

Cityscapes

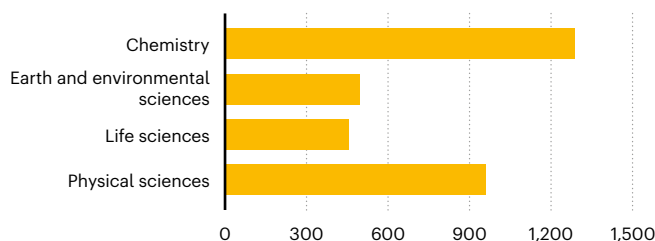
Sizing up the success of the world's science hotspots. Data analysis by Bo Wu. Infographic by Tanner Maxwell.

1. BEIJING

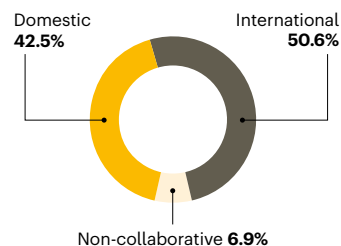
- **Population:** 21.5 million
- **GDP per capita:** US\$23,800
- **Share 2019:** 2,846.4 (+40.8%)*
- **Count 2019:** 6,018

Despite substantial progress towards clearing them, Beijing's notoriously polluted skies remain one of its biggest public policy and scientific challenges. Between 2005 and 2018 the city's reliance on coal burned for power fell from 30 million tonnes to only 4 million tonnes. Beijing's largest source of energy is now solar, contributing more than 30% in 2017. Beijing is home to the Chinese Academy of Sciences, which leads the index in Share, including in the Earth and environmental sciences.

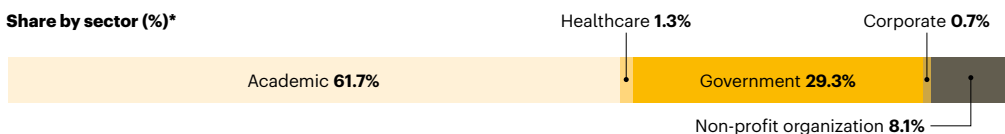
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Share by sector (%)*

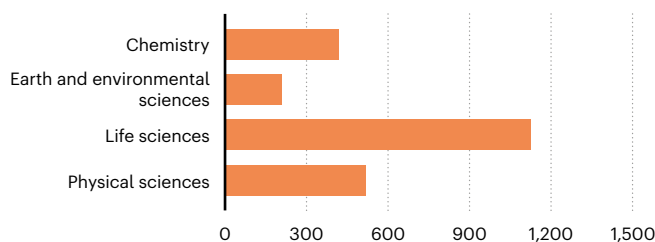


2. NEW YORK

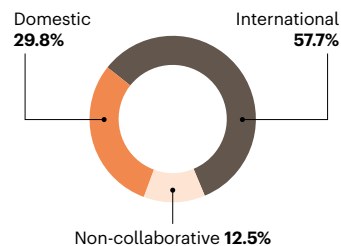
- **Population:** 20.3 million
- **GDP per capita:** US\$71,000
- **Share 2019:** 2,066.4 (-10.3%)*
- **Count 2019:** 4,894

The New York metropolitan area, home to more than 5.5 million foreign-born residents, is a global winner in the competition to attract and retain human capital, a key factor in its number one ranking for competitiveness by Kearney. However the city's top position is threatened by negative trends in liveability, foreign direct investment, entrepreneurship, private investment and a general decline in doing business. The New York metropolitan area's top institution in the Nature Index, Yale University in New Haven, Connecticut, ranks 9th globally in the life sciences.

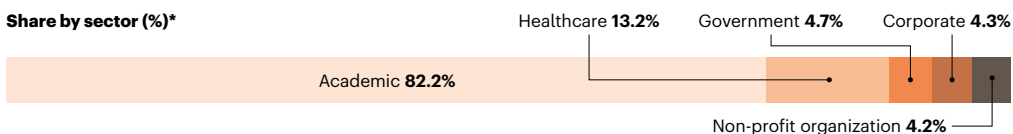
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Share by sector (%)*

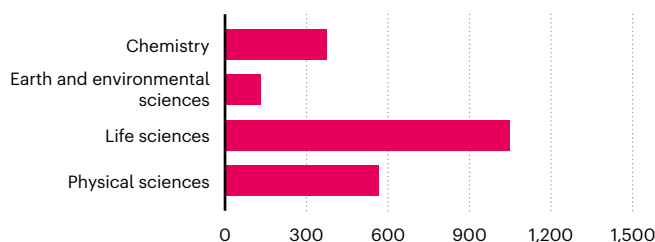


3. BOSTON

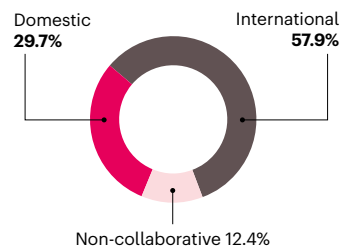
- **Population:** 4.9 million
- **GDP per capita:** US\$78,500
- **Share 2019:** 1,909.8 (-5.5%)*
- **Count 2019:** 4,325

Boston's strategy for innovation districts focuses on mixed-use areas that geographically integrate academic institutions, start-up incubators and mass transit. The Boston Waterfront Innovation District, established in 2010, revitalized roughly 4 square kilometres of industrial facilities, boasting more than 200 new companies and 4,000 new jobs within three years. In nearby Cambridge, the Massachusetts Institute of Technology (MIT), ranked 6th in the index, anchors Kendall Square, which according to MIT, is home to the greatest concentration of biotechnology companies in the world.

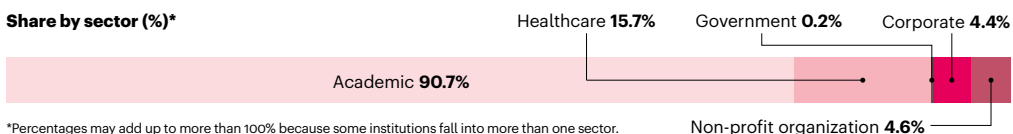
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Share by sector (%)*



*Percentages may add up to more than 100% because some institutions fall into more than one sector.

A RANKING OF RANKINGS

The Nature Index top 5 science cities according to 5 different independent indices. City boundaries used may vary between the selected rankings, and be different from the metropolitan area definitions used by the Nature Index.

Sustainability

- Arcadis Sustainable Cities Index 2018
- 110 cities are ranked by weighted average of 48 indicators related to quality of life, economic strength and the environment.

Competitive

- Kearney 2019 Global Cities Index
- 130 cities are scored using 27 metrics across 5 categories, with business and human capital highly weighted.

Innovation

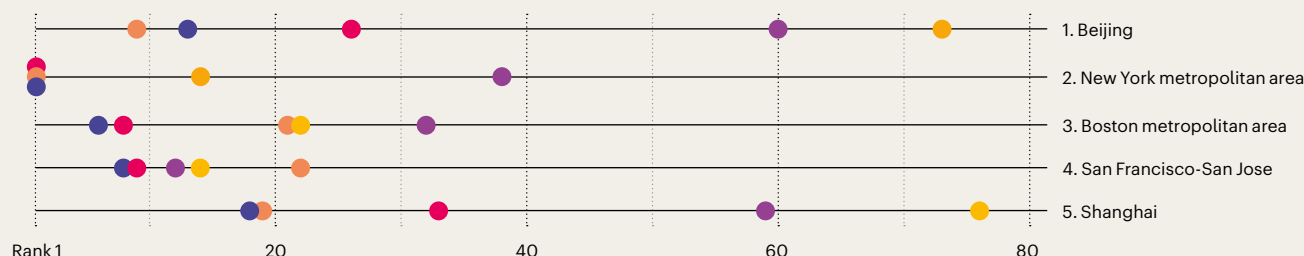
- Innovation Cities Index 2019
- 500 cities are ranked on 162 indicators of the quality and number of innovation sources found in their cultural assets, infrastructure and economies.

Smart cities

- IMD Smart City Index 2019
- 102 cities are ranked based on a survey of citizens' perceptions of the infrastructure and technology available to them.

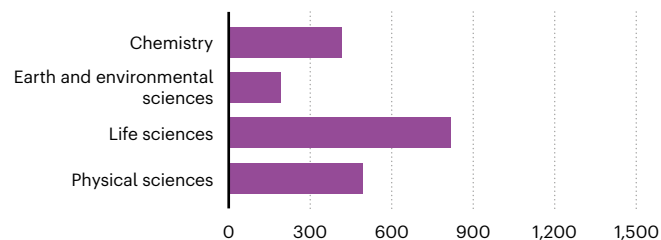
Research and development

- Global Power City Index 2019
- 48 cities are ranked on 8 indicators, for example, highly ranked universities, academic performance in maths and science, R&D expenditure and start-up environment.

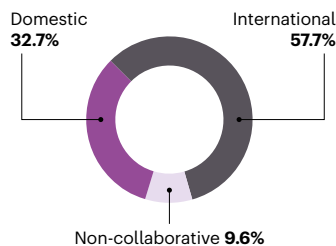


Variations in area definitions affect direct comparisons; figures are intended as a guide only.

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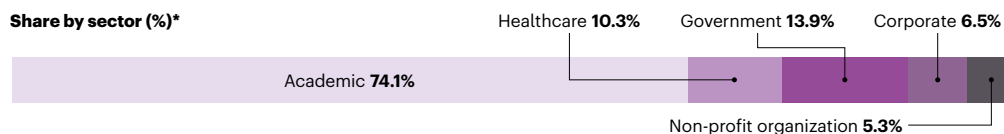


4. SAN FRANCISCO-SAN JOSE

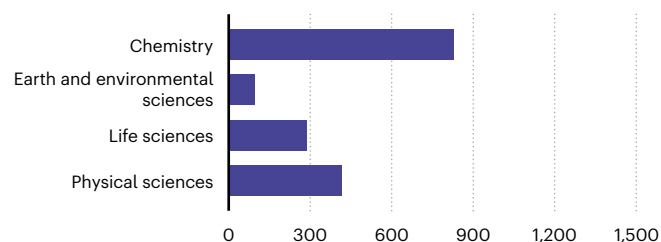
- Population:** 8.7 million
- GDP per capita:** US\$131,000
- Share 2019:** 1,692.5 (-10.7%)*
- Count 2019:** 3,979

San Francisco, home to Silicon Valley, brought the world integrated circuits, synthetic insulin and mail-order genetic tests, among other innovations. Highly rated by its citizens for job creation, cultural activities and citizen engagement, the downsides of its success in high-technology industries include income inequality and a lack of affordable housing. Stanford University ranks 5th globally for Share in the Nature Index and 1st in the city across all four natural sciences fields, while Alphabet, Google's parent company, had the area's fastest rising adjusted Share 2015-19.

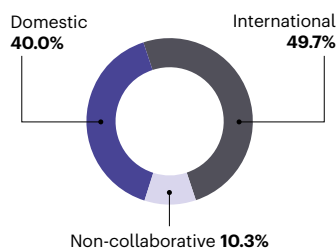
Share by sector (%)*



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5. SHANGHAI

- Population:** 24.2 million
- GDP per capita:** US\$22,800
- Share 2019:** 1,480.5 (+38.6%)*
- Count 2019:** 3,227

Of the top 10 cities in the 2019 Global Power Cities Index ranking from Japan's Mori Memorial Foundation, 5 are in the US, while Tokyo is the highest ranked in Asia. Shanghai, at 18th, is 7th in Asia, also preceded by Seoul (5th), Hong Kong (10th), Singapore (11th), Beijing (13th), and Osaka (17th). The Shanghai municipal government announced in 2017 that it would seek to attract foreign R&D centres by providing policy and financial support, simplified exit and entry procedures and customs clearance. In 2017, Shanghai boasted 416 foreign R&D centres, one-quarter of the total in China.

Share by sector (%)*



*Change in adjusted Share 2015-19

ADDITIONAL SOURCES: OPENDATANETWORK.COM, SINA.COM, WIKIPEDIA

Correction

This Index infographic misstated the populations of Beijing and Shanghai. Beijing hosts 21.5 million people, and Shanghai hosts 24.2.