

Dell Women Entrepreneurs (WE Cities) Index Methodology: Measuring a city's ability to attract and support High-Potential Women Entrepreneurs

Introduction: As part of its thought leadership and commitment to Women Entrepreneurs, Dell has set out to benchmark and rate cities on their ability to attract and support High-Potential Women Entrepreneurs (HPWE), defined as women entrepreneurs who are scaling and growing existing businesses with the potential to break through the \$1 million or more mark in annual revenue.

The WE Cities Index began as a pilot in 2016 with 25 global countries ranked. In 2017 the Index was expanded to its current ranking of 50 global cities. The 2019 WE Cities index ranks those 50 cities again and provides an analysis of how cities have improved relative to the 2017 benchmark year.

Background on the construction: In order to gain more insight and perspective on what HPWEs need, Dell partnered with Dr. David S. Ricketts of the Technology and Entrepreneurship Center at Harvard (TECH), Palisades Media Ventures, and IHS Markit to host a research symposium on April 5, 2016 at the Harvard Club in New York City. The symposium was invitation-only and convened key stakeholders and experts including: successful women entrepreneurs, policymakers with a focus on supporting women owned businesses, venture capitalists that invest in companies with female founders, organizations that train entrepreneurs and media professionals and researchers who study entrepreneurship, women's issues, and global cities' economic performance.

The symposium provided new insight into the ways that female entrepreneurs' needs differ from those of their male counterparts and the importance of specific aspects of the operating and enabling environment in which they live and work, e.g. access to crowdfunding, paternity leave policies, women's own expectations about their ability to succeed in business, and the collection of gendered data.

Building on themes highlighted in previous literature on this topic and the April NYC Dell Research Symposium, IHS Markit was commissioned by Dell to develop an index (WE Cities) to compare the following 25 global metropolitan areas on their ability to attract and support HPWE:

1. Austin
2. Beijing
3. Delhi
4. Hong Kong
5. Istanbul
6. Jakarta
7. Johannesburg
8. London
9. Mexico City
10. Milan
11. Munich
12. New York City
13. Paris
14. San Francisco Bay Area
15. Sao Paulo
16. Seattle
17. Seoul
18. Shanghai
19. Singapore
20. Stockholm
21. Sydney
22. Taipei
23. Tokyo
24. Toronto
25. Washington DC

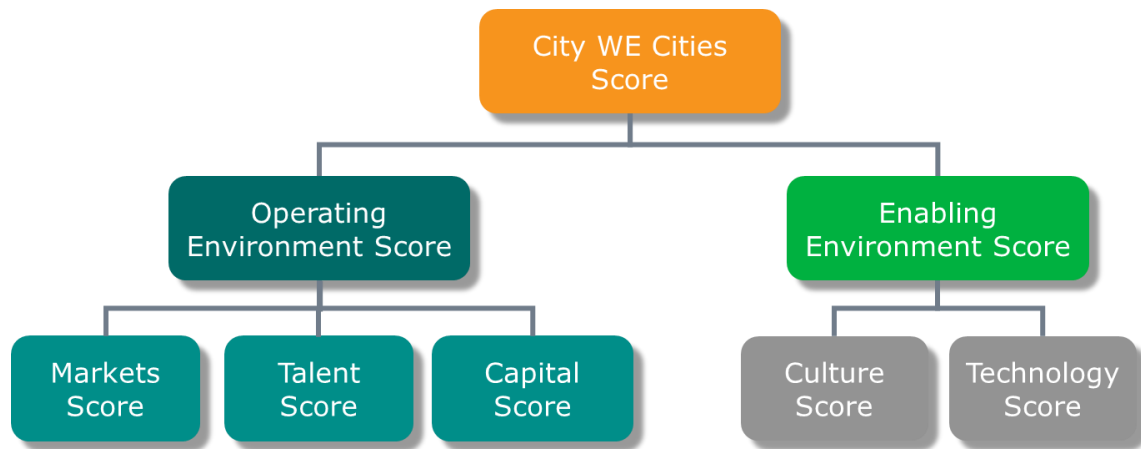
In 2017 an additional 25 cities were added:

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|--------------------------|------------------|
| 1. Pittsburgh | 14. Copenhagen |
| 2. Boston | 15. Dublin |
| 3. Chicago | 16. Barcelona |
| 4. Los Angeles | 17. Warsaw |
| 5. Miami/ Ft. Lauderdale | 18. Melbourne |
| 6. Minneapolis | 19. Nairobi |
| 7. Portland (OR) | 20. Tel Aviv |
| 8. Houston | 21. Dubai |
| 9. Atlanta | 22. Kuala Lumpur |
| 10. Vancouver | 23. Bangalore |
| 11. Amsterdam | 24. Guadalajara |
| 12. Belfast | 25. Lima |
| 13. Berlin | |

Previous research by Dell in conjunction with their Dell Women’s Entrepreneur Network (DWEN) found four critical pillars for HPWE: Markets, Capital, Talent and Technology. Subsequent to the Symposium and IHS Markit’s own research on the sub-components of these pillars (and corresponding metrics or indicators that could be used to measure each), IHS Markit proposed the inclusion of a fifth pillar: Culture. This pillar captures women’s role models, networks, attitudes and expectations as well as the policies that help shape a culture where women are seen as equal and have a level playing field.

Construction of the Rating

The rating was constructed to measure the Operational and Enabling Environment each city provides for women entrepreneurs. Between these two foundational categories, more than 70 indicators are divided among 5 main pillars as follows:



The data collected to support each of these indicators was undertaken by IHS Markit consultants, analysts, and country experts drawing from more than 10 global IHS Markit offices and their own familiarity with that city or country’s local language, culture and databanks. Further, to offset the challenge of finding globally comparable, government sanctioned, city-level, gender-specific data, IHS Markit developed proxy indicators where necessary, and used innovative social media analytics and website scraping techniques to draw information from, Factiva’s database of news articles, Crunchbase.com, and other websites that play a role in supporting the growth of women owned businesses.

In the 2017 Index, a few indicators were added and some replaced indicators in the 2016 index due to: (1) a better quality data source was found that was more comparable for all 50 cities or (2) a new data source was found that provided a better proxy measure of a sub-category (3) a new indicator was identified via our interview process

The overall enabling and operational environment, as well as the pillars, sub-categories, and individual indicators were weighted using four (4) criteria:

1. The relevance of the indicator for measuring what it is intended to measure (e.g. its ability to reflect city versus country level characteristics).
2. The quality of the underlying data for that indicator (e.g. comparability across cities, data collection methodology, etc.)
3. Its uniqueness in the index (e.g. whether it is measuring something that is also captured by other indicators included in the rating).
4. The gender-specific component (e.g. whether it is measuring something important to women entrepreneurs rather than entrepreneurs in general)

Differences between the 2017 and 2019 WE Cities Index

In 2019, due to changes in some sources some indicators needed to be adjusted or changed depending on the availability and comparability of data. However, all weights were kept the same and the index continues to have 71 indicators. The indicators that changed are noted below.

Additionally, due to some changes in methodology, where we refined an indicator or changed the source 4 indicators are not directly comparable with the corresponding 2017 indicator. These are also noted in the descriptions below. However, given that each indicator is meant to proxy (give information about) the overall sub-pillar, we believe these rankings are still comparable between the two years.

Indicators and Sources

<u>Pillar</u>	<u>Indicator</u>	<u>Description</u>	<u>Source</u>
MARKETS	City population	Population gives a general size of the market.	Brookings Institution; Eurostat; IHS Markit; UN
MARKETS	GMP	GMP gives a general sense of the market and opportunity.	Brookings Institution; IHS Markit
MARKETS	Forecasted economic growth rate of city, region, or country over the next 5 years	Forecasted economic growth gives a general sense of the market and opportunity.	Brookings Institution; IHS Markit
MARKETS	Corporate income tax rate	This indicator is inverted because lower income tax rates are more beneficial for attracting and supporting entrepreneurship.	Deloitte
MARKETS	Cost of living	This indicator is inverted because a lower cost of living allows women to put more capital towards scaling their businesses rather than overhead costs.	Expatistan

MARKETS	Percentage of company board members who are women	The proportion of women on boards signals companies' willingness to support diversity.	2020 Women on Boards; Forbes Global 2000; MSCI Women on Boards: Progress Report 2018
MARKETS	Number of accelerators	Accelerators help entrepreneurs to scale their business through networking, training, and access to capital.	F6S; GAN; Google search; Seed-DB
MARKETS	Presence of a city portal/website for business creation	Businesses often struggle to obtain the correct permits, the correct registration, and local resources. Many cities provide portals as one-stop shops for centralized information.	City government websites
MARKETS	Corporate vendor programs for women-owned business procurement	Women-owned businesses often face bias and discrimination when competing for vendor contracts. Cities with large companies that commit to diverse supply chains help women entrepreneurs reach scale.	WEConnect International
MARKETS	Government goals for women-owned business procurement	Some city governments have supplier diversity goals to ensure women-owned businesses can secure vendor contracts.	City government websites
MARKETS	Women-owned startups as a percentage of startups in city	When a city has a high proportion of women-owned startups, women entrepreneurs report that the city better fosters their businesses. (We refined our collection of this source and therefore this indicator is not directly comparable to 2017).	Crunchbase
MARKETS	Ease of starting a business	Lower barriers to starting a business is a first step to scaling. (The source changed to a different scale and therefore this indicator is not directly comparable to 2017).	PWC
TALENT	Women's labor force participation rate	Women's ability to participate in the labor force is often a first step to gaining the experience required to operate a business.	Eurostat; Government statistical agencies; IHS Markit; OECD; World Bank

TALENT	Business management or finance training programs for businesswomen	Scaling a business requires skills in finance and business management.	BPW International; Business Chicks; City government websites; Chamber of commerce websites; Ellevest Network; EWMD; eWomen Network; Future Females; Global Woman Club; IPWS; NAWBO; PWN Global; US SBA Women's Business Centers; YWiB
TALENT	Ratio of women to men with executive experience	This ratio shows whether women are proportionately gaining executive experience that could be transferred to scaling a business.	LinkedIn
TALENT	Percentage of the population with a tertiary education	An educated workforce provides the talent a women-owned business needs to scale.	Eurostat; Government statistical agencies; IHS Markit; OECD; World Bank
TALENT	Percentage of women with a tertiary education	Educated women are more likely to have the skills and network to start and scale a business.	Eurostat; Government statistical agencies; IHS Markit; OECD; World Bank
TALENT	Percentage of labor force employed in professional services (finance, marketing, accounting, law)	The professional services field provides the talent necessary to scale a business.	LinkedIn
TALENT	Percentage of the labor force employed in IT	In today's internet- and enterprise- software-driven environment, businesses need a sophisticated IT staff to scale.	LinkedIn
TALENT	Number of accredited business schools	Business students produce new businesses, and they gain the skills and network necessary to scale those businesses.	Find MBA; IHS Markit
TALENT	Number of globally top-ranked business schools	Top-ranked business schools tend to attract people with the talent and vision to scale a business.	Financial Times Global MBA Rankings
TALENT	Women as a percentage of students at top universities	Women who attend top universities often have the skills, network, and talent to be successful entrepreneurs. This indicator also serves as a proxy for a city's ability to attract high-potential women.	Times Higher Education World University Rankings
TALENT	Ratio of women to men with MBAs	MBA programs hatch successful business, so this indicator serves as a proxy for the potential of a city's women entrepreneurs.	LinkedIn
TALENT	Women as a percentage of faculty at top business schools	When women business students lack faculty role models, they are less likely to graduate.	Business school websites; Financial Times
TALENT	Number of globally top-ranked universities	Top-ranked universities attract talent to a city.	US News & World Report Best Global Universities
TALENT	Global rank of a city's top university	Top-ranked universities attract talent to a city. This indicator is inverted so that cities with higher-ranked universities receive higher scores.	US News & World Report Best Global Universities
CAPITAL	Value of VC funds awarded to businesses with at least 25% women executives	VC funds are a powerful source of capital for scaling, but women-owned businesses have struggled to obtain them in the past.	Crunchbase
CAPITAL	Number of women founders or executives in at least the 2nd funding round	Women who plan to scale their business seek VC or private equity funds. Women who successfully scale their businesses obtain multiple rounds of funding.	Crunchbase

CAPITAL	Number of top 34 most active corporate VC firms	The presence of active corporate VC firms indicates a strong access point for capital in a city. This indicator measures how many of the world's top 34 most active corporate VC firms are located in each city.	CB Insights
CAPITAL	Number of high-net-worth individuals	High-net-worth-individuals are potential investors for all businesses, including women-owned businesses.	Frank Knight Wealth Report; IHS Markit; Phoenix Marketing International
CAPITAL	Percentage of investment companies with at least 1 female executive	Investment firms with women executives or partners tend to invest more in women entrepreneurs.	Crunchbase
CAPITAL	Percentage of businesses in at least the 2nd funding round with a woman founder or executive	This indicator measures whether women receive proportional access to funding. Higher funding rounds provide the investment that businesses need to scale.	Crunchbase
CAPITAL	Number of weeks of paid maternity leave (full pay or partial pay)	Without paid maternity leave, mothers lose income that provides a base for wealth creation.	Government websites
CAPITAL	Percentage of VC funds awarded to businesses with at least 25% women executives	This indicator measures whether women receive proportional access to funding.	Crunchbase
CAPITAL	Amount of money raised on crowdfunding websites	Crowdfunding can level the playing field for women entrepreneurs in need of capital. This indicator also serves as a proxy for broader access to capital.	Kickstarter; Local crowdfunding websites
CAPITAL	Number of projects on crowdfunding websites	Crowdfunding can level the playing field for women entrepreneurs in need of capital. This indicator also serves as a proxy for broader access to capital.	Kickstarter; Local crowdfunding websites
CAPITAL	Number of VC firms with at least 25% women partners	VCs with women partners tend to invest more in women entrepreneurs.	Crunchbase
CULTURE	Number of globally-recognized, successful women business leaders	World-renowned, successful businesswomen can serve as role models for women entrepreneurs looking to scale their businesses.	Forbes Global 2000; Forbes: The World's 100 Most Powerful Women; Fortune 500; IHS Markit
CULTURE	Women mayors in the most recent three terms	Women in political leadership can serve as role models and influence gender policy.	Google search; IHS Markit
CULTURE	Number of national-level advocacy or supplier-development groups for women in business	These organizations advocate for women entrepreneurs, help them secure government vendor contracts, and can improve the public perception of businesswomen. National policies and culture often permeate cities.	BPW International; IHS Markit; WBENC; WBII; WECConnect International; WEP
CULTURE	Number of city-level organizations specifically for women in business	These organizations provide networking, education, and advocacy, which helps women-owned businesses scale.	Eventbrite; Local organization websites; Meetup
CULTURE	Women as a percentage of major business association board members	Influential women in the business community can serve as role models, help businesswomen network, and foster a diverse business environment.	Business association websites; Google search
CULTURE	Number of women leaders of major city business associations	Influential women in the business community can serve as role models, help businesswomen network, and foster a diverse business environment.	Business association websites; Google search
CULTURE	Percentage of major city business associations headed by women leaders	When women are proportionally represented in business community leadership, other businesswomen benefit	Business association websites; Google search

		from more role models and a more diverse business environment.	
CULTURE	Frequency of events for women in business	These events help businesswomen network and gain critical skills.	Eventbrite; Google search; Local business organization websites; Meetup
CULTURE	Ratio of those who agree to those who disagree with the statement men have done enough to help women's equality	This is a measure of the overall attitude towards gender equality and the role that everyone can play in achieving it. (This source changed and therefore is not directly comparable with 2017).	IHS Markit; Ipsos
CULTURE	News articles about successful women entrepreneurs as a percentage of all news articles	Media focus on successful women entrepreneurs can help other women entrepreneurs identify role models. (Our methodology for collecting this data changed and therefore this source is not directly comparable with 2017).	Factiva
CULTURE	Crime level	Crime is a key concern for any business, but women tend to evaluate their security more closely. This indicator is inverted so that cities with less crime receive higher scores.	Numbeo
CULTURE	Safety scale	Safety is a key concern for any business, but women tend to evaluate their safety more closely.	Numbeo
CULTURE	Fear of attack	Safety is a key concern for any business, but women tend to evaluate their safety more closely. This indicator is inverted so that cities with a lower fear of attack level receive higher scores.	Numbeo
CULTURE	Collection of city-level data on income or employment by gender	If a city collects this gender-specific economic data, it likely has a culture that values women's economic participation.	City government websites; Government statistical agencies; IHS Markit
CULTURE	Presence of city-and/or national-level policy advocacy organization for women's equality issues	Organizations committed to women's equality can influence culture and promote women's rights, which is often a prerequisite for women to succeed in business.	Google search; IHS Markit; Organization websites
CULTURE	Policy for "equal remuneration for work of equal value"	Cities with fair pay policies are more likely to value women's economic participation. These policies also help women build wealth.	Google search; Government websites; IHS Markit
CULTURE	Policy for "non-discrimination based on gender in hiring"	Cities with employment non-discrimination policies are more likely to value women's economic participation. These policies also help women build wealth, skills, and professional networks.	Google search; Government websites; IHS Markit
CULTURE	Presence of a paid maternity leave policy	Cities with paid maternity leave are more likely to value women's economic participation. These policies also help women build wealth.	Google search; Government websites; IHS Markit
CULTURE	Presence of a paid paternity leave policy	When fathers can take paternity leave, mothers have more opportunity to re-enter the workforce. Cities with paid paternity leave are more likely to value women's economic participation.	Google search; Government websites; IHS Markit
CULTURE	Population with entrepreneurial experience	A large community of entrepreneurs can provide networking and advice to other entrepreneurs.	LinkedIn
CULTURE	Women as a percentage of the legislature	Women in political leadership can serve as role models and influence gender policy.	Government websites; Inter-Parliamentary Union
TECHNOLOGY	Percentage of women who use the internet	Access to the internet is often necessary to fully engage in the global economy.	Consumer Barometer; ITU

TECHNOLOGY	Percentage of women who use smart phones	Smart phones are an important communication source, information source, and tool to engage in commerce.	APEC; Consumer Barometer; USAID
TECHNOLOGY	Ratio of women to men who used an account to make a transaction through a mobile phone	Whether women use technology to make financial transactions signals women's willingness to use technology for business purposes.	World Bank Global Findex Database 2017
TECHNOLOGY	Ratio of women to men who used LinkedIn	This ratio measures whether women equally engage in professional social media.	LinkedIn
TECHNOLOGY	Average monthly internet cost (8MB)	High technology costs can hinder a growing business. This indicator is inverted so that cities with lower internet costs receive higher scores.	Expatistan
TECHNOLOGY	Average cost of 1 minute of prepaid mobile phone service	High technology costs can hinder a growing business. This indicator is inverted so that cities with lower mobile phone service costs receive higher scores.	Expatistan
TECHNOLOGY	Presence of open data initiatives	Entrepreneurs can use open data find solutions to common business constraints in their cities. Open data initiatives also signal transparency on the part of government.	City government websites; Google search
TECHNOLOGY	Access to open and flexible technology	Businesses rely on open and flexible technology to scale more quickly at a lower cost.	Open Compute Project
TECHNOLOGY	Technology training organizations for women	Women entrepreneurs often need technology skills. Women-specific classes can be more inviting and less intimidating.	Anita Borg Institute; Eventbrite; Chick Tech; Geekettes; Geek Girls Carrots; Girl Develop It; Girls in Tech; Google search; Ladies That UX; Local organization websites; Meetup; PyLadies; Rails Girls; SoGal; Women Who Code
TECHNOLOGY	Collection of data on technology use by gender	Cities that collect data on women's technology use can better ensure equal access to technology.	City government websites; Google search
TECHNOLOGY	Number of Smart City projects	Smart City projects optimize city functions, which improves efficiency for businesses and signals potential for innovation.	IHS Markit Smart Cities IoT Intelligence Service
TECHNOLOGY	Ratio of women to men who use Facebook	Social media is a platform for individuals and businesses to share ideas and information.	Facebook
TECHNOLOGY	Per capita number of open development users	Open development platforms allow developers and software applications users to meet. These platforms help entrepreneurs scale their businesses more quickly and at a lower cost.	Github

About IHS Markit

IHS Markit (NYSE: INFO) is the leading source of information, insight and analytics in critical areas that shape today's business landscape. Businesses and governments in more than 165 countries around the globe rely on the comprehensive content, expert independent analysis and flexible delivery methods of IHS Markit to make high-impact decisions and develop strategies with speed and confidence. IHS Markit has been in business since 1959 and became a publicly traded company on the New York Stock Exchange in 2005. Headquartered in Englewood, Colorado, USA, IHS Markit is committed to sustainable, profitable growth and employs approximately 8,000 people in 31 countries around the world.

Global Insight, now known as IHS Markit Economics, was formed in May 2001 through the merger of DRI, founded as Data Resources, Inc. in 1968 and WEFA, founded in 1963 as Wharton Econometric Forecasting Associates – two companies that were created to provide quantitative economic research to business and government agencies. DRI was co-founded in by Donald Marron and Otto Eckstein.

Marron is best known as the former CEO of PaineWebber and founder of Lightyear Capital and Eckstein was a Harvard University economics professor, economic consultant to Lyndon Baines Johnson and member of the Council of Economic Advisors. WEFA was founded by Nobel Prize winner Dr. Lawrence R. Klein and was a spinoff of the Wharton School of the University of Pennsylvania, where Klein taught. Global Insight was acquired by IHS Markit, Inc. in October 2008.