Transport
- High Speed Cellular Services
- High Speed Internet Connection
- Homelessness
- Hospital Capacity
- Household Capacity
- Household Income

- Housing Affordability
- Income Equality
- Innovative Research Institutions
- International Trade
- Investment Risk
- Job Creation
- Labour Force Gender Equality
- Mitigation of Diabetes
- Mitigation of Infectious Diseases
- Mobile Phone Usage
- National Economic Strength
- National Gender Equality
- National Population Happiness
- Patented Innovations
- Population Above Poverty Threshold
- Population Density
- Population Electricity Access
- Population Life Expectancy
- Population Literacy
- Postgraduate Degrees

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107 Indicators

- Prevention of Child Mortality
- Prevention of Drug-Related Deaths
- Primary Education Student-Teacher Ratio
- Primary Level Education Endurance
- Proportion of Two-Parent Families
- Protection Against Natural Disaster
- Protection Against Sexual Violence
- Provision for Paid Parental Leave
- Proximity to Air Transit
- Proximity to Public Transit
- Public Access to Appropriate Shelter
- Public Infrastructure Supply
- Public Transport Ridership
- Recycling Services
- Refuse Collection Services

- Renewable Energy
- Research and Development
- Safety from Domestic Abuse
- Secondary Level Education Endurance
- Security from Homicide
- Sights and Landmarks
- Sporting and Event Facilities
- Strength of Fire-related Emergency Services
- Strength of Police-related Emergency Services
- Suicide Prevention
- Sustainable Access to Basic Sanitation
- Sustainable Access to Basic Water Sources
- Sustainable Access to Safely Managed Sanitation
- Sustainable Access to Safely Managed Water Sources
- Sustainable Population Fertility

- Taxation of Income
- Taxational Barriers to Investment
- Tertiary Degrees
- Tourism Revenue
- Tourism Visits
- Transportation Fatalities
- Unemployment
- Universities Ranking
- Voter Participation
- Youth Suicide Prevention
- Youth Wellbeing

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Indicators

Dimensions

Basic Needs

Competitiveness

Opportunity

Livability

Basic Needs dimension:
- Three Waters
- Waste Management
- Energy Supply
- Social Welfare
- Shelter/Housing
- Basic Education
- Safety + Security
- Employment
- Character + Moral Compass
- Public Health
- Food Security

Competitiveness dimension:
- Mobility + Transport
- Fair + Just System
- Resilient Infrastructure
- Connectivity + Communication
- Investment
- Trade
- Efficiency
- Political Stability

Opportunity dimension:
- Female Equality
- Children + Youth
- Talent Pool
- Innovation + Entrepreneurship
- Higher Education

Livability dimension:
- Environmental Stewardship
- Urban Design
- Healthy Lifestyle
- Entertainment
- Tourism
- Social Isolation

- Collaborative Community
- Signature/Identity
- Excellence
- Hope

Scoring of over 4,000 cities providing a framework for Global comparison

Global4000 by CitiIQ

CitiIQ

CitiIQ

John Smith

- Dashboard
- City Scores
- City Profile
- Sustainable Development Goals
- Trend
- Methodology
- Urban Monitoring Framework
- Admin

Dashboard

Since data availability differs among cities, each Overall city score is rated with up to 5 stars to illustrate the quality of the data inputs used to derive the score. 5 stars suggests the highest quality of data.

Overall Score
44
⭐⭐⭐☆☆
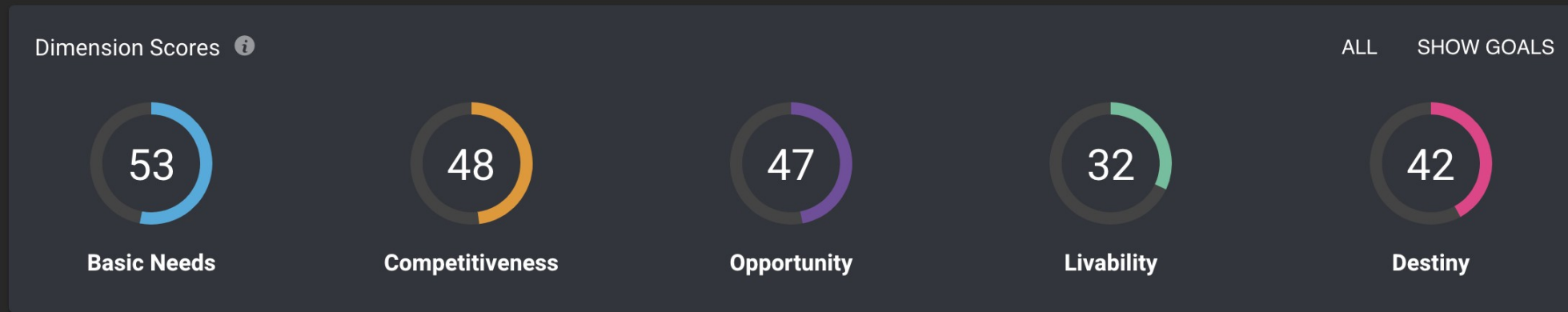
Dimension Scores
SHOW GOALS

53	48	47	32	42
Basic Needs	Competitiveness	Opportunity	Livability	Destiny

Watch List — EDIT
Considerations

Consideration	Dimension	Score
Connectivity + Communication	Competitiveness	53
Energy Supply	Basic Needs	63
Resilient Infrastructure	Competitiveness	55
Environmental Stewardship	Competitiveness	52

Consideration Comparison
Basic Needs

⚫ Previous Quarter 🔵 Current Quarter

- Basic Education
- Employment
- Energy Supply
- Ethical Compass
- Family
- Food Security
- Public Health
- Public Welfare
- Safety + Security

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← City Scores

Dimension Scores ⓘ

ALL   SHOW GOALS

53	48	47	32	42
Basic Needs	**Competitiveness**	**Opportunity**	**Livability**	**Destiny**

Sort by: High to Low

Basic Needs

76 Basic Education	64 Ethical Compass	63 Energy Supply	57 Safety + Security
56 Waste Management	55 Water Supply	54 Employment	46 Food Security
46	42	41	39

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Kisumu
Kenya

34

Population (Metro Area)	Currency	Municipal GDP (B USD)	Area Km2	Current Temp.
610082	Kenyan shilling	3.9000	297.00	21°C

City Scores

48	45	40	31	27
Basic Needs	**Competitiveness**	**Opportunity**	**Livability**	**Destiny**

Sort by: **High to Low**

Competitiveness
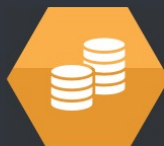
57 Investment	53 Fair + Just System	53 Political Stability	48 Connectivity + Communication
42 Resilient Infrastructure	**42 Trade**	**39 Efficiency**	**26 Mobility + Transportation**

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34 Kisumu
Kenya

Population (Metro Area)
👥 610082

t Temp.
1°C

Basic Needs — 48
Competitiveness — 45
Op...

to Low ▾

Competitiveness

57 Investment	53 Fair + Just System	...ctivity + munication — 48
42 Resilient Infrastructure	42 Trade	Mobility + ...sportation — 26

← 👁
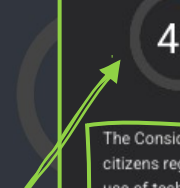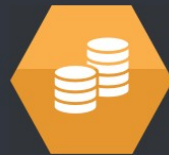
Consideration
Resilient Infrastructure

City Scores

Score
42 Derived from indicators that are first normalized and then applied in proportions.

Weighting
12% How much this consideration affects the dimension score.

The Consideration of Resilient Infrastructure identifies the ability of a city to meet the needs of its citizens regarding the maintenance and preparedness of infrastructure. Resilience is the efficient use of technology and resources to provide sustainable buildings and communities that can grow over time. Futureproofing is the process of anticipating the future based on existing data sets from local and international data trends, and developing methods and infrastructure that minimise the effects of shocks and stresses of future events such as: - Natural Disasters - Population Growth - Energy Harvesting & Resourcing - Climate Change For a city to be competitive and thrive into the foreseeable future, it must ensure its longevity, quality of service, livability and sustainability. A modern city must build in a way that is conducive to future growth to facilitate success in all facets of city life, from the economic to the environmental and the social. Future-proof infrastructure is a vital measure of a city's resilience and is further indicative of its competitive positioning.

Indicators
The Indicators and their proportional contribution to this score.

16 4.24% Domestic and International Security	**85** 11.88% Greenhouse Gas Emissions	
19 9.58% High Capacity Public Transport	**73** 6.79% High Speed Cellular Services	
10 11.52% High Speed Internet Connection	**20** 4.24% Protection Against Natural Disaster	
40 13.82% Public Infrastructure Supply	**19** 4.85% Public Transport Ridership	
70 15.76% Renewable Energy	**23** 11.52% Sustainable Access to Safely Managed Sanitation	
43 5.82% Sustainable Access to Safely Managed Water Sources		

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Admin Admin

- Dashboard
- City Scores
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Compare Cities ⊕   Q4'21 ▾

Dimensions

59	Abu Dhabi United Arab Emirates
36	Accra Ghana
46	Ad Dammam Saudi Arabia
34	Addis Ababa Ethiopia
63	Adelaide Australia
41	Ahmadabad India

Highest Competitiveness
72
Oslo
Norway
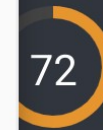
Highest Opportunity
74
Toronto
Canada

Highest Livability
71
London
United Kingdom
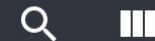
Highest Destiny
70
London
United Kingdom

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Dashboard

City Scores

City Profile

Trend

Methodology

All

Multi-City Scores

City	Overall	Basic Needs	Competitiveness	Opportunity	Livability
Nairobi Kenya	41	54	45	49	36
Accra Ghana	36	51	43	42	32
Kisumu Kenya	34	48	45	40	31

Multi-city Dashboard

Overall	Dimensions

● Basic Needs   ● Competitiveness   ● Opportunity   ● Livability   ● Destiny

Dimension: Basic Needs

Energy supply

Kumasi : 63.3
Accra : 62.6
Tema : 63.3
Cape Coast : 63.3
Sekondi Takoradi : 65.3
Sunyani : 63.3
Obuase : 63.3
Techiman : 63.3
Kyebi : 63.3
Komenda Edina Eguafo
Abirem : 63.3
Ketu North : 63.3
Tamale : 63.3

City	Value
Kumasi	55.3
Accra	53.1
Tema	51.1
Cape Coast	49.2
Sekondi Takoradi	49.2
Sunyani	49.0
Obuase	48.1
Techiman	47.3
Kyebi	47.0
Komenda Edina Eguafo Abirem	46.1
Ketu North	45.8
Tamale	44.1

Axis: 0   10   40   50   60   70   80   90   100

CitiIQ's SDG Tracker

- Captures the change in SDG progress between quarters and across a year.

- CitiIQ Considerations map to the SDGs, so changes in Consideration scores instruct changes in the SDG trends.

- Informs VLR/VNR of SDGs

CitiIQ Maps to the 17 SDGs

CitiIQ's SDG Tracker in Action

Example case: SDG 11- *Make cities and human settlements inclusive, safe, resilient and sustainable*

11 SUSTAINABLE CITIES AND COMMUNITIES

Targets:

- *Access to safe, affordable housing and basic services*
- *Access to safe, affordable, and sustainable transport*
- *Inclusive and sustainable urbanization*
- *Protect cultural and natural heritage*
- *Reduce losses from natural disaster*
- *Reduce adverse environmental impact of cities*
- *Accessible and safe public green spaces*

CitiIQ Consideration Matches:

- *Shelter and Housing*
  - *Housing affordability, access to shelter, access to basic services, etc.*
- *Environmental Stewardship*
  - *Air quality, green space, GHG emissions, renewable energy, etc.*
- *Mobility and Transportation*
  - *Transport ridership, proximity to public transport, cycleways, etc.*
- *Quality of Life*
  - *Arts and culture community, social isolation etc.*
- *Safety and Security*
  - *Disaster mitigation and protections, security from crime, etc.*

Value for City Stakeholders

- Assess strengths and weaknesses
- Gain consensus and set goals
- Compare cities
- Monitor SDG progress
- Conduct VLR/VNR
- Report to stakeholders
- Obtain financing/investor opportunities
- No staff to be hired
- No software to be developed

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Thoughts

1. As increased focus is placed on Municipal Strategies....

2. Adopt a National "Municipal Measurement Framework"

3. Identify, prioritize and incentivize key municipal strategies

4. Measure and compare municipal progress over time

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