

MAY 2016

RATING GLOBAL CITIES' ABILITY TO ATTRACT AND SUPPORT HIGH POTENTIAL WOMEN ENTREPRENEURS







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Part I: Scoring 25 Global Cities

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Overview

- The Dell Women Entrepreneur Cities Index (WE Cities) is a measure of a city's ability to attract and support high potential women entrepreneurs (HPWE) i.e., women that want to grow and scale their business.
- The 25 cities in the rankings were chosen from the list of 50 global cities in the Dell Future Ready Economies (FRE) Model in order to make comparisons between the two indices, with geographic diversity utilized as a key criteria in city selection.
- Johannesburg, though not on the Global 50, was added because South Africa will host this year's Dell Women Entrepreneur Network (DWEN) Summit.
- The 50 global cities of the FRE were chosen for that study based on their size as well as their average growth over the last 5 years.
- As such, cities included in the WE Cities rankings are already strong, as compared to global peers, in the commercial aspects of *future readiness*.
- The second part of this report correlates a city's WE Cities rating with its FRE score. The high correlation between the two shows that attracting and supporting high potential women entrepreneurs could be an important part of a city's ability to be Future Ready.

Methodology*

Presymposium Research

Symposium

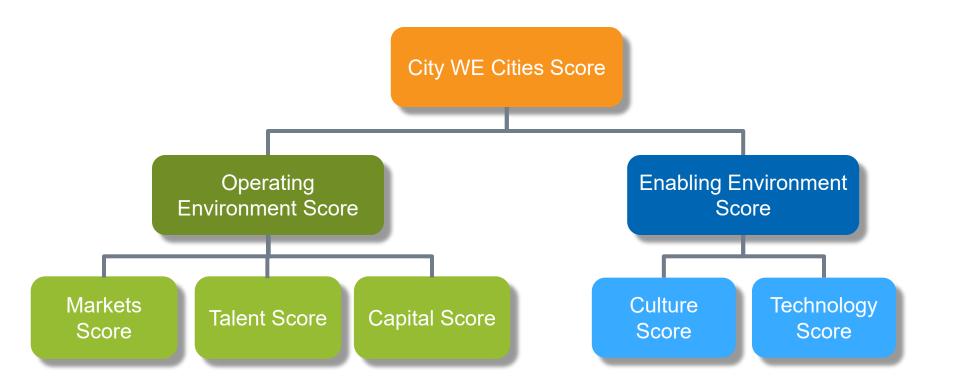
Data Gathering

Standardize Data Aggregate Data

- Identify subcategories and potential indicators
- Validate and identify any new categories and relative importance
- Collection of raw data to evaluate 25 global cities across the subcategories of interest
- Put all data on same 0-100 scale
- Score/Rank cities

*See Appendix A for complete details on the methodology.

The Rating Construction



Dell WE Cities Research / May 2016

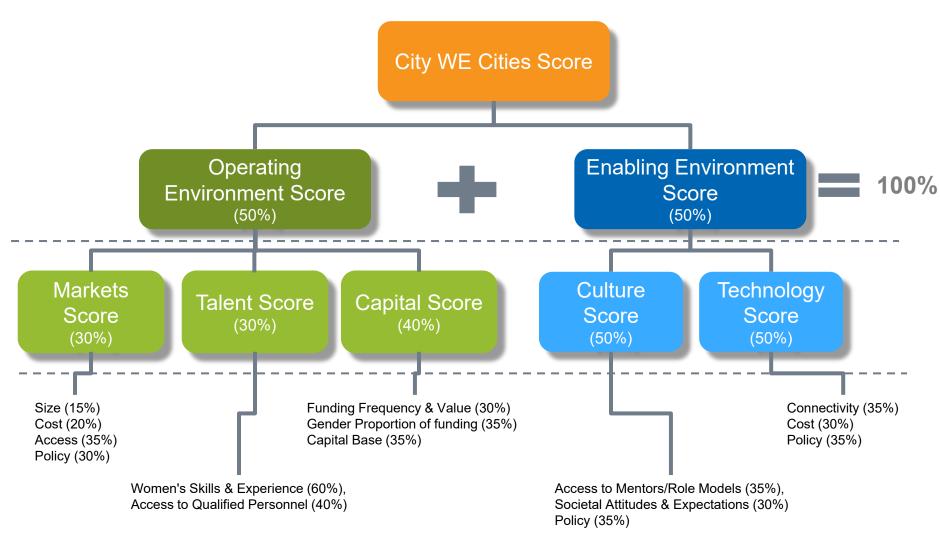
The Rating Construction – Details



- The rating has 5 pillars, divided into 2 categories, *Operational Environment* and *Enabling Environment*:
 - 1. Capital (Operational Environment)
 - 2. Markets (Operational Environment)
 - 3. Talent (Operational Environment)
 - 4. Culture (Enabling Environment)
 - 5. Technology (Enabling Environment)
- Almost all pillars contain a *Policy* sub-category that captures many of the important policies that help level the playing field for women entrepreneurs.
- The rating has 70 indicators. Of these:
 - · Almost two-thirds (44) have a gender-based component.
 - The vast majority (87%, or 61 indicators) were specific to the city/MSA level (rather than country-level).
 - All indicators use the most current data available, with almost all using data from 2014 or later.
- Individual indicators were weighted based on 4 criteria:
 - 1. Relevance
 - 2. Quality of underlying data
 - 3. Uniqueness in the index
 - 4. Contains a gender specific component
- Using robust data-driven analysis covering a multitude of factors, the rating is meant to highlight relative strengths and weaknesses, which can help cities leverage their strengths to improve areas where they are less competitive.
- Many of the indicators measure the *inputs* (or drivers) that attract and support HPWE rather than outcomes (the presence of HPWE in the city) in order to provide a tool for cities that helps provide insight to develop actionable strategies for improving cities' ability to attract and support HPWE.



The Rating Construction Showing Factor Weights*



^{*}The weights in the rows and groups sum to 100. For example, the *Capital Base* makes up 35% of the overall *Capital Score*, which is 40% of the *Operating Environment* score, which is then 50% of the overall city WE Cities score.



Why these Categories and Sub-Categories?

WE Cities

Operating Environment

MARKETS

The Markets category measures whether the female entrepreneur operates in a market with sufficient <u>size</u> such that scale can be achieved, the <u>cost</u> of being a profitable business in that market, the transparency and clarity of steps or ladders to gain <u>access</u> to potential customers in that market and the local <u>policies</u> that help level the playing field for women owned businesses.

TALENT

The Talent category measures both the likelihood of finding women with the training and experience required to run and scale a business and the availability of a local labor force with the skills and education necessary for a woman entrepreneur to build a well functioning team.

CAPITAL

As financial Capital is fundamental for businesses seeking to scale but is often particularly hard for women entrepreneurs to access, this category measures the frequency and value of funding received by women led businesses, the proportion of funding that businesses run by women (compared to men) receive, and the capital base that women can draw on.

Enabling Environment

CULTURE

A city's Culture, while less tangible, is believed by women entrepreneurs to be a critical enabler for their participation in commerce. This category measures the prevalence of relevant mentors, networks, and role models, the predominant attitudes & expectations of that society toward women entrepreneurs that help shape their own expectations, and the policies that enable women to assume leadership positions and business success.

TECHNOLOGY

Often taken for granted until it is not there, Technology has become critical for running nearly all business operations. This category measures women entrepreneurs' global connectivity via the internet and social media channels, the cost of staying connected, and policies that enable women to access and utilize information, data and technology.

Results

NYC tops the list, ranking first for *Operational Environment*; Stockholm is first for *Enabling Environment**

| Top 10 Market Scores |
|-----------------------------|
| New York |
| San Francisco Bay Area |
| London |
| Seattle |
| Paris |
| Austin |
| Toronto |
| Washington, DC |
| Sydney |
| Milan |

| Top 10 Capital Scores |
|------------------------------|
| New York |
| Bay Area |
| London |
| Shanghai |
| Washington, DC |
| Seattle |
| Beijing |
| Austin |
| Hong Kong |
| Stockholm |

| Top 10 Culture Scores |
|------------------------------|
| Toronto |
| New York |
| Sydney |
| Munich |
| Singapore |
| London |
| Bay Area |
| Paris |
| Stockholm |
| Sao Paulo |

| Top 10 Talent Scores | | | | |
|----------------------|--|--|--|--|
| Bay Area | | | | |
| Munich | | | | |
| Washington, DC | | | | |
| New York | | | | |
| Paris | | | | |
| Beijing | | | | |
| London | | | | |
| Singapore | | | | |
| Toronto | | | | |
| Shanghai | | | | |

| Top 10 Technology |
|-------------------------------|
| <u>Scores</u> |
| Stockholm |
| Beijing |
| Singapore |
| Austin |
| Ola!! |
| Shanghai |
| Snangnai Munich |
| |
| Munich |
| Munich Hong Kong |
| Munich Hong Kong Taipei |

| Overall WE Cities Ranking |
|---------------------------|
| NEW YORK |
| BAY AREA |
| LONDON |
| STOCKHOLM |
| SINGAPORE |
| TORONTO |
| WASHINGTON, DC |
| SYDNEY |
| PARIS |
| SEATTLE |
| MUNICH |
| AUSTIN |
| BEIJING |
| HONG KONG |
| TAIPEI |
| SHANGHAI |
| ТОКҮО |
| MEXICO CITY |
| SAO PAULO |
| SEOUL |
| MILAN |
| DELHI |
| JOHANNESBURG |
| JAKARTA |
| ISTANBUL |

*Cities highlighted in bold are cities not in the top 10 overall ranking.

Comparison of US Cities

| Metro Area | Ove rall Ran k | Operating Environme | | Talent | Capital | Enabling Environme nt Rank | Culture | Technolo gy |
|---------------|-------------------------|------------------------|---|--------|---------|----------------------------------|---------|----------------|
| | | | | | | | | |
| New York | 1 | 1 | 1 | 4 | 1 | 5 | 2 | 17 |
| San | | | | | | | | |
| Francisco | | | | | | | | |
| Bay Area | 2 | 2 | 2 | 1 | 2 | 6 | 7 | 11 |
| Washington | | | | | | | | |
| , DC | 7 | 4 | 8 | 3 | 5 | 18 | 19 | 13 |
| Seattle | 10 | 5 | 4 | 13 | 6 | 16 | 13 | 15 |
| Austin | 12 | 8 | 6 | 18 | 8 | 14 | 23 | 4 |

While US cities are generally strong in their operating environment, they are relatively weaker in their enabling environment. The Bay Area is the only metro area that scores in the top half of the rankings in all categories, but NYC is stronger in two critical areas, *Capital* and *Culture*. Seattle and Austin score in the top 50% of cities on half of the categories.

Highlights from the Rating

At the Top:

- NYC ranks 1st overall among the 25 cities for its ability to attract and support HPWE with a topranked *Operating Environment* and an *Enabling Environment* ranked 5th. While NYC ranks first for *Markets and Capital*, it is 2nd in *Culture* and 4th in *Talent*. It tops the list for its performance in *Policy Enabling Market Access* and 2nd for the *Frequency & Value of Funding* to businesses with women entrepreneurs.
- The Bay Area (consisting of the San Francisco and San Jose metro areas) ranks second overall, ranking 2nd for *Operating Environment* and 6th for *Enabling Environment*. It ranks 1st for *Talent* and 2nd for *Capital & Markets*, with a #1 rank for *Access to Markets* and the *Frequency & Value of Funding* to businesses founded and led by women.
- London ranks 3rd overall, performing 2nd for *Access to Markets*, 3rd for the *Operating Environment* and *Capital* (and 1st for *Capital Base* specifically).

Other top performers:

- Stockholm and Singapore round out the top 5 in the overall ranking.
 - Stockholm is 1st for the *Enabling Environment* foundational pillar ranking 1st for *Technology* and 9th for *Culture*.
 - Singapore performs in the top third of the 25 cities ranked for *Talent*, *Culture* and *Technology*.

Highlights from the Rating

Cities to watch:

- Toronto (6th overall) ranks 1st for *Culture*; ranking 3rd for related *Policy* and 4th for *Access to* Mentors/Role Models.
- Washington, DC (7th overall) excels in the *Operational Environment* foundational pillar (4th), ranking 3rd for Talent and 5th for Capital. It tops the list for Market Access Costs, Women's Skills & Experience, and Gender Proportion of funding.
- Svdnev (8th overall) ranks 4th for Enabling Environment, ranking 2nd for both Access to Mentors/Role Models (in Culture) and Connectivity (in Technology).
- Seattle (10th overall) ranks 1st in the Access to Mentors & Role Models (in Culture) and 2nd in Gender proportionate funding (in Capital).
- Munich (11th overall) ranks 3rd for *Enabling Environment* overall, ranking 1st for Policy (in the *Culture* category); it also ranks 2nd for Women's Skills & Experience (in Talent).
- Beijing (13th overall) ranks 6th for *Talent* overall, ranking 3rd for *Access to Qualified Personnel*; it also ranks 2nd for *Technology*.
- Austin (12th overall) ranks 4th overall in *Technology* and #1 in technology-related *Policy*.
- Tokyo (17th overall) ranks 1st in *Market Size*, followed by Shanghai.
- Sao Paulo (19th overall) ranks 3rd for Attitudes & Expectations.
- Delhi (22st overall) ranks 1st for Technology Cost.

Highlights from the Rating

Areas to Improve:

- Relative to the 25 cities evaluated (which already outperform their peers in a number of areas), notable steps could be taken to support and attract HPWE in Jakarta & Istanbul, ranked 24th and 25th, respectively. Jakarta ranks last for all *Talent* categories and 17th or below for all *Culture* categories.
- Access to Capital is a particularly large challenge for women entrepreneurs (WE) in Munich, Istanbul,
 Sao Paulo, Milan and Johannesburg.
- Improving education and training (both for WE and the population at large) could help Jakarta, Delhi and Istanbul to attract and support the *Talent* required for HPWE.
- Providing access to female mentors, role models and WE networks could go a long way in Mexico City, Tokyo and Jakarta toward improving the *Culture* surrounding HPWE.
- Improving Technology (including internet connectivity and policies enabling greater use of technology by women) in Istanbul, Johannesburg, Milan and Jakarta would help support & attract HPWE.
- While strong in other areas, the *Size of Markets* in Stockholm, Johannesburg, and Munich hold them back from being able to support the growth of HPWE as rapidly as some of their global peers.
- Three Asian cities (Seoul, Tokyo and Taipei) could do more to increase *Access to Markets* for women owned businesses.

Part II: How a city's ability to attract and support High potential women entrepreneurs affects 'future readiness'



Human Capital Pillar (Weighting: 40%) Commerce Pillar (Weighting 30%) Infrastructure Pillar (Weighting 30%)

DELL GLOBAL FRE RANKING

- The 50 cities were chosen based on average growth over the past 5 years and size of the economy.
- The Global Index combined the US and International rankings.
- A global score was calculated by using the indicators that were the same or very close on both the US and International ranking; for indicators that were not compatible, a new indicator was found to reconcile the US and International cities.
- See full list at:
 http://www.futurereadyeconomies.dell.com/the-top-50-ranking-future-ready-cities-around-the-globe/

| Rank of the 25 of 50 Global FRE |
|---------------------------------|
| San Jose |
| San Francisco |
| Singapore |
| London |
| New York |
| Beijing |
| Sydney |
| Austin |
| Washington DC |
| Hong Kong |
| Toronto |
| Stockholm |
| Seoul-Incheon |
| Shanghai |
| Seattle |
| Paris |
| Taipei |
| Munich |
| Tokyo |
| Sao Paulo |
| Delhi |
| Milan |
| Jakarta |
| Istanbul |
| Mexico City |



Future Ready Economies attract innovative people that help their economies grow and adapt to the ever changing future.

Women are more likely to reinvest their profits in education, their family and their community, contributing to bolstering the human capital pillar of the Future Ready Economies Rating (Brush, 2013).



Where the only thing certain about the future is uncertainty – innovators are needed to make the adaptive changes that will help an economy continue to thrive.

Growth and Development

High Potential Entrepreneurs

High potential women entrepreneurs grow business revenue on average 20% or more per year, creating jobs and economic growth (NWBC, 2014).

Entrepreneurs (both men and women) are innovators. Innovation is what drives new growth and development.



Future Ready Economies attract innovative people that help their economies grow and adapt to the ever changing future.

Women represent untapped potential - Only 2% of women owned businesses cross over to break the \$1 million revenue mark







What we found: A cities ability to attract and support high potential women entrepreneurs is 86% correlated with its Future Ready Score*

| The Ratings Correlations | | | | |
|----------------------------------|--------------------|--|--|--|
| <u>Category</u> † | <u>Correlation</u> | | | |
| Future Ready Economy (FRE) Score | 0.863 | | | |
| Human Capital Score | 0.754 | | | |
| Labor Force Engagement | 0.619 | | | |
| Learning | 0.718 | | | |
| Cultural and Lifestyle | 0.623 | | | |
| Civic Engagement | 0.550 | | | |
| Commerce Score | 0.353 | | | |
| Public/Private Collaboration | 0.327 | | | |
| Innovation/Investment | 0.659 | | | |
| Infrastructure | 0.384 | | | |
| Transparency | 0.404 | | | |

^{*}Only 6 of the 69 indicators used to score cities on their ability to attract and support HPWE were also used to score cities on their ability to be Future Ready.

WE Cities scores are most highly correlated with the *Human Capital* category of the Future Ready Economies (FRE) ratings, with its all sub-categories correlated by more than 50%. Among these *Learning*, *Labor Force Engagement*, and *Culture* & *Lifestyle* have the highest correlation.

There is a positive correlation between almost all FRE categories and the overall WE Cities score, with the *Commerce* and *Infrastructure* pillars showing more than 30% correlation. Perhaps unsurprisingly, the WE Cities score is correlated 3rd most highly with *Innovation/Investment* in the FRE *Commerce* pillar.

[†] Sub-categories with a correlation above 0.3 reported



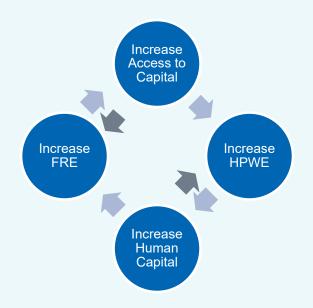
Correlating the rankings on the WE Cities and FRE Indices

- > 7 of the top 10 cities in the WE Cities rating are in the top 10 metro areas of the FRE Rating*: NYC, Bay Area, London, Singapore, Washington DC, Sydney, Toronto
- > 7 of the bottom 10 cities in the WE Cities rating are in the bottom 10 metro areas of the FRE Rating*:

Tokyo, Mexico City, Sao Paulo, Milan, Delhi, Jakarta, Indonesia

Channels through which attracting HPWE can help cities become Future Ready:

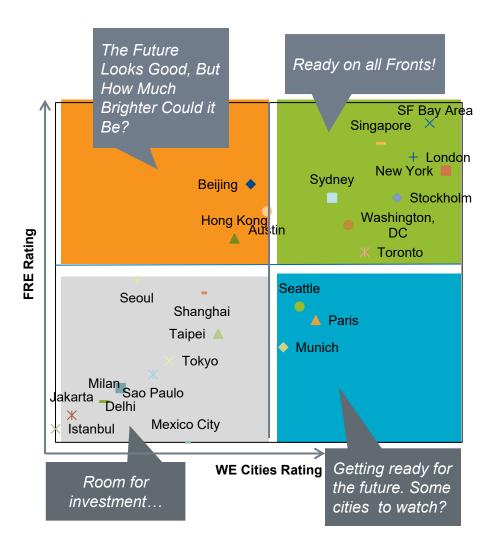
Invest in your people: 9 of the top 10 cites in the WE Cities are in the top 10 for Human Capital subcategory in the FRE (Paris is the exception).



Follow the money: Beijing, Austin and Hong Kong rank in the top 10 for Access to Capital in the WE Cities rating and rank in the top 10 of the FRE (along with London, NYC, the Bay Area and Washington DC).

*of the 24 cities that are scored in both the FRE and WE Cities

How do the ranks of the 25 global city rankings compare between WE Cities and FRE?



- Cities ranking high on both WE Cities and FRE have good momentum for continuing to attract and support innovators. For example, Toronto scored high in *Markets*, *Culture*, and *Technology* for WE, even exceeding its strong performance in the FRE Index as 11th among 50 global cities.
- Cities ranked high on WE Cities but low on FRE may be missing opportunities in other areas that could help them prepare for the future. For example, Munich provides a great Enabling Environment for WE but could do a lot more to improve Human Capital and Commerce overall. Paris has set goals to increase HPWE and is creating a technology hub; it might become more future-ready if it can translate this into economic growth.
- ➤ Cities ranking higher in FRE but in the bottom half of the WE Cities may be missing out on the extra boost HPWE could give their economies. For example, Hong Kong's *Infrastructure* drove a high FRE score, but it was much weaker in WE Cities *Markets* and *Talent* indicators.
- Cities ranking lower in both WE Cities and FRE have some work to do, but can use their scores in both to find areas of focus. For example, Mexico City, though faring poorly across a broad range of FRE categories, might build on its strengths in Technology enabling HPWE.

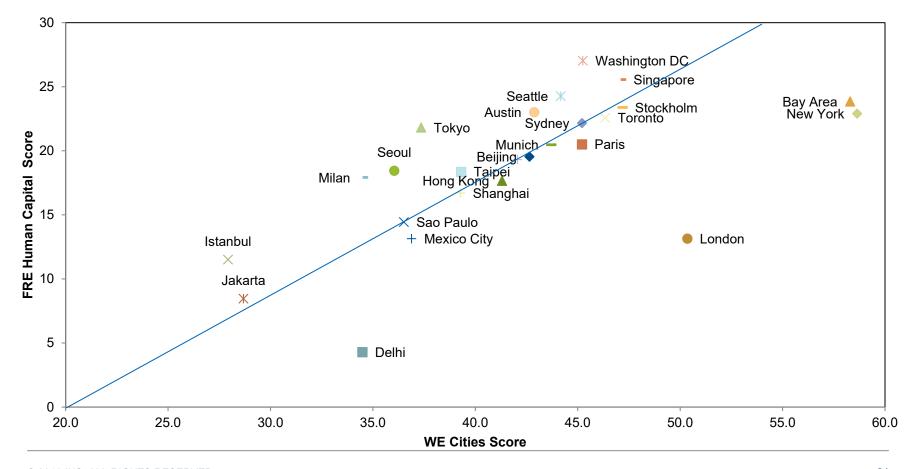
Future Ready trends

- ☐ The next three slides show the trend lines (the quantitative relationship between the two indices, as described by a regression line).
- ☐ The trend line indicates which cities have WE Cities scores (measuring cities' ability to attract and support high potential women entrepreneurs) that are commensurate with their performance on the FRE (based on the three categories of Human Capital, Commerce and Infrastructure).
- ☐ It provides a visualization of the strong positive association between the categories of the FRE and WE Cities.



Future Ready Trends: A closer look at the correlation between WE Cities scores and FRE Human Capital scores.

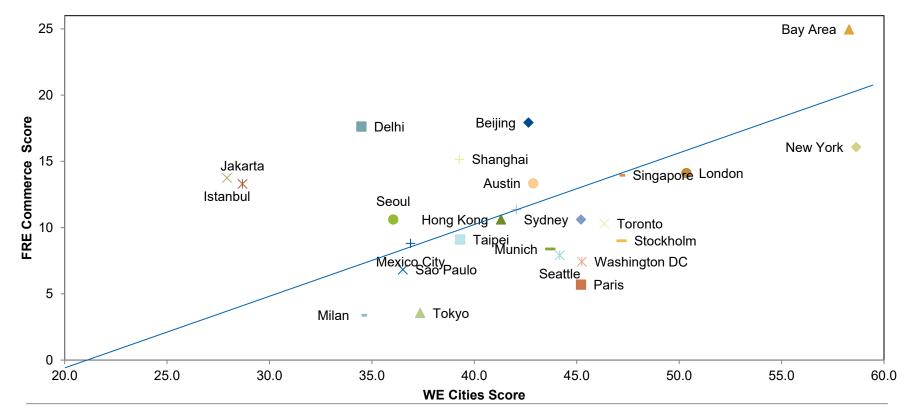
The relationship between the WE Cities score and the FRE human capital score is particularly strong, with the majority of cities falling on or near the trend line.





Future Ready Trends: A closer look at the High Potential Women Entrepreneurs Scores with the Future Ready Commerce Scores.

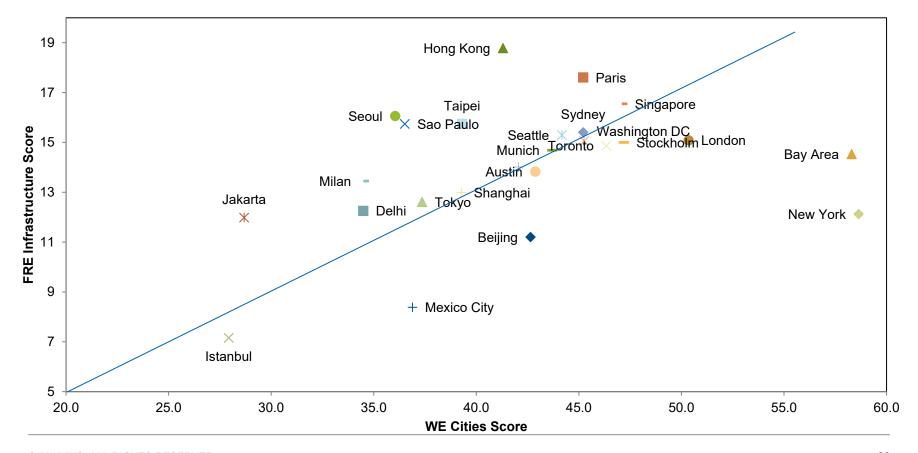
Rapid growth in Asian economies and the recent tech sector boom propelled cities above the trend line to have higher economic performance (FRE *Commerce* scores) than one would have expected given their WE Cities score. However, a strong economic foundation can pave the way for increasing WE Cities scores in the future (provided a city's leverage its growth in an inclusive way).





Future Ready Trends: A closer look at the High Potential Women Entrepreneurs Scores with the Future Ready Technology Scores.

Based on the trend line, it appears Hong Kong, Paris and Seoul have lower WE Cities scores than would be expected from their relatively strong infrastructure performance in the FRE; the converse is true of the Bay Area and New York City.



Appendix

- A. WE Cities Scoring Methodology
- B. How this rating differs from other entrepreneurship measures
- C. How to read the Rating Workbook
- D. Using the Rating
- E. Acknowledgements

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A. Scoring Methodology – Indicator Selection

- Building on Dell's years of research on High Potential Women Entrepreneurs (HPWE), IHS identified five important categories of city characteristics (pillars) that influence them.
- IHS conducted a literature review to identify important sub-categories within those pillars as well as
 potential indicators that could be used for measuring those sub-categories.
- Dell, Harvard TECH Professor David Ricketts, and IHS convened a Research Symposium bringing together women entrepreneurs, funders, thought leaders, policy makers and researchers to discuss what cities need to attract and support HPWE.
- IHS took feedback from DWEN Symposium participants into account when determining which
 indicators to include in the rating. The Symposium surfaced three new indicators that hadn't previously
 been proposed: paternity leave, initiatives to collect gendered data, and safety of transportation
 systems (which relates to the city safety/security overall).
- Culture (including mentoring/networking, internal mindsets/expectations and relevant
 nondiscrimination/ level playing field policies) carried much of the discussion. Capital was identified as
 the biggest constraint in the survey and discussed as critical to business scaling; crowd-funding in
 particular emerged as a growing source of capital for WE. Talent (both in terms of the entrepreneurs'
 own talent, including education & experience) and getting the right team in place (staff skills) also
 came out as highly important. All of these were thus given higher weight in the final index scoring.
- A higher order categorization of city characteristics emerged from the symposium: factors that
 influence the *Operating Environment* and factors that influence the *Enabling Environment*. The five
 pillars were thus re-organized to fit into these two foundational pillars, with related <u>Policy</u> included as a
 component of each.



A. Scoring Methodology – Data Collection

- IHS identified indicators and proxy indicators to measure the important categories (*Markets, Capital, Technology, Talent* and *Culture*) and individual components of each.
- IHS colleagues around the globe supported data collection, as they were able to leverage their familiarity with the city, the local language and available data sources.
- Social media analytics and website scraping were used to get city level data for the Talent, Technology and Culture categories. Key sources include: Twitter, LinkedIn, Crunchbase, genderize.io, and 2020wob.com.
- Data was leveraged (where possible) from organizations that participated in the NYC Symposium and the organizations and websites mentioned there. These include:
 - the headquarters of the member companies of the Open Compute Project (http://opencompute.org/)
 - the headquarters of member companies of WEConnect (companies that have committed to instituting vendor programs for WOB that are certified through this organization)
 - 2020WOB.com (lists global companies and the percent of women on their boards)
 - · Chapters of WPO, WeConnect, Women Who Code, Girls in Tech, PWN, etc.



A. Scoring Methodology – Scoring & Ranking Cities

- IHS weighted indicators based the four criteria described on slide 3:
 1) relevance, 2) data quality, 3) uniqueness, and 4) gender-specific focus.
- The few instances of missing data were handled by either giving the city the average of all the other cities (this neutralized the impact on the city when the data is standardized) or using a proportion found in a related data source to adjust the data point of interest (e.g., using the ratio of female to male literacy rates in New Delhi to come up with an equivalent ratio of tertiary educational attainment for women in New Delhi).
- IHS standardized all data using the method x-min/(max-min) to put all scores on a 0-100 scale so they could be added together.
- IHS aggregated the weighted data to get sub-category, category and overall WE Cities ranking scores for all 25 cities.

B. How this scoring differs from other entrepreneurship ratings

- The WE Cities Score is different in that:
 - It is city level
 - It is a global rating (many city level studies rank US cities only).
 - It specifically focuses on women entrepreneurs versus all entrepreneurs.
 - It specifically focuses on women who have the <u>potential to grow and scale</u> their business (versus all women owned businesses and versus women's ability to start a business).
 - Indicators are chosen to be <u>actionable</u> (things that reflect drivers of a city's ability to attract and support HPWE versus outcomes – looking at the current state of whether a city is in fact attracting HPWE).
 - Many indicators were uniquely constructed (via <u>social media and website scraping</u>) using <u>2016 sources and data</u>.

C. How to read the Scoring Sheet

- There are two Foundational categories: *Operating Environment* and *Enabling Environment*. They are equally weighted at 50% and an overall score for each is provided for each of the 25 cities.
- Within the two Foundational categories are five High Level Pillars (with the weights of each indicated in parentheses):
 - in Operating Environment: Capital (40%), Talent (30%), and Markets (30%) and
 - in Enabling Environment: Culture (50%) and Technology (50%)
- Sub-categories scores within each of the pillars (with the weights of each indicated in parentheses) include:
 - Markets: Size (15%), Cost (20%), Access (35%), Policy (30%)
 - Talent: Women's Skills & Experience (60%), Access to Qualified Personnel (40%)
 - Capital: Funding Frequency & Value (30%), Gender Proportion (35%), Women's Capital Base (35%)
 - Culture: Access to Mentors/Role Models (35%), Societal Attitudes & Expectations (30%), Policy (35%)
 - Technology: Connectivity (35%), Cost (30%), Policy (35%)

D. Using the Rating

- The WE Cities rating is useful for highlighting relative areas of strengths and weaknesses within a city that can help it improve by leveraging existing strengths and improving areas that are less strong.
- Indicators were selected that had an action component (e.g., increasing tertiary education; instituting Vendor Diversity programs, etc.)
- While the WE Cities rating can point to areas that a city could strengthen to increase its
 overall WE Cities score, further analysis is required to identify the context and develop
 appropriate improvement strategies.

E. Acknowledgements

The project team would to thank the following colleagues for their substantial support on this project:

Raj Badiani Braden Muhl

Eleonora Bonalumi Chichi Morales

Carlos Cardenas Martin Seban

Alison Evans Ege Seckin

Diana Heger David Wilson

David Hunt Edwin Wong

Marushia Li Gislen Yating Xu

Hanna Luchnikava Steve Zabak

Roelof Middeljans Yajing Zhao

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