

nature INDEX 2018 SCIENCE CITIES

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COUNTING CAPITAL COSTS

Cities are the ideal setting for scientific exploration. They attract bright and diverse minds, buzz with creative activity, and can summon the capital to realize big ideas. But their potential can be stifled by social realities. Each of the five science cities profiled in this supplement are contending with problems of equity and engagement which, if not addressed, threaten their trajectories.

When it comes to the long-term viability of a science hotspot, local matters count as much as global positioning. Perhaps part of the solution lies in pursuing and rewarding the type of science that engages directly with local communities, and achieves impact.

San Francisco's sci-tech revolution has contributed to soaring housing costs, which could undermine the California metropolis's position as a leading region of innovation (S6). Wuhan is at risk from talent-poaching campaigns by richer coastal cities, as the competition for research supremacy intensifies in China (S16). The fault lines run deep in Cape Town, South Africa, where elite universities are

under growing pressure to address inherited racial and gender inequalities (S2).

At the global scale, some degree of benefit sharing is taking place. An analysis of highly-cited research reveals that the gap between top-tier and second-tier cities narrowed between 1999 and 2014 (S18). Similar trends are apparent in the Nature Index, which measures a city's fractional count (FC), a metric for the share of contribution to the authorship of articles in 82 high-quality research journals.

In a highly connected world, cities can't take success for granted. Even though Beijing has emerged as a dominant producer of high-quality research, for example, its share of China's output has declined since 2012, as Nanjing, Wuhan and Guangzhou nestle in. Cities remain powerful units of scientific production, yet each urban centre's capacity is subject to change. Staying on top means paying heed to more than research funding.

Smriti Mallapaty

Senior editor, Nature Index

The cape of change

S2: Cape Town is confronting its colonial past to set a more inclusive research scene.

A venture under pressure

S6: Scientific innovation has powered the San Francisco Bay Area's economy, but local challenges could undermine progress.



City links

S8: Graphic of the top collaborating cities in the index.

A European heavyweight

S14: A rich research network has secured Munich's position as a centre of science in the region.

Discovery central

S16: A hive of young talent, Wuhan has surged up the Nature Index, but competition for minds is heating up.

Peripheral forces

S18: The growing impact of second-tier cities is narrowing the gap in knowledge production.

Standing firm

S22: An island of success in a stricken country, how much more can São Paulo endure?

The tables

S24: The world's cities ranked by their production of high-quality research.



ON THE COVER

The Nature Index profiles five science cities that are leaders in their regions: Cape Town, San Francisco, Munich, Wuhan and São Paulo.

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