URBAN ENVIRONMENT & SOCIAL INCLUSION INDEX

www.datadrivenlab.org/urban

POLICYMAKERS' SUMMARY - 2020

What is the UESI?

Cities will shape the future of our planet. Like never before, cities are where people confront environmental problems and tackle the challenges of sustainable development.

Why don't we know more about their performance? Does where one lives affect the quality of the air they breathe? Does income determine one's environmental quality of life?

The Urban Environment and Social Inclusion Index (UESI), created by the Data-Driven EnviroLab (Data-Driven Lab) provides a first-of-its-kind look at the ways cities perform at the intersection of environment and social equity.

The Index incorporates novel geospatial datasets, including remotely-sensed data and open-source datasets, alongside more traditional data sources, to understand urban environmental performance and social inclusion across the globe.

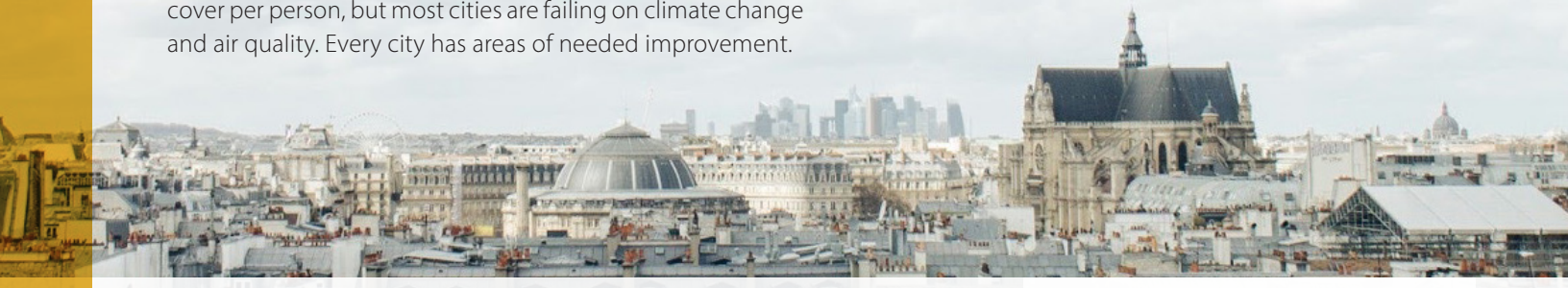
To explore in more detail, visit the UESI portal: **datadrivenlab.org/urban**

KEY FINDINGS

Environmental benefits and burdens are distributed unequally among urban residents. The UESI results show that in most cities, wealthy and poor, poorer populations bear the greatest environmental burdens, face disproportionate levels of air pollution and urban heat, and lack access to public transit and tree cover. Even in cities with strong environmental performance, low-income communities do not receive their fair share of these benefits.

Cities' environmental performance varies widely across different issues areas. Many already provide adequate tree cover per person, but most cities are failing on climate change and air quality. Every city has areas of needed improvement.

Wealthy cities tend to have higher environmental performance than lower-income cities. North American and European cities, which tend to have higher levels of income per capita, perform better on the UESI's environmental metrics, while rapidly urbanizing cities in Asia score lower. But there are some cities in Africa that perform better than their economic development levels would suggest.

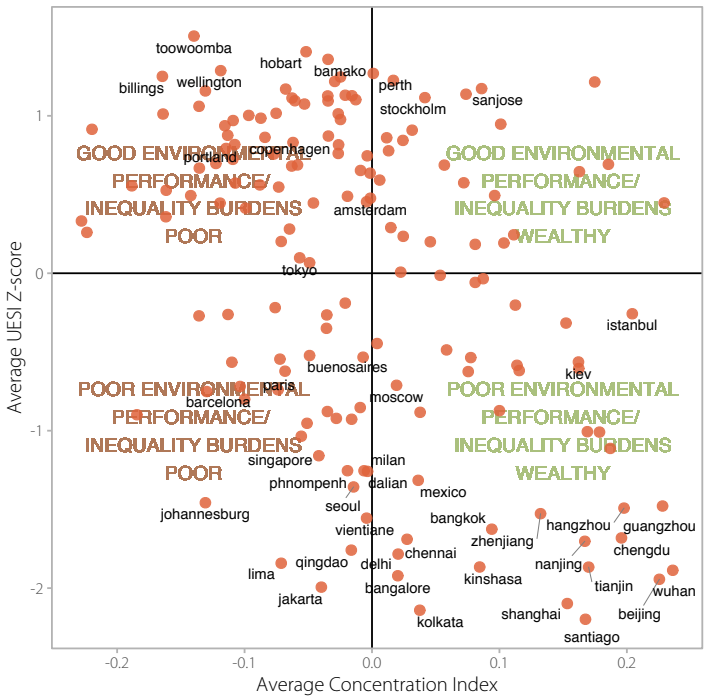


DATA DRIVEN ENVIROLAB

Data-Driven EnviroLab, an interdisciplinary collaboration of policy experts, data scientists, visual designers, and interactive programmers at Yale-NUS College in Singapore and beyond.

In collaboration with SAMUEL CENTRE FOR SOCIAL CONNECTEDNESS

Figure 1. Overall relationship between UESI environmental performance and social inclusion.



Air pollution is one of the biggest urban environmental threats to human health. 86 percent of people living in the UESI's cities breathe air that does not meet the World Health Organization's guideline (10 micrograms per cubic meter) for safe exposure to fine particulate pollution ($PM_{2.5}$).

Nearly a quarter of cities are water stressed. Some, including Charlotte, Kolkata, Chennai, Fortaleza, Santiago, and Tel Aviv, rely on water sources where almost the entire available water supply is withdrawn each year for urban, agricultural, and industry use.

Between 2001 and 2016, UESI cities lost more than 3,000 square kilometers of urban tree cover, an area roughly four times the size of New York City. Vientiane, Coimbra, Fortaleza, and Bengalore experienced particularly large losses, which may reflect the replacement of vegetated space by new developments and city infrastructure.

In many cities, the urban poor are more exposed to the impacts of climate change. The urban heat island effect is worse for cities with lower tree cover or more built infrastructure.

Less than half of UESI cities have an average access to public transit that's within walking distance. Access ranges from near universal coverage in cities like Athens, Brussels, Paris, Porto, and Boston to less than five percent in cities including Bridgeport, Billings, and Toowoomba.

Figure 2. Global map of UESI cities.