



WOMEN IN TECH INITIATIVE
UNIVERSITY OF CALIFORNIA

Spring 2019
Leadership Round Table

Event Summary Report
June 2019

UNIVERSITY
OF
CALIFORNIA



Berkeley
ENGINEERING

Executive Summary

Friday, June 21, 2019, marked the eighth Women in Tech Leadership Round Table, when industry leaders and academics met with the shared purpose of discussing gender pay equity and hiring practices, guided by data and action-oriented best practices. The event was hosted by WITI@UC co-founders *Tsu-Jae King Liu*, Dean of the College of Engineering; *Camille Crittenden*, Executive Director of CITRIS and the Banatao Institute; and WITI Director *Jill Finlayson*.

Agenda and key insights:

Pay equity data (Representatives from Biddle, Adobe, and Glassdoor):

- Gender workforce and pay analysis can and should be done by all companies to illuminate disparities and level the playing field.
- Every company already has most of the data required to uncover inequities.
- Simple analysis is an excellent, low-effort starting point.
- Comparison of full compensation (equity, etc.) becomes complex quickly.
- Real-world execution to close pay gaps is challenged by inaccurate titles and job groupings.
- Resolving issues has budget implications and political realities.
- Top-down support for effort is essential; 70% of work occurs after analysis.
- Salary equity is the tip of the iceberg; further analysis needed for leveling and workplace distribution.
- Much of the overall gender pay gap could be closed with improvements to occupational sorting, i.e., better mixing genders across all job families and levels.

Corporate Survey

- WITI@UC is developing a survey to be completed by companies requesting to recruit at Berkeley Engineering. The survey asks whether companies track and publish diversity metrics and inquires about various benefits that might appeal to women and under-represented employees. The voluntary survey is meant to better inform students about the companies seeking to recruit them.

Dawn Jones, Intel, Policy and Global Diversity

- Intel achieved full representation of “available talent” in 2018.
- Now Intel is committed to reaching leadership parity (and opportunity parity).
- Companies need to consider how they will respond to policy and social issues outside its business role, e.g., #MeToo, refugees, etc. when public/staff demand.

Sarah Myers West, AINow, Policy and Research

- 18% of authors at leading AI conferences are women, 80% of AI professors are men, 15% of the AI research staff at Facebook and 10% at Google are women.
- Predictive hiring tools can reflect systemic biases from past hiring decisions and reproduce inequity at every stage of the hiring process. Even when tools explicitly ignore race, gender, etc., other variables stand in as proxies.

- Use of AI tools by corporations raises questions regarding surveillance, consent, transparency, and appropriate regulation.
- Avoid giving undue weight to outputs of automated systems over other info.

Brandie Nonnecke, CITRIS Policy Lab, on computational propaganda

- Automated harassment has huge implications for women and discourse related to gendered issues.
- Tweets from bot accounts linked to pro-choice or pro-life were spread by other bots liking/retweeting, and by influencers retweeting the misinformation.
- Tools like [Botometer](#) and botcheck.me allow users to identify likely bots.

Kara Sammet, GenderLenz, on increasing the number of women on boards

- California law requires large public companies headquartered in the state to include at least one woman on their board by the end of 2019.
- Feedback sought on approaches to placing more women in tech on boards.



WITI@UC Leadership Round Table participants, June 2019

Next Steps

1. **Share information, advance metrics, and drive salary equity efforts.**
2. **SAVE THE DATE: Next Leadership Round Table is Friday, December 13, 2019.**
3. **[Complete Survey](#)** to inform next WITI@UC Leadership Round Table:
 - Topic suggestions for next Round Table and for next Symposium
 - Feedback on Corporate Survey
 - Feedback on approaches to increase the number of women on boards
 - Referrals for future invitations for Round Table

Session I: Progress Toward “Facing the data”

A panel on salary equity, leveling, and workplace distribution

During the first session, experts shared their research and initiatives to achieve pay equity and pay parity, while discussing related issues of occupational segregation.

Dan Kuang, VP of Diversity, Equity, and People Analytics at Biddle Consulting Group, Inc., presented best practices to accurately measure pay equity. He started with a quick primer on statistical methods often used: t-tests, which test for difference in pay between any two groups, and multiple regression, which tests for differences between groups after controlling for explanatory factors.

He debunked the popular misconception that conducting a company-wide survey is necessary to study pay gap issues. Rather, most companies already have the data needed, so no “survey” is required. To conduct a pay equity analysis, data for four dimensions is required:

- groups of people (gender, specific ethnicity, intersectional identities)
- explanatory factors for models (time in company, time in job, geographical variables, performance measures, experience, education)
- pay type (base and non-base)
- comparison grouping (“substantially similar” job titles)

Kuang emphasized that the actual **analysis takes only 30% of the effort** - the company must expend the rest of the **70% to act upon the findings**. Long-term commitment to an iterative process is required from all levels within a company to garner insights, resolve disparities, and conduct a more complex analysis. He cautioned that not including performance metrics makes it difficult for companies to defend themselves in litigation. Biases can creep in when there are no standards for objective performance measurement.

Lastly, Kuang touched upon a huge hurdle in achieving pay equity: workforce distribution (also referred to as occupational segregation or leadership parity by other Round Table attendees). Women and men often occupy different roles in companies, with men disproportionately occupying higher-paying positions such as executive or engineering roles. Roles dominated by women are often lower paid or become lower paid over time.

The rationale behind valuing some roles over others should be explored and assessed to determine whether qualifications, skills, competition, etc. actually justify the differential “pricing.” Initial placement, leveling, and salary negotiation

for new employees need to be carefully considered to ensure that women with comparable qualifications are not placed in more junior positions or under-paid. Starting pay gaps will only increase over time due to promotions.

PayLevel	Job	Values	GENDER		Overall
			Female	Male	
1	Associate	Average Pay	65,000	65,000	65,000
		Count (#)	36	11	47
	Production I	Average Pay	60,000	60,000	60,000
		Count (#)	37	14	51
2	Manager	Average Pay	75,000	75,000	75,000
		Count (#)	20	4	24
3	Supervisor	Average Pay	80,000	80,000	80,000
		Count (#)	19	6	25
5	Admin-I	Average Pay	95,000	95,000	95,000
		Count (#)	4	7	11
6	Admin-II	Average Pay	105,000	105,000	105,000
		Count (#)	2	10	12
7	Admin-II Regional	Average Pay	115,000	115,000	115,000
		Count (#)	5	12	17
9	Admin-II HQ	Average Pay	130,000	130,000	130,000
		Count (#)	1	6	7
	Admin-II National	Average Pay	125,000	125,000	125,000
		Count (#)	1	9	10
10	Executive	Average Pay	140,000	140,000	140,000
		Count (#)	2	7	9
Overall Average Pay			73,071	96,000	82,606
Overall Count (#)			127	86	213

Figure 1: Workforce Distribution Effects (Dan Kuang, Biddle 2019)



Figure 2: Salary Starting Effects (Dan Kuang, Biddle 2019)

Rosemary Arriada-Keiper, VP of Global Rewards at Adobe, shared her goal to develop compensation and benefits strategies that attract, retain, and engage talent. At Adobe, approximately 70% of employees are men and 30% are female, but within functions, the ratio leans closer to 60% /40%. While facing initial challenges around data accessibility, the company continued its efforts. When employees feel respected and valued, they will perform at their best and contribute to the company's overall success. Diversity of thought and experience is needed for optimal performance.

Arriada-Keiper introduced four key initiatives by Adobe:

1. **Focus on the pipeline** - How do we provide access to individuals at all levels to foster the education, technology skills and opportunities required to move into tech careers?
2. **Attract talent** - How do we attract a diverse workforce? How do we mitigate biases inherent in our recruiting policies?
3. **Employee experience** - How do we ensure global pay practices, programs, networks, and clubs that foster inclusion?
4. **Industry collaboration** - How do we work as a sector to achieve equity and build alliances and partnerships to collectively make change?

In 2016, Adobe set a goal to achieve global pay parity, and was able to claim global parity by the end of the year. Reflecting on the journey, Arriada-Keiper shared that while there is no perfect answer, **transparency in the methodology and approach to the process is necessary**. While exposure may lead to risk of litigation, assumptions must be shared. This opens up space for criticism and thus, improvement.

Adobe's modeling was based on individuals in the same work, location, and level. **However, a frequent problem was that employees were expected to do work that did not reflect their job title – titles were often chosen based on pay range rather than function**. And while regression modeling worked fine for the US and India, where employment and representation of diverse groups is high, there was insufficient data to make a meaningful global analysis. Analysts needed to group countries and job families to infer meaningful insights and identify pockets of opportunity.

Key to Adobe's success in achieving global pay parity was executive sponsorship and support from the board. After analysis, solutions carried a financial cost (adjusting salaries), and required collaborative efforts across levels. Individual conversations had to take place at the management level, regarding who would be affected and how.

By next year, much of the data collected will be outdated. Salary range is driven by supply and demand in the market. And while the current data is useful for deriving insights on the past, there is no predictive mechanism to know if they are creating a new pay equity problem.

Finally, she shared Adobe’s plans to achieve “**opportunity parity**” – equitable opportunity for promotions, movement, and growth within the company - as well as programs for incentive-based cash compensation.

Andrew Chamberlain, Chief Economist & Director of Research at Glassdoor

Glassdoor has collected data from nearly half a million companies worldwide, including crowdsourced salaries, employer reviews, and 20 million job postings. When its [2016 gender pay gap study](#) was released, it received widespread attention in industry. This research is used by Glassdoor engineers to build products and tools to increase transparency and reward good practices in the industry.

Country	“UNADJUSTED” GENDER PAY GAP		“ADJUSTED” GENDER PAY GAP	
	Average Cents/Pence Earned by Women Per Dollar/Pound/Euro of Male Earnings	Percentage Male Pay Advantage	Average Cents/Pence Earned by Women Per Dollar/Pound/Euro of Male Earnings	Percentage Male Pay Advantage
United States	75.9 cents	24.1%	94.6 cents	5.4%
United Kingdom	77.1 pence	22.9%	94.5 pence	5.5%
Australia	82.7 cents	17.3%	96.1 cents	3.9%
Germany	77.5 cents	22.5%	94.5 cents	5.5%
France	85.7 cents	14.3%	93.7 cents	6.3%

Country	“Explained” Part of Gender Pay Gap Due to Worker Differences	“Unexplained” Part of Gender Pay Gap (Possible Workplace Gender Bias)
United States	67%	33%
United Kingdom	64%	36%
Australia	61%	39%
Germany	51%	49%
France	71%	29%

Figure 3: From [Demystifying the Gender Pay Gap](#), Evidence From Glassdoor Salary Data, March 2016

Glassdoor contributes to better industry practices in two main ways:

1. A **product and platform** that influences public policy and behavior by providing salary estimation in the job search experience, and a program for pledges and certifications to give employers credit for inclusive policies.
2. Real **research about pay** with no political agenda encourages competition among employers to do good. This contributes to the macro-solutions for pay equity by influencing culture and pipeline.

Glassdoor data also illustrates the issue of workforce distribution or occupational segregation. Not only were women often disproportionately at the bottom level of jobs, they also were not proportionally promoted. There was interest in tracking *why* women leave the tech industry. High school students visiting Adobe mention they have heard that computer science majors are too competitive and have weeding-out structures that discourage them. To address pipeline and retention issues, Berkeley and San Jose State University (SJSU) participate in the [Technology Pathways Initiative](#), an alliance of universities addressing the pipeline.

Belle Wei (SJSU) shared how her university is creating partnerships between the CS and biology departments to develop bioinformatics, computational biology, and data science programs. At SJSU, 60% of biology majors are women, and the new program aims to bring computer science to them, rather than make them seek CS. At Berkeley, the percentage of female data science majors is twice the percentage of female CS majors. **Dean Tsu-Jae King Liu** shared a communications course for engineers and plans for Berkeley's next joint major between CS and English. Others mentioned the value of coding academies or bootcamps. [Rithm School SF](#) participants are more than half female, with graduates earning an average starting salary of \$112k per year.

Lunch Session

Dean Tsu-Jae King Liu introduced a [new corporate survey](#) to encourage companies to track and share metrics. The short survey will be required for companies recruiting at Berkeley Engineering. It asks companies to indicate the quantitative metrics they track and the diversity and wellness programs they implement. For students, the data will inform their job decisions by providing info on each company's efforts toward ensuring an equitable culture. The Dean will be disseminating the survey to other engineering deans at universities around the Bay Area and across the country, who also may be implementing it (or similar survey) in the coming academic year. The Round Table participants suggested adding metrics

for gender inclusive bathrooms, transgender healthcare, and inclusive research practices for clinical applications.

Executive Director Camille Crittenden showed a [video recapping the March 8, 2019 Athena Awards and Women in Tech Symposium on the Future of Artificial Intelligence](#). **Save the date for the next Symposium on Friday, March 6, 2020.**

Session II: Timely Topics

Policies and Priorities Around Diversity and AI

Dawn Jones, Director of Policy and External Partnerships at Intel's Global Diversity and Inclusion Group presented the progress made in having a representative workforce at Intel, as well as the difficulties of accomplishing diversity goals. Intel's CEO made the bold commitment to achieve full representation of the available talent in the market by 2020, with special focus on African American women, Hispanic Americans, and Native Americans, and in 2018, this goal was reached two years early. Now, Intel is committed to reaching leadership parity.

With 55,000 employees in the U.S., across a wide geographic area, Intel needs to ensure that whatever policy they advocate will not adversely affect the communities in which they conduct business. Even with data, diversity and inclusion work is more difficult and complex than engineering, she pointed out, because it deals with people. This complexity creates challenges for current implementations of AI within HR. While tech and AI can contribute to solving diversity issues, it is the human element, the mutual respect, the joint mission for allowing people the opportunity to compete, that will allow us to accomplish these goals.

Dawn also shared the importance of policy and governance as corporations are now having to confront social issues in more public venues and on a shorter time cycle than before. Customers and employees are demanding that companies take a stance on issues from #MeToo to immigration. She suggested companies should anticipate controversial topics arising and plan how they will address these issues in advance.

Sarah Myers West, a postdoctoral researcher at AI Now, presented on AI policy and its implications in the tech sector. AI Now is the world's first research institute devoted to studying the social implications of AI. It is also the first and only AI institute founded and run by two women. This interdisciplinary center housed at NYU is a collaboration between engineering, law, education, data science, business, and

mathematics programs. [Discriminating Systems: Gender, Race, and Power in AI](#) is a pilot study evaluating the landscape of diversity in the field of AI. It is a cross-disciplinary literature survey of over 150 peer-reviewed studies as well as over 450 other reports, articles, and blogs.

AI Now has found that:

- [18% of authors at leading AI conferences are women](#)
- [80% of AI professors are men](#)
- [Women comprise 15% of the AI research staff at Facebook and 10% at Google](#)

Public data is lacking on transgender workers; very few studies acknowledge gender fluidity; and there is very little work on intersectionality. Most research addressing women in tech implicitly benefits white women only.

Myers West shared recent legal cases and investigations related to gender and diversity:

- A class-action suit alleging [Microsoft's systematic failure](#) to take allegations of harassment and discrimination seriously
- A federal investigation examining [gender discrimination at Uber](#)
- [Apple dismissing concerns about its lack of workplace diversity](#) and referring to diverse hiring practices as “burdensome”
- An audit of Google’s pay practices by the Department of Labor showing [systemic compensation disparities and a difference of 6-7 standard deviations between men and women](#) in nearly every job category
- [Black employees at Facebook](#) being aggressively treated by security and discouraged from participating in Black@ group activities
- A [lawsuit filed at Tesla alleging gender discrimination](#), retaliation, and a hostile work environment

These are examples of the deep-rooted cultural attitudes and biases evident in the tech industry. The data that trains machine learning algorithms come from humans, and as a result, reflect human biases. Citing a [2018 study by Miranda Bogen and Aaron Rieke](#), Myers West cautioned that predictive hiring tools can reflect institutional and systemic biases, and that **predictions based on past hiring decisions can reveal and reproduce inequity at every stage of the hiring process.**

Removing sensitive information is not a solution either, because even when tools explicitly ignore race, gender, age, and other protected attributes, biases are still reflected in the systems. [Other variables can stand in as proxies](#). Amazon scrapped

their secret automated hiring tool because it showed bias against women. When the data is limited, it is difficult for the algorithm to be properly debiased while also ‘functioning properly,’ or accomplishing its task. The data needs to be diversified, but this can lead to unfair outcomes when the data collected is not used to benefit the group from which it is sourced. Even if people consent to data collection (e.g., audio and video recording), it is not the same as consenting to uses of data after it is collected. The report included guidance for improving workplace diversity and addressing bias in AI systems:

Recommendations for Improving Workplace Diversity

1. Publish compensation levels, including bonuses and equity, across all roles and job categories, broken down by race and gender.
2. End pay and opportunity inequality, and set pay and benefit equity goals that include contract workers, temps, and vendors.
3. Publish harassment and discrimination transparency reports, including the number of claims over time, the types of claims submitted, and actions taken.
4. Change hiring practices to maximize diversity: include targeted recruitment beyond elite universities, ensure more equitable focus on under-represented groups, and create more pathways for contractors, temps, and vendors to become full-time employees.
5. Commit to transparency around hiring practices, especially regarding how candidates are leveled, compensated, and promoted.
6. Increase the number of people of color, women and other under-represented groups at senior leadership levels of AI companies across all departments.
7. Ensure executive incentive structures are tied to increases in hiring and retention of under-represented groups.
8. For academic workplaces, ensure greater diversity in all spaces where AI research is conducted, including AI-related departments and conference committees.

Recommendations for Addressing Bias and Discrimination in AI Systems

9. Remedying bias in AI systems is almost impossible when these systems are opaque. Transparency is essential, and begins with tracking and publicizing where AI systems are used, and for what purpose.
10. Rigorous testing should be required across the lifecycle of AI systems in sensitive domains. Pre-release trials, independent auditing, and ongoing monitoring are necessary to test for bias, discrimination, and other harms.
11. The field of research on bias and fairness needs to go beyond technical debiasing to include a wider social analysis of how AI is used in context. This necessitates including a wider range of disciplinary expertise.
12. The methods for addressing bias and discrimination in AI need to expand to include assessments of whether certain systems should be designed at all, based on a thorough risk assessment.

Figure 4: Excerpt from [Discriminating Systems: Gender, Race, and Policy in AI](#), April 2019, AI Now

Because of the current problems and automation bias plaguing AI in HR uses, Myers West discouraged **automation bias – giving undue weight to the outputs of an automated system, discounting other sources of information.**

The deployment of these flawed tools is NOT inevitable. Concerned citizens and professionals still have leverage. [An Illinois bill aims to regulate the use of AI in video-recorded job interviews](#), and it is even backed by one of the leading vendors of the technology. A [growing tech workers coalition](#) is driving change from the ground up. Finally, Myers West stressed the importance of establishing a baseline of transparency. Transparency is required to research these AI tools applied to HR if the industry wants to see improvements.

Brandie Nonnecke, [CITRIS Policy Lab](#), discussed a recent research project on computational propaganda, the use of AI or automation to influence public opinion on social media platforms. The project focused on women’s reproductive rights and the use of Twitter bot accounts. In a data set of 1.7 million tweets, Nonnecke and her team used social network analysis to identify the most influential accounts. With the use of Indiana University’s [Botometer](#) platform to detect which accounts were real or bots, they mapped those bots linked to pro-choice or pro-life influencers.

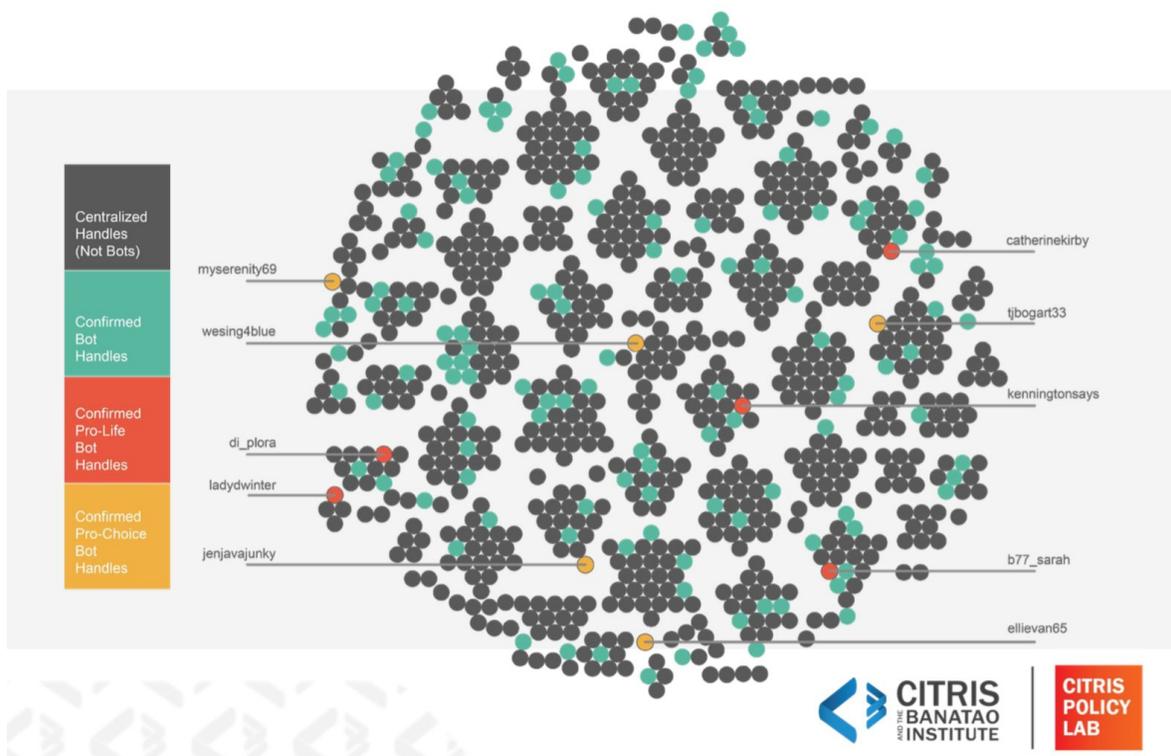


Figure 5: Excerpt from CITRIS Policy Lab [Women’s Reproductive Rights Report, 2019](#)

Bots that supported pro-life positions attacked Planned Parenthood and pro-choice advocates by using misquotes, harrassing language and misinformation. These tweets were spread not only by other bots liking and retweeting, but also by influencers retweeting the content. Pro-choice groups were more likely to use bots to call attention to the subject and create political discord, directing followers to contact their state representatives and share the state of women's reproductive rights in the current administration.

Over the last few months, 9 states have passed restrictive abortion laws, igniting further debates on Twitter and bots spreading computational propaganda. Existing tools like botcheck.me from Robhat Labs allow users to differentiate between likely bots and other forms of computational propaganda. Computational harassment has outsized implications for women, especially women in tech, who often experience online harassment that discourages them from sharing their voices.

Kara Sammet, founder of Gender Lenz, and a visiting scholar at WITI@UC, proposed a [training program](#) to prepare tech executive women to be “board ready.”

Several factors led to this timely research:

- Despite demonstrated high ROI for diversity (improved revenue, profitability, innovation, talent), boards lack gender diversity due to numerous causes (low turnover, outdated recruiting methods, reliance on referrals, bias).
- Companies and their boards are being increasingly pressured by employees and customers to have board composition that reflects the population.
- The risk and cost of lacking diversity, including lawsuits and brand damage, is high.
- California became the first state in the U.S. to require companies headquartered in the state to include women on their boards: [Senate Bill 826](#), signed Sept. 30, 2018.
 - SB 826 requires that companies headquartered in the state and publicly traded on a major stock exchange have at least one female director by the first deadline of December 31, 2019, and more in subsequent years, creating an estimated 1,000+ board seats for women over the next three years.
 - Nearly one-third (29%) of California companies have all-male boards & [are not in compliance with the 1st deadline; 88% are not in compliance with the 2nd deadline.](#)
 - Women currently hold 17% of board seats in the technology sector, and 66% of tech companies have zero or one woman on their boards.
 - Even in tech companies with at least one woman on board, women only occupy 14% of board seats, leading to concerns about tokenism.

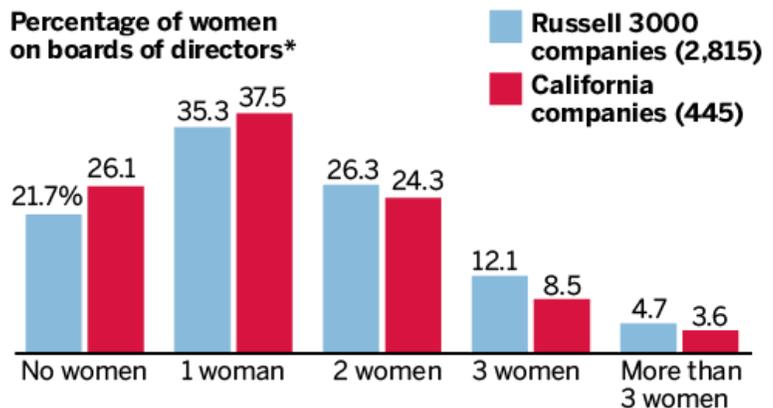
- Companies in all sectors increasingly need tech expertise on their boards due to cybersecurity concerns, privacy breaches, increasing automation, and other tech advancements, yet of the Fortune 100 surveyed, only [12%](#) have direct technology experience on their boards.

The goals of the proposed WITI program are to increase the number of technical women serving on corporate boards, deepen and expand UC’s corporate partnerships in technology, and position WITI@UC nationally as the first and only university executive program for technical women on boards. Potential collaborators could include the UC Berkeley Haas School of Business, the Fung Institute for Engineering Leadership, the Center for Equity, Gender, and Leadership, and organizations like [Broadrooms](#), and [WomenCorporateDirectors](#).

Some participants debated the utility of an executive education program versus other interventions such as networking events with recruiters. Others expressed concern that the new California law would promote more tokenism, or that companies would only put some women on board as ‘placeholders.’ Some felt there were plenty of qualified women but not enough board seats. WITI@UC will take the feedback and iterate on collaborative ways to improve the number of women on boards.

CALIFORNIA COMPANIES LAG BEHIND

Companies with headquarters in California are more likely to have no women on their boards compared to the companies in the Russell 3000 Index. More than one-quarter of California companies have no women directors serving on their boards and are also less likely to have two or more female directors.



*As of June 30, 2017, gender diversity of the boards of directors of the 445 publicly traded companies with headquarters in California in the Russell 3000 Index. The number of Russell 3000 companies is under 3,000 due to mergers, acquisitions, bankruptcies, going-private transactions, etc

Source: Board Governance Research LLC

BAY AREA NEWS GROUP

Figure 6: Board Governance Research LLC, via the [Mercury News](#)

Additional Resources are in the [shared Leadership Round Table Drive](#) and include: [Women Did Everything Right, Then Corporations Got Greedy](#) [10 things we should all demand from Big Tech right now](#) [“Algorithmic Bill of Rights”]

Acknowledgements: This report was compiled by WITI@UC student employees Rebekah Tang, a data science major and linguistics minor, and Matthew Avaylon, an Applied Mathematics in Data Science major.