THE GENDER PAY GAP IN TECH

Despite recent pushes for gender pay equality, issues persist in the tech industry. These pay gaps between men's and women's salaries exist even when other factors, including experience, roles, location and education are controlled for. Even with the past and continued contributions that women make in technology, the tech industry isn't leading in this particular arena. There is much work to be done.

To help raise awareness and drive the discussion about salary equality, Dice presents its findings on pay differences between men and women in the technology field, putting real numbers behind compensation inequality. Our data reveals a pay differential that transcends regions, states and occupations. In fact, in some states, the pay differential between men and women exceeds $15,000. With this data, we hope to foster more conversation around pay differentials and create change for the industry as a whole.

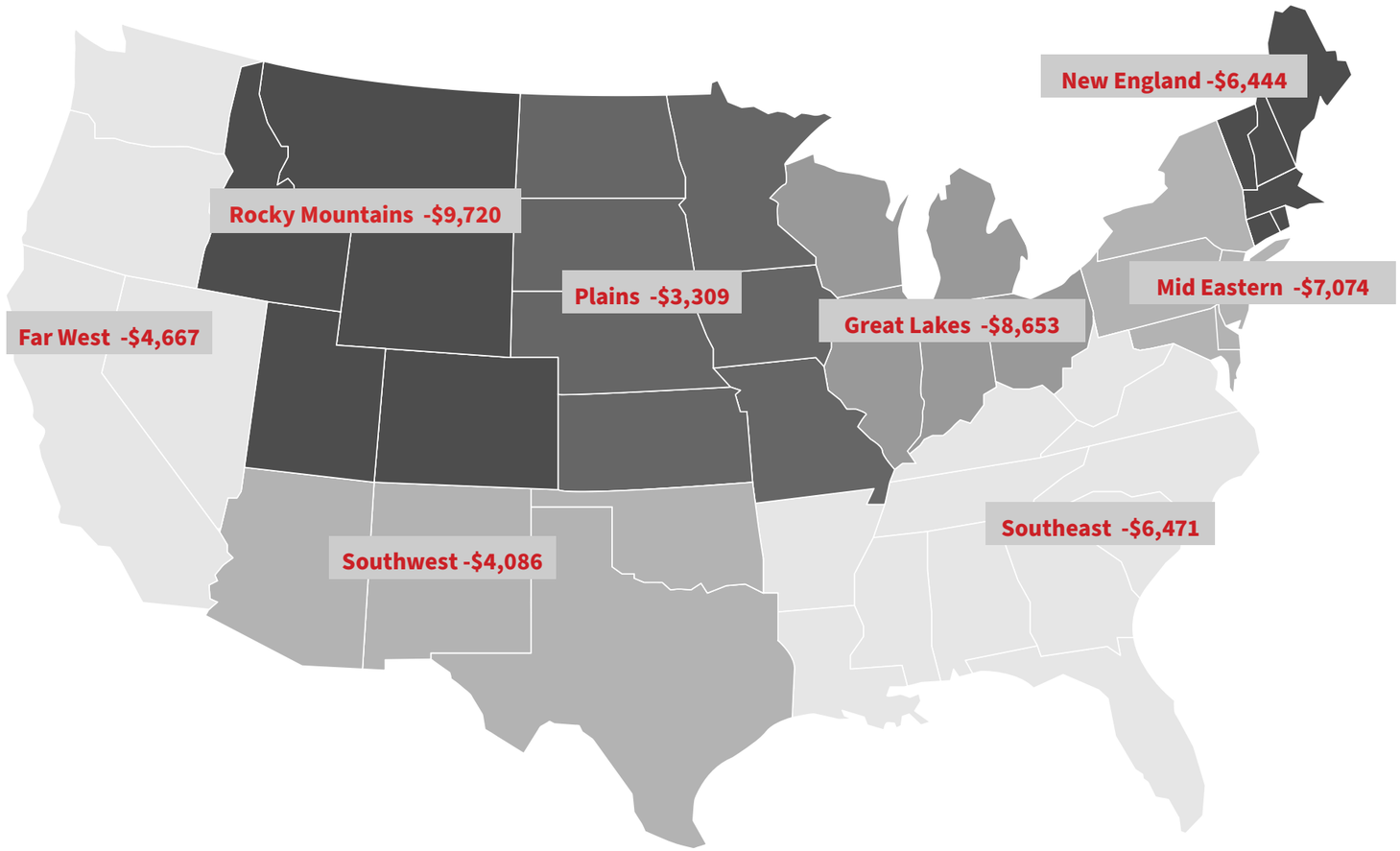
01

WOMEN IN TECH ARE STILL PAID LESS IN 2020

Nearly every U.S. state and region shows a negative pay differential, meaning that women are paid less than men, and thus indicates that there is a gender pay gap. While some differentials are wider than others, the data represents an industry-wide issue related to unequal pay, transcending state lines and regions.

REGION

For all eight featured U.S. regions, the salary differential shows men earn more than women, even when controlling for education, experience and occupation.



Looking at the data on a state level, the salary differential is also present, albeit with significant differences across states in each region.

STATES WITH THE LARGEST SALARY DIFFERENTIAL	SALARY DIFFERENTIAL
Utah	-$16,871
Alabama	-$16,660
Illinois	-$11,375
Arkansas	-$10,821*
Colorado	-$9,687
Connecticut	-$9,203
Michigan	-$8,971
New York	-$8,914
Missouri	-$8,871
Georgia	-$8,314
Maryland	-$8,264
Wisconsin	-$7,481
Pennsylvania	-$7,471
Ohio	-$5,965
North Carolina	-$5,627
California	-$5,369
Florida	-$5,001
South Carolina	-$4,968
Iowa	-$4,923
Virginia	-$4,779

* Sample size less than 40 respondents, therefore, not statistically valid, but presented for continuity purposes only.

Note: A negative (-) differential indicates the amount less that female technologist makes compared to her male equivalent. A positive differential indicates the amount more a female technologists makes compared to her male equivalent.

Note: Differentials that are less than $5,000 are not statiscially significant

MINNESOTA

Pay differential: **+$3,929**

Of all the featured states, Minnesota is the only one with a positive differential, meaning that women make more than men. While the gap is certainly less significant than other featured states, that $3,929 represents a change from the national status quo that negatively impacts many female technologists.

NEW YORK

Pay differential: **-$8,914**

New York, which had the most tech job postings of any city in 2019 (and a year-over-year growth of 15%) shows a pay differential of $8,914. In recent years, the Empire State has banned state agencies from asking job candidates about their salary histories or basing their pay on prior salary, which may help close this gap in the future.

MARYLAND

Pay differential: **-$4,779**

Maryland shows a pay differential of $4,779. While this gap is significant, the state also recently passed a major law, which strengthens existing laws that prohibit discrimination based on gender or gender identity.

CALIFORNIA

Pay differential: **-$5,369**

California, which is home to Silicon Valley as well as San Diego (the latter is one of the fastest-growing tech hubs), has a salary differential of $5,369, even with the state's recent efforts to reduce gender pay disparity. With more Bay Area companies highlighting their equal pay policies, and with California joining other U.S. states in signing a salary privacy bill, some wage parity progress has been made, but there's still much to be done. In 2019, California tech job postings saw a 23% year-over-year growth.

ALABAMA

Pay differential: **-$16,660**

Women technologists make an average of $16,660 less than men in Alabama, the third highest in the country. Home to emerging tech hubs including Huntsville and Birmingham, Alabama's job postings also grew by 15% between 2018 and 2019. While the pay gap is significant, the state has recently passed an Equal Pay Act that prohibits an employer from paying an employee less than another employee of a different race or sex for equal work.

Job Posting Data Source: Labor Insight Jobs (Burning Glass Technologies)

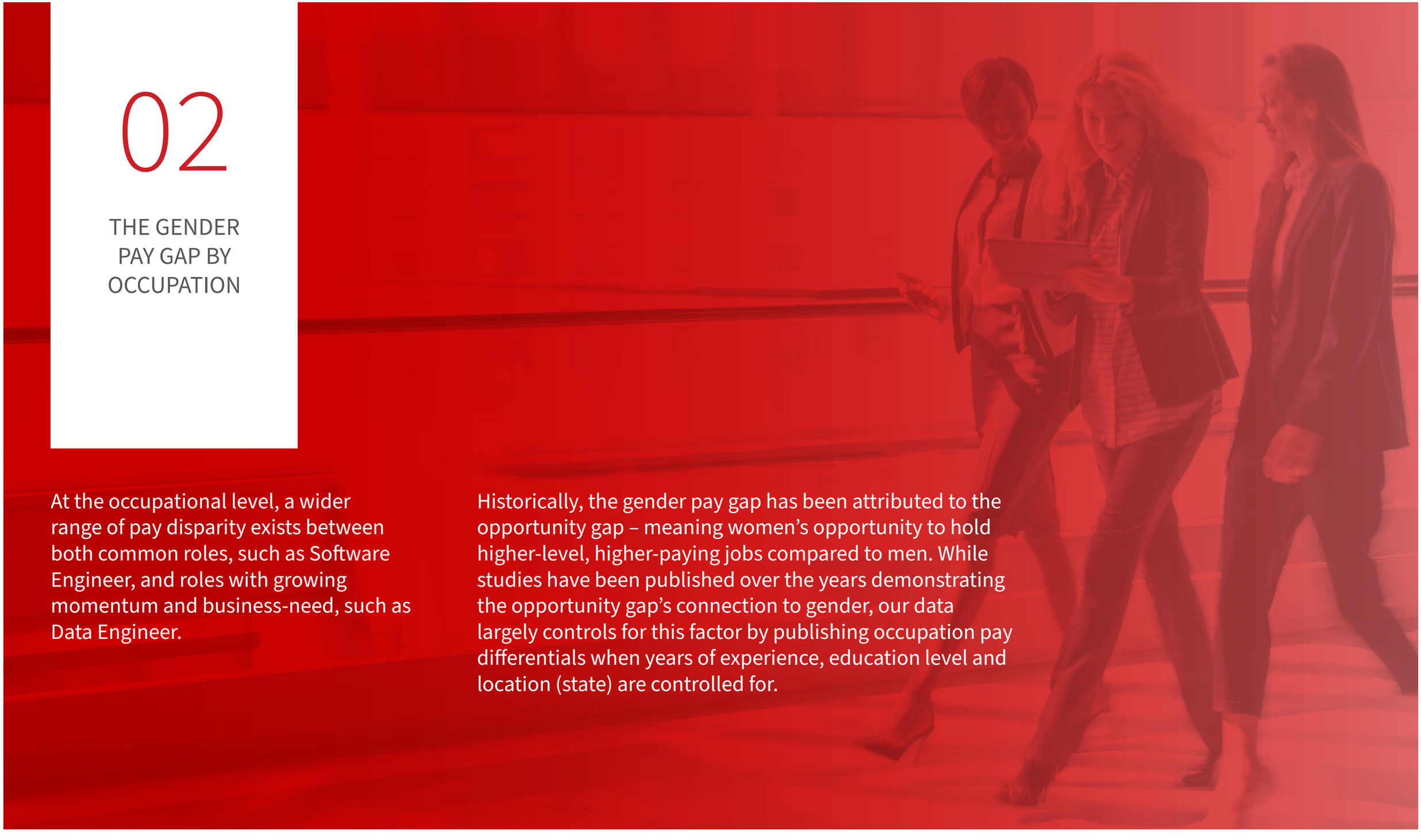
Dice®

02

THE GENDER PAY GAP BY OCCUPATION

At the occupational level, a wider range of pay disparity exists between both common roles, such as Software Engineer, and roles with growing momentum and business-need, such as Data Engineer.

Historically, the gender pay gap has been attributed to the opportunity gap – meaning women's opportunity to hold higher-level, higher-paying jobs compared to men. While studies have been published over the years demonstrating the opportunity gap's connection to gender, our data largely controls for this factor by publishing occupation pay differentials when years of experience, education level and location (state) are controlled for.



DATA ARCHITECT

Pay differential: **-$13,123**

There has been an increase in demand for Data Architects over the past few years; in the past two years alone, job postings rose 15%. That's not surprising, given companies' need for technologists who can design and manage often-complex data architecture. Yet, while the demand for the role increases, gender pay shows one of the greatest contrasts of any featured occupation: specifically, a $13,123 pay differential.

SOFTWARE ENGINEER

Pay differential: **-$8,559**

Businesses throughout the United States are hiring Software Developers at a remarkable rate. In fact, this role accounts for roughly 12% of all tech job openings listed in the past year, with a projected growth of 30% over the next decade (per a Burning Glass Technologies analysis). At many companies, Software Developers can earn massive compensation once they ascend to the senior tiers, especially once you factor in bonuses and stock options, which just shows their importance to organizations' overall strategies. Yet, despite that growth, opportunity and demand, this occupation still shows a $8,559 pay differential between men and women.

DATA SCIENTIST

Pay differential: **-$9,561**

Data Scientist shows a $9,561 pay differential between men and women. That comes as this role, which analyzes data in ways that executives and employees can utilize to make their business grow, has shown significant growth in industry-wide demand. In fact, the role had a 7% expansion in job postings between 2018 and 2019, hinting at a growing hunger for data scientists skilled enough to analyze datasets (of both the structured and unstructured variety) for insights.

OCCUPATION	DIFFERENTIAL
Mainframe Systems Programmer	-$16,328*
DevOps Engineer	-$15,077*
Security Architect	-$14,134*
Data Architect	-$13,123
Database Administrator	-$11,053
Data Scientist	-$9,561
Data Engineer	-$9,242
Software Engineer	-$8,559
Security Engineer	-$6,847
Technical Recruiter	-$6,811
Sales Engineer	-$6,779*
Business Analyst	-$6,455
Project Manager	-$5,068
Product Manager	-$4,709
Quality Assurance Engineer	-$4,404
Hardware Engineer	-$2,400*
Systems Administrator	-$2,061
UI / UX Engineer	-$1,923
MIS Manager	-$1,355
Web Developer/Programmer	-$1,180
Help Desk Support	-$579
Cloud Engineer	+$803*
Systems Architect	+$2,446*
Network Engineer	+$4,836
Technical Writer	+$6,443

* Sample size less than 40 respondents, therefore, not statistically valid, but presented for continuity purposes only.

Note: A negative (-) differential indicates the amount less that female technologist makes compared to her male equivalent. A positive differential indicates the amount more a female technologists makes compared to her male equivalent.

Note: Differentials that are less than $5,000 are not statiscially significant

DATABASE ADMINISTRATOR

Pay differential: **-$11,053**

Database Administrator (DBA) roles showed one of the most significant pay differentials, with a gap of $11,053. While job postings for the occupation dropped by 2% between 2018 and 2019, the difference in salary is one of the most noteworthy in the tech industry. Database administrators are tasked with conceptualizing databases (including capacity planning, which is crucial), as well as overseeing database security, backup, and data recovery.

DATA ENGINEER

Pay differential: **-$9,242**

Between 2018 and 2019, Data Engineering roles showed the most significant growth in job postings, with a 50% year-over-year increase. Data Engineers are usually tasked with constructing and maintaining repositories of data, such as customer information databases. While this occupation is growing tremendously to meet demand, Data Engineer roles show a $9,242 pay differential between men and women.

SECURITY ENGINEER

Pay differential: **-$6,847**

In the wake of several high-profile data breaches over the past few years— including Equifax, Facebook, Marriott International, and others—companies are more cognizant than ever that a security breach can cost corporate reputations and lots of money. At the same time, the increasing complexity of corporate IT infrastructure makes it harder to secure than ever. That's why companies really want highly specialized security engineers who can recognize (and patch) the vulnerabilities that inevitably pop up in the system. Today, Security Engineer roles represent a $6,847 pay differential between men and women.

Job Posting Data Source: Labor Insight Jobs (Burning Glass Technologies)

WOMEN PIONEERS IN TECH

Without Adele Goldberg, the Apple desktop environment might look very different today. While working at Xero Palo Alto Research Center (PARC), Adele was the only woman in the group that built Smalltalk-80, one of the most popular and influential early programming languages. She also presented Smalltalk to Steve Jobs, who implemented many of these concepts into Apple's first products. Beyond Apple, many modern Graphical User Interfaces (GUIs) have design standards that trace directly back to Goldberg's original work.

03

SATISFACTION LEVELS DIFFER BETWEEN MEN AND WOMEN

In addition to salary differentials, we also analyzed the satisfaction levels related to men's and women's compensation, job, team composition, and more. Our data suggests that women are generally less satisfied than men in tech. For employers, that's a huge issue, as unsatisfied employees have a tendency to leave, massively impacting a company's ability to retain its collective skills and institutional knowledge, as well as attract new candidates.

COMPENSATION

The data suggests that women are generally less satisfied with their compensation then men. In fact, 38% of women are dissatisfied with their compensation, compared to 33% of men. At the same time, roughly half (49%) of women expressed satisfaction with their compensation, compared to 51% of men.

The average salary for a woman satisfied with her compensation is $93,591, while the average salary for a woman dissatisfied with her compensation is $69,543. This contrasts with men, where the average salary for "compensation satisfaction" is $108,711, while those dissatisfied make an average of $81,829. This could suggest that men expect to be paid more (hence the relatively high salary number for dissatisfaction), which can have an impact on whether they accept offers and negotiate for raises.

HOW WOULD YOU RATE YOUR LEVEL OF SATISFACTION WITH THE TEAM YOU WORK WITH?

	Female	Male
Very satisfied	32%	32%
Somewhat satisfied	30%	33%
Neutral	21%	22%
Somewhat dissatisfied	10%	9%
Very dissatisfied	6%	4%

Women are also slightly less satisfied with their team and manager. While 65% of men are satisfied with the team they work with, 62% of women said the same. Moreover, while 59% of men said they're satisfied with their manager, only 56% of women are satisfied with their manager.

HOW SATISFIED ARE YOU WITH THE COMPENSATION IN YOUR CURRENT POSITION?

	Female	Male
Very satisfied	17%	17%
Somewhat satisfied	32%	34%
Neutral	12%	15%
Somewhat dissatisfied	23%	22%
Very dissatisfied	15%	11%

HOW WOULD YOU RATE YOUR LEVEL OF SATISFACTION WITH YOUR MANAGER?

	Female	Male
Very satisfied	33%	32%
Somewhat satisfied	23%	27%
Neutral	21%	20%
Somewhat dissatisfied	11%	11%
Very dissatisfied	12%	10%

WHO'S CHANGING EMPLOYERS?

The relative dissatisfaction as it relates to compensation, teams and management is influencing technologists' likeliness to change employers. And in 2020, more women (42%) intend to change employers than men (39%).

REASONS FOR CHANGING EMPLOYERS

When it comes to reasons for changing employers, however, men (69%) appear slightly more motivated to seek a higher salary than women (64%). Our data also shows that, while 33% of men expressed an urge for more responsibility as a reason to change employers, only 29% of women said the same. But slightly more women than men (10% vs. 8%) were willing to change jobs in order to better express their creativity.

BURNOUT

Burnout is an issue that plagues nearly every business in some regard, but how it effects men and women reveals a deeper nuance to the issue. The data suggests that women are slightly more burnt out (33%) compared to men (31%). While equal percentages of men and women noted hours worked and lack of time off as reasons for feeling burnt out, more women (10%) than men (7%) highlighted friction with their team as a reason for feeling burnt out. Moreover, while 33% of women cited lack of recognition for their work as a cause, slightly less men (31%) said the same.

WITHIN THE NEXT YEAR, DO YOU ANTICIPATE CHANGING EMPLOYERS VERSUS STAYING WHERE YOU ARE?

	Female	Male
Yes, I'll likely change employers	42%	39%

IF YES, WHY DO YOU ANTICIPATE CHANGING EMPLOYERS?

	Female	Male
To seek higher compensation	64%	69%
To seek more responsibility	29%	33%
To seek better working conditions	45%	47%
Anticipate losing current position	19%	22%
Relocation	13%	13%
Shorter commute	18%	18%
I want to leave the tech industry	1%	1%
I want to have more opportunity to express my creativity	10%	8%
I want to be a part of the startup culture	3%	3%

HOW BURNED OUT DO YOU FEEL AT YOUR JOB?

BURNT OUT OR VERY BURNT OUT
33%

BURNT OUT OR VERY BURNT OUT
31%

WHAT WOULD YOU SAY ARE THE TOP TWO REASONS YOU FEEL BURNED OUT?

	Female	Male
Hours worked	28%	28%
Lack of time off	14%	14%
Friction with my boss	17%	16%
Friction with my team	10%	7%
Workload	38%	38%
Lack of recognition for my work	33%	31%
Lack of work/life balance overall	25%	25%
Lack of challenges/monotony	23%	27%

04

MEN AND WOMEN VALUE DIFFERENT THINGS IN EMPLOYERS

Building a gender-diverse workforce leads to a more positive workplace culture and a greater range of ideas and solutions to overcome business challenges. Employers looking to generate higher satisfaction among their female technologists should take note of the distinct values that women prioritize – notably, benefits that go beyond the workplace and enrich their lives.

BENEFITS CONSIDERED IMPORTANT

Women and men place equal (or near-equal) value on many of the core benefits that the tech industry has come to expect, such as health and dental insurance, paid vacation days and 401(k) matching/pension. But women place higher importance on paid volunteer opportunities (38% of women say this is important, compared to 29% of men), college tuition reimbursement (49% of women say this is important, compared to 44% of men), maternity leave (45% of women say this is important, compared to 40% of men), remote and flex options (77% of women say this is important, compared to 72% of men) and wellness programs (46% of women say this is important, compared to 41% of men).

WHICH BENEFITS DO YOU CONSIDER IMPORTANT VS. HAVE?

Benefit	Important	Have	Gap
Health insurance	85%	80%	5%
Dental insurance	79%	74%	5%
Vision insurance	71%	67%	4%
Wellness programs	46%	41%	5%
Paid vacation days	85%	73%	12%
Paid sick days	80%	62%	18%
Remote and flex options	77%	51%	26%
Maternity/Paternity leave	45%	37%	8%
401(k) matching/pension	81%	60%	21%
Stock programs	42%	19%	23%
Training and education	73%	40%	33%
College tuition reimbursement	49%	27%	22%
Paid volunteer opportunities	38%	18%	20%

WHICH BENEFITS DO YOU CONSIDER IMPORTANT?

	Female	Male
Health insurance	85%	86%
Dental insurance	79%	79%
Vision insurance	71%	70%
Wellness programs	46%	41%
Paid vacation days	85%	85%
Paid sick days	80%	78%
Remote and flex options	77%	72%
Maternity/Paternity leave	45%	40%
401(k) matching/pension	81%	81%
Stock programs	42%	46%
Training and education	73%	71%
College tuition reimbursement	49%	44%
Paid volunteer opportunities	38%	29%

BENEFITS DISPARITIES

A look at the benefits that women consider important versus those they actually have reveals a few key disparities. For example, while 73% of women respondents consider training and education important, only 40% have this benefit. Moreover, although 77% of women consider remote and flex options to be important, just 51% have this offered as a benefit. Also, worth noting are stock options: 42% of women consider this to be an important benefit, but only 19% have it, representing a 23% gap.

WOMEN PIONEERS IN TECH

Gladys West is largely hailed as the figure whose mathematical work led to the invention of the Global Positioning system (GPS). She programmed the IBM 7030 'Stretch' computer that delivered refined calculations for a geodetic Earth model, which eventually became known as GPS. In 2018, she was inducted into the Air Force Space and Missile Pioneers Hall of Fame.

EQUAL PAY IN THE U.S.

The road towards gender equality in the workplace has been a long progression with key milestones along the way.

1963

The Equal Pay Act is passed by Congress, promising equitable wages for the same work, regardless of the race, color, religion, national origin or sex of the worker.

1964

Title VII of the Civil Rights Act passes including a prohibition against employment discrimination on the basis of race, color, religion, national origin, or sex.

1968

President Lyndon B. Johnson signs an executive order prohibiting sex discrimination by government contractors and requiring affirmative action plans for hiring women.

1972

Title IX of the Education Amendments prohibits sex discrimination in all aspects of education programs that receive federal support.

1973

The U.S. Supreme Court bans sex-segregated “help wanted” advertising as a violation of Title VII of the Civil Rights Act of 1964 as amended.

1978

The Pregnancy Discrimination Act bans employment discrimination against women that are pregnant.

1994

Congress adopts the Gender Equity in Education Act to train teachers in gender equality, promote math and science learning by girls, counsel pregnant teens and prevent sexual harassment.

2005

The Supreme Court rules that Title IX prohibits punishing someone for complaining about sex-based discrimination.

2009

Lily Ledbetter Fair Pay Restoration Act allows victims, usually women, of pay discrimination to file a complaint with the government against their employer within 180 days of their last paycheck.

TOP MOTIVATORS

Building a gender-diverse workforce leads to a more dynamic work culture and increased creativity. Today, employers are beginning to take note of the different motivators and values that not only attract a gender-diverse workforce, but also retain one. In fact, 44% of women respondents cited work-life balance and 33% cited enjoyable work culture as motivators they received in 2019. Additionally, 39% of women noted remote work options as a motivator they received. Interestingly, roughly 32% of women (which is 1% lower than male respondents) cited recognition for their work.

OF THE FOLLOWING, WHICH THREE COULD YOUR CURRENT COMPANY CHANGE TO INCREASE YOUR ENGAGEMENT/ HAPPINESS AT WORK?

	Female	Male
Higher compensation or a promotion	69%	75%
Remote work options	28%	24%
Improved health or retirement benefits	24%	26%
More training or certifications	21%	23%
Better work/life balance	20%	20%
More recognition	17%	17%
Improved work culture	15%	14%
Knowing my opinions and expertise matter	14%	12%
More meaningful work	14%	14%
More interesting problems to solve	10%	13%
Better, more inspiring co-workers	8%	8%
Reduced friction with my boss	5%	5%
More independence and autonomy	4%	5%

WOMEN PIONEERS IN TECH

MARGARET HAMILTON
Computer Scientist, Business Owner: Hamilton Technologies

Margaret Hamilton is an American computer scientist, systems engineer and business owner. Hamilton was the Director of the Software Engineering Division of the MIT Instrumentation Laboratory, which designed the onboard flight software that made Neil Armstrong and Buzz Aldrin's Apollo mission possible. On November 22, 2016, she received the Presidential Medal of Freedom from President Barack Obama for her work on NASA's Apollo Moon missions. After her stint developing software for NASA, she founded two software companies.

LEAH LASALLA
CEO & Technical Founder: Astral AR

Leah LaSalla is the technical founder and CEO of Astral AR, a company that creates and programs armored drones to allow law enforcement to "see" guns and bombs through walls, as well as detect heartbeats and breathing, which can be beneficial in finding people who are trapped in tight places. LaSalla addresses pay inequality head-on in her own company by making sure that everyone on her team is paid the same amount.

SAMANTHA SNABES
CEO & Co-Founder: re:3D

After traveling the world with Engineers Without Borders, Samantha Snabes saw the potential of 3D printing and decided to launch her attempt at a solution that could change the world. The result was re:3D, a technology business that strives to transform the manufacturing industry by delivering industrial 3D printers to companies around the world. Before launching re:3D, Snabes grew up dreaming of being an astronaut, and even went on to work for NASA (including a stint as a Strategist for the Space Life Sciences sector of the NASA Human Health and Performance Center for three years between 2009 and 2012).

05

THE TECH INDUSTRY STRUGGLES TO ELIMINATE BIAS

Transparency is key to closing the gap; when people know how much their colleagues and managers are paid, they can take more effective action to bring their own compensation numbers in line.

Although many tech companies are very reluctant to reveal salary information either internally or externally (many of tech's biggest firms are only too happy to release annual diversity reports that break down employee demographics—but few mention any kind of salary figures), that might be changing; Intel, for example, announced in October 2019 that it would begin publicly releasing employee pay data broken down by gender and race. More transparency might prove an extremely effective tool in eliminating bias in compensation.

There's still much work to be done, however. Over the past few years, some high-profile incidents have highlighted how, even with diversity programs in place, many firms struggle to adjust their cultures in ways that will close the diversity (and pay) gap. For example, despite all of its programs, Google has nonetheless faced lawsuits over gender pay inequality; Uber is in the midst of revamping its public image (including the hiring of a chief diversity officer) after a series of damning reports about its "bro-tastic" culture; and Microsoft has wrestled with allegations of "toxic culture" in the wake of a company-wide email chain in which employees discussed sexual harassment and other issues.

In the tech industry, what starts at the biggest companies often trickles down to smaller ones. It's potentially good news if firms large and small actively attempt to diversify their employee rankings and talent pipelines. However, Dice's data also makes it clear that these diversity efforts—as halting and incremental as they might seem at moments—aren't necessarily closing the gender pay gap, especially in crucial roles such as data, security, and software engineering.

ABOUT DICE

Dice is a leading tech career hub connecting employers with skilled technology professionals and providing tech professionals with career opportunities, data, insights and advice. Established in 1990, Dice began as one of the first career sites and today provides a comprehensive suite of recruiting solutions, empowering companies and recruiters to make informed hiring decisions. Dice serves multiple markets throughout North America.

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METHODS

To complete this analysis, Dice combined survey data from its 2017-2019 Dice Salary Reports, with supplementary panel data collected for 2019 salary data. Supplemental panel data was obtained to create a more balanced male/female sample size within key markets in 2019 which allowed for hypothesis testing within those markets. The research was conducted by Cypress Research Group.

The analysis was limited to those with salary levels at or below $400,000, who self-reported their sex as female or male, were working at a tech professional in the U.S. at the time of the survey, and who provided data for each of the covariates in our study (years of experience as a tech professional, educational level and technology occupation). The total number of responses used in the analysis from the 2017 survey was 9,721; in 2018, 9,842; and in 2019, 12,304. For each year of data collection, surveys were collected from mid- October until mid-December. The additional panel-sourced survey responses were collected in January of 2020 to supplement 2019 salary survey data.

The estimated gender differentials were calculated using a dummy-coded regression analysis and controlling for the covariates of year of data collection, years of experience (as a technology professional), educational attainment, technology occupation (for location-based differentials) and U.S. state (for occupation-based differentials). This type of analysis was used in order to isolate the gender salary differential when other factors were taken into account. There may be important factors related to pay levels not captured in our survey and hence not included in our analysis.

Job posting data was gathered by Dice's partner, Burning Glass Technologies, which has a database of more than 1 billion current and historical job postings worldwide. For the purpose of identifying growth, job postings between 2018 and 2019 were compared. Key employers, roles, and skills were identified by analyzing job post data for 2019 only.