

2018

Scientist's Ideal City Global Survey Report



Shanghai Institute for Science of Science

Address: 10-11F, No. 1525, West Zhongshan Rd., Shanghai

Tel: 021-64381056

website: www.siss.sh.cn

Email: siss@siss.sh.cn

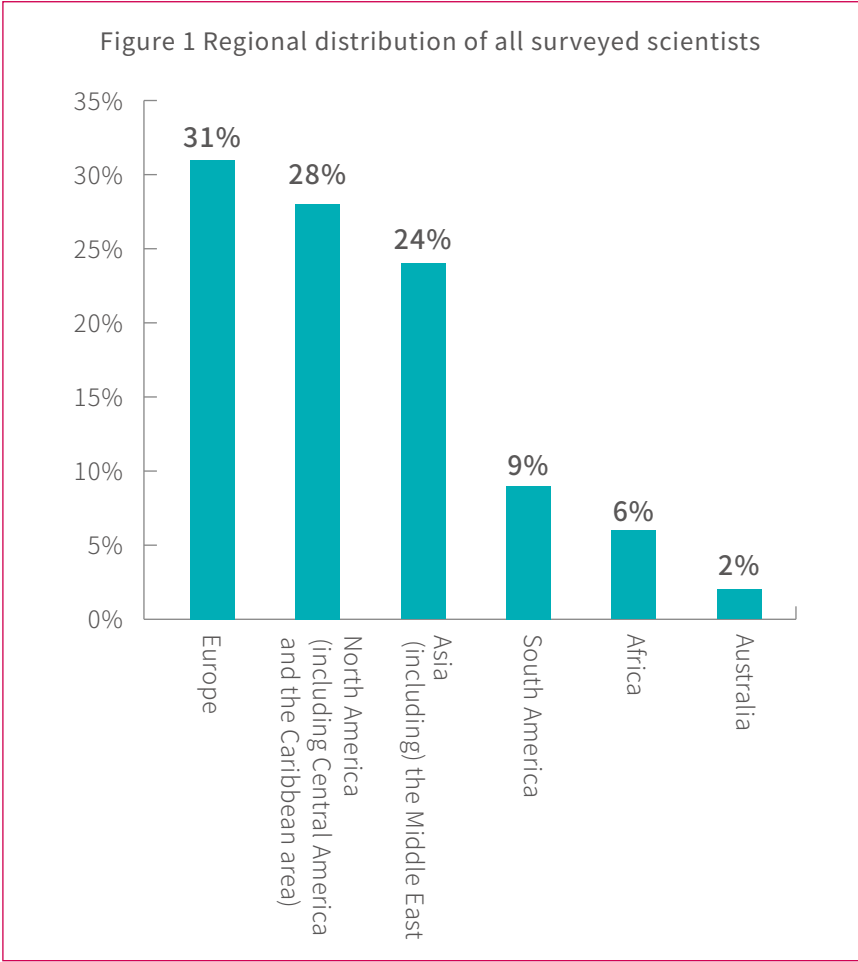


上海市科学研究所
SHANGHAI INSTITUTE FOR SCIENCE OF SCIENCE
格物致知 咨政益世

Table of contents

1	Shanghai has become the most desirable Chinese city for scientists worldwide to work	01
2	The open and inclusive urban culture of Shanghai is attractive to scientists worldwide	05
3	The good research conditions and innovative culture are the key elements to attract scientists	07
4	Young core-force academic scientists are most interested in coming to work in Shanghai	11
5	Global scientists are generally optimistic about the prospects of Shanghai to build the Science and Technology Innovation Center	13
6	The policy choices and countermeasures for Shanghai to build a global science and technology innovation center	15
Annex 1 Description of the investigation progress		17
Annex 2 Introduction to research institutions		19

In order to analyze Shanghai’s advantages and disadvantages in attracting and gathering talents in the construction of the global science and technology innovation center, and support Shanghai to accelerate the establishment of a global high-tech talents highland, Shanghai Institute for Science of Science entrusted Springer Nature in 2018 to develop the questionnaire survey facing the first-line scientists of major countries and regions around the world (collecting 654 complete questionnaires, mostly are from associate professors and above, with regional distribution shown in Figure 1), to understand the main reasons why the scientists worldwide choose the cities and regions to live, work and start businesses; the main factors of a city to attract international high-end scientific and technological innovation talents, and makes suggestions for Shanghai to further attract the gathering of scientific and technological innovation talents and accelerate the construction of the global science and technology innovation center.



Note: All the scientists surveyed are from the authors and readers of academic journals of the Springer Nature Group, which were randomly selected according to the approximate proportion of readers in major countries and regions around the world.

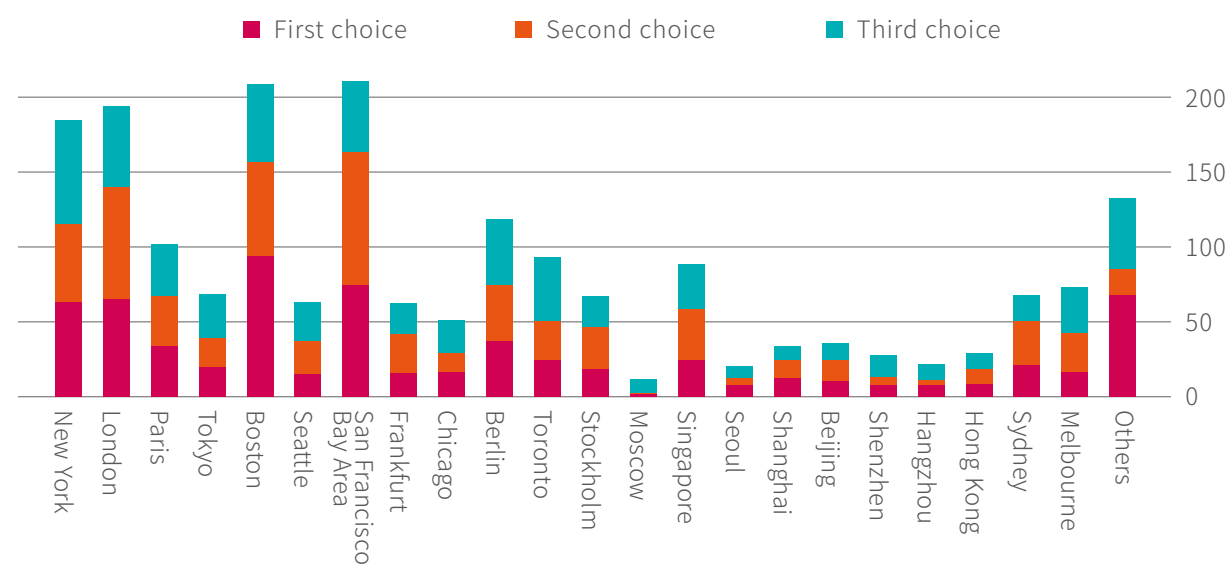


1. Shanghai has become the most desirable Chinese city for scientists worldwide to work

In the survey of cities where scientists around the world most want to work, Shanghai ranks first among five domestic cities (ranked in order as follows: Shanghai, Beijing, Hong Kong, Shenzhen, and Hangzhou), with about 1.8% of surveyed scientists taking Shanghai as their first choice for an ideal city to work.

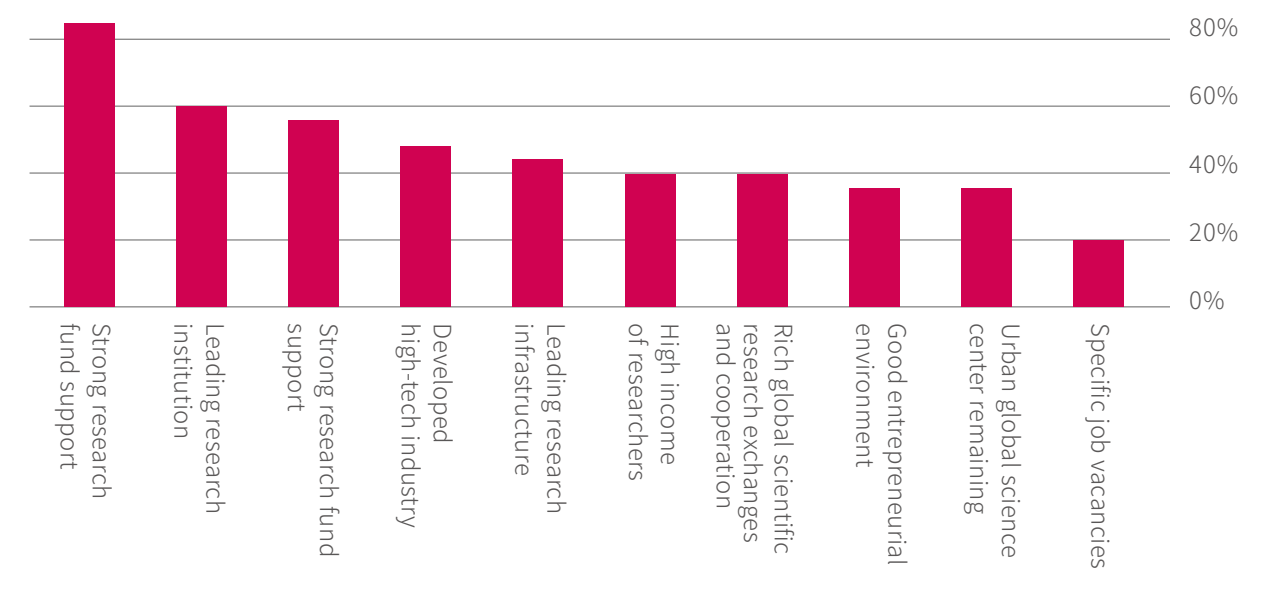
Compared with the innovation center cities in developed countries, there is still a big gap in the attractiveness of Shanghai to scientists. Shanghai ranks the 16th in the overall ranking of 22 innovative cities around the world. Boston, with the overall ranking of No.1, has approximately 15% as first choice, followed by San Francisco (Bay Area), London, New York and Berlin. Please refer to Figure 2

Figure 2 Global scientists' choices about ideal working cities



The excellent scientific and technological innovation resources and conditions (“hardware”) are the main attraction of Shanghai to global scientists. In the evaluation of scientists’ scientific and technological innovation environment in their preferred work city, Shanghai scored the highest in research fund support, surpassing the world’s top two cities: Boston and San Francisco (Bay Area). The other advantages of Shanghai are leading scientific research institutions, scientific research opportunities, high-tech industries and scientific research infrastructure. Shanghai’s performance is relatively weak in terms of scientists’ income, international exchange and cooperation opportunities, and entrepreneurial environment. Please refer to Figure 3.

Figure 3 Evaluation of various aspects of the research work environment in Shanghai by surveyed scientists



From the personal point of view of the scientists surveyed, the most important reason for scientists to come to work in Shanghai is Shanghai can provide good research opportunities, with more than 60% of the choices. Second, Shanghai has a leading research institution in specific fields, and about 1/4 choose this item. Third, followed by the strong research fund support and good research environment. Please refer to Figure 4



Compared with international and domestic competitive cities, Shanghai's main disadvantages lie in the shortages of international exchanges and cooperation in scientific and technological innovation. The survey results calculate the main advantages of the scientific and technological innovation work environment in cities recognized by scientists at home and abroad. Please refer to Figure 5.

As the most desirable city for scientists around the world, the main advantages of Boston's highest scores are leading research institutions, research infrastructure, global technology exchange and cooperation opportunities, research fund support, and reputation as a global science center; the main advantages of San Francisco (Bay Area) are global science and technology exchange and cooperation opportunities, leading research institutions and research infrastructure.

As a global metropolis with strong appeal to scientists, London's main strengths are the reputation as the global science center, global technology exchange opportunities, leading research institutions and research infrastructure; and New York's main strengths are global technology exchange opportunities, research fund support, leading research institutions and scientists' income levels.

Among domestic cities, Beijing's main advantages are research fund support, global science and technology exchange and cooperation opportunities, research infrastructure, entrepreneurial environment and research employment opportunities. Shenzhen's main strengths are research fund support, global technology exchange and cooperation opportunities, leading research institutions, research infrastructure and research employment opportunities. Hong Kong's main strengths are research fund support, global technology exchange and cooperation opportunities, high-tech industries, entrepreneurial environments and research infrastructure.

Figure 5 Main advantages of research and development environment in leading cities at home and abroad



What's worth attention is that in the top international innovation cities such as Boston, San Francisco, London, and New York, as well as the Chinese cities such as Beijing, Shenzhen, and Hong Kong, the international exchanges and cooperation environment of science and technology innovation are all advantages recognized by global scientists whereas this aspect is relatively weak for Shanghai. It can be seen that the international openness and display of Shanghai's technological innovation could not match with the global science and technology innovation center.

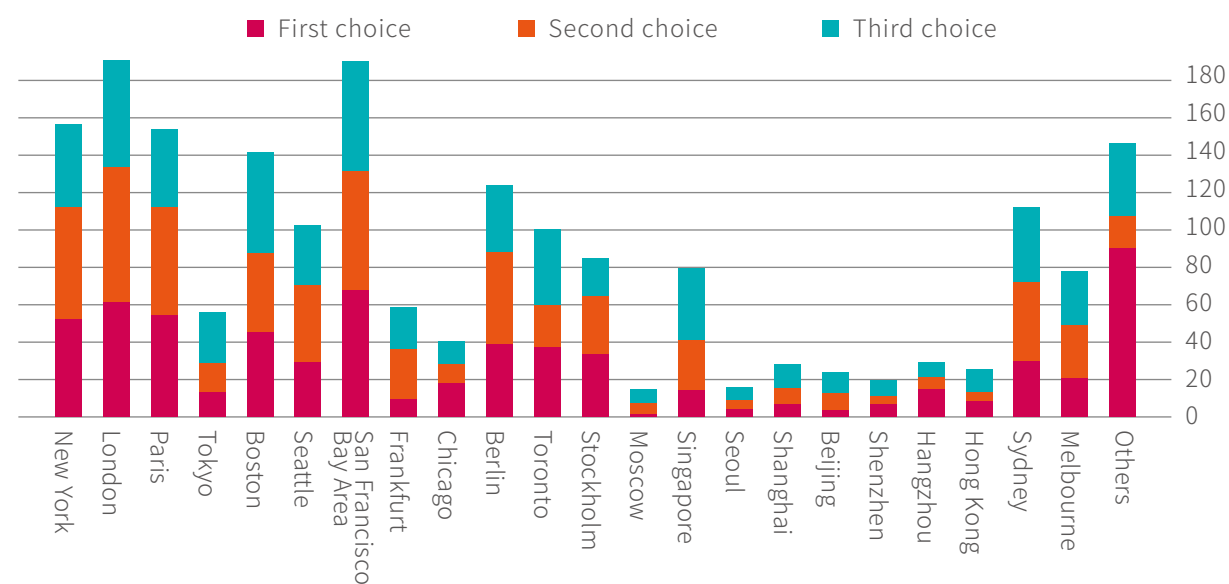


2. The open and inclusive urban culture of Shanghai is attractive to scientists worldwide

In the survey of the cities that the world's scientists most want to live in, Shanghai ranks the third, together with Shenzhen (ranked in the following order: Hangzhou, Hong Kong, Shanghai and Shenzhen, Beijing). About 0.9% of the surveyed scientists have selected Shanghai as the first choice for their ideal living city.

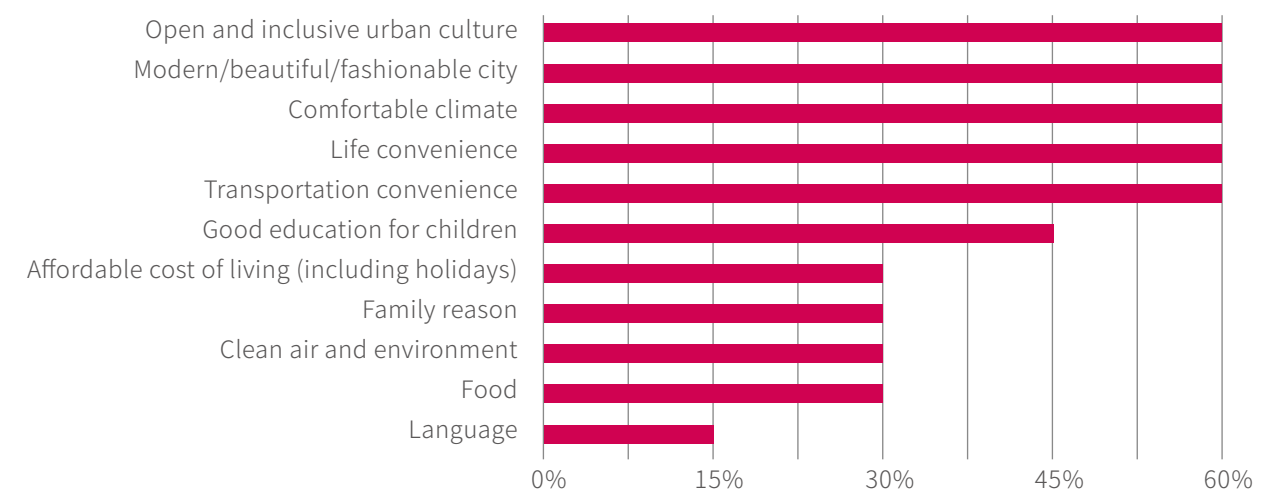
Shanghai ranks the 18th in the overall ranking of 22 innovative cities around the world. The top five cities are San Francisco (Bay Area), London, Paris, New York and Boston. Nearly 10% of the scientists chose the highest ranked San Francisco (Bay Area), and Hangzhou is also the first choice for nearly 3% of global scientists. Please refer to Figure 6

Figure 6 Selection of the global scientist to the ideal living city



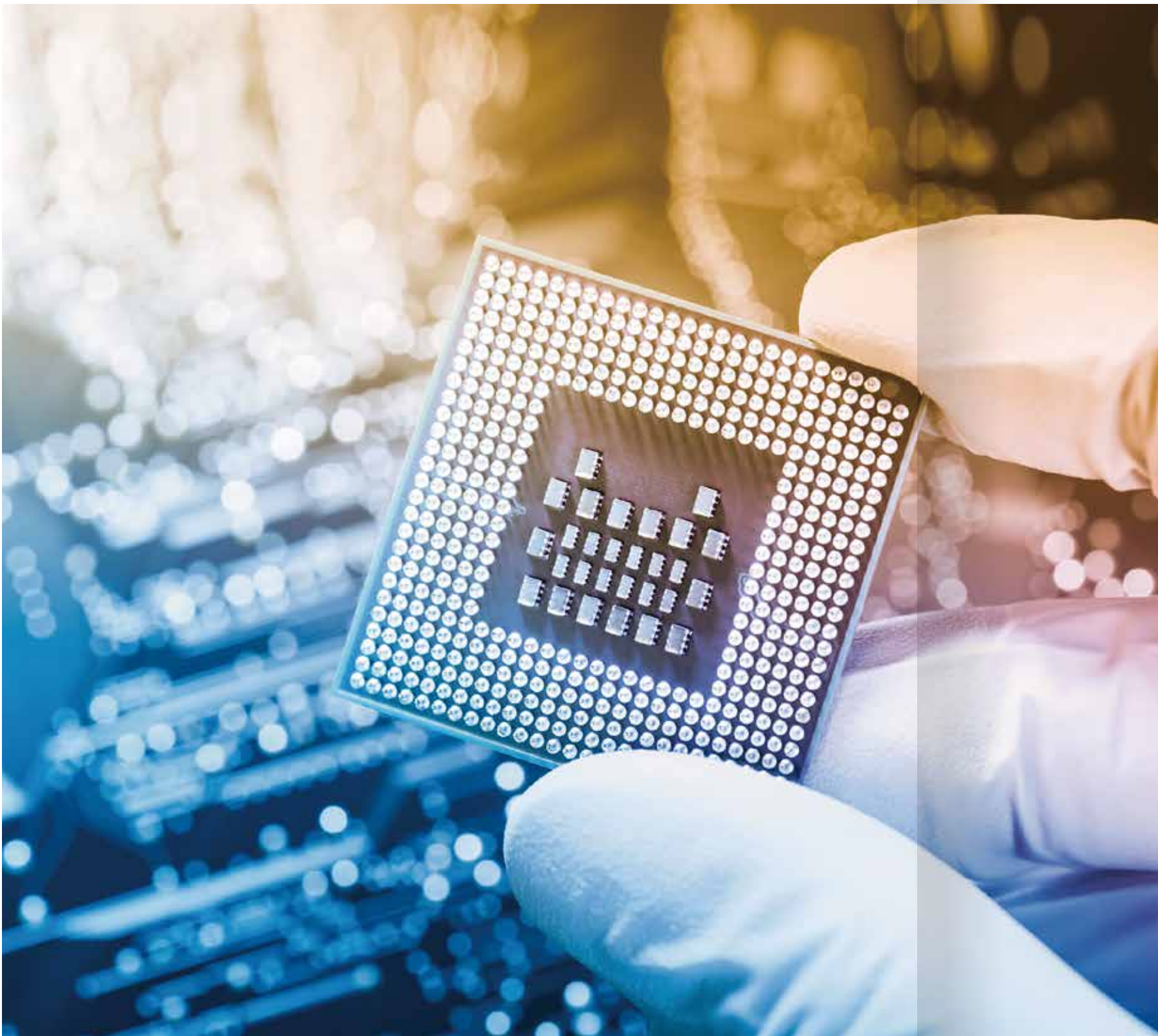
Urban culture has become a prominent highlight for Shanghai to attract global scientists. Language is still the biggest obstacle to influence overseas scholars' settlement in Shanghai. The main reasons why the surveyed scientists prefer to live in Shanghai include the open and inclusive urban culture, modern and fashionable urban cityscape, convenient living, convenient transportation and pleasant climate, etc. Among the five domestic cities in the survey, Shanghai is the only city in which urban culture is highly recognized by scientists around the world. Compared with domestic and foreign cities, the relative disadvantages of Shanghai to attract scientists are firstly language barriers, followed by air and environmental quality, and relatively high living costs. Please refer to Figure 7

Figure 7 Evaluation of various aspects of Shanghai's living environment by surveyed scientists



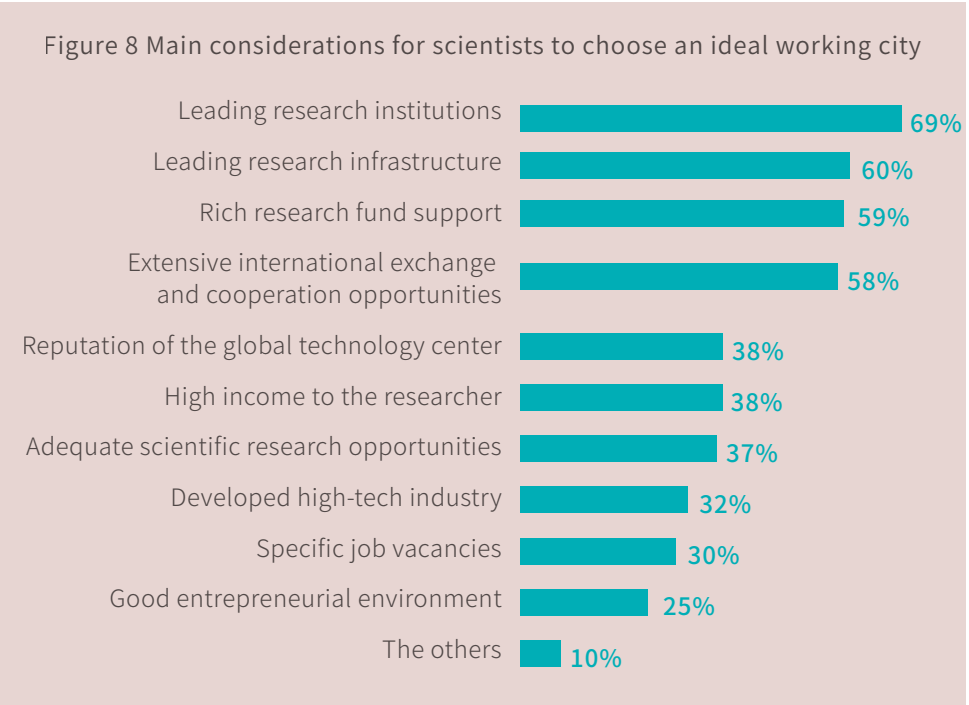
As the most ideal place to live in the minds of scientists around the world, the primary reason why San Francisco (Bay Area) is favored is its open and inclusive urban culture, followed by a comfortable climate, clean air and environment, and a modern and fashionable city. The main advantages of cities such as London, Paris, New York, and Boston generally include urban culture, fashionable cities, convenient transportation, convenient living, and children's education. In addition, different cities also have their own special charm points, such as diversified language environment in London, delicious cuisines in Paris and beautiful cityscape in Boston.

Among the domestic cities, the reasons why Hangzhou's life is most favored by scientists include good environment, beautiful city appearance, low living cost and convenient daily life. Hong Kong's advantages include convenient living, convenient transportation, fashionable city and clean environment. Shenzhen's advantages include fashion city, comfortable climate and convenient living. Beijing's advantages include convenient living, convenient transportation, cost of living and education for children.



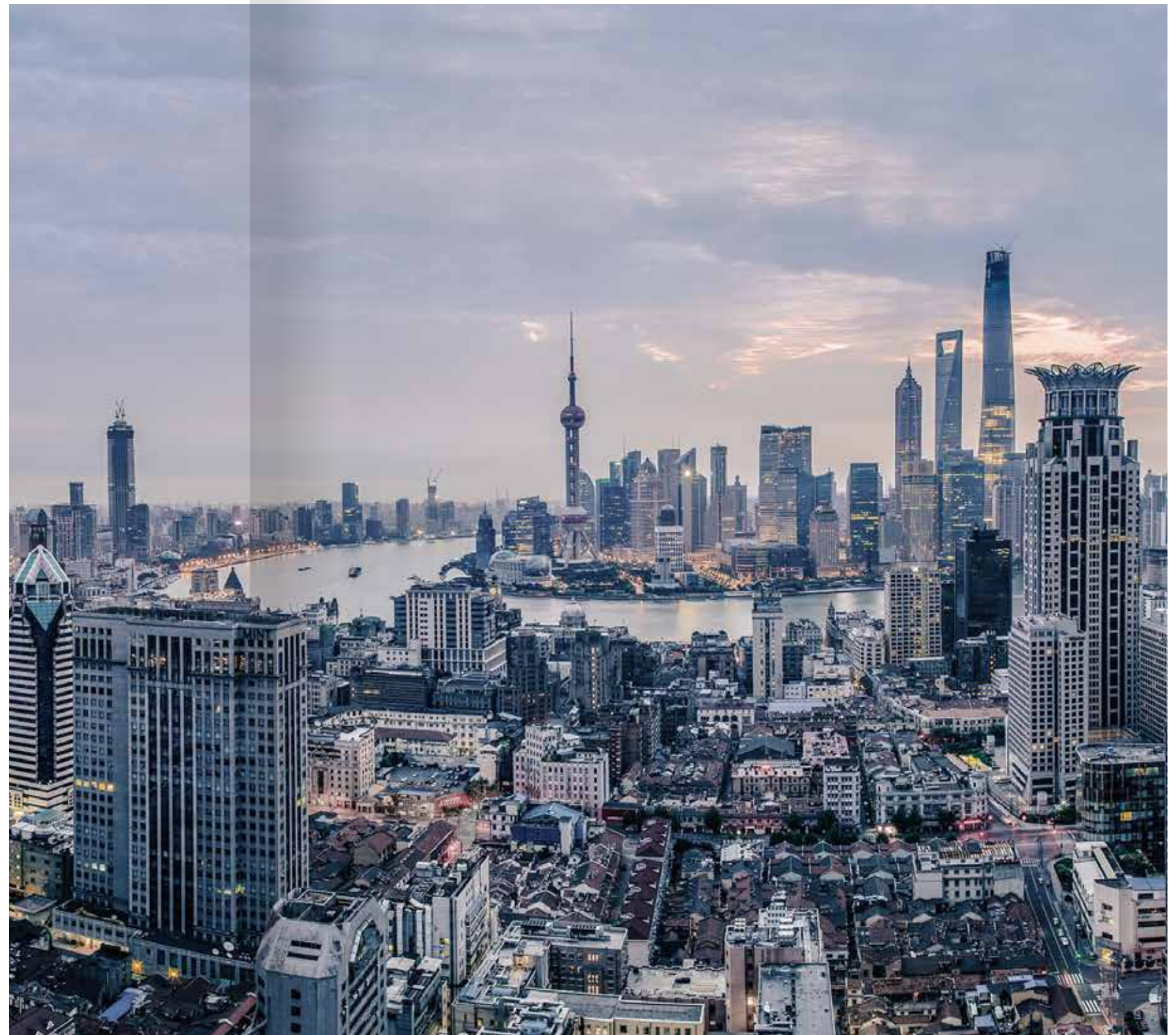
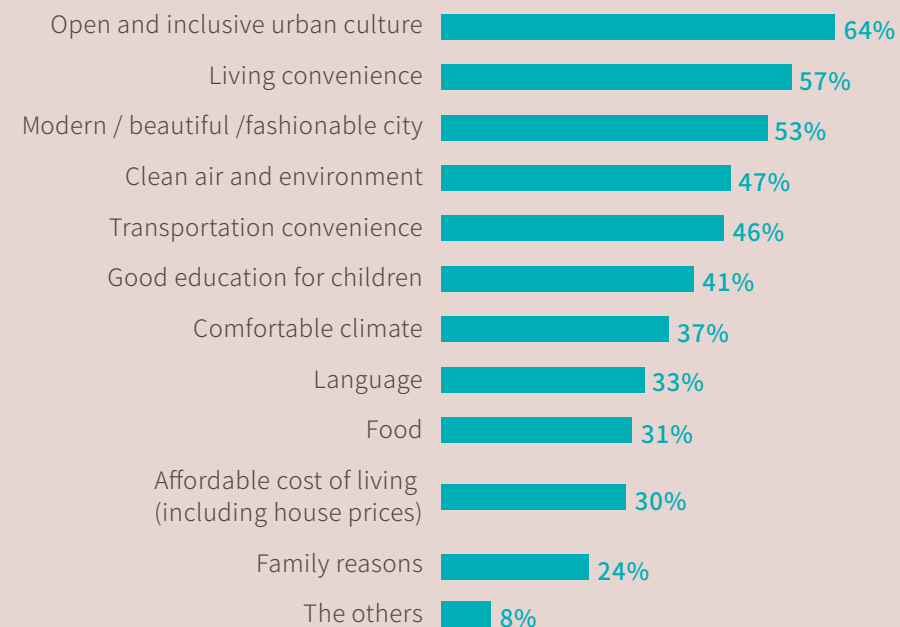
3. The good research conditions and innovative culture are the key elements to attract scientists

When selecting a working city, scientists mainly consider the conditions of scientific research platforms, especially the leading scientific research institutions. According to the survey results, the most important factor for scientists around the world to choose the ideal working city is that the city has the world's leading research institutions, and about 70% of surveyed scientists chose this item. Other major factors selected by a large number of scientists are the world's leading research infrastructure, rich research fund support, and extensive global opportunities for scientific and technological innovation exchanges and cooperation. Lesser considerations include the city's global technology center reputation, higher scientist income, adequate research opportunities, developed high-tech industries, and good entrepreneurial environment, as shown in Figure 8. According to the survey results, global scientists attach more importance to high-level scientific research platforms than other aspects of personal treatment when choosing a workplace.



When the scientists choose a city to live, they first consider the city's innovative cultural environment. According to the survey results, the most important factor for scientists around the world to choose the ideal city is the open and inclusive urban innovation culture. About two-thirds of the surveyed scientists chose this. Other major factors selected by a large number of scientists are convenience of daily life, modern/beautiful/fashionable urban style, clean air and environment, convenient transportation, and ideal children's education. Less important considerations include the city's climate, language, diet and cost of living, as shown in Figure 9. According to the survey results, scientists pay more attention to the “intangible” cultural atmosphere of the city than the “tangible” factors such as convenience of life, urban environment, children's education and living costs.

Figure 9 Key considerations for scientists to choose an ideal city for life

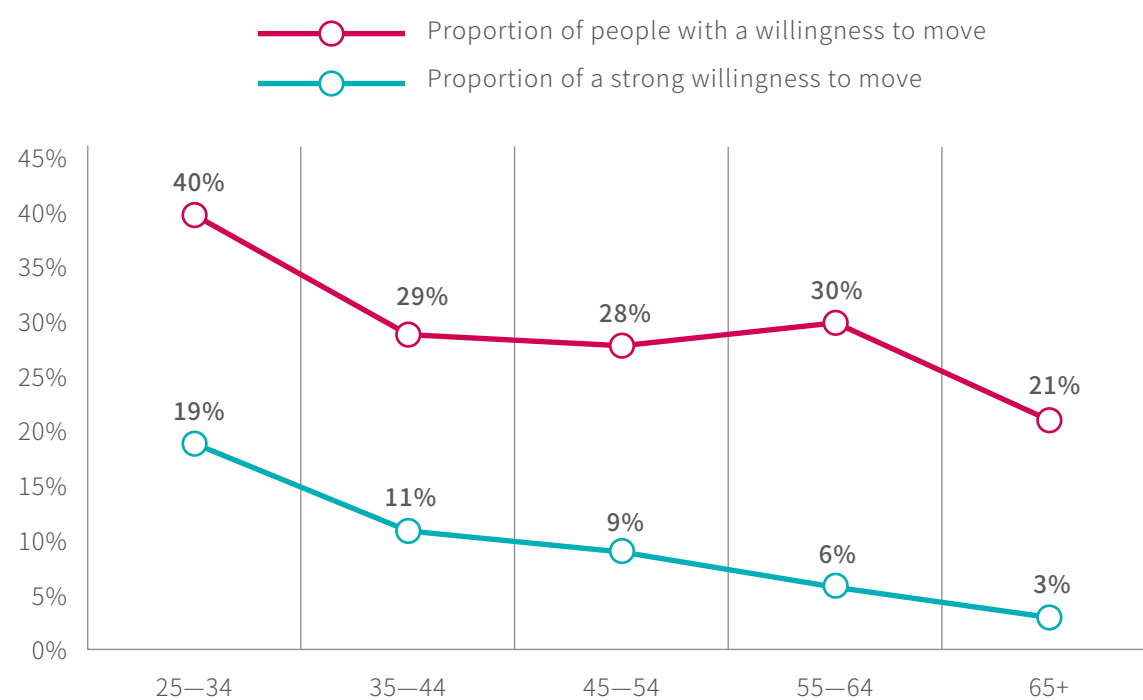


4. Young core-force academic scientists are most interested in coming to work in Shanghai

The results of the age-specific survey show that young scientists have a stronger tendency to cross-regional mobility. Among the surveyed scientists under the age of 35, 40% say they have willingness to work and live in Shanghai if they have the right opportunity, and 19% of them have strong willingness. With the increase of the ages of the surveyed scientists, the willingness to move gradually diminishes. 11% of scientists aged 35 to 44 have a strong willingness to work in Shanghai, 9% from 45 to 54 years old, and only 6% from 55 to 64 years old. Please refer to Figure 10

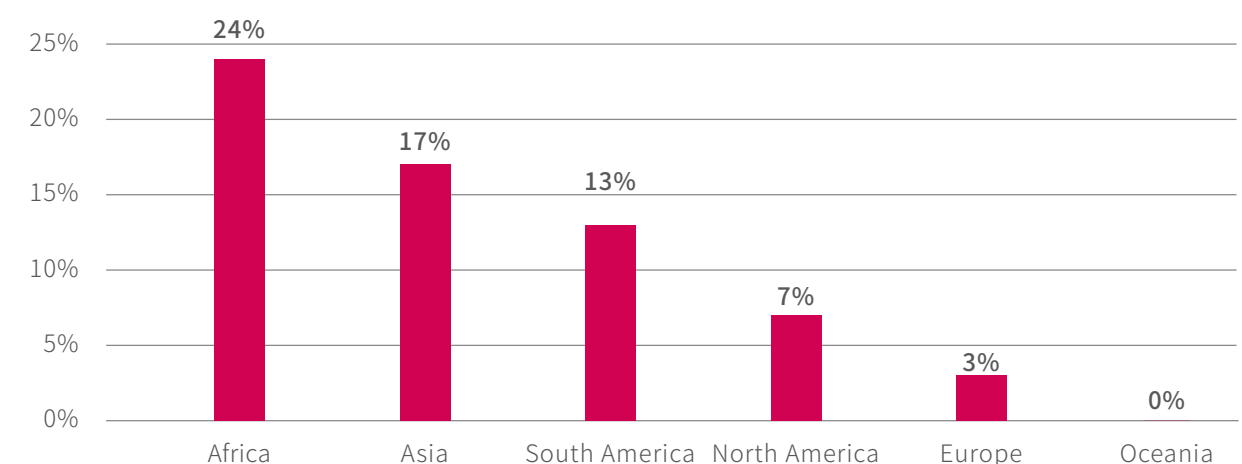
The survey also shows that associate professors and research scientists (equivalent to assistant professors or assistant researchers) are the most active academic positions. Among the surveyed scientists who hold these two positions, 13% and 14% respectively express a strong willingness to move to Shanghai, while only 8% of the professors with higher academic levels and lower post-docs is willing to move in Shanghai. Around the age of 35, scientists at the associate professor level are at the stage of optimal balance of creativity and knowledge accumulation in their academic career, and are often at the most productive stage of important results. This part of the scientists' preference for Shanghai is very valuable.

Figure 10 Willingness of surveyed scientists from different ages to move to Shanghai



North American scientists more like Shanghai than their European counterparts. From the tendency of scientists reflected by the results of the survey, developed countries and regions still have strong advantages in attracting scientists. The top five cities that global scientists most hope to work and live in are all from Europe and North America. From the tendency of scientists reflected by the results of the survey that tend to move out, Shanghai's attraction to Asian scientists is significantly higher than that of Europe and the United States, and its attraction to North American scientists is significantly higher than that of Europe. In Asia (excluding mainland China), 17% of scientists have a strong desire to move to Shanghai, whereas there are only 7% in North America and only 3% in Europe. The lowest is Oceania, the willingness of scientists to move to Shanghai is 0%, as shown in Figure 11.

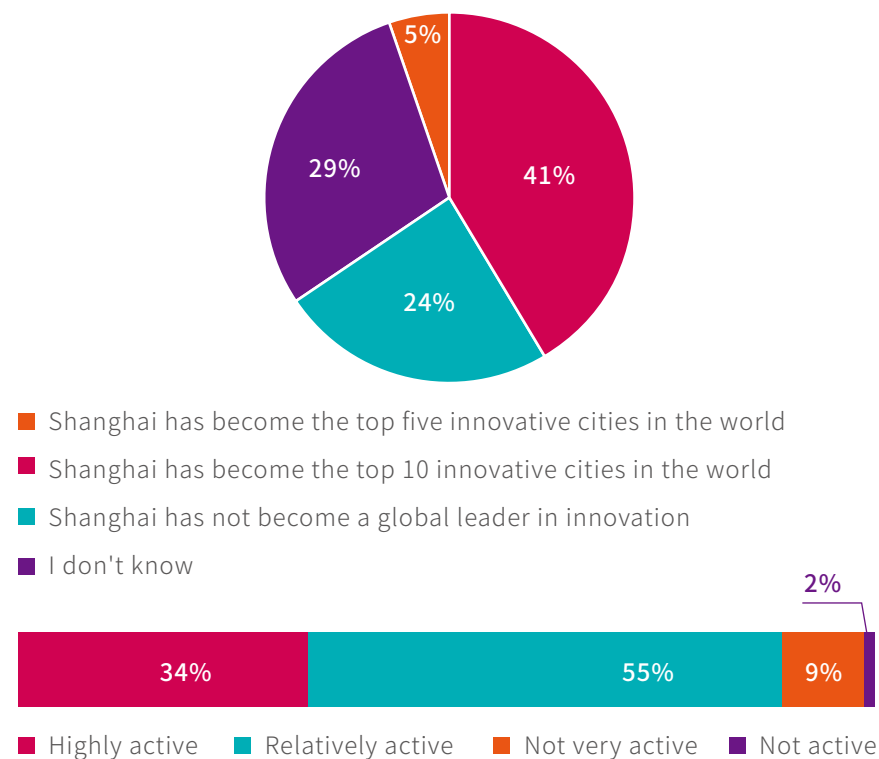
Figure 11 Proportion of scientists with strong willingness to move to Shanghai on all continents



5. Global scientists are generally optimistic about the prospects of Shanghai to build the Science and Technology Innovation Center

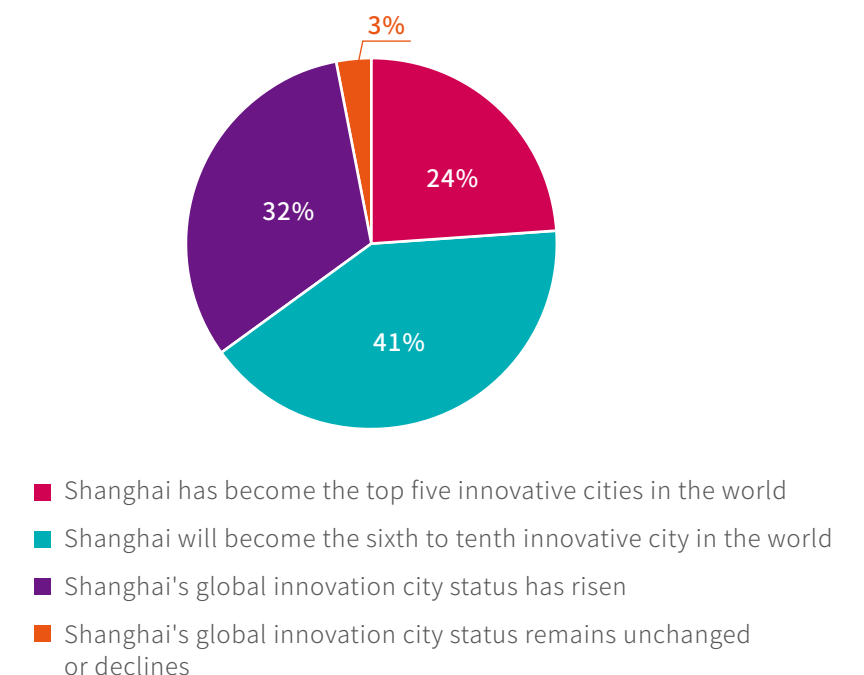
Nearly half of the surveyed scientists believe that Shanghai now ranks among the top ten innovative cities in the world. In a survey of the current situation of Shanghai's global technological innovation status, 46% of the surveyed scientists believe that Shanghai has become the top ten innovative cities in the world, and about 5% of the surveyed scientists believe that Shanghai now ranks the top five innovative cities in the world. 24% of surveyed scientists believe that Shanghai is temporarily not a global leader in innovation. 34% of surveyed scientists believe that Shanghai currently plays a highly active role in the global innovation network, and another 55% of surveyed scientists believe that Shanghai is more active in the global innovation network. Please refer to Figure 12

Figure 12 Evaluation of the status of Shanghai's global scientific and technological innovation by surveyed scientists



About a quarter of the surveyed scientists believe that Shanghai will enter the top five innovative cities in the world in the next decade. Most of the surveyed scientists are optimistic about the future prospects of the Shanghai Science and Technology Innovation Center. Up to 97% of surveyed scientists believe that Shanghai's international status in technological innovation will be further enhanced in the next decade. 24% of surveyed scientists believe that Shanghai will rank among the top five innovative cities in the world in the next decade, and another 41% of surveyed scientists believe that Shanghai will rank among the world's six to ten innovative cities in the next decade. 32% of surveyed scientists believe that Shanghai will improve its global innovation status in the next decade, but it is still difficult to enter the top ten innovative cities in the world. Only 3% of surveyed scientists believe that Shanghai's status as a global innovation city will remain unchanged or decline in the next decade. Please refer to Figure 13

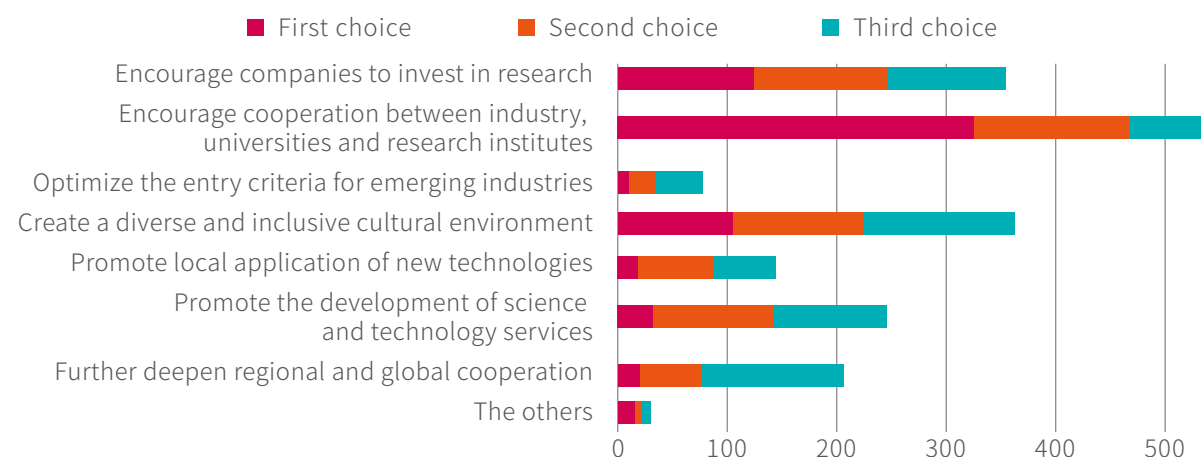
Figure 13 Outlook of the surveyed scientists on Shanghai's status of global technological innovation in the next decade



6. The policy choices and countermeasures for Shanghai to build a global science and technology innovation center

The questionnaire asked global scientists for the importance of various innovation policies for Shanghai to build a global science and technology innovation center. Most of the surveyed scientists believe that encouraging universities and industry to conduct industry-university-research cooperation is the most valuable policy choice. More than half of the surveyed scientists choose this option as first choice. In addition, scientists believe that innovative policies of importance to Shanghai include creating a diverse and inclusive cultural environment, encouraging companies to invest in research and development, promoting the development of science and technology services, and deepening regional and global innovation cooperation. Please refer to Figure 14

Figure 14 Policy recommendations of the surveyed scientists on the building of Science and Technology Innovation Center in Shanghai



The surveyed scientists also made some specific suggestions for Shanghai to build a global science and technology innovation center:

- First, it is suggested that Shanghai should further enhance the degree of openness of technological innovation, establish an innovation platform for global scientists and equal opportunities, and provide overseas scholars with more opportunities to integrate into Shanghai's science and technology innovation system and participate in the construction of global science and technology centers to attract high-level scientific and technological innovation talents with different cultural backgrounds from different countries.
- Second, it is suggested that Shanghai should further strengthen its efforts on higher education, especially pay more attention to basic research and create a world-class academic university.
- Third, it is suggested that Shanghai should pay more attention to the deep integration of scientific and technological innovation and comprehensive urban development, actively apply scientific and technological achievements to reduce air pollution, improve the urban environment, improve the quality of people's livelihood, and enhance the overall attractiveness of the city.

Based on the specific opinions of the surveyed scientists and the analysis of the survey results, the research team proposed the countermeasures as follows:

First, to strengthen the efforts on attracting the global talents, and focus on attracting young scientists who are young and prosperous. Build a comprehensive national science center in Zhangjiang and building a global source of innovation requires the participation of more international scientists. Shanghai should change the practice of introducing foreign experts with emphasis on titles, honors and past achievements. It's necessary to focus on the introduction of a large number of 30-40 years old, associate professors or equivalent levels of innovation peak scientists. In order to provide international scientists with a platform to fully display their talents, it's necessary to be brave in innovation in the management mechanism of new scientific research institutions, the introduction and use of overseas talents, the undertaking of science and technology project mechanisms and international cooperation project mechanisms by foreign scientists, and actively explore breakthroughs in institutional mechanisms so as to attract the most creative scientists from all over the world to participate in Shanghai's leading innovation with the world-class scientific research platform, superior scientific research infrastructure and inclusive innovation system environment and cultural environment.

Second, to strengthen international exchanges and cooperation and enhance the global influence of Shanghai's scientific and technological innovation. Shanghai should be more humble, have less concerns and vigorously strengthen the frequency and depth of international exchanges and cooperation in scientific and technological innovation by "bringing in" and "going out". Give full play to the role and influence of Pujiang Innovation Forum, build a high-level dialogue platform for global technology, industry and capital, and promote sustainable innovation cooperation mechanisms based on the annual event, so that the Pujiang Innovation Forum could become a "Technology Davos". By taking the opportunity of the annual forum, through long-term forms such as international cooperation projects, cross-employment of personnel, establishment of institutional cooperation, construction of new scientific research institutions, jointly build the new type of scientific institutions and platform in Shanghai or "going out", try to "retain" the world-class brain and let High-level experts contribute wisdom to Shanghai sustainably. Actively organize and carry out high-level international scientific and technological innovation cooperation based on Shanghai, enhance the ability of the world's leading innovation issues, and organize the capabilities of large-scale scientific projects to lay the foundation for global innovation.

Third, to actively promote cross-border collaboration and further improve the Shanghai regional innovation system. Make full use of the advantages of colleges and universities, enterprise R&D headquarters, intermediary services, and financial capital in Shanghai and the Yangtze River Delta region, give full play to the advantages of innovation organization and governance, and promote the close interaction between different types of innovation subjects with high frequency and efficiency. Further deepen the demonstration of comprehensive innovation and reform, optimize the institutional environment, policy environment and business environment that are conducive to innovation, and establish and maintain a market environment for emerging markets with fair competition. Pay more attention to the science and technology innovation service industry, foster professional, international, and branded service institutions and organizations, and play an important role in linking innovation and realizing value. In the urban planning, pay attention to and reserve innovation space, promote the organic combination of innovation functions, industrial functions and community functions around universities and research institutes, form a powerful "field effect" of innovation, and create a world-famous innovation gathering "hot circle".

Annex I Description of the investigation progress

I. Survey objectives

This large-scale survey mainly expects to achieve the following main objectives:

1. Understand the trends and causes of scientists worldwide choosing a city to live, work and start a business
2. Understand the main key factors for cities to attract international high-end scientific and technological innovation talents
3. Analyze Shanghai's advantages and disadvantages in attracting and gathering international high-end scientific and technological innovation talents
4. Understand the views and opinions of scientists worldwide on Shanghai's construction of the Global Science and Technology Innovation Center
5. Suggestions for Shanghai to further attract talents and accelerate the establishment of a global high-tech talent pool

II. Questionnaire design

Taking into account the language and cultural background of the surveyed scientists, this survey uses English as the working language. The questionnaire is designed by the seminar of Shanghai Institute for Science of Science and the Springer Nature Group team. It consists of 14 questions and is based on multiple-choice questions. The questionnaire consists of four main parts:

1. The three ideal working cities in the minds of the surveyed scientists, and the reasons for selection
2. The three ideal living cities in the minds of the surveyed scientists, and the reasons for their choice
3. The surveyed scientists' views on Shanghai, including subjective preferences, objective evaluation and future prospects
4. The surveyed scientists' suggestions for Shanghai to build the Science and Technology Innovation Center

In addition, the content of the questionnaire also covers the personal information of the country, age, position, profession, etc. from which the surveyed scientists come from.

The research team refers to the list of cities included in the internationally renowned city innovation index. In the questionnaire, 22 global innovation leading cities are provided as options, and the surveyed scientists are allowed to choose other ideal cities in addition to the option list.



III. Third, issuance and recycling of the questionnaire

The survey is conducted in the form of an electronic questionnaire. The questionnaire issuance and recycling process has lasted about three weeks. Through the website publicity, e-mail and other means, a total of more than 50,000 questionnaires have been distributed to scientists around the world, and more than 760 complete questionnaires have been collected. After sorting, a total of 654 valid questionnaires have been obtained.

IV. Data processing and analysis

Questionnaire data processing and analysis are mainly performed by using spss and excel software. After all the questionnaires are sorted and screened, the valid questionnaire data is entered into the software and statistical analysis is performed.

2018

Scientist's Ideal City Global Survey Report

Annex II Introduction to research institutions

Shanghai Institute for Science of Science was established in January 1980. It is one of the earliest soft science research institutions in China and belongs to the non-profit scientific research social institutions. Shanghai Institute for Science of Science is committed to serving innovation decision-making, persisting in demand orientation, problem orientation, application orientation, focusing on science and technology innovation strategy, public policy and industrial technology innovation, and combining software and hardware, research and consultation, and dedicated to creating a high-level platform-based, distinctive technological innovation think tank with professionalism.

Springer Nature Group is the world's leading research and publishing organization. It owns many high-level academic journals represented by Nature magazine and has an electronic media and communication platform with extensive international influence in the scientific and technological community. Its high-quality research comprehensive database covers more than 260,000 papers published by more than 52,000 institutions in 213 countries on six continents. The author's database accurately covers the global research audiences.

2018

全球科学家“理想之城” 调查报告

