

Session 6

**2018 Annual Indices for Expatriates and Ordinary Residents
on Cost of Living, Wages and Purchasing Power for
World's 105 Major Cities**

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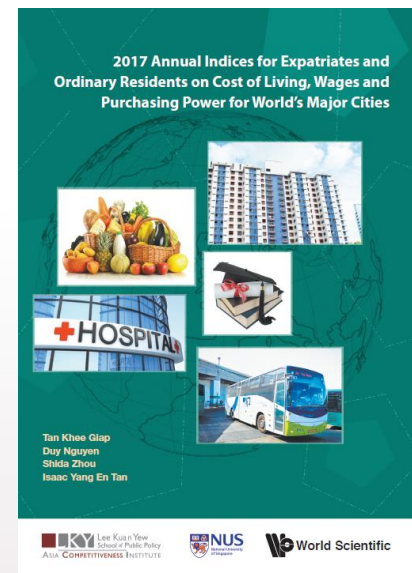
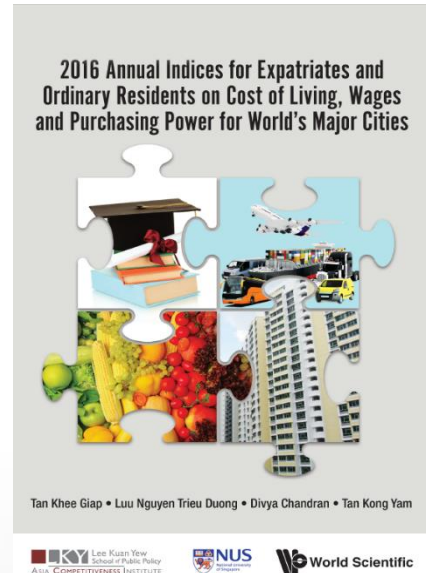
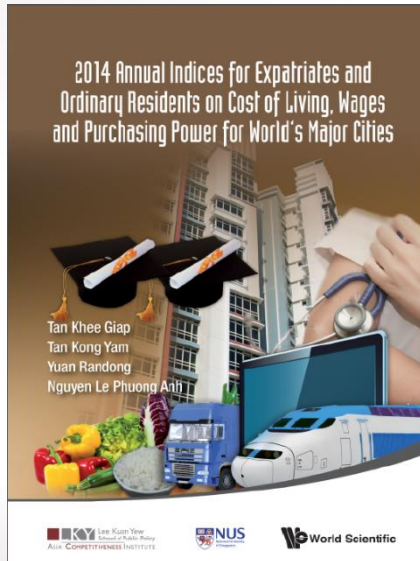
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ACI's Research Publications on Indices for Expatriates and Ordinary Residents on Cost of Living, Wages and Purchasing Power



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I. Motivation for Research

The ACI aims to provide for ordinary residents, multinational executives, potential investors, policy makers and government officials reliable estimates on cost of living for the world's major cities across the globe in a professional manner as follows:

- Our book provides annual indices and rankings for cost of living since 2005 for **ordinary residents** (the first ever comprehensive study of this kind available today) and **expatriates** (which are widely available but done less rigorously as compared to the ACI study);
- Our book also provides annual indices and rankings for wages and purchasing power since 2005 for **ordinary residents**;
- Data used and their sources are explicitly disclosed;
- Our rigorous methodology is explained openly;
- Weights employed for consumption baskets are justified and stated clearly;
- All assumptions made are also laid down in a transparent approach.

2. Expected Contributions and Implications of ACI Indices

- For transparency and consistency
 - Unless assumptions, methodology and data sources are disclosed publicly, it can lead to spurious or misleading results for cities.
- For policy makers:
 - Poverty statistics can be measured differently taking into account cost of living of ordinary residents.
 - Differences between ordinary residents and expatriates, which were previously hidden by a national index, are now made salient.

2. Expected Contributions and Implications of ACI Indices

- For academics:
 - More accurate depiction of price levels for each city.
 - Distinction between ordinary residents and expatriates opens up more tools for social research.
- For multinational corporations:
 - Employers can review and adjust compensation packages according to cities for expatriates.
 - Allowing employers to adopt more competitive compensation packages for workers working abroad given the differences in cost of living between expatriates and ordinary residents in a given city.

3. List of Cities

No	City	Country
1	ADELAIDE	Australia
2	AMMAN	Jordan
3	AMSTERDAM	Netherlands
4	ASUNCION	Paraguay
5	ATHENS	Greece
6	ATLANTA	United States
7	AUCKLAND	New Zealand
8	BAKU	Azerbaijan
9	BANGKOK	Thailand
10	BARCELONA	Spain
11	BEIJING	China
12	BERLIN	Germany
13	BOGOTA	Colombia
14	BOSTON	United States
15	BRATISLAVA	Slovakia
16	BRISBANE	Australia
17	BRUSSELS	Belgium

No	City	Country
18	BUCHAREST	Romania
19	BUDAPEST	Hungary
20	BUENOS AIRES	Argentina
21	CAIRO	Egypt
22	CALGARY	Canada
23	CARACAS	Venezuela
24	CHICAGO	United States
25	CLEVELAND	United States
26	COLOMBO	Sri Lanka
27	COPENHAGEN	Denmark
28	DALIAN	China
29	DETROIT	United States
30	DOHA	Qatar
31	DUBAI	United Arab Emirates
32	DUBLIN	Ireland
33	FRANKFURT	Germany
34	GENEVA	Switzerland

3. List of Cities

No	City	Country
35	GUANGZHOU	China
36	HANOI	Vietnam
37	HELSINKI	Finland
38	HO CHI MINH CITY	Vietnam
39	HONG KONG	Hong Kong, China
40	HONOLULU	United States
41	HOUSTON	United States
42	ISTANBUL	Turkey
43	JAKARTA	Indonesia
44	JOHANNESBURG	South Africa
45	KIEV	Ukraine
46	KUALA LUMPUR	Malaysia
47	KUWAIT	Kuwait
48	LEXINGTON	United States
49	LIMA	Peru
50	LISBON	Portugal
51	LONDON	Great Britain
52	LOS ANGELES	United States

No	City	Country
53	LUXEMBOURG	Luxembourg
54	LYON	France
55	MADRID	Spain
56	MANILA	Philippines
57	MELBOURNE	Australia
58	MEXICO CITY	Mexico
59	MIAMI	United States
60	MILAN	Italy
61	MINNEAPOLIS	United States
62	MONTEVIDEO	Uruguay
63	MONTREAL	Canada
64	MOSCOW	Russia
65	MUMBAI	India
66	MUNICH	Germany
67	NAIROBI	Kenya
68	NEW DELHI	India
69	NEW YORK	United States
70	OSAKA / KOBE	Japan

3. List of Cities

No	City	Country
71	OSLO	Norway
72	PARIS	France
73	PERTH	Australia
74	PITTSBURGH	United States
75	PRAGUE	Czech Republic
76	PRETORIA	South Africa
77	QINGDAO	China
78	QUITO	Ecuador
79	REYKJAVIK	Iceland
80	RIO DE JANEIRO	Brazil
81	ROME	Italy
82	SAN FRANCISCO	United States
83	SANTIAGO	Chile
84	SAO PAULO	Brazil
85	SEATTLE	United States
86	SEOUL	South Korea
87	SHANGHAI	China
88	SHENZHEN	China

No	City	Country
89	SINGAPORE	Singapore
90	SOFIA	Bulgaria
91	ST PETERSBURG	Russia
92	STOCKHOLM	Sweden
93	SUZHOU	China
94	SYDNEY	Australia
95	TAIPEI	Taiwan, China
96	TEL AVIV	Israel
97	TIANJIN	China
98	TOKYO	Japan
99	TORONTO	Canada
100	VANCOUVER	Canada
101	VIENNA	Austria
102	WARSAW	Poland
103	WASHINGTON DC	United States
104	WELLINGTON	New Zealand
105	ZURICH	Switzerland

4. Comparative Literature Review

Economist Intelligence Unit (EIU) :
Worldwide Cost of Living Index

- Updated annually
- Includes only cost of living index for expatriates
- Based on a single set of weights for the basket of goods and services; geared towards Western consumption

 The
Economist INTELLIGENCE
UNIT

Worldwide Cost of Living 2018

Which global cities have the highest cost of living?

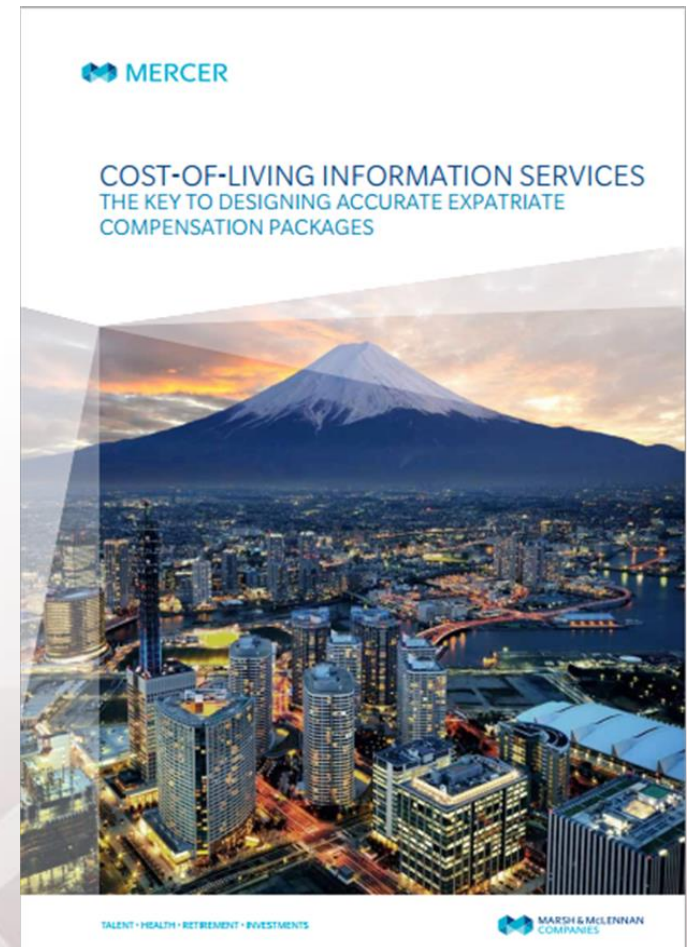
A report by The Economist Intelligence Unit



4. Comparative Literature Review

Mercer: Cost of Living Rankings

- Updated annually
- Includes only the ranking of cities according to cost of living for expatriates; no index value



4. Comparative Literature Review

UBS: Prices and Earnings Report

- Updated every three years
- Offers indices on price levels for expatriates
- Basket of goods and services used to calculate indices was based on European family of three.
- The same basket assumed common consumer preferences across all cities regardless of geography, lifestyle, culture etc.



Chief Investment Office WM
September 2015

Prices and earnings 2015

Do I earn enough for the life I want?



5. Three Improved Features in the ACI Indices

1. More comprehensive coverage

- Cost of living indices are reported for both expatriates and ordinary residents, the first of its kind in the world.
- Wages and purchasing power indices are also reported for ordinary residents.

2. More rigorous methodology

- The ACI report distinguishes between the ordinary residents and the expatriates in terms of cost of living.
- Expatriates tend to purchase high-end products and have western consumption preferences.
- Ordinary residents purchase typical products and have a local pattern of consumption.

3. More reliable data

- The data on item prices was drawn from EIU, which is considered the most reliable private source of data by most researchers.
- Consumer preference profiles were taken from the International Comparison Program (ICP) survey by the World Bank and household expenditure surveys in various countries.
- Wages and mean weekly hours actually worked data are from the International Labour Organisation (ILO) database.

6. Data Sources

- Price data from the EIU CityData database.
- Price data for Miscellaneous Goods and Services category from UBS.
- Weights data for each consumption item are derived based on the ICP survey conducted by the World Bank and household expenditure surveys in various countries.
- Daily average exchange rates from Bloomberg Terminal.
- Annual inflation rates mainly from the World Development Indicators, World Bank, supplemented by data from International Financial Statistics (IFS), International Monetary Fund (IMF); PC-AXIS database, Taiwan Directorate General of Budget, Accounting and Statistics and United Arab Emirates National Bureau of Statistics

6. Data Sources

- Nominal Expenditure per capita and Real Expenditure per capita from the ICP, World Bank.
- Both the EIU City Database and the ICP survey provide a compendium of item price data. However, key differences required selective use of both.
 - EIU provides data at city-level, but reports expatriate-oriented prices.
 - ICP provides data only at national level, but reported price indices are more reflective of the local consumption preferences.
- Gross average nominal monthly wages in local currency units from the International Labour Organisation (ILO) database.
- Mean weekly hours actually worked from the ILO database.

7. Assumptions Made

In developing the indices, we have made the following assumptions :

- Expatriates are assumed to follow Western consumption pattern, gearing towards high-end lifestyle products. The consumption basket for expatriates is the average of the consumption baskets of 24 industrialised countries*.
- The consumption pattern of expatriates is assumed to be the same across 105 cities.
- The consumption pattern of ordinary residents varies from country to country. The consumption pattern of ordinary residents is influenced by geographical location, social values and cultural affiliation in the respective countries.

*Note: 24 industrialised countries refer to Austria, Australia, Belgium, Canada, Denmark, Finland, France, Germany, Great Britain, Greece, Iceland, Ireland, Israel, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland and United States.

7. Assumptions Made

- Ordinary residents living in different cities of the same country are assumed to have the same consumption pattern.
- Consumption patterns of both expatriates and ordinary residents are assumed to change over time. The changes in spending preference are partially affected by the variation in prices and quality of goods and services.
- As the ICP survey is conducted every six years, proxy for the nominal expenditure per capita and real expenditure per capita in years not covered under the study will be made based on exchange rates and inflation rates.
- As the data for inflation rates, nominal expenditure per capita, real expenditure per capita, nominal monthly wages and mean weekly working hours are not available at city level, the national level data will be used as the proxy.

8. Methodology: Cost of Living Index

- We rank the Cost of Living Index for each city (for either Expatriates or Ordinary Residents) in a descending order.
- A larger Cost of Living Index value implies that the city has higher cost of living. A smaller Cost of Living Index value implies that the city has lower cost of living.
- New York is used as base city (i.e. Cost of Living Index of New York = 100).
- Cities with Cost of Living Index larger than 100 are more expensive than New York. Cities with Cost of Living Index smaller than 100 are cheaper than New York.
- All prices used to construct the Cost of Living Indices are in US dollar. Conversion, where required, is carried out using the yearly average exchange rates. Yearly average exchange rates are calculated from the daily average exchange rates obtained from Bloomberg.

8. Methodology: The 10 ACI Consumption Categories

- The ACI Cost of Living Indices consist of 10 Consumption Categories, 165 products and services and 283 price data entries for each city. The 10 Consumption Categories are as follows:
 1. Food & Non-alcoholic Beverages
 2. Alcohol & Tobacco
 3. Clothing
 4. Housing Rents & Utilities
 5. Household Supplies & Domestic Help
 6. Health
 7. Transport
 8. Recreation
 9. Education
 10. Miscellaneous Goods and Services

8. Methodology: Cost of Living Index for Expatriates

- Cost of Living Index for Expatriates in city m is calculated as follows:

$$\text{Cost of Living Index for Expatriates in city } m = \frac{\sum_{i=1}^n P_{C,m,i} \times W_i}{\sum_{i=1}^n P_{US,NY,i} \times W_i} \times 100$$

where

m = city;

C = the country where city m is located in;

NY = New York;

US = United States;

i = item;

n = number of items in the consumption basket for expatriates;

$P_{C,m,i}$ = US dollar denominated average price of item i in city m of country C †;

W_i = weight of item i within Cost of Living Index for Expatriates.

†Note: For an item, multiple prices might be collected from various locations, for example from the supermarkets, branded stores, chain store, etc. $P_{C,m,i}$ is the average of all available prices for the same item in each city.

8. Methodology: Cost of Living Index for Ordinary Residents

- Cost of Living Index for Ordinary Residents in city m is calculated as follows:

$$\text{Cost of Living Index for Ordinary Residents in city } m = \frac{CP_{C,m}^{\text{EIU}} \times \frac{NP_C^{\text{ICP}}}{NP_C^{\text{EIU}}}}{CP_{\text{US,NY}}^{\text{EIU}} \times \frac{NP_{\text{US}}^{\text{ICP}}}{NP_{\text{US}}^{\text{EIU}}}}$$

where

m = city;

C = the country where city m is located in;

NY = New York;

US = United States;

$CP_{C,m}^{\text{EIU}} = \sum_{i=1}^n P_{C,m,i} \times W_{C,i}$;

i = item;

n = number of items in the consumption basket;

$P_{C,m,i}$ = US dollar denominated average price of item i in city m of country C ;

$W_{C,i}$ = weight of item i within Cost of Living Index for Ordinary Residents in country C ;

$NP_C^{\text{ICP}} = \frac{\text{index of nominal expenditure per capita for country } C}{\text{index of real expenditure per capita for country } C}$;

$NP_C^{\text{EIU}} = \text{mean } CP_{C,m}^{\text{EIU}} \text{ from all cities within country } C$;

8. Methodology: Cost of Living Index for Ordinary Residents

$$\begin{aligned} & \text{Index of nominal expenditure for country C} \\ &= \frac{\text{Nominal expenditure per capita for country C}}{\text{Nominal expenditure per capita of the world}} \end{aligned}$$

$$\begin{aligned} & \text{Index of real expenditure for country C} \\ &= \frac{\text{Real expenditure per capita for country C}}{\text{Real expenditure per capita of the world}} \end{aligned}$$

8. Methodology: Cost of Living Index for Ordinary Residents

- World Bank conducts the survey to get ICP data every five or six years, i.e. only the 2005 and 2011 ICP survey data are relevant for our study.
- For the period 2006-2010 and from 2012 onwards, we need to proxy for ICP survey data.
- We use the ICP index available for 2005 to proxy forward for 2006, 2007, 2008, 2009 and 2010 data, making adjustments for changes in inflation and exchange rates. We then use the ICP index available for 2011 to proxy forward for 2012, 2013, 2014, 2015 and 2016 data, making adjustments for changes in inflation and exchange rates.
- Exchange rates and inflation rates are key factors which affect the comparison of cost of living for ordinary residents across countries.

8. Methodology: Cost of Living Index for Ordinary Residents

- Formally, the NP_C^{ICP} for a particular year T within the 2006-2010 period is given by:

$$NP_{C,T}^{ICP} = NP_{C,2005}^{ICP} \times \frac{\text{Exchange Rate}_{C,2005}}{\text{Exchange Rate}_{C,T}} \times \prod_{t=2006}^T (1 + \text{Inflation rate}_{C,t})$$

$\forall T \in (2006, 2007, 2008, 2009 \text{ and } 2010)$

where

C = country;

T = year;

$NP_{C,T}^{ICP} = NP_C^{ICP}$ in year T ;

$\text{Inflation rate}_{C,t}$ = yearly average inflation rate for country C in year t ;

$\text{Exchange Rate}_{C,T}$ = yearly average exchange rate between country C and the United States in year T (expressed as local currency unit per US dollar).

8. Methodology: Cost of Living Index for Ordinary Residents

- Likewise, the NP_C^{ICP} for a particular year T within the 2012-2016 period is given by:

$$NP_{C,T}^{ICP} = NP_{C,2011}^{ICP} \times \frac{\text{Exchange Rate}_{C,2011}}{\text{Exchange Rate}_{C,T}} \times \prod_{t=2012}^T (1 + \text{Inflation rate}_{C,t})$$

$\forall T \in (2012, 2013, 2014, 2015 \text{ and } 2016)$

where

C = country;

T = year;

$NP_{C,T}^{ICP} = NP_C^{ICP}$ in year T ;

$\text{Inflation rate}_{C,t}$ = yearly average inflation rate for country C in year t ;

$\text{Exchange Rate}_{C,T}$ = yearly average exchange rate between country C and the United States in year T (expressed as local currency unit per US dollar).

8. Methodology: Wages Index for Ordinary Residents

- We rank the Wages Index for each city in a descending order.
- A larger Wages Index value implies higher wages for ordinary residents in the city. A smaller Wages Index value implies lower wages for ordinary residents in the city.
- New York is used as base city (i.e. Cost of Living Index of New York = 100).
- A city where ordinary residents earn higher wages (on average) than their counterparts in New York has a Wages Index value which is larger than 100. A city where ordinary residents earn lower wages (on average) than their counterparts in New York has a Wages Index value which is smaller than 100.
- Similar to prices, monthly wages are converted from local currency units to US dollar using the yearly average exchange rates.

8. Methodology: Wages Index for Ordinary Residents

- The Wages Index for Ordinary Residents in city m is calculated as:

$$\begin{aligned} & \text{Wages Index for Ordinary Residents in city } m \\ &= \frac{\text{gross hourly wage}_{C,m}}{\text{gross hourly wage}_{US,NY}} \times 100 \end{aligned}$$

where:

m = city;

C = the country where city m is located in;

NY = New York;

US = United States;

$\text{gross hourly wage}_{C,m} = \frac{\text{monthly wages}_C \times 12}{\text{mean weekly hours actually worked}_C \times 52}$;

monthly wages_C = monthly wages in country C;

mean weekly hours actually worked_C = mean weekly hours actually worked in country C.

8. Methodology: Purchasing Power Index for Ordinary Residents

- We can understand purchasing power as the number of baskets of goods and services that the ordinary residents can enjoy if they work for an hour. A higher purchasing power is thus more desirable as ordinary residents are able to enjoy more goods and services given that they work for an hour.
- We rank the Purchasing Power Index for each city in a descending order.
- A higher Purchasing Power Index value means that ordinary residents in the city are able to consume more baskets of goods and services given an hour of work. A lower Purchasing Power Index value means that ordinary residents in the city are able to consume fewer baskets of goods and services given an hour of work.
- The Purchasing Power Index for Ordinary Residents reflects the purchasing power of ordinary residents in the city of interest relative to that of their counterparts in the base city. With New York chosen as the base city, the Purchasing Power Index for Ordinary Residents in New York is always 100.00.

8. Methodology: Purchasing Power Index for Ordinary Residents

- The Purchasing Power Index for Ordinary Residents is calculated by dividing the Wages Index for Ordinary Residents against the Cost of Living Index for Ordinary Residents:

$$\begin{aligned} & \text{Purchasing Power Index for Ordinary Residents in city } m \\ &= \frac{\text{Wages Index for Ordinary Residents}_{C,m}}{\text{Cost of Living Index for Ordinary Residents}_{C,m}} \times 100 \end{aligned}$$

where

m = city;

C = the country where city m is located in.

9. ACI 2018 Cost of Living Index and Ranking for Expatriates[^]

Cost of Living Ranking for Expatriates	City	Country	Cost of Living Index for Expatriates	Cost of Living Ranking for Ordinary Residents
1	CARACAS	Venezuela	2065.16	1
2	NEW YORK	United States	100.00	2
3	ZURICH	Switzerland	85.51	3
4	SINGAPORE	Singapore	80.81	54
5	GENEVA	Switzerland	77.48	4
6	HONG KONG	Hong Kong, China	75.67	50
7	LOS ANGELES	United States	75.27	6
8	LONDON	Great Britain	73.10	23
9	TOKYO	Japan	73.02	19
10	CHICAGO	United States	66.14	14
11	WASHINGTON DC	United States	65.34	16
12	SAN FRANCISCO	United States	64.18	17
13	OSAKA/KOBE	Japan	63.99	39
14	FRANKFURT	Germany	63.48	31
15	PARIS	France	62.16	11
16	SYDNEY	Australia	61.18	5
17	COPENHAGEN	Denmark	61.01	9
18	MINNEAPOLIS	United States	60.19	22
19	HONALULU	United states	59.92	25
20	SHANGHAI	China	58.41	62
21	SEOUL	South Korea	57.25	60

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

9. ACI 2018 Cost of Living Index and Ranking for Expatriates[^]

Cost of Living Ranking for Expatriates	City	Country	Cost of Living Index for Expatriates	Cost of Living Ranking for Ordinary Residents
22	MELBOURNE	Australia	57.13	7
23	TEL AVIV	Israel	57.12	24
24	MIAMI	United States	56.39	36
25	OSLO	Norway	56.33	8
26	MUNICH	Germany	56.28	43
27	SEATTLE	United States	56.16	38
28	BOSTON	United States	56.03	40
29	HOUSTON	United States	55.20	37
30	REYKJAVIK	Iceland	54.60	10
31	BEIJING	China	53.76	72
32	HELSINKI	Finland	53.39	20
33	TORONTO	Canada	53.24	12
34	AUCKLAND	New Zealand	53.13	26
35	PITTSBURGH	United States	52.75	42
36	BRISBANE	Australia	52.72	13
37	WELLINGTON	New Zealand	52.60	28
38	ATLANTA	United States	52.37	45
39	CLEVELAND	United States	51.95	47
40	DUBLIN	Ireland	51.05	27
41	MADRID	Spain	50.68	49
42	ROME	Italy	50.55	41

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

Source: Asia Competitiveness Institute

9. ACI 2018 Cost of Living Index and Ranking for Expatriates[^]

Cost of Living Ranking for Expatriates	City	Country	Cost of Living Index for Expatriates	Cost of Living Ranking for Ordinary Residents
43	MOSCOW	Russia	50.35	97
44	GUANGZHOU	China	50.22	74
45	BARCELONA	Spain	50.22	51
46	MILAN	Italy	50.18	44
47	VIENNA	Austria	49.80	32
48	ADELAIDE	Australia	49.75	18
49	SHENZHEN	China	49.62	71
50	DUBAI	United Arab Emirates	49.60	55
51	LEXINGTON	United States	49.41	48
52	ISTANBUL	Turkey	49.32	78
53	BANGKOK	Thailand	48.92	96
54	LIMA	Peru	48.88	73
55	MEXICO CITY	Mexico	48.75	77
56	JAKARTA	Indonesia	48.45	95
57	STOCKHOLM	Sweden	48.31	21
58	MONTEVIDEO	Uruguay	47.75	59
59	HO CHI MINH	Vietnam	47.65	98
60	DETROIT	United States	47.56	53
61	PERTH	Australia	47.04	30
62	VANCOUVER	Canada	46.75	29
63	BRUSSELS	Belgium	46.32	33

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

9. ACI 2018 Cost of Living Index and Ranking for Expatriates[^]

Cost of Living Ranking for Expatriates	City	Country	Cost of Living Index for Expatriates	Cost of Living Ranking for Ordinary Residents
64	DOHA	Qatar	46.31	52
65	AMMAN	Jordan	46.07	91
66	QINGDAO	China	46.04	70
67	SANTIAGO	Chile	45.96	66
68	KUWAIT	Kuwait	45.91	63
69	AMSTERDAM	Netherlands	45.68	35
70	HANOI	Vietnam	45.11	101
71	BERLIN	Germany	44.85	56
72	CALGARY	Canada	44.52	34
73	SAO PAULO	Brazil	44.51	64
74	DALIAN	China	44.42	75
75	SUZHOU	China	44.25	76
76	RIO DE JANEIRO	Brazil	44.05	67
77	LISBON	Portugal	43.74	57
78	LUXEMBOURG	Luxembourg	42.72	15
79	TIANJIN	China	42.52	86
80	NAIROBI	Kenya	42.51	82
81	QUITO	Ecuador	41.98	65
82	BOGOTA	Colombia	41.52	83
83	MONTREAL	Canada	41.21	46
84	BUENOS AIRES	Argentina	41.14	88

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

9. ACI 2018 Cost of Living Index and Ranking for Expatriates[^]

Cost of Living Ranking for Expatriates	City	Country	Cost of Living Index for Expatriates	Cost of Living Ranking for Ordinary Residents
85	ST PETERSBURG	Russia	41.05	100
86	TAIPEI	Taiwan, China	41.04	80
87	MUMBAI	India	40.86	94
88	MANILA	Philippines	40.21	81
89	LYON	France	39.10	61
90	BRATISLAVA	Slovakia	35.72	69
91	ATHENS	Greece	35.69	58
92	BUDAPEST	Hungary	34.41	84
93	BAKU	Azerbaijan	34.39	104
94	COLOMBO	Sri Lanka	34.34	99
95	PRAGUE	Czech Republic	34.19	68
96	CAIRO	Egypt	33.83	103
97	JOHANNESBURG	South Africa	33.74	85
98	WARSAW	Poland	32.79	87
99	KUALA LUMPUR	Malaysia	32.55	92
100	PRETORIA	South Africa	30.99	89
101	KIEV	Ukraine	28.86	105
102	ASUNCION	Paraguay	28.47	79
103	BUCHAREST	Romania	27.71	90
104	SOFIA	Bulgaria	26.80	93
105	NEW DELHI	India	26.31	102

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

9. ACI 2018 Purchasing Power Index and Ranking for Ordinary Residents[^]

Purchasing Power Ranking for Ordinary Residents	City	Country	Purchasing Power Index for Ordinary Residents
1	GENEVA	Switzerland	234.55
2	COPENHAGEN	Denmark	229.77
3	LYON	France	217.08
4	ZURICH	Switzerland	213.05
5	DETROIT	United States	212.92
6	LEXINGTON	United States	202.80
7	CLEVELAND	United States	197.44
8	LUXEMBOURG	Luxembourg	195.55
9	OSLO	Norway	195.55
10	ATLANTA	United States	195.43
11	PITTSBURGH	United States	189.167
12	BERLIN	Germany	186.54
13	PERTH	Australia	182.37
14	BOSTON	United States	181.11
15	VIENNA	Austria	179.60
16	MONTREAL	Canada	179.14
17	SEATTLE	United States	177.96
18	HOUSTON	United States	177.80
19	MIAMI	United States	175.80
20	SINGAPORE	Singapore	171.22
21	ADELAIDE	Australia	168.13

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

Source: Asia Competitiveness Institute

9. ACI 2018 Purchasing Power Index and Ranking for Ordinary Residents[^]

Purchasing Power Ranking for Ordinary Residents	City	Country	Purchasing Power Index for Ordinary Residents
22	HONOLULU	United States	166.97
23	STOCKHOLM	Sweden	166.43
24	MINNEAPOLIS	United States	164.68
25	HELSINKI	Finland	161.90
26	BRUSSLES	Belgium	158.60
27	BRISBANE	Australia	158.55
28	CALGARY	Canada	158.25
29	SEOUL	South Korea	156.17
30	VANCOUVER	Canada	155.86
31	WELLINGTON	New Zealand	155.10
32	SAN FRANCISCO	United States	155.05
33	AUCKLAND	New Zealand	153.95
34	MUNICH	Germany	153.79
35	WASHINGTON DC	United States	153.42
36	DUBLIN	Ireland	150.86
37	CHICAGO	United States	149.05
38	KUWAIT	Kuwait	148.04
39	MELBOURNE	Australia	141.59
40	AMSTERDAM	Netherlands	140.28
41	TAIPEI	Taiwan, China	139.96
42	FRANKFURT	Germany	138.02

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

9. ACI 2018 Purchasing Power Index and Ranking for Ordinary Residents[^]

Purchasing Power Ranking for Ordinary Residents	City	Country	Purchasing Power Index for Ordinary Residents
43	TORONTO	Canada	135.41
44	OSAKA/KOBE	Japan	133.97
45	LONDON	Great Britain	132.76
46	REYKJAVIK	Iceland	131.27
47	SYDNEY	Australia	130.48
48	LOS ANGELES	United States	129.56
49	PARIS	France	125.03
50	PRETORIA	South Africa	122.95
51	TOKYO	Japan	120.23
52	DOHA	Qatar	116.92
53	TEL AVIV	Israel	116.27
54	MILAN	Italy	115.85
55	BARCELONA	Spain	114.98
56	JOHANNESBURG	South Africa	114.76
57	ROME	Italy	113.30
58	MADRID	Spain	113.03
59	NEW YORK	United States	100.00
60	ATHENS	Greece	99.88
61	WARSAW	Poland	98.66
62	BUDAPEST	Hungary	90.63
63	PRAGUE	Czech Republic	89.53

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

Source: Asia Competitiveness Institute

9. ACI 2018 Purchasing Power Index and Ranking for Ordinary Residents[^]

Purchasing Power Ranking for Ordinary Residents	City	Country	Purchasing Power Index for Ordinary Residents
64	HONG KONG	Hong Kong, China	87.44
65	ISTANBUL	Turkey	83.25
66	BRATISLAVA	Slovakia	82.14
67	ST PETERSBURG	Russia	80.14
68	BUCHAREST	Romania	79.25
69	BAKU	Azerbaijan	76.08
70	LISBON	Portugal	74.43
71	KUALA LUMPUR	Malaysia	73.34
72	TIANJIN	China	72.21
73	CAIRO	Egypt	69.78
74	MOSCOW	Russia	69.38
75	SUZHOU	China	66.55
76	DALIAN	China	66.22
77	SOFIA	Bulgaria	61.69
78	GUANGZHOU	China	60.58
79	BEIJING	China	58.66
80	SHENZHEN	China	58.41
81	QINGDAO	China	57.89
82	SANTIAGO	Chile	57.69
83	DUBAI	United Arab Emirates	56.81
84	AMMAN	Jordan	53.39

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

Source: Asia Competitiveness Institute

9. ACI 2018 Purchasing Power Index and Ranking for Ordinary Residents[^]

Purchasing Power Ranking for Ordinary Residents	City	Country	Purchasing Power Index for Ordinary Residents
85	RIO DE JANEIRO	Brazil	53.28
86	QUITO	Ecuador	51.00
87	SAO PAULO	Brazil	50.88
88	KIEV	Ukraine	50.04
89	NAIROBI	Kenya	47.26
90	SHANGHAI	China	46.32
91	BOGOTA	Columbia	45.68
92	BANGKOK	Thailand	44.46
93	MONTEVIDEO	Uruguay	43.90
94	LIMA	Peru	41.68
95	ASUNCION	Paraguay	40.29
96	HANOI	Vietnam	34.31
97	BUENOS AIRES	Argentina	30.65
98	MEXICO CITY	Mexico	29.16
99	HO CHI MINH CITY	Vietnam	28.98
100	NEW DELHI	India	22.64
101	COLOMBO	Sri Lanka	22.51
102	JAKARTA	Indonesia	20.85
103	MANILA	Philippines	19.65
104	MUMBAI	India	16.68
105	CARACAS	Venezuela	6.42

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

Source: Asia Competitiveness Institute

9. ACI 2018 Cost of Living Index and Ranking for Ordinary Residents[^]

Cost of Living Ranking for Ordinary Residents	City	Country	Cost of Living Index for Ordinary Residents	Cost of Living Ranking for Expatriates
1	CARACAS	Venezuela	344.15	1
2	NEW YORK	United States	100.00	2
3	ZURICH	Switzerland	93.69	3
4	GENEVA	Switzerland	85.10	5
5	SYDNEY	Australia	82.11	16
6	LOS ANGELES	United States	77.18	7
7	MELBOURNE	Australia	75.67	22
8	OSLO	Norway	74.81	25
9	COPENHAGEN	Denmark	73.02	17
10	REYKJAVIK	Iceland	71.46	30
11	PARIS	France	70.35	15
12	TORONTO	Canada	67.66	33
13	BRISBANE	Australia	67.57	36
14	CHICAGO	United States	67.09	10
15	LUXEMBOURG	Luxembourg	67.00	78
16	WASHINGTON DC	United States	65.18	11
17	SAN FRANCISCO	United States	64.50	12
18	ADELAIDE	Australia	63.72	48
19	TOKYO	Japan	61.97	9
20	HELSINKI	Finland	61.95	32
21	STOCKHOLM	Sweden	61.31	57

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

9. ACI 2018 Cost of Living Index and Ranking for Ordinary Residents[^]

Cost of Living Ranking for Ordinary Residents	City	Country	Cost of Living Index for Ordinary Residents	Cost of Living Ranking for Expatriates
22	MINNEAPOLIS	United States	60.73	18
23	LONDON	Great Britain	60.66	8
24	TEL AVIV	Israel	60.10	23
25	HONOLULU	United States	59.89	19
26	AUCKLAND	New Zealand	59.61	34
27	DUBLIN	Ireland	59.34	40
28	WELLINGTON	New Zealand	59.17	37
29	VANCOUVER	Canada	58.78	62
30	PERTH	Australia	58.74	61
31	FRANKFURT	Germany	58.33	14
32	VIENNA	Austria	58.14	47
33	BRUSSELS	Belgium	57.98	63
34	CALGARY	Canada	57.90	72
35	AMSTERDAM	Netherlands	57.40	69
36	MIAMI	United States	56.88	24
37	HOUSTON	United States	56.24	29
38	SEATTLE	United States	56.19	27
39	OSAKA / KOBE	Japan	55.61	13
40	BOSTON	United States	55.21	28
41	ROME	Italy	53.48	42
42	PITTSBURGH	United States	52.86	35

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

9. ACI 2018 Cost of Living Index and Ranking for Ordinary Residents[^]

Cost of Living Ranking for Ordinary Residents	City	Country	Cost of Living Index for Ordinary Residents	Cost of Living Ranking for Expatriates
43	MUNICH	Germany	52.35	26
44	MILAN	Italy	52.31	46
45	ATLANTA	United States	51.17	38
46	MONTREAL	Canada	51.14	83
47	CLEVELAND	United States	50.65	39
48	LEXINGTON	United States	49.31	51
49	MADRID	Spain	48.92	41
50	HONG KONG	Hong Kong, China	48.21	6
51	BARCELONA	Spain	48.09	45
52	DOHA	Qatar	48.08	64
53	DETROIT	United States	46.97	60
54	SINGAPORE	Singapore	46.43	4
55	DUBAI	United Arab Emirates	46.30	50
56	BERLIN	Germany	43.16	71
57	LISBON	Portugal	43.05	77
58	ATHENS	Greece	42.93	91
59	MONTEVIDEO	Uruguay	42.77	58
60	SEOUL	South Korea	40.77	21
61	LYON	France	40.52	89
62	SHANGHAI	China	37.70	20
63	KUWAIT	Kuwait	37.16	68

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

9. ACI 2018 Cost of Living Index and Ranking for Ordinary Residents[^]

Cost of Living Ranking for Ordinary Residents	City	Country	Cost of Living Index for Ordinary Residents	Cost of Living Ranking for Expatriates
64	SAO PAULO	Brazil	33.46	73
65	QUITO	Ecuador	33.30	81
66	SANTIAGO	Chile	32.84	67
67	RIO DE JANEIRO	Brazil	31.95	76
68	PRAGUE	Czech Republic	31.67	95
69	BRATISLAVA	Slovakia	30.66	90
70	QINGDAO	China	30.17	66
71	SHENZHEN	China	29.90	49
72	BEIJING	China	29.77	31
73	LIMA	Peru	29.07	54
74	GUANGZHOU	China	28.82	44
75	DALIAN	China	26.37	74
76	SUZHOU	China	26.24	75
77	MEXICO CITY	Mexico	26.04	55
78	ISTANBUL	Turkey	25.98	52
79	ASUNCION	Paraguay	25.56	102
80	TAIPEI	Taiwan, China	25.50	86
81	MANILA	Philippines	25.44	88
82	NAIROBI	Kenya	25.03	80
83	BOGOTA	Colombia	24.60	82
84	BUDAPEST	Hungary	24.48	92

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

9. ACI 2018 Cost of Living Index and Ranking for Ordinary Residents[^]

Cost of Living Ranking for Ordinary Residents	City	Country	Cost of Living Index for Ordinary Residents	Cost of Living Ranking for Expatriates
85	JOHANNESBURG	South Africa	24.34	97
86	TIANJIN	China	24.18	79
87	WARSAW	Poland	24.06	98
88	BUENOS AIRES	Argentina	23.99	84
89	PRETORIA	South Africa	22.72	100
90	BUCHAREST	Romania	22.58	103
91	AMMAN	Jordan	22.56	65
92	KUALA LUMPUR	Malaysia	21.06	99
93	SOFIA	Bulgaria	20.51	104
94	MUMBAI	India	20.51	87
95	JAKARTA	Indonesia	20.19	56
96	BANGKOK	Thailand	20.00	53
97	MOSCOW	Russia	19.22	43
98	HO CHI MINH	Vietnam	18.40	59
99	COLOMBO	Sri Lanka	18.06	94
100	ST PETERSBURG	Russia	16.64	85
101	HANOI	Vietnam	15.54	70
102	NEW DELHI	India	15.10	105
103	CAIRO	Egypt	13.59	96
104	BAKU	Azerbaijan	10.46	93
105	KIEV	Ukraine	9.86	101

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

9. ACI 2018 Wages Index and Ranking for Ordinary Residents[^]

Wages Ranking for Ordinary Residents	City	Country	Wages Index for Ordinary Residents
1	GENEVA	Switzerland	199.61
1	ZURICH	Switzerland	199.61
3	COPENHAGEN	Denmark	167.78
4	OSLO	Norway	146.29
5	LUXEMBOURG	Luxembourg	131.02
6	ADELAIDE	Australia	107.13
6	BRISBANE	Australia	107.13
6	MELBOURNE	Australia	107.13
6	PERTH	Australia	107.13
6	SYDNEY	Australia	107.13
11	VIENNA	Austria	104.41
12	STOCKHOLM	Sweden	102.03
13	HELSINKI	Finland	100.30
14	NEW YORK	United States	100.00
14	ATLANTA	United States	100.00
14	BOSTON	United States	100.00
14	CHICAGO	United States	100.00
14	CLEVELAND	United States	100.00
14	DETROIT	United States	100.00
14	HONOLULU	United States	100.00
14	HOUSTON	United States	100.00

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

9. ACI 2018 Wages Index and Ranking for Ordinary Residents[^]

Wages Ranking for Ordinary Residents	City	Country	Wages Index for Ordinary Residents
14	LEXINGTON	United States	100.00
14	LOS ANGELES	United States	100.00
14	MIAMI	United States	100.00
14	MINNEAPOLIS	United States	100.00
14	PITTSBURGH	United States	100.00
14	SAN FRANCISCO	United States	100.00
14	SEATTLE	United States	100.00
14	WASHINGTON DC	United States	100.00
30	REYKJAVIK	Iceland	93.81
31	BRUSSELS	Belgium	91.96
32	AUCKLAND	New Zealand	91.77
32	WELLINGTON	New Zealand	91.77
34	CALGARY	Canada	91.62
34	MONTREAL	Canada	91.62
34	TORONTO	Canada	91.62
34	VANCOUVER	Canada	91.62
38	DUBLIN	Ireland	89.52
39	LYON	France	87.96
39	PARIS	France	87.96
41	LONDON	Great Britain	80.53
42	AMSTERDAM	Netherlands	80.51

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

9. ACI 2018 Wages Index and Ranking for Ordinary Residents[^]

Wages Ranking for Ordinary Residents	City	Country	Wages Index for Ordinary Residents
43	BERLIN	Germany	80.50
43	FRANKFURT	Germany	80.50
43	MUNICH	Germany	80.50
46	SINGAPORE	Singapore	79.49
47	OSAKA / KOBE	Japan	74.50
47	TOKYO	Japan	74.50
49	TEL AVIV	Israel	69.88
50	SEOUL	South Korea	63.68
51	MILAN	Italy	60.60
51	ROME	Italy	60.60
53	DOHA	Qatar	56.22
54	BARCELONA	Spain	55.29
54	MADRID	Spain	55.29
56	KUWAIT	Kuwait	55.02
57	ATHENS	Greece	42.88
58	HONG KONG	Hong Kong, China	42.16
59	TAIPEI	Taiwan, China	35.69
60	LISBON	Portugal	32.05
61	PRAGUE	Czech Republic	28.35
62	JOHANNESBURG	South Africa	27.94
62	PRETORIA	South Africa	27.94

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

9. ACI 2018 Wages Index and Ranking for Ordinary Residents[^]

Wages Ranking for Ordinary Residents	City	Country	Wages Index for Ordinary Residents
64	DUBAI	United Arab Emirates	26.31
65	BRATISLAVA	Slovakia	25.19
66	WARSAW	Poland	23.74
67	BUDAPEST	Hungary	22.18
68	CARACAS	Venezuela	22.10
69	ISTANBUL	Turkey	21.63
70	SANTIAGO	Chile	18.95
71	MONTEVIDEO	Uruguay	18.78
72	BUCHAREST	Romania	17.90
73	BEIJING	China	17.46
73	DALIAN	China	17.46
73	GUANGZHOU	China	17.46
73	QINGDAO	China	17.46
73	SHANGHAI	China	17.46
73	SHENZHEN	China	17.46
73	SUZHOU	China	17.46
73	TIANJIN	China	17.46
81	RIO DE JANEIRO	Brazil	17.02
81	SAO PAULO	Brazil	17.02
83	QUITO	Ecuador	16.98
84	KUALA LUMPUR	Malaysia	15.45

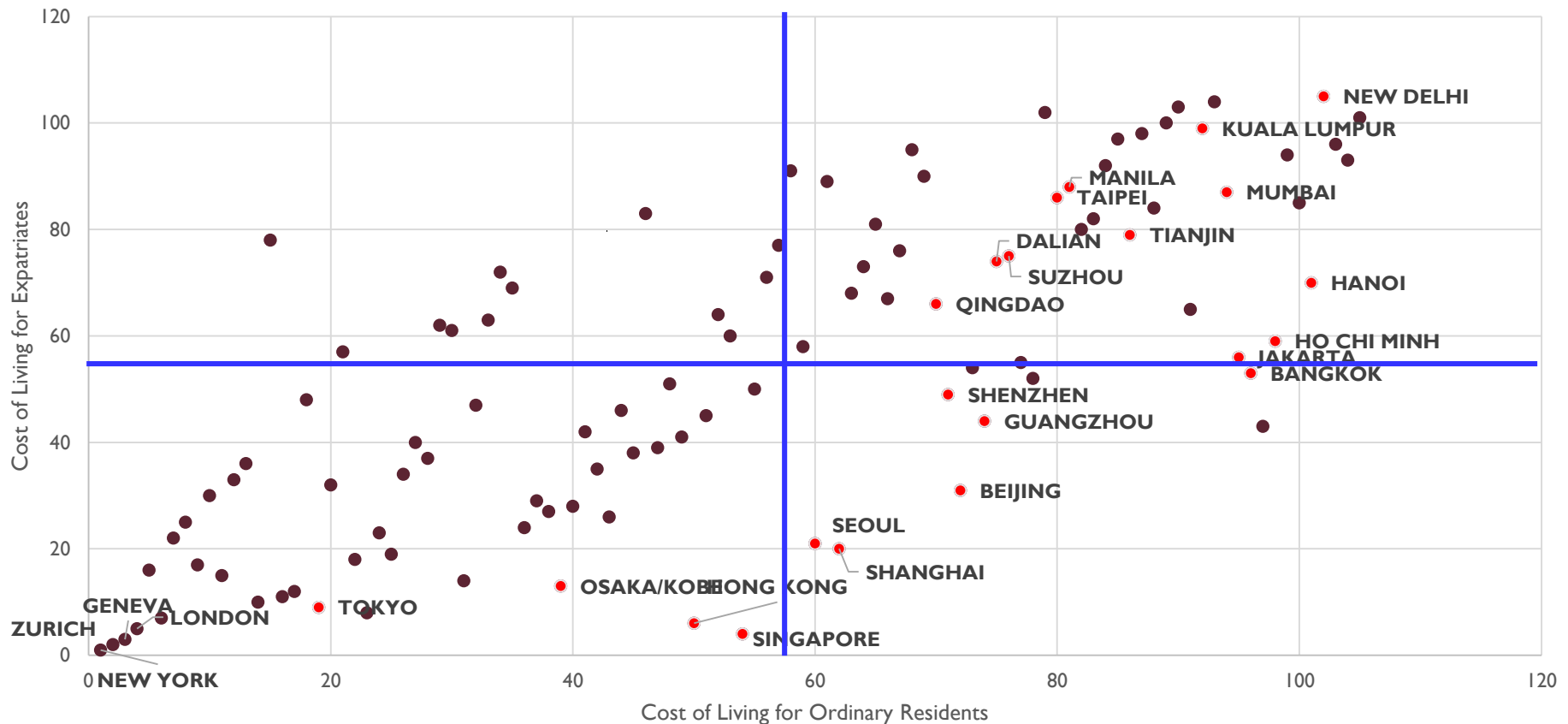
[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

9. ACI 2018 Wages Index and Ranking for Ordinary Residents[^]

Wages Ranking for Ordinary Residents	City	Country	Wages Index for Ordinary Residents
85	MOSCOW	Russia	13.33
85	ST PETERSBURG	Russia	13.33
87	SOFIA	Bulgaria	12.65
88	LIMA	Peru	12.12
89	AMMAN	Jordan	12.04
90	NAIROBI	Kenya	11.83
91	BOGOTA	Colombia	11.24
92	ASUNCION	Paraguay	10.30
93	CAIRO	Egypt	9.48
94	BANGKOK	Thailand	8.89
95	BAKU	Azerbaijan	7.96
96	MEXICO CITY	Mexico	7.59
97	BUENOS AIRES	Argentina	7.35
98	HANOI	Vietnam	5.33
98	HO CHI MINH	Vietnam	5.33
100	MANILA	Philippines	5.00
101	KIEV	Ukraine	4.93
102	JAKARTA	Indonesia	4.21
103	COLOMBO	Sri Lanka	4.07
104	MUMBAI	India	3.42
104	NEW DELHI	India	3.42

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

I0. Comparing the Cost of Living for Expatriates and Ordinary Residents across Geographical Regions



10. Comparing the Cost of Living for Expatriates and Ordinary Residents across Geographical Regions

- An interesting observation emerges when we compare the cost of living in different cities across geographical regions. Cities in the western Europe tend to have higher cost of living for **ordinary residents**, followed by cities in Australasia, North America, South America, Eastern Europe, Asia and Africa, although a handful of Japanese cities such as Tokyo, Osaka and Kobe are as expensive as their western counterparts.
- The general pattern is still that cities in the west have higher cost of living for **ordinary residents** than cities in the rest of the world, notably in Asia. This is not so much of the cultural connotations of the western lifestyles vis-à-vis the Eastern ones. It has more to do with the west being relatively more developed in term of the stage of economic growth and development, while the east comprises more developing economies which neither have attained the take-off stage nor reached the maturity level of developed countries.
- The explanation for the pattern observed lies in the difference in **the cost structure of non-traded goods** and especially services between the western countries and others, less developed countries. Locally provided services which are non-tradable such as haircuts, hawker food and night markets, constitute an integral part of ordinary residents' consumption basket and they are therefore important determinants of the cost of living for **ordinary residents** in a country. By nature, the services industries are labor intensive and the average wages are significantly higher in the West

10. Comparing the Cost of Living for Expatriates and Ordinary Residents across Geographical Regions

- It is of little surprise that our cost of living for **ordinary residents** is able to capture the differences in prices of non-tradable goods and services across countries. Such differences are reflected through **purchasing power parity (PPP)** based exchanged rate.
- Our cost of living index for ordinary residents incorporates data from International Comparison Program (ICP) of the World Bank Group, which is designed to collect data from around the world in order to calculate PPP based exchange rates.
- In contrast to the clear pattern observed for **ordinary residents**, there is no such pattern in the geographical distribution of the cities according to the cost of living for **expatriates**. This is perhaps because expatriates everywhere geared towards high-end imports to attain their international lifestyles. As such, their costs of living are mainly affected by exchange rate fluctuations rather than local factors.
- Hence we are able to explain why cost of living ranking for **expatriates (EX)** and **ordinary residents (OR)** are *far apart* in Asian cities but rather *closer together* for western cities. For **Asia cities**: Cost for living for Singapore (4th for EX & 54th for OR; Hong Kong (6th for EX & 50th for OR); Shanghai (20th for EX & 62nd for OR); Seoul (21st for EX & 60th for OR).
- For **western cities**: Cost of living for New York (2nd for both EX & OR); Zurich (3rd for both EX & OR); Geneva (5th for EX & 4th for OR); Los Angeles (7th for EX & 6th for OR)

10. Comparing the Cost of Living for Expatriates and Ordinary Residents across Geographical Regions

- Cost of living only denotes one-side of the coin; if wages are being taken into consideration, it would enable us to evaluate **purchasing power of ordinary residents** .
- In terms of purchasing power for ordinary residents, Singapore is ranked 1st in Asia and 20th globally amongst world's 105 cities, a steady improvement since 2012 which ranked 39th to 26th in 2013, 21st in 2014, 20th for 2015 and 2016.
- **In terms of purchasing power, cities from Western Europe and North America for the top 19 positions with Singapore as (20th)** which include Geneva (1st), Copenhagen (2nd), Lyon (3rd), Zurich (4th), Detroit (5th), Lexington (6th), Cleveland (7th), Luxembourg (8th), Oslo (9th), Atlanta (10th), Pittsburg (11th), Berlin (12th), Perth (13th), Boston (14th), Vienna (15th), Montreal (16th), Seattle (17th), Houston (18th) & Miami (19th).
- **In terms of purchasing power, cities from Asia for the top 20 positions** are as follows: Singapore (1st), Adelaide (2nd), Seoul (3rd), Wellington (4th), Auckland (5th), Taipei (7th), Osaka/Kobe (8th), Sydney (9th); Tokyo (10th), Hong Kong (11th), Kuala Lumpur (12th), Tianjin (13th), Suzhou (14th), Dalian (15th), Guangzhou (16th), Beijing (17th), Shenzhen (18th), Qingdao (19th) Shanghai (20th)

11. Ensuring Housing Affordability for Ordinary People: the Singapore Experience

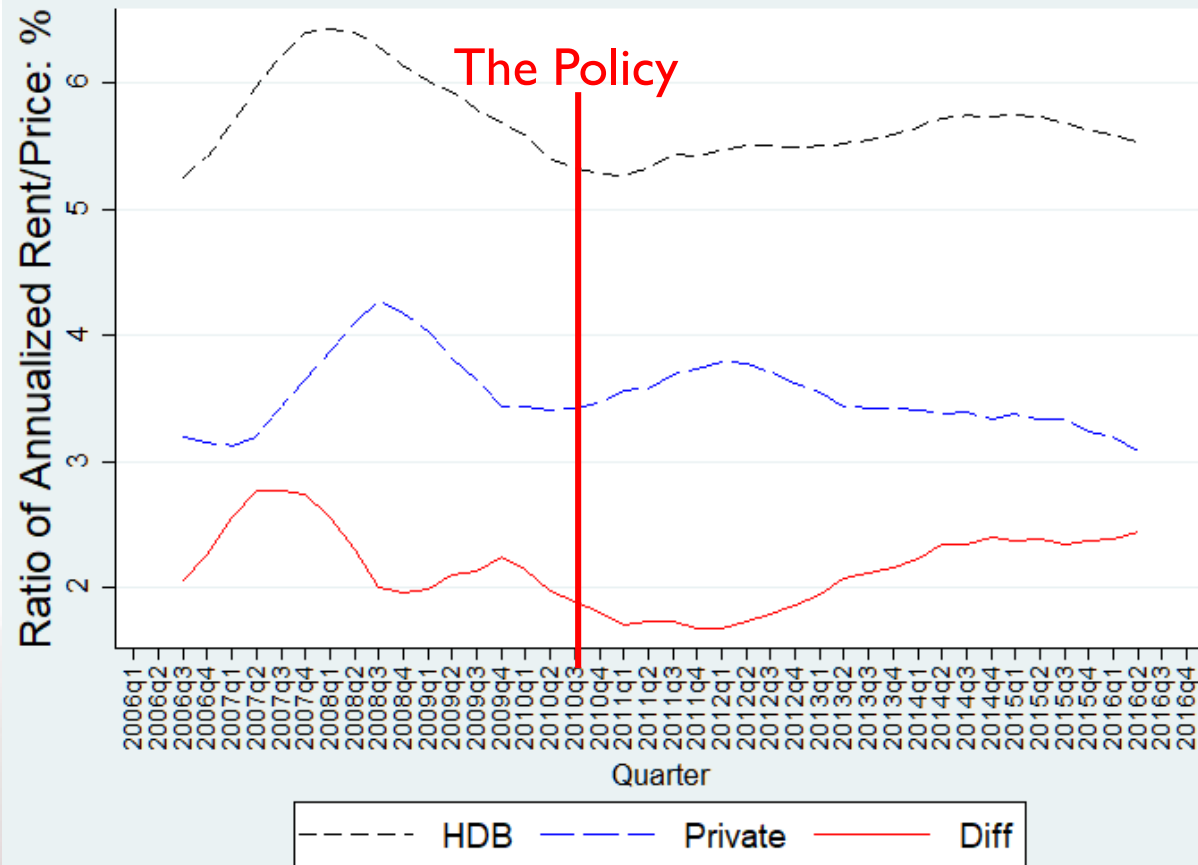
- The Singapore government is very cautious about the country's housing prices and intervenes in its public (HDB) and private housing markets regularly to maintain stability and affordability.
- Singapore has two housing sectors.
 - 1) The public housing sector (also called HDB), which homes around 80% of the local ordinary people. Singapore residents either can buy new homes from government or buy resale homes from the resale market. The HDB is subsidized by the government and its resale market is strictly regulated by the government.
 - 2) The private sector homes the rest relatively high-income residents and foreigners. Their prices are much higher.
- Objective: It is government's priority to ensure the affordability of new and resale HDB homes to ordinary people. How does the government achieve that?

II. Ensuring Housing Affordability for Ordinary People: the Singapore Experience

Stop the relatively rich people profiting from HDB.

Policy Aug 30, 2010

- Cannot buy private homes within 5 years after buying resale HDB;
- Must sell the existing private home to buy a resale HDB;
- Extend minimum occupying period from 3 years to 5 years after buying resale HDB.



Note: "HDB", "Private" and "Diff" indicate the 3-Quarter moving average of rent price ratio of HDB market, private housing market as well as the difference of in rent price ratio between the two markets.
 Source: Calculated by authors based on data from URA and HDB.

II. Ensuring Housing Affordability for Ordinary People: the Singapore Experience

- Policy on relative price, rent and rent/price ratio change between HDB & Private.

$$Y_{i,t} = \beta_1 \times HDB_{i,t} + \beta_2 \times Policy_{i,t} + \beta_3 \times HDB_{i,t} \times Policy_{i,t} + \mathbf{t} + \mathbf{i} + Con_{i,t} + \varepsilon_{i,t}$$

Y : Monthly price index, rent index or rent/price ratio index of HDB and Private homes separately, for each region.

HDB : Dummy, 1 if the index is for HDB, 0 if the index is for Private;

$Policy$: Dummy, 1 if after the policy, 0 if before the policy;

β_3 : Treatment effect, the impacts of the policy on HDB relative to private housing market;

Region and Year Month fixed effects are also controlled;

II. Ensuring Housing Affordability for Ordinary People: the Singapore Experience

- *Price effects* of deterring private home owners from buying HDB

	(1)	(2)	(3)
Dependant Variable: Regional Price Index, Jan 2006=100			
	All	2 Year Window	Narrowed Window
HDB	-13.44*** (0.733)	-7.843*** (0.807)	-14.95*** (1.202)
Policy	119.4*** (4.649)	71.93*** (3.002)	24.66*** (2.330)
HDB×Policy	-18.97*** (1.058)	-10.76*** (1.128)	-5.804*** (2.173)
Region Fixed Effect	Yes	Yes	Yes
Year Month Fixed Effect	Yes	Yes	Yes
Constant	114.4*** (3.671)	158.6*** (2.032)	186.0*** (1.699)
Observations	1,320	490	120
R-squared	0.957	0.957	0.889

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

II. Ensuring Housing Affordability for Ordinary People: the Singapore Experience

- *Rent effects* of deterring private home owners from buying HDB

	(1)	(2)	(3)
Dependant Variable: Regional Rent Index, Jan 2007=100			
	All	2 Year Window	Narrowed Window
HDB	16.13*** (0.672)	23.78*** (0.520)	22.77*** (0.837)
Policy	35.92*** (3.491)	28.62*** (2.579)	17.57*** (1.758)
HDB×Policy	22.65*** (0.762)	10.13*** (0.817)	5.470*** (1.398)
Region Fixed Effect	Yes	Yes	Yes
Year Month Fixed Effect	Yes	Yes	Yes
Constant	90.47*** (3.189)	128.3*** (1.895)	123.0*** (1.150)
Observations	1,200	490	120
R-squared	0.956	0.968	0.951

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

II. Ensuring Housing Affordability for Ordinary People: the Singapore Experience

- *Cap rate effects* of deterring private home owners from buying HDB

	(1)	(2)	(3)
Dependant Variable: Regional Cap Rate Index, Jan 2007=0			
	All	2 Year Window	Narrowed Window
HDB	1.356*** (0.023)	1.360*** (0.013)	1.372*** (0.012)
Policy	-1.240*** (0.230)	-1.098*** (0.032)	-0.0850*** (0.023)
HDB×Policy	0.571*** (0.025)	0.328*** (0.015)	0.300*** (0.019)
Region Fixed Effect	Yes	Yes	Yes
Year Month Fixed Effect	Yes	Yes	Yes
Constant	-0.588*** (0.228)	0.023 (0.028)	-1.046*** (0.022)
Observations	1,320	490	120
R-squared	0.959	0.991	0.996

Robust standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

- **Part 3: *Heterogeneity Tests, obtain consistent results***

II. Ensuring Housing Affordability for Ordinary People: the Singapore Experience

- Ensuring housing affordability for first-time HDB buyers by lowering the resale HDB prices which also brings down the prices for new HDB flats.
- Make the low-income citizens even better off by 1) making it affordable to own a HDB home; 2) allowing higher rent when subletting bedroom(s).

	HDB 4 Room	Private Condo & Apartment
Scenario 1: HDB reduced by 5 points of index, private raised by 5.76 points;		
Housing Price Variation:	S\$ -13518.50	57826.60
Housing Price Variation in Household Member Income:	-5.44 Months	
Scenario 2: HDB reduced by 7 points of index, private by 3.76 points;		
Housing Price Variation:	S\$ -18925.90	37747.92
Housing Price Variation in Household Member Income:	-7.61 Months	

Note: The per household member average income from work of residents staying in 4 Room HDB is from Singapore The General Household Survey (GHS) 2015. The average housing prices of 4-room HDB and private are based on 2006 Q1 value where the price indexes=100.

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Thank you!

Appendix: Cost of Living Index for Ordinary Residents by Consumption Categories

I. ACI 2018 Cost of Living Index for Ordinary Residents: Food & Non-alcoholic Beverages Category[^]

Food & Non-alcoholic Ranking for Ordinary Residents	City	Country	Food & Non-alcoholic Index for Ordinary Residents
1	CARACAS	Venezuela	933.17
2	TOKYO	Japan	114.22
3	ZURICH	Switzerland	110.01
4	OSLO	Norway	104.98
5	GENEVA	Switzerland	103.97
6	OSAKA / KOBE	Japan	101.17
7	NEW YORK	United States	100.00
8	SEOUL	South Korea	97.50
9	REYKJAVIK	Iceland	97.12
10	SYDNEY	Australia	97.00
11	MONTREAL	Canada	94.31
12	MELBOURNE	Australia	93.76
13	BRISBANE	Australia	93.45
14	CLEVELAND	United States	92.57
15	TEL AVIV	Israel	91.92
16	AUCKLAND	New Zealand	91.69
17	COPENHAGEN	Denmark	91.63
18	CALGARY	Canada	88.09
19	WELLINGTON	New Zealand	87.03
20	ADELAIDE	Australia	86.04
21	PERTH	Australia	83.45

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

I. ACI 2018 Cost of Living Index for Ordinary Residents: Food & Non-alcoholic Beverages Category ^

Food & Non-alcoholic Ranking for Ordinary Residents	City	Country	Food & Non-alcoholic Index for Ordinary Residents
22	VANCOUVER	Canada	82.51
23	MINNEAPOLIS	United States	82.25
24	SHENZHEN	China	81.04
25	ROME	Italy	80.94
26	SAN FRANCISCO	United States	79.84
27	VIENNA	Austria	79.77
28	DETROIT	United States	79.38
29	LOS ANGELES	United States	78.47
30	HONG KONG	Hong Kong, China	78.35
31	PARIS	France	78.05
32	DUBLIN	Ireland	76.21
33	MONTEVIDEO	Uruguay	76.01
34	LUXEMBOURG	Luxembourg	75.98
35	HELSINKI	Finland	75.74
36	TORONTO	Canada	75.32
37	HONOLULU	United States	73.59
38	MUNICH	Germany	73.37
39	STOCKHOLM	Sweden	72.66
40	WASHINGTON DC	United States	72.38
41	BRUSSELS	Belgium	72.31
42	SINGAPORE	Singapore	71.94

^Note: Based on 2016 data, which were the latest available at the time the study was conducted.

I. ACI 2018 Cost of Living Index for Ordinary Residents:

Food & Non-alcoholic Ranking for Ordinary Residents	City	Country	Food & Non-alcoholic Index for Ordinary Residents
43	DUBAI	United Arab Emirates	71.58
44	FRANKFURT	Germany	71.36
45	SHANGHAI	China	69.56
46	LEXINGTON	United States	68.99
47	DOHA	Qatar	68.42
48	LONDON	Great Britain	68.07
49	CHICAGO	United States	67.04
50	SEATTLE	United States	66.58
51	PITTSBURGH	United States	66.00
52	AMSTERDAM	Netherlands	64.33
53	QUITO	Ecuador	63.55
54	MILAN	Italy	63.28
55	ATHENS	Greece	62.95
56	HOUSTON	United States	62.14
57	DALIAN	China	62.01
58	MIAMI	United States	61.70
59	LYON	France	61.32
60	SANTIAGO	Chile	61.20
61	BERLIN	Germany	60.90
62	MADRID	Spain	60.82
63	AMMAN	Jordan	60.20

^Note: Based on 2016 data, which were the latest available at the time the study was conducted.

Source: Asia Competitiveness Institute

I. ACI 2018 Cost of Living Index for **Ordinary Residents**: Food & Non-alcoholic Beverages Category[^]

Food & Non-alcoholic Ranking for Ordinary Residents	City	Country	Food & Non-alcoholic Index for Ordinary Residents
64	KUWAIT	Kuwait	59.25
65	BARCELONA	Spain	58.64
66	QINGDAO	China	58.55
67	GUANGZHOU	China	57.65
68	LISBON	Portugal	57.62
69	ATLANTA	United States	55.99
70	BOSTON	United States	55.67
71	BRATISLAVA	Slovakia	55.15
72	NAIROBI	Kenya	53.72
73	TAIPEI	Taiwan, China	53.48
74	ISTANBUL	Turkey	53.00
75	LIMA	Peru	50.51
76	HO CHI MINH	Vietnam	49.32
77	PRAGUE	Czech Republic	49.20
78	BUDAPEST	Hungary	48.80
79	SUZHOU	China	48.07
80	ASUNCION	Paraguay	47.99
81	SAO PAULO	Brazil	47.52
82	TIANJIN	China	47.34
83	BEIJING	China	45.48
84	MANILA	Philippines	45.17

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

I. ACI 2018 Cost of Living Index for Ordinary Residents: Food & Non-alcoholic Beverages Category[^]

Food & Non-alcoholic Ranking for Ordinary Residents	City	Country	Food & Non-alcoholic Index for Ordinary Residents
85	BUCHAREST	Romania	44.43
86	RIO DE JANEIRO	Brazil	44.30
87	BOGOTA	Colombia	44.06
88	SOFIA	Bulgaria	42.79
89	HANOI	Vietnam	42.09
90	MEXICO CITY	Mexico	41.77
91	KUALA LUMPUR	Malaysia	41.73
92	PRETORIA	South Africa	41.18
93	BANGKOK	Thailand	41.02
94	JAKARTA	Indonesia	40.98
95	JOHANNESBURG	South Africa	39.92
96	COLOMBO	Sri Lanka	39.75
97	MOSCOW	Russia	39.28
98	ST PETERSBURG	Russia	38.50
99	CAIRO	Egypt	37.53
100	WARSAW	Poland	37.29
101	BUENOS AIRES	Argentina	33.68
102	NEW DELHI	India	31.17
103	MUMBAI	India	29.44
104	KIEV	Ukraine	25.51
105	BAKU	Azerbaijan	23.89

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

2. ACI 2018 Cost of Living Index for Ordinary Residents: Alcohol & Tobacco Category^

Alcohol & Tobacco Ranking for Ordinary Residents	City	Country	Alcohol & Tobacco Index for Ordinary Residents
1	CARACAS	Venezuela	701.40
2	SINGAPORE	Singapore	121.74
3	OSLO	Norway	111.78
4	REYKJAVIK	Iceland	104.44
5	NEWYORK	United States	100.00
6	MELBOURNE	Australia	98.26
7	SYDNEY	Australia	94.95
8	ADELAIDE	Australia	90.75
9	AUCKLAND	New Zealand	89.51
10	WELLINGTON	New Zealand	86.85
11	LOS ANGELES	United States	84.40
12	DUBLIN	Ireland	84.08
13	PERTH	Australia	83.07
14	BRISBANE	Australia	80.94
15	LONDON	Great Britain	80.42
16	CALGARY	Canada	79.89
17	HONOLULU	United States	74.44
18	VANCOUVER	Canada	73.74
19	MONTREAL	Canada	71.67
20	TORONTO	Canada	70.86
21	CHICAGO	United States	68.99

^Note: Based on 2016 data, which were the latest available at the time the study was conducted.

2. ACI 2018 Cost of Living Index for Ordinary Residents: Alcohol & Tobacco Category ^

Alcohol & Tobacco Ranking for Ordinary Residents	City	Country	Alcohol & Tobacco Index for Ordinary Residents
22	ZURICH	Switzerland	68.52
23	HONG KONG	Hong Kong, China	68.48
24	DETROIT	United States	67.96
25	HOUSTON	United States	66.80
26	MINNEAPOLIS	United States	65.60
27	BOSTON	United States	65.25
28	HELSINKI	Finland	64.43
29	TEL AVIV	Israel	64.11
30	SEATTLE	United States	62.36
31	BEIJING	China	62.32
32	WASHINGTON DC	United States	61.95
33	SUZHOU	China	61.31
34	STOCKHOLM	Sweden	61.22
35	TIANJIN	China	60.79
36	PARIS	France	60.03
37	QINGDAO	China	59.28
38	SAN FRANCISCO	United States	59.27
39	COPENHAGEN	Denmark	58.94
40	PITTSBURGH	United States	58.65
41	GENEVA	Switzerland	58.40
42	MONTEVIDEO	Uruguay	56.38

^Note: Based on 2016 data, which were the latest available at the time the study was conducted.

2. ACI 2018 Cost of Living Index for Ordinary Residents: Alcohol & Tobacco Category ^

Alcohol & Tobacco Ranking for Ordinary Residents	City	Country	Alcohol & Tobacco Index for Ordinary Residents
43	ROME	Italy	56.09
44	CLEVELAND	United States	55.95
45	SHENZHEN	China	54.69
46	DALIAN	China	54.44
47	LEXINGTON	United States	54.12
48	GUANGZHOU	China	52.95
49	TOKYO	Japan	52.19
50	ATLANTA	United States	52.16
51	SHANGHAI	China	51.80
52	MIAMI	United States	51.46
53	AMSTERDAM	Netherlands	50.88
54	DUBAI	United Arab Emirates	49.58
55	OSAKA / KOBE	Japan	47.92
56	BRUSSELS	Belgium	47.64
57	FRANKFURT	Germany	46.40
58	VIENNA	Austria	45.64
59	MUNICH	Germany	45.38
60	KUALA LUMPUR	Malaysia	44.22
61	KUWAIT	Kuwait	43.93
62	ISTANBUL	Turkey	43.37
63	DOHA	Qatar	43.32

^Note: Based on 2016 data, which were the latest available at the time the study was conducted.

2. ACI 2018 Cost of Living Index for Ordinary Residents: Alcohol & Tobacco Category [^]

Alcohol & Tobacco Ranking for Ordinary Residents	City	Country	Alcohol & Tobacco Index for Ordinary Residents
64	ATHENS	Greece	42.95
65	BERLIN	Germany	42.91
66	LUXEMBOURG	Luxembourg	42.46
67	SEOUL	South Korea	42.05
68	LYON	France	41.06
69	LISBON	Portugal	40.97
70	BARCELONA	Spain	40.85
71	QUITO	Ecuador	40.51
72	MADRID	Spain	40.36
73	JAKARTA	Indonesia	39.78
74	MILAN	Italy	39.38
75	TAIPEI	Taiwan, China	39.23
76	SANTIAGO	Chile	39.06
77	NAIROBI	Kenya	38.63
78	BRATISLAVA	Slovakia	38.44
79	PRAGUE	Czech Republic	37.11
80	BANGKOK	Thailand	37.06
81	AMMAN	Jordan	35.22
82	BUCHAREST	Romania	34.92
83	LIMA	Peru	34.20
84	WARSAW	Poland	33.10

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

2. ACI 2018 Cost of Living Index for Ordinary Residents: Alcohol & Tobacco Category ^

Alcohol & Tobacco Ranking for Ordinary Residents	City	Country	Alcohol & Tobacco Index for Ordinary Residents
85	MUMBAI	India	32.09
86	SAO PAULO	Brazil	31.72
87	MEXICO CITY	Mexico	30.64
88	SOFIA	Bulgaria	29.57
89	BOGOTA	Colombia	29.38
90	JOHANNESBURG	South Africa	28.03
91	CAIRO	Egypt	27.68
92	ASUNCION	Paraguay	27.62
93	RIO DE JANEIRO	Brazil	27.19
94	PRETORIA	South Africa	27.06
95	BUDAPEST	Hungary	26.73
96	NEW DELHI	India	26.08
97	MANILA	Philippines	24.93
98	COLOMBO	Sri Lanka	22.83
99	HANOI	Vietnam	22.51
100	BUENOS AIRES	Argentina	21.61
101	HO CHI MINH	Vietnam	21.54
102	MOSCOW	Russia	17.38
103	ST PETERSBURG	Russia	16.01
104	KIEV	Ukraine	11.35
105	BAKU	Azerbaijan	11.14

^Note: Based on 2016 data, which were the latest available at the time the study was conducted.

3. ACI 2018 Cost of Living Index for Ordinary Residents: Clothing Category^

Clothing Ranking for Ordinary Residents	City	Country	Clothing Index for Ordinary Residents
1	CARACAS	Venezuela	1222.92
2	REYKJAVIK	Iceland	100.74
3	NEWYORK	United States	100.00
4	WASHINGTON DC	United States	91.94
5	MELBOURNE	Australia	91.45
6	VANCOUVER	Canada	88.62
7	SAO PAULO	Brazil	87.14
8	MONTEVIDEO	Uruguay	85.81
9	SYDNEY	Australia	84.59
10	LOS ANGELES	United States	84.25
11	MILAN	Italy	81.64
12	GENEVA	Switzerland	81.41
13	ZURICH	Switzerland	79.12
14	BRISBANE	Australia	77.65
15	SEOUL	South Korea	76.94
16	OSLO	Norway	76.55
17	PITTSBURGH	United States	72.99
18	COPENHAGEN	Denmark	71.37
19	RIO DE JANEIRO	Brazil	69.03
20	CHICAGO	United States	68.55
21	HELSINKI	Finland	68.25

^Note: Based on 2016 data, which were the latest available at the time the study was conducted.

3. ACI 2018 Cost of Living Index for Ordinary Residents: Clothing Category ^

Clothing Ranking for Ordinary Residents	City	Country	Clothing Index for Ordinary Residents
22	MINNEAPOLIS	United States	67.42
23	TEL AVIV	Israel	66.94
24	STOCKHOLM	Sweden	66.41
25	DALIAN	China	66.19
26	MUNICH	Germany	65.68
27	MIAMI	United States	65.33
28	HOUSTON	United States	64.04
29	PARIS	France	63.79
30	BRUSSELS	Belgium	63.69
31	SHENZHEN	China	63.08
32	BOSTON	United States	62.60
33	OSAKA / KOBE	Japan	62.56
34	AMSTERDAM	Netherlands	62.14
35	ADELAIDE	Australia	62.12
36	WELLINGTON	New Zealand	61.62
37	ASUNCION	Paraguay	61.24
38	HONOLULU	United States	60.81
39	SEATTLE	United States	60.64
40	BEIJING	China	60.16
41	QUITO	Ecuador	59.44
42	AUCKLAND	New Zealand	59.17

^Note: Based on 2016 data, which were the latest available at the time the study was conducted.

3. ACI 2018 Cost of Living Index for Ordinary Residents: Clothing Category [^]

Clothing Ranking for Ordinary Residents	City	Country	Clothing Index for Ordinary Residents
43	TOKYO	Japan	58.94
44	LISBON	Portugal	58.56
45	MONTREAL	Canada	57.77
46	FRANKFURT	Germany	57.40
47	VIENNA	Austria	57.38
48	BUENOS AIRES	Argentina	57.28
49	LUXEMBOURG	Luxembourg	57.06
50	DUBLIN	Ireland	56.47
51	DOHA	Qatar	54.88
52	ATLANTA	United States	53.44
53	BRATISLAVA	Slovakia	52.61
54	CALGARY	Canada	51.82
55	KUWAIT	Kuwait	51.82
56	PRAGUE	Czech Republic	51.79
57	WARSAW	Poland	51.65
58	LYON	France	50.77
59	LEXINGTON	United States	50.63
60	LIMA	Peru	50.50
61	DUBAI	United Arab Emirates	49.91
62	SANTIAGO	Chile	49.76
63	LONDON	Great Britain	49.76

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

3. ACI 2018 Cost of Living Index for Ordinary Residents: Clothing Category ^

Clothing Ranking for Ordinary Residents	City	Country	Clothing Index for Ordinary Residents
64	MADRID	Spain	49.49
65	BARCELONA	Spain	49.25
66	BERLIN	Germany	48.82
67	ATHENS	Greece	48.45
68	BUCHAREST	Romania	48.40
69	SOFIA	Bulgaria	44.08
70	TIANJIN	China	43.71
71	PERTH	Australia	43.11
72	BOGOTA	Colombia	42.26
73	BUDAPEST	Hungary	41.97
74	SINGAPORE	Singapore	41.78
75	SAN FRANCISCO	United States	41.45
76	DETROIT	United States	40.60
77	HONG KONG	Hong Kong, China	38.65
78	SHANGHAI	China	38.34
79	MOSCOW	Russia	37.62
80	ROME	Italy	36.92
81	ISTANBUL	Turkey	35.94
82	TORONTO	Canada	34.35
83	MANILA	Philippines	32.46
84	MEXICO CITY	Mexico	31.64

^Note: Based on 2016 data, which were the latest available at the time the study was conducted.

3. ACI 2018 Cost of Living Index for Ordinary Residents: Clothing Category [^]

Clothing Ranking for Ordinary Residents	City	Country	Clothing Index for Ordinary Residents
85	JOHANNESBURG	South Africa	31.26
86	SUZHOU	China	30.98
87	KUALA LUMPUR	Malaysia	28.92
88	JAKARTA	Indonesia	28.44
89	CLEVELAND	United States	28.32
90	AMMAN	Jordan	27.96
91	KIEV	Ukraine	26.97
92	ST PETERSBURG	Russia	26.87
93	HO CHI MINH	Vietnam	26.32
94	PRETORIA	South Africa	25.79
95	TAIPEI	Taiwan, China	25.78
96	NAIROBI	Kenya	24.28
97	BAKU	Azerbaijan	23.84
98	QINGDAO	China	23.58
99	BANGKOK	Thailand	20.24
100	CAIRO	Egypt	19.59
101	GUANGZHOU	China	19.39
102	NEW DELHI	India	18.77
103	COLOMBO	Sri Lanka	18.14
104	HANOI	Vietnam	15.13
105	MUMBAI	India	11.99

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

4. ACI 2018 Cost of Living Index for Ordinary Residents: Housing Rents & Utilities [^]

Housing Rents & Utilities Ranking for Ordinary Residents	City	Country	Housing Rents & Utilities Index for Ordinary Residents
1	NEWYORK	United States	100.00
2	SYDNEY	Australia	77.77
3	ZURICH	Switzerland	73.57
4	CARACAS	Venezuela	65.44
5	LOS ANGELES	United States	61.41
6	GENEVA	Switzerland	56.79
7	MELBOURNE	Australia	53.88
8	PARIS	France	51.19
9	SAN FRANCISCO	United States	49.61
10	LUXEMBOURG	Luxembourg	48.95
11	COPENHAGEN	Denmark	44.74
12	TORONTO	Canada	43.85
13	BRISBANE	Australia	42.26
14	LONDON	Great Britain	41.68
15	TOKYO	Japan	40.01
16	AUCKLAND	New Zealand	39.74
17	WELLINGTON	New Zealand	37.93
18	HELSINKI	Finland	37.88
19	WASHINGTON DC	United States	37.74
20	ADELAIDE	Australia	35.96
21	OSLO	Norway	35.23

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

4. ACI 2018 Cost of Living Index for Ordinary Residents: Housing Rents & Utilities [^]

Housing Rents & Utilities Ranking for Ordinary Residents	City	Country	Housing Rents & Utilities Index for Ordinary Residents
22	AMSTERDAM	Netherlands	34.51
23	CHICAGO	United States	33.68
24	BRUSSELS	Belgium	33.62
25	MUNICH	Germany	33.16
26	DUBLIN	Ireland	32.67
27	STOCKHOLM	Sweden	32.58
28	VANCOUVER	Canada	32.40
29	SINGAPORE	Singapore	32.22
30	TEL AVIV	Israel	31.93
31	FRANKFURT	Germany	31.75
32	HONOLULU	United States	31.28
33	BOSTON	United States	31.14
34	ROME	Italy	30.49
35	REYKJAVIK	Iceland	29.57
36	MADRID	Spain	29.41
37	BERLIN	Germany	28.85
38	HONG KONG	Hong Kong, China	28.70
39	OSAKA / KOBE	Japan	28.58
40	VIENNA	Austria	28.32
41	MIAMI	United States	28.25
42	BARCELONA	Spain	27.75

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

4. ACI 2018 Cost of Living Index for Ordinary Residents: Housing Rents & Utilities [^]

Housing Rents & Utilities Ranking for Ordinary Residents	City	Country	Housing Rents & Utilities Index for Ordinary Residents
43	HOUSTON	United States	26.79
44	MILAN	Italy	26.79
45	DOHA	Qatar	26.27
46	DUBAI	United Arab Emirates	24.56
47	MINNEAPOLIS	United States	24.41
48	MONTREAL	Canada	24.25
49	SEATTLE	United States	23.65
50	LISBON	Portugal	22.96
51	SHANGHAI	China	22.71
52	ATHENS	Greece	22.34
53	CALGARY	Canada	21.83
54	RIO DE JANEIRO	Brazil	20.81
55	PERTH	Australia	20.30
56	MEXICO CITY	Mexico	20.18
57	PRAGUE	Czech Republic	19.11
58	PITTSBURGH	United States	18.62
59	MONTEVIDEO	Uruguay	17.90
60	ATLANTA	United States	17.83
61	SANTIAGO	Chile	17.76
62	DETROIT	United States	17.62
63	GUANGZHOU	China	17.51

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

4. ACI 2018 Cost of Living Index for Ordinary Residents: Housing Rents & Utilities [^]

Housing Rents & Utilities Ranking for Ordinary Residents	City	Country	Housing Rents & Utilities Index for Ordinary Residents
64	HO CHI MINH	Vietnam	17.42
65	BEIJING	China	17.24
66	LYON	France	16.03
67	SEOUL	South Korea	15.69
68	SAO PAULO	Brazil	15.46
69	BRATISLAVA	Slovakia	15.21
70	TAIPEI	Taiwan, China	15.06
71	LEXINGTON	United States	14.78
72	BUCHAREST	Romania	14.34
73	JOHANNESBURG	South Africa	13.69
74	KUWAIT	Kuwait	13.68
75	BUENOS AIRES	Argentina	13.30
76	QINGDAO	China	13.27
77	BUDAPEST	Hungary	12.28
78	QUITO	Ecuador	12.12
79	ISTANBUL	Turkey	11.67
80	CLEVELAND	United States	11.45
81	SHENZHEN	China	11.35
82	WARSAW	Poland	11.29
83	LIMA	Peru	11.20
84	MUMBAI	India	10.91

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

4. ACI 2018 Cost of Living Index for Ordinary Residents: Housing Rents & Utilities [^]

Housing Rents & Utilities Ranking for Ordinary Residents	City	Country	Housing Rents & Utilities Index for Ordinary Residents
85	SUZHOU	China	10.89
86	MANILA	Philippines	10.66
87	TIANJIN	China	9.60
88	PRETORIA	South Africa	9.39
89	NAIROBI	Kenya	9.31
90	JAKARTA	Indonesia	9.20
91	KUALA LUMPUR	Malaysia	8.44
92	AMMAN	Jordan	8.23
93	BOGOTA	Colombia	7.97
94	SOFIA	Bulgaria	7.84
95	ASUNCION	Paraguay	7.66
96	DALIAN	China	7.19
97	HANOI	Vietnam	7.16
98	COLOMBO	Sri Lanka	6.92
99	BANGKOK	Thailand	6.91
100	MOSCOW	Russia	6.46
101	CAIRO	Egypt	3.53
102	ST PETERSBURG	Russia	2.80
103	NEW DELHI	India	2.50
104	KIEV	Ukraine	2.27
105	BAKU	Azerbaijan	1.90

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

5. ACI 2018 Cost of Living Index for **Ordinary Residents**: Household Supplies & Domestic Help Category[^]

Household Supplies & Domestic Help Ranking for Ordinary Residents	City	Country	Household Supplies & Domestic Help Index for Ordinary Residents
1	CARACAS	Venezuela	1154.79
2	REYKJAVIK	Iceland	103.24
3	NEW YORK	United States	100.00
4	PERTH	Australia	90.90
5	GENEVA	Switzerland	90.14
6	PARIS	France	87.18
7	VANCOUVER	Canada	84.61
8	ZURICH	Switzerland	84.56
9	BRISBANE	Australia	83.81
10	LOS ANGELES	United States	83.75
11	MONTEVIDEO	Uruguay	78.62
12	AUCKLAND	New Zealand	78.53
13	MILAN	Italy	78.43
14	TORONTO	Canada	78.36
15	COPENHAGEN	Denmark	78.07
16	OSAKA / KOBE	Japan	77.69
17	SEATTLE	United States	76.68
18	TOKYO	Japan	76.64
19	SHENZHEN	China	76.54
20	OSLO	Norway	76.17
21	FRANKFURT	Germany	75.11

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

5. ACI 2018 Cost of Living Index for Ordinary Residents: Household Supplies & Domestic Help Category ^

Household Supplies & Domestic Help Ranking for Ordinary Residents	City	Country	Household Supplies & Domestic Help Index for Ordinary Residents
22	SHANGHAI	China	74.93
23	DALIAN	China	74.58
24	PITTSBURGH	United States	73.48
25	HELSINKI	Finland	73.31
26	LONDON	Great Britain	72.91
27	WELLINGTON	New Zealand	72.91
28	TEL AVIV	Israel	72.77
29	VIENNA	Austria	72.75
30	CALGARY	Canada	72.66
31	SINGAPORE	Singapore	72.44
32	CLEVELAND	United States	72.39
33	HONG KONG	Hong Kong, China	72.09
34	STOCKHOLM	Sweden	72.06
35	LUXEMBOURG	Luxembourg	72.03
36	SYDNEY	Australia	71.64
37	SAN FRANCISCO	United States	71.58
38	DOHA	Qatar	71.45
39	MINNEAPOLIS	United States	71.24
40	WASHINGTON DC	United States	71.17
41	CHICAGO	United States	70.12
42	BRUSSELS	Belgium	69.63

^Note: Based on 2016 data, which were the latest available at the time the study was conducted.

5. ACI 2018 Cost of Living Index for **Ordinary Residents**: Household Supplies & Domestic Help Category [^]

Household Supplies & Domestic Help Ranking for Ordinary Residents	City	Country	Household Supplies & Domestic Help Index for Ordinary Residents
43	QUITO	Ecuador	67.72
44	AMSTERDAM	Netherlands	67.34
45	BOSTON	United States	67.22
46	DUBLIN	Ireland	66.09
47	KUWAIT	Kuwait	65.59
48	ADELAIDE	Australia	65.35
49	MUNICH	Germany	64.60
50	BARCELONA	Spain	64.25
51	SEOUL	South Korea	63.95
52	QINGDAO	China	63.31
53	MONTREAL	Canada	62.85
54	DETROIT	United States	62.63
55	MELBOURNE	Australia	61.72
56	LEXINGTON	United States	61.58
57	MADRID	Spain	60.97
58	ATLANTA	United States	58.91
59	ROME	Italy	58.78
60	ATHENS	Greece	58.78
61	LISBON	Portugal	58.61
62	MIAMI	United States	58.56
63	LIMA	Peru	57.43

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

5. ACI 2018 Cost of Living Index for Ordinary Residents: Household Supplies & Domestic Help Category ^

Household Supplies & Domestic Help Ranking for Ordinary Residents	City	Country	Household Supplies & Domestic Help Index for Ordinary Residents
64	SUZHOU	China	57.03
65	GUANGZHOU	China	56.30
66	BEIJING	China	55.72
67	HONOLULU	United States	55.60
68	SANTIAGO	Chile	55.56
69	RIO DE JANEIRO	Brazil	55.00
70	LYON	France	54.43
71	BRATISLAVA	Slovakia	53.24
72	TAIPEI	Taiwan, China	52.70
73	DUBAI	United Arab Emirates	51.85
74	BOGOTA	Colombia	51.48
75	BERLIN	Germany	51.08
76	PRAGUE	Czech Republic	50.31
77	HOUSTON	United States	49.62
78	SAO PAULO	Brazil	46.64
79	JOHANNESBURG	South Africa	46.50
80	TIANJIN	China	46.03
81	AMMAN	Jordan	43.91
82	KUALA LUMPUR	Malaysia	43.83
83	ASUNCION	Paraguay	43.46
84	PRETORIA	South Africa	43.31

^Note: Based on 2016 data, which were the latest available at the time the study was conducted.

5. ACI 2018 Cost of Living Index for Ordinary Residents: Household Supplies & Domestic Help Category ^

Household Supplies & Domestic Help Ranking for Ordinary Residents	City	Country	Household Supplies & Domestic Help Index for Ordinary Residents
85	ISTANBUL	Turkey	43.10
86	BUCHAREST	Romania	42.09
87	MUMBAI	India	42.00
88	BUDAPEST	Hungary	41.67
89	NAIROBI	Kenya	41.16
90	HANOI	Vietnam	40.83
91	BANGKOK	Thailand	40.80
92	MEXICO CITY	Mexico	40.43
93	SOFIA	Bulgaria	39.63
94	WARSAW	Poland	39.30
95	COLOMBO	Sri Lanka	37.31
96	BUENOS AIRES	Argentina	37.28
97	MANILA	Philippines	36.25
98	MOSCOW	Russia	33.63
99	CAIRO	Egypt	32.63
100	HO CHI MINH	Vietnam	31.28
101	JAKARTA	Indonesia	31.20
102	ST PETERSBURG	Russia	30.95
103	NEW DELHI	India	25.45
104	BAKU	Azerbaijan	23.65
105	KIEV	Ukraine	22.66

^Note: Based on 2016 data, which were the latest available at the time the study was conducted.

6. ACI 2018 Cost of Living Index for Ordinary Residents: Health Category[^]

Health Ranking for Ordinary Residents	City	Country	Health Index for Ordinary Residents
1	CARACAS	Venezuela	316.98
2	NEW YORK	United States	100.00
3	ZURICH	Switzerland	98.51
4	CHICAGO	United States	95.91
5	GENEVA	Switzerland	93.53
6	MELBOURNE	Australia	87.45
7	BRISBANE	Australia	83.25
8	LOS ANGELES	United States	82.39
9	PERTH	Australia	81.19
10	ADELAIDE	Australia	80.52
11	MINNEAPOLIS	United States	80.43
12	SYDNEY	Australia	79.95
13	OSLO	Norway	79.17
14	LUXEMBOURG	Luxembourg	76.69
15	HONOLULU	United States	74.59
16	SEATTLE	United States	73.78
17	MIAMI	United States	70.51
18	COPENHAGEN	Denmark	70.29
19	CALGARY	Canada	69.75
20	WASHINGTON DC	United States	68.55
21	DUBLIN	Ireland	68.41

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

6. ACI 2018 Cost of Living Index for Ordinary Residents: Health Category ^

Health Ranking for Ordinary Residents	City	Country	Health Index for Ordinary Residents
22	TORONTO	Canada	68.32
23	REYKJAVIK	Iceland	68.29
24	HOUSTON	United States	67.32
25	PARIS	France	67.25
26	CLEVELAND	United States	67.24
27	PITTSBURGH	United States	64.05
28	FRANKFURT	Germany	61.66
29	STOCKHOLM	Sweden	60.61
30	MONTREAL	Canada	60.42
31	SAN FRANCISCO	United States	59.70
32	AMSTERDAM	Netherlands	59.06
33	VIENNA	Austria	58.30
34	ATLANTA	United States	57.56
35	BRUSSELS	Belgium	56.58
36	DUBAI	United Arab Emirates	55.85
37	TEL AVIV	Israel	55.80
38	DOHA	Qatar	55.72
39	BOSTON	United States	55.70
40	HELSINKI	Finland	55.34
41	LONDON	Great Britain	53.94
42	VANCOUVER	Canada	52.59

^Note: Based on 2016 data, which were the latest available at the time the study was conducted.

6. ACI 2018 Cost of Living Index for Ordinary Residents: Health Category ^

Health Ranking for Ordinary Residents	City	Country	Health Index for Ordinary Residents
43	MILAN	Italy	52.42
44	WELLINGTON	New Zealand	51.96
45	HONG KONG	Hong Kong, China	51.31
46	TOKYO	Japan	50.83
47	AUCKLAND	New Zealand	49.41
48	BARCELONA	Spain	49.08
49	DETROIT	United States	48.37
50	OSAKA / KOBE	Japan	48.10
51	ROME	Italy	47.87
52	KUWAIT	Kuwait	47.49
53	LEXINGTON	United States	46.66
54	MADRID	Spain	45.01
55	LISBON	Portugal	42.35
56	SINGAPORE	Singapore	41.31
57	MONTEVIDEO	Uruguay	40.63
58	MUNICH	Germany	37.19
59	SHANGHAI	China	36.61
60	LYON	France	33.83
61	QINGDAO	China	33.26
62	ATHENS	Greece	32.68
63	SANTIAGO	Chile	31.74

^Note: Based on 2016 data, which were the latest available at the time the study was conducted.

6. ACI 2018 Cost of Living Index for Ordinary Residents: Health Category ^

Health Ranking for Ordinary Residents	City	Country	Health Index for Ordinary Residents
64	SEOUL	South Korea	30.01
65	BERLIN	Germany	29.72
66	QUITO	Ecuador	29.70
67	SAO PAULO	Brazil	28.20
68	MEXICO CITY	Mexico	26.15
69	ASUNCION	Paraguay	25.89
70	PRAGUE	Czech Republic	23.95
71	LIMA	Peru	23.31
72	GUANGZHOU	China	22.67
73	BOGOTA	Colombia	22.55
74	ISTANBUL	Turkey	21.80
75	SUZHOU	China	21.30
76	JOHANNESBURG	South Africa	21.24
77	PRETORIA	South Africa	20.20
78	BRATISLAVA	Slovakia	19.72
79	MANILA	Philippines	19.61
80	RIO DE JANEIRO	Brazil	18.49
81	BEIJING	China	18.11
82	AMMAN	Jordan	17.44
83	BUENOS AIRES	Argentina	17.12
84	WARSAW	Poland	16.95

^Note: Based on 2016 data, which were the latest available at the time the study was conducted.

6. ACI 2018 Cost of Living Index for Ordinary Residents: Health Category ^

Health Ranking for Ordinary Residents	City	Country	Health Index for Ordinary Residents
85	BUDAPEST	Hungary	16.39
86	KUALA LUMPUR	Malaysia	16.20
87	MOSCOW	Russia	16.18
88	TAIPEI	Taiwan, China	16.12
89	JAKARTA	Indonesia	15.82
90	ST PETERSBURG	Russia	15.62
91	NAIROBI	Kenya	15.45
92	TIANJIN	China	15.23
93	SHENZHEN	China	14.86
94	DALIAN	China	14.68
95	BANGKOK	Thailand	14.05
96	BUCHAREST	Romania	13.11
97	SOFIA	Bulgaria	12.33
98	HANOI	Vietnam	9.76
99	COLOMBO	Sri Lanka	8.68
100	CAIRO	Egypt	8.68
101	KIEV	Ukraine	7.80
102	BAKU	Azerbaijan	7.80
103	MUMBAI	India	7.55
104	NEW DELHI	India	6.98
105	HO CHI MINH	Vietnam	6.43

^Note: Based on 2016 data, which were the latest available at the time the study was conducted.

7. ACI 2018 Cost of Living Index for Ordinary Residents: Transport Category[^]

Transport Ranking for Ordinary Residents	City	Country	Transport Index for Ordinary Residents
1	CARACAS	Venezuela	557.28
2	REYKJAVIK	Iceland	207.37
3	COPENHAGEN	Denmark	186.40
4	OSLO	Norway	182.64
5	ZURICH	Switzerland	170.96
6	GENEVA	Switzerland	170.72
7	VANCOUVER	Canada	160.33
8	HELSINKI	Finland	158.26
9	FRANKFURT	Germany	156.86
10	TEL AVIV	Israel	153.56
11	SYDNEY	Australia	152.88
12	STOCKHOLM	Sweden	152.68
13	LONDON	Great Britain	151.34
14	PARIS	France	150.75
15	AMSTERDAM	Netherlands	150.41
16	VIENNA	Austria	147.95
17	AUCKLAND	New Zealand	143.06
18	ROME	Italy	142.80
19	LOS ANGELES	United States	142.62
20	MELBOURNE	Australia	141.99
21	BRUSSELS	Belgium	141.23

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

7. ACI 2018 Cost of Living Index for Ordinary Residents: Transport Category [^]

Transport Ranking for Ordinary Residents	City	Country	Transport Index for Ordinary Residents
22	DUBLIN	Ireland	139.08
23	BERLIN	Germany	139.07
24	MIAMI	United States	138.17
25	WELLINGTON	New Zealand	137.71
26	TOKYO	Japan	135.07
27	SINGAPORE	Singapore	135.00
28	MUNICH	Germany	132.50
29	HONG KONG	Hong Kong, China	131.30
30	OSAKA / KOBE	Japan	130.77
31	CHICAGO	United States	129.99
32	LEXINGTON	United States	129.70
33	LUXEMBOURG	Luxembourg	129.46
34	LYON	France	127.22
35	BARCELONA	Spain	126.03
36	LISBON	Portugal	125.09
37	MADRID	Spain	124.82
38	BRISBANE	Australia	123.47
39	SAN FRANCISCO	United States	121.72
40	ATHENS	Greece	118.38
41	PERTH	Australia	117.80
42	ADELAIDE	Australia	117.12

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

7. ACI 2018 Cost of Living Index for Ordinary Residents: Transport Category [^]

Transport Ranking for Ordinary Residents	City	Country	Transport Index for Ordinary Residents
43	HONOLULU	United States	114.72
44	MILAN	Italy	114.07
45	MINNEAPOLIS	United States	113.93
46	SEOUL	South Korea	113.82
47	MONTEVIDEO	Uruguay	113.26
48	SEATTLE	United States	112.37
49	TORONTO	Canada	112.30
50	HOUSTON	United States	110.57
51	CALGARY	Canada	110.21
52	SAO PAULO	Brazil	109.93
53	ATLANTA	United States	109.62
54	MONTREAL	Canada	108.88
55	BUDAPEST	Hungary	104.74
56	BEIJING	China	103.22
57	BRATISLAVA	Slovakia	101.99
58	PITTSBURGH	United States	101.93
59	HANOI	Vietnam	101.32
60	ISTANBUL	Turkey	100.67
61	NEW YORK	United States	100.00
62	PRAGUE	Czech Republic	98.08
63	WASHINGTON DC	United States	97.90

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

7. ACI 2018 Cost of Living Index for Ordinary Residents: Transport Category [^]

Transport Ranking for Ordinary Residents	City	Country	Transport Index for Ordinary Residents
64	RIO DE JANEIRO	Brazil	96.94
65	HO CHI MINH	Vietnam	95.59
66	SUZHOU	China	94.89
67	BOSTON	United States	93.01
68	NAIROBI	Kenya	93.00
69	BUCHAREST	Romania	90.93
70	SANTIAGO	Chile	89.46
71	DETROIT	United States	89.46
72	WARSAW	Poland	87.92
73	SOFIA	Bulgaria	86.27
74	CLEVELAND	United States	85.13
75	DALIAN	China	83.88
76	TIANJIN	China	83.31
77	DUBAI	United Arab Emirates	81.57
78	MEXICO CITY	Mexico	78.46
79	SHANGHAI	China	78.32
80	BOGOTA	Colombia	77.36
81	ASUNCION	Paraguay	77.01
82	BUENOS AIRES	Argentina	75.87
83	LIMA	Peru	75.49
84	TAIPEI	Taiwan, China	74.84

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

7. ACI 2018 Cost of Living Index for Ordinary Residents: Transport Category ^

Transport Ranking for Ordinary Residents	City	Country	Transport Index for Ordinary Residents
85	QUITO	Ecuador	71.95
86	AMMAN	Jordan	71.79
87	GUANGZHOU	China	69.49
88	QINGDAO	China	68.99
89	MANILA	Philippines	67.71
90	MOSCOW	Russia	66.58
91	PRETORIA	South Africa	66.55
92	MUMBAI	India	66.51
93	SHENZHEN	China	66.27
94	DOHA	Qatar	65.69
95	COLOMBO	Sri Lanka	65.44
96	BANGKOK	Thailand	65.41
97	ST PETERSBURG	Russia	65.23
98	JOHANNESBURG	South Africa	65.13
99	KUALA LUMPUR	Malaysia	64.80
100	NEW DELHI	India	62.03
101	JAKARTA	Indonesia	58.22
102	KUWAIT	Kuwait	55.52
103	KIEV	Ukraine	45.81
104	BAKU	Azerbaijan	41.92
105	CAIRO	Egypt	38.66

^Note: Based on 2016 data, which were the latest available at the time the study was conducted.

8. ACI 2018 Cost of Living Index for Ordinary Residents: Recreation Category[^]

Recreation Ranking for Ordinary Residents	City	Country	Recreation Index for Ordinary Residents
1	CARACAS	Venezuela	917.47
2	REYKJAVIK	Iceland	121.95
3	ZURICH	Switzerland	117.52
4	MELBOURNE	Australia	106.99
5	OSLO	Norway	104.79
6	GENEVA	Switzerland	104.25
7	NEW YORK	United States	100.00
8	COPENHAGEN	Denmark	99.39
9	PARIS	France	96.73
10	TEL AVIV	Israel	93.13
11	WELLINGTON	New Zealand	92.65
12	FRANKFURT	Germany	92.42
13	HELSINKI	Finland	91.26
14	CHICAGO	United States	91.13
15	LOS ANGELES	United States	90.46
16	HOUSTON	United States	89.10
17	PERTH	Australia	87.23
18	SYDNEY	Australia	86.99
19	STOCKHOLM	Sweden	85.88
20	ROME	Italy	84.37
21	TORONTO	Canada	83.90

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

8. ACI 2018 Cost of Living Index for Ordinary Residents: Recreation Category ^

Recreation Ranking for Ordinary Residents	City	Country	Recreation Index for Ordinary Residents
22	VIENNA	Austria	83.28
23	MONTREAL	Canada	81.23
24	LONDON	Great Britain	81.23
25	TOKYO	Japan	80.71
26	DUBLIN	Ireland	80.56
27	AUCKLAND	New Zealand	80.32
28	LUXEMBOURG	Luxembourg	80.02
29	MUNICH	Germany	78.33
30	CLEVELAND	United States	78.33
31	BOSTON	United States	77.55
32	HONOLULU	United States	77.14
33	AMSTERDAM	Netherlands	76.89
34	BRUSSELS	Belgium	76.81
35	MONTEVIDEO	Uruguay	76.38
36	MINNEAPOLIS	United States	76.36
37	SAN FRANCISCO	United States	76.31
38	VANCOUVER	Canada	75.86
39	OSAKA / KOBE	Japan	75.75
40	ADELAIDE	Australia	75.57
41	MIAMI	United States	74.43
42	WASHINGTON DC	United States	74.31

^Note: Based on 2016 data, which were the latest available at the time the study was conducted.

8. ACI 2018 Cost of Living Index for Ordinary Residents: Recreation Category ^

Recreation Ranking for Ordinary Residents	City	Country	Recreation Index for Ordinary Residents
43	CALGARY	Canada	73.67
44	ATLANTA	United States	73.34
45	DOHA	Qatar	72.00
46	DUBAI	United Arab Emirates	71.97
47	MILAN	Italy	71.63
48	BRISBANE	Australia	71.00
49	MADRID	Spain	70.98
50	PITTSBURGH	United States	70.95
51	BARCELONA	Spain	70.84
52	LISBON	Portugal	69.67
53	LEXINGTON	United States	67.17
54	ATHENS	Greece	66.93
55	SEOUL	South Korea	65.13
56	SEATTLE	United States	65.05
57	RIO DE JANEIRO	Brazil	63.96
58	KUWAIT	Kuwait	61.93
59	QUITO	Ecuador	61.02
60	SANTIAGO	Chile	60.28
61	BERLIN	Germany	59.82
62	SAO PAULO	Brazil	58.75
63	DETROIT	United States	57.46

^Note: Based on 2016 data, which were the latest available at the time the study was conducted.

8. ACI 2018 Cost of Living Index for Ordinary Residents: Recreation Category ^

Recreation Ranking for Ordinary Residents	City	Country	Recreation Index for Ordinary Residents
64	LYON	France	57.28
65	ASUNCION	Paraguay	53.59
66	BRATISLAVA	Slovakia	52.86
67	HONG KONG	Hong Kong, China	49.26
68	PRAGUE	Czech Republic	48.14
69	SINGAPORE	Singapore	47.14
70	ISTANBUL	Turkey	47.13
71	LIMA	Peru	46.30
72	BEIJING	China	45.50
73	MEXICO CITY	Mexico	45.43
74	BUENOS AIRES	Argentina	45.01
75	NAIROBI	Kenya	43.97
76	AMMAN	Jordan	41.99
77	SHANGHAI	China	41.20
78	BUDAPEST	Hungary	40.63
79	WARSAW	Poland	40.08
80	SHENZHEN	China	39.48
81	JOHANNESBURG	South Africa	39.22
82	BOGOTA	Colombia	38.33
83	MOSCOW	Russia	37.90
84	TAIPEI	Taiwan, China	37.87

^Note: Based on 2016 data, which were the latest available at the time the study was conducted.

8. ACI 2018 Cost of Living Index for Ordinary Residents: Recreation Category ^

Recreation Ranking for Ordinary Residents	City	Country	Recreation Index for Ordinary Residents
85	DALIAN	China	37.74
86	SUZHOU	China	37.71
87	MANILA	Philippines	37.35
88	GUANGZHOU	China	37.28
89	BUCHAREST	Romania	36.13
90	PRETORIA	South Africa	35.82
91	SOFIA	Bulgaria	35.42
92	QINGDAO	China	34.97
93	TIANJIN	China	34.80
94	HANOI	Vietnam	34.58
95	ST PETERSBURG	Russia	33.61
96	KUALA LUMPUR	Malaysia	32.09
97	BANGKOK	Thailand	31.84
98	MUMBAI	India	31.02
99	NEW DELHI	India	28.25
100	JAKARTA	Indonesia	28.18
101	HO CHI MINH	Vietnam	27.04
102	COLOMBO	Sri Lanka	26.82
103	KIEV	Ukraine	24.86
104	CAIRO	Egypt	23.06
105	BAKU	Azerbaijan	21.68

^Note: Based on 2016 data, which were the latest available at the time the study was conducted.

9. ACI 2018 Cost of Living Index for Ordinary Residents: Education Category[^]

Education Ranking for Ordinary Residents	City	Country	Education Index for Ordinary Residents
1	CARACAS	Venezuela	150.57
2	WASHINGTON DC	United States	128.74
3	LUXEMBOURG	Luxembourg	122.42
4	ZURICH	Switzerland	116.27
5	GENEVA	Switzerland	106.49
6	NEW YORK	United States	100.00
7	MINNEAPOLIS	United States	96.23
8	TORONTO	Canada	93.33
9	LOS ANGELES	United States	89.66
10	ATLANTA	United States	88.52
11	LEXINGTON	United States	87.71
12	CLEVELAND	United States	84.57
13	CALGARY	Canada	79.77
14	STOCKHOLM	Sweden	75.59
15	PITTSBURGH	United States	75.44
16	OSLO	Norway	74.99
17	COPENHAGEN	Denmark	74.07
18	MIAMI	United States	73.94
19	CHICAGO	United States	73.31
20	BOSTON	United States	72.58
21	SEATTLE	United States	72.14

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

Source: Asia Competitiveness Institute

9. ACI 2018 Cost of Living Index for Ordinary Residents: Education Category ^

Education Ranking for Ordinary Residents	City	Country	Education Index for Ordinary Residents
22	PARIS	France	69.80
23	HONOLULU	United States	69.66
24	BRISBANE	Australia	69.65
25	REYKJAVIK	Iceland	69.45
26	VIENNA	Austria	69.43
27	ADELAIDE	Australia	68.39
28	MELBOURNE	Australia	68.30
29	SAN FRANCISCO	United States	66.08
30	SYDNEY	Australia	64.56
31	DETROIT	United States	62.40
32	PERTH	Australia	62.27
33	BRUSSELS	Belgium	62.12
34	LONDON	Great Britain	61.40
35	HOUSTON	United States	61.34
36	FRANKFURT	Germany	58.55
37	HELSINKI	Finland	56.72
38	DOHA	Qatar	54.64
39	AMSTERDAM	Netherlands	52.44
40	TOKYO	Japan	50.07
41	ROME	Italy	49.87
42	MUNICH	Germany	49.10

^Note: Based on 2016 data, which were the latest available at the time the study was conducted.

Source: Asia Competitiveness Institute

9. ACI 2018 Cost of Living Index for Ordinary Residents: Education Category ^

Education Ranking for Ordinary Residents	City	Country	Education Index for Ordinary Residents
43	TEL AVIV	Israel	46.95
44	DUBLIN	Ireland	45.16
45	DUBAI	United Arab Emirates	43.66
46	OSAKA / KOBE	Japan	43.38
47	AUCKLAND	New Zealand	42.71
48	HONG KONG	Hong Kong, China	42.15
49	VANCOUVER	Canada	42.07
50	BARCELONA	Spain	40.82
51	WELLINGTON	New Zealand	40.09
52	SEOUL	South Korea	39.79
53	MADRID	Spain	39.38
54	KUWAIT	Kuwait	38.22
55	SINGAPORE	Singapore	37.93
56	MILAN	Italy	34.51
57	ATHENS	Greece	34.09
58	MONTREAL	Canada	31.00
59	LYON	France	30.06
60	LISBON	Portugal	29.32
61	MONTEVIDEO	Uruguay	28.85
62	BEIJING	China	28.70
63	SHANGHAI	China	27.01

^Note: Based on 2016 data, which were the latest available at the time the study was conducted.

Source: Asia Competitiveness Institute

9. ACI 2018 Cost of Living Index for Ordinary Residents: Education Category [^]

Education Ranking for Ordinary Residents	City	Country	Education Index for Ordinary Residents
64	BERLIN	Germany	25.96
65	SHENZHEN	China	25.60
66	GUANGZHOU	China	23.73
67	QUITO	Ecuador	22.04
68	RIO DE JANEIRO	Brazil	21.59
69	PRAGUE	Czech Republic	19.93
70	TAIPEI	Taiwan, China	19.45
71	QINGDAO	China	19.42
72	SUZHOU	China	19.15
73	SAO PAULO	Brazil	18.47
74	TIANJIN	China	18.29
75	DALIAN	China	17.83
76	BRATISLAVA	Slovakia	17.36
77	NAIROBI	Kenya	17.20
78	JOHANNESBURG	South Africa	16.66
79	LIMA	Peru	16.64
80	BOGOTA	Colombia	16.41
81	PRETORIA	South Africa	16.35
82	WARSAW	Poland	15.85
83	SANTIAGO	Chile	15.21
84	AMMAN	Jordan	14.78

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

Source: Asia Competitiveness Institute

9. ACI 2018 Cost of Living Index for Ordinary Residents: Education Category [^]

Education Ranking for Ordinary Residents	City	Country	Education Index for Ordinary Residents
85	BUENOS AIRES	Argentina	14.69
86	ASUNCION	Paraguay	13.98
87	BUDAPEST	Hungary	13.73
88	KUALA LUMPUR	Malaysia	12.98
89	MUMBAI	India	12.00
90	BANGKOK	Thailand	11.10
91	MANILA	Philippines	10.88
92	JAKARTA	Indonesia	8.43
93	MOSCOW	Russia	8.17
94	ST PETERSBURG	Russia	8.09
95	HANOI	Vietnam	7.63
96	SOFIA	Bulgaria	7.62
97	BUCHAREST	Romania	7.56
98	ISTANBUL	Turkey	6.78
99	MEXICO CITY	Mexico	6.54
100	COLOMBO	Sri Lanka	6.49
101	CAIRO	Egypt	6.20
102	NEW DELHI	India	5.70
103	KIEV	Ukraine	4.73
104	HO CHI MINH	Vietnam	4.27
105	BAKU	Azerbaijan	4.13

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

Source: Asia Competitiveness Institute

10. ACI 2018 Cost of Living Index for **Ordinary Residents:** Miscellaneous Goods & Services Category[^]

Miscellaneous Goods & Services Ranking for Ordinary Residents	City	Country	Miscellaneous Goods & Services Index for Ordinary Residents
1	CARACAS	Venezuela	683.54
2	ZURICH	Switzerland	120.14
3	GENEVA	Switzerland	115.07
4	OSLO	Norway	108.45
5	COPENHAGEN	Denmark	106.53
6	REYKJAVIK	Iceland	105.59
7	NEW YORK	United States	100.00
8	TEL AVIV	Israel	91.86
9	ADELAIDE	Australia	90.81
9	BRISBANE	Australia	90.81
9	MELBOURNE	Australia	90.81
9	PERTH	Australia	90.81
9	SYDNEY	Australia	90.81
14	DUBLIN	Ireland	90.20
15	HELSINKI	Finland	89.95
16	LUXEMBOURG	Luxembourg	87.35
17	AUCKLAND	New Zealand	87.22
17	WELLINGTON	New Zealand	87.22
19	CHICAGO	United States	86.93
20	BRUSSELS	Belgium	85.68
21	STOCKHOLM	Sweden	85.05

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

Source: Asia Competitiveness Institute

10. ACI 2018 Cost of Living Index for Ordinary Residents: Miscellaneous Goods & Services Category [^]

Miscellaneous Goods & Services Ranking for Ordinary Residents	City	Country	Miscellaneous Goods & Services Index for Ordinary Residents
22	TORONTO	Canada	84.89
23	ATLANTA	United States	83.63
23	BOSTON	United States	83.63
23	CLEVELAND	United States	83.63
23	DETROIT	United States	83.63
23	HONOLULU	United States	83.63
23	HOUSTON	United States	83.63
23	LEXINGTON	United States	83.63
23	MINNEAPOLIS	United States	83.63
23	PITTSBURGH	United States	83.63
23	SAN FRANCISCO	United States	83.63
23	SEATTLE	United States	83.63
23	WASHINGTON DC	United States	83.63
35	PARIS	France	83.53
36	AMSTERDAM	Netherlands	83.30
37	CALGARY	Canada	83.14
37	VANCOUVER	Canada	83.14
39	OSAKA / KOBE	Japan	81.74
39	TOKYO	Japan	81.74
41	MONTREAL	Canada	81.40
42	LONDON	Great Britain	81.35

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

Source: Asia Competitiveness Institute

10. ACI 2018 Cost of Living Index for Ordinary Residents: Miscellaneous Goods & Services Category [^]

Miscellaneous Goods & Services Ranking for Ordinary Residents	City	Country	Miscellaneous Goods & Services Index for Ordinary Residents
43	VIENNA	Austria	81.29
44	MILAN	Italy	80.75
45	KUWAIT	Kuwait	76.03
46	LOS ANGELES	United States	75.74
47	MUNICH	Germany	75.67
48	LYON	France	75.38
49	FRANKFURT	Germany	73.53
50	MADRID	Spain	73.45
51	DOHA	Qatar	73.14
52	ROME	Italy	73.05
53	MIAMI	United States	71.83
54	BARCELONA	Spain	68.41
55	ATHENS	Greece	66.99
56	DUBAI	United Arab Emirates	64.41
57	SEOUL	South Korea	64.10
58	BERLIN	Germany	63.94
59	HONG KONG	Hong Kong, China	62.97
60	SINGAPORE	Singapore	62.25
61	LISBON	Portugal	62.01
62	MONTEVIDEO	Uruguay	61.60
63	QUITO	Ecuador	57.98

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

Source: Asia Competitiveness Institute

10. ACI 2018 Cost of Living Index for Ordinary Residents: Miscellaneous Goods & Services Category [^]

Miscellaneous Goods & Services Ranking for Ordinary Residents	City	Country	Miscellaneous Goods & Services Index for Ordinary Residents
64	SAO PAULO	Brazil	57.90
65	BRATISLAVA	Slovakia	53.74
66	SANTIAGO	Chile	53.33
67	SHANGHAI	China	51.86
68	RIO DE JANEIRO	Brazil	51.15
69	ISTANBUL	Turkey	48.49
70	PRAGUE	Czech Republic	47.56
71	DALIAN	China	46.29
71	GUANGZHOU	China	46.29
71	QINGDAO	China	46.29
71	SHENZHEN	China	46.29
71	SUZHOU	China	46.29
71	TIANJIN	China	46.29
77	LIMA	Peru	45.10
78	AMMAN	Jordan	44.09
79	BOGOTA	Colombia	42.87
80	MEXICO CITY	Mexico	42.75
81	MANILA	Philippines	41.22
82	BEIJING	China	40.72
83	WARSAW	Poland	40.71
84	BUENOS AIRES	Argentina	40.00

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

Source: Asia Competitiveness Institute

10. ACI 2018 Cost of Living Index for Ordinary Residents: Miscellaneous Goods & Services Category [^]

Miscellaneous Goods & Services Ranking for Ordinary Residents	City	Country	Miscellaneous Goods & Services Index for Ordinary Residents
85	BUDAPEST	Hungary	39.66
86	BUCHAREST	Romania	37.50
87	SOFIA	Bulgaria	36.66
88	ASUNCION	Paraguay	36.42
89	TAIPEI	Taiwan, China	35.84
90	KUALA LUMPUR	Malaysia	35.26
91	HANOI	Vietnam	34.25
91	HO CHI MINH	Vietnam	34.25
93	NAIROBI	Kenya	34.13
94	NEW DELHI	India	34.09
95	JOHANNESBURG	South Africa	33.80
95	PRETORIA	South Africa	33.80
97	COLOMBO	Sri Lanka	32.31
98	MUMBAI	India	30.76
99	JAKARTA	Indonesia	30.72
100	BANGKOK	Thailand	30.23
101	MOSCOW	Russia	28.48
101	ST PETERSBURG	Russia	28.48
103	CAIRO	Egypt	22.59
104	BAKU	Azerbaijan	20.64
105	KIEV	Ukraine	20.34

[^]Note: Based on 2016 data, which were the latest available at the time the study was conducted.

Source: Asia Competitiveness Institute

I I. Ensuring Housing Affordability for Ordinary People: the Singapore Experience

- Research Objective

To find out how a purchasing restriction policy impacts on housing market equilibrium and welfare distribution.

- Contribution

- Links to Micro structure literature (Anenberg and Bayer, 2017), empirically demonstrates that deterring concurrent home ownership reduces housing prices.
- Links the housing sales market to rental market: it demonstrates how a purchasing restriction twists the two segmented housing markets as well as their rental and sale sectors.
- Adds to the literature on Policy & welfare re-distribution. (Ortalo-Magne and Rady, 2006; Hilber and Lyytikainen, 2017)

II. Ensuring Housing Affordability for Ordinary People: the Singapore Experience

Summary of Findings

- The HDB home prices are decreased relative to the private home prices;
- The HDB home rents are raised relative to the private home rents;
- The policy realize its priority to ensure the affordability of HDB for first-time buyers and make the poor HDB owners better off;
- Marginally, the policy makes the well-off HDB home owners more difficult to upgrade to private homes.

II. Ensuring Housing Affordability for Ordinary People: the Singapore Experience

- Data Sources: SRX, URA, HDB, Singapore Statistics
- Variables at individual level:

Variables	Definition
Price	The housing transaction price. It is the contract price in SGD.
Rent	The monthly rent rate, which is the contract rent rate in SGD
Size	The size of a housing unit, measured in square meter.
Floor	The floor level where a housing unit is located.
Age	The age of the housing unit, which is the number of years after when its construction is completed.
Dis_*	The distance to the nearest park, MRT, CBD, etc. They are measured in meters.
Region	The planning region. In Singapore, there are 5 planning regions, i.e., central, west, east, northeast, north
Central_West	A dummy variable, it equals 1 if in the Central or West Region, otherwise 0.
HDB Town	In our dataset, we include 26 HDB towns or estates.

I I. Ensuring Housing Affordability for Ordinary People: the Singapore Experience

- Variables at aggregate level:

Variables	Definition or Construction Method
HDB_Mean_Price	Average of resale HDB prices in a HDB down in a year, in SGD per square meter.
HDB_Mean_Rent	Average monthly rent of HDB in a HDB down in a year, in SGD per square meter.
HDB_Mean_Cap	Average cap rate ($\text{Monthly Rent} \times 12 / \text{Price} \times 100\%$) of HDB flats transacted in a HDB down in a year, in %.
Rent_Ratio	Proportion of HDB units rented out in a HDB town in a year, in %.
Cap_Index	Hedonic cap rate index of HDB or private homes in a region in a month, Jan 2007=0
Price_Index	Hedonic price index of HDB or private homes in a region in a month, Jan2006=100
Rent_Index	Hedonic rent index of HDB or private homes in a region in a month, Jan2007=100
Policy	A dummy variable. If the index month is before the studied con-current home ownership policy, then it equals to 0; if the index month is after the policy, it equals 1.
HDB	A dummy variable, if the index is for HDB, then it equals 1; if the index is for private homes, it equals 0.

II. Ensuring Housing Affordability for Ordinary People: the Singapore Experience

Purchasing restrictions adopted as anti-speculation policies will:

- Influence housing wealth distribution & mobility across housing ladders;
- Twist the inter regional market price equilibrium.

Policy Implication:

- The government's priority is to help first-time HDB home buyers to own their home, and help the low-income to gain decent rental income from owning HDB homes.
- Achieved by stopping the rich profiting from HDB.
- Marginally, make well-off HDB home owners more difficult to upgrade.

I I. Ensuring Housing Affordability for Ordinary People: the Singapore Experience

- **Part 2:** Con-current home owning & HDB price, rent and caprate

$$Y_{i,t} = \theta \times \text{Rent_Ratio}_{i,t} + \mathbf{t} + \mathbf{i} + \text{Con}_{i,t} + \varepsilon_{i,t}$$

Mean price, mean rent and mean cap rate (rent/price) of each HDB town and year;

Proxy of concurrent home owning, it is the ratio of active lease properties to total stock of a HDB town year;

Year and HDB town fixed effect;

I I. Ensuring Housing Affordability for Ordinary People: the Singapore Experience

- **Part 2:** Con-Current home owning and HDB prices, rents and cap rates

	(1)	(2)	(3)
Dependant Variable:	Mean Price	Mean Rent	Cap Rate
Rent_Ratio	397.6*** (27.820)	0.912*** (0.124)	-0.104** (0.045)
Year Fixed Effect	Yes	Yes	Yes
HDB Town Fixed Effect	Yes	Yes	Yes
Constant	2,679*** (62.600)	14.92*** (0.279)	6.324*** (0.102)
Observations	260	260	260
R-squared	0.981	0.977	0.805

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1