世界城市综合实力排名

概要版 | 2019年11月

全球城市实力指数 2019

1. 伦敦
2. 纽约
3. 东京
4. 巴黎
5. 新加坡

森記念財団
MORI MEMORIAL FOUNDATION

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What is the GPCI?

全球城市实力指数

Given the global competition between cities, the Global Power City Index (GPCI) evaluates and ranks the major cities of the world according to their "magnetism," or their comprehensive power to attract people, capital, and enterprises from around the world. It does so through measuring 6 functions—Economy, Research and Development, Cultural Interaction, Livability, Environment, and Accessibility—providing a multidimensional ranking.

Originally formulated with input from the late Sir Peter Hall, an authority in the urban research field, and published every year since 2008, this ranking is created through the direction of the Executive Committee, comprised of various experts in different fields, while the Working Committee oversees concrete data analysis. In order to ensure the impartiality of the ranking process and results, two third-party peer reviewers validate the contents and provide suggestions for improvement.

The GPCI is able to grasp the strengths, weaknesses, and challenges of global cities in a continuously changing world not only through a ranking, but also through analyzing that ranking's specific components. It is hoped that in addition to this year's results, the past 12 years of data will also continue to be of use to various individuals for planning urban policy and corporate strategy.

"全球城市实力指数"（GPCI - Global Power City Index）国际城市间竞争中，能够吸引人和企业的"磁力"，是基于根据城市拥有的综合能力所衍生的想法而产生的。GPCI对世界主要城市的"综合能力"从经济、研究开发、文化交流、居住、环境、交通等6个领域进行多方位评价，继而产生排名。自2008年起，每年发布的排名都由国际城市研究的先驱，已故的Peter Hall爵士担任首席顾问，由在各领域中享誉全球首屈一指的翘楚学者组成执行委员会担任监制，由事务委员会进行具体的分析。排名的产生过程以及结果的公正性遵照同行评审方式进行评价和验证。GPCI不只是单纯地对顺序进行排列，通过对排名的构成要素的分析，在全球千变万化的发展中可掌握各个城市的优势弱项以及是否对此进行研究等情况。包括今年的结果在内，共有12年的数据积累，希望今后在制定城市政策和企业战略上能够向更多的人士提供帮助。

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Methodology
排名方法

Function 领域	Indicator Group 分组	No. 编号	Indicator 指标	
Economy  经济	Market Size 市场规模	1	Nominal GDP	GDP
		2	GDP per Capita	人均GDP
	Market Attractiveness 市场魅力	3	GDP Growth Rate	GDP增长率
		4	Economic Freedom	经济自由度
	Economic Vitality 经济活力	5	Stock Market Capitalization	证券交易所的股票总市值
		6	World's Top 500 Companies	世界500强企业
	Human Capital 人力资源	7	Total Employment	总从业人数
		8	Employees in Business Support Services	商务支持人才数量
	Business Environment 营商环境	9	Wage Level	工资水平
		10	Availability of Skilled Human Resources	技能人才保障
		11	Variety of Workplace Options	工作场所供给
	Ease of Doing Business 经商便利度	12	Corporate Tax Rate	企业税率
		13	Political, Economic and Business Risk	政治、经济商业风险
R&D  研究 · 开发	Academic Resources 学术资源	14	Number of Researchers	研究员人数
		15	World's Top Universities	世界一流大学
	Research Environment 研究环境	16	Research and Development Expenditure	研发费用
		17	Number of International Students	国际留学生数
		18	Academic Performance	学术能力
	Innovation 创新	19	Number of Patents	专利数量
		20	Winners of Prizes in Science and Technology	主要科学技术奖项得主
		21	Startup Environment	创业环境
Cultural Interaction  文化 · 交流	Trendsetting Potential 趋势引领潜力值	22	Number of International Conferences	国际会议举办次数
		23	Number of Cultural Events	文化活动举办次数
		24	Cultural Content Export Value	文化产业输出额
		25	Art Market Environment	艺术市场环境
	Tourism Resources 旅游资源	26	Tourist Attractions	旅游景点
		27	Proximity to World Heritage Sites	世界遗产比邻度
		28	Nightlife Options	夜间经济活跃度
	Cultural Facilities 文化设施	29	Number of Theaters	剧场与音乐厅数量
		30	Number of Museums	美术馆与博物馆数量
		31	Number of Stadiums	体育场数量
	Visitor Amenities 访客设施	32	Number of Hotel Rooms	酒店房间数量
		33	Number of Luxury Hotel Rooms	豪华酒店房间数量
		34	Attractiveness of Shopping Options	购物选择吸引力
		35	Attractiveness of Dining Options	饮食选择吸引力
	International Interaction 国际交流	36	Number of Foreign Residents	外籍居民人数
		37	Number of Foreign Visitors	外国访问者人数

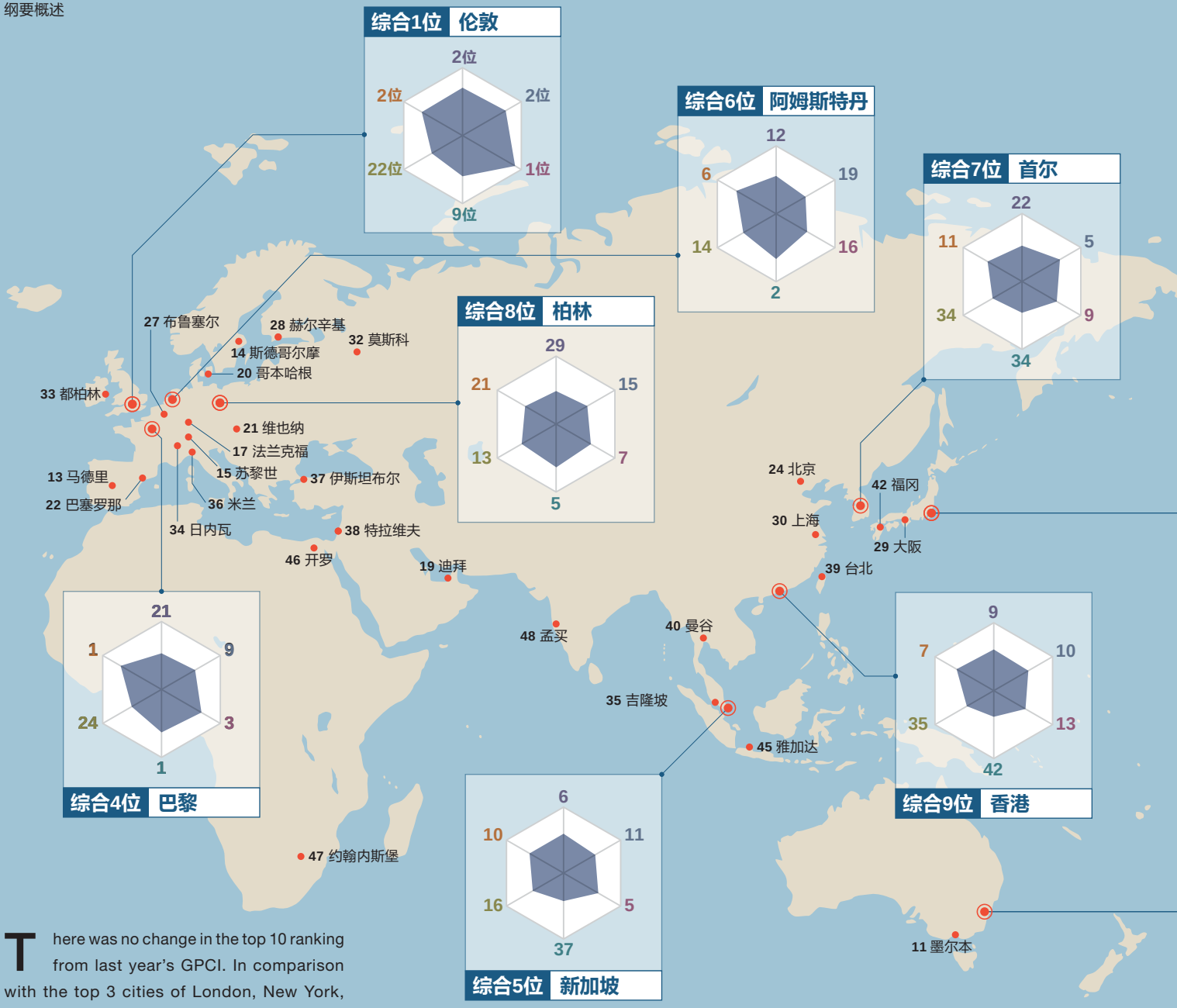
The GPCI evaluates its target cities in 6 urban functions and each of these functions comprises multiple indicator groups (total: 26 groups), which in turn consist of several indicators. A total of 70 indicators are used in the GPCI. The average indicator scores of the indicator groups are combined to create the function-specific rankings, and then the comprehensive ranking is created from the total scores of the function-specific rankings. The highest possible total score equals 2,600 points.

GPCI在6个领域中设置了表示主要要素的26个指标组，并选取了70个构成指标。各指标的平均值作为指标组的分值，根据其总和值产生各领域排名。综合排名共计2600分满分。

Function 领域	Indicator Group 分组	No. 编号	Indicator 指标	
Livability 宜居	Working Environment 就业环境	38	Total Unemployment Rate	总计失业率
		39	Total Working Hours	总劳动时间长度
		40	Workstyle Flexibility	工作方式灵活性
	Cost of Living 生活成本	41	Housing Rent	房屋租金
		42	Price Level	物价水平
	Security and Safety 安全与保障	43	Number of Murders	命案次数
		44	Economic Risk of Natural Disaster	自然灾害经济风险
	Well-Being 福祉	45	Life Expectancy	预期寿命
		46	Social Freedom and Equality	社会自由度与平等性
		47	Risk to Mental Health	精神健康风险
	Ease of Living 生活便利度	48	Number of Medical Doctors	医生数量
		49	ICT Readiness	信息通信技术成熟度
		50	Number of Retail Shops	零售商铺数量
		51	Number of Restaurants	餐饮店数量
Environment 环境	Sustainability 可持续发展	52	Commitment to Climate Action	气候行动执行力
		53	Renewable Energy Rate	可再生能源利用率
		54	Waste Recycle Rate	废物回收率
	Air Quality 空气质量	55	CO_2 Emissions	二氧化碳排放量
		56	SPM Density	悬浮颗粒物密度
		57	SO_2 and NO_2 Density	二氧化硫与二氧化氮浓度
	Natural Environment 自然环境	58	Water Quality	水体质量
		59	Urban Greenery	城市绿地
		60	Comfort Level of Temperature	气温舒适度
Accessibility 交通·可达性	International Network 国际互联	61	Cities with Direct International Flights	国际直航城市
		62	International Freight Flows	国际货物流通规模
	Air Transport Capacity 航空载客量	63	Number of Air Passengers	航空旅客
		64	Number of Runways	跑道数量
	Inner-City Transportation 市内交通	65	Station Density	车站密度
		66	Public Transportation Use	公共交通利用率
		67	Travel Time to Airports	前往机场的出行时间
	Transport Comfortability 出行舒适度	68	Commuting Time	通勤时间
		69	Traffic Congestion	交通拥堵情况
		70	Taxi Fare	出租车费

Executive Summary

纲要概述



There was no change in the top 10 ranking from last year's GPCI. In comparison with the top 3 cities of London, New York, and Tokyo, Paris' drop in score was minimal, narrowing the gap once again between the French capital and Tokyo. Although Paris experienced a downtrend in score following the repeated terror attacks of 2015, following the 2017 confirmation as host-city of the 2024 Olympic Games, an upward trend in score is building. Among the 4 new cities added this year (Melbourne, Helsinki, Dublin, Tel Aviv), Melbourne at #11 was the highest performer.

前十名的名次和去年一致无变化。和前3名的伦敦、纽约、东京相比，巴黎的分值下滑幅度小，再次拉近了和东京之间的差距。巴黎自2015年发生多起恐怖袭击之后，分值有下滑的趋势，但2017年被定为2024奥运举办地后有所回升。

新增加的4个城市（墨尔本、赫尔辛基、都柏林、特拉维夫）中，墨尔本的排名最高，位居第11名。

1 伦敦

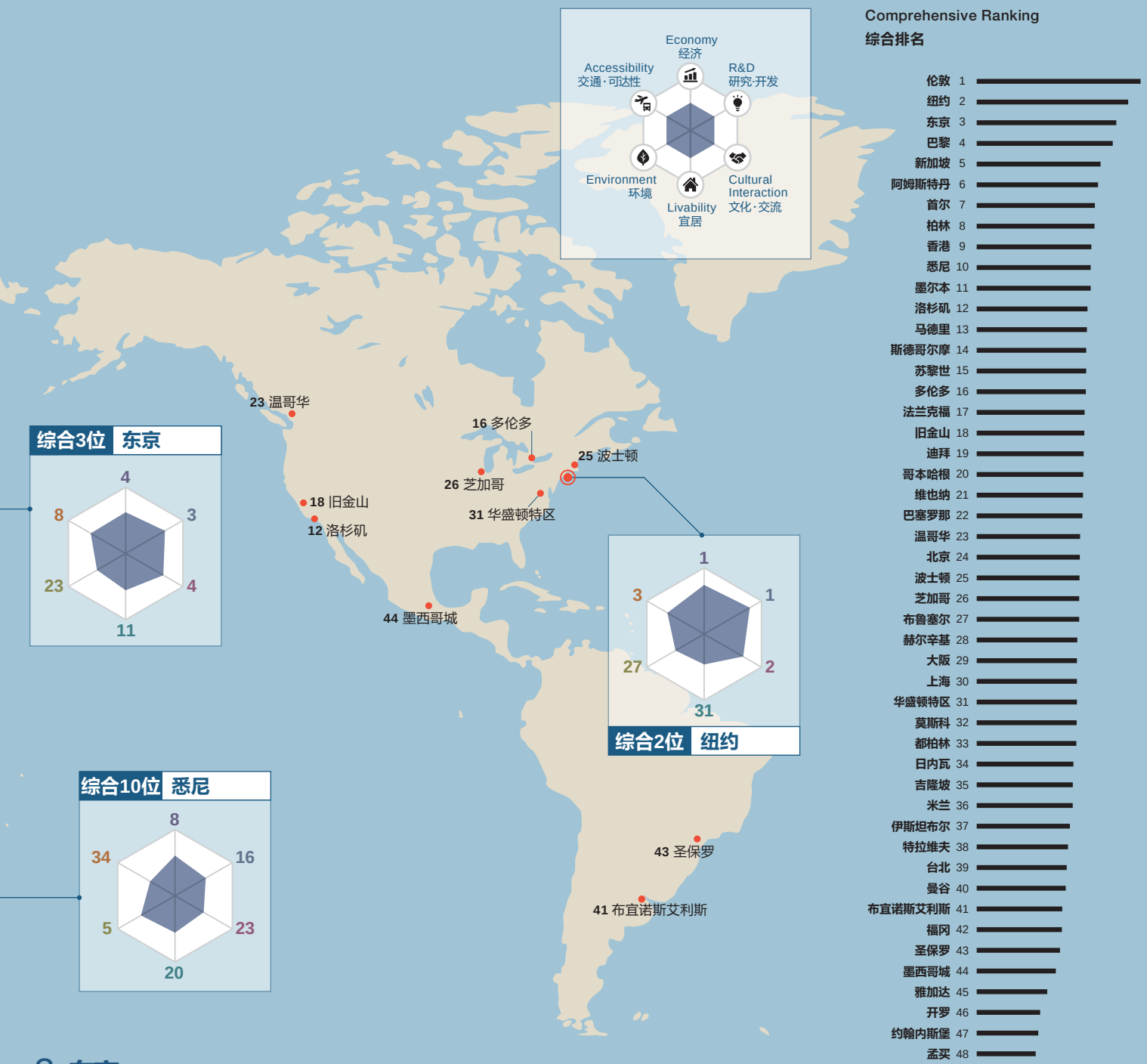
Although London maintained its #1 position for the 8th consecutive year, results show that the city's comprehensive power has fallen. While its score continued to rise following the 2016 EU membership referendum, this year its score in Economy's *World's Top 500 Companies* fell, perhaps showing the effects of turmoil surrounding Brexit negotiations. However, the city holds a top 5 position in 12 of the 16 Cultural Interaction indicators, still displaying its superior strength.

虽然伦敦蝉联首位长达8年，但今年的综合能力有所下降：虽然2016年的英国的欧盟公投后GPCI分数有所上升，但“经济”领域中的“世界500强企业”分值或因脱欧的不确定性而减少。尽管如此，伦敦在“文化与交流”内的12项指标里位居前5，其卓越的实力仍不可小觑。

2 纽约

New York maintains a top position in Economy and Research & Development by obtaining results with high scores in *GDP*, *Stock Market Capitalization*, and *Startup Environment*. The city also obtained strong results in Cultural Interaction (#2) and Accessibility (#3). However in Cultural Interaction, *Number of Foreign Residents* has shown a decreasing trend for the past 3 years, indicating an outflow of foreign population to other domestic and international cities.

通过“GDP”、“证券交易所得股票总市值”和“创业环境”指标的高得分，纽约在今年的“经济”和“研究与开发”领域中卫冕成功。同时，纽约也在“文化与交流”和“交通与可达性”方面分别获得第2和第3名的好成绩。但是“文化与交流”中的“外籍居民人数”指标显示，纽约已经连续3年呈现下降趋势，反应了外籍人口向国内外其他城市流出的走向。



Comprehensive Ranking
综合排名

伦敦	1
纽约	2
东京	3
巴黎	4
新加坡	5
阿姆斯特丹	6
首尔	7
柏林	8
香港	9
悉尼	10
墨尔本	11
洛杉矶	12
马德里	13
斯德哥尔摩	14
苏黎世	15
多伦多	16
法兰克福	17
旧金山	18
迪拜	19
哥本哈根	20
维也纳	21
巴塞罗那	22
温哥华	23
北京	24
波士顿	25
芝加哥	26
布鲁塞尔	27
赫尔辛基	28
大阪	29
上海	30
华盛顿特区	31
莫斯科	32
都柏林	33
日内瓦	34
吉隆坡	35
米兰	36
伊斯坦布尔	37
特拉维夫	38
台北	39
曼谷	40
布宜诺斯艾利斯	41
福冈	42
圣保罗	43
墨西哥城	44
雅加达	45
开罗	46
约翰内斯堡	47
孟买	48

3 东京

Similar to the top 2 cities, Tokyo also saw a decrease in comprehensive score, though it maintained its #3 position. The gap between the #4 Paris and Tokyo narrowed once again, as Paris' drop in score was relatively small in comparison. Tokyo's status as a balanced city is continuing to gradually strengthen, as it lacks both exceedingly strong and extremely weak functions despite being a comprehensively powerful city overall.

与第2名相同，东京虽低于去年的综合分值，但仍然坐稳了第3把交椅。第4名的巴黎同样分值下滑，但与东京相比，巴黎的分值下滑幅度小，再次拉近了和东京之间的差距。虽然东京是一所综合能力非凡的城市，但未有技压群芳的领域，也无极端薄弱的方面，发展相对平衡也是其强项之一。

Criteria for Selecting Cities

1. Cities found in the top 20 of existing influential city rankings
2. Major cities of countries found in the top 20 of existing influential international competitiveness rankings
3. Cities which do not meet the above criteria but were deemed appropriate for inclusion by the GPCI Executive Committee

However, some cities match one or more of the above criteria but are not evaluated in the GPCI as necessary data are not available.

综合排名城市评选标准

1. 选取现有最具影响力排名的前20个城市
2. 选取现有最具国际竞争力的前20个国家中的主要城市
3. 不符合以上条件，但被执行委员会认定适合纳入GPCI的城市

然而，有些城市虽符合一个或多个领域评选标准的城市因为数据不足也无法纳入本名单中。

Comprehensive Ranking
综合排名

Among an increasing opacity in the global economy and a rising awareness of environmental issues, 1st-place London starts to experience a drop in momentum, Tokyo is sluggish, and Paris recovery trends upward.

在世界经济前景不明和对地球环境意识日益高涨的形势中，渐趋下降的冠军伦敦、难以伸展的东京和上升回归的巴黎。

London saw its comprehensive score fall after 8 years of maintaining its position alone at the top of the GPCI. Although New York, Tokyo, and Paris' scores all decreased for their own individual reasons, due to the size of Tokyo's fall, the gap between the Japanese capital and New York widened while the distance between Paris and Tokyo narrowed. Paris continued with forward momentum following the successful bid in 2017 to host the 2024 Olympic Games, overcoming a previous downtrend following the 2015 terror attacks.

Looking back at the state of the world over the past year, a large number of challenging events have occurred or continued, such as US-China trade friction, issues surrounding the UK's withdrawal from the EU, and the Hong Kong protests. A number of potential effects have been noticed in the GPCI 2019, with Beijing and Shanghai's *GDP Growth Rates* stagnating, and London's number of *World's Top 500 Companies* falling. Effects on Hong Kong will likely be felt in the GPCI 2020. Regarding international activity related to the environment, a target to reduce the amount of new plastic waste in the world's oceans to zero by 2050 was adopted at the G20 Summit which took place in June 2019, Osaka. It is clear that awareness of the challenges associated with the global environment is gradually growing stronger. In GPCI 2019, Northern European cities as well as Australian cities received high scores in Environment.

Among the newly added cities to the GPCI, Melbourne scored highest at #11, followed by Helsinki (#28), Dublin (#33), and Tel Aviv (#38). Melbourne and Helsinki both achieved strong results in Environment, with Melbourne also performing well in Livability, while Dublin and Tel Aviv possess high *GDP Growth Rates*, with Dublin especially proving itself to be particularly specialized in Economy.

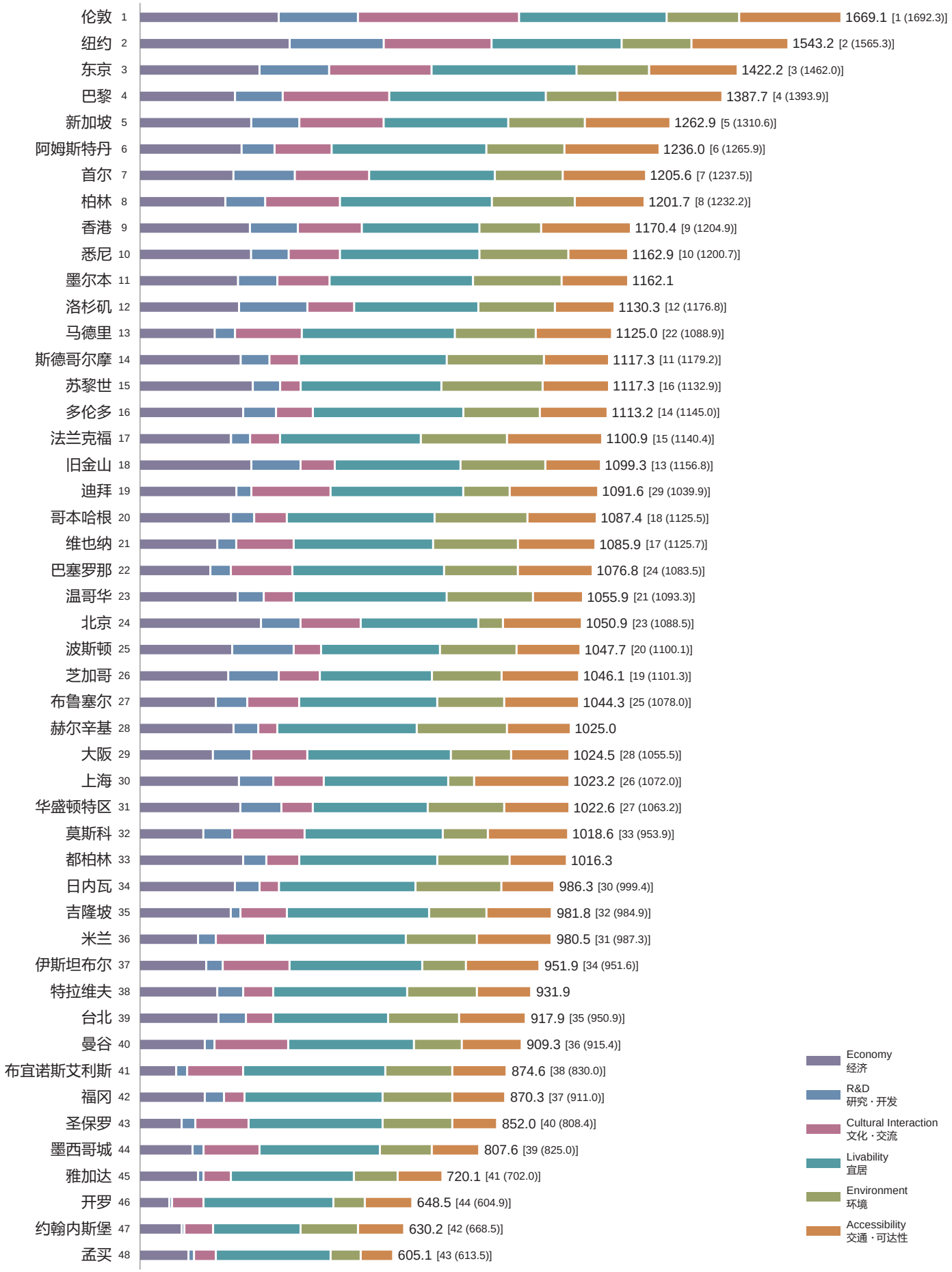
伦敦自2012年起连续8年保持冠首，一直处于领先地位，但今年，其势头出现了阴影。纽约、东京、巴黎由于各自的原因使得分值下降，其中东京的下滑幅度最大，拉大了与纽约的差距，与巴黎的距离更近了。巴黎自2015年发生多起恐怖袭击之后，分值有下滑的趋势，但2017年被定为2024奥运举办地后有所回升。

回顾这一年的国际形势，中美贸易摩擦的长期化、英国脱欧问题的前景不明、香港市民的抗议活动等，发生了许多对世界地区经济具有重大影响的事件。从GPCI 2019可以看出这些形势的迹象，如北京和上海的“GDP增长率”停滞、伦敦的“世界500强企业”数量减少。预测香港的影响将在GPCI 2020之后被体现出来。另外，与环境有关的国际动态中，6月在大阪举行的G20峰会上，定下了将在2050年解决海洋塑料污染新问题的目标。在提高对地球环境问题的意识方面，北欧城市和澳洲城市在GPCI 2019的环境项目中获得了高度评价。

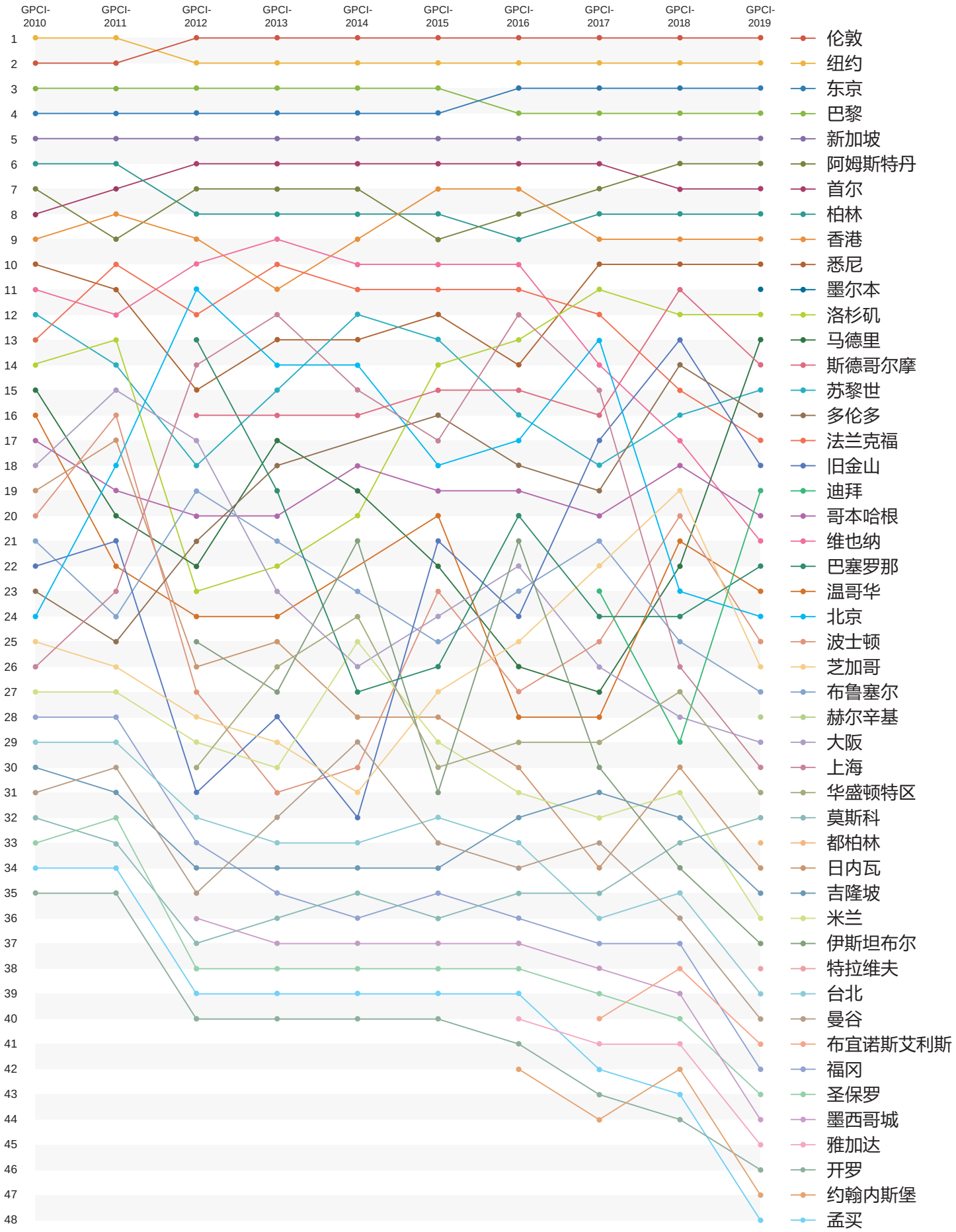
新增的4个城市中墨尔本最高，位居第11名、其后为赫尔辛基（第28名）、都柏林（第33名）和特拉维夫（第38名）。墨尔本和赫尔辛基在环境领域获得的评价最高，墨尔本还在居住领域获得了高度评价。另外，都柏林和特拉维夫在“GDP增长率”上获得高分值，特别是都柏林成为了加强在经济领域上具有优势的城市。

Comprehensive Ranking | 综合排名

Numbers in [ ] are ranks and scores from the GPCI-2018
[ ]内的数字为GPCI-2018年的名次和分值

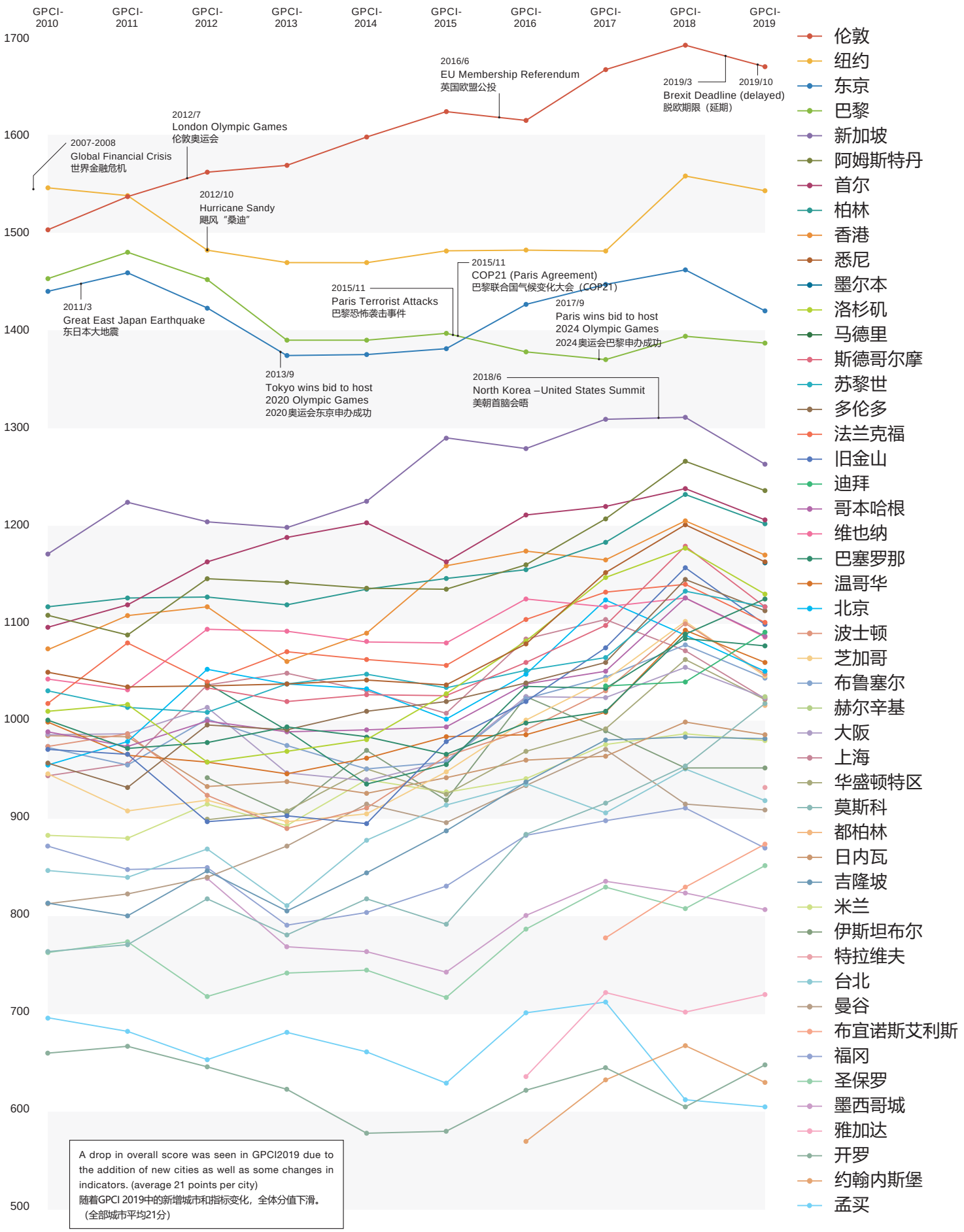


Rank Fluctuation | 综合排名变动



Score Fluctuation | 综合分数变动

Each year's score is converted to the full score of 2600 points
各年度的分值以2600分为满分换算得出



A drop in overall score was seen in GPCI2019 due to the addition of new cities as well as some changes in indicators. (average 21 points per city)
随着GPCI 2019中的新增城市和指标变化，全体分值下滑。（全部城市平均21分）

Function-Specific Ranking
专项排名

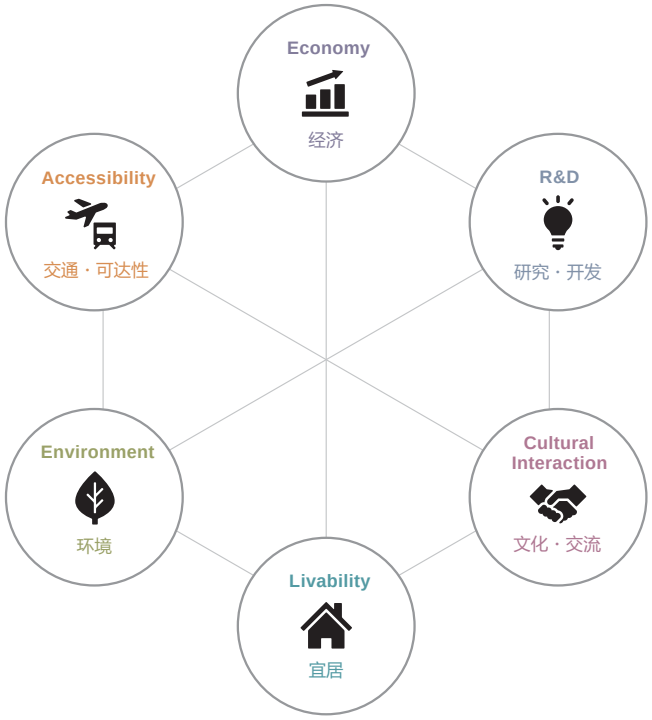
Important factors concerning the competition between cities are gradually undergoing significant change, reflecting turbulent global conditions and action towards the environment.

国际动荡的形式和环境行动的相关动态反映出了涉及城市间竞争的决定性要素正在经历重大更迭。

In the Economy function, newly added Dublin ranks at #11 due to its high scores in *GDP Growth Rate* and a low *Corporate Tax Rate*, as the city attracts attention in the UK's withdrawal from the EU. In Livability, Paris, which suffered a decrease in score following the 2015 terrorist attacks, returns to the #1 position after 3 years. As global awareness of environmental challenges increases, Northern European cities such as Stockholm, Copenhagen, and Helsinki, as well as Swiss and Australian cities, returned high scores in the Environment function.

经"经济"方面，因英国脱欧问题而获得关注的新晋城市都柏林在"GDP增长率"和"企业税率"方面取得高分值，并夺得了11名的好成绩。

"宜居"方面，巴黎因2015年发生多起恐怖袭击事件影响造成分值下滑，直至3年后重归首位。在全球提高环境意识的形势下，北欧城市斯德哥尔摩、哥本哈根和赫尔辛基，以及瑞士、澳大利亚的城市在"环境"领域中获得了高分值。



The key feature of the GPCI is that, rather than targeting a single specific function, it evaluates the comprehensive power of global cities by offering a multi-dimensional view based on these 6 functions.

GPCI的主要特点在于它是基于6个功能领域为综合评估提供了多维度视角。

Function-Specific Ranking | 专项排名

	Economy 经济		R&D 研究 · 开发		Cultural Interaction 文化 · 交流		Livability 宜居		Environment 环境		Accessibility 交通 · 可达性	
1	纽约	358.5	纽约	224.5	伦敦	382.7	巴黎	371.8	苏黎世	242.5	巴黎	247.1
2	伦敦	331.4	伦敦	187.8	纽约	254.1	阿姆斯特丹	365.5	斯德哥尔摩	232.4	伦敦	239.1
3	北京	288.4	东京	166.2	巴黎	252.2	马德里	364.4	哥本哈根	222.8	纽约	226.6
4	东京	286.6	旧金山	163.1	东京	241.9	温哥华	364.3	赫尔辛基	218.9	上海	225.7
5	苏黎世	269.4	首尔	146.5	新加坡	204.3	柏林	361.8	悉尼	216.0	法兰克福	223.7
6	新加坡	266.4	波士顿	145.7	迪拜	188.2	巴塞罗那	361.4	墨尔本	215.5	阿姆斯特丹	223.6
7	旧金山	266.0	芝加哥	121.2	柏林	177.7	多伦多	358.4	日内瓦	210.0	香港	212.9
8	悉尼	264.8	旧金山	117.3	曼谷	173.8	哥本哈根	352.8	法兰克福	207.5	东京	208.0
9	香港	262.7	巴黎	114.5	首尔	173.4	伦敦	351.8	旧金山	206.2	迪拜	207.9
10	多伦多	248.3	香港	113.4	莫斯科	170.7	斯德哥尔摩	351.2	温哥华	206.1	新加坡	199.7
11	都柏林	246.3	新加坡	112.0	伊斯坦布尔	159.8	东京	343.3	维也纳	204.9	首尔	199.1
12	阿姆斯特丹	244.5	华盛顿特区	98.3	马德里	159.0	墨尔本	340.8	马德里	196.1	莫斯科	185.8
13	斯德哥尔摩	241.6	北京	96.1	香港	153.4	大阪	340.3	柏林	195.2	维也纳	183.5
14	华盛顿特区	241.0	墨尔本	95.3	巴塞罗那	148.1	布宜诺斯艾利斯	338.7	阿姆斯特丹	187.8	北京	182.2
15	洛杉矶	237.3	柏林	94.2	北京	143.1	吉隆坡	338.1	波士顿	185.8	芝加哥	182.0
16	上海	236.6	悉尼	90.6	阿姆斯特丹	138.4	苏黎世	336.8	新加坡	184.7	马德里	178.2
17	墨尔本	233.1	大阪	90.5	维也纳	137.9	米兰	335.3	华盛顿特区	184.7	米兰	175.4
18	温哥华	232.8	上海	80.3	墨西哥城	135.3	法兰克福	334.6	洛杉矶	183.5	伊斯坦布尔	173.7
19	迪拜	231.3	阿姆斯特丹	76.2	大阪	133.6	赫尔辛基	331.2	多伦多	183.2	巴塞罗那	173.7
20	日内瓦	228.9	多伦多	75.6	布宜诺斯艾利斯	133.3	悉尼	330.1	都柏林	178.0	布鲁塞尔	172.5
21	巴黎	226.1	布鲁塞尔	71.7	圣保罗	124.8	维也纳	329.9	巴塞罗那	177.6	柏林	168.8
22	首尔	224.3	莫斯科	69.3	布鲁塞尔	123.6	布鲁塞尔	329.2	伦敦	176.3	哥本哈根	161.5
23	赫尔辛基	223.8	斯德哥尔摩	66.5	悉尼	122.4	莫斯科	327.4	东京	176.2	多伦多	159.2
24	波士顿	220.9	苏黎世	64.4	墨尔本	122.3	都柏林	325.9	巴黎	175.9	苏黎世	155.7
25	吉隆坡	218.9	台北	63.0	上海	122.2	福冈	325.8	台北	171.6	墨尔本	155.3
26	法兰克福	217.8	温哥华	61.9	米兰	115.5	日内瓦	325.6	米兰	171.3	台北	155.1
27	哥本哈根	217.5	特拉维夫	61.0	洛杉矶	109.3	圣保罗	320.2	纽约	170.3	斯德哥尔摩	153.2
28	芝加哥	209.8	日内瓦	58.4	吉隆坡	108.6	迪拜	317.5	福冈	170.0	吉隆坡	152.4
29	柏林	204.1	赫尔辛基	58.3	芝加哥	99.0	特拉维夫	317.2	特拉维夫	169.2	华盛顿	151.6
30	台北	188.8	都柏林	55.5	多伦多	88.4	伊斯坦布尔	315.1	芝加哥	168.9	波士顿	148.2
31	特拉维夫	185.6	哥本哈根	54.4	旧金山	81.9	纽约	309.2	圣保罗	167.5	赫尔辛基	147.0
32	维也纳	183.9	马德里	49.2	都柏林	78.9	开罗	307.1	布鲁塞尔	164.0	曼谷	141.0
33	布鲁塞尔	183.3	巴塞罗那	48.5	哥本哈根	78.3	曼谷	300.7	布宜诺斯艾利斯	162.6	洛杉矶	140.0
34	马德里	178.2	福冈	46.5	开罗	75.8	首尔	300.0	首尔	162.4	悉尼	139.1
35	大阪	176.9	法兰克福	46.3	华盛顿特区	74.7	洛杉矶	297.1	香港	147.8	大阪	136.8
36	巴塞罗那	167.5	维也纳	45.8	温哥华	73.1	旧金山	297.1	大阪	146.3	都柏林	131.8
37	伊斯坦布尔	159.6	米兰	43.1	斯德哥尔摩	72.3	新加坡	295.8	吉隆坡	141.6	旧金山	130.8
38	曼谷	156.7	伊斯坦布尔	37.0	特拉维夫	71.5	上海	294.5	约翰内斯堡	139.1	布宜诺斯艾利斯	127.5
39	福冈	155.9	迪拜	33.7	法兰克福	70.9	雅加达	293.1	墨西哥城	128.3	特拉维夫	127.4
40	莫斯科	152.4	圣保罗	32.6	约翰内斯堡	66.3	墨西哥城	284.2	曼谷	114.8	福冈	123.4
41	雅加达	140.6	布宜诺斯艾利斯	25.2	波士顿	66.1	波士顿	281.0	莫斯科	113.2	日内瓦	121.0
42	米兰	139.9	墨西哥城	24.8	台北	64.9	香港	280.2	迪拜	113.0	温哥华	117.7
43	墨西哥城	127.0	吉隆坡	22.3	雅加达	64.4	北京	276.9	雅加达	108.3	开罗	111.5
44	孟买	117.6	曼谷	22.2	孟买	52.8	台北	274.5	伊斯坦布尔	106.7	约翰内斯堡	108.0
45	圣保罗	101.7	雅加达	11.4	福冈	48.7	孟买	272.6	开罗	75.7	墨西哥城	108.0
46	约翰内斯堡	100.2	孟买	11.1	苏黎世	48.6	华盛顿特区	272.4	孟买	75.0	圣保罗	105.2
47	布宜诺斯艾利斯	87.3	约翰内斯堡	8.1	赫尔辛基	45.7	芝加哥	265.2	北京	64.3	雅加达	102.4
48	开罗	70.6	开罗	7.8	日内瓦	42.4	约翰内斯堡	208.6	上海	63.9	孟买	76.0

Economy
经济

Numbers in [ ] are ranks from the GPCI-2018
[ ]内的数值为GPCI-2018的排名

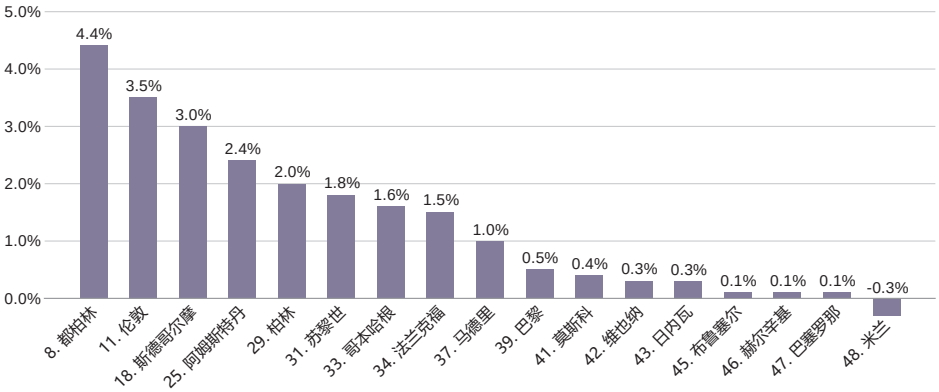
While the top 10 cities in the Economy function saw no change from last year, there was a noticeable shift in positions. Asian cities experienced considerable change, with Beijing (#3), which scores highly in *GDP Growth Rate* and *World's Top 500 Companies*, overtaking Tokyo (#4), and Singapore (#6) surpassing Hong Kong (#9). Singapore, especially noted for its excellent English ability, obtained superior results among Asian cities in *Availability of Skilled Human Resources*.

Within the newly added cities to the GPCI this year, Dublin (#11) in particular achieves excellent results. Among European cities, it obtains the highest scores after London (#2) and Zurich (#5), with *Corporate Tax Rate* scoring just behind Dubai, while also earning the only European top-10 position in *GDP Growth Rate*. As the UK's withdrawal from the EU continues to pose challenges, it is possible that Dublin, acting as a prominent European financial center, could push forward with specialized growth.

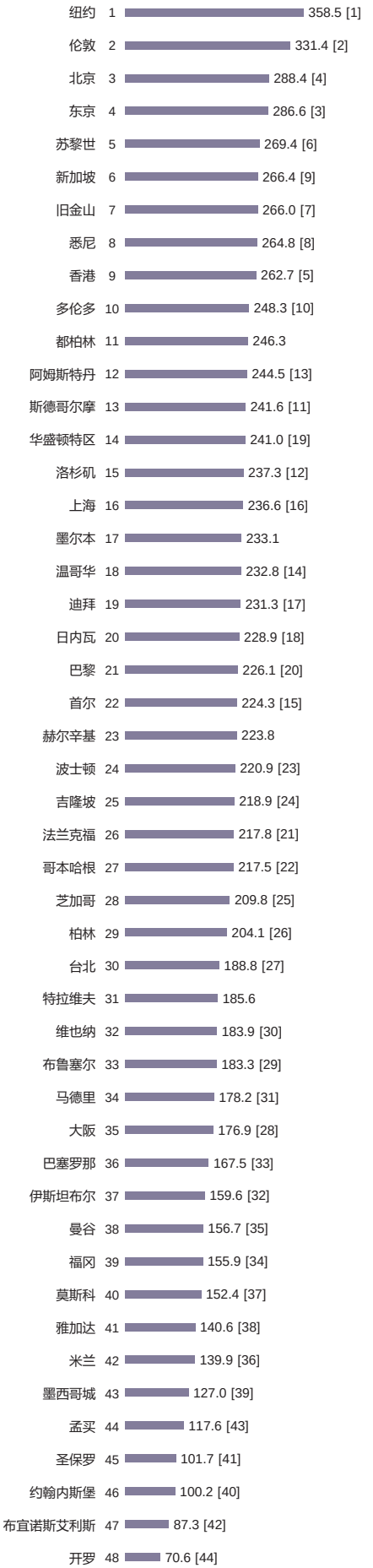
经济”领域中，进入前10名的城市与去年并无二致，但其中名次的交替值得关注。在“GDP增长率”和“世界500强企业”指标上获得高度评价的北京（第3名）超过了东京（第4名），而新加坡（第6名）也超越了香港（第9名），说明了亚洲城市正在经历重大转变。其中新加坡以优异的英语能力在“技能人才保障”指标上超越了其他亚洲城市。

此次排名新增的4个城市中，都柏林（第11名）取得了傲人的成绩：在欧洲城市中仅位列伦敦（第2名）与苏黎世（第5位）之后，“企业税率”指标方面也紧跟迪拜，它还是唯一一个进入“GDP增长率”前十的欧洲城市。在英国脱欧局势混乱的情势下，都柏林作为欧洲为数不多的金融城市，在今后推动自身发展方面有着巨大潜能。

GDP 增长率（欧洲城市）



* European cities only / *仅列欧洲城市



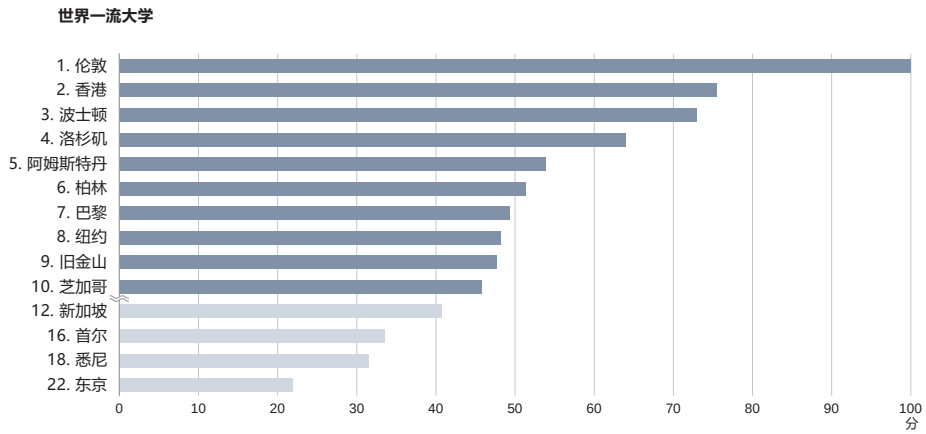
Research and Development
研究 · 开发

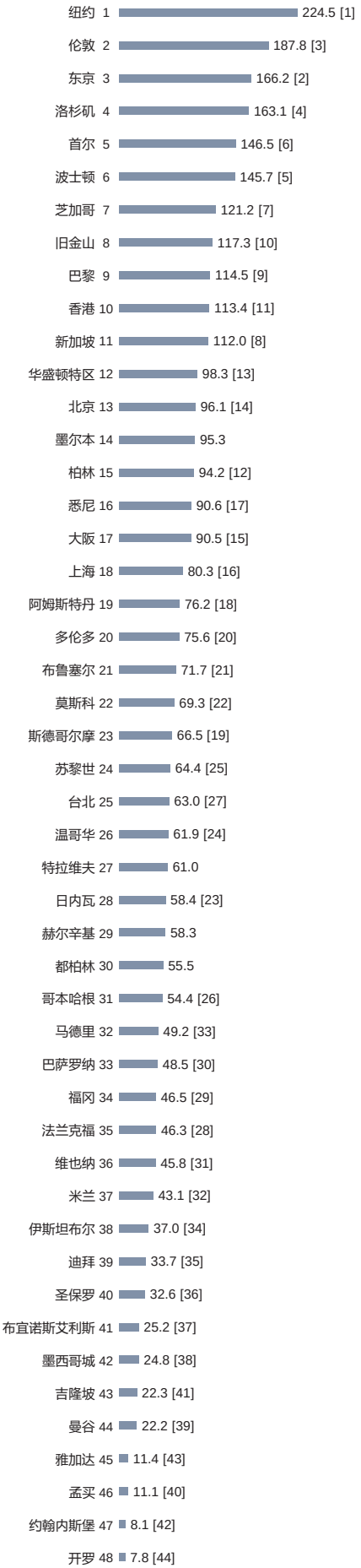
Numbers in [ ] are ranks from the GPCI-2018
[ ]内的数值为 GPCI-2018的排名

In Research & Development, the top 3 cities of New York (#1), London (#2), and Tokyo (#3) remain unchanged from last year. New York proves itself to be a balanced city, obtaining # 1 in "Academic Resources"' *Number of Researchers* and "Research Environment"'s *Research and Development Expenditure*, as well as #2 in "Innovation"'s *Winners of Prizes in Science and Technology* and *Startup Environment*. London shows strengths in *World's Top Universities*, *Number of International Students*, and *Startup Environment*, while Tokyo scores highly in *Number of Researchers*, *Research and Development Expenditure*, *Academic Performance*, and *Number of Patents*. The American cities of Los Angeles, Boston, Chicago, and San Francisco achieved excellent results in *Research and Development Expenditure* and *Winners of Prizes in Science and Technology*, placing in the top 10 once again.

In *World's Top Universities*, which act as urban facilities to cultivate global talent, London and the 5 American cities, as well as Amsterdam and Berlin from Europe, and Hong Kong from Asia maintain top 10 positions, while Paris is a new entrant this year.

研究与开发和去年相同，纽约、伦敦和东京占据了今年"研究与开发"榜前3位。纽约斩获了"学术资源"组项中的"研究员人数"与"研究环境"中的"研发费用"指标的首位，并在"创新"组项中的"主要科学技术奖项得主"和"创业环境"指标中高居第2位，充分展示了城市的均衡性。伦敦则领先于"世界一流大学"、"国际留学生数"和"创业环境"；东京在"研究员人数"、"研发费用"、"学术能力"和"专利数量"上得到高分。美国城市洛杉矶、波士顿、芝加哥和旧金山也都在"研发费用"和"主要科学技术奖项得主"方面再次进入前10名。





* Shaded bars represent other top 10 cities from the comprehensive ranking / * 指标里前10城市+综合排名前10都市

Cultural Interaction
文化 · 交流

Numbers in [ ] are ranks from the GPCI-2018
[ ]内的数值为GPCI-2018的排名

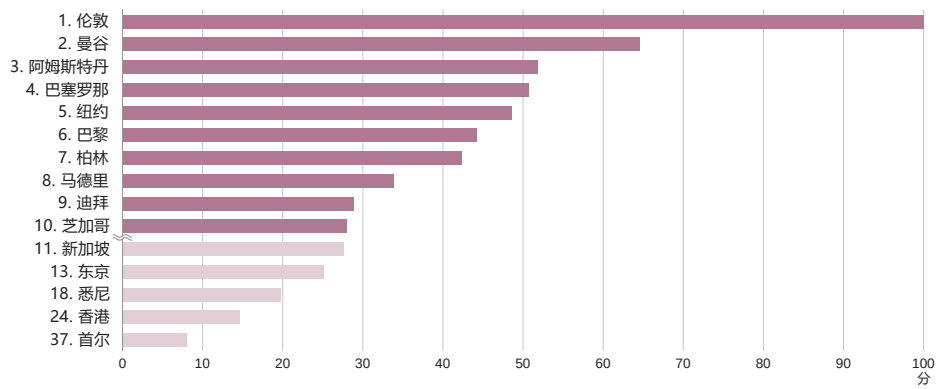
London holds a top 5 position in 12 of the 16 Cultural Interaction indicators, still displaying its superior strength. Most of the other top 10 cities remain unchanged this year, though Dubai (#6), Bangkok (#8), and Moscow (#10) are new entrants. Both Dubai and Bangkok see high scores in *Number of Foreign Visitors* and *Number of Luxury Hotel Rooms*, while these two cities are also evaluated highly in *Number of Foreign Residents* and *Number of Hotel Rooms*, respectively. On the other hand, Moscow is noted for its *Number of Museums*, *Number of Theaters*, *Number of Cultural Events*, and *Tourist Attractions*.

As the nighttime economy captures global attention, London, Bangkok, Amsterdam, Barcelona, and New York—all cities with well-established and renowned cultural attractiveness—enter the top 5 in new indicator *Nightlife Options*. In *Art Market Environment*, the top 5 cities are New York, London, Beijing, Paris, and Berlin, making it evident that the rich art industry existing in these cities attracts artists, collectors, and art lovers alike.

文化与交流方面，伦敦在16项指标中有12项都位居前5名，彰显了其强劲的实力。其他前10的城市大致与去年相同。另外，今年还入围了迪拜（第6名）、曼谷（第8名）和莫斯科（第10名）。迪拜和曼谷同在“外国访问者人数”和“豪华酒店房间数量”指标上夺得高分，并分别在“外籍居民人数”与“酒店房间数量”上获得高度评价。另外，莫斯科以“美术馆与博物馆数量”、“剧场与音乐厅数量”和“文化活动举办次数”闻名今年的文化类评比。

随着世界夜间经济的发展，具有文化特色的5个知名城市——伦敦、曼谷、阿姆斯特丹、巴塞罗那和纽约都在“夜间经济活跃度”这个新指标里问鼎前5。在“艺术市场环境”方面，前5名的城市（纽约、伦敦、北京、巴黎和柏林）再次证明了城市已有的丰富艺术产业能够持续吸引艺术家、收藏家和艺术爱好者。

夜间经济活跃度



伦敦	1	382.7 [1]
纽约	2	254.1 [2]
巴黎	3	252.2 [3]
东京	4	241.9 [4]
新加坡	5	204.3 [5]
迪拜	6	188.2 [13]
柏林	7	177.7 [6]
曼谷	8	173.8 [11]
首尔	9	173.4 [10]
莫斯科	10	170.7 [20]
伊斯坦布尔	11	159.8 [8]
马德里	12	159.0 [21]
香港	13	153.4 [15]
巴塞罗那	14	148.1 [14]
北京	15	143.1 [7]
阿姆斯特丹	16	138.4 [12]
维也纳	17	137.9 [9]
墨西哥城	18	135.3 [23]
大阪	19	133.6 [22]
布宜诺斯艾利斯	20	133.3 [25]
圣保罗	21	124.8 [32]
布鲁塞尔	22	123.6 [17]
悉尼	23	122.4 [19]
墨尔本	24	122.3
上海	25	122.2 [18]
米兰	26	115.5 [24]
洛杉矶	27	109.3 [16]
吉隆坡	28	108.6 [29]
芝加哥	29	99.0 [26]
多伦多	30	88.4 [30]
旧金山	31	81.9 [27]
都柏林	32	78.9
哥本哈根	33	78.3 [33]
开罗	34	75.8 [37]
华盛顿特区	35	74.7 [28]
温哥华	36	73.1 [34]
斯德哥尔摩	37	72.3 [35]
特拉维夫	38	71.5
法兰克福	39	70.9 [36]
约翰内斯堡	40	66.3 [38]
波士顿	41	66.1 [31]
台北	42	64.9 [41]
雅加达	43	64.4 [42]
孟买	44	52.8 [39]
福冈	45	48.7 [44]
苏黎世	46	48.6 [40]
赫尔辛基	47	45.7
日内瓦	48	42.4 [43]

* Shaded bars represent other top 10 cities from the comprehensive ranking / *指标里前10城市+综合排名前10都市

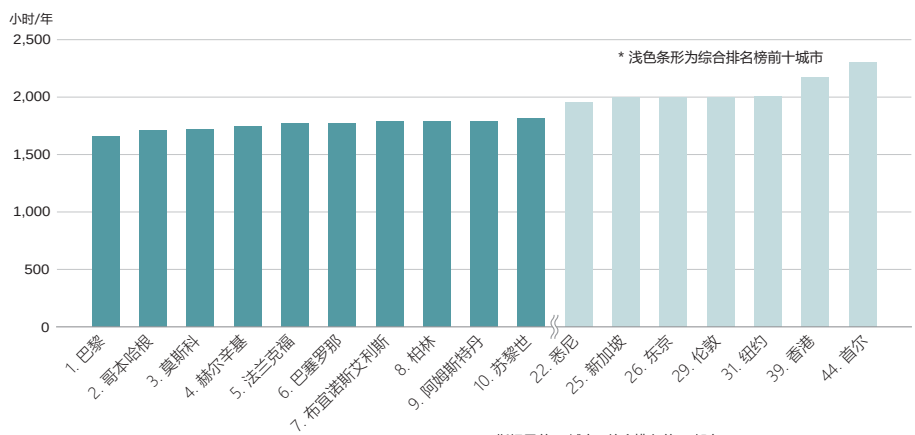
Livability
宜居

In the Livability function, Paris returns to #1 after 3 years since the GPCI 2016. Although the city's scores fell in "Security and Safety" after the terrorist attacks of 2015 , Paris' results in this indicator group have steadily recovered over the past few years. The French capital also achieves top scores in *Total Working Hours*, *Number of Retail Shops*, and *Number of Restaurants*, proving itself to be a livable city for its residents.

Looking at the top cities in this function, European and Canadian cities continue to dominate. Vancouver (# 4) and Toronto (# 7) both have a balance of high scores across most of the indicators, but return favorable results especially for *Social Freedom and Equality* and *Economic Risk of Natural Disaster*. Despite weaknesses in "Cost of Living" such as *Housing Rent* and *Price Level*, the top European cities show strengths in *Total Working Hours* similar to Paris, whereas Asian and American cities tend towards much longer working hours. However, according to the graph on page 12 , European cities' *GDP Growth Rates* are comparably low, showing that balancing between the two indicators is a challenge across all cities.

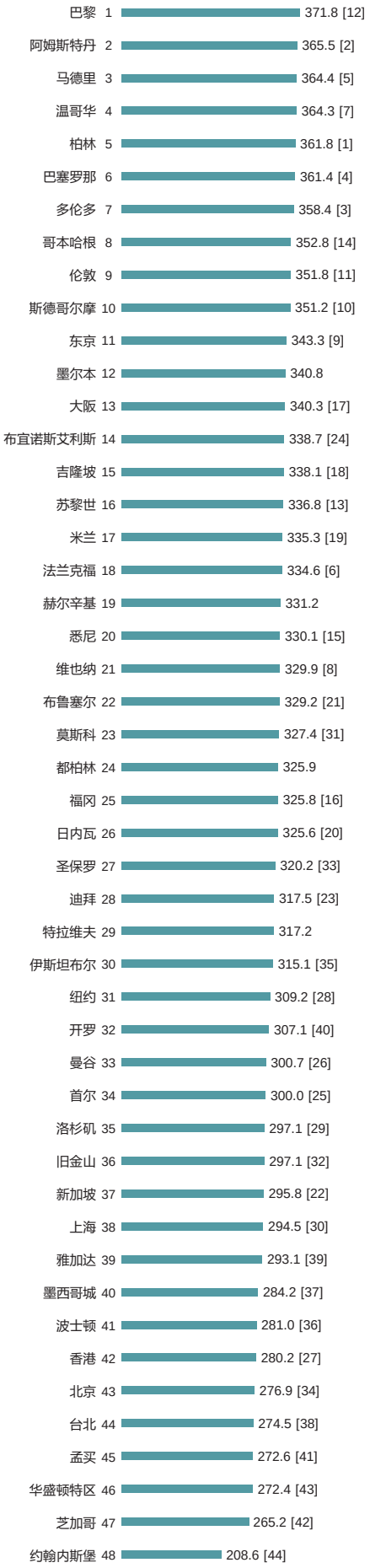
居在"宜居"领域里，巴黎时隔三年重夺桂冠。尽管2015年发生的多起恐怖袭击事件使其"安全与保障"组别中的分数和名次下降，但近年正在稳步回升。作为法国首都，巴黎在"总劳动时间长度"、"零售商铺数量"和"餐饮店数量"都取得第一，是一座宜居的城市。此专项排名前十的城市持续被欧洲和加拿大城市所占据。温哥华（第4名）和多伦多（第7名）在众多指标上获得了均衡的高度评价，并在"社会自由度与平等性"与"自然灾害经济风险"方面展现了特别优势。除巴黎以外，位列前位的欧洲城市虽然在"经济"中的"GDP增长率"和"生活成本"组别下的"房屋租金"和"物价水平"方面较弱，但在"总劳动时间长度"上总体比亚洲城市更加人性化，如何平衡这两者是这些城市需要面对的问题。

总劳动时间长度



* Shaded bars represent other top 10 cities from the comprehensive ranking / * 指标里前10城市+综合排名前10都市

Numbers in [ ] are ranks from the GPCI-2018
[ ]内的数值为 GPCI-2018的排名



Environment
环境

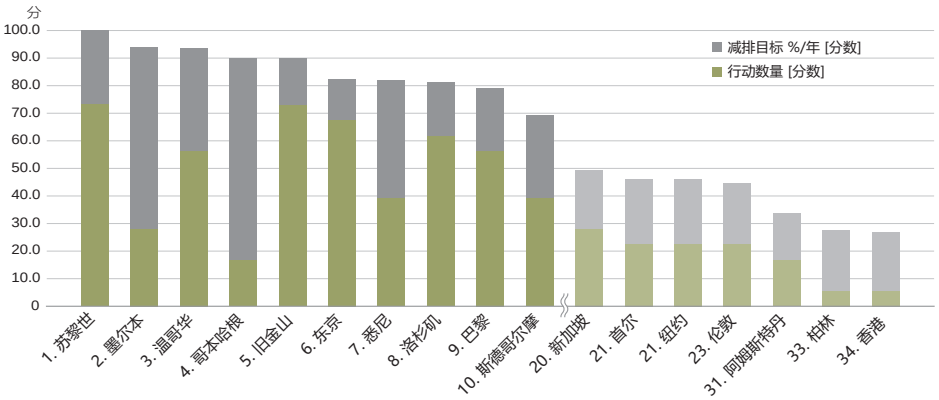
Numbers in [ ] are ranks from the GPCI-2018
[ ]内的数值为GPCI-2018的排名

As with previous years, top cities in Environment are from Switzerland, Australia, and Northern Europe. Zurich (#1) and Geneva (# 7) performed well in “Natural Environment” indicators such as *Urban Greenery* and *Water Quality*, as well as CO_2 *Emissions*, while Sydney (#5) and Melbourne (#6) were evaluated highly in *SPM Density* and SO_2 *and* NO_2 *Density*. Three Northern European cities, Stockholm (# 2), Copenhagen (# 3), and Helsinki (# 4), scored well in *Water Quality* and *Renewable Energy Rates*. The top-performing city within Asia was Singapore (# 16), which marked the top score for *Waste Recycle Rate*. Other Asian cities such as Seoul, Taipei, and Hong Kong also ranked within the top 10 in this indicator, showing it to be one strong point for Asian cities still far behind in this function.

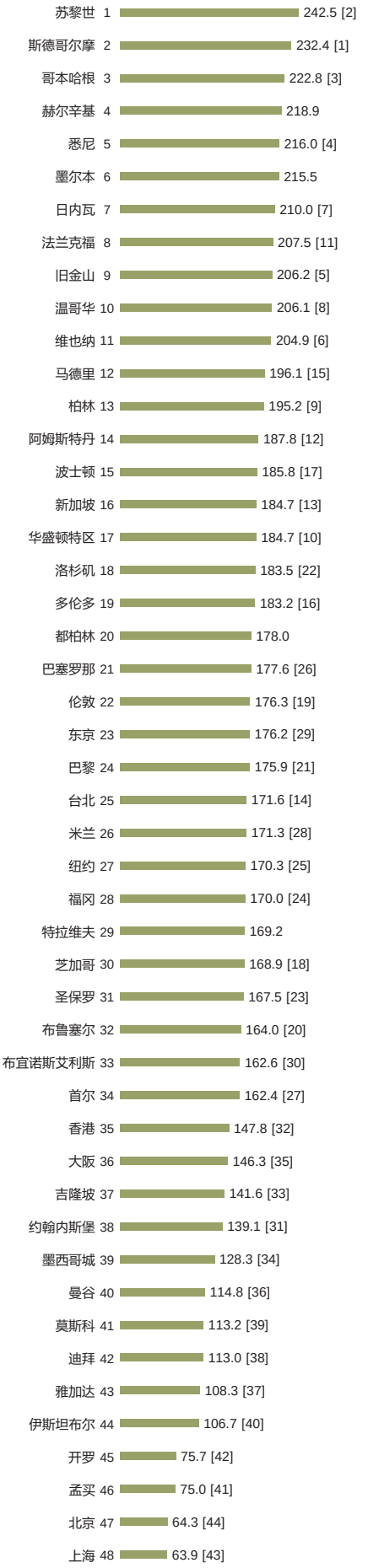
For the indicator *Commitment to Climate Action*, in addition to the total number of climate actions used last year, greenhouse gas emissions were evaluated by taking the reduction target and dividing by the reduction period (years) for each city. From these results, cities in Europe and Australia are still at the frontline of environmental policy.

环境与往年相似，位于瑞士、澳大利亚和北欧城市仍然名列“环境”榜单前茅。苏黎世（第1名）和日内瓦（第7名）在“城市绿地”、“水体质量”和“二氧化碳排放量”指标中表现良好，而悉尼（第5名）和墨尔本（第6名）则领先“悬浮颗粒物密度”和“二氧化硫与二氧化氮浓度”指标。斯德哥尔摩（第2名）、哥本哈根（第3名）和赫尔辛基（第4名）这三个北欧城市因优质的“水体质量”和“可再生能源利用率”而备受瞩目。亚洲城市表现最好的是新加坡（第16名），并取得了“废物回收率”指标的最高分，首尔、台北和香港也在这个指标中表现优异，显示了该指标为众多较为落后的亚洲城市的“环境”强项。在对“气候行动执行力”的评审过程中，GPCI延续去年的行动数量计算方法，并在此基础上加入了温室气体排放的数据。结果显示，欧洲和澳大利亚城市继续处于世界领先水准。

气候变化行动



* Shaded bars represent other top 10 cities from the comprehensive ranking / * 指标里前10城市+综合排名前10都市



Accessibility
交通 · 可达性

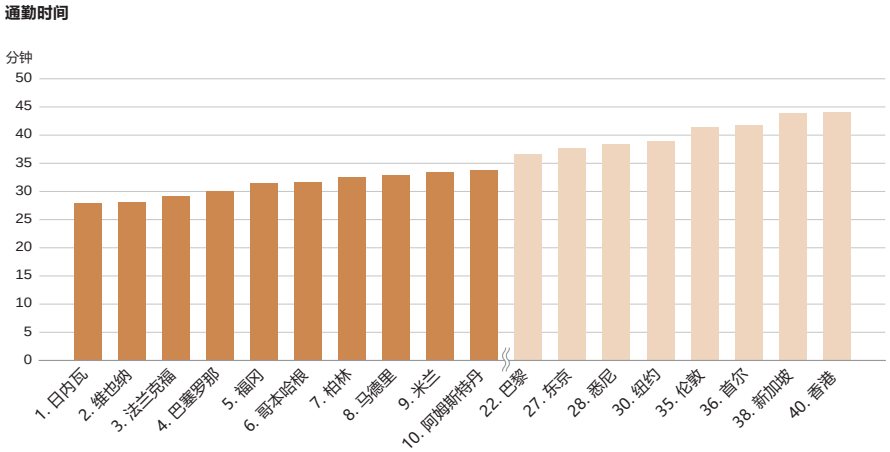
Numbers in [ ] are ranks from the GPCI-2018
[ ]内的数值为GPCI-2018的排名

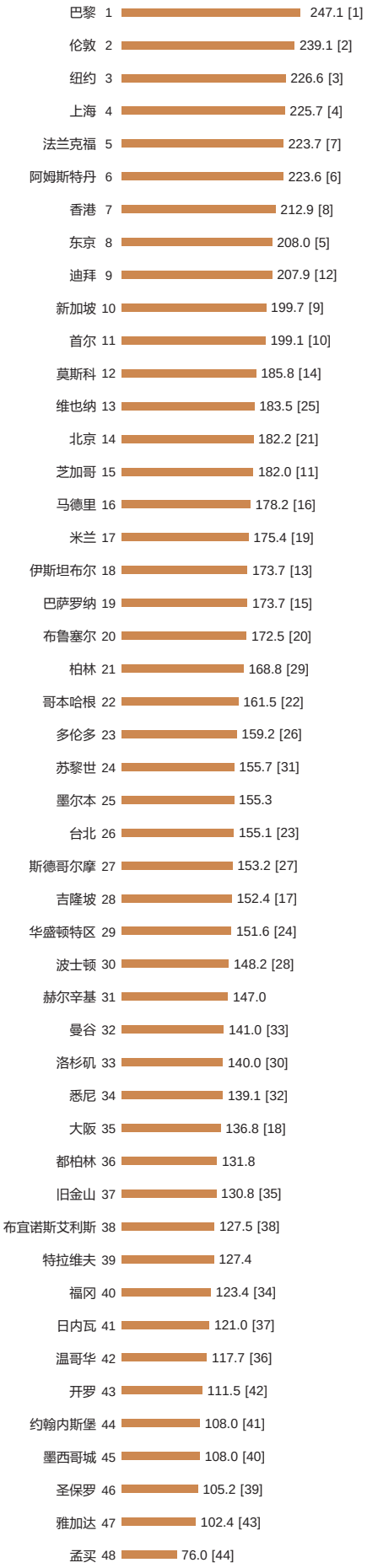
In Accessibility, large cities acting as international access hubs, such as Paris (#1) and London (#2) with their large number of *Cities with Direct International Flights*, New York (# 3) with a high *Number of Air Passengers* and *Number of Runways* in “Air Transport Capacity”, and Shanghai (#4) which scored highly in *International Freight Flows* and *Number of Air Passengers*, remained unchanged as the top 4 cities. Frankfurt (#5) and Dubai (#9) improved their ranks with their respective strengths in *Commuting Time* and *Traffic Congestion*, areas where large cities are weak. Tokyo (# 8) dropped its rank this year due to the lack of improvement in *Cities with Direct International Flights* and *Travel Time to Airports*, as well as the higher scores obtained by Amsterdam and Hong Kong.

Commuting Time is another weakness of large cities. Aside from Fukuoka, all the top 10 cities are European small-mid scale cities, showing the proximity of their residential areas to work locations.

交通与可达性领域里，大型城市扮演着国际交通枢纽的角色。巴黎（第1名）和伦敦（第2名）在“国际直航城市“中以航班量取胜；纽约（第3名）则引领”航空旅客“和”跑道数量“指标；上海（第4名）以”国际货物流通规模“和”航空旅客“的高分持平去年排名。法兰克福（第5名）和迪拜（第9名）分别在大城市普遍薄弱的”通勤时间“和”交通拥堵情况“方面提升了排名。东京（第8名）因在”国际直航城市“和”前往机场的出行时间“方面没有改善，加上阿姆斯特丹和香港的名次上升，导致今年的名次有所下降。

过长的”通勤时间“是常见的大城市病之一。除福冈以外，此指标排名前10的城市均为欧洲中小型城市，意味着住职距离相对较近。





* Shaded bars represent other top 10 cities from the comprehensive ranking / * 指标里前10城市+综合排名前10都市

GPCI Actor Evaluation
参与者视角评价

London, with its excellent business environment, diversity, tourist attractiveness, and accessibility, ranks at the top of 3 actors. Challenges emerge for Residents in New York, and Global Professionals in Tokyo.

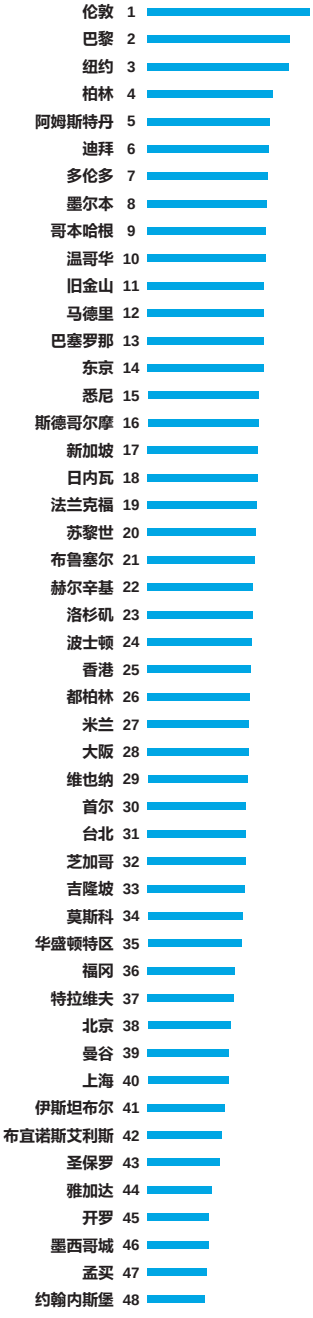
伦敦因其卓越的商业环境、多样性、观光魅力及交通便利，在三个参与者评价指标中位居首位。纽约的居住者指标及东京的全球专家指标成绩均不乐观。

Global Actor
Corporate Executive
国际参与者：企业家

Upon evaluating the most important components valued by Corporate Executives in terms of choosing the location of a company, London ranks #1 as it creates business vitality through its *Startup Environment* and has a large number of *Cities with Direct International Flights* which is indispensable to global enterprise activities. New York (#2) displays strengths in "Business Environment" due to its *Variety of Workplace Options*. Singapore (#3) excels in *Economic Freedom* and *Political, Economic, and Business Risk*, while Amsterdam (#4) performs well thanks to *Employees in Business Support Services*. Although Tokyo (#5) scores highly in "Market Size" and "Economic Vitality", both integral for business expansion, the city comes far behind the top 4 cities in *Startup Environment* and *Cities with Direct International Flights*, posing a significant challenge.

在企业布局方面按照企业家重视各要素进行排名，最终在创造商务活力的“启动环境”，以及全球性企业活动中不可或缺的“拥有国际直达航班的城市数量”方面的成绩均遥遥领先的伦敦位居首位。排名第二的纽约，在以“职场充实程度”为首的“商务环境”中具有领先优势。排名第三的新加坡以“经济自由度”、“政治、经济、商机的风险”为优势、第四位的阿姆斯特丹则在“商务支援人才数量”方面表现优异。排名第五的东京，虽然经营环境方面重要指标的“市场规模”和“经济积累”方面都获得了很高的评价，却在“启动环境”和“拥有国际直达航班的城市数量”评价中，与排名前4位的其他城市差距较大，期待今后能予以改善

Global Actor
Global Professional
国际参与者：全球专家



Looking at cities from the perspective of Global Professionals who carry out activities across the world regardless of national boundaries or nationality, London achieves #1 in the ranking. With high scores in *Number of Foreign Residents* and *Number of International Students*, as well as *Startup Environment*, it is clear the city possesses a multi-cultural, innovative urban environment. For Paris (#2) and New York (#3), Paris shows favorable results in *Total Working Hours*, *Number of Retail Shops*, and *Number of Restaurants*, while New York especially stands out for *Workstyle Flexibility* and *Variety of Workplace Options*—all indicating an ease of living and working. Berlin (#4) and Amsterdam (#5) both show excellent results in *Social Freedom and Equality*, as well as *Total Working Hours*, exemplifying the attractiveness of European cities.

不论国界和国籍，单从活跃于世界舞台之上的全球专家视点评价成绩来看，伦敦排名第一。在“外国人居住者数量”、“留学生人数”和“启动环境”方面都获得了很高的评价，可以说是多文化、拥有丰富创造性的一座城市。位居第2位与第3位的分别是巴黎与纽约，其中巴黎以“总工作时间短”、“零售店铺数量”和“餐饮店数量”倍受好评，而纽约则在“工作方式灵活性”和“职场充实程度”方面广受瞩目，二者分别在居住和工作的便利性方面力压群雄。位居第4位和第5位的柏林与阿姆斯特丹，在“社会自由•平等度”和“总劳动时间短”方面平分秋色，以欧洲城市独具的显著魅力而崭露头角。

In addition to a function-specific analysis, the GPCI also carries out an evaluation of major cities from the perspectives of people managing businesses, working, touring, and living in those cities. For the evaluation, 3 Global Actors and 1 Local Actor were established and those indicators considered important by each actor were extracted from the GPCI's 70 indicators across the 6 functions. The scores for these extracted indicators were then averaged and ranked.

分领域的评价中，GPCI主要为以在世界主要城市经营公司、工作、观光、生活者的观点进行评价。评价时会设定3个全球参与者（企业家，全球专家，游客）与1个本地参与者（居住者），从GPCI的6大领域70个指标中横向提取他们各自所重视的指标。并对提取出的指标得分进行平均计算后得出排名。

Global Actor
Tourist
国际参与者：游客

伦敦 1
巴黎 2
东京 3
纽约 4
首尔 5
马德里 6
柏林 7
莫斯科 8
曼谷 9
迪拜 10
新加坡 11
伊斯坦布尔 12
香港 13
阿姆斯特丹 14
巴塞罗那 15
北京 16
上海 17
维也纳 18
布宜诺斯艾利斯 19
大阪 20
墨西哥城 21
圣保罗 22
悉尼 23
米兰 24
吉隆坡 25
布鲁塞尔 26
墨尔本 27
多伦多 28
法兰克福 29
哥本哈根 30
台北 31
洛杉矶 32
芝加哥 33
开罗 34
特拉维夫 35
都柏林 36
旧金山 37
温哥华 38
波士顿 39
斯德哥尔摩 40
华盛顿特区 41
雅加达 42
赫尔辛基 43
苏黎世 44
福冈 45
日内瓦 46
孟买 47
约翰内斯堡 48

London (#1) shows magnitude of its strength due to the city's abundant tourist spots and cultural events as well as a large number of *Cities with Direct International Flights* providing excellent access. Paris (#2) also benefits from exceptional international transport access, and additionally scores highly in *Number of Theaters* and *Tourist Attractions*. Tokyo (#3) receives a strong evaluation for *Attractiveness of Shopping Options* and *Attractiveness of Dining Options*, while New York (#4) sees high scores in *Number of Theaters* and *Number of Museums*. Seoul (#5) returns especially stronger results than the top 4 cities in *Taxi Fare*.

排名第一的伦敦，不仅有着丰富的旅游景点与充实的文化活动，在“拥有国际直达航班的城市数量”等交通方面也有着出色的表现，具有压倒性的优势。位列第2的巴黎，同样拥有着卓越的国际交通，并在“剧场、音乐厅数量”和“丰富的旅游景点”方面斩获了高度评价。排在第3位的东京，以“购物的魅力”和“饮食的魅力”，荣获同级城市中的最高评价，排在第4位的纽约，以“剧场•音乐厅数量”、“美术馆•博物馆数量”等“文化设施”方面的卓越表现而备受好评。排名第5位的首尔在“出租车价格便宜”方面成绩优异，而这一点恰恰又是前4名较为薄弱的部分。

Local Actor
Resident
本地参与者：居民

巴黎 1
柏林 2
伦敦 3
马德里 4
东京 5
巴塞罗那 6
墨尔本 7
维也纳 8
大阪 9
阿姆斯特丹 10
布宜诺斯艾利斯 11
纽约 12
斯德哥尔摩 13
哥本哈根 14
法兰克福 15
多伦多 16
米兰 17
布鲁塞尔 18
首尔 19
苏黎世 20
温哥华 21
莫斯科 22
新加坡 23
香港 24
赫尔辛基 25
迪拜 26
台北 27
悉尼 28
福冈 29
日内瓦 30
上海 31
都柏林 32
吉隆坡 33
圣保罗 34
旧金山 35
北京 36
特拉维夫 37
波士顿 38
伊斯坦布尔 39
华盛顿特区 40
芝加哥 41
洛杉矶 42
墨西哥城 43
曼谷 44
开罗 45
雅加达 46
孟买 47
约翰内斯堡 48

From the viewpoint of a Resident, Paris was evaluated as the top city. One reason is due to the high *Number of Retail Shops* and associated results from “Ease of Living”. Berlin (#2) and Madrid (#4) both show similar trends with excellent scores in “Cost of Living” and “Ease of Living”. Furthermore, these two cities can be said to possess competitive power in terms of cost and the proximity of one's workplace to their home, evident in strong results for *Housing Rent* and *Commuting Time*. London (#3) and Tokyo (#5) are shown to have a high level of public transport convenience as both cities score well in *Public Transportation Use*. However, as their *Traffic Congestion* and *Taxi Fare* return low results, it may not be as convenient when travelling by car in those cities.

居住者评价中，巴黎排名最高。主要原因在于，这座城市中以“零售店铺数量”为首的“生活便利性”较高。位居第2位的柏林和位居第4位的马德里较为相似，在“居住成本”和“生活便利性”方面的成绩均较为优秀。此外，在“房租水平低”和“上班、上学往返时间短”方面，比巴黎、伦敦及东京的表现都更为突出，可以称之为成本方面极具竞争力的职住接近型城市。排名第3的伦敦和排名第5的东京，都在“公共交通利用率”方面有很好的表现，可见这两座城市的公共交通工具都十分方便，但与此同时，“交通拥堵少”和“出租车价格便宜”这两个弱点又在两座城市中同时存在，车辆移动依旧是未来的重大课题

Special Contribution
特邀稿件

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Sustainable Cities: Opportunities and Challenges for the 21st Century
可持续发展城市：21世纪的机遇和挑战

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Cities are expanding – both physically and in terms of their political stature. They hold roughly half of the world's population; by 2050, more than two-thirds will be living in cities. (*1) These urban areas generate over 80% of global GDP(*2), making them instrumental in driving wealth and development. Sustainable Development Goal (SDG) 11 acknowledges the important role of cities in the global policy agenda, and sets the charge for them to be both sustainable and inclusive in moving the world towards a resilient future.

Yet for all the benefits they confer, cities are also major sites of pollution, heat, and waste. Currently, they account for a staggering 70 percent of the planet's energy-related carbon dioxide emissions. (*3) Further, increases in population and motorized vehicles, coupled with intensive economic activities, like manufacturing and fossil fuel burning, have given rise to severe smog and bad air in many urban areas. The overwhelming majority of city residents breathe air that exceeds the World Health Organization's guidelines for safe exposure to fine particulate pollution (PM2.5), one of the most dangerous urban threats to human health. Cities also experience the urban heat island effect, a rise in local temperature as a result of high-density living conditions and the clearing of natural land cover. This heat, exacerbated by rising temperatures from climate change, can lead to serious illnesses like heat stroke and vector-borne diseases.

Cities are also increasingly loci of inequality. The Urban Environment and Social Inclusion Index (UESI), a flagship tool developed by my group, the Data-Driven Lab, provides an unprecedented level of detail into the state of the environment and social equity in cities. Using high-resolution and large-scale data, the UESI reveals how residents living in the same city often experience urban environments in vastly different and unequal ways. 90 out of 162 cities are disproportionately burdening lower-income populations with air pollution, urban heat, and lack of accessible transport.(*4) Poorer city residents are also much less likely to have the means to adapt to these challenges, which can perpetuate and exacerbate inequality. On this front, cities are failing on SDG 11 to provide inclusive and sustainable urban growth.

Cities thus present a puzzle: how can some of these adverse trends be reconciled with the need for cities to be sustainable and inclusive?

Cities are increasingly aware of the challenges they face – both locally and globally – and have started to act. To tackle climate change, cities have undertaken new mitigation and adaptation policies that can contribute to global efforts while building resilience for residents. My group's *Global Climate Action from Cities, Regions, and Businesses 2019* report shows that more than 6,000 subnational actors and 1,500 businesses in ten high-emitting countries around the world have committed to emission reduction targets that could lead to an additional 1.4-2.2 $GtCO_2e/yr$ in 2030 – approximately four percent of today's global emissions.(*5) This number is on top of what national governments have already pledged to the Paris Agreement. There is thus significant potential for cities to fill in the emissions gap and ramp up global ambition.

Cities also hold the key to greater sustainability and inclusion. Urban innovation and the reorganization of cities into more compact, connected, and coordinated hubs can generate a wealth of employment opportunities and lower infrastructure costs, with estimated savings of $17 trillion by 2050. Integrated transit systems and sustainable buildings can reduce pollution and increase accessibility for residents, while the strategic addition of green spaces can help to reduce urban heat. With the right leadership and programs, cities have a strong likelihood of achieving SDG 11.

2020 is a critical year for climate action. It is the year the Paris Agreement goes into effect and nations begin implementing – as well as ratcheting up – their climate plans. What comes after will determine how closely the world stays within its warming targets and whether we can stave off the worst effects of climate change. As nations fumble to get their emissions reduction acts together, cities are stepping up to the plate. They are increasingly playing a crucial role in climate action and have the ability to build more sustainable and equitable societies.

都市的规模，无论是物理层面还是政治层面，都在不断扩大。世界人口中，城市人口占了总数的一半左右，到2050年，世界上的3分之2以上人口都会集中在城市。(*1) 城市产值占了世界GDP的80%(*2)，引领着财富和发展的动向。可持续发展目标（SDGs）的目标11，认识到了城市在全球性政策课题中的重要性，并赋予城市以可持续性与全面性的职责，从而引导其创造出更具弹性的未来世界

As nations fumble to get their emissions reduction acts together, cities are stepping up to the plate. They are increasingly playing a crucial role in climate action and have the ability to build more sustainable and equitable societies.

随着世界各国对降低能耗的重视，城市也在积极地采取行动。气候行动的重要性不断攀升，而其中，城市无疑是构筑更可持续发展的平等社会中最重要的一环。

但是，在为人类提供生命活动所需资源的同时，城市也变成了污染、热量和废弃物的温床。如今，地球上的与能源相关的CO2排放量中，70%源于城市。(*3) 而且，随着人口和汽车的增加，以及生产及矿石燃料消耗等集中性经济活动的扩张，许多城市都开始面临烟雾、大气污染的严峻问题。绝大部分的城市居民都受到了粒子状物质(PM2.5)的威胁，这是大气中含有的一种对人体有害的物质，并且其污染程度已经超过了世界卫生组织制定的安全标准值。此外，高密度的居住环境和地表覆盖，导致城市局部温度上升，出现了热岛现象。气候变化导致的气温上升加剧了这种现象，从而让人类饱受中暑的困扰，昆虫传播性疾病等问题也日益严峻。

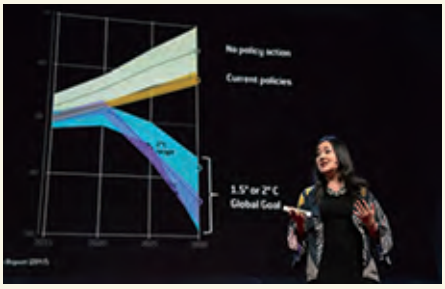
城市也生出了许多不平衡。Data-Driven Lab开展的“Urban Environment and Social Inclusion Index(UESI)”，对城市环境与社会公正状态做出了非常详尽的说明。UESI使用了高分辨率的大数据，明确了城市居住者分别以不同的方式、不平等的形式在体验城市环境的这一事实。162座城市中的90座城市，因大气污染、气温上升、缺乏便利交通条件，而让低收入阶层过着不均衡的生活。(*4) 贫困阶层的居民无法适应环境，从而不断扩大并加剧了城市的不平等现象。从这个观点来看，城市并未实现SDGs的目标11，即全面、可持续的城市发展。

那么这就引申出了另一个问题。在这种消极的趋势下，我们如何才能实现全面性的可持续发展城市呢？

每个城市都在不断重视这一城市内及全球性的问题，并已经开始采取行动。为了应对气候变化，城市作为世界性活动的一环，在不断推进新的缓和及适应政策的同时，也在构建城市自身的耐性。在我们发表的Global Climate Action from Cities, Regions, and Businesses 2019报告中，说明了在温室效应排气量居于世界前列的10个国家中，6,000个地方政府和1,500个企业，已经制定了至2030年止，削减CO2排放量为每年1.4～2.2千兆吨的目标，这就相当于如今全球温室效应气体排泄量的大约4%。(*5) 这个数值已经超过了各国政府在巴黎协定中承诺的排放值。不过，城市在降低排放量，提高世界性目标的同时，也蕴藏着巨大的可能性。

城市，掌握着进一步实现可持续性和全面社会的钥匙。在城市变革的同时，紧密、和谐的中心地城市重组措施也在不断推进，不仅增加了就业机会，也让基础设施的成本得以降低，预计到2050年，将降低约17兆美元的成本。综合交通体系和可持续型建筑物可以降低大气污染，提升居民生活的便利性，此外，战略性的绿地增设也会降低城市内部的气温。正确的领导能力和计划，可以引导城市加快实现SDGs目标11。

2020年对气候行动而言，是极为重要的一年。这是巴黎协定实施的第一年，各国正在加紧实施各自的气候变化应对措施，并不断提升其目标。也许不用多久，我们就能明确地掌握自己距离地球变暖应对措施还有多少距离，并清晰地认识到气候变化产生的最糟结果。随着世界各国对降低能耗的重视，城市也在积极地采取行动。气候行动的重要性不断攀升，而其中，城市无疑是构筑更可持续发展的平等社会中最重要的一环。



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*1 United Nations (2018). *World Urbanization Prospects: The 2018 Revision*. Available at: https://www.un.org/development/desa/publications/2018-revision-of-world-urbanization-prospects.html.

*2 The World Bank. *Urban Development Overview*. Available at: https://www.worldbank.org/en/topic/urbandevelopment/overview.

*3 International Energy Agency (2016). *Energy Technology Perspectives 2016: Towards Sustainable Urban Energy Systems*. Available at: https://www.iea.org/publications/freepublications/publication/EnergyTechnologyPerspectives2016_ExecutiveSummary_EnglishVersion.pdf.

*4 Hsu et. al (2018). *Metrics For Sustainable and Inclusive Cities*. Available at: https://datadrivenlab.org/wp-content/uploads/2018/12/2018_UESI_Full_Report.pdf

*5 Data-Driven Lab et. al (2019). *Global Climate Action from Cities, Regions, and Businesses: 2019 update on the potential impact of individual actors and collective initiatives on global greenhouse gas emissions*.

Special Article
专题研究

Comparing Perception vs Data

Identifying diversions between environmental perception and quantitative data

认知与和数据的比较

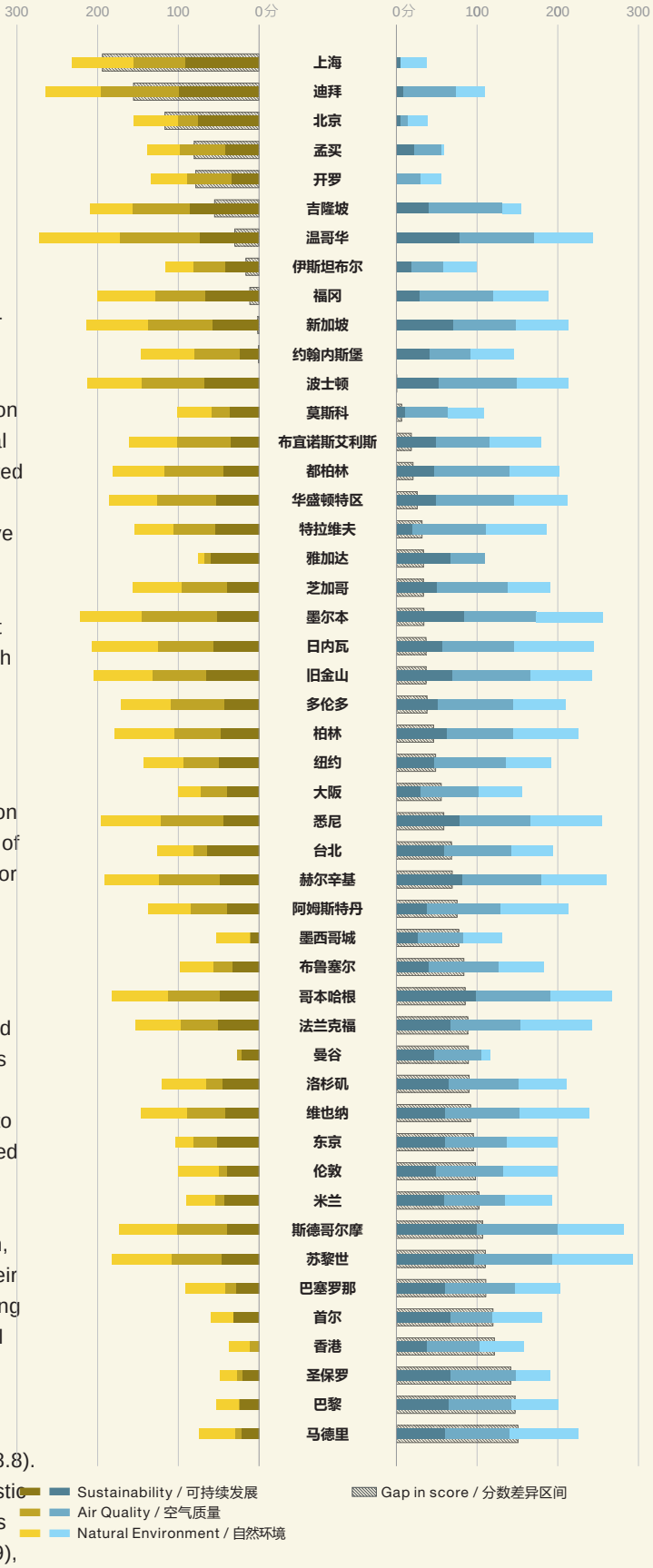
环境专项问卷调查与定量数据的差异分析

While collecting and analyzing statistical data is powerful, understanding the public's perception of their urban environment and the impacts of climate change is also of critical importance(*1) This is because the success of environmental policies rests not only on government policy makers, but also the actions of "people"–the general urban stakeholder whose environmental decisions are more or less affected by their individual perception(*2). Therefore, the purpose of this special article is to clarify the gap between people's perceptions and quantitative data, providing a tool for environmental policy makers.

A perception survey was conducted based on the methodology outlined on the following page, and the responses were compared with indicator-group data from the GPCI's Environmental function, with the results visualized in the adjacent graph.

Among cities that show a tendency towards "optimistic" perception, Shanghai and Dubai display relatively large gaps between perception and data scores across all 3 indicator groups, with a total discrepancy of 194.1 and 155.6 respectively (max 300). Dubai's perception results for "Sustainability" (including climate policy support) scored highest among all cities, and in "Air Quality" the city was #2 behind Vancouver, indexed at 96.5 (max 100). Quantitatively, though, Dubai's score for "Sustainability" was near the bottom of the 48 GPCI cities at #45, while its "Air Quality" ranked #37 according to indicator data. Shanghai, likewise, displayed a similar trend with survey respondents providing positive perceptions much higher than GPCI data results, though it should be noted that for Beijing, residents' responses regarding "Air Quality" were much closer to the final GPCI scores, showing a discrepancy of only 16.3, as opposed to Shanghai's 63.5.

For those cities showing a more "pessimistic" tendency in perception, several displayed low results from survey respondents' views on their urban environment despite possessing relatively high scores according to GPCI data. Notable examples include Madrid, which showed a total discrepancy of 151.4, and ranked #44 in perception for "Sustainability", but #19 in the GPCI's final results. In "Natural Environment", the Spanish city ranks #33 for perception, but #6 according to quantitative data, with Water Quality and Urban Greenery having high discrepancies (34.0, 38.8). Paris also displayed a high discrepancy (total 147.7) towards pessimistic perceptions of its results. For the perception of "Sustainability", Paris ranked #42 with a score of 23.7, comparable to Johannesburg (23.9), and Bangkok (21.7), while the GPCI ranked Paris at #14, a significant gap. Sao Paulo, Hong Kong and Seoul mirror these two cities with total discrepancies of 142.4, 122.0, and 120.2 respectively, with Seoul suffering an especially negative perception of its "Sustainability" (#40) considering



The yellow-shaded bars on the left represent index scores based on the perception survey. The blue-shaded bars on the right represent index scores based on GPCI results. The thick shaded bar represents the total gap between a city's survey score and GPCI score. Maximum points for each category's score and gap is 100 (total 300).
左侧的黄色条形图表示基于问卷调查的指数值。右侧的蓝色条形图表示基于GPCI定量数据的指数值。黑色加粗的条形图显示了各城市的问卷调查结果和GPCI数据的背离幅度。各项的分值以及背离幅度的最大值为100（合计300）。

the city is ranked #10 in the GPCI for this indicator group.

A final group to consider are those cities where perception and quanti tative data match relatively closely in terms of their performance among the 48 GPCI cities. The cities of Johannesburg, Boston, and Singapore all display minimal total gaps of 0.1, 0.5, and 1.5 respectively, with Singapore and Johannesburg's "Air Quality" showing only a 4.1 and 5.5-point discrepancy between perception and GPCI results. Residents in Boston rate the city's "Natural Environment" only a few points higher than in the GPCI, with a perception score of 67.5.

While it is difficult to make definitive conclusions regarding the cause of these discrepancies in perception, it is clear that significant divergences exist. "Optimistic" and "pessimistic" perceptions that exist where statistics show relatively opposing conditions could indicate a problem of communication from administrations regarding environ - mental policy measures and results. It could also indicate a disconnect between evaluation methods and how people on the ground experience the impacts of climate change. Understanding these potential challenges and the links between perception and statistical indicators, then, can act as a tool in crafting more effective policy.

定量数据的收集和分析，在帮助人们提高对城市环境和气候变化认知方面的理解是非常重要的 (*1) 。之所以这么说，是因为环境政策的成功不仅取决于行政决策者，而且还取决于城市居民的具体行动，而他们的决断也多少受到了个人认知水平的影响 (*2) 。因此，本次专题研究的目的，就是要通过揭示人们的认知和定量数据之间的背离状况，为今后环境政策的制定提供有益的参考。

根据右栏记载的方法进行问卷调查，将调查结果与GPCI环境领域指标组的数据进行比较，结果如左图所示。

位于图表上部的上海和迪拜，调查结果高于定量数据，可以看出居民有较高的"乐观"认知倾向。这两座城市在所有的3项指标组中显示出来的调查结果和定量数据的分值，都呈现出较大的背离。3组数据的合计背离值中，上海为194 . 1，迪拜为155 .6（最大值为300）。在对气候变化的行政政策和解决对策进行评价的《可持续性》指标中，迪拜的问卷调查结果在所有城市中得分最高，在《大气质量》方面也以96 .5（最大值100）的分值，继温哥华之后位列第二。尽管如此，在《可持续性》指标中，迪拜的定量数据在48个城市中仅排名第45位，《大气质量》则排名第37位。上海也显示出相同的倾向，回答者的印象比实际的数据要高得多，均为"乐观"的状态。另一方面，在北京，针对《大气质量》的问卷调查结果与实际的GPCI分值相当接近，与上海63.5的背离值相比，北京的这一数值仅为16.3 ，值得我们关注。

虽然很多城市的调查结果均低于定量数据，呈现出"悲观的"倾向，但是我们仍然可以举一个显著的例子来说明问题，那就是背离值达151 .4 的马德里。在《可持续性》指标中，马德里的调查结果排在第44位，GPCI数据则排在第19位，远远高于前者的排名。在《自然环境》指标中，其调查结果也排在第33位，而定量数据则排在第6位，特别是"水质的良好度"和"绿地的充实度"两项的背离值较高（分别为34 .0和38 .8 ）。巴黎也同样呈现出较高的背离值（合计147 .7），可以说是一座比较"悲观的"城市。在《可持续性》指标方面，巴黎的调查结果排在第42位，分值为23 .7 ，结果与约翰内斯堡（23.9）和曼谷（21.7）十分相似，不过，实际的GPCI数据却居于第14位，两者之间背离巨大。圣保罗、香港、首尔的背离值分别为142.4、122.0、120.2，与马德里和巴黎呈现出相似的倾向。其中，首尔针对《可持续性》的调查结果排在第40位，但是GPCI数据则排在全体城市的第10位，具有公众认知低于调查数据的倾向。

最后，调查结果和GPCI数据评估值接近的城市有，约翰内斯堡、波士顿和新加坡。这些城市的背离值分别为0 .1、0 .5、1 .5，在48个城市中是最低的。特别是在《大气质量》指标中，新加坡和约翰内斯堡的调查结果和GPCI数据，不同项目的背离值最高也仅为4 .1和5 .5。针对波士顿居民在《自然环境》方面的调查结果值为67 . 5，居民的评价略高于GPCI的结果。

要归结出这种认知和数据之间出现背离现象的主因并不是一件容易的事情，但是，两者之间产生背离现象的城市又的确存在。出现城市居民所持有的"乐观"或者"悲观"的认知，与定量数据呈现出来的结果完全相反的现象，表明行政部门很有可能并没有准确地向市民传达有关环境政策的制定及其实施效果方面的信息。同时，这也很可能表明，针对环境开展的惯例性评价项目与居民在实际生活中对气候变化影响给自身带来的切身感受点并不一致。通过了解这类课题，以及人们的认知和数据之间的关联，或许能够帮助我们制定更加行之有效的政策。

Survey Method

The perception survey was deployed to residents from all 48 GPCI cities in July, 2019. Respondents were asked 5 questions related to their city's environment, with each question corresponding to an indicator group or indicator within the GPCI's Environment function. Specifically, respondents were asked to evaluate the following:

(1) Engagement (both local residents and government) of the city in promoting environmental sustainability. ("Sustainability")
(2) Air quality of the city. ("Air Quality")
(3) Water quality of rivers, lakes, ponds, and seas in or near the city. (*Water Quality*)
(4) Abundance of greenery in the city. (*Urban Greenery*)
(5) Comfort level of the climate of the city. (*Comfort Level of Temperature*)

The number of responses for each choice on the scale were totaled, and these totals were then indexed from 0-100. As (3) to (5) represent the indicators in the "Natural Environment" indicator group, the indexed scores for those three questions were averaged so that it could be compared with the corresponding GPCI indicator group score.

调查方法

问卷调查于2019年7月，针对GPCI-2019的48个目标城市的居民展开。回答者针对所居住城市与环境相关的5个问题进行回答，每个问题对应GPCI环境领域的指标组或者指标。问题的具体内容如下。

(1) 市民及行政机关对环境可持续性提出的对策和所做的努力（《可持续性》）
(2) 城市大气质量的优良情况（《大气质量》）
(3) 城市河流、湖泊、池塘、海域等水质的质量情况（"水质的良好度"）
(4) 城市绿地的丰富度（"绿地充实度"）
(5) 城市气候的舒适度（"气温的舒适性"）

根据评价，对分值量化的回答进行统计，设定最大值为100、最小值为0，计算出相应的指数。第（3）项到第（5）项对应《自然环境》指标组内的3项指标，因此通过取3个分数的平均值，以便与GPCI的指标组进行比较。

*1 Copstick et al. (2015). *International trends in public perceptions of climate change over the past quarter century*. Available at: https://onlinelibrary.wiley.com/doi/pdf/10.1002/wcc.321
*2 Pyhälä et al. (2016). *Global environmental change: local perceptions, understandings, and explanations*. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5040507/

Function 领域	Indicator Group 指标分组	ID 编号	Indicator 指标	Definition 定义
Economy 经济	Market Size 市场规模	1	Nominal GDP GDP	Nominal GDP of the target city. 目标城市的名义GDP。
		2	GDP per Capita 人均GDP	Nominal GDP per capita of the target city. 目标城市的名义人均 GDP。
	Market Attractiveness 市场魅力	3	GDP Growth Rate GDP增长率	Compound Annual Growth Rate (CAGR) of real GDP for the target city for the last 5 years. 目标城市最近5年实际 GDP的复合年均增长率。
		4	Economic Freedom 经济自由度	Score of the country of the target city in the Heritage Foundation's "Index of Economic Freedom". 评分依照美国智库传统基金会Heritage Foundation的《经济自由指数》中目标城市所在的国家得分。
	Economic Vitality 经济活力	5	Stock Market Capitalization 证券交易所的股票总市值	Aggregate domestic market capitalization for the stock exchanges located in the target city from World Federation of Exchanges' "Domestic Market Capitalization". 在World Federation of Exchanges的“Domestic Market Capitalization”中提到的目标城市交易所的国内时价总额。
		6	World's Top 500 Companies 世界 500强企业	Total score (determined by rank) of companies located in the target city that feature in Fortune's "Fortune Global 500". Fortune的“Fortune Global 500”上榜的企业中，根据排名顺序，将位于目标城市的企业进行评分所得到的分值。
	Human Capital 人力资源	7	Total Employment 总从业人数	Total employment in the target city. 目标城市的从业人数。
		8	Employees in Business Support Services 商务支持人才数量	Percentage of employees in the target city working in industries such as finance, insurance services, real estate services, professional services, business services, and science and technology services. 目标城市商业支持行业（金融、保险、不动产、事务、科学技术等各种服务业）的从业人数占目标城市从业人数的比例。
	Business Environment 营商环境	9	Wage Level 工资水平	Wage level (gross annual salary, with New York indexed as 100) of the target city given in UBS' "Prices and Earnings". 约值为100时，在UBS的“Prices and Earnings”中目标城市的工资水平（税前年收入总额）的值。
		10	Availability of Skilled Human Resources 技能人才保障	Average of the indexed values of the following data: (1) Average of the 9 indicators of the country of the target city related to the ease of securing human resources in INSEAD's "Global Talent Competitiveness Index", (2) Average of the 3 indicators of the target city related to the ease of securing human resources in INSEAD's "Global Talent Competitiveness Index - City and Regions", (3) Score of the target city in EF Education First's "English Proficiency Index". 以下数据指数化后的平均值：①在INSEAD的“Global Talent Competitiveness Index”中目标城市所属国家在留住优秀人才的简易性方面的9项指标的平均分值，②在INSEAD的“Global Talent Competititiveness Index-City and Regions”中，目标城市在留住优秀人才的简易性方面的3项指标的平均分值，③在EF Education First的"English Proficiency Index”中，目标城市的英语能力分值。
		11	Variety of Workplace Options 工作场所供给	Average of the indexed values of the following data: (1) Office space occupied per desk in the target city in Cushman & Wakefield's "Office Metrics", (2) Number of coworking facilities located in target cities according to Coworker.com. 以下数据指数化后的平均值：①在Cushman&Wakefield的“OfficeMetrics”中，目标城市每台办公桌对应的办公室专用面积，②Coworker.com中刊登的目标城市的联合办公设施数。
	Ease of Doing Business 经商便利度	12	Corporate Tax Rate 企业税率	Corporate tax rate for the target city or the country of the target city in KPMG's "Corporate Tax Rates Table". 在KPMG的“Corporate Tax Rates Table”中，目标城市或者目标城市所属国家的法人税率。
		13	Political, Economic and Business Risk 政治、经济商业风险	Average of the indexed values of the following data: (1) Average of the 10 indicators related to ease of doing business for the target city or the country of the target city in the World Bank's "Doing Business", (2) Moody's long-term credit rating for the country risk ceiling of foreign currency for the country of the target city. 以下数据指数化后的平均值：①在WorldBank的“Doing Business”中，与目标城市或目标城市所属国家的商业便利性相关的10项指标的平均分值，②Moody's对目标城市所属国家外汇风险上限的长期信用评级。
R & D 研究·开发	Academic Resources 研究集积	14	Number of Researchers 研究员人数	Number of researchers in the target city estimated pro rata from the number of employees in the country and target city in the UNESCO Institute of Statistics' "UIS Statistics". 把UNESCO Institute of Statistics“UIS Statistics”中的目标城市所属国家的研究员人数，按国家和目标城市从业人数的比例分配进行推算得出的人数。
		15	World's Top Universities 世界一流大学	Ranking score determined from the rank of universities located within 50 km of the center of the target city that are in the top 1000 of Times Higher Education's "World University Rankings". 在Times Higher Education的“World University Rankings”中排名1000位以内的大学中，根据排名顺序将位于目标城市中心50 km范围内的大学进行评分得到的分值。
	Research Environment 研究环境	16	Research and Development Expenditure 研发费用	Research and development expenditure in the country of the target city estimated pro rata from the number of employees in the country and target city listed under the UNESCO Institute of Statistics' "UIS Statistics". 把UNESCO Institute of Statistics的“UIS Statistics”中的目标城市所属国家的研发费，按国家和目标城市从业人数的比例分配进行推算得到的金额。
		17	Number of International Students 国际留学生数	Number of international students attending universities estimated from the number of students and the percentage of international students of each university located within 50 km of the city center of the target city that are in the top 1000 of Times Higher Education's "World University Rankings". 在Times Higher Education的“World University Rankings”中排名1000位以内的大学中，根据目标城市中心50公里范围内大学的学生人数和留学生比例推算出来的目标城市的留学生人数。
		18	Academic Performance 学术能力	Average score of all subjects for the country of the target city in the OECD "Programme for International Student Assessment (PISA)". 在OECD的“Programme for International Student Assessment（PISA）”中，目标城市所属国家的全部科目平均得分。
	Innovation 创新	19	Number of Patents 专利数量	Number of registered patents estimated pro rata from the number of employees in the country and target city based on averages for the last 11 years from World Intellectual Property Organization's "WIPO IP Statistics Data Center". 将World Intellectual Property Organization的“WIPO IP Statistics Data Center”中的目标城市所属国家最近11年来的专利登记数的平均值，按国家和目标城市从业人数的比例分配进行推算得到的数值。
		20	Winners of Prizes in Science and Technology 创业环境	Total points awarded to the target city for number of recipients within the last 20 years of the major science and technology-related awards (Nobel Prize, Balzan Prize, Crafoord Prize, Nevanlinna Prize, and Fields Medal) based on the university or research institute (located within 50 km of the city center) with which they were affiliated at the time of receiving the award. Points are weighted based on the year in which the prize was awarded. 在主要科学技术奖（诺贝尔奖、巴尔赞奖、克拉福德奖、内文林纳奖、菲尔兹奖）近20年来的获奖者中，将获奖时所在研究机构位于目标城市中心50公里圈内的获奖者，根据获奖经过的年份进行评分所得到的分值。

[O] ··· Indicators using questionnaires
使用了问卷调查结果的指标

Function 领域	Indicator Group 指标分组	ID 编号	Indicator 指标	Definition 定义
R & D 研究·开发	Innovation 创新	21	Startup Environment 创业环境	Average of the indexed values of the following data: (1) Startup Ecosystem score in Nestpick's "Startup Cities Index", (2) Average number of startups founded in the target city in the last 3 years according to Crunchbase. 以下数据指数化后的平均值：①Nestpick“Startup Cities Index”中的目标城市的“StartupEcosystem”分值，②Crunchbase中刊登的过去3年在目标城市成立的初创企业的平均值。
Cultural Interaction 文化·交流	Trendsetting Potential 趋势引领潜力值	22	Number of International Conferences 国际会议举办次数	Number of international conferences held in the target city listed in the Union of International Associations' "Yearbook of International Organizations". 在Union of International Associations的“Yearbook of International Organizations”中所列目标城市举行的国际会议次数。
		23	Number of Cultural Events 文化活动举办次数	Average of the indexed values of the following data: (1) Number of points awarded to the target city for hosting global events such as the Olympics, World Expositions, and FIFA World Cups in the last 20 years according to their size and year in which they were hosted, (2) Average number of events held in the target city in the last 3 years listed in Columbus Travel Media's "World Travel Guide". 以下数据指数化的平均值：①将最近20年在目标城市举办的世界文化活动（奥林匹克、FIFA世界杯、万国博览会），按照规模和举办经过的年份进行评分后所得的分值，②最近3年，在Columbus Travel Media的“World Travel Guid”目标城市中举办的文化活动数量的平均值。
		24	Cultural Content Export Value 文化产业输出额	Average of the indexed values of the following data (weighted 1:2): (1) Export value of Printed Books and Optical Media estimated pro rata from the proportion of GDP for the country and target city according to the International Trade Center's "International Trade Statistics", (2) Export value of Audiovisual and Related Services estimated pro rata from the proportion of GDP for the country and target city according to the International Trade Center's "International Trade Statistics". 将以下数据指数化后，按1：2加权得到的平均值①将International Trade Center的“International Trade Statistics”中目标城市所属国家向各国出口的书籍以及光学媒体的数额，按所占国家和目标城市GDP的比例分配进行推算得到的数额；②将International Trade Center的、“International Trade Statistics”中列举的目标城市所属国家向各国出口的视听服务及其他相关服务的数额，按所占国家和目标城市GDP的比例分配进行推算得到的数额。
		25	Art Market Environment 艺术市场环境	Average of the indexed values of the following data: (1) Score determined by the ranking of the contemporary artists based in the target city from the top 200 living artists ranked according to total sales over the period of one year in Artprice.com's "Contemporary Art Market Report", (2) Number of art galleries listed in Artnet.com's "Gallery Network". 以下数据指数化后的平均值：①在Artprice.com的“Contemporary Art Market Report”中年度中标总额排名200位以内的上榜作家（健在）里，将其中把目标城市作为活动据点的作家根据排位顺序进行评分后所得的数值，②Artnet.com的“GalleryNetwork”中刊登的目标城市的画廊数。
	Tourism Resources 旅游资源	26 [O]	Tourist Attractions 旅游景点	Average of the indexed values of the following data: (1) Number of tourist attractions listed in TripAdvisor with more than 100 reviews and located within 10 km of the center of the target city, (2) Number of days required for a foreign visitor to visit the major tourist attractions in the target city according to the Resident Questionnaire. 以下数据指数化后的平均值：①TripAdvisor中刊登的目标城市中心10公里范围内的观光景点数（评论100以上）、②根据对居民的问卷调查，外国参访人员流览目标城市的主要观光景点所需要的天数。
		27	Proximity to World Heritage Sites 世界遗产比邻度	Total points awarded based on the size and type of UNESCO World Heritage Sites located within 100km of the center of the target city. 将从目标城市的中心点开始100公里范围内所分布的UNESCO评定的联合国教科文组织世界遗产，根据遗产种类及面积进行评分所得到的分值。
		28	Nightlife Options 夜间经济活跃度	Average of the indexed values of the following data: (1) Relative number of searches for the city's name + "nightlife" in the past 12 months according to Google Trends, (2) Number of nightlife attractions listed in TripAdvisor with more than 10 reviews. 以下数据指数化后的平均值：①在Google Trends中“目标城市名+nightlife”主题的相对检索数（过去12个月）、②TripAdvisor中刊登的目标城市的夜生活点的个数（评论数10以上）。
	Cultural Facilities 文化设施	29	Number of Theaters 剧场与音乐厅数量	Average of the following values: (1) Number of theaters and concert halls listed in TripAdvisor, (2) Number of theaters and concert halls listed in OpenStreetMap located within 10km of the center of the target city. 以下数据的平均值：①TripAdvisor中刊登的目标城市的剧场、音乐厅数量、②OpenStreetMap中刊登的目标城市中心点开始10公里范围内的剧场、音乐厅数量。
		30	Number of Museums 美术馆与博物馆数量	Number of museums listed in De Gruyter Saur's "Museums of the World". De Gruyter Saur的“Museums of the World”中刊登的目标城市的美术馆、博物馆数量。
		31	Number of Stadiums 体育场数量	Number of stadiums listed in World Stadiums with a capacity of more than 10,000 people. Stadiums for universities and other educational facilities are excluded. World Stadiums中刊登的目标城市的运动场馆数量（容纳人数10,000人以上，大学等教育机构内的体育场除外）。
	Visitor Amenities 访客设施	32	Number of Hotel Rooms 酒店房间数量	Total number of hotel rooms located within 10km of the city center displayed on Hotels.com. Hotels.com中刊登的从目标城市中心点开始10公里范围内的酒店总客房数。
		33	Number of Luxury Hotel Rooms 豪华酒店房间数量	Total number of 5 star hotel rooms located within 10km of the city center displayed on Hotels.com. Hotels.com中刊登的从目标城市中心点开始10公里范围内的5星级酒店总客房数。
		34 [O]	Attractiveness of Shopping Options 购物选择吸引力	Average of the indexed values of the following data: (1) Number of luxury-brand shops (Burberry, Cartier, Chanel, Christian Dior, Fendi, Gucci, Hermes, Louis Vuitton, Prada, Rolex, Tiffany) located in the target city, (2) Influence level of shopping as a major reason for visiting the target city according to the Resident Questionnaire. 以下数据指数化后的平均值：①目标城市内奢侈品牌（Burberry，Cartier，Chanel，ChristianDior，Fendi，Gucci，Hermes，Louis Vuitton，Prada，Rolex，Tiffany）的合计门店数量、②根据居民问卷调查，游客感觉自己是被购物魅力所吸引而将目标城市作为参访目的地的程度。
		35 [O]	Attractiveness of Dining Options 饮食选择吸引力	Average of the indexed values of the following data: (1) Number of restaurants located within 10 km from the city center in the target city in La Liste's "World's Top 1000 Restaurants", (2) Influence level of cuisine or dining as a major reason for visiting the target city according to the Resident Questionnaire. 以下数据指数化后的平均值：①从目标城市中心开始10公里范围内，在La Liste的“World's Top 1000 Restaurants”中上榜的餐厅数量、②根据居民的问卷调查，游客感觉自己是被膳食魅力所吸引而将目标城市作为参访目的地的程度。
	International Interaction 国际交流	36	Number of Foreign Residents 外籍居民人数	Number of registered foreign people or residents without citizenship in the country of the target city. 目标城市的常住外国人人口或者没有市民权的居住者数量。
		37	Number of Foreign Visitors 外国访问者人数	Annual number of foreign visitors to the target city. 1年之内参访目标城市的外国人数。

Function 领域	Indicator Group 指标分组	ID 编号	Indicator 指标	Definition 定义
Livability 宜居	Working Environment 就业环境	38	Total Unemployment Rate 总计失业率	Total unemployment rate in the target city. 目标城市的完全失业率。
		39	Total Working Hours 总劳动长度	Working Hours for the target city given in UBS' "Prices and Earnings". 在UBS的“Prices and Earnings”中提到的目标城市一年的总劳动时间。
		40 Q	Workstyle Flexibility 工作方式灵活性	Ease of working flexibly at the workplace (such as leaving early, work from home) in the target city according to the Resident Questionnaire. 根据居民问卷调查，目标城市在工作方式上的灵活性（比如早退的容易程度或者居家工作的容易程度等）程度。
	Cost of Living 生活成本	41	Housing Rent 房屋租金	Average Rent of a furnished 2 -room apartment, an unfurnished 3 -room apartment, and a typical sized apartment in the target city given in UBS' "Prices and Earnings". 在UBS的“Prices and Earnings”中提到的目标城市的房租（带家具的2房，不带家具的3房，目标城市中普通大小房间的平均租金）。
		42	Price Level 物价水平	Prices excl. Rent (with New York indexed as 100) given in UBS' "Prices and Earnings". 在UBS的“Prices and Earnings”中提到的目标城市的物价值（房租除外），假设将纽约的物价值定为100。
	Security and Safety 安全与保障	43	Number of Murders 命案次数	Number of murders (acknowledged) per year per population of one million in the target city. 目标城市每100万人中每年发生的杀人案件（故意杀人）件数。
		44	Economic Risk of Natural Disaster 自然灾害经济风险	Share of Average Annual GDP for "GDP at Risk" in Lloyd's "Lloyd's City Risk Index". 在Lloyd's的“Lloyd's City Risk Index”中，目标城市的GDP风险量与年均GDP的比。
	Well-Being 福祉	45	Life Expectancy 预期寿命	Average life expectancy for the country of the target city listed in the World Health Organization's "World Health Statistics". Health Organization的“World Health Statistics”中，目标城市所属国家的平均寿命。
		46	Social Freedom and Equality 社会自由度与平等性	Average of the indexed values of the following data: (1) Score for the country of the target city listed in Transparency International's "Corruption Perceptions Index", (2) Score for the country of the target city listed in Freedom House's "Freedom in the World", (3) Score for the country of the target city listed in Reporters without Borders' "World Press Freedom Index", (4) Score for the country of the target city listed in World Economic Forum's "Global Gender Gap Index". 以下数据指数化后的平均值：①在Transparency International的“Corruption Perceptions Index”中，目标城市所属国家的分值、②在Freedom House的“Freedom in the World”中，目标城市所属国家的分值，③在Reporter without Borders的“World Press Freedom I ndex” 中，对象城市所属国家的分值，④在World Economic Forum的“Global Gender Gap Index”中，目标城市所属国家的分值。
		47	Risk to Mental Health 精神健康风险	Average of the indexed values of the following data: (1) Total value of the indexed score for disability-adjusted life years (the number of years lost due to illness, disorder or premature death) based only on acquired mental illnesses for the country of the target city listed in the World Health Organization's "Global Health Estimates", (2) Suicide rates per 100 , 000 population for the country of the target city in the World Health Organization's "Global Health Observatory". 以下数据指数化后的平均值：①在World Health Organization的“Global Health Estimates”中，目标城市所属国家后天性精神疾病的伤残调整寿命年（因疾病、伤残、天折而失去的年数），②在World Health Organization的“Global Health Observatory”中，目标城市所属国家每10万人中的自杀人数。
	Ease of Living 生活便利度	48	Number of Medical Doctors 医生数量	Number of medical doctors per one million people estimated pro rata from the number of employees in the country and target city based on the average number of medical doctors in the country listed in the OECD's "Health Statistics" and the WHO's "Global Health Observatory". 将OECD的“Health Statistics”和WHO的“Global Health Observatory”中目标城市所属国家的医生人数平均值，按国家和目标城市从业人数的比率分配进行推算，所得到的每100万人中的医生人数。
		49	ICT Readiness 信息通信技术成熟度	Indexed score of the 16 indicators of the country of the target city related to ICT infrastructure for resident, business, and government services in World Economic Forum's "Networked Readiness Index". 将World Economic Forum的“Networked Readiness Index”中目标城市所属国家的个人、商务、行政服务中16项有关ICT环境的指标，用相同的调查方法进行指数化后得到的值。
		50 Q	Number of Retail Shops 零售商铺数量	Average of the indexed values of the following data: (1) Number of retail shops listed in OpenStreetMap located within 10km of the center of the target city, (2) Number of retail shops located within a 10 -minute walk in the target city according to the Resident Questionnaire. 以下数据指数化后的平均值：①OpenStreetMap中刊登的目标城市中心10公里范围内的零售店数量、②根据居民问卷调查，在目标城市中步行10分钟范围内的零售店数量。
		51 Q	Number of Restaurants 餐饮店数量	Average of the indexed values of the following data: (1) Number of restaurants listed in OpenStreetMap located within 10km of the center of the target city, (2) Number of restaurants located within a 10 -minute walk in the target city according to the Resident Questionnaire. 以下数据指数化后的平均值：①OpenStreetMap中刊登的目标城市中心10公里范围内的餐馆数量、②根据居民问卷调查，在目标城市中步行10分钟范围内的餐馆数量。

[o] … Indicators using questionnaires
使用了问卷调查结果的指标

Function 领域	Indicator Group 指标分组	ID 编号	Indicator 指标	Definition 定义
Environment 环境	Sustainability 可持续发展	52	Commitment to Climate Action 气候行动执行力	Average of the indexed values of the following data: (1) Number of commitments for the target city based on data from the United Nations Framework Convention on Climate Change's "Non-state Actor Zone for Climate Action (NAZCA)", (2) Percentage of GHG emissions reduction target of the target city divided by the number of years from the baseline year to the target year. 以下数据指数化后的平均值：①目标城市根据United Nations Framework Convention on Climate Change（联合国气候变化框架公约）的约定，目标城市在“Non-state Actor Zone for Climate Action（NAZCA）”中刊登的行动次数、②将目标城市的温室气体减排中期目标，除以基准年至目标年的年数，得到的每年减排目标率。
		53	Renewable Energy Rate 可再生能源利用率	Percentage of renewable energy supply used versus the total primary energy supply for the country of the target city listed in the International Energy Agency's "Renewables Information". International Energy Agency的“Renewables Information”中所列目标城市所属国家的可再生能源供应，占1次能源供应总量的比率。
		54	Waste Recycle Rate 废物回收率	Average percentage of municipal waste generated that is recycled in the country of the target city listed in the OECD's "Environment Statistics" and the United Nations Statistics Division's "Environmental Indicators". OECD的“Environment Statistics”以及United Nations Statistics Division的“EnvironmentalIndicators”中所列目标城市所在国的普通垃圾回收率的平均值。
	Air Quality 空气质量	55	CO_2 Emissions 二氧化碳排放量	Volume of CO_2 emission estimated pro rata from the proportion of GDP for the country and target city in the International Energy Agency's "CO_2 Emissions from Fuel Combustion". 将International Energy Agency的“CO_2 Emissions from Fuel Combustion”中所列目标城市所在国的二氧化碳排放量，按国家和目标城市GDP的比例分配进行推算得到的排放量。
		56	SPM Density 悬浮颗粒物密度	Concentration of PM 2.5 observed in the air at measurement points in the target city according to the World Health Organization's "World Health Statistics". 世界卫生组织的“World Health Statistics”中目标城市的测定点观测到的空气中PM2.5浓度。
		57	SO_2 and NO_2 Density 二氧化硫与二氧化氮浓度	Average of the indexed values of the following data: (1) Concentration of sulfur dioxide (SO_2) in the air at measurement points in the target city, (2) Concentration of nitrogen dioxide (NO_2) in the air at measurement points in the target city. 以下数据指数化的平均值：①目标城市内测定点空气中的二氧化硫（SO_2）浓度，②目标城市内测定点空气中的二氧化氮（NO_2）浓度。
	Natural Environment 自然环境	58	Water Quality 水体质量	Score of "Water Quality" for the target city in Numbeo's "Pollution". Numbeo的“Pollution”指标中，目标城市在“Water Quality”方面的分值。
		59	Urban Greenery 城市绿地	Average of the indexed values of the following data: (1) Score of "Quality of Green and Parks" for the target city in Numbeo's "Pollution", (2) Percentage of green areas within 10km² of the city centeral area according to Google Maps. 以下数据指数化后的平均值：①在Numbeo的“Pollution”指标中，目标城市在“Quality of Green and Parks”方面的分值，②Google Maps中从目标城市中心开始10平方公里范围内绿地面积所占的比例。
		60	Comfort Level of Temperature 气温舒适度	3-year average amount by which the target city's apparent temperature, calculated from the weather data from Raspisaniye Pogodi Ltd.'s "Weather in the World", deviates from the ideal temperature range (15-25℃). Raspisaniye Pogodi Ltd.的“Weather in the World”中刊登的目标城市最近3年间，以与根据气象数据计算出的体感温度的舒适温度（15～25℃）之间的背离度为基础，综合计算出的值。
Accessibility 交通·可达性	International Network 国际互联	61	Cities with Direct International Flights 国际直航城市	Number of cities from which direct passenger flights depart or arrive at the target city's airports cited in the Official Airline Guide's "OAG MAX". 在Official Airline Guide的“OAG MAX”中提到的客运航班（仅限直达航班）将目标城市作为出发地或到达地的城市数量。
		62	International Freight Flows 国际货物流通规模	Average of the indexed values of the following data: (1) Port freight of the target city cited in the American Association of Port Authorities' "World Port Rankings", (2) Number of cities from which direct cargo flights depart or arrive at the target city's airports cited in the Official Airline Guide's "OAG MAX". 以下数据指数化后的平均值：①American Association of Port Authorities的“World Port Rankings”中提到的目标城市港口合计处理的货运量、②Official Airline Guide的“OAG MAX”中提到的客运航班（仅限直达航班）将目标城市作为出发地或到达地的城市数量。
	Air Transport Capacity 航空载客量	63	Number of Air Passengers 航空旅客	Total annual number of arriving/departing passengers at major airports (one million or more passengers a year) of the target city. 目标城市的机场（年旅客数100万以上）年合计运送的旅客数量。
		64	Number of Runways 跑道数量	Total number of runways that are 2,000 m or more in length at the target city's major airports that receive more than one million passengers a year according to Fubra Limited's "World Airport Codes". 在Fubra Limited的“World Airport Codes”中提到的目标城市的机场（年旅客数100万人以上）跑道（长度2,000m以上）的合计数量。
	Inner-City Transportation 市内交通	65	Station Density 车站密度	Density of train and tram stations listed in OpenStreetMap located within 10km of the center of the target city. 在OpenStreetMap中刊登的目标城市中，从中心点开始10公里范围内，火车站和有轨电车站的数量（火车站和有轨电车站重名的除外）除以区域面积所显示的密度。
		66	Public Transportation Use 公共交通利用率	Ratio of public transportation use in the target city according to Numbeo's "Traffic". 在Numbeo的“Traffic”中提到的目标城市利用公共交通工具上班、上学的人数比例，除以使用公共交通工具、私家车、摩托车的总人数比例后，计算得到的比例。
		67	Travel Time to Airports 前往机场的出行时间	Average time required to travel from the major airport (one million or more passengers a year) of the target city to the city center. If more than one airport exists, a weighted average is calculated according to the number of passengers of each airport. 从目标城市的机场（年旅客数100万以上）到市中心单程所需的时间。若有多个机场，则按各机场的旅客数计算加权平均值。
	Transport Comfortability 出行舒适度	68 [o]	Commuting Time 通勤时间	Average of the following values: (1) Time required for a one-way trip to work or school in the target city according to Numbeo's "Traffic", (2) Time required for a one-way trip to work or school in the target city according to the Resident Questionnaire. 以下数据的平均值：①在Numbeo的“Traffic”中提到的目标城市上班、上学单程所需的时间、②根据居民的问卷调查，在目标城市上班、上学单程所需的时间。
		69	Traffic Congestion 交通拥堵情况	Congestion level in percentage for each target city which compares the average additional travel time accrued due to traffic congestion according to TomTom's "Traffic Index". 在TomTom的“TrafficIndex”中提到的目标城市中，与非高峰期的交通状况相比，高峰期需要多花的时间比例。
		70	Taxi Fare 出租车费	Taxi fare for a 5km ride in the target city cited in UBS' "Prices and Earnings". 在UBS的“Prices and Earnings”中提到的目标城市打的5公里所需的出租车费。

Global Power City Index 2019

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Global Power City Index 2019

世界の都市総合力ランキング

概要版 | 2019年11月

Global Power City Index 2019

1. London
2. New York
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森記念財団
MORI MEMORIAL FOUNDATION

Contents

What is the GPCI?

世界の都市総合力ランキングとは

Given the global competition between cities, the Global Power City Index (GPCI) evaluates and ranks the major cities of the world according to their "magnetism," or their comprehensive power to attract people, capital, and enterprises from around the world. It does so through measuring 6 functions—Economy, Research and Development, Cultural Interaction, Livability, Environment, and Accessibility—providing a multidimensional ranking.

Originally formulated with input from the late Sir Peter Hall, an authority in the urban research field, and published every year since 2008, this ranking is created through the direction of the Executive Committee, comprised of various experts in different fields, while the Working Committee oversees concrete data analysis. In order to ensure the impartiality of the ranking process and results, two third-party peer reviewers validate the contents and provide suggestions for improvement.

The GPCI is able to grasp the strengths, weaknesses, and challenges of global cities in a continuously changing world not only through a ranking, but also through analyzing that ranking's specific components. It is hoped that in addition to this year's results, the past 12 years of data will also continue to be of use to various individuals for planning urban policy and corporate strategy.

「世界の都市総合力ランキング」（Global Power City Index, GPCI）は、国際的な都市間競争において、人や企業を惹きつける"磁力"は、その都市が有する総合的な力によって生み出されるという考えに基づき作成されたものである。GPCIでは、世界の主要都市の「総合力」を経済、研究・開発、文化・交流、居住、環境、交通・アクセスの6分野で複眼的に評価し、順位付けしている。

2008年から毎年発表している本ランキングは、都市研究に関する世界的権威であった故・ピーターホール卿を最高顧問として招き、この分野における国際的な第一人者によって構成される実行委員会の監修の下、作業委員会が具体的な分析を行っている。ランキングの作成過程および結果の妥当性については、ピア・レビューアーによる評価・検証を受けている。

GPCIは、順位そのものだけでなく、ランキングの構成要素を分析することで、変わりつつある世界の中で、各都市がどのような強みや弱み、課題を有しているのかを詳細に把握することができる。本年の結果に加えて、過去12年間のデータの蓄積が、今後さらに多くの人々によって都市政策や企業戦略の立案に役立てられることを期待したい。

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Methodology
ランキングの作成方法

Function 分野	Indicator Group 指標グループ	No. 番号	Indicator 指標	
Economy 経済	Market Size 市場の規模	1	Nominal GDP	GDP
		2	GDP per Capita	1人あたりGDP
	Market Attractiveness 市場の魅力	3	GDP Growth Rate	GDP成長率
		4	Economic Freedom	経済自由度
	Economic Vitality 経済集積	5	Stock Market Capitalization	証券取引所の株式時価総額
		6	World's Top 500 Companies	世界トップ500企業
	Human Capital 人的集積	7	Total Employment	従業者数
		8	Employees in Business Support Services	ビジネスサポート人材の多さ
	Business Environment ビジネス環境	9	Wage Level	賃金水準の高さ
		10	Availability of Skilled Human Resources	優秀な人材確保の容易性
		11	Variety of Workplace Options	ワークプレイス充実度
	Ease of Doing Business ビジネスの容易性	12	Corporate Tax Rate	法人税率の低さ
		13	Political, Economic and Business Risk	政治・経済・商機のリスク
R&D 研究・開発	Academic Resources 研究集積	14	Number of Researchers	研究者数
		15	World's Top Universities	世界トップ大学
	Research Environment 研究環境	16	Research and Development Expenditure	研究開発費
		17	Number of International Students	留学生数
		18	Academic Performance	学力の高さ
	Innovation イノベーション	19	Number of Patents	特許登録件数
		20	Winners of Prizes in Science and Technology	主要科学技術賞受賞者数
		21	Startup Environment	スタートアップ環境
Cultural Interaction 文化・交流	Trendsetting Potential 発信力	22	Number of International Conferences	国際コンベンション件数
		23	Number of Cultural Events	文化イベント開催件数
		24	Cultural Content Export Value	コンテンツ輸出額
		25	Art Market Environment	アート市場環境
	Tourism Resources 観光資源	26	Tourist Attractions	観光地の充実度
		27	Proximity to World Heritage Sites	世界遺産への近接性
		28	Nightlife Options	ナイトライフ充実度
	Cultural Facilities 文化施設	29	Number of Theaters	劇場・コンサートホール数
		30	Number of Museums	美術館・博物館数
		31	Number of Stadiums	スタジアム数
	Visitor Amenities 受入環境	32	Number of Hotel Rooms	ホテル客室数
		33	Number of Luxury Hotel Rooms	ハイクラスホテル客室数
		34	Attractiveness of Shopping Options	買物の魅力
		35	Attractiveness of Dining Options	食事の魅力
	International Interaction 外国人受入実績	36	Number of Foreign Residents	外国人居住者数
		37	Number of Foreign Visitors	外国人訪問者数

The GPCI evaluates its target cities in 6 urban functions and each of these functions comprises multiple indicator groups (total: 26 groups), which in turn consist of several indicators. A total of 70 indicators are used in the GPCI. The average indicator scores of the indicator groups are combined to create the function-specific rankings, and then the comprehensive ranking is created from the total scores of the function-specific rankings. The highest possible total score equals 2,600 points.

GPCIでは、6分野において主要な要素を表す指標グループを26設定し、さらにそれらを構成する指標を70選定した。各指標をスコア化し平均したものを指標グループのスコアとし、さらにそれらを合算して分野別ランキングを作成した。総合ランキングはそれらを合計して2,600点満点で作成した。

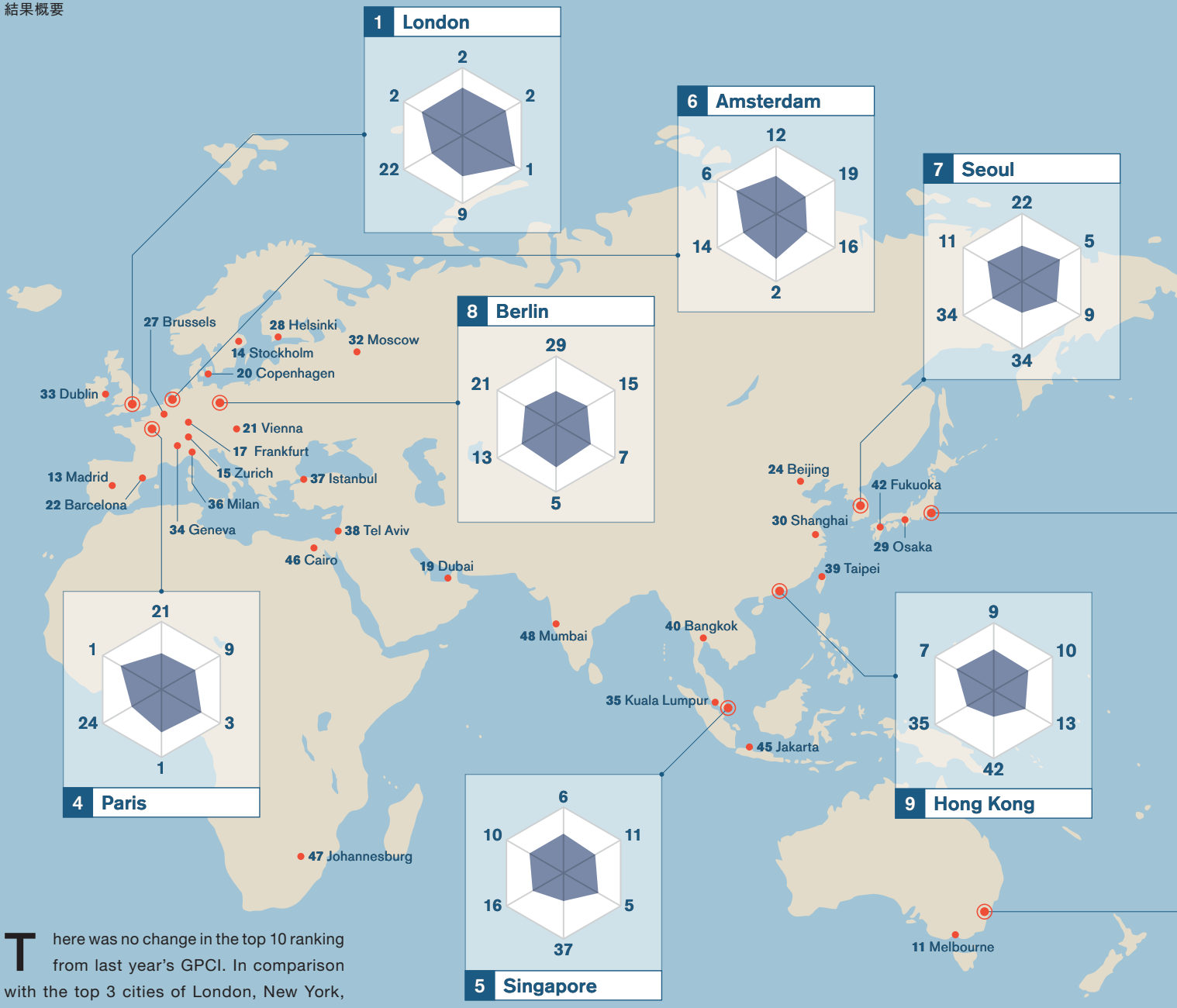
Function 分野	Indicator Group 指標グループ	No. 番号	Indicator 指標	
Livability 居住	Working Environment 就業環境	38	Total Unemployment Rate	完全失業率の低さ
		39	Total Working Hours	総労働時間の短さ
		40	Workstyle Flexibility	働き方の柔軟性
	Cost of Living 居住コスト	41	Housing Rent	住宅賃料水準の低さ
		42	Price Level	物価水準の低さ
	Security and Safety 安全・安心	43	Number of Murders	殺人件数の少なさ
		44	Economic Risk of Natural Disaster	自然災害の経済的リスクの少なさ
	Well-Being 生活良好性	45	Life Expectancy	平均寿命
		46	Social Freedom and Equality	社会の自由度・平等さ
		47	Risk to Mental Health	メンタルヘルス水準
	Ease of Living 生活利便性	48	Number of Medical Doctors	医師数
		49	ICT Readiness	ICT環境の充実度
		50	Number of Retail Shops	小売店舗の多さ
		51	Number of Restaurants	飲食店の多さ
Environment 環境	Sustainability 持続可能性	52	Commitment to Climate Action	環境への取り組み
		53	Renewable Energy Rate	再生可能エネルギー比率
		54	Waste Recycle Rate	リサイクル率
	Air Quality 大気質	55	CO_2 Emissions	CO_2 排出量の少なさ
		56	SPM Density	SPM濃度の低さ
		57	SO_2 and NO_2 Density	SO_2・NO_2 濃度の低さ
	Natural Environment 自然環境	58	Water Quality	水質の良好性
		59	Urban Greenery	緑地の充実度
		60	Comfort Level of Temperature	気温の快適性
Accessibility 交通・アクセス	International Network 国際ネットワーク	61	Cities with Direct International Flights	国際線直行便就航都市数
		62	International Freight Flows	国際貨物流通規模
	Air Transport Capacity 航空キャパシティ	63	Number of Air Passengers	国内・国際線旅客数
		64	Number of Runways	滑走路本数
	Inner-City Transportation 都市内交通	65	Station Density	駅密度
		66	Public Transportation Use	公共交通機関利用率
		67	Travel Time to Airports	空港アクセス時間の短さ
	Transport Comfortability 移動の快適性	68	Commuting Time	通勤・通学時間の短さ
		69	Traffic Congestion	渋滞の少なさ
		70	Taxi Fare	タクシー運賃の安さ

Changes to indicators in GPCI-2019 | GPCI-2019における指標の変更

(17) *Number of International Students* was changed from *Readiness for Accepting Researchers*, and (28)*Nightlife Options* was newly introduced. 「留学生数」を移動して「研究者の受入態勢」を差し替え、さらに「ナイトライフ充実度」を新規追加。
(25) *Art Market Environment* was changed from *Environment of Creative Activities*. 「アート市場環境」は「アーティストの創作環境」から変更。
(26) *Tourist Attractions* was changed from *Cultural Interaction Opportunities*. 「観光地の充実度」は「歴史・伝統への接触機会」から変更。
(32) *Number of Hotel Rooms* was changed from *Number of Hotels*. 「ホテル客室数」は「ホテル総数」から変更。
(40) *Workstyle Flexibility* was changed from *Employee Life Satisfaction*. 「働き方の柔軟性」は「従業員の生活満足度」から変更。
(66) *Public Transportation Use* was changed from *Public Transportation Coverage and Punctuality*. 「公共交通機関利用率」は「公共交通の充実・正確さ」から変更。
(68) *Commuting Time* was changed from *Commuting Convenience*. 「通勤・通学時間の短さ」は「通勤・通学の利便性」から変更。

Executive Summary

結果概要



There was no change in the top 10 ranking from last year's GPCI. In comparison with the top 3 cities of London, New York, and Tokyo, Paris' drop in score was minimal, narrowing the gap once again between the French capital and Tokyo. Although Paris experienced a downtrend in score following the repeated terror attacks of 2015, following the 2017 confirmation as host-city of the 2024 Olympic Games, an upward trend in score is building. Among the 4 new cities added this year (Melbourne, Helsinki, Dublin, Tel Aviv), Melbourne at #11 was the highest performer.

トップ10の順位は昨年から変化がなかった。トップ3については、ロンドン、ニューヨーク、東京と比べて、パリのスコアの下落幅が小さく、東京とパリとのスコア差が再び縮まった。パリは2015年の同時多発テロ以降、スコアが下落傾向にあったが、2017年の2024パリ五輪決定以降、上向きつつある。新規に追加した4都市（メルボルン、ヘルシンキ、ダブリン、テルアビブ）の中では、メルボルンが11位で最も高かった。

1 London

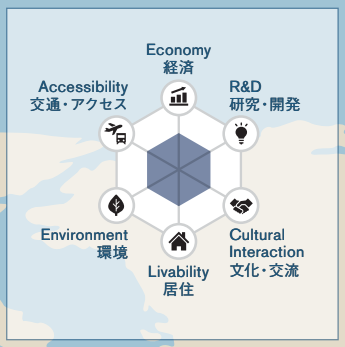
Although London maintained its #1 position for the 8th consecutive year, results show that the city's comprehensive power has fallen. While its score continued to rise following the 2016 EU membership referendum, this year its score in Economy's *World's Top 500 Companies* fell, perhaps showing the effects of turmoil surrounding Brexit negotiations. However, the city holds a top 5 position in 12 of the 16 Cultural Interaction indicators, still displaying its superior strength.

ロンドンは8年連続で1位を維持したものの、今年は総合力を落とす結果となった。2016年のEU離脱国民投票後もスコアを伸ばし独走を続けていたが、混迷する離脱交渉の影響を示すかのように今年は経済の「世界トップ500企業」でスコアを落とした。一方で、文化・交流は16指標中12の指標でトップ5位以内に入っており、依然として卓抜した強さを有している。

2 New York

New York maintains a top position in Economy and Research & Development by obtaining results with high scores in *GDP*, *Stock Market Capitalization*, and *Startup Environment*. The city also obtained strong results in Cultural Interaction (#2) and Accessibility (#3). However in Cultural Interaction, *Number of Foreign Residents* has shown a decreasing trend for the past 3 years, indicating an outflow of foreign population to other domestic and international cities.

ニューヨークは「GDP」や「証券取引所の株式時価総額」、「スタートアップ環境」などの指標で高い評価を得た結果、経済と研究・開発で今年も1位を堅持した。また、文化・交流と交通・アクセスもそれぞれ2位、3位と高い評価を得た。しかし、文化・交流における「外国人居住者数」は過去3年間人数が減少傾向であることから、国内外の都市へ外国人が流出していることが伺える。



Comprehensive Ranking
総合ランキング

London	1
New York	2
Tokyo	3
Paris	4
Singapore	5
Amsterdam	6
Seoul	7
Berlin	8
Hong Kong	9
Sydney	10
Melbourne	11
Los Angeles	12
Madrid	13
Stockholm	14
Zurich	15
Toronto	16
Frankfurt	17
San Francisco	18
Dubai	19
Copenhagen	20
Vienna	21
Barcelona	22
Vancouver	23
Beijing	24
Boston	25
Chicago	26
Brussels	27
Helsinki	28
Osaka	29
Shanghai	30
Washington, DC	31
Moscow	32
Dublin	33
Geneva	34
Kuala Lumpur	35
Milan	36
Istanbul	37
Tel Aviv	38
Taipei	39
Bangkok	40
Buenos Aires	41
Fukuoka	42
Sao Paulo	43
Mexico City	44
Jakarta	45
Cairo	46
Johannesburg	47
Mumbai	48

3 Tokyo

Similar to the top 2 cities, Tokyo also saw a decrease in comprehensive score, though it maintained its #3 position. The gap between the #4 Paris and Tokyo narrowed once again, as Paris' drop in score was relatively small in comparison. Tokyo's status as a balanced city is continuing to gradually strengthen, as it lacks both exceedingly strong and extremely weak functions despite being a comprehensively powerful city overall.

トップ2都市と同様、東京も昨年と比べて総合スコアを落とす結果となったが3位は維持した。4位のパリもスコアを落としているが、東京と比べてスコアの下落幅が小さいため、東京とパリとの間のスコア差が再び縮まった。東京は総合力が非常に高い都市ではあるものの、圧倒的に強い分野はなく、逆に極端に弱い分野もないことから、バランス型の都市としての様相がますます強まりつつある。

Criteria for Selecting Cities

1. Cities found in the top 20 of existing influential city rankings
2. Major cities of countries found in the top 20 of existing influential international competitiveness rankings
3. Cities which do not meet the above criteria but were deemed appropriate for inclusion by the GPCI Executive Committee

However, some cities match one or more of the above criteria but are not evaluated in the GPCI as necessary data are not available.

都市の選定基準

1. 既存の有力な都市比較ランキングで上位20位に入っている都市
2. 有力な国際競争力ランキングにおいて競争力上位20位に入っている国の主要都市
3. 本ランキングを作成する実行委員会から対象都市として取り上げることが適切として判断された都市

ただし、上記の基準を満たすものの、データの入手が困難であることから対象都市に含まれていない都市もある。

Comprehensive Ranking
総合ランキング

Among an increasing opacity in the global economy and a rising awareness of environmental issues, 1st-place London starts to experience a drop in momentum, Tokyo is sluggish, and Paris' recovery trends upward.

不透明感が増す世界経済と地球環境問題への意識の高まりの中、勢いを落とし始めた首位のロンドン、伸び悩む東京と復調傾向のパリ。

London saw its comprehensive score fall after 8 years of maintaining its position alone at the top of the GPCI. Although New York, Tokyo, and Paris' scores all decreased for their own individual reasons, due to the size of Tokyo's fall, the gap between the Japanese capital and New York widened while the distance between Paris and Tokyo narrowed. Paris continued with forward momentum following the successful bid in 2017 to host the 2024 Olympic Games, overcoming a previous downtrend following the 2015 terror attacks.

Looking back at the state of the world over the past year, a large number of challenging events have occurred or continued, such as US-China trade friction, issues surrounding the UK's withdrawal from the EU, and the Hong Kong protests. A number of potential effects have been noticed in the GPCI 2019, with Beijing and Shanghai's *GDP Growth Rates* stagnating, and London's number of *World's Top 500 Companies* falling. Effects on Hong Kong will likely be felt in the GPCI 2020. Regarding international activity related to the environment, a target to reduce the amount of new plastic waste in the world's oceans to zero by 2050 was adopted at the G20 Summit which took place in June 2019, Osaka. It is clear that awareness of the challenges associated with the global environment is gradually growing stronger. In GPCI 2019, Northern European cities as well as Australian cities received high scores in Environment.

Among the newly added cities to the GPCI, Melbourne scored highest at #11, followed by Helsinki (#28), Dublin (#33), and Tel Aviv (#38). Melbourne and Helsinki both achieved strong results in Environment, with Melbourne also performing well in Livability, while Dublin and Tel Aviv possess high *GDP Growth Rates*, with Dublin especially proving itself to be particularly specialized in Economy.

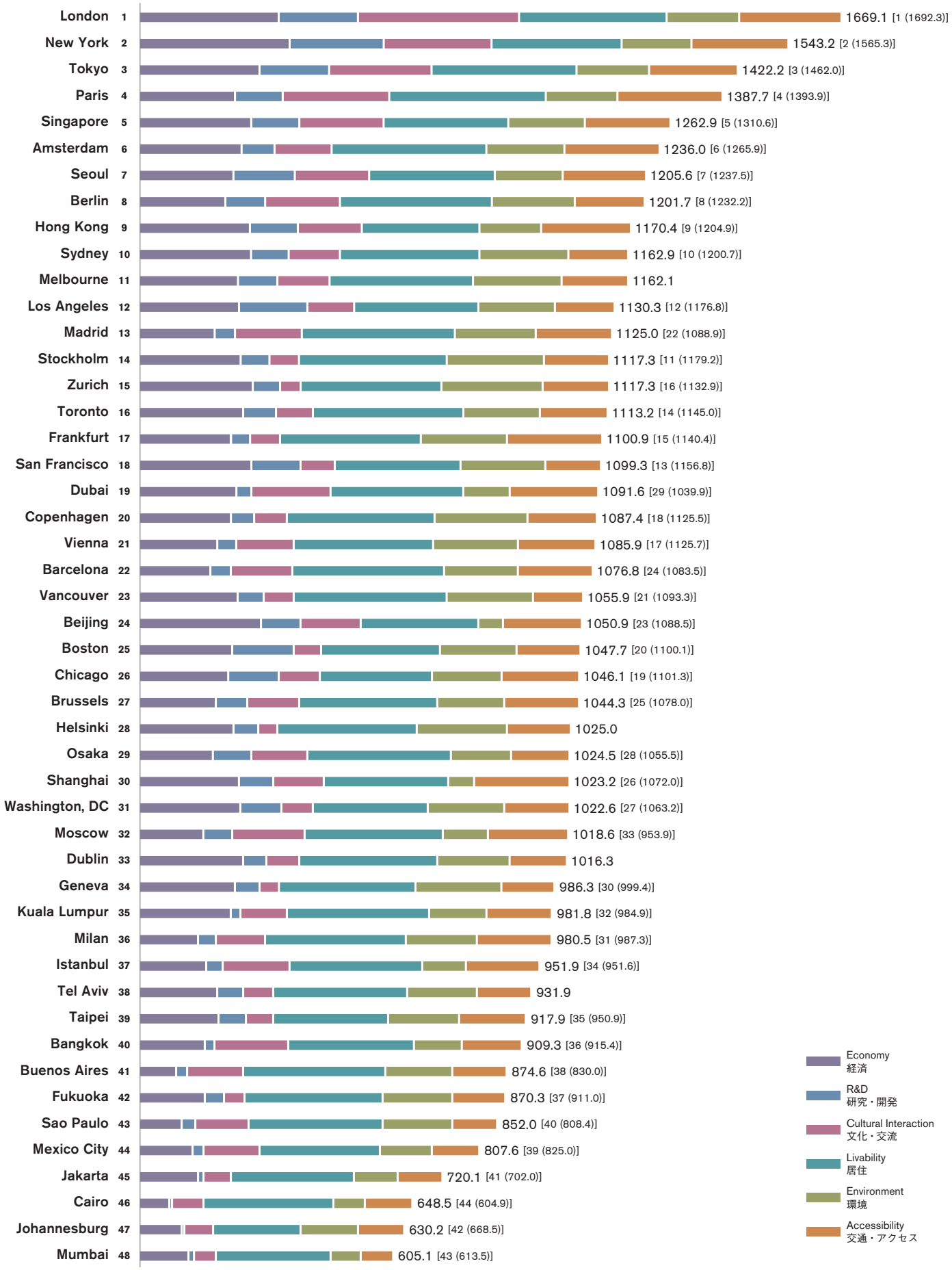
ロンドンは2012年以降8年連続で首位を維持し、独走状態を続けているが、今年はその勢いに陰りが見られた。ニューヨーク、東京、パリもそれぞれの理由でスコアを落としたが、なかでも東京の下落幅は大きく、ニューヨークとのスコア差が広がり、パリとの差が縮まった。パリは2015年の同時多発テロ後、スコアが下落傾向にあったが、2017年の2024パリ五輪決定以降は上向きつつある。

この一年の世界情勢を振り返ると、米中貿易摩擦の長期化や、混迷が続く英国の欧州連合離脱問題、香港市民の抗議活動など、世界および地域経済に対して影響力の大きな出来事が数多くあった。GPCI 2019ではそれらの情勢を反映するかのように、北京と上海の「GDP成長率」が停滞、ロンドンの「世界トップ500企業」数に下落が見られた。香港については、GPCI 2020以降に影響が出ることが予想される。また、環境に関する世界的な動きとして、6月に大阪で開催されたG20サミットにて、プラスチックごみによる新たな海洋汚染を2050年までにゼロにする目標が採択された。地球環境問題に対する意識がますます高まりつつあるなか、GPCI 2019では、北欧都市や豪州都市が環境において高い評価を得ている。

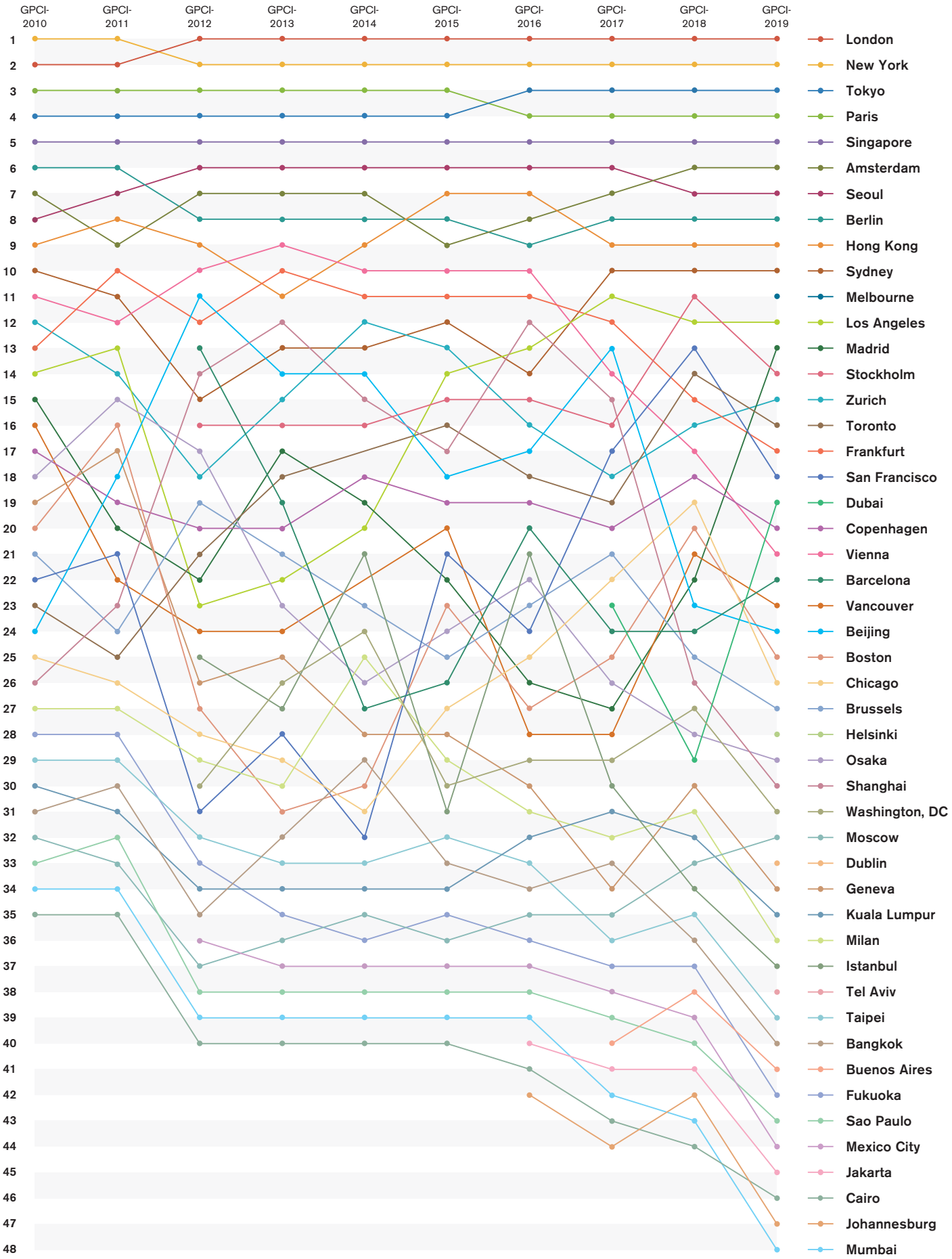
新たに追加された4都市の中では、メルボルンが11位と最も高く、ヘルシンキ（28位）、ダブリン（33位）、テルアビブ（38位）と続いた。メルボルンとヘルシンキは環境分野の評価が高く、メルボルンはそれに加えて居住分野でも高い評価を得た。一方でダブリンとテルアビブは「GDP成長率」が高く、特にダブリンは経済分野を強みとする特化型都市であることがわかった。

Comprehensive Ranking | 総合ランキング

Numbers in [ ] are ranks and scores from the GPCI-2018
[ ]内の数値はGPCI-2018の順位とスコア

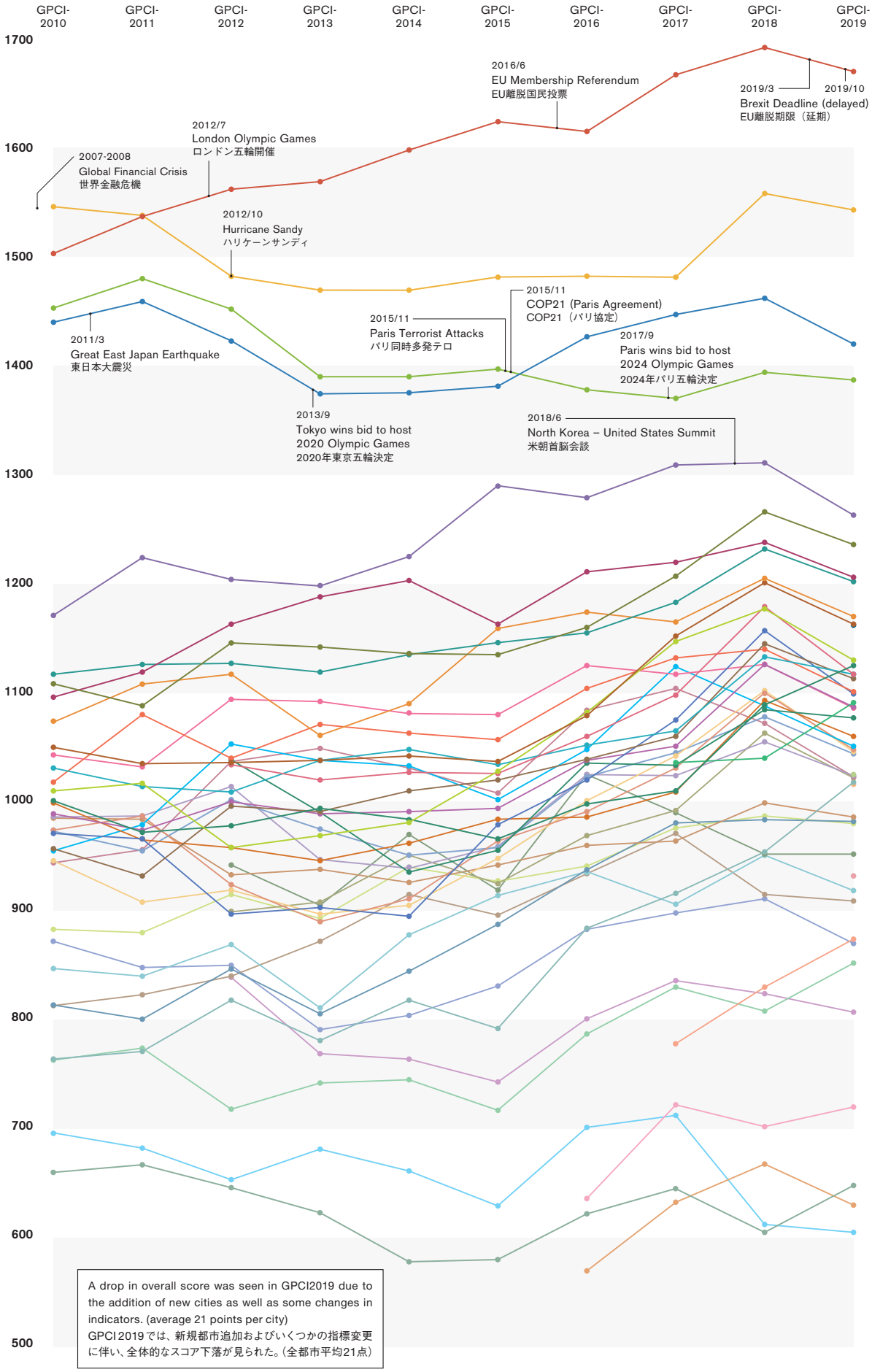


Rank Fluctuation | 総合順位の変動



Score Fluctuation | 総合スコアの変動

Each year's score is converted to the full score of 2600 points
各年のスコアは2600点満点となるよう換算



A drop in overall score was seen in GPCI2019 due to the addition of new cities as well as some changes in indicators. (average 21 points per city)
GPCI 2019では、新規都市追加およびいくつかの指標変更に伴い、全体的なスコア下落が見られた。(全都市平均21点)

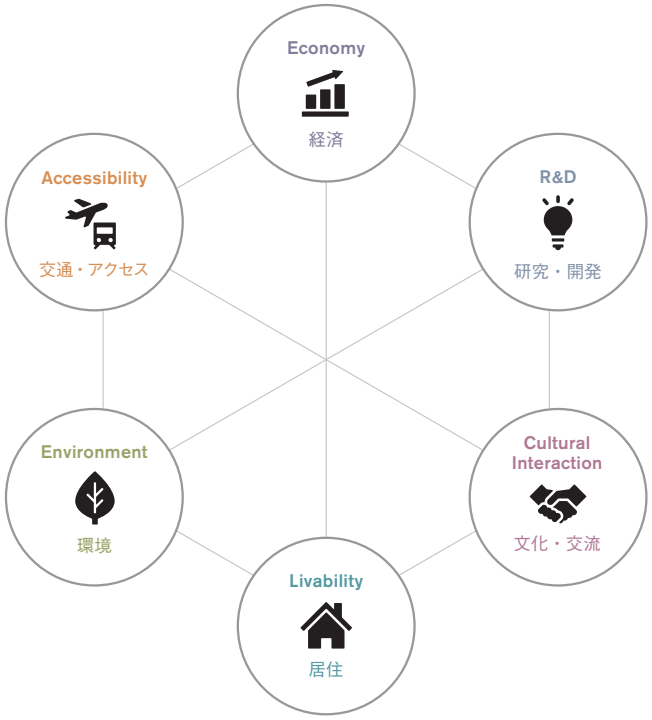
Function-Specific Ranking
分野別ランキング

Important factors concerning the competition between cities are gradually undergoing significant change, reflecting turbulent global conditions and action towards the environment.

揺れ動く世界情勢や環境保護へと向かう世界的な動きを反映しながら、都市間競争において重視される要素も少しずつ様変わりしている。

In the Economy function, newly added Dublin ranks at #11 due to its high scores in *GDP Growth Rate* and a low *Corporate Tax Rate*, as the city attracts attention in the UK's withdrawal from the EU. In Livability, Paris, which suffered a decrease in score following the 2015 terrorist attacks, returns to the #1 position after 3 years. As global awareness of environmental challenges increases, Northern European cities such as Stockholm, Copenhagen, and Helsinki, as well as Swiss and Australian cities, returned high scores in the Environment function.

経済分野では、英国の欧州連合離脱問題で注目を集めているダブリンが「GDP成長率」の高さと「法人税率の低さ」を強みに新規追加都市ながら11位と高評価を得た。居住分野では、2015年のパリ同時多発テロ以降スコアを落としていたパリが3年ぶりに1位に返り咲いた。また、環境問題に対する世界的な意識がますます高まりつつあるなか、ストックホルム、コペンハーゲン、ヘルシンキといった北欧都市や、スイス、そしてオーストラリアの都市が環境分野において高い評価を得た。



The key feature of the GPCI is that, rather than targeting a single specific function, it evaluates the comprehensive power of global cities by offering a multi-dimensional view based on these 6 functions.

GPCIの特徴のひとつは、特定の分野のみを対象とするのではなく、これらの6分野から複眼的に都市の総合力を評価している点にある。

Function-Specific Ranking | 分野別ランキング

	Economy 経済		R&D 研究・開発		Cultural Interaction 文化・交流		Livability 居住		Environment 環境		Accessibility 交通・アクセス	
1	New York	358.5	New York	224.5	London	382.7	Paris	371.8	Zurich	242.5	Paris	247.1
2	London	331.4	London	187.8	New York	254.1	Amsterdam	365.5	Stockholm	232.4	London	239.1
3	Beijing	288.4	Tokyo	166.2	Paris	252.2	Madrid	364.4	Copenhagen	222.8	New York	226.6
4	Tokyo	286.6	Los Angeles	163.1	Tokyo	241.9	Vancouver	364.3	Helsinki	218.9	Shanghai	225.7
5	Zurich	269.4	Seoul	146.5	Singapore	204.3	Berlin	361.8	Sydney	216.0	Frankfurt	223.7
6	Singapore	266.4	Boston	145.7	Dubai	188.2	Barcelona	361.4	Melbourne	215.5	Amsterdam	223.6
7	San Francisco	266.0	Chicago	121.2	Berlin	177.7	Toronto	358.4	Geneva	210.0	Hong Kong	212.9
8	Sydney	264.8	San Francisco	117.3	Bangkok	173.8	Copenhagen	352.8	Frankfurt	207.5	Tokyo	208.0
9	Hong Kong	262.7	Paris	114.5	Seoul	173.4	London	351.8	San Francisco	206.2	Dubai	207.9
10	Toronto	248.3	Hong Kong	113.4	Moscow	170.7	Stockholm	351.2	Vancouver	206.1	Singapore	199.7
11	Dublin	246.3	Singapore	112.0	Istanbul	159.8	Tokyo	343.3	Vienna	204.9	Seoul	199.1
12	Amsterdam	244.5	Washington, DC	98.3	Madrid	159.0	Melbourne	340.8	Madrid	196.1	Moscow	185.8
13	Stockholm	241.6	Beijing	96.1	Hong Kong	153.4	Osaka	340.3	Berlin	195.2	Vienna	183.5
14	Washington, DC	241.0	Melbourne	95.3	Barcelona	148.1	Buenos Aires	338.7	Amsterdam	187.8	Beijing	182.2
15	Los Angeles	237.3	Berlin	94.2	Beijing	143.1	Kuala Lumpur	338.1	Boston	185.8	Chicago	182.0
16	Shanghai	236.6	Sydney	90.6	Amsterdam	138.4	Zurich	336.8	Singapore	184.7	Madrid	178.2
17	Melbourne	233.1	Osaka	90.5	Vienna	137.9	Milan	335.3	Washington, DC	184.7	Milan	175.4
18	Vancouver	232.8	Shanghai	80.3	Mexico City	135.3	Frankfurt	334.6	Los Angeles	183.5	Istanbul	173.7
19	Dubai	231.3	Amsterdam	76.2	Osaka	133.6	Helsinki	331.2	Toronto	183.2	Barcelona	173.7
20	Geneva	228.9	Toronto	75.6	Buenos Aires	133.3	Sydney	330.1	Dublin	178.0	Brussels	172.5
21	Paris	226.1	Brussels	71.7	Sao Paulo	124.8	Vienna	329.9	Barcelona	177.6	Berlin	168.8
22	Seoul	224.3	Moscow	69.3	Brussels	123.6	Brussels	329.2	London	176.3	Copenhagen	161.5
23	Helsinki	223.8	Stockholm	66.5	Sydney	122.4	Moscow	327.4	Tokyo	176.2	Toronto	159.2
24	Boston	220.9	Zurich	64.4	Melbourne	122.3	Dublin	325.9	Paris	175.9	Zurich	155.7
25	Kuala Lumpur	218.9	Taipei	63.0	Shanghai	122.2	Fukuoka	325.8	Taipei	171.6	Melbourne	155.3
26	Frankfurt	217.8	Vancouver	61.9	Milan	115.5	Geneva	325.6	Milan	171.3	Taipei	155.1
27	Copenhagen	217.5	Tel Aviv	61.0	Los Angeles	109.3	Sao Paulo	320.2	New York	170.3	Stockholm	153.2
28	Chicago	209.8	Geneva	58.4	Kuala Lumpur	108.6	Dubai	317.5	Fukuoka	170.0	Kuala Lumpur	152.4
29	Berlin	204.1	Helsinki	58.3	Chicago	99.0	Tel Aviv	317.2	Tel Aviv	169.2	Washington, DC	151.6
30	Taipei	188.8	Dublin	55.5	Toronto	88.4	Istanbul	315.1	Chicago	168.9	Boston	148.2
31	Tel Aviv	185.6	Copenhagen	54.4	San Francisco	81.9	New York	309.2	Sao Paulo	167.5	Helsinki	147.0
32	Vienna	183.9	Madrid	49.2	Dublin	78.9	Cairo	307.1	Brussels	164.0	Bangkok	141.0
33	Brussels	183.3	Barcelona	48.5	Copenhagen	78.3	Bangkok	300.7	Buenos Aires	162.6	Los Angeles	140.0
34	Madrid	178.2	Fukuoka	46.5	Cairo	75.8	Seoul	300.0	Seoul	162.4	Sydney	139.1
35	Osaka	176.9	Frankfurt	46.3	Washington, DC	74.7	Los Angeles	297.1	Hong Kong	147.8	Osaka	136.8
36	Barcelona	167.5	Vienna	45.8	Vancouver	73.1	San Francisco	297.1	Osaka	146.3	Dublin	131.8
37	Istanbul	159.6	Milan	43.1	Stockholm	72.3	Singapore	295.8	Kuala Lumpur	141.6	San Francisco	130.8
38	Bangkok	156.7	Istanbul	37.0	Tel Aviv	71.5	Shanghai	294.5	Johannesburg	139.1	Buenos Aires	127.5
39	Fukuoka	155.9	Dubai	33.7	Frankfurt	70.9	Jakarta	293.1	Mexico City	128.3	Tel Aviv	127.4
40	Moscow	152.4	Sao Paulo	32.6	Johannesburg	66.3	Mexico City	284.2	Bangkok	114.8	Fukuoka	123.4
41	Jakarta	140.6	Buenos Aires	25.2	Boston	66.1	Boston	281.0	Moscow	113.2	Geneva	121.0
42	Milan	139.9	Mexico City	24.8	Taipei	64.9	Hong Kong	280.2	Dubai	113.0	Vancouver	117.7
43	Mexico City	127.0	Kuala Lumpur	22.3	Jakarta	64.4	Beijing	276.9	Jakarta	108.3	Cairo	111.5
44	Mumbai	117.6	Bangkok	22.2	Mumbai	52.8	Taipei	274.5	Istanbul	106.7	Johannesburg	108.0
45	Sao Paulo	101.7	Jakarta	11.4	Fukuoka	48.7	Mumbai	272.6	Cairo	75.7	Mexico City	108.0
46	Johannesburg	100.2	Mumbai	11.1	Zurich	48.6	Washington, DC	272.4	Mumbai	75.0	Sao Paulo	105.2
47	Buenos Aires	87.3	Johannesburg	8.1	Helsinki	45.7	Chicago	265.2	Beijing	64.3	Jakarta	102.4
48	Cairo	70.6	Cairo	7.8	Geneva	42.4	Johannesburg	208.6	Shanghai	63.9	Mumbai	76.0

Economy
経済

Numbers in [ ] are ranks from the GPCI-2018
[ ]内の数値はGPCI-2018の順位

New York 1 358.5 [1]
London 2 331.4 [2]
Beijing 3 288.4 [4]
Tokyo 4 286.6 [3]
Zurich 5 269.4 [6]
Singapore 6 266.4 [9]
San Francisco 7 266.0 [7]
Sydney 8 264.8 [8]
Hong Kong 9 262.7 [5]
Toronto 10 248.3 [10]
Dublin 11 246.3
Amsterdam 12 244.5 [13]
Stockholm 13 241.6 [11]
Washington, DC 14 241.0 [19]
Los Angeles 15 237.3 [12]
Shanghai 16 236.6 [16]
Melbourne 17 233.1
Vancouver 18 232.8 [14]
Dubai 19 231.3 [17]
Geneva 20 228.9 [18]
Paris 21 226.1 [20]
Seoul 22 224.3 [15]
Helsinki 23 223.8
Boston 24 220.9 [23]
Kuala Lumpur 25 218.9 [24]
Frankfurt 26 217.8 [21]
Copenhagen 27 217.5 [22]
Chicago 28 209.8 [25]
Berlin 29 204.1 [26]
Taipei 30 188.8 [27]
Tel Aviv 31 185.6
Vienna 32 183.9 [30]
Brussels 33 183.3 [29]
Madrid 34 178.2 [31]
Osaka 35 176.9 [28]
Barcelona 36 167.5 [33]
Istanbul 37 159.6 [32]
Bangkok 38 156.7 [35]
Fukuoka 39 155.9 [34]
Moscow 40 152.4 [37]
Jakarta 41 140.6 [38]
Milan 42 139.9 [36]
Mexico City 43 127.0 [39]
Mumbai 44 117.6 [43]
Sao Paulo 45 101.7 [41]
Johannesburg 46 100.2 [40]
Buenos Aires 47 87.3 [42]
Cairo 48 70.6 [44]

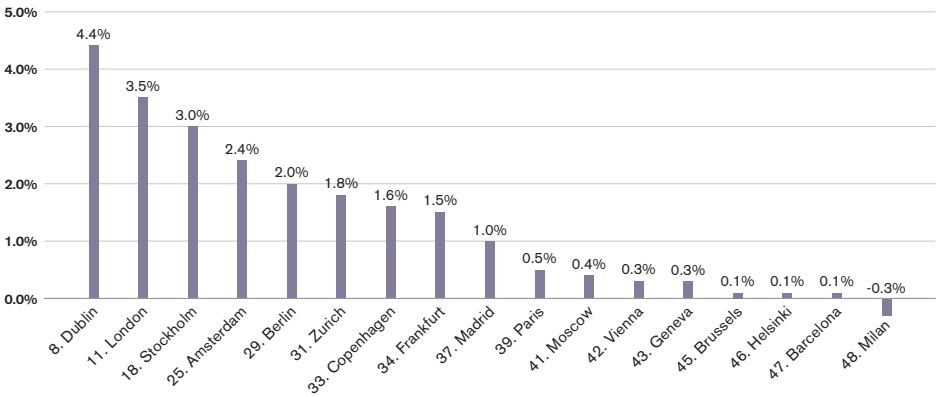
While the top 10 cities in the Economy function saw no change from last year, there was a noticeable shift in positions. Asian cities experienced considerable change, with Beijing (#3), which scores highly in *GDP Growth Rate* and *World's Top 500 Companies*, overtaking Tokyo (#4), and Singapore (#6) surpassing Hong Kong (#9). Singapore, especially noted for its excellent English ability, obtained superior results among Asian cities in *Availability of Skilled Human Resources*.

Within the newly added cities to the GPCI this year, Dublin (#11) in particular achieves excellent results. Among European cities, it obtains the highest scores after London (#2) and Zurich (#5), with *Corporate Tax Rate* scoring just behind Dubai, while also earning the only European top-10 position in *GDP Growth Rate*. As the UK's withdrawal from the EU continues to pose challenges, it is possible that Dublin, acting as a prominent European financial center, could push forward with specialized growth.

経済分野では、上位10都市の顔触れが昨年と変わらないなか、順位の入れ替えが目を引く結果となった。「GDP成長率」や「世界トップ500企業」といった指標で高評価の北京（3位）が東京（4位）を抜いたほか、僅差ではあるが香港（9位）をシンガポール（6位）が上回るなど、アジア都市のなかでの変化が見られた。特にシンガポールは、その高い英語力もあり、「優秀な人材確保の容易性」においてアジア都市のなかでは卓越している。

今回新たに加わった4都市のなかでは、ダブリン（11位）が特に目覚ましい結果を収めた。ヨーロッパ都市においては、ロンドン（2位）とチューリッヒ（5位）に次ぐ高評価を得たうえ、「法人税率の低さ」においてはドバイに次ぐ高順位につけたほか、「GDP成長率」では全ヨーロッパ都市で唯一トップ10入りを果たしている。イギリスのEU離脱問題がいまだ混迷を極めるなか、欧州有数の国際金融都市であるダブリンが、今後独自の発展を推し進める可能性は大いにあるといえよう。

GDP Growth Rate ｜ GDP成長率



* European cities only ／* ヨーロッパ都市のみ

Research and Development
研究・開発

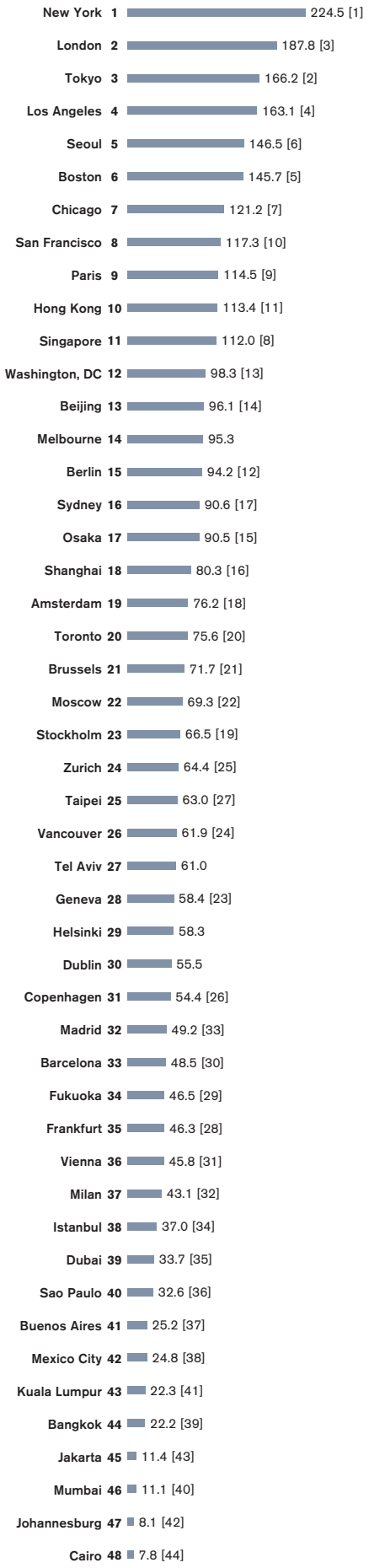
In Research & Development, the top 3 cities of New York (#1), London (#2), and Tokyo (#3) remain unchanged from last year. New York proves itself to be a balanced city, obtaining # 1 in "Academic Resources"' *Number of Researchers* and "Research Environment"'s *Research and Development Expenditure*, as well as #2 in "Innovation"'s *Winners of Prizes in Science and Technology* and *Startup Environment*. London shows strengths in *World's Top Universities*, *Number of International Students*, and *Startup Environment*, while Tokyo scores highly in *Number of Researchers*, *Research and Development Expenditure*, *Academic Performance*, and *Number of Patents*. The American cities of Los Angeles, Boston, Chicago, and San Francisco achieved excellent results in *Research and Development Expenditure* and *Winners of Prizes in Science and Technology*, placing in the top 10 once again.

In *World's Top Universities*, which act as urban facilities to cultivate global talent, London and the 5 American cities, as well as Amsterdam and Berlin from Europe, and Hong Kong from Asia maintain top 10 positions, while Paris is a new entrant this year.

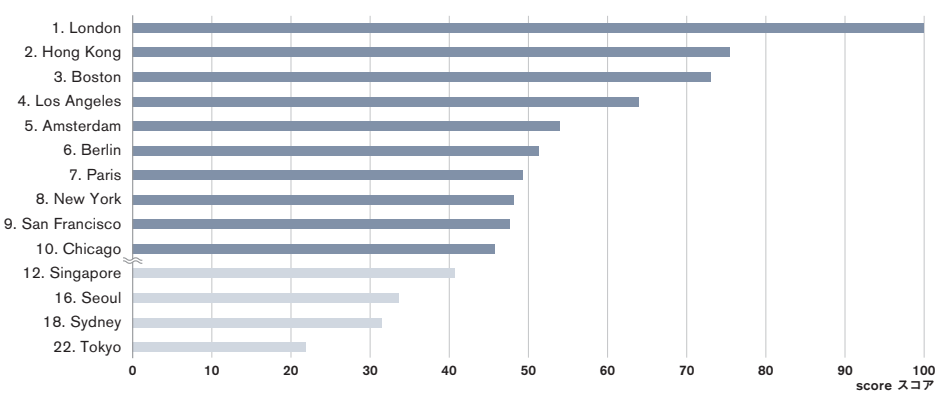
研究・開発では昨年と同様、ニューヨーク、ロンドン、東京がトップ3となった。ニューヨークは、『研究集積』の「研究者数」と『研究環境』の「研究開発費」が1位、『イノベーション』における「主要科学技術賞受賞者数」と「スタートアップ環境」が2位と、各指標グループにおいてバランスよく高い評価を受けている。ロンドンは「世界トップ大学」、「留学生数」、「スタートアップ環境」に強みを有するのに対し、東京は「研究者数」、「研究開発費」、「学力の高さ」、「特許登録数」の評価が高い。ロサンゼルスやボストン、シカゴ、サンフランシスコといった米国都市は、今年も「研究開発費」や「主要科学技術受賞者数」で強みをみせ、昨年に引き続きトップ10にランクインしている。

グローバル人材の育成の場として機能する「世界トップ大学」では、これまで通りロンドンおよび米国の5都市、そしてヨーロッパのアムステルダムとベルリン、アジアからは香港がトップ10を維持しているが、今年は新たにパリがトップ10にランクインした。

Numbers in [ ] are ranks from the GPCI-2018
[ ]内の数値はGPCI-2018の順位



World's Top Universities | 世界トップ大学



* Shaded bars represent other top 10 cities from the comprehensive ranking ／ * 指標上位10都市＋総合ランキング上位10都市

Cultural Interaction
文化・交流

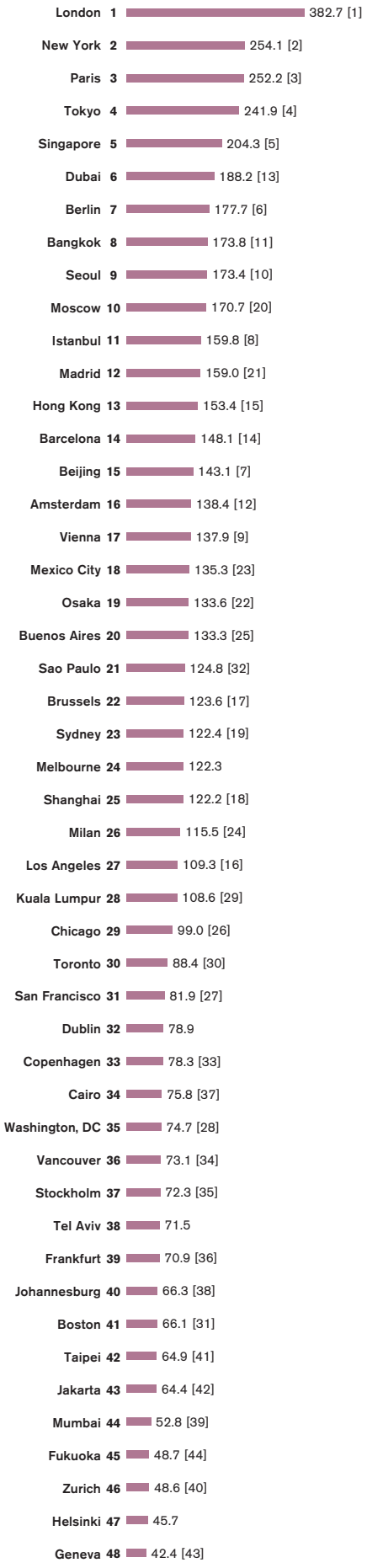
London holds a top 5 position in 12 of the 16 Cultural Interaction indicators, still displaying its superior strength. Most of the other top 10 cities remain unchanged this year, though Dubai (#6), Bangkok (#8), and Moscow (#10) are new entrants. Both Dubai and Bangkok see high scores in *Number of Foreign Visitors* and *Number of Luxury Hotel Rooms*, while these two cities are also evaluated highly in *Number of Foreign Residents* and *Number of Hotel Rooms*, respectively. On the other hand, Moscow is noted for its *Number of Museums*, *Number of Theaters*, *Number of Cultural Events*, and *Tourist Attractions*.

As the nighttime economy captures global attention, London, Bangkok, Amsterdam, Barcelona, and New York—all cities with well-established and renowned cultural attractiveness—enter the top 5 in new indicator *Nightlife Options*. In *Art Market Environment*, the top 5 cities are New York, London, Beijing, Paris, and Berlin, making it evident that the rich art industry existing in these cities attracts artists, collectors, and art lovers alike.

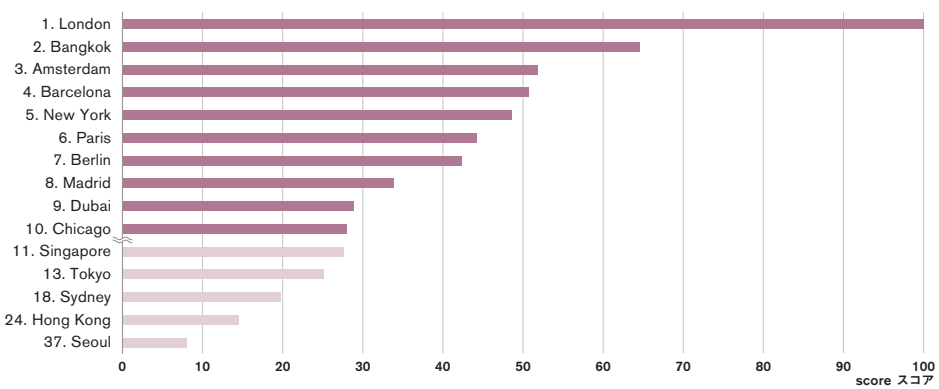
文化・交流分野では、ロンドンが16指標中12の指標でトップ5位以内に入っており、依然として卓抜した強さを有している。他の上位10都市の多くも昨年と同様だが、今年はドバイ（6位）、バンコク（8位）、モスクワ（10位）の3都市が新たにランクインした。ドバイとバンコクはともに「外国人訪問者数」と「ハイクラスホテル客室数」における評価が高く、加えてドバイは対象都市で「外国人居住者数」が最も多く、バンコクは「ホテル客室数」でも高い評価を得た。一方、モスクワは「美術館・博物館数」をはじめ、「劇場・コンサートホール数」や「文化イベント開催件数」、「観光地の充実度」で抜きんでている。

ナイトタイム経済が世界的に脚光を浴びるなか、新規指標の「ナイトライフ充実度」ではロンドン、バンコク、アムステルダム、バルセロナ、ニューヨークとそれぞれ固有の文化的魅力で知られる都市が上位5位に入った。また、「アート市場環境」では、ニューヨーク、ロンドン、北京、パリ、ベルリンがトップ5となっており、これらの都市のアート産業の充実度が、アーティスト、コレクター、鑑賞者いずれをも惹きつけていることが伺える。

Numbers in [ ] are ranks from the GPCI-2018
[ ]内の数値はGPCI-2018の順位



Nightlife Options | ナイトライフ充実度



* Shaded bars represent other top 10 cities from the comprehensive ranking ／* 指標上位10都市＋総合ランキング上位10都市

Livability
居住

Numbers in [ ] are ranks from the GPCI-2018
[ ]内の数値はGPCI-2018の順位

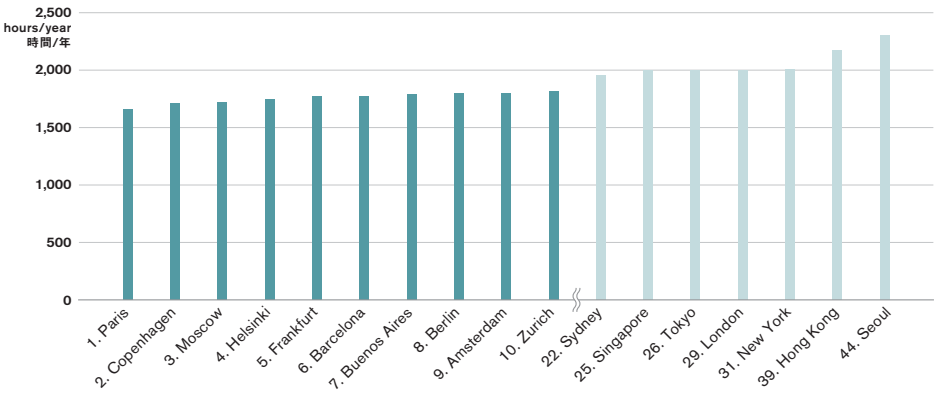
In the Livability function, Paris returns to #1 after 3 years since the GPCI 2016. Although the city's scores fell in "Security and Safety" after the terrorist attacks of 2015 , Paris' results in this indicator group have steadily recovered over the past few years. The French capital also achieves top scores in *Total Working Hours*, *Number of Retail Shops*, and *Number of Restaurants*, proving itself to be a livable city for its residents.

Looking at the top cities in this function, European and Canadian cities continue to dominate. Vancouver (# 4) and Toronto (# 7) both have a balance of high scores across most of the indicators, but return favorable results especially for *Social Freedom and Equality* and *Economic Risk of Natural Disaster*. Despite weaknesses in "Cost of Living" such as *Housing Rent* and *Price Level*, the top European cities show strengths in *Total Working Hours* similar to Paris, whereas Asian and American cities tend towards much longer working hours. However, according to the graph on page 12 , European cities' *GDP Growth Rates* are comparably low, showing that balancing between the two indicators is a challenge across all cities.

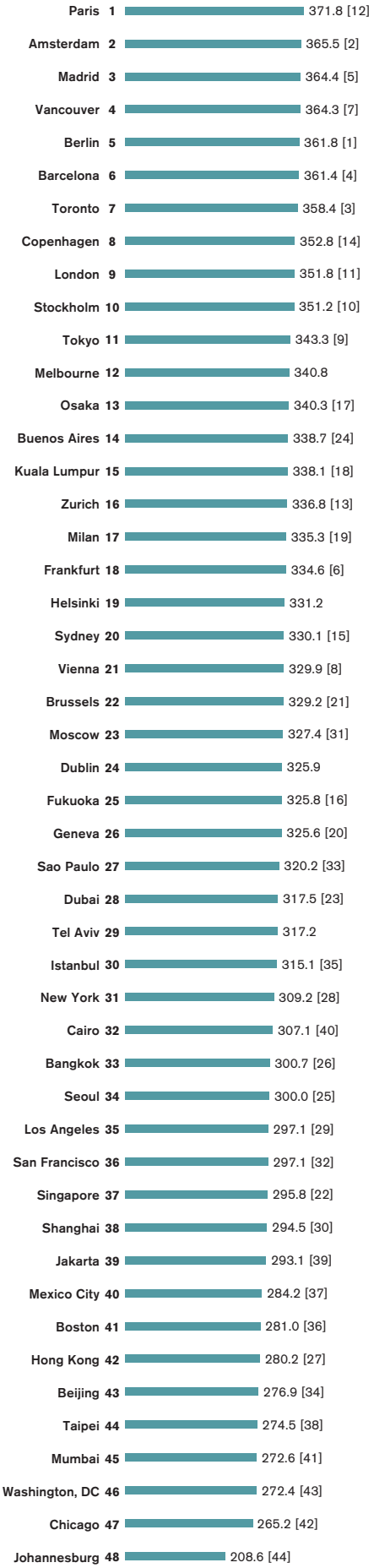
居住分野では、パリがGPCI2016以来、3年ぶりに1位に返り咲いた。2015年に発生したパリ同時多発テロにより『安全・安心』に関する評価が低下したため、居住の順位下落につながっていたが、ここ数年は同指標グループの評価が回復している。パリはその他にも、「総労働時間の短さ」や「小売店舗の多さ」、「飲食店の多さ」といった指標において全都市中トップの評価となっており、人々が生活しやすい都市であることがわかる。

パリ以外の上位都市では、例年同様にヨーロッパとカナダの都市が多くみられた。バンクーバー（4位）とトロント（7位）は多くの指標でバランス良く高評価となっているが、特に「社会の自由度・平等さ」や「自然災害の経済的リスクの少なさ」が強みである。パリ以外の上位ヨーロッパ都市においては、「住宅賃料水準の低さ」や「物価水準の低さ」といった『居住コスト』が弱みではあるが、アジア都市や米国都市とは異なり、どの都市もパリ同様「総労働時間の短さ」の評価が高い。しかし、ヨーロッパ都市の「GDP成長率」は比較的低く（12ページ参照）、この2指標のバランスを取るのはどの都市においても課題といえるだろう。

Total Working Hours ｜ 総労働時間の短さ



* Shaded bars represent other top 10 cities from the comprehensive ranking ／ * 指標上位10都市＋総合ランキング上位10都市



Environment
環境

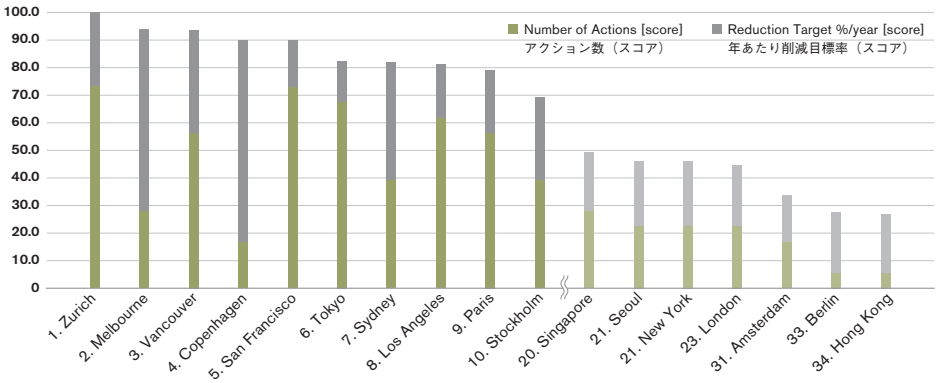
As with previous years, top cities in Environment are from Switzerland, Australia, and Northern Europe. Zurich (#1) and Geneva (# 7) performed well in "Natural Environment" indicators such as *Urban Greenery* and *Water Quality*, as well as *CO_2 Emissions*, while Sydney (#5) and Melbourne (#6) were evaluated highly in *SPM Density* and *SO_2 and NO_2 Density*. Three Northern European cities, Stockholm (# 2), Copenhagen (# 3), and Helsinki (# 4), scored well in *Water Quality* and *Renewable Energy Rates*. The top-performing city within Asia was Singapore (# 16), which marked the top score for *Waste Recycle Rate*. Other Asian cities such as Seoul, Taipei, and Hong Kong also ranked within the top 10 in this indicator, showing it to be one strong point for Asian cities still far behind in this function.

For the indicator *Commitment to Climate Action*, in addition to the total number of climate actions used last year, greenhouse gas emissions were evaluated by taking the reduction target and dividing by the reduction period (years) for each city. From these results, cities in Europe and Australia are still at the frontline of environmental policy.

環境分野では今年も例年通り、スイスやオーストラリア、北欧の都市が上位に名を連ねた。チューリッヒ（1位）とジュネーブ（7位）が「緑地の充実度」や「水質の良好性」といった『自然環境』に加えて「CO_2排出量の少なさ」を強みとしているのに対し、シドニー（5位）とメルボルン（6位）は「SPM濃度の低さ」や「SO_2・NO_2濃度の低さ」で高評価となった。ストックホルム（2位）、コペンハーゲン（3位）、ヘルシンキ（4位）の北欧3都市は、「水質の良好性」や「再生可能エネルギー比率」を強みとしている。アジア都市で最も高評価となったシンガポール（16位）は「リサイクル率」で全都市中トップとなっているが、他にもソウル、台北、香港がトップ10にランクインしており、環境分野で遅れを取っているアジア都市が強みとする指標である。

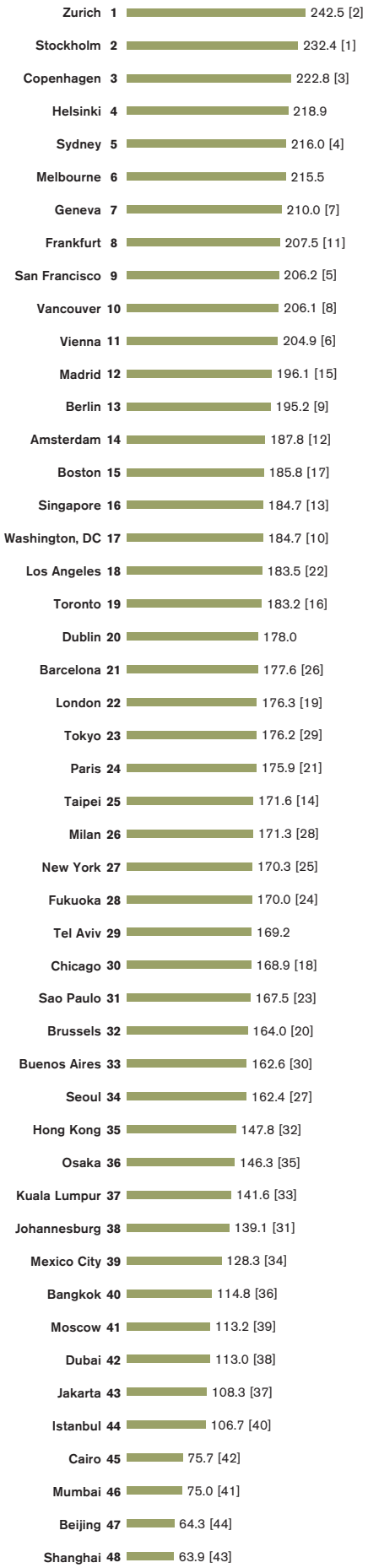
「環境への取り組み」では、昨年に引き続き気候変動に対する各都市の取り組み（アクション）数を評価し、さらに今年は各都市が設定している温室効果ガス削減目標を目標期間で除した"年あたり削減目標率"も加味している。この結果からも、環境政策に関してはヨーロッパ都市や豪州都市が牽引していることがわかる。

Commitment to Climate Action ｜ 環境への取り組み



* Shaded bars represent other top 10 cities from the comprehensive ranking ／ * 指標上位10都市＋総合ランキング上位10都市

Numbers in [ ] are ranks from the GPCI-2018
[ ]内の数値はGPCI-2018の順位



Accessibility
交通・アクセス

Numbers in [ ] are ranks from the GPCI-2018
[ ]内の数値はGPCI-2018の順位

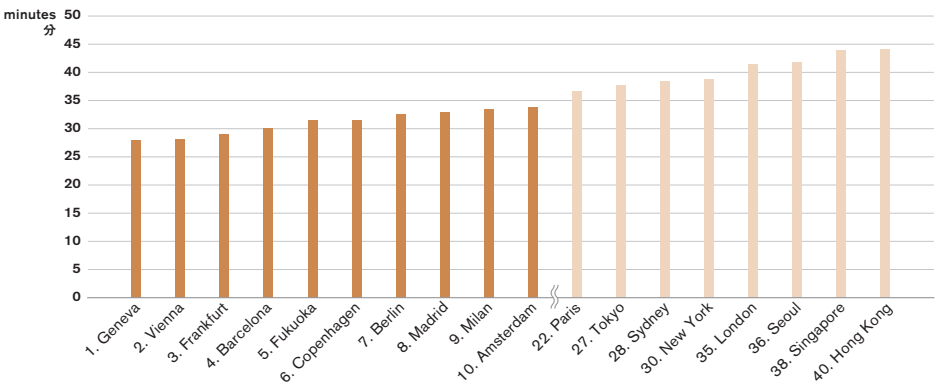
In Accessibility, large cities acting as international access hubs, such as Paris (#1) and London (#2) with their large number of *Cities with Direct International Flights*, New York (# 3) with a high *Number of Air Passengers* and *Number of Runways* in “Air Transport Capacity”, and Shanghai (#4) which scored highly in *International Freight Flows* and *Number of Air Passengers*, remained unchanged as the top 4 cities. Frankfurt (#5) and Dubai (#9) improved their ranks with their respective strengths in *Commuting Time* and *Traffic Congestion*, areas where large cities are weak. Tokyo (# 8) dropped its rank this year due to the lack of improvement in *Cities with Direct International Flights* and *Travel Time to Airports*, as well as the higher scores obtained by Amsterdam and Hong Kong.

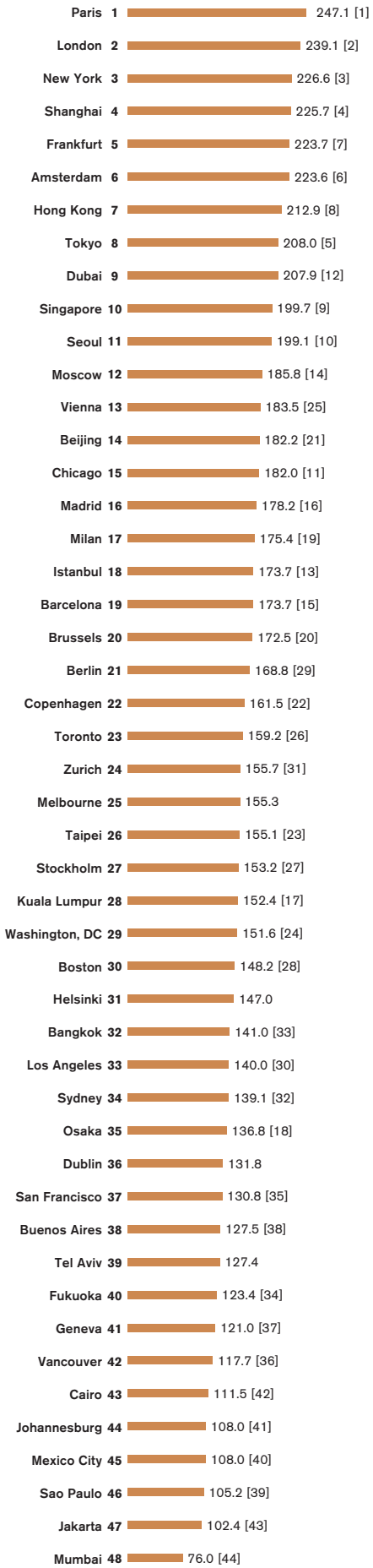
Commuting Time is another weakness of large cities. Aside from Fukuoka, all the top 10 cities are European small-mid scale cities, showing the proximity of their residential areas to work locations.

交通・アクセス分野では、「国際線直行便就航都市数」を強みとするパリ（1位）やロンドン（2位）、「国内・国際線旅客数」や「滑走路本数」といった『航空キャパシティ』を強みとするニューヨーク（3位）、「国際貨物流通規模」や「国内・国際線旅客数」で高い評価を得た上海（4位）など、国際アクセスのハブとなる大都市が昨年に引き続き上位を占めた。フランクフルト（5位）は大都市が弱みとする「通勤・通学時間の短さ」での高評価により昨年から順位を上げた。同様に大都市の弱点である「渋滞の少なさ」で評価を上げたドバイ（9位）も今年はトップ10入りを果たしている。東京（8位）は「国際線直行便就航都市数」や「空港アクセス時間の短さ」といった課題点に加えて、アムステルダムや香港が評価を上げたため、順位を落とした。

「通勤・通学時間の短さ」は大都市が弱みとする指標のひとつであるが、今年の結果を見ると、福岡を除くトップ10都市がすべてヨーロッパの小〜中規模都市であることから、それらの都市は居住地と就業地が近接していることが伺える。

Commuting Time ｜ 通勤・通学時間の短さ





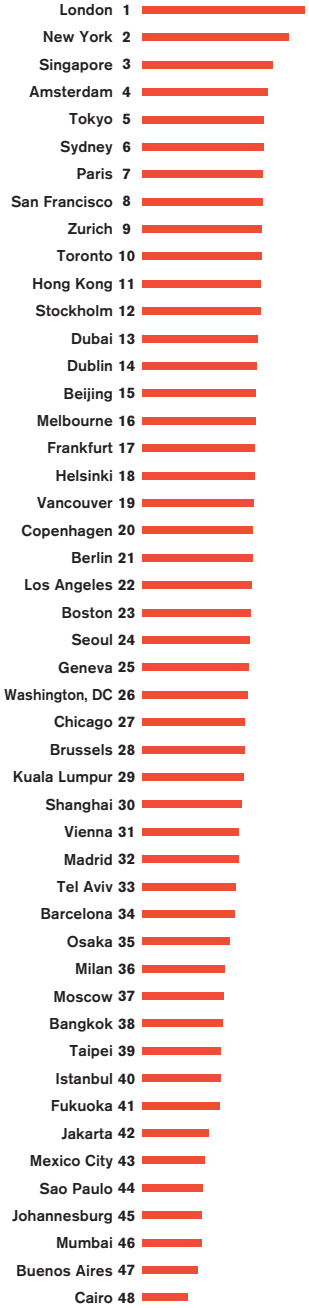
* Shaded bars represent other top 10 cities from the comprehensive ranking ／ * 指標上位10都市＋総合ランキング上位10都市

GPCI Actor Evaluation
アクター視点評価

London, with its excellent business environment, diversity, tourist attractiveness, and accessibility, ranks at the top of 3 actors. Challenges emerge for Residents in New York, and Global Professionals in Tokyo.

ロンドンが優れたビジネス環境や多様性、観光の魅力、アクセスの良さを発揮し、3つのアクターでトップとなった。ニューヨークは居住者、東京はグローバルエキスパートからの評価が課題。

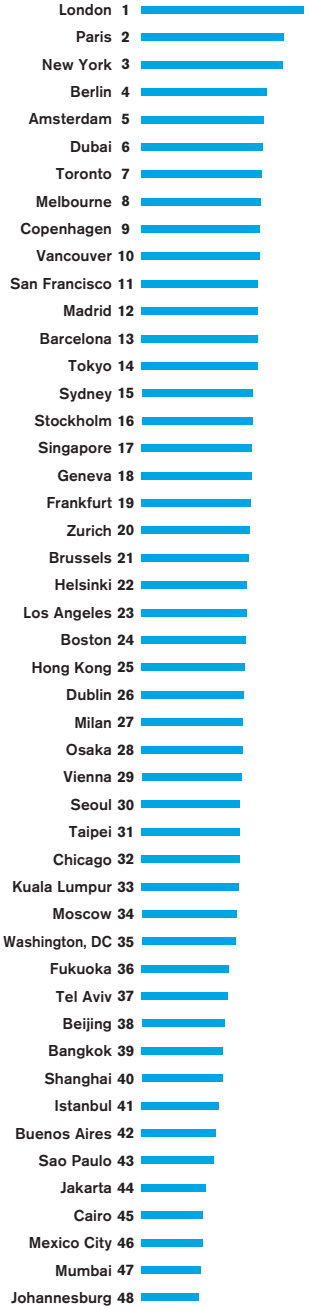
Global Actor
Corporate Executive
［経営者］



Upon evaluating the most important components valued by Corporate Executives in terms of choosing the location of a company, London ranks #1 as it creates business vitality through its *Startup Environment* and has a large number of *Cities with Direct International Flights* which is indispensable to global enterprise activities. New York (#2) displays strengths in “Business Environment” due to its *Variety of Workplace Options*. Singapore (#3) excels in *Economic Freedom* and *Political, Economic, and Business Risk*, while Amsterdam (#4) performs well thanks to *Employees in Business Support Services*. Although Tokyo (#5) scores highly in “Market Size” and “Economic Vitality”, both integral for business expansion, the city comes far behind the top 4 cities in *Startup Environment* and *Cities with Direct International Flights*, posing a significant challenge.

企業立地において経営者が重視する要素で順位付けすると、ビジネスの活力を創出する「スタートアップ環境」や、グローバルな企業活動に欠かせない「国際線直行便就航都市数」で抜きんでているロンドンが1位となった。2位のニューヨークは「ワークプレイス充実度」をはじめとする『ビジネス環境』で強みをみせた。3位のシンガポールは「経済自由度」や「政治・経済・商機のリスク」、4位のアムステルダムは「ビジネスサポート人材の多さ」をそれぞれ強みとしている。5位の東京は、事業を展開する上で重要な『市場の規模』や『経済集積』では高評価だったが、「スタートアップ環境」と「国際線直行便就航都市数」の評価で、上位4都市に大きく離されており課題が残る。

Global Actor
Global Professional
［グローバルエキスパート］



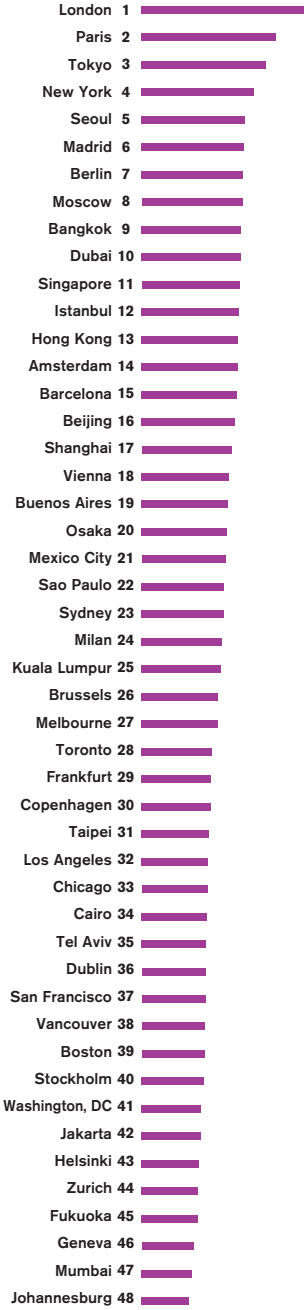
Looking at cities from the perspective of Global Professionals who carry out activities across the world regardless of national boundaries or nationality, London achieves #1 in the ranking. With high scores in *Number of Foreign Residents* and *Number of International Students*, as well as *Startup Environment*, it is clear the city possesses a multi-cultural, innovative urban environment. For Paris (#2) and New York (#3), Paris shows favorable results in *Total Working Hours*, *Number of Retail Shops*, and *Number of Restaurants*, while New York especially stands out for *Workstyle Flexibility* and *Variety of Workplace Options*—all indicating an ease of living and working. Berlin (#4) and Amsterdam (#5) both show excellent results in *Social Freedom and Equality*, as well as *Total Working Hours*, exemplifying the attractiveness of European cities.

国境や国籍にこだわらず世界を舞台に活躍するグローバルエキスパートの視点で都市を評価すると、ロンドンが1位となった。「外国人居住者数」や「留学生数」、「スタートアップ環境」で高評価を得ており、多文化でイノベーティブな都市環境が形成されているといえる。2位はパリ、3位はニューヨークであるが、パリは「総労働時間の短さ」、「小売店舗の多さ」や「飲食店の多さ」で、ニューヨークは「働き方の柔軟性」や「ワークプレイス充実度」で卓越しており、それぞれ、住みやすさや働きやすさが評価された。4位のベルリンと5位のアムステルダムは、「社会の自由度・平等さ」と「総労働時間の短さ」が共通して優れており、欧州都市ならではの魅力が顕著となった。

In addition to a function-specific analysis, the GPCI also carries out an evaluation of major cities from the perspectives of people managing businesses, working, touring, and living in those cities. For the evaluation, 3 Global Actors and 1 Local Actor were established and those indicators considered important by each actor were extracted from the GPCI's 70 indicators across the 6 functions. The scores for these extracted indicators were then averaged and ranked.

分野別の評価に加えて、GPCIでは世界の主要都市において会社を経営し、働き、観光し、暮らす人々の視点での評価も行っている。評価にあたっては、3つのグローバルアクター（経営者、グローバルエキスパート、観光客）と1つのローカルアクター（居住者）を設定し、それぞれのアクターが重視する指標を、GPCIの6分野70指標の中から分野横断的に抽出。抽出された指標のスコアを平均し、順位付けを行った。

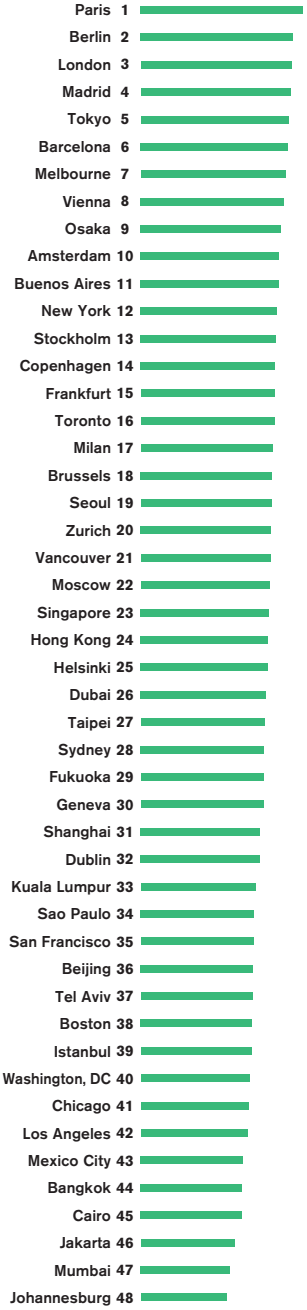
Global Actor
Tourist
［観光客］



London (#1) shows magnitude of its strength due to the city's abundant tourist spots and cultural events as well as a large number of *Cities with Direct International Flights* providing excellent access. Paris (#2) also benefits from exceptional international transport access, and additionally scores highly in *Number of Theaters* and *Tourist Attractions*. Tokyo (#3) receives a strong evaluation for *Attractiveness of Shopping Options* and *Attractiveness of Dining Options*, while New York (#4) sees high scores in *Number of Theaters* and *Number of Museums*. Seoul (#5) returns especially stronger results than the top 4 cities in *Taxi Fare*.

1位のロンドンは観光スポットや文化イベントの充実に加えて、「国際線直行便就航都市数」といったアクセス面も優れており、圧倒的な強さを見せた。2位のパリも国際アクセスが優れている一方で、「劇場・コンサートホール数」や「観光地の充実度」でも高評価を得ている。3位の東京は、「買物の魅力」と「食事の魅力」が対象都市の中で最も評価が高く、4位のニューヨークは、「劇場・コンサートホール数」や「美術館・博物館数」といった『文化施設』が充実している。5位のソウルは上位4都市が弱みとする「タクシー運賃の安さ」の評価が優れている。

Local Actor
Resident
［居住者］



From the viewpoint of a Resident, Paris was evaluated as the top city. One reason is due to the high *Number of Retail Shops* and associated results from "Ease of Living". Berlin (#2) and Madrid (#4) both show similar trends with excellent scores in "Cost of Living" and "Ease of Living". Furthermore, these two cities can be said to possess competitive power in terms of cost and the proximity of one's workplace to their home, evident in strong results for *Housing Rent* and *Commuting Time*. London (#3) and Tokyo (#5) are shown to have a high level of public transport convenience as both cities score well in *Public Transportation Use*. However, as their *Traffic Congestion* and *Taxi Fare* return low results, it may not be as convenient when travelling by car in those cities.

居住者の視点から都市を評価するとパリが最も高い順位となった。「小売店舗の多さ」をはじめとする『生活利便性』の高さがその理由に挙げられる。2位のベルリンと4位のマドリッドは似た傾向にあり、いずれも『居住コスト』や『生活利便性』の評価が高い。さらに「住宅賃料水準の低さ」や「通勤・通学時間の短さ」の指標で、パリ、ロンドン、東京よりも抜きんでた評価を得ており、コスト面での競争力を有する職住近接型の都市であるといえる。3位のロンドンと5位の東京は「公共交通機関利用率」が高いことから、居住者にとって公共交通機関の利便性が高いことがうかがえる一方で、「渋滞の少なさ」や「タクシー運賃の安さ」はどちらの都市も弱みとしており、車での移動には課題がみられる。

Special Contribution
特別寄稿

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Sustainable Cities: Opportunities and Challenges for the 21st Century
持続可能都市：21世紀の可能性と課題

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Cities are expanding – both physically and in terms of their political stature. They hold roughly half of the world's population; by 2050, more than two-thirds will be living in cities.(*1) These urban areas generate over 80% of global GDP (*2), making them instrumental in driving wealth and development. Sustainable Development Goal (SDG) 11 acknowledges the important role of cities in the global policy agenda, and sets the charge for them to be both sustainable and inclusive in moving the world towards a resilient future.

Yet for all the benefits they confer, cities are also major sites of pollution, heat, and waste. Currently, they account for a staggering 70 percent of the planet's energy-related carbon dioxide emissions. (*3) Further, increases in population and motorized vehicles, coupled with intensive economic activities, like manufacturing and fossil fuel burning, have given rise to severe smog and bad air in many urban areas. The overwhelming majority of city residents breathe air that exceeds the World Health Organization's guidelines for safe exposure to fine particulate pollution (PM2.5), one of the most dangerous urban threats to human health. Cities also experience the urban heat island effect, a rise in local temperature as a result of high-density living conditions and the clearing of natural land cover. This heat, exacerbated by rising temperatures from climate change, can lead to serious illnesses like heat stroke and vector-borne diseases.

Cities are also increasingly loci of inequality. The Urban Environment and Social Inclusion Index (UESI), a flagship tool developed by my group, the Data-Driven Lab, provides an unprecedented level of detail into the state of the environment and social equity in cities. Using high-resolution and large-scale data, the UESI reveals how residents living in the same city often experience urban environments in vastly different and unequal ways. 90 out of 162 cities are disproportionately burdening lower-income populations with air pollution, urban heat, and lack of accessible transport.(*4) Poorer city residents are also much less likely to have the means to adapt to these challenges, which can perpetuate and exacerbate inequality. On this front, cities are failing on SDG 11 to provide inclusive and sustainable urban growth.

Cities thus present a puzzle: how can some of these adverse trends be reconciled with the need for cities to be sustainable and inclusive?

Cities are increasingly aware of the challenges they face – both locally and globally – and have started to act. To tackle climate change, cities have undertaken new mitigation and adaptation policies that can contribute to global efforts while building resilience for residents. My group's *Global Climate Action from Cities, Regions, and Businesses 2019* report shows that more than 6,000 subnational actors and 1,500 businesses in ten high-emitting countries around the world have committed to emission reduction targets that could lead to an additional 1.4-2.2 $GtCO_2e/yr$ in 2030 – approximately four percent of today's global emissions.(*5) This number is on top of what national governments have already pledged to the Paris Agreement. There is thus significant potential for cities to fill in the emissions gap and ramp up global ambition.

Cities also hold the key to greater sustainability and inclusion. Urban innovation and the reorganization of cities into more compact, connected, and coordinated hubs can generate a wealth of employment opportunities and lower infrastructure costs, with estimated savings of $17 trillion by 2050. Integrated transit systems and sustainable buildings can reduce pollution and increase accessibility for residents, while the strategic addition of green spaces can help to reduce urban heat. With the right leadership and programs, cities have a strong likelihood of achieving SDG 11.

2020 is a critical year for climate action. It is the year the Paris Agreement goes into effect and nations begin implementing – as well as ratcheting up – their climate plans. What comes after will determine how closely the world stays within its warming targets and whether we can stave off the worst effects of climate change. As nations fumble to get their emissions reduction acts together, cities are stepping up to the plate. They are increasingly playing a crucial role in climate action and have the ability to build more sustainable and equitable societies.

都市は物理的かつ政治的に拡大を続けている。都市は世界の人口の約半分を有しており、2050年には総人口の3分の2以上が都市に住まうこととなる。(*1) こうした都市部は世界のGDPの80％を生み出しており(*2)、富と発展を牽引している。持続可能な開発目標（SDGs）の目標11では、世界的な政策課題における都市の重要性を認識し、世界をレジリエントな未来へと導くために、持続可能で包括的であるよう都市に役割を課している。

As nations fumble to get their emissions reduction acts together, cities are stepping up to the plate. They are increasingly playing a crucial role in climate action and have the ability to build more sustainable and equitable societies.

各国が各自の排出量削減において一貫した行動を取り損ねるなか、都市が積極的に行動に出ている。気候行動においてその役割は重要性を増しており、都市こそがより持続可能で平等な社会を築く実力を有しているのだ。

しかしこうした恩恵を生み出すうえで、都市は汚染や熱、廃棄物の温床となっている。今日、地球上のエネルギー関連CO_2排出量のうち70％が都市から排出されている。(*3) さらに、人口と自動車の増加と、それに伴う製造や化石燃料消費といった集約的な経済活動は、多くの都市部に深刻なスモッグと大気汚染をもたらしている。圧倒的多数の都市居住者が、健康への最大の脅威である粒子状物質(PM2.5)を含む大気を吸っており、その汚染レベルは世界保健機関が定める安全基準値を上回っている。加えて、高密度な居住環境と地表面被覆の結果として、都市では局部温度の上昇、すなわちヒートアイランド現象が起こっている。気候変動による気温上昇がこの現象を悪化させており、熱中症や昆虫媒介性疾病などの深刻な病気を引き起こしている。

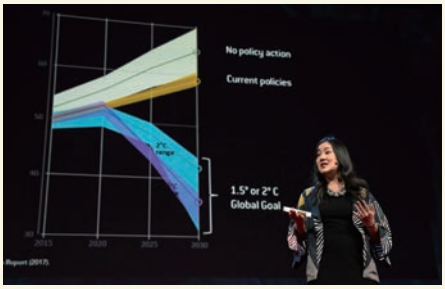
都市はまた不均衡を多く生み出している。Data-Driven Labが展開する「Urban Environment and Social Inclusion Index (UESI)」は、都市の環境と社会的公正の状態を非常に詳細にわたって提供している。高解像度で大規模なデータを使用し、UESIは都市の居住者が人によって非常に異なる、不平等なかたちで都市環境を体験していることを明らかにした。162都市中90都市において、大気汚染や、気温上昇、利便性の高い交通の欠如は低所得者層に不均衡なまでに課せられている。(*4) 貧困層の住民ほどこうした環境に順応する術を有しておらず、それが不平等を長引かせるうえ状況を悪化させている。この観点において、都市は包括的かつ持続可能な都市成長を図るというSDGs目標11を達成していない。

そこである問いが浮上する。こうした否定的な傾向は、持続可能で包括的な都市の必要性とどう折り合いをつけるのだろうか？

都市は、都市内および地球規模で直面している課題に対して今まで以上に意識が高まっており、行動を起こし始めている。気候変動に対処すべく、都市は世界的な活動の一環として、新たな緩和および適応政策に取り組んでおり、同時に都市自体の耐性を築いている。私たちが発表した*Global Climate Action from Cities, Regions, and Businesses 2019*では、温室効果ガス排出量の多い10か国において6,000の地方政府と1,500の企業が、2030年にはCO_2換算で年間1.4～2.2ギガトンまで減らす削減目標に取り組んでいると報告したが、これは今日の世界の温室効果ガス排出量の約4％にあたる。(*5) この値は、各国政府がパリ協定で誓約した値を上回っている。然るに、都市は排出ギャップを埋め、世界的な目標を引き上げるうえで、大きな可能性を秘めているのだ。

都市はまた、更なる持続可能性と包括性実現のための鍵を握っている。都市革新に加え、よりコンパクトかつ密接で、調和がとれた中心地への都市再編が、豊富な雇用機会とインフラコスト削減につながり、その節約額は2050年には17兆ドルにのぼるとみられている。総合交通体系と持続可能な建造物は大気汚染を減らし、住民たちにとっての利便性を高めるだろうし、一方で戦略的な緑地増設は都市内の気温を下げるだろう。正しいリーダーシップと計画があれば、都市がSDGs目標11を達成する可能性は非常に高い。

2020年は気候行動にとって極めて重要な年だ。本年はパリ協定が実施される年であり、各国はそれぞれの気候変動対策を実行に移すとともに、徐々に引き上げていく。我々が温暖化防止の目標にどれだけ近づけたか、そして気候変動がもたらす最悪の結果を食い止めることができたかは、いずれはっきりする。各国が各自の排出量削減において一貫した行動を取り損ねるなか、都市が積極的に行動に出ている。気候行動においてその役割は重要性を増しており、都市こそがより持続可能で平等な社会を築く実力を有しているのだ。



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*1 United Nations (2018). *World Urbanization Prospects: The 2018 Revision*. Available at: https://www.un.org/development/desa/publications/2018-revision-of-world-urbanization-prospects.html.
*2 The World Bank. *Urban Development Overview*. Available at: https://www.worldbank.org/en/topic/urbandevelopment/overview.
*3 International Energy Agency (2016). *Energy Technology Perspectives 2016: Towards Sustainable Urban Energy Systems*. Available at: https://www.iea.org/publications/freepublications/publication/EnergyTechnologyPerspectives2016_ExecutiveSummary_EnglishVersion.pdf.
*4 Hsu et. al (2018). *Metrics For Sustainable and Inclusive Cities*. Available at: https://datadrivenlab.org/wp-content/uploads/2018/12/2018_UESI_Full_Report.pdf
*5 Data-Driven Lab et. al (2019). *Global Climate Action from Cities, Regions, and Businesses: 2019 update on the potential impact of individual actors and collective initiatives on global greenhouse gas emissions*.

Special Article
特集研究

Comparing Perception vs Data

Identifying diversions between environmental perception and quantitative data

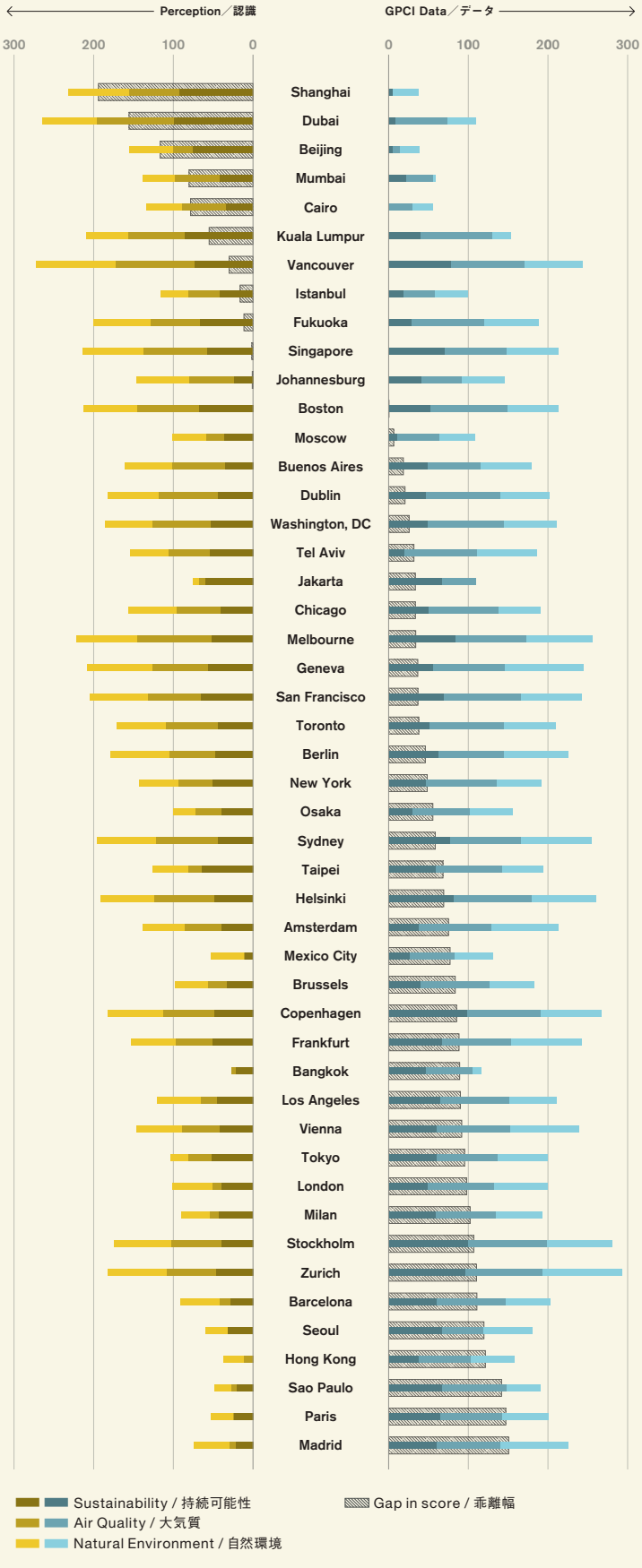
認識とデータの比較
環境におけるアンケート結果と定量データ間の乖離分析

While collecting and analyzing statistical data is powerful, understanding the public's perception of their urban environment and the impacts of climate change is also of critical importance (*1). This is because the success of environmental policies rests not only on government policy makers, but also the actions of "people"—the general urban stakeholder whose environmental decisions are more or less affected by their individual perception (*2). Therefore, the purpose of this special article is to clarify the gap between people's perceptions and quantitative data, providing a tool for environmental policy makers.

A perception survey was conducted based on the methodology outlined on the following page, and the responses were compared with indicator-group data from the GPCI's Environmental function, with the results visualized in the adjacent graph.

Among cities that show a tendency towards "optimistic" perception, Shanghai and Dubai display relatively large gaps between perception and data scores across all 3 indicator groups, with a total discrepancy of 194.1 and 155.6 respectively (max 300). Dubai's perception results for "Sustainability" (including climate policy support) scored highest among all cities, and in "Air Quality" the city was #2 behind Vancouver, indexed at 96.5 (max 100). Quantitatively, though, Dubai's score for "Sustainability" was near the bottom of the 48 GPCI cities at #45, while its "Air Quality" ranked #37 according to indicator data. Shanghai, likewise, displayed a similar trend with survey respondents providing positive perceptions much higher than GPCI data results, though it should be noted that for Beijing, residents' responses regarding "Air Quality" were much closer to the final GPCI scores, showing a discrepancy of only 16.3, as opposed to Shanghai's 63.5.

For those cities showing a more "pessimistic" tendency in perception, several displayed low results from survey respondents' views on their urban environment despite possessing relatively high scores according to GPCI data. Notable examples include Madrid, which showed a total discrepancy of 151.4, and ranked #44 in perception for "Sustainability", but #19 in the GPCI's final results. In "Natural Environment", the Spanish city ranks #33 for perception, but #6 according to quantitative data, with *Water Quality* and *Urban Greenery* having high discrepancies (34.0, 38.8). Paris also displayed a high discrepancy (total 147.7) towards pessimistic perceptions of its results. For the perception of "Sustainability", Paris ranked #42 with a score of 23.7, comparable to Johannesburg (23.9), and Bangkok (21.7), while the GPCI ranked Paris at #14, a significant gap. Sao Paulo, Hong Kong and Seoul mirror these two cities with total discrepancies of 142.4, 122.0, and 120.2 respectively, with Seoul suffering an especially negative perception of its "Sustainability" (#40) considering



The yellow-shaded bars on the left represent index scores based on the perception survey. The blue-shaded bars on the right represent index scores based on GPCI results. The thick shaded bar represents the total gap between a city's survey score and GPCI score. Maximum points for each category's score and gap is 100 (total 300).
左側の黄色棒グラフはアンケート調査に基づいた指数値を示す。右の青色棒グラフはGPCIの定量データに基づいた指数値を示す。黒の太い棒グラフは各都市のアンケート結果とGPCIデータの乖離幅を示す。各カテゴリのスコアおよび乖離幅の最大値は100（合計300）である。

the city is ranked #10 in the GPCI for this indicator group.

A final group to consider are those cities where perception and quantitative data match relatively closely in terms of their performance among the 48 GPCI cities. The cities of Johannesburg, Boston, and Singapore all display minimal total gaps of 0.1, 0.5, and 1.5 respectively, with Singapore and Johannesburg's "Air Quality" showing only a 4.1 and 5.5-point discrepancy between perception and GPCI results. Residents in Boston rate the city's "Natural Environment" only a few points higher than in the GPCI, with a perception score of 67.5.

While it is difficult to make definitive conclusions regarding the cause of these discrepancies in perception, it *is* clear that significant divergences exist. "Optimistic" and "pessimistic" perceptions that exist where statistics show relatively opposing conditions could indicate a problem of communication from administrations regarding environmental policy measures and results. It could also indicate a disconnect between evaluation methods and how people on the ground experience the impacts of climate change. Understanding these potential challenges and the links between perception and statistical indicators, then, can act as a tool in crafting more effective policy.

定量データの収集・分析とならび、都市環境や気候変動に対する人々の認識を理解することは非常に重要である[*1]。なぜなら、環境政策の成功は行政の政策立案者のみならず、都市に住む人々の行動に依拠しており、彼らの決断は少なからず個々の認識に影響されているからである[*2]。そこで本特集研究では、人々の認識と定量データの乖離を明らかにすることで、今後の環境政策の立案に寄与することを目的とした。

右欄に記載している手法に基づきアンケート調査を行い、GPCIの環境分野の指標グループのデータと比較したところ、左のグラフのような結果となった。

アンケート結果が定量データよりも高い"楽観的"な認識傾向が強くみられた都市としては、グラフ上部の上海やドバイがあげられる。この二都市は全3指標グループにおいてアンケート結果と定量データのスコアに大きな乖離がみられ、3グループの合計乖離値は、上海が194.1でドバイが155.6である(最大300)。行政の気候変動に対する政策やその取り組みを評価する『持続可能性』において、ドバイのアンケート結果は全都市中最も高く、『大気質』においても96.5(最大100)とバンクーバーに次いで二番目に高い。しかしながら、『持続可能性』でのドバイの定量データは48都市中45位であり、『大気質』は37位となっている。上海も同様の傾向があり、回答者の印象は実際のデータよりもはるかに高く、"楽観的"である。一方、北京の場合、『大気質』に対するアンケート結果が実際のGPCIスコアとかなり近く、上海の乖離値63.5に対し、わずか16.3であることは注目に値する。

アンケート結果が定量データを下回る"悲観的"な認識傾向のある都市は数多くみられたが、顕著な例として、151.4の乖離値を示したマドリッドがあげられる。『持続可能性』におけるそのアンケート結果は44位ながらGPCIデータは19位とはるかに高い。『自然環境』においてもアンケート結果が33位であるのに対し、定量データは6位であり、とりわけ「水質の良好性」と「緑地の充実度」で乖離値が高い(34.0と38.8)。パリも同様に高い乖離値(合計147.7)を示しており、"悲観的"な都市と言える。『持続可能性』において、パリのアンケート結果は42位でスコア23.7と、ヨハネスブルグ(23.9)やバンコク(21.7)と類似する結果となったが、実際のGPCIデータでは14位と、かなりかけ離れている。サンパウロ、香港、ソウルは、それぞれ乖離値が142.4、122.0、120.2と、マドリッドやパリに似通った傾向にある。なかでもソウルは『持続可能性』に対するアンケート結果が40位であるのに対し、GPCIデータでは全体の10位と、認識がデータを下回る傾向にある。

最後に、アンケート結果とGPCIデータの評価が近似する都市として、ヨハネスブルグ、ボストン、シンガポールがあげられる。これらの都市はそれぞれ乖離値が0.1、0.5、1.5と48都市中最も低く、特に『大気質』におけるシンガポールとヨハネスブルグのアンケート結果とGPCIデータの項目別乖離値は、わずかに4.1と5.5にとどまった。ボストン居住者は『自然環境』のアンケート結果で67.5と、GPCI結果をわずかに上回る評価をくだしている。

こうした認識とデータにおける乖離の要因を結論付けることは容易ではないが、二者間に乖離が生じている都市が存在するのも事実である。定量データの示す結果とは裏腹に、居住者が抱く"楽観的"あるいは"悲観的"な認識は、環境政策の策定やその結果に関して行政が発信する情報が市民に正しく伝わっていない可能性を示している。同時にこれは、環境における慣例的な評価項目と、実際に住民が気候変動による影響を肌で感じるポイントに不一致がある可能性も示している。こうした課題や、人々の認識とデータの関連を知ることで、より効果的な政策立案が可能となるだろう。

Survey Method

The perception survey was deployed to residents from all 48 GPCI cities in July, 2019. Respondents were asked 5 questions related to their city's environment, with each question corresponding to an indicator group or indicator within the GPCI's Environment function. Specifically, respondents were asked to evaluate the following:

(1) Engagement (both local residents and government) of the city in promoting environmental sustainability. ("Sustainability")
(2) Air quality of the city. ("Air Quality")
(3) Water quality of rivers, lakes, ponds, and seas in or near the city. (*Water Quality*)
(4) Abundance of greenery in the city. (*Urban Greenery*)
(5) Comfort level of the climate of the city. (*Comfort Level of Temperature*)

The number of responses for each choice on the scale were totaled, and these totals were then indexed from 0-100. As (3) to (5) represent the indicators in the "Natural Environment" indicator group, the indexed scores for those three questions were averaged so that it could be compared with the corresponding GPCI indicator group score.

調査手法

アンケート調査はGPCI-2019の48対象都市居住者に対して、2019年7月に行われた。回答者は、居住都市の環境に関する5つの質問に答え、各質問はGPCIの環境分野における指標グループないしは指標に対応している。質問の具体的な内容は下記の通り。

(1) 市民および行政の環境持続可能性に対する取り組み(『持続可能性』)
(2) 都市の大気質の良さ(『大気質』)
(3) 都市の川、湖、池、海などの水質の良さ(「水質の良好性」)
(4) 都市の緑地の豊富さ(「緑地の充実度」)
(5) 都市の気候の快適さ(「気温の快適性」)

評価に応じて点数化した回答を集計し、最大値を100、最小値を0として指数化を行った。(3)から(5)は指標グループ『自然環境』内の3指標に対応しているため、3つのスコアを平均化することで、GPCIの指標グループと比較できるようにした。

*1 Copstick et al. (2015). *International trends in public perceptions of climate change over the past quarter century*. Available at: https://onlinelibrary.wiley.com/doi/pdf/10.1002/wcc.321
*2 Pyhälä et al. (2016). *Global environmental change: local perceptions, understandings, and explanations*. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5040507/

Function 分野	Indicator Group 指標グループ	ID	Indicator 指標	Definition 定義
Economy 経済	Market Size 市場の規模	1	Nominal GDP GDP	Nominal GDP of the target city. 対象都市の名目GDP。
		2	GDP per Capita 1人あたりGDP	Nominal GDP per capita of the target city. 対象都市の人口1人あたりの名目GDP。
	Market Attractiveness 市場の魅力	3	GDP Growth Rate GDP成長率	Compound Annual Growth Rate (CAGR) of real GDP for the target city for the last 5 years. 対象都市における実質GDPの直近5年間の年平均成長率。
		4	Economic Freedom 経済自由度	Score of the country of the target city in the Heritage Foundation's "Index of Economic Freedom". Heritage Foundationの"Index of Economic Freedom"における対象都市が属する国のスコア。
	Economic Vitality 経済集積	5	Stock Market Capitalization 証券取引所の株式時価総額	Aggregate domestic market capitalization for the stock exchanges located in the target city from World Federation of Exchanges' "Domestic Market Capitalization". World Federation of Exchangesの"Domestic Market Capitalization"における対象都市に立地する取引所の国内時価総額。
		6	World's Top 500 Companies 世界トップ500企業	Total score (determined by rank) of companies located in the target city that feature in Fortune's "Fortune Global 500". Fortuneの"Fortune Global 500"でランクインした企業のうち、対象都市に立地する企業を順位に応じて点数化したスコア。
	Human Capital 人的集積	7	Total Employment 従業者数	Total employment in the target city. 対象都市の従業者数。
		8	Employees in Business Support Services ビジネスサポート人材の多さ	Percentage of employees in the target city working in industries such as finance, insurance services, real estate services, professional services, business services, and science and technology services. 対象都市におけるビジネスサポート業種（金融、保険、不動産、事務、科学技術などの各種サービス業）の従業者数の対象都市の従業者数に対する割合。
	Business Environment ビジネス環境	9	Wage Level 賃金水準の高さ	Wage level (gross annual salary, with New York indexed as 100) of the target city given in UBS' "Prices and Earnings". UBSの"Prices and Earnings"における対象都市の賃金水準（税引前の年間総収入）のニューヨークを100としたときの値。
		10	Availability of Skilled Human Resources 優秀な人材確保の容易性	Average of the indexed values of the following data: (1) Average of the 9 indicators of the country of the target city related to the ease of securing human resources in INSEAD's "Global Talent Competitiveness Index", (2) Average of the 3 indicators of the target city related to the ease of securing human resources in INSEAD's "Global Talent Competitiveness Index - City and Regions", (3) Score of the target city in EF Education First's "English Proficiency Index". 以下のデータを指数化したものの平均値：①INSEADの"Global Talent Competitiveness Index"における対象都市が属する国の優秀な人材確保の容易性に関する9指標の平均スコア、②INSEADの"Global Talent Competitiveness Index - City and Regions"における対象都市の優秀な人材確保の容易性に関する3指標の平均スコア、③EF Education Firstの"English Proficiency Index"における対象都市の英語能力スコア。
		11	Variety of Workplace Options ワークプレイス充実度	Average of the indexed values of the following data: (1) Office space occupied per desk in the target city in Cushman & Wakefield's "Office Metrics", (2) Number of coworking facilities located in target cities according to Coworker.com. 以下のデータを指数化したものの平均値：①Cushman & Wakefieldの"Office Metrics"における対象都市の1デスクあたりのオフィス専有面積、②Coworker.comに掲載されている対象都市のコワーキング施設数。
	Ease of Doing Business ビジネスの容易性	12	Corporate Tax Rate 法人税率の低さ	Corporate tax rate for the target city or the country of the target city in KPMG's "Corporate Tax Rates Table". KPMGの"Corporate Tax Rates Table"における対象都市もしくは対象都市が属する国の法人税率。
		13	Political, Economic and Business Risk 政治・経済・商機のリスク	Average of the indexed values of the following data: (1) Average of the 10 indicators related to ease of doing business for the target city or the country of the target city in the World Bank's "Doing Business", (2) Moody's long-term credit rating for the country risk ceiling of foreign currency for the country of the target city. 以下のデータを指数化したものの平均値：①World Bankの"Doing Business"における対象都市もしくは対象都市が属する国のビジネスの容易性に関する10指標の平均スコア、②Moody'sによる対象都市が属する国の外貨建カントリーシーリングの長期格付け。
R & D 研究・開発	Academic Resources 研究集積	14	Number of Researchers 研究者数	Number of researchers in the target city estimated pro rata from the number of employees in the country and target city in the UNESCO Institute of Statistics' "UIS Statistics". UNESCO Institute of Statisticsの"UIS Statistics"における対象都市が属する国の研究者数を国と対象都市の従業者数の比率で按分して推計した人数。
		15	World's Top Universities 世界トップ大学	Ranking score determined from the rank of universities located within 50 km of the center of the target city that are in the top 1000 of Times Higher Education's "World University Rankings". Times Higher Educationの"World University Rankings"で1000位以内にランクインした大学のうち、対象都市の中心点から50 km圏内に所在する大学を順位に応じて点数化したスコア。
	Research Environment 研究環境	16	Research and Development Expenditure 研究開発費	Research and development expenditure in the country of the target city estimated pro rata from the number of employees in the country and target city listed under the UNESCO Institute of Statistics' "UIS Statistics". UNESCO Institute of Statisticsの"UIS Statistics"における対象都市が属する国の研究開発費を国と対象都市の従業者数の比率で按分して推計した額。
		17	Number of International Students 留学生数	Number of international students attending universities estimated from the number of students and the percentage of international students of each university located within 50 km of the city center of the target city that are in the top 1000 of Times Higher Education's "World University Rankings". Times Higher Educationの"World University Rankings"で1000位以内にランクインした大学のうち、対象都市の中心点から50 km圏内に所在する大学の生徒数と留学生割合から推計した対象都市における留学生数。
		18	Academic Performance 学力の高さ	Average score of all subjects for the country of the target city in the OECD's "Programme for International Student Assessment (PISA)". OECDの"Programme for International Student Assessment (PISA)"における対象都市が属する国の全科目平均得点。
	Innovation イノベーション	19	Number of Patents 特許登録件数	Number of registered patents estimated pro rata from the number of employees in the country and target city based on averages for the last 11 years from World Intellectual Property Organization's "WIPO IP Statistics Data Center". World Intellectual Property Organizationの"WIPO IP Statistics Data Center"における対象都市が属する国の特許登録数の直近11年間の平均値を国と対象都市の従業者数の比率で按分して推計した数。
		20	Winners of Prizes in Science and Technology 主要科学技術賞受賞者数	Total points awarded to the target city for number of recipients within the last 20 years of the major science and technology-related awards (Nobel Prize, Balzan Prize, Crafoord Prize, Nevanlinna Prize, and Fields Medal) based on the university or research institute (located within 50 km of the city center) with which they were affiliated at the time of receiving the award. Points are weighted based on the year in which the prize was awarded. 主要科学技術賞（ノーベル賞、バルザン賞、クラフォード賞、ネヴァンリンナ賞、フィールズ賞）の直近20年間の受賞者のうち、受賞当時の在籍機関が対象都市の中心点から50km圏内に所在する受賞者を受賞経年数に応じて点数化したスコア。

[o] … Indicators using questionnaires
アンケート結果を用いている指標

Function 分野	Indicator Group 指標グループ	ID	Indicator 指標	Definition 定義
R & D 研究・開発	Innovation イノベーション	21	Startup Environment スタートアップ環境	Average of the indexed values of the following data: (1) Startup Ecosystem score in Nestpick's "Startup Cities Index", (2) Average number of startups founded in the target city in the last 3 years according to Crunchbase. 以下のデータを指数化したものの平均値：①Nestpickの"Startup Cities Index"における対象都市の"Startup Ecosystem"のスコア、②Crunchbaseに掲載されている対象都市で起業されたスタートアップ数の直近3年間の平均値。
Cultural Interaction 文化・交流	Trendsetting Potential 発信力	22	Number of International Conferences 国際コンベンション件数	Number of international conferences held in the target city listed in the Union of International Associations' "Yearbook of International Organizations". Union of International Associationsの"Yearbook of International Organizations"における対象都市で開催された国際会議件数。
		23	Number of Cultural Events 文化イベント開催件数	Average of the indexed values of the following data: (1) Number of points awarded to the target city for hosting global events such as the Olympics, World Expositions, and FIFA World Cups in the last 20 years according to their size and year in which they were hosted, (2) Average number of events held in the target city in the last 3 years listed in Columbus Travel Media's "World Travel Guide". 以下のデータを指数化したものの平均値：①世界的な文化イベント(オリンピック、FIFAワールドカップ、万国博覧会)のうち、直近20年間に対象都市で開催されたイベントを規模および開催経年数に応じて点数化したスコア、②Columbus Travel Mediaの"World Travel Guide"における対象都市で開催された文化イベント数の直近3年間の平均値。
		24	Cultural Content Export Value コンテンツ輸出額	Average of the indexed values of the following data (weighted 1:2): (1) Export value of Printed Books and Optical Media estimated pro rata from the proportion of GDP for the country and target city according to the International Trade Center's "International Trade Statistics", (2) Export value of Audiovisual and Related Services estimated pro rata from the proportion of GDP for the country and target city according to the International Trade Center's "International Trade Statistics". 以下のデータを指数化したものを1:2で重み付けした平均値：①International Trade Centerの"International Trade Statistics"における対象都市が属する国の書籍および光学メディアの国別輸出額を国と対象都市のGDPの比率で按分して推計した額、②International Trade Centerの"International Trade Statistics"における対象都市が属する国の視聴覚および関連サービスの国別輸出額を国と対象都市のGDPの比率で按分して推計した額。
		25	Art Market Environment アート市場環境	Average of the indexed values of the following data: (1) Score determined by the ranking of the contemporary artists based in the target city from the top 200 living artists ranked according to total sales over the period of one year in Artprice.com's "Contemporary Art Market Report", (2) Number of art galleries listed in Artnet.com's "Gallery Network". 以下のデータを指数化したものの平均値：①Artprice.comの"Contemporary Art Market Report"で年間落札総額200位以内にランクインした作家(存命)のうち、対象都市を活動拠点としている作家を順位に応じて点数化したスコア、②Artnet.comの"Gallery Network"に掲載されている対象都市のギャラリー数。
	Tourism Resources 観光資源	26 [o]	Tourist Attractions 観光地の充実度	Average of the indexed values of the following data: (1) Number of tourist attractions listed in TripAdvisor with more than 100 reviews and located within 10 km of the center of the target city, (2) Number of days required for a foreign visitor to visit the major tourist attractions in the target city according to the Resident Questionnaire. 以下のデータを指数化したものの平均値：①TripAdvisorに掲載されている対象都市の中心点から10 km圏内に所在する観光スポット数（レビュー数100以上）、②居住者アンケートより、外国人訪問者が対象都市の主な観光スポットを回るのに要する日数。
		27	Proximity to World Heritage Sites 世界遺産への近接性	Total points awarded based on the size and type of UNESCO World Heritage Sites located within 100km of the center of the target city. UNESCOによるユネスコ世界遺産のうち、対象都市の中心点から100km圏内に所在する世界遺産を種別および面積に応じて点数化したスコア。
		28	Nightlife Options ナイトライフ充実度	Average of the indexed values of the following data: (1) Relative number of searches for the city's name + "nightlife" in the past 12 months according to Google Trends, (2) Number of nightlife attractions listed in TripAdvisor with more than 10 reviews. 以下のデータを指数化したものの平均値：①Google Trendsにおける"対象都市名 nightlife"の相対的な検索数(過去12か月間)、②TripAdvisorに掲載されている対象都市のナイトライフスポット数（レビュー数10以上）。
	Cultural Facilities 文化施設	29	Number of Theaters 劇場・コンサートホール数	Average of the following values: (1) Number of theaters and concert halls listed in TripAdvisor, (2) Number of theaters and concert halls listed in OpenStreetMap located within 10km of the center of the target city. 以下のデータの平均値：①TripAdvisorに掲載されている対象都市の劇場・コンサートホール数、②OpenStreetMapに掲載されている対象都市の中心点から10km圏内に所在する劇場・コンサートホール数。
		30	Number of Museums 美術館・博物館数	Number of museums listed in De Gruyter Saur's "Museums of the World". De Gruyter Saurの"Museums of the World"に掲載されている対象都市の美術館・博物館数。
		31	Number of Stadiums スタジアム数	Number of stadiums listed in World Stadiums with a capacity of more than 10,000 people. Stadiums for universities and other educational facilities are excluded. World Stadiumsに掲載されている対象都市のスタジアム数（収容人数10,000人以上、大学など教育施設構内のスタジアムは除く）。
	Visitor Amenities 受入環境	32	Number of Hotel Rooms ホテル客室数	Total number of hotel rooms located within 10km of the city center displayed on Hotels.com. Hotels.comに掲載されている対象都市の中心点から10km圏内に所在するホテルの総客室数。
		33	Number of Luxury Hotel Rooms ハイクラスホテル客室数	Total number of 5 star hotel rooms located within 10km of the city center displayed on Hotels.com. Hotels.comに掲載されている対象都市の中心点から10km圏内に所在する5つ星ホテルの総客室数。
		34 [o]	Attractiveness of Shopping Options 買物の魅力	Average of the indexed values of the following data: (1) Number of luxury-brand shops (Burberry, Cartier, Chanel, Christian Dior, Fendi, Gucci, Hermes, Louis Vuitton, Prada, Rolex, Tiffany) located in the target city, (2) Influence level of shopping as a major reason for visiting the target city according to the Resident Questionnaire. 以下のデータを指数化したものの平均値：①ラグジュアリーブランド（Burberry, Cartier, Chanel, Christian Dior, Fendi, Gucci, Hermes, Louis Vuitton, Prada, Rolex, Tiffany）の対象都市内の合計店舗数、②居住者アンケートより、観光客が買物の魅力を対象都市の訪問の目的として感じている度合い。
		35 [o]	Attractiveness of Dining Options 食事の魅力	Average of the indexed values of the following data: (1) Number of restaurants located within 10 km from the city center in the target city in La Liste's "World's Top 1000 Restaurants", (2) Influence level of cuisine or dining as a major reason for visiting the target city according to the Resident Questionnaire. 以下のデータを指数化したものの平均値：①La Listeの"World's Top 1000 Restaurants"でランクインしたレストランのうち、対象都市の中心点から10km圏内に所在するレストラン数、②居住者アンケートより、観光客が食事の魅力を対象都市の訪問の目的として感じている度合い。
	International Interaction 外国人受入実績	36	Number of Foreign Residents 外国人居住者数	Number of registered foreign people or residents without citizenship in the country of the target city. 対象都市の外国人居住者数もしくは市民権を持たない居住者数。
		37	Number of Foreign Visitors 外国人訪問者数	Annual number of foreign visitors to the target city. 対象都市を1年間に訪問した外国人数。

Function 分野	Indicator Group 指標グループ	ID	Indicator 指標	Definition 定義
Livability 居住	Working Environment 就業環境	38	Total Unemployment Rate 完全失業率の低さ	Total unemployment rate in the target city. 対象都市の完全失業率。
		39	Total Working Hours 総労働時間の短さ	Working Hours for the target city given in UBS' "Prices and Earnings". UBSの"Prices and Earnings"における対象都市の年間総労働時間。
		40 Q	Workstyle Flexibility 働き方の柔軟性	Ease of working flexibly at the workplace (such as leaving early, work from home) in the target city according to the Resident Questionnaire. 居住者アンケートより、対象都市における働き方の柔軟性（早退のしやすさや在宅勤務のしやすさなど）の度合い。
	Cost of Living 居住コスト	41	Housing Rent 住宅賃料水準の低さ	Average Rent of a furnished 2 -room apartment, an unfurnished 3 -room apartment, and a typical sized apartment in the target city given in UBS' "Prices and Earnings". UBSの"Prices and Earnings"における対象都市の住宅賃料（家具付き2部屋、家具なし3部屋、対象都市で一般的な大きさの部屋の平均賃料）。
		42	Price Level 物価水準の低さ	Prices excl. Rent (with New York indexed as 100) given in UBS' "Prices and Earnings". UBSの"Prices and Earnings"における対象都市の物価（住宅賃料を除く）のニューヨークを100としたときの値。
	Security and Safety 安全・安心	43	Number of Murders 殺人件数の少なさ	Number of murders (acknowledged) per year per population of one million in the target city. 対象都市の人口100万人あたりの年間殺人事件発生（認知）件数。
		44	Economic Risk of Natural Disaster 自然災害の経済的リスクの少なさ	Share of Average Annual GDP for "GDP at Risk" in Lloyd's "Lloyd's City Risk Index". Lloyd'sの"Lloyd's City Risk Index"における対象都市のGDPリスク量の対平均年間GDP比。
	Well-Being 生活良好性	45	Life Expectancy 平均寿命	Average life expectancy for the country of the target city listed in the World Health Organization's "World Health Statistics". World Health Organizationの"World Health Statistics"における対象都市が属する国の平均寿命。
		46	Social Freedom and Equality 社会の自由度・平等さ	Average of the indexed values of the following data: (1) Score for the country of the target city listed in Transparency International's "Corruption Perceptions Index", (2) Score for the country of the target city listed in Freedom House's "Freedom in the World", (3) Score for the country of the target city listed in Reporters without Borders' "World Press Freedom Index", (4) Score for the country of the target city listed in World Economic Forum's "Global Gender Gap Index". 以下のデータを指数化したものの平均値：①Transparency Internationalの"Corruption Perceptions Index"における対象都市が属する国のスコア、②Freedom Houseの"Freedom in the World"における対象都市が属する国のスコア、③Reporter without Bordersの"World Press Freedom Index"における対象都市が属する国のスコア、④World Economic Forumの"Global Gender Gap Index"における対象都市が属する国のスコア。
		47	Risk to Mental Health メンタルヘルス水準	Average of the indexed values of the following data: (1) Total value of the indexed score for disability-adjusted life years (the number of years lost due to illness, disorder or premature death) based only on acquired mental illnesses for the country of the target city listed in the World Health Organization's "Global Health Estimates", (2) Suicide rates per 100 , 000 population for the country of the target city in the World Health Organization's "Global Health Observatory". 以下のデータを指数化したものの平均値：①World Health Organizationの"Global Health Estimates"における対象都市が属する国の後天的な精神疾患による障害調整生命年（病的状態、障害、早死により失われた年数）、②World Health Organizationの"Global Health Observatory"における対象都市が属する国の人口10万人あたりの自殺者数。
	Ease of Living 生活利便性	48	Number of Medical Doctors 医師数	Number of medical doctors per one million people estimated pro rata from the number of employees in the country and target city based on the average number of medical doctors in the country listed in the OECD's "Health Statistics" and the WHO's "Global Health Observatory". OECDの"Health Statistics"およびWHOの"Global Health Observatory"における対象都市が属する国の医師数の平均値を国と対象都市の従業者数の比率で按分して推計した人口100万人あたりの医師数。
		49	ICT Readiness ICT環境の充実度	Indexed score of the 16 indicators of the country of the target city related to ICT infrastructure for resident, business, and government services in World Economic Forum's "Networked Readiness Index". World Economic Forumの"Networked Readiness Index"における対象都市が属する国の個人、ビジネス、行政サービスにおけるICT環境に関する16指標を同調査と同じ方法で指数化した値。
		50 Q	Number of Retail Shops 小売店舗の多さ	Average of the indexed values of the following data: (1) Number of retail shops listed in OpenStreetMap located within 10km of the center of the target city, (2) Number of retail shops located within a 10 -minute walk in the target city according to the Resident Questionnaire. 以下のデータを指数化したものの平均値：①OpenStreetMapに掲載されている対象都市の中心点から10 km圏内に所在する小売店舗数、②居住者アンケートより、対象都市で徒歩10分圏内に所在する小売店舗数。
		51 Q	Number of Restaurants 飲食店の多さ	Average of the indexed values of the following data: (1) Number of restaurants listed in OpenStreetMap located within 10km of the center of the target city, (2) Number of restaurants located within a 10 -minute walk in the target city according to the Resident Questionnaire. 以下のデータを指数化したものの平均値：①OpenStreetMapに掲載されている対象都市の中心点から10 km圏内に所在するレストラン数、②居住者アンケートより、対象都市で徒歩10分圏内に所在するレストラン数。

◘… Indicators using questionnaires
アンケート結果を用いている指標

Function 分野	Indicator Group 指標グループ	ID	Indicator 指標	Definition 定義
Environment 環境	Sustainability 持続可能性	52	Commitment to Climate Action 環境への取り組み	Average of the indexed values of the following data: (1) Number of commitments for the target city based on data from the United Nations Framework Convention on Climate Change's "Non-state Actor Zone for Climate Action (NAZCA)", (2) Percentage of GHG emissions reduction target of the target city divided by the number of years from the baseline year to the target year. 以下のデータを指数化したものの平均値：①United Nations Framework Convention on Climate Change（気候変動に関する国際連合枠組条約）による"Non-state Actor Zone for Climate Action (NAZCA)"に掲載されている対象都市のアクション数、②対象都市の温室効果ガス排出削減中期目標を基準年から目標年までの年数で除した1年あたりの削減目標率。
		53	Renewable Energy Rate 再生可能エネルギー比率	Percentage of renewable energy supply used versus the total primary energy supply for the country of the target city listed in the International Energy Agency's "Renewables Information". International Energy Agencyの"Renewables Information"における対象都市が属する国の総1次エネルギー供給量に対する再生可能エネルギーの供給量の比率。
		54	Waste Recycle Rate リサイクル率	Average percentage of municipal waste generated that is recycled in the country of the target city listed in the OECD's "Environment Statistics" and the United Nations Statistics Division's "Environmental Indicators". OECDの"Environment Statistics"およびUnited Nations Statistics Divisionの"Environmental Indicators"における対象都市が属する国の一般ごみのリサイクル率の平均値。
	Air Quality 大気質	55	CO_2 Emissions CO_2排出量の少なさ	Volume of CO_2 emission estimated pro rata from the proportion of GDP for the country and target city in the International Energy Agency's "CO_2 Emissions from Fuel Combustion". International Energy Agencyの"CO_2 Emissions from Fuel Combustion"における対象都市が属する国のCO_2排出量を国と対象都市のGDPの比率で按分して推計した量。
		56	SPM Density SPM濃度の低さ	Concentration of PM 2.5 observed in the air at measurement points in the target city according to the World Health Organization's "World Health Statistics". World Health Organizationの"World Health Statistics"における対象都市が属する国内の測定点における空気中のPM2.5濃度。
		57	SO_2 and NO_2 Density SO_2・NO_2濃度の低さ	Average of the indexed values of the following data: (1) Concentration of sulfur dioxide (SO_2) in the air at measurement points in the target city, (2) Concentration of nitrogen dioxide (NO_2) in the air at measurement points in the target city. 以下のデータを指数化したものの平均値：①対象都市内の測定点における空気中の二酸化硫黄（SO_2）濃度、②対象都市内の測定点における空気中の二酸化窒素（NO_2）濃度。
	Natural Environment 自然環境	58	Water Quality 水質の良好性	Score of "Water Quality" for the target city in Numbeo's "Pollution". Numbeoの"Pollution"における対象都市の"Water Quality"のスコア。
		59	Urban Greenery 緑地の充実度	Average of the indexed values of the following data: (1) Score of "Quality of Green and Parks" for the target city in Numbeo's "Pollution", (2) Percentage of green areas within 10㎢ of the city centeral area according to Google Maps. 以下のデータを指数化したものの平均値：①Numbeoの"Pollution"における対象都市の"Quality of Green and Parks"のスコア、②Google Mapsにおける対象都市の中心部における10㎢内に所在する緑地面積の割合。
		60	Comfort Level of Temperature 気温の快適性	3-year average amount by which the target city's apparent temperature, calculated from the weather data from Raspisaniye Pogodi Ltd.'s "Weather in the World", deviates from the ideal temperature range (15-25℃). Raspisaniye Pogodi Ltd.の"Weather in the World"に掲載されている対象都市の直近3年間の気象データから算出した体感温度の快適な温度（15～25℃）からの乖離度を集計した値。
Accessibility 交通・アクセス	International Network 国際ネットワーク	61	Cities with Direct International Flights 国際線直行便就航都市数	Number of cities from which direct passenger flights depart or arrive at the target city's airports cited in the Official Airline Guide's "OAG MAX". Official Airline Guideの"OAG MAX"における対象都市を出発地もしくは到着地とする航空旅客便（直行便のみ）の輸送実績を有する都市数。
		62	International Freight Flows 国際貨物流通規模	Average of the indexed values of the following data: (1) Port freight of the target city cited in the American Association of Port Authorities' "World Port Rankings", (2) Number of cities from which direct cargo flights depart or arrive at the target city's airports cited in the Official Airline Guide's "OAG MAX". 以下のデータを指数化したものの平均値：①American Association of Port Authoritiesの"World Port Rankings"における対象都市の港湾の合計取扱貨物量、②Official Airline Guideの"OAG MAX"における対象都市を出発地もしくは到着地とする航空貨物便（直行便のみ）の輸送実績を有する都市数。
	Air Transport Capacity 航空キャパシティ	63	Number of Air Passengers 国内・国際線旅客数	Total annual number of arriving/departing passengers at major airports (one million or more passengers a year) of the target city. 対象都市の空港（年間旅客数100万人以上）の合計年間旅客数。
		64	Number of Runways 滑走路本数	Total number of runways that are 2,000 m or more in length at the target city's major airports that receive more than one million passengers a year according to Fubra Limited's "World Airport Codes". Fubra Limitedの"World Airport Codes"における対象都市の空港（年間旅客数100万人以上）における滑走路（長さ2,000m以上）の合計本数。
	Inner-City Transportation 都市内交通	65	Station Density 駅密度	Density of train and tram stations listed in OpenStreetMap located within 10km of the center of the target city. OpenStreetMapに掲載されている対象都市の中心点から10km圏内に所在する鉄道とトラムの駅数（トラムは駅名が重複するものを除く）を当該面積で除した密度。
		66	Public Transportation Use 公共交通機関利用率	Ratio of public transportation use in the target city according to Numbeo's "Traffic". Numbeoの"Traffic"における対象都市の通勤・通学における公共交通機関の利用者割合を公共交通機関、自動車、バイクの利用者割合の合計で除した割合。
		67	Travel Time to Airports 空港アクセス時間の短さ	Average time required to travel from the major airport (one million or more passengers a year) of the target city to the city center. If more than one airport exists, a weighted average is calculated according to the number of passengers of each airport. 対象都市の空港（年間旅客数100万人以上）から対象都市の中心点までの片道所要時間。複数の空港が存在する場合は各空港の旅客数で加重平均を取った。
	Transport Comfortability 移動の快適性	68 ◘	Commuting Time 通勤・通学時間の短さ	Average of the following values: (1) Time required for a one-way trip to work or school in the target city according to Numbeo's "Traffic", (2) Time required for a one-way trip to work or school in the target city according to the Resident Questionnaire. 以下のデータの平均値：①Numbeoの"Traffic"における対象都市で通勤・通学にかかる片道所要時間、②居住者アンケートより、対象都市で通勤・通学にかかる片道所要時間。
		69	Traffic Congestion 渋滞の少なさ	Congestion level in percentage for each target city which compares the average additional travel time accrued due to traffic congestion according to TomTom's "Traffic Index". TomTomの"Traffic Index"における対象都市において非混雑時の交通状況と比較して混雑時に余分にかかる時間の割合。
		70	Taxi Fare タクシー運賃の安さ	Taxi fare for a 5km ride in the target city cited in UBS' "Prices and Earnings". UBSの"Prices and Earnings"における対象都市で5km走行した場合のタクシー運賃。

Global Power City Index 2019

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Cairo
Johannesburg
Mumbai

Global Power City Index 2019