

DWEN

Dell
Women's
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Network

Dell Technologies & DWEN WE Cities Research 2018

A ranking of top cities in the world for women
entrepreneurs to do more, scale faster and thrive

Capital + Technology Deep Dive Reports



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Capital Deep Dive Report



Outline of Capital Deep Dive

- Introduction

- Motivation and approach for the capital deep dive study
- State of funding for women entrepreneurs

- Dell WE Cities Capital Results:

- Analysis of the overall capital scores
 - › Distribution of Capital Scores overall
 - › Distributions of Capital Sub pillars
- City Case Studies
 - › Identify unique cities in capital and conduct qualitative/quantitative research to identify forces that drive funding in these cities
- Industry Analysis
- Correlations

- Summary

- Summary of the capital deep dive study
- Future of Funding for Women Entrepreneurs

Introduction



Motivation

- Capital is critical for scaling; in our research we heard and learned that this is often the limiting factor and women face unique challenges when it comes to raising capital.
- Whereas other research has helped document the barriers for women, this research will contribute to a discussion on solutions. Specifically, what is working (or effective) for women entrepreneurs when it comes to accessing capital.
- The research also uncovers:
 1. How women entrepreneurs are accessing capital
 2. Do women in different regions access different sources of capital?
 3. What industries do women entrepreneurs gravitate towards and how does this affect capital access?
 4. How does capital access differ across leading cities?

State of Funding for Women Entrepreneurs



- 2017 was a great year for progress in gender equality. Movements against sexism, sexual harassment, and wage inequality were put in motion in a significant way.
- However, there was little to no improvement in the state of women entrepreneurship. The number of companies with at least one female founder has remained stagnant for past 5 years at 17% ([TechCrunch](#)). Moreover, there was not much improvement to the amount of funding these firms receive.
- [TechCrunch](#) reported that “for the first two quarters in 2017, startups with a female founder raised \$332 million in seed investment, or around 15 percent of all seed funding dollars. Approximately \$6.5 billion has been invested in female-founded companies, representing more than 11 percent of all dollars invested in the first two quarters of 2017.”



Continued...

- The stagnation in funding is attributed primarily to the lack of progression in women's roles as investors. However, there have been minute improvements in this area in recent years.
- The [CrunchBase Women in Venture Report](#) reports that the percentage of women partners at the top 100 VC firms increased 17%. Furthermore, there was a 25% increase in women partners at accelerators and women also founded 16 micro-venture funds in the last three years.
- The rate of inclusivity of women partners is becoming more prevalent at new firms; The study finds that the frequency of women partners is nearly three times in new firms compared to the top 100 firms.
- The increase of female partners in VCs, although small, is a positive sign for both women entrepreneurs seeking funding and the emergence of women's roles in investment positions.

Approach

- We analyzed the 2017 WE Cities data to identify which cities are leading in capital and what indicators within those categories are setting them apart.
- After identifying benchmark metrics and leading cities, we will do qualitative research into those cities to better understand what specific policies and practices are in place that are enabling greater access for high potential women entrepreneurs.
- The research will also uncover, what high potential women entrepreneurs are doing well in terms of accessing capital.
- For example: 1) How are women entrepreneurs accessing capital? 2) Do women in different regions access capital differently? 3) Do women in different industries have varying access to capital? 4) How does capital access differ across leading cities?
- Members of the Dell Women's Entrepreneur Network (#DWEN) shared their real world stories of accessing capital for this study.

Dell WE Cities Capital Results



DWEN WE Cities - 2017

Rankings of the Capital Pillar

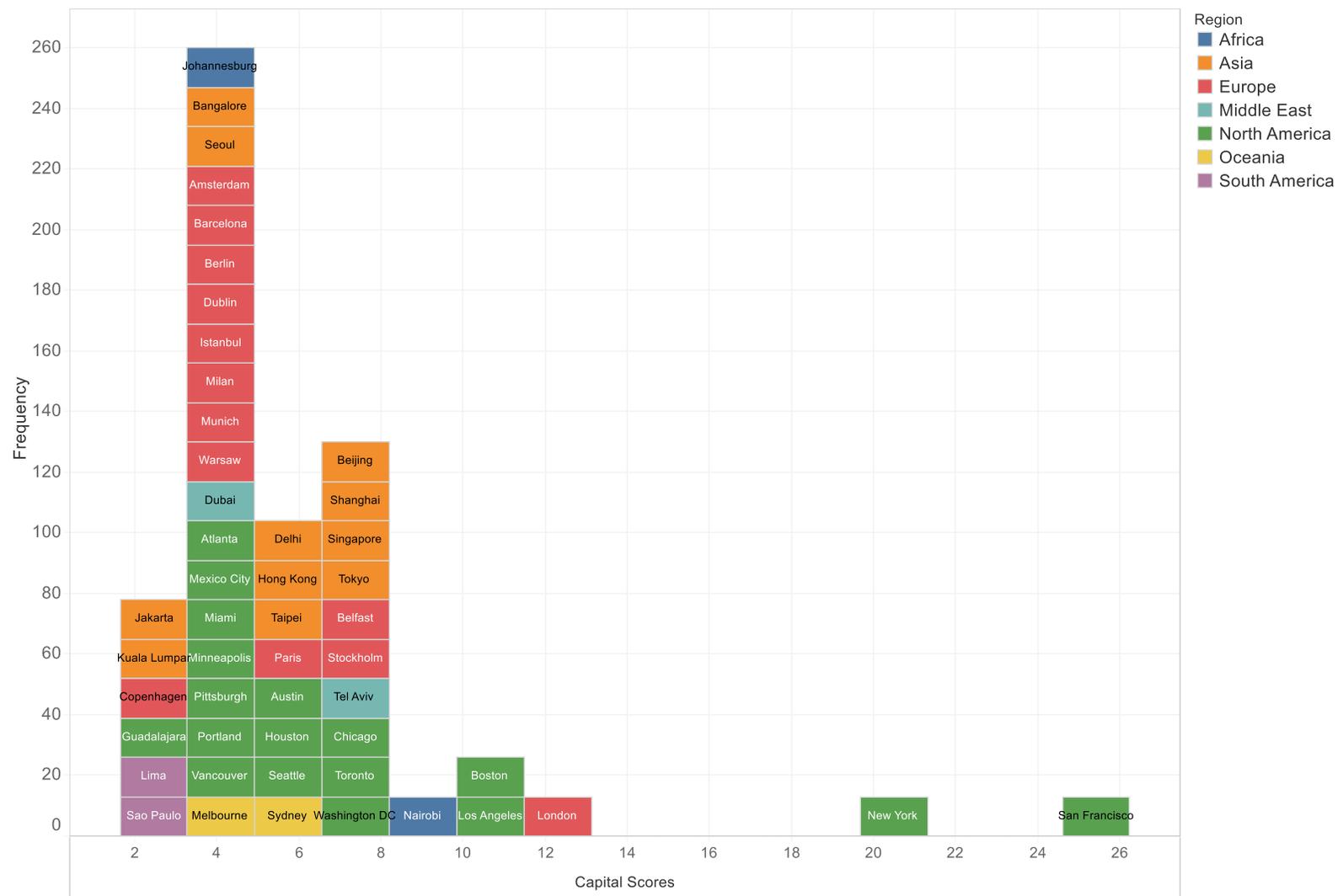
- All in all, the San Francisco Bay Area is the winner of the capital pillar
- Out of the top 10 cities, 5 are North American, 2 European, 2 Asian, and 1 African
- Tel Aviv – in the Middle East region, was just outside the top 10 at number 11
- The Latin American region lags the most in the area of capital



San Francisco	1	Vancouver	26
New York	2	Mexico City	27
London	3	Istanbul	28
Boston	4	Dublin	29
Los Angeles	5	Melbourne	30
Nairobi	6	Johannesburg	31
Singapore	7	Atlanta	32
Chicago	8	Seoul	33
Stockholm	9	Dubai	34
Beijing	10	Portland	35
Tel Aviv	11	Amsterdam	36
Belfast	12	Warsaw	37
Toronto	13	Bangalore	38
Shanghai	14	Milan	39
Washington DC	15	Pittsburgh	40
Tokyo	16	Berlin	41
Paris	17	Munich	42
Seattle	18	Miami	43
Houston	19	Barcelona	44
Taipei	20	Sao Paulo	45
Hong Kong	21	Kuala Lumpur	46
Delhi	22	Jakarta	47
Sydney	23	Copenhagen	48
Austin	24	Guadalajara	49
Minneapolis	25	Lima	50

Capital Scores Distribution

- Obtaining capital to start or expand a business is one of the biggest obstacles for women entrepreneurs. It comes as no surprise that capital has a highly skewed distribution and the lowest average indicator score among the pillars measured.
- The heavy skew in the distribution demonstrates that there is still a long way to go in the area of capital for women entrepreneurs.
- The distribution of capital shines a light on the overperformers as well as the underperformers, identifying cities that stand out for better or worse.
- The San Francisco Bay Area significantly outperforms the other cities, Nairobi presents a unique case for being the only African city to make it in the top 10, and Sao Paulo, among the majority of Latin American cities, is in the bottom 5.



Capital Sub pillar Scores Distributions

- All sub-pillars are skewed to the low end.
- Encouragingly, the gender proportion in funding is the least skewed of the capital sub pillars. Demonstrating that progress is being made in the area of women's access to capital relative to their male counterparts.
- Low capital scores are not simply due to biases, they are a complex function of cultural, economic, talent and technology.
- Working on some of these factors, can create a virtuous cycle where strengthening the other pillars can attract capital and more capital can strengthen the other pillars for women entrepreneurs.



Benchmark City: San Francisco Bay Area



- The San Francisco Bay Area is the leader of the capital pillar. It ranks in the top 10 in all the capital sub pillars and benchmarks 6 out of the 14 indicators.
- It comes as no surprise that the Bay Area ranks 1st in value and frequency of funding. There is more venture capital investment on an aggregate and per capita basis than any other region in the world.
- The area's strengths in funding come down to sheer numbers. The area is home to 16 of the 62 most active, globally ranked VC firms, notably Intel Capital and Google Ventures. Furthermore, roughly 19 billion dollars of VC funds were given to businesses with at least 25% women executives, and there are 1450+ female founders or executives in 2nd round of funding or higher.
- The abundance of funding in the Bay Area does not necessarily translate into equitable funding for women. The area shows weakness in gender proportion of funding. The percent of VC funds going to women entrepreneurs is approximately 19% and the percent of businesses with a female founder or partner in the second round of funding or higher is 16%. Moreover, there is room for improvements of women's presence in investment positions, as the percentage of total investment companies with at least one female executive is 35%.

Practices/Policies for success: Networking is essential for obtaining capital. In analyzing the Dell WE cities data we found that cities with a large entrepreneurial network tend to score higher on capital. An advantage of living in the Bay Area is that the area is geographically small and allows for a higher interconnectedness of individuals. Our interview with Rose Broome, founder of HandUp, highlighted the areas open and optimistic culture. Furthermore, she emphasized that there is a culture of founders helping founders, which was significant in launching her business.

The Bay Area investors, compared to investors with financial services backgrounds, tend to have more experiences in launching startups themselves. Furthermore, they are more apt to take risks than other investors. This attitude leads to more investment in shorter periods of time. According to [RocketSpace](#), raising funds in the Bay Area “typically takes 2-3 month, for both seed rounds and Series A/B.

Practices/Policies need for improvement: The significant “bro culture” mentality in Silicon Valley can explain the gender gap in funding. Our interview with Amy Norman, founder of Little Passports, described the entrepreneurial environment in the Bay Area as “male entrenched”. There are more male VC founders and only a handful of female CEOs. The lack of women role models and women in investment positions lead to unconscious bias which affect funding opportunities for women. Recent news on sexual harassment allegations which led to the firing of Uber's former CEO, Travis Kalanick, and the forced resignation of venture capitalist Justin Caldbeck, are further instances that the area has ways to go in improving the entrepreneurial atmosphere for women.

There still a significant wage gap in the Bay Area. According to the census, “women in San Francisco earn 84 cents for every dollar that their male counterparts make” ([Fortune](#)). However, the city is making strides to combat this issue. In summer of 2017, Mayor Ed Lee announced that employers won't be allowed to ask applicants about their previous salaries.



Benchmark City: Nairobi



- Nairobi is an emerging hub for technology start ups and is rightfully recognized as Africa’s “Silicon Valley”. The city ranks 6th in Capital overall, 40th in Value and Frequency of Funding, 48th in Women’s Capital Base, and 1st in Gender Proportion of Funding.
- Nairobi leads the gender proportion of funding sub pillar. Roughly 67% of VC funds were given to businesses with at least 25% female executives. Moreover, there is a higher presence of women in investment roles relative to the other cities; 42% of investment companies have at least 1 female executive. The city ranks 1st in the percent of city businesses in 2nd or higher round of funding, coming in at 35%.
- However, strengths in equitable funding between men and women does not necessarily speak on the availability of funding for entrepreneurs. Nairobi scores on the lower end for both women’s capital base and value and frequency of funding. The city is however making strides to make Nairobi more attractive location for investors. Initiatives such as the Konza Technopolis is Kenya’s attempt at building a smart city. Konza is located approximately 60 kilometers outside of Nairobi, and it’s purposed to “be a world-class technology hub, home to leading companies in education, life science, telecom, and BPO/ITES.”

Practices/Policies for success: The success of women entrepreneurs in the Information Communication Technology (ICT) sector, although slow, has been more prevalent in Nairobi. University of Nairobi, largest university in Kenya, has been **actively partnering with technology hubs and incubators** to promote entrepreneurial development in the ICT sector; often, with the special focus of encouraging women into ICT. These initiatives are supported by the high rate of return among the Kenyan diaspora, who have professional and academic experience in STEM fields from the US, UK, and Europe. These entrepreneurs are typically responsible for finding new companies because they have experience in finding and persuading funders to finance new projects in Kenya. This is especially important as private funders are typically risk averse when providing start-up capital in sub-Saharan Africa.

Regionally, Kenya has a comparative advantage in the quality and reach of the **ICT infrastructure** throughout the country; especially via broadband and mobile networks. In 2017, internet penetration overall was around 85% nationwide. This is largely facilitated by mobile internet utilizing telecommunications infrastructure that has been rapidly developed by the market dominant Safaricom, in which the government retains a major ownership stake. For this reason, Kenya has experienced the fastest growth in mobile payment and transfer systems in sub-Saharan Africa, as well as the adoption and use of social media platforms. Since a new political party gained power in 2013, the government has exploited these comparative advantages by partnering with various technology hubs and incubators in Nairobi. This trend is expected to continue with development of the Konza Technopolis.

Practices/Policies need for improvement: The **availability of funds** for women entrepreneurs is lacking in the city. Although women have had relatively more success with microfinances, they are not sufficient to sustain their business. According to an IFC report, “women entrepreneurs who have outgrown microfinance loan limits have a hard time obtaining loans as small KSh1 million from commercial banks.” Furthermore, banks tend to discriminate against women entrepreneurs. The same report, noted that “bank officials tend to ignore [women] and prefer speaking to their husbands or male business partner.”



Benchmark City: Sao Paulo



- Sao Paulo ranks among the bottom 5 cities for capital. The city ranks 50th in Gender Proportion of Funding, 37th in Value and Frequency of Funding, and 15th in Women's Capital Base.
- Sao Paulo ranks the lowest in Gender Proportion of funding. This comes as no surprise as a survey by Sebrae and Dieese found that only 10% of all women founded organizations in Brazil receive outside funding. Roughly 3.5% of VC funds were given to businesses with at least 25% female executives. Moreover, only 5% of women founded businesses were in the second or higher funding round. The presence of women in investment positions also lacks in the city, only 13% of investment companies were found to have at least one female partner.
- The city also lacks in sheer numbers when it comes to funding opportunities for women entrepreneurs. Sao Paulo scores on the lower half in value and frequency of funding. The low score stems from the total amount of funding going to businesses with at least 25% female executives and the lack of major VC firms in the city. However, the city does particularly well in Women's Capital Base. Crowdfunding is just starting to become an option to some businesses and Sao Paulo ranks 29th in the index for the number of projects on crowdfunding sites. Just as an example, Catarse, the main crowdfunding site in Brazil, has moved around only BRL 32 million (about US\$ 10 million) in more than its five years in existence. And, no significant data exists to show crowdfunding options for women enterprises in Sao Paulo alone.

Practices/Policies for success: Sao Paulo offers generous **paid maternity leave** to women. The city ranks 10th in terms of maternity leave policies. The Brazilian law guarantees 120 days of paid maternity leave for mothers, and this can be extended for another two months following an agreement between companies and the unions. This level of support both during and after the baby is born provides women with stability at work.

The Sao Paulo local town hall is striving to encourage women to venture into new businesses. The local town's **partnership** with Google and Rede Mulher Empreendedora is an instance of a project with the intent to support women interested in investing in the tech sector –an area mainly dominated by men. This in turn helps Sao Paulo mobilize its women's capital base, where it ranks in the top half.

Practices/Policies need for improvement: Due to **the lack of outside funding**, women entrepreneurs tend to use their own savings and or get help from family members to start their business. However, direct bank loans, often secured against property, remain by far the most common way to finance new enterprises in Sao Paulo. One interviewee pointed out that the “the credit model in Brazil is still an old credit model, which only provides credit for someone who has a property. If the woman does not have a car or a house in her name, then she has less access to credit than men. Her situation is worse than men's to get the money in the banks.” This has disabled most businesses in the city to find cheap funding, and business owners have to negotiate with bank managers on rates that are usually very high. However, the recovery from the recent recession in Brazil, should enable the Brazilian Central Bank to cut interest rates to ameliorate the situation, at least in the medium term.

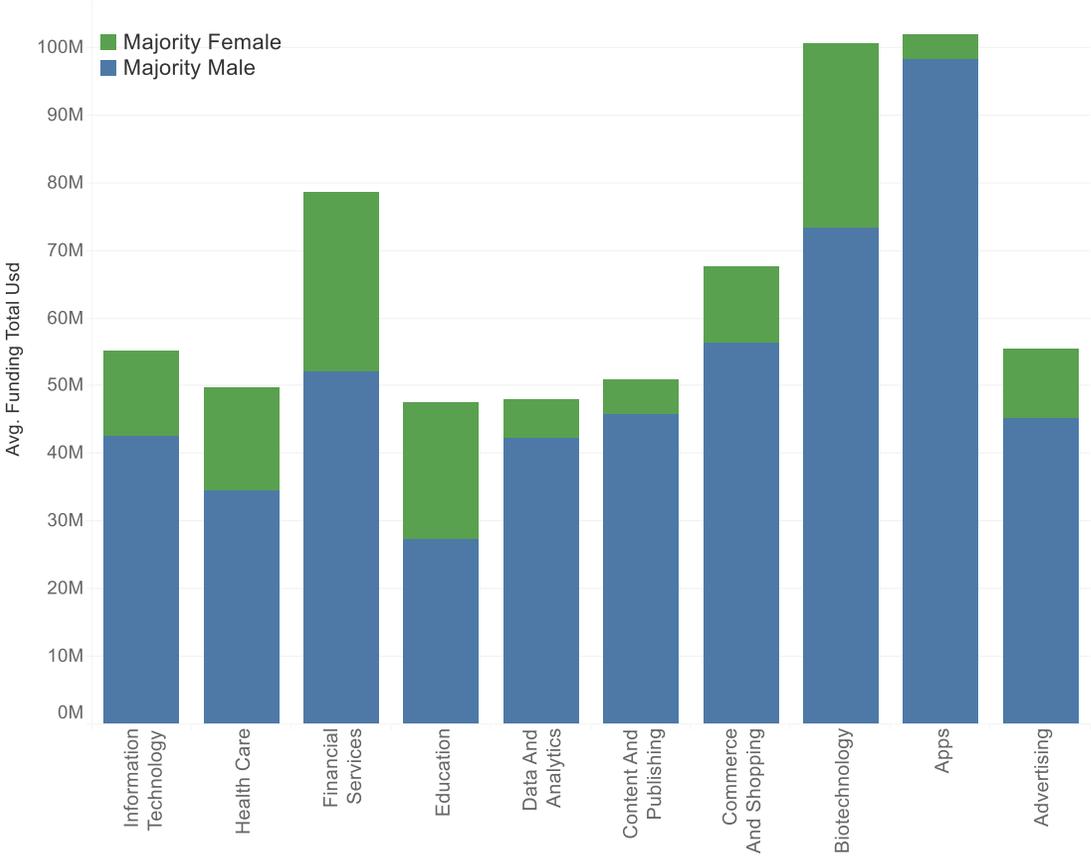
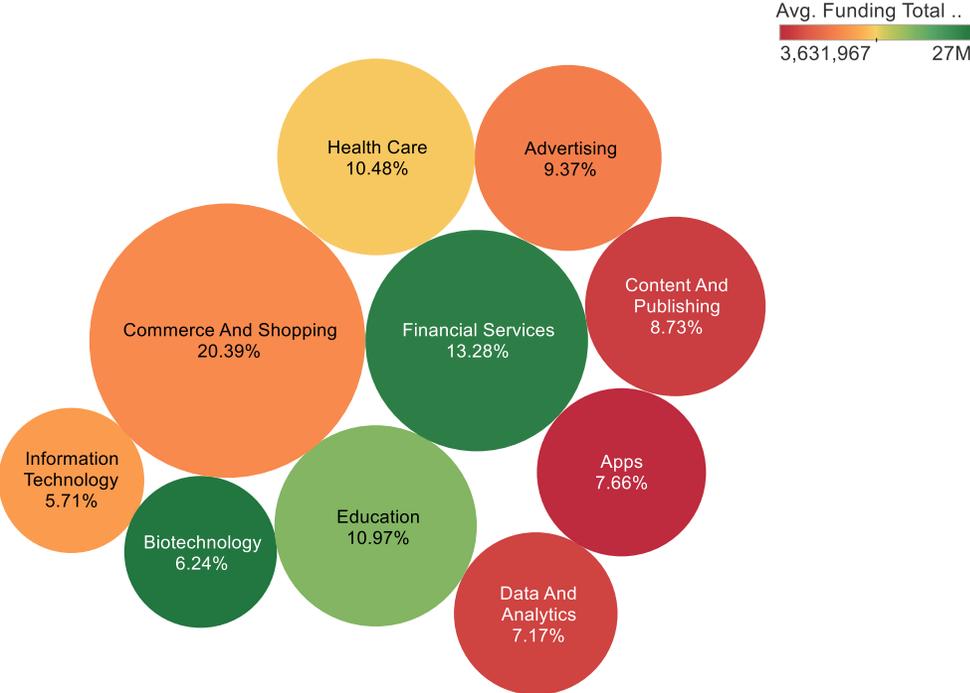


Industry Analysis

Leveraging data from CrunchBase, we identified the industries that men and women entrepreneurs tend to gravitate towards. This was done by aggregating the organizations with majority women executives. Furthermore, we color coded the industries by the average amount of funding raised.

About 20.39% of organizations with majority women executives fall into the commerce and shopping sector, yet on average the biotechnology sector has raised the most amount of VC funds.

Top 10 Industries with Majority Female Executives



Even among the industries that women gravitate towards, they raise less VC funds on average compared to their male counterparts.



Non-Capital Factors that drive Funding in WE Cities

Correlations between capital and non-capital indicators provide insight into outside forces that drive funding in WE cities.

We calculated correlations between the capital scores and non-capital indicators listed the top 3 highest correlated indicators:

Accelerators

- Accelerators provide entrepreneurs with the proper network, investment and mentorship to start their business. Naturally, cities with higher number accelerators tend to provide better access to capital.

Entrepreneurial Network (population with entrepreneurial experience)

- Through our interviews and research we found that women entrepreneurs often noted networking to be a key factor in their success. Although networking does not guarantee funding, access to the right network can provide guidance to ensure that women are equipped with the right tools when pitching their businesses to investors.

Presence of role models: # of globally recognized successful WE

- The presence of role models in a city provides more than just inspiration for women entrepreneurs, they are a reflection of the environment. Thus, cities with a higher presence of role models tend to have a more inclusive and accepting culture, which can lead to less bias when it comes to funding.



SUMMARY

ACCESSING CAPITAL



Summary of the Capital Deep Dive

- The Dell WE Cities capital results and the city case studies show there are still major gender gaps in traditional investment channels e.g., VCs and banks.
- Recent [research](#) by Harvard Business Review, finds that there is bias in VCs approach to the questions posed to male and female entrepreneurs. The study finds that in the US “67% of the questions posed to male entrepreneurs were promotion-oriented.” Meaning, the questions focused on achievements and hopes of the entrepreneurs.
- While, “66% of [the questions] to female entrepreneurs were prevention-oriented”. These questions were more concerned with safety, responsibility and security. The study finds that entrepreneurs who were asked the prevention-oriented questions tended to raise less capital on average than those with the promotion-based questions.

Future of funding for women entrepreneurs: crowdfunding

- The difficulty of raising funds through traditional investment channels has led women to partake in new sources of funding. Crowdfunding has become a thriving source of capital for women entrepreneurs. A recent [study](#) of Kickstarter found that although women set lower funding goals, “they have been better able to raise funds in excess of their original funding goals, even in [male-dominated] categories, such as technology”.
- **Women’s success in crowdfunding is global.** [PWC](#) finds that globally, “22% of campaigns led by women reached their target, compared to the 17% of those led by men”. Furthermore, “on average each individual backer contributes \$87 to women compared to \$83 to men.” The gap widens to \$10 in the UK and US. Women’s success in crowdfunding is attributed to the even gender-level playing field for the backers. Unlike, the male-dominant traditional investment channels, crowdfunding allows for a diverse pool of investors.

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Technology Deep Dive Report



Outline of Technology Deep Dive

- Introduction
 - Motivation and approach for the technology deep dive study
- Summarize Dell WE Cities Technology Results:
 - Analysis of the overall technology scores
 - › Distribution of Technology Scores overall
 - › Distributions of Technology Sub pillars
 - Benchmark Cities
 - › Identify the top cities in technology and analyze the metrics that set these cities
 - › Qualitative/quantitative research to identify outside forces that drive technology use in these cities
 - Correlations
- Identify the top cities in Technology
 - Analyze the metrics that set these cities apart
 - Qualitative/quantitative research to identify outside forces that drive technology access in these cities
 - Real world stories of women entrepreneurs
 - › Women using technology to scale businesses
 - › Women starting/scaling tech businesses
 - › Women who have found technology to be a barrier to scaling (i.e., where/how does lack of technology pose a constraint?)

Introduction



Motivation

- Based on the 2017 Dell WECities Index that ranked 50 cities for their ability on attracting and retaining women entrepreneurs, we found that many women entrepreneurs have difficulty talking about technology in general.
- They understand what they use, but many do not fully consider technology that is available that they may not be using, or how it can help them scale a business.
- This study is aimed at gaining insight into how women entrepreneurs use technology to scale businesses and how the technology ecosystem of a city can aid in that scaling.

Approach

- We analyzed the 2017 WE Cities data to identify which cities are leading in technology and what indicators within those categories are setting them apart.
- After identifying benchmark metrics and leading cities, we will do qualitative research into those cities to better understand what specific policies and practices are in place that are enabling greater access for high potential women entrepreneurs.
- The research will also uncover, what high potential women entrepreneurs are doing as well in terms of accessing and using technology (including what technologies and platforms women may be leading on)
- For example: 1) How are women entrepreneurs accessing and using and/or driving technology? 2) Do women in different regions access and use different technology platforms? 3) Do women in different industries use different technologies?
- With input from Dell and DWEN the studies will include real world stories from women entrepreneurs on their experience accessing and using technology.

Dell WE Cities Technology Results



DWEN WE Cities - 2017

Rankings of the Technology Pillar

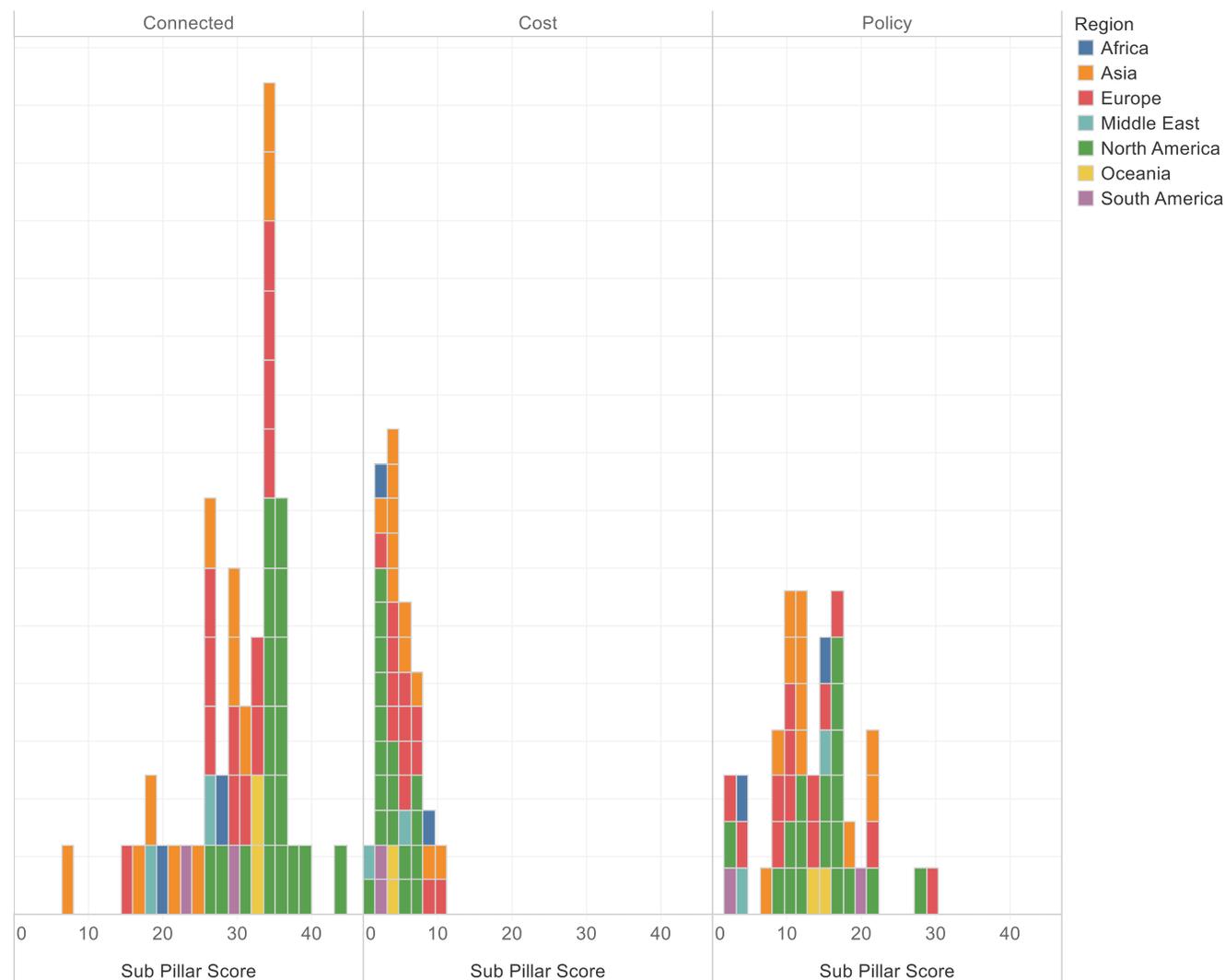
- Austin, Texas is the top city in the technology pillar
- Out of the top 10 cities, 6 are North American, 2 European, and 2 Asian
- Middle East, African, and Latin American cities lagged far behind in this pillar



Austin	1	Warsaw	26
London	2	Atlanta	27
Stockholm	3	Minneapolis	28
New York	4	Houston	29
Hong Kong	5	Barcelona	30
Seattle	6	Johannesburg	31
San Francisco	7	Seoul	32
Miami	8	Tokyo	33
Boston	9	Dublin	34
Singapore	10	Milan	35
Chicago	11	Munich	36
Los Angeles	12	Belfast	37
Portland	13	Mexico City	38
Amsterdam	14	Kuala Lumpur	39
Toronto	15	Shanghai	40
Washington DC	16	Beijing	41
Paris	17	Bangalore	42
Berlin	18	Tel Aviv	43
Sao Paulo	19	Jakarta	44
Vancouver	20	Dubai	45
Taipei	21	Guadalajara	46
Melbourne	22	Nairobi	47
Sydney	23	Delhi	48
Pittsburgh	24	Lima	49
Copenhagen	25	Istanbul	50

Technology Sub pillar Scores Distributions

- The distributions of the sub-pillar scores are very different from each other, giving an interesting picture of where disparities exist.
- The 'Connectedness' sub-pillar is highly skewed to the right-hand side, suggesting that high scoring cities are achieving relatively average levels of connectedness, with the others lagging far behind.
- 'Cost', on the other hand, is quite left-hand skewed, suggesting that cost is a category that could be improved across the board.
- Finally, 'Policy' has a wide, relatively flat distribution, suggesting that policies impacting the technology sector vary widely and can have a big impact on the pillar as a whole.



Benchmark City: Austin



The Austin Metro Area is the highest-scoring city for Technology. It ranks 2nd in Policy, 7th in Costs and 2nd in Connectedness out of 50 cities. Austin is an important tech hub that is well-positioned to provide female entrepreneurs with the knowledge to utilize new technologies.

Austin has a thriving tech network with women-oriented organizations and events that spread knowledge about technology. It ranks 1st in technology training, providing centers for women entrepreneurs across all sectors that enable them to improve their operations and scale up their businesses. The availability of mentoring is a meaningful factor driving the adoption of technology, as they encourage women to increase key technical skills and implement more advanced tools. Austin ranks 26th in the number of business organizations for women, many of which provide tech resources. Tech-specific ventures find well-funded start-up incubators and opportunities for collaboration with other women in the technology space.

Despite Austin's promising technology ecosystem, women entrepreneurs face a significant barrier in the form of high costs. The city ranks 42nd in mobile rates and 41st in standard internet rates. The 2015 study "Digital Inclusion in Austin" revealed that 61% of the city's 50,000 non-internet users agreed that costs were too high, and that they tended to be older, less educated and female. Efforts to expand cutting-edge telecommunications infrastructure, such as 5G and small-cell technology, are important to keeping up with Austin's booming growth.

Practices/Policies for success: Austin is one of the few cities that **collects and publishes data** on access to technology by gender and other demographics. This data enables the public, private and non-for-profit sectors to improve digital inclusion and address disparities that hold back women entrepreneurs of all backgrounds.

Tax incentives, grants and publicly-funded programs facilitate **access to technology**. These include a sales tax exemption on software and equipment employed in R&D, and the Grant for Technology Opportunities Program that awards funding and devices to projects that create digital opportunities for the community. The Texas' Skills Development Fund also provides training for employees through technical colleges.

Practices/Policies need for improvement: Austin ranks 1st both for the percent of women using the internet and using smart phones. However, investment in infrastructure to **support next-generation technology**, such as mobile broadband and high-speed optic fiber, lags behind the city's pace of growth. Reliable connectivity is crucial to supporting the business application of the internet of things and cloud computing.

Moreover, the development of interactive online sales platforms and streaming for retail promotion, as well as the ability to employ customer data insights in a smart-business ecosystem, require **improved connectivity speeds** that are relatively expensive in Austin compared to other cities.

Affordable internet access that can support emerging technologies would allow new and existing women-owned businesses to modernize, become more cost-effective and expand into global markets



Benchmark City: London



Greater London is ranked 2nd on Technology, with an international tech scene that has grown significantly over the past 5 years. It scores 1st in Policy, 16th in Cost and 30th in Connectedness out of the 50 cities studied.

London stands out for its ready availability of networking and professional development opportunities. A rich calendar of tech-related events enables women to access coaching schemes and establish cross-sector business relationships in a welcoming environment. The city ranks in the top 5 for mentoring programs for women entrepreneurs. Government initiatives, such as the Go to Grow program, offer mentoring, workshops and even access to trade missions to help businesses improve their use of technology and expand globally.

However, London scores low in the Connectedness category due to its lagging rates of smart phone ownership and social media usage compared to other large cities. It ranks 20th in the percentage of women who own a smart phone, at 89%. In addition, London ranks 35th on women's use of social media platforms such as LinkedIn, for which the ratio of women to men is only 76:100. While London scores 16th in Cost overall, it ranks 28th for the cost of mobile phone plans and 23rd for internet rates. This poses a significant barrier to internet access for women entrepreneurs.

In an effort to boost digital connectivity, the Mayor of London announced the creation of a Digital Infrastructure Fund to improve internet coverage in areas with poor provision in 2017. Moreover, the government launched an initiative to install free Wi-Fi in over 80 public buildings around the city in 2018.

Practices/Policies for success:

London ranks 7th for technology training, with a variety of **formal and informal educational opportunities** that are specifically designed for women. The city is host to many of the world's top universities and business schools, offering a wide range of courses on technology-driven innovation and the use of digital tools. Many of these award scholarships for aspiring female entrepreneurs. Community initiatives such as Code First: Professional Women organize workshops for women in all sectors to understand the role of digital tools and improve their practical tech skills.

The city's **technology-friendly policy environment** attracts investment from multinational companies and fosters the emergence of start-ups. London houses the regional headquarters of Google and Facebook, and in 2017 it received more venture capital funding for tech companies than all other major European cities put together. The importance of the tech sector creates a unique business ecosystem for women entrepreneurs to engage with emerging technologies.

Practices/Policies need for improvement:

London views data as an important part of its infrastructure, and has launched an ambitious plan to create a centralized City Data Market aimed at reducing data-sharing frictions. Nevertheless, the city could do more to ensure that gender-based disparities in technology utilization can be identified and rectified by expanding the scope of **data collection efforts** at the gender level.



Benchmark City: Sydney



Greater Sydney is an emerging global entrepreneurship center and ranks 23rd in the Technology pillar. The government actively seeks to promote innovation and gender diversity. The city ranks 24th in Policy, 34th in Cost and 22nd in Connectedness in the 2017 WE Cities Index.

The city ranks 18th in technology training organizations and provides a growing number of networking opportunities for entrepreneurs. The new Sydney School of Entrepreneurship, a government-funded NGO, brings together 12 universities and technical schools with the purpose of keeping the next generation of innovators in Australia. It hosts regular events aimed at expanding opportunities for women and spreading knowledge about the adoption of new technologies. Sydney is also home to some unique technology-oriented education initiatives. For example, the company Teacup Techies imparts personalized home lessons to help senior women use technology more effectively.

On the interviews conducted with female entrepreneurs for this study, a consistent theme amongst those operating in Sydney was the dichotomy between relying on technology to expand globally due to Australia's relative geographic isolation, and the relatively high barrier to leveraging that crucial technology.

Sydney has taken important steps towards improving internet access in recent years. The number of high-speed fiber connections rose to 1.4 million between December 2016 and December 2017, a 122% increase. In spite of this, the city ranks 44th in mobile rates and 35th in standard internet rates. Even though 89% of women in Sydney use the internet and own smart phones, a relatively high percentage, their ranks are only 20th and 21st respectively.

Practices/Policies for success: Australia offers some of the most **generous tax incentives** to start-ups in the world. These include a 10-year exemption on capital gains tax, a 20% tax offset for qualifying investments below 200,000 per investor per year, and a 10% tax offset on capital invested through early stage venture capital limited partnerships. Furthermore, in 2018 the government expanded the annual cap on cash refunds for early start-ups from AUD\$2 million to \$AUD4 million, and increased the R&D expenditure threshold for tax incentives from AUD\$100 million to AUD\$150 million.

The government of New South Wales opened the Sydney Startup Hub in 2018 to **bring entrepreneurs together**, along with investors, incubators and accelerators. It houses startups both within and outside the tech sector, providing a space for innovation, collaboration and knowledge transfer on cutting-edge technologies. Thanks to visionary projects such as this one, Australia is now in 1st place in the 2018 Economist Intelligence Unit's Technological Readiness Ranking along with Singapore and Sweden.

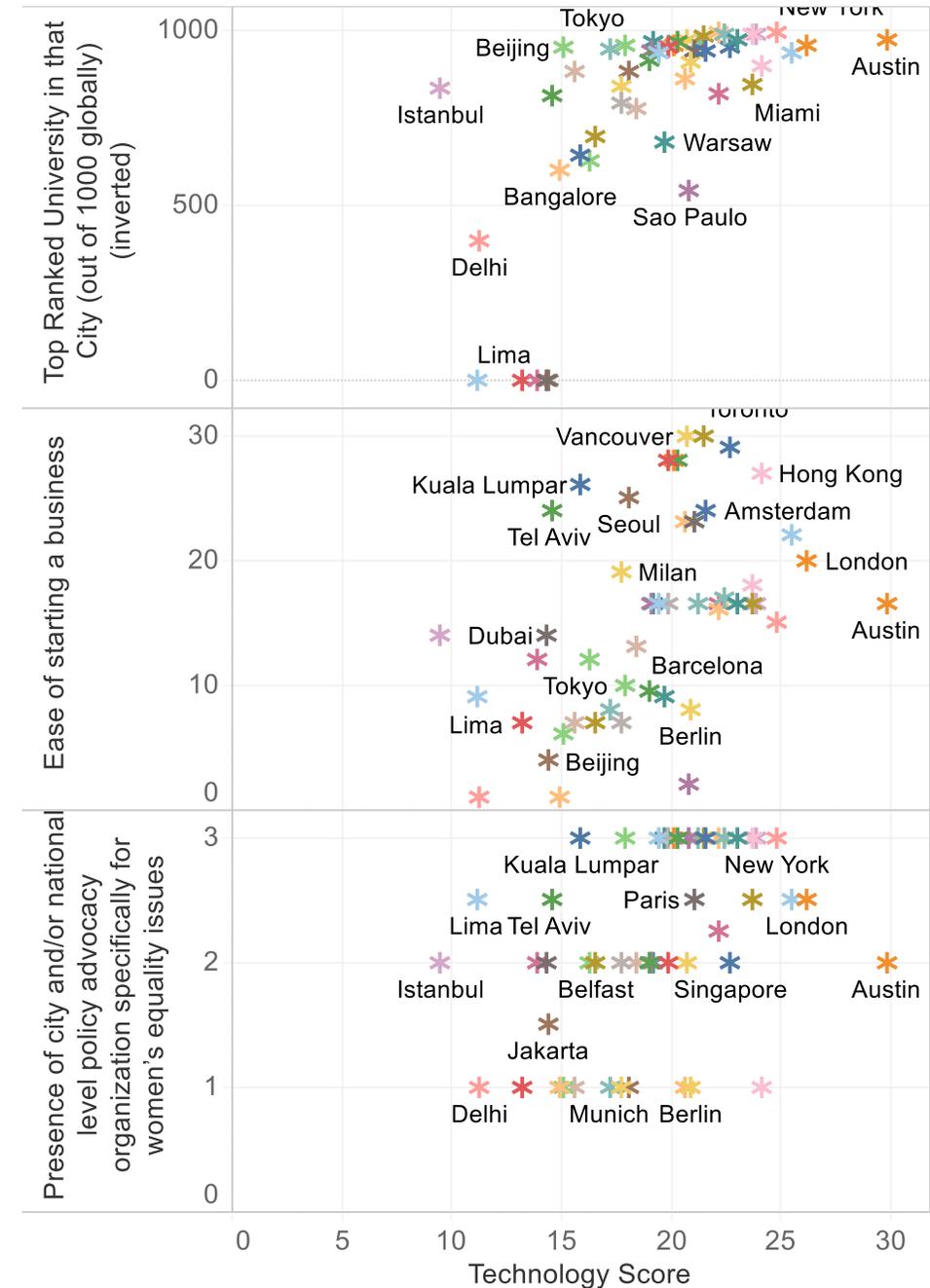
Practices/Policies need for improvement: Like other global cities looking to attract and support women entrepreneurs, Sydney would benefit from improving **data collection initiatives**. The Australian Bureau of Statistics gathers some gender-level data, but Sydney does not systematically collect data by gender or make it publicly available. Disaggregated data would facilitate the analysis of gender disparities in technology use and the design of policies that help empower women to reach their potential.

Relative geographic isolation makes global **scalability reliant on technology**, making improvements to access and cost of technology all the more crucial for female entrepreneurs in Sydney.



Non-technology Factors that drive technology access in WE Cities

- Correlations between technology and non-technology indicators provide insight into outside forces that drive technology access in WE cities.
- We calculated correlations between technology and non-technology indicators, focusing on the top 5 highest positively correlated non-technology. Then, we counted the frequency these indicators appeared in the top 3.
- The top 3 highest correlated indicators with technology are:
 - Top Ranked University in that City (out of 1000 globally) (inverted)
 - Ease of starting a business
 - Presence of city and/or national level policy advocacy organization specifically for women's equality issues



SUMMARY

RECOMMENDATIONS FOR ACCESSING TECHNOLOGY



Summary of Technology

- The Dell WE Cities technology analysis and the city case studies highlight the importance of connectivity, training and support networks.
- The cost of accessing the internet is a significant factor that affects how women use technology. Innovations that require high-speed connectivity strain telecommunications infrastructure and increase prices when investment can't keep up. Investing in improved connectivity can lay the groundwork for women entrepreneurs to derive tangible benefits from technological advancements.
- Mobile phone use and maintaining an active online presence are fundamental to scaling any business in today's fast-paced global economy. In some cities, there is a large gender gap in smartphone ownership, the frequency of mobile transactions and the use of social media platforms that magnify business visibility. Fostering parity is an important step towards empowering women entrepreneurs to improve their business outcomes.
- Technical skills training isn't just important to attract women into tech start-up hubs. Organizations that improve computer literacy in a judgement-free environment can enhance women's ability to use technology effectively regardless of what sector their business is in.

Summary of Technology

- Benchmark cities reveal the importance of mentoring networks to bolster the adoption of new technologies. Local and nationwide groups providing opportunities to ask for guidance from experienced entrepreneurs encourage business owners to implement more advanced systems.
- Tax incentives for investors and entrepreneurs play a prominent role in the development and acquisition of digital tools. Government schemes, including grants and cash refunds, can also help women entrepreneurs access the necessary technology infrastructure to expand their operations worldwide. This conclusion is supported by women interviewed across cities as part of this study.
- Reliance on technology for scaling a business beyond the local market means that high cost and restricted access to technology can have a disproportionate impact on women entrepreneurs scaling their business.
- Public access to data on technology use by gender can support the appropriate targeting and monitoring of policy interventions and community initiatives. Some of the top-ranking cities in the Dell WE Cities index have already begun to collect data on digital inclusion as part of their strategy to spur innovation and economic growth. Governments around the world can do more to make these indicators publicly available at regular intervals.

CONTACTS:

KAREN A. CAMPBELL

Sr. Consultant

+1 (215) 594-9503

karen.campbell@ihsmarkit.com

JIM DIFFLEY

Sr. Director

+1 (215) 789-7422

jim.diffley@ihsmarkit.com

BRENDAN O'NEIL

Director

+1 (202) 481-9239

brendan.oneil@ihsmarkit.com



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