

JANUARY 2019

Women in the Workforce: How California Measures Up

Jessica Jackson

RESEARCH

ABOUT US

ABOUT THE MILKEN INSTITUTE

The Milken Institute is a nonprofit, nonpartisan think tank. We catalyze actionable solutions to persistent global challenges by connecting human, financial, and community resources to those who need them. Guided by a conviction that the best ideas, under-resourced, go nowhere, we conduct applied research, convene luminaries from competing viewpoints, and construct programs and initiatives designed to achieve our overarching mission of building meaningful lives.

ABOUT THE CENTER FOR REGIONAL ECONOMICS

The Center for Regional Economics promotes prosperity and sustainable growth by increasing understanding of the dynamics that drive job creation and promote industry expansion. Our research, programs, and convening develop and disseminate innovative, actionable economic and policy solutions that provide changemakers with the tools to create jobs and improve access to capital.

©2019 Milken Institute

This work is made available under the terms of the Creative Commons AttributionNonCommercial-NoDerivs 3.0 Unported License, available at creativecommons.org/licenses/by-nc-nd/3.0/

INTRODUCTION

California is one of the world's largest economies, home to 53 of the Fortune 500 companies and a leader in industries ranging from agriculture to financial services, tourism, and technology. However, strong economic performance is not universal across the state or the workforce, and opportunity is not equal across regions or genders.

California is not alone regarding discrepancies in workforce opportunities. Even though the average woman completes more education than the average man, across the country women earn less money than, choose to participate less often in the labor force than, and do not achieve the same level of career success as men. These facts have not deterred women from seeking entry-level employment. Hence, it seems clear that the states which are most effective at providing career advancement and retainment strategies for women will have a competitive edge.

This paper primarily assesses the state of play in California by providing policymakers and researchers a recent snapshot of comparative environmental conditions for Californian women that impact their participation and advancement in the workforce. To provide appropriate context for the California data we also compiled comparable information for the states most often considered California's peers.

Compared to that set, California is ahead of many states on certain measures that affect how women participate in the workforce. Most notably, the state has what is considered the most advanced parental leave policy in the nation, which legally enforces paid leave for new or expecting parents.¹ Further, of California's top wage-earning quartile, 35.07 percent are women—and only eight other states beat that share.

INTRODUCTION

On the other hand, the state still lacks sufficient female representation in its state legislature, as well as among companies' chief executives. As well, California currently underperforms in educational attainment and women hold only 26.48 percent of STEM occupations across the state.

We hope that by highlighting areas of strength as well as those in need of improvement, policymakers will be better able to forge policies that can increase gender equity—ultimately maximizing human capital and bolstering knowledge-based economies, the drivers of economic growth and productivity.

DATA AND METHODOLOGY

The following analysis examines the landscape navigated by women in the workforce by assembling the most recent data for each of the 50 states, including a compilation of decision-making, cultural, and family-and-work mobility variables. The analysis aims to capture the decision-making power for women by using multiple measures for the concentration of women in decision-making roles. The regional culture that may influence a woman's career decisions is reflected in variables that range from the average age at first childbirth, women's average years of education, the wage differential between women and men, and the concentration of women in STEM, to the labor force participation rate for women. Mobility measures included obstacles to women's ability to be mobile between family and work, such as childcare costs and parental leave policies. The latter group of variables is important because, since 1990, the primary reason women give for leaving the labor force has been to care for a family member, predominantly a small child.² Information on opportunity for women to advance in the labor force was also assembled for context on the effect of women's decision-making power, the culture surrounding them, and the ease with which they can remain at or return to work with family obligations. Detailed information about the variables used for the analysis and the variables used for context on workforce advancement opportunity can be found in the appendix.

Each state faces a unique set of constraints and challenges, so that a policy change aimed at reducing obstacles faced by women in the workforce in one state might not work for another. To account for that, we used a hierarchical cluster analysis to classify groups of states with similar societal, economic, or professional characteristics. This approach finds trends common to each classified group create the foundation for a better peer-to-peer comparison. Results provide policymakers and researchers a recent

DATA AND METHODOLOGY

snapshot of conditions for women in each state, and create a solid foundation for further research. The paper specifically focuses on California's current state of affairs for women with regards to entering, remaining, and advancing in the workforce and discusses what may lie ahead for the state.

Data compiled for this research includes the most recent data—a mid-2018 snapshot for female legislators and annual 2016 for all other variables—for each of the 50 states in the U.S.

Z-scores, the difference between the value of an observed indicator and the mean of all observations for that variable divided by the standard deviation for all observations in that variable, were used to standardize values for each variable—making comparisons easy from a zero mean. A hierarchical cluster analysis employing Ward's minimum variance method was then used to classify groups of states with similar environmental characteristics for women in the workforce.^{3,4}

Every cluster's median Z-scores (Table 1) for each variable can be used to find each group's defining characteristics. For example, Cluster D, which includes Delaware, Hawaii, Maine, Maryland, and Vermont, has the most favorable Z-scores for categories measuring representation of women in decision-making roles (i.e., legislators and managers) when compared with other clusters. This gives Cluster D a distinctive characterization of being inclusive of women in decision-making roles.

DATA AND METHODOLOGY

Table 1. Median Z-Scores by Cluster⁵

	Cluster A	Cluster B	Cluster C	Cluster D	Cluster E
Percentage of total legislators who are female	-1.399149	0.0328837	0.5632662	1.05387	-0.238937
Percentage of total managers who are female	0.1462612	-0.008524	0.2216463	1.046296	-1.346222
Average age at first childbirth	-1.211285	-0.448697	1.043679	0.9288817	-0.202701
Median age at first marriage for women	-0.925361	-0.207408	1.029064	0.7498604	-0.566384
Average years of education for women	-1.255223	-0.305775	0.9778177	0.6588585	0.0952426
Ratio of average wage for women to average wage for men	-0.394924	-0.151347	-0.022596	0.8399437	0.5413236
Share of women in STEM occupations	-0.606469	-0.160322	-0.17259	1.59176	0.9368447
Female labor force participation rate	-1.354838	-0.321049	0.5009739	0.9327022	1.369432
Parental leave score	-0.313701	-0.684214	1.106598	0.5508289	-0.313701
Childcare cost as a percentage of median income*	-1.11801	0.1595377	0.7515716	-0.05858	-0.027421

Decision-Making Power Variable	Cultural Variable	Family Life to Workforce Mobility Variable
--------------------------------	-------------------	--

Source: Milken Institute.

Note: *For childcare cost as a percentage of the median income, Z-scores should be interpreted the opposite from the rest of the variables, where smaller is better and larger is worse because lower childcare costs are preferable.

CLUSTERS

The 50 states were clustered based on variables which provided pseudo peer groups and are presented in no particular order. These groupings allow an exploration of both differences among states based on female workforce advancement characteristics and the variables that were collected that can affect women progressing through their careers. The cluster profiles can be useful to policymakers in each state by allowing them to see how they compare to peers across indicators and female workforce advancement to inform what areas may benefit from new or altered policy action.

Table 2 provides the cluster descriptions, while Table 3 shows the clusters' relative performance in aspects of female workforce advancement as measured by the percentage of chief executives who are women and the percentage of women in states' top-earning quartiles. This data gives context to how each cluster's defining characteristics related to female leadership, culture, and ease of mobility between workforce and home obligation affect female workforce advancement. As shown, Cluster D has the most women at the chief executive level relative to men and also has the highest percentage of women in the top-earning quartile which indicates that women have fewer barriers to advancement in those states. In contrast, Cluster A has poor performance in those indicators which may point to obstacles for female workforce advancement in those states.

California belongs in Cluster C, defined by a supportive culture with high costs. This cluster boasts the best parental leave scores in the country and exceeds national averages in other cultural aspects indicative of an environment supportive of women in the workforce, such as age at first childbirth and marriage and age equality.

CLUSTERS

Table 2. Cluster Descriptions

Clusters	States Included in Cluster		Defining Characteristics
Cluster A: Lower Childcare Cost and Lowest Advancement Opportunity	Alabama Arkansas Kentucky Louisiana Mississippi	Oklahoma Tennessee Utah West Virginia	<ul style="list-style-type: none"> - Lowest childcare cost - Lowest average education for women - Smallest female representation in state legislature - Youngest age at first childbirth
Cluster B: Balanced but More Limited Parental Leave	Alaska Arizona Florida Georgia Idaho Indiana Kansas Michigan Missouri	Montana Nevada New Mexico North Carolina Ohio Pennsylvania South Carolina Texas Wyoming	<ul style="list-style-type: none"> - Lowest parental leave score - Middle of the pack for other indicators
Cluster C: Supportive Culture with High Costs	California Colorado Connecticut Illinois Massachusetts New Hampshire	New Jersey New York Oregon Rhode Island Virginia Washington	<ul style="list-style-type: none"> - Highest average education for women - Highest parental leave score - Highest age at first childbirth - Highest childcare cost
Cluster D: Most Female Decision Makers and Smallest Wage Gap	Delaware Hawaii Maine Maryland Vermont		<ul style="list-style-type: none"> - Highest concentration of women in decision-making roles - Smallest wage gap - Highest concentration of women in STEM
Cluster E: High Female Labor Force Participation	Iowa Minnesota Nebraska North Dakota South Dakota Wisconsin		<ul style="list-style-type: none"> - Highest female labor force participation rate - Low female representation in decision-making roles - Relatively small wage gap and high concentration of women in STEM

Source: Milken Institute.

CLUSTERS

Table 3. Percentage of Chief Executives Who Are Women and Percentage of Women in the Top-Earning Quartile of Their States by Cluster

Clusters	Percent of C-Suite Who Are Women		Percent of Top-Earning Quartile Who Are Women	
	Median	Mean	Median	Mean
Cluster A	30.25%	29.25%	25.26%	25.74%
Cluster B	32.07%	31.37%	27.70%	27.86%
Cluster C	32.96%	33.43%	29.03%	28.88%
Cluster D	37.04%	37.46%	31.71%	31.31%
Cluster E	31.44%	30.56%	26.67%	25.90%

Source: Milken Institute.

CALIFORNIA'S WORKFORCE ENVIRONMENT FOR WOMEN

As part of Cluster C, California leads the group in some indicators for women in the workforce, and lags behind in others. Because of its first-of-its-kind paid family leave law and its paid sick days law, California is considered a leader in providing adequate and fair policies for families.⁶ However, with the state's high childcare costs, the benefits of family leave are disproportionately experienced by women with relatively high socioeconomic status regarding labor force attachment.

Various industries throughout California have been subject to research focused on improving gender diversity, particularly in higher paying jobs. A previous Milken Institute report, "Hollywood's Diversity Problem: It's Not Just Actors," points out that California's entertainment industry has a major glass ceiling issue.⁷ The report discusses the obstruction of women's advancement in the industry, illuminating that women commonly hold lower-skilled jobs, and those in higher-skilled creative jobs earn far less than their male counterparts.⁸ With the country's eyes on California, state legislators responded by formulating legislation to extend the state's film and television tax credit program, which included measures to encourage, but not force, diverse hiring across genders and ethnicities.⁹ More of the state's key industries need to focus on gender issues, and the language on gender diversity included in the film and television tax incentive bill shows that there is a desire to take action.

California strives to be a leader on women's issues in the political sphere. Its desire to be a game changer is evident through the entertainment industry-specific legislation, groundbreaking family leave laws, and most recently, when it became the first state to require all publicly traded companies with headquarters in California to have female board membership.¹⁰ Despite these advancements, only 25.8 percent of California's state legislators are women, and

CALIFORNIA'S WORKFORCE ENVIRONMENT FOR WOMEN

the state has yet to elect a female governor. In comparison, 25 other states outperform California in the representation of women in state legislature, including its southwestern geographic neighbors of Arizona, Nevada, and New Mexico from Cluster B.

Although Cluster B boasts a more robust female representation in state legislatures, states in Cluster B tend to have low parental leave scores, a measure in which California leads. An additional layer to consider in the comparison of California to states in Cluster B is the effects more female lawmakers might bring. For example, New Mexico has a higher percentage of female chief executives, more women in the top-earning quartile, and an overall smaller gender wage gap than California. If California favors policy to support the advancement of women in the workforce, as indicated by the company board quota, increasing the number of women in politics may be the next appropriate intervention.

Another contrarian reality for California is that although it has a relatively high average age at first childbirth, the state is plagued by low educational attainment for women—the eighth lowest in all 50 states and the lowest amongst its peers in Cluster C. This is a symptom of the economic split between inland agricultural and manufacturing economies and the coastal knowledge-based economies of the state. The Milken Institute's report, "A Matter of Degrees," shows California as the home to one of the top educated large metros, San Jose-Sunnyvale-Santa Clara, CA, and one of the least educated large metros, Riverside-San Bernardino-Ontario, CA.¹¹

California's large coastal metros with more high-tech industry presence draw higher skilled and educated labor from across the state, the U.S., and internationally while many inland California metros lack those high-tech industries and draw labor that does not require the same level of educational attainment. Contrarily, large coastal metros have high costs of living which encourages dual-income domestic partnerships. The lower costs of living in inland metros, which may not offer as many high paying jobs for women,

CALIFORNIA'S WORKFORCE ENVIRONMENT FOR WOMEN

may ultimately make the opportunity cost of exiting the labor force relatively low. This partially explains why California has a relatively low rate of female labor force participation—69.75 percent.

Also affecting the disparity in age at first childbirth and educational attainment may be the fact that California has a high rate of first-generation immigrants relative to other states. It's important to note that some female immigrants may already have had a child before immigrating, and would not be represented in the age at first childbirth data.¹² Immigrants are represented in American Community Survey education data and tend to receive lower levels of educational attainment than non-immigrants, though the statistic varies across demographic groups.^{13,14}

Peer states in Cluster C show evidence of a positive correlation between parental leave score and age at first childbirth. In fact, 10 of the 12 Cluster C states were in the top 14 states for parental leave scores, and all 12 states in the cluster are in the top 16 states for highest age at first childbirth. This suggests that parental leave laws incentivize women to wait to start families until they or their partners have established themselves in the workforce to become eligible to receive parental leave benefits.

Cluster A, the lower childcare cost and lowest advancement opportunity cluster, has the lowest age at first birth, the largest gender wage gap, the lowest female labor force participation rate, and has the smallest percentage of women chief executives and top-earners. Several past studies claim that delaying childbirth is correlated with higher wages or that early childbirth is correlated with a decrease in women's earnings while not affecting men's.^{15,16,17,18} These studies show that strategies to increase age at first childbirth, like improving parental leave laws, could be beneficial for states in Cluster A to decrease the gender wage gap. Because interruptions in the completion of education or in the formative years of a woman's career serve as counterforces to female advancement in the workforce, programs to facilitate

CALIFORNIA'S WORKFORCE ENVIRONMENT FOR WOMEN

pathways for women to complete degrees after childbirth could also benefit these states.

California's low female educational attainment and a low concentration of women in STEM occupations serve as a blockage in the high-tech labor pipeline. A recent Milken Institute report, "Educating a Workforce: Keeping Local Talent," shows that educated workers' mobility between states has been decreasing over time.¹⁹ The high cost of living in the metros housing the bulk of California's knowledge-based economy also makes it more difficult for people to move to those locations. Though the Bay Area's talented and educated workforce is currently one of California's biggest advantages over other states with burgeoning knowledge-based economies, if California does not actively try to tap into the talent source of its female workforce it stands to lose its competitive edge.

Since STEM occupations tend to pay more, if the percentage of women in STEM were to increase, the wage gap between men and women would decrease. Though California's wage gap is currently the 9th smallest gap in the U.S., the average female wage is still only 72.2 percent of the average male wage. This indicates ample room for improvement in California and the entire country.

A similar trend follows for California's top-earning quartile. Though there are substantially more female top earners in California than in other states, there is more progress to be made. As for another indicator of women's ability to advance in the workforce (percentage of women in C-suite positions), California performs poorly relative to other peer states. Only 29.2 percent of the state's chief executives are women, which barely keeps California in the top 20 for highest percentage of female C-suite executives.

CONCLUSION

Culture is a major factor when it comes to female participation in the labor force. As shown in Cluster C, states in which women are able to finish their desired education and become established in a career before starting a family tend to have fewer barriers to workforce advancement. However, it is clear that women in decision-making roles also have a major effect. States in Cluster D—the most female decision makers and smallest wage gap cluster—tend to have more women at the chief executive level and in the highest earning quartile, while also having significantly better representation in state legislatures and more female managers. As discussed, the influence of the political sphere is important, and California has work to do to improve female participation in government positions.

Lower educational attainment is a major impediment to female advancement in the workforce, especially as skill requirements continue to increase. California's female educational attainment could be improved with programs aimed at facilitating women's paths to two-year and four-year degree completion after childbirth. Among policies that may reduce obstacles for women's advancement in California's labor force are ones that would facilitate women's paths in STEM careers. Employees in STEM careers on average earn 29 percent more than employees in non-STEM occupations,²⁰ and states with more women in STEM fields have higher female labor force participation rates, as shown by Cluster E.

California's labor force pipeline also needs a new source of local STEM talent to sustain its competitive advantage in high tech talent. As new knowledge-based economies develop in other states like Utah, it will be imperative to invest in future local talent. Inland populations and women across all of California can be a source of new talent for the state's knowledge-based economy if there is better cooperation between employers, education providers,

CONCLUSION

and policymakers. Utah has a very low number of women in the workforce and in STEM fields specifically. As gender diversity becomes more and more important to companies as they select locations for new headquarters, California can capitalize on its lead regarding its support of female workforce advancement by investing in women in the workforce today.

GENDER EQUITY POLICY APPROACHES FOR CALIFORNIA

California's government, universities, and community colleges could create programs to facilitate pathways for women to complete degrees after childbirth. Just as caring for a child can influence women to exit the labor force, it also can influence women to leave college before graduating or to avoid enrolling in post-secondary education altogether. Creating resources for women to complete post-secondary degrees after having a child is vital. With ever-increasing skill requirements, pathways to any degree, including a two-year degree, could be significant for women reentering the workforce.

California's government, universities, or nongovernmental organizations could create programs for women in STEM. These programs should start at the K-12 level to get girls interested in and prepared for post-secondary STEM degree fields. There should also be programs supporting women in STEM through their post-secondary education, and broader support systems for women throughout their STEM careers. Increasing women in STEM occupations is important for both female labor force participation and for decreasing the wage gap. STEM occupations generally require higher levels of skill and pay better than other categories of jobs. The reality that women are underrepresented in STEM occupations in all 50 states is exacerbated by the fact that even when women begin STEM careers, they often do not stay in or advance in those careers. California specifically needs to increase the number of women in STEM to maintain its competitive advantage in high tech talent.

California's government should track and analyze outcomes of its paid family leave laws. These laws are an important part of making it easier for women to return to the labor force after having a child. Since California's paid leave policy was the first of its kind, it is important to assess the effectiveness of the policy. This data is a large component in creating more transparency on the conditions mothers face reentering and remaining in the labor force after childbirth, and thus improving the ability of legislators to create or improve policies to facilitate female workforce attachment and advancement.

California's nongovernmental organizations aimed at helping women run for political office should be supported. Groups like the National Women's Political Caucus of California (NWPC CA), Close the Gap CA, and California Federation of Republican Women (CFRW) need more support in their efforts to help women get involved in politics. However, the majority of these groups are connected to a political party or a policy position so support should go equally across party affiliations. These groups also are often associated with different levels of government. For instance, Close the Gap CA is specifically aimed at increasing the number of women running for California's state legislature, while others like the CFRW and NWPC CA are open to helping women at all levels- national, state, and local.^{21,22,23} Support should focus on organizations which aid female candidates at the state and local levels where the largest disparity in the number of women and men candidates exists.

APPENDIX

A. FEMALE WORKFORCE ADVANCEMENT

Though overall female participation in the labor force is lower than men's, for women who choose to participate there are specific obstacles to advancement in the workforce. The more women's employment opportunities and choices are broadened, the more likely they are to also stay in the labor force contributing their talents and skills to the economy. To capture information about female workforce advancement, this paper looks at the share of women chief executives and the share of female top earners.

A1. The Percentage of Total Chief Executives Who Are Female

This variable is an important part of understanding women's representation in the corporate world. A higher concentration of women at the chief executive level indicates fewer barriers to female advancement in the workforce of that state. The percentage of female chief executives was calculated by taking the percentage of total chief executives (according to occupation codes) who are women in a given state. The data was derived from the 2014-2016 American Community Survey (ACS).

APPENDIX

Table A1. Percentage of Total Chief Executives Who Are Female

Rank	State	% C-Suite	Rank	State	% C-Suite
1	Hawaii	34.818%	26	Pennsylvania	27.514%
2	New Mexico	34.211%	27	Colorado	27.436%
3	Maryland	33.073%	28	Iowa	27.426%
4	Rhode Island	31.944%	29	Connecticut	27.169%
5	Arizona	31.899%	30	Vermont	27.049%
6	Delaware	31.707%	31	Alabama	26.940%
7	Alaska	31.304%	32	Georgia	26.789%
8	Oregon	30.943%	33	North Carolina	26.674%
9	South Dakota	30.921%	34	Idaho	26.556%
10	New Hampshire	30.514%	35	Ohio	26.535%
11	New York	30.181%	36	Washington	26.282%
12	Virginia	29.995%	37	Wisconsin	25.911%
13	Missouri	29.971%	38	Texas	25.660%
14	Louisiana	29.942%	39	Kentucky	25.375%
15	Maine	29.921%	40	New Jersey	25.295%
16	Mississippi	29.787%	41	Arkansas	25.255%
17	Florida	29.473%	42	Michigan	25.236%
18	Nevada	29.470%	43	Tennessee	25.115%
19	California	29.196%	44	Oklahoma	25.045%
20	Massachusetts	28.858%	45	Indiana	24.858%
21	Illinois	28.781%	46	West Virginia	24.675%
22	Kansas	28.764%	47	Nebraska	21.495%
23	Montana	28.708%	48	North Dakota	21.348%
24	Minnesota	28.271%	49	Wyoming	20.000%
25	South Carolina	27.881%	50	Utah	19.487%

APPENDIX

A2. The Percentage of Women in the Top-Earning Quartile

Although many women enter the labor force, the ability to stay at work and advance to higher earning job titles is still a major hurdle. This can be seen in the fact that the top quartile of wage earners is dominated by men. When states have a particularly low concentration of women in their top-earning quartile, this is an indication that women have less opportunity to advance in the workplace. The data for females in the top-earning quartile was derived from ACS 2016 income, employment, and demographic data.

Table A2. Percentage of Women in the Top-Earning Quartile

Rank	State	% Female Top-Earners	Rank	State	% Female Top-Earners
1	Vermont	41.2226%	26	Iowa	32.1664%
2	Delaware	38.2822%	27	Kentucky	32.1629%
3	New York	38.1909%	28	Connecticut	32.1626%
4	Rhode Island	37.2141%	29	Colorado	32.1475%
5	Maine	37.0370%	30	Missouri	31.9518%
6	New Mexico	36.5918%	31	Michigan	31.7956%
7	Maryland	36.3667%	32	New Jersey	31.7348%
8	Florida	35.3086%	33	Mississippi	31.5789%
9	California	35.0730%	34	Nebraska	30.7232%
10	Massachusetts	34.3916%	35	New Hampshire	30.6859%
11	Hawaii	34.3704%	36	Texas	30.5037%
12	Oregon	34.1713%	37	West Virginia	30.2460%
13	Pennsylvania	33.9459%	38	Montana	30.1782%
14	Minnesota	33.8945%	39	South Dakota	29.9135%
15	Arizona	33.6384%	40	Washington	29.4724%
16	Georgia	33.5825%	41	Alaska	29.4545%
17	North Carolina	33.4184%	42	Kansas	29.3995%
18	Illinois	33.0857%	43	Indiana	28.8675%
19	Arkansas	32.8953%	44	Alabama	28.4853%
20	Virginia	32.8387%	45	Oklahoma	28.3959%
21	South Carolina	32.8261%	46	Louisiana	27.4542%
22	Wisconsin	32.7049%	47	Idaho	26.8760%
23	Nevada	32.6324%	48	North Dakota	23.9362%
24	Tennessee	32.5805%	49	Wyoming	21.5470%
25	Ohio	32.1870%	50	Utah	19.4769%

APPENDIX

B. DECISION-MAKING POWER VARIABLES USED FOR HIERARCHICAL CLUSTER ANALYSIS

Increasing the share of women in decision-making power is one of the most important parts of improving gender equality for women because decision-makers affect the environments in which women live and work. To capture the decision-making power of women, this paper uses the share of state legislators who are women and the share of managers who are women.

B1. The Percentage of Total Legislators Who Are Female

Data on the percent of total legislators who are female in a given state was drawn from the Center for American Women and Politics (CAWP) report on women in state legislatures, which reflected current percentages at the time of access (September 2018). As of May 2018, 25.4 percent of U.S. state legislators are women, leaving half the population greatly underrepresented in their state governments where many choices are made that affect the environment for women in the workforce.²⁴ However, some states represent the female population better than others. It is important to understand whether women's values are represented by the governments that are charged with making decisions for them.

APPENDIX

Table B1. Percentage of Total State Legislators Who Are Female, Ordered Largest to Smallest

Rank	State	% Female Legislators	Rank	State	% Female Legislators
1	Arizona	40.00%	26	California	25.80%
1+	Vermont	40.00%	27	North Carolina	25.30%
3	Nevada	38.10%	28	Michigan	25.00%
4	Colorado	38.00%	29	Massachusetts	24.50%
5	Washington	37.40%	30	Wisconsin	24.20%
6	Illinois	35.60%	31	Iowa	23.30%
7	Maine	33.90%	32	Missouri	22.80%
8	Maryland	33.50%	33	Ohio	22.00%
9	Oregon	33.30%	34	Delaware	21.00%
10	Rhode Island	31.90%	34+	South Dakota	21.00%
11	Minnesota	31.80%	36	Texas	20.40%
12	Alaska	31.70%	37	Utah	20.20%
13	New Jersey	30.80%	38	Indiana	20.00%
14	Idaho	30.50%	39	Pennsylvania	19.40%
15	New Mexico	30.40%	40	Arkansas	19.30%
16	Hawaii	28.90%	41	North Dakota	18.40%
17	New Hampshire	28.80%	42	Kentucky	16.70%
18	Kansas	28.50%	43	South Carolina	15.90%
19	New York	28.20%	43+	Tennessee	15.90%
20	Montana	28.00%	45	Alabama	15.00%
21	Connecticut	27.30%	46	Mississippi	14.90%
22	Virginia	27.10%	46+	West Virginia	14.90%
23	Georgia	26.70%	48	Louisiana	14.60%
24	Nebraska	26.50%	49	Oklahoma	12.80%
25	Florida	26.30%	50	Wyoming	11.10%

APPENDIX

B2. The Percentage of Total Managers Who Are Female

The percentage of female managers was calculated by taking the percentage of total managers (according to occupation codes) who are women in a given state. This data was derived from the 2016 ACS. The percentage of female managers is an important dynamic of females' decision-making power in the labor force. Furthermore, one of the most common reasons an employee leaves a job is their boss. Women managers are more likely to understand the work-life challenges that other females encounter, which can aid in the retention of those female employees.

Table B2. Percentage of Total Managers Who Are Female

Rank	State	% Female Managers	Rank	State	% Female Managers
1	Vermont	52.80%	26	Alabama	43.04%
2	Maine	47.70%	27	New Jersey	43.01%
3	New Mexico	47.33%	28	Colorado	42.94%
4	Maryland	46.93%	29	North Carolina	42.61%
5	Alaska	46.83%	30	New Hampshire	42.58%
6	Massachusetts	46.49%	31	Montana	42.51%
7	Connecticut	46.20%	32	Wyoming	42.45%
8	Delaware	45.90%	33	Washington	42.39%
9	Louisiana	45.67%	34	Michigan	42.33%
10	Florida	45.65%	35	Texas	42.08%
11	New York	45.38%	36	Pennsylvania	42.06%
12	Tennessee	45.17%	37	Arizona	41.87%
13	West Virginia	45.13%	38	Arkansas	41.75%
14	Oregon	44.46%	39	Rhode Island	41.34%
15	South Carolina	44.25%	40	Indiana	41.20%
16	California	44.06%	41	Kentucky	41.06%
17	Nevada	44.03%	42	Wisconsin	40.26%
18	Mississippi	43.90%	43	Kansas	40.06%
19	Virginia	43.56%	44	Minnesota	39.66%
20	Illinois	43.47%	45	Iowa	38.04%
21	Ohio	43.35%	46	Idaho	36.84%
22	Hawaii	43.34%	47	Nebraska	36.01%
23	Georgia	43.25%	48	Utah	33.39%
24	Missouri	43.22%	49	South Dakota	31.09%
25	Oklahoma	43.20%	50	North Dakota	28.00%

C. CULTURAL VARIABLES USED FOR HIERARCHICAL CLUSTER ANALYSIS

Culture has a major effect on how women participate in the labor force. Aspects such as family commitments, education and training, and low compensation can deter women from remaining at work long term, which is a major obstacle for female advancement in the workforce. To capture cultural characteristics, this paper looks at the age at first childbirth, age at first marriage, educational attainment, gender-based wage gap, share of women in STEM occupations, and female labor force participation rate.

C1. Average Age at First Childbirth

The average age at first childbirth data was extracted from the Center for Disease Control's online database, WONDER, and pulled for the most recent year available—2016.²⁵ Average age at first childbirth is crucial to understanding patterns in female labor force participation, as caring for children is the primary reason for women not to work. When the average age at first childbirth is low, it can indicate that the careers and economic independence of women are not valued in that state's culture. Furthermore, studies have shown that early child bearers are more likely to incur a larger wage penalty because of career interruptions during the critical time for career building.²⁶

APPENDIX

Table C1. Average Age at First Childbirth

Rank	State	Avg. Age at First Childbirth	Rank	State	Avg. Age at First Childbirth
1	Massachusetts	29.14	26	North Dakota	26.02
2	New Jersey	28.55	27	Georgia	25.97
3	Connecticut	28.54	28	Montana	25.96
4	New York	28.14	29	Iowa	25.90
5	New Hampshire	27.77	30	Ohio	25.82
6	Vermont	27.73	31	Alaska	25.80
7	Maryland	27.69	32	Texas	25.72
8	California	27.65	33	South Carolina	25.69
9	Minnesota	27.56	34	Missouri	25.60
10	Washington	27.51	35	Arizona	25.57
11	Hawaii	27.44	35+	Kansas	25.57
11+	Rhode Island	27.44	37	Utah	25.45
13	Colorado	27.35	38	Indiana	25.40
14	Virginia	27.34	39	Tennessee	25.33
15	Oregon	27.28	40	South Dakota	25.30
16	Illinois	27.10	41	Wyoming	25.29
17	Pennsylvania	26.95	42	Idaho	24.98
18	Maine	26.90	43	Louisiana	24.96
19	Florida	26.83	44	Kentucky	24.94
20	Wisconsin	26.72	45	Alabama	24.83
21	Delaware	26.68	46	West Virginia	24.68
22	Michigan	26.22	47	New Mexico	24.67
23	Nevada	26.19	48	Oklahoma	24.61
24	North Carolina	26.13	49	Arkansas	24.35
25	Nebraska	26.10	50	Mississippi	24.00

APPENDIX

C2. Median Age at First Marriage for Women

The median age at first marriage for women in each state was sourced from 2016 ACS data. The variable was intended to capture cultural differences across states that may affect female labor force participation because the influence of the institution of marriage depends on its communal value and meaning.²⁷ When women marry before establishing themselves in their careers or even before finishing degrees, it may be an indicator of a lack of economic independence which limits employment options. However, the choice to delay marriage may not be beneficial to women of lower socioeconomic status who cannot afford higher education which would qualify them for jobs with higher incomes. Some studies also say that marriage decreases women's wages and when coupled with early childbearing can substantially decrease lifetime earnings.²⁸

Table C2. Median Age at First Marriage for Women

Rank	State	Med. Age at 1st Marriage	Rank	State	Med. Age at 1st Marriage
1	Rhode Island	30.0	26	Colorado	27.3
2	Massachusetts	29.8	26+	Missouri	27.3
2+	New York	29.8	28	Georgia	27.1
4	Connecticut	29.5	29	Maine	27.0
5	New Jersey	29.3	29+	Tennessee	27.0
6	Florida	29.0	29+	Washington	27.0
7	Maryland	28.9	32	Indiana	26.9
7+	Pennsylvania	28.9	32+	Texas	26.9
9	Illinois	28.8	34	Alaska	26.8
10	California	28.7	34+	Iowa	26.8
11	Delaware	28.6	34+	New Mexico	26.8
12	New Hampshire	28.4	37	North Dakota	26.7
12+	South Carolina	28.4	38	Mississippi	26.6
12+	Vermont	28.4	39	West Virginia	26.5
15	Nevada	28.2	40	Montana	26.4
16	Wisconsin	28.1	41	Alabama	26.3
17	Arizona	28.0	41+	Kentucky	26.3
18	Michigan	27.9	43	Nebraska	26.2
19	Ohio	27.8	44	Kansas	26.0
20	Hawaii	27.7	44+	South Dakota	26.0
20	North Carolina	27.7	44+	Wyoming	26.0
22	Minnesota	27.6	47	Oklahoma	25.7
22+	Oregon	27.6	48	Arkansas	25.6
24	Louisiana	27.5	49	Idaho	25.1
25	Virginia	27.4	50	Utah	24.7

APPENDIX

C3. Average Years of Education for Women

Women’s average years of education came from the 2016 ACS. On average, women receive more years of education than men, but earn less money and have lower rates of labor force participation. However, a relatively high educational attainment signals that there are more women with college degrees, and these degrees bring more labor force participation options for women, which can allow for economic stability independent from a partner. Education is also known to reduce the magnitude of wage penalty from early childbirth.²⁹

Table C3. Average Years of Education for Women

Rank	State	Avg. Years of Education	Rank	State	Avg. Years of Education
1	Massachusetts	14.7036	26	Wisconsin	13.8800
2	Connecticut	14.5146	27	South Dakota	13.8776
3	Maryland	14.5072	28	Wyoming	13.8580
4	Vermont	14.4683	29	Iowa	13.8426
5	Colorado	14.4634	30	Michigan	13.8165
6	New Hampshire	14.4288	31	Florida	13.8086
7	Virginia	14.4214	32	Missouri	13.8084
8	New Jersey	14.3508	33	Ohio	13.8017
9	Hawaii	14.1290	34	South Carolina	13.7753
10	Rhode Island	14.1216	35	Kentucky	13.6752
11	Delaware	14.1079	36	New Mexico	13.6618
12	Minnesota	14.1067	37	Tennessee	13.6597
13	Washington	14.0898	38	Arizona	13.6270
14	New York	14.0715	39	Idaho	13.6185
15	Oregon	14.0690	40	Indiana	13.5847
16	Illinois	14.0655	41	Alabama	13.5767
17	Maine	14.0606	42	Alaska	13.5694
18	North Dakota	14.0397	43	California	13.5107
19	Nebraska	13.9995	44	West Virginia	13.4862
20	Utah	13.9802	45	Mississippi	13.4776
21	Montana	13.9698	46	Louisiana	13.4734
22	North Carolina	13.9677	47	Texas	13.4542
23	Kansas	13.9402	48	Oklahoma	13.4389
24	Pennsylvania	13.9109	49	Arkansas	13.3905
25	Georgia	13.8929	50	Nevada	13.3341

APPENDIX

C4. Percent Difference in Average Wages Between Women and Men

The data to represent the wage gap between women and men was derived from the 2016 ACS. The wage gap variable in each state was calculated by dividing the average wage for all employed women in a state by the average wage for all employed men a state to create female to male wage ratio. The wage gap is likely the most discussed measure on the topic of women in the workforce and indicates whether women are being paid appropriately for their work. If women are paid less than male counterparts, they can feel less valued which creates a negative environment for women in the workforce. Lower wages for women also lower the opportunity cost of staying home to care for family members, contributing to lower female labor force participation rates and fewer women remaining in the workforce long enough to receive advancement opportunities.

Table C4. Average Female Wage as a Percentage of Average Male Wage

Rank	State	Female to Male Wage Ratio	Rank	State	Female to Male Wage Ratio
1	Vermont	83.019%	26	Nebraska	67.651%
2	South Dakota	75.835%	27	Missouri	67.534%
3	Maine	74.177%	28	South Carolina	67.214%
4	New Mexico	73.062%	29	North Carolina	67.033%
5	Alaska	72.311%	30	Georgia	66.961%
6	Minnesota	72.051%	31	Kentucky	66.728%
7	Rhode Island	71.868%	32	Massachusetts	66.719%
8	Delaware	71.506%	33	Illinois	66.711%
9	California	71.196%	34	Ohio	66.583%
10	Hawaii	71.109%	35	Michigan	66.161%
11	Maryland	70.599%	36	West Virginia	66.046%
12	Wisconsin	70.511%	37	Indiana	65.759%
13	New York	70.026%	38	New Hampshire	65.460%
14	Iowa	69.861%	39	Texas	65.155%
15	Nevada	69.567%	40	North Dakota	65.019%
16	Arizona	69.400%	41	New Jersey	64.936%
17	Oregon	68.895%	42	Washington	64.670%
18	Colorado	68.767%	43	Mississippi	64.536%
19	Arkansas	68.670%	44	Kansas	64.340%
20	Virginia	68.666%	45	Alabama	64.102%
21	Montana	68.410%	46	Louisiana	62.537%
22	Pennsylvania	68.202%	47	Idaho	61.665%
23	Florida	68.105%	48	Connecticut	60.521%
24	Oklahoma	68.040%	49	Wyoming	60.202%
25	Tennessee	67.893%	50	Utah	53.635%

APPENDIX

C5. Share of Women in STEM Occupations

The share of women in STEM occupations was derived from 2016 ACS data using Standard Occupation Classification (SOC) codes. The list of STEM SOC codes came from the U.S. Department of Commerce, Economics and Statistics Administration which includes computer and math occupations, engineering and surveying occupations, physical and life sciences occupations, and STEM managerial occupations.³⁰ A new dummy variable for STEM occupations was created, and the percentage of women with that indicator was calculated for each state. Workers in STEM occupations earn higher wages than their non-STEM counterparts.³¹ Since these fields are highly dominated by men, lower shares of women in STEM can contribute to the difference in earnings between the genders overall.

Table C5. Share of Women in STEM Occupations

Rank	State	% of Women in STEM	Rank	State	% of Women in STEM
1	Hawaii	32.188%	26	Pennsylvania	26.455%
2	North Dakota	32.117%	27	New Jersey	26.370%
3	Maryland	31.066%	28	West Virginia	26.246%
4	Delaware	31.047%	29	Florida	26.149%
5	Maine	30.714%	30	South Carolina	26.048%
6	Wisconsin	30.110%	31	Oregon	25.758%
7	South Dakota	29.787%	32	Washington	25.362%
8	North Carolina	29.448%	33	Oklahoma	25.085%
9	Kentucky	29.114%	34	Connecticut	25.080%
10	Massachusetts	29.110%	35	Alaska	25.000%
11	Georgia	28.627%	36	Tennessee	24.838%
12	Minnesota	28.607%	37	Kansas	24.677%
13	Wyoming	28.431%	38	Arizona	24.585%
14	Idaho	27.889%	39	Colorado	24.508%
15	Montana	27.835%	40	Texas	24.502%
16	Illinois	27.476%	41	Louisiana	24.490%
17	New York	27.456%	42	Ohio	24.464%
18	Virginia	27.446%	43	Michigan	24.336%
19	New Mexico	27.291%	44	Mississippi	24.173%
20	Iowa	27.287%	45	Indiana	23.774%
21	Vermont	27.222%	46	New Hampshire	23.689%
22	Arkansas	27.033%	47	Alabama	23.666%
23	Nebraska	27.015%	48	Rhode Island	22.697%
24	Missouri	26.638%	49	Nevada	21.074%
25	California	26.482%	50	Utah	17.101%

C6. Female Labor Force Participation

The female labor force participation rate for each state was calculated by taking the total number of working-age women reported as participating in the state's labor force as a percentage of the total female working age population in that state. Though the working-age population has traditionally been considered ages 15 through 64, education, training, and employment trends over time have influenced newer research to increase the minimum age for the working age population. In this paper ages 26 through 64 were used to remove the age where the most volatility in education and employment exists. This data was derived from the 2016 American Community Survey. Table C5 includes the difference in female and male labor for participation rates (female labor force participation rate minus male labor force participation rate) for context of gender disparity in this measure.

APPENDIX

Table C6. Female Labor Force Participation Rate and the Difference in Participation Rates Between Women and Men

Rank	State	Female Labor Force Part. Rate	Difference in Part. Rate (F-M)	Rank	State	Female Labor Force Part. Rate	Difference in Part. Rate (F-M)
1	Nebraska	80.49%	-5.87%	26	Montana	71.98%	-8.52%
2	Minnesota	79.13%	-6.53%	27	Indiana	71.78%	-8.81%
3	Vermont	79.01%	-4.22%	28	Missouri	71.62%	-7.29%
4	South Dakota	78.24%	-7.36%	29	Nevada	70.85%	-10.95%
5	North Dakota	77.92%	-7.23%	30	Oregon	70.33%	-9.29%
6	Maryland	77.87%	-6.94%	31	Florida	70.21%	-7.82%
7	Massachusetts	77.85%	-6.25%	32	Washington	70.10%	-12.44%
8	Iowa	77.76%	-7.10%	33	North Carolina	69.78%	-9.90%
9	New Hampshire	77.24%	-8.66%	34	California	69.75%	-12.10%
10	Wisconsin	77.00%	-5.96%	35	Michigan	69.69%	-7.81%
11	Connecticut	76.50%	-8.76%	36	Georgia	69.49%	-9.23%
12	Hawaii	76.13%	-6.19%	37	South Carolina	69.26%	-8.38%
13	New Jersey	74.99%	-10.19%	38	Texas	68.79%	-12.76%
14	Rhode Island	74.96%	-8.74%	39	Arizona	67.37%	-8.95%
15	Kansas	74.58%	-9.17%	40	Tennessee	67.34%	-10.10%
16	Delaware	74.56%	-6.37%	41	Louisiana	67.07%	-6.80%
17	Illinois	74.33%	-7.99%	42	New Mexico	66.80%	-6.09%
18	Virginia	74.08%	-8.76%	43	Utah	66.44%	-20.92%
19	Colorado	73.99%	-9.84%	44	Kentucky	66.16%	-7.73%
20	Maine	73.28%	-3.79%	45	Arkansas	65.91%	-8.16%
21	New York	73.04%	-7.91%	46	Idaho	65.89%	-16.28%
22	Pennsylvania	72.74%	-7.78%	47	Oklahoma	65.88%	-9.73%
23	Wyoming	72.19%	-12.22%	48	Mississippi	65.59%	-6.65%
24	Ohio	72.13%	-7.98%	49	Alabama	64.81%	-9.45%
25	Alaska	72.10%	-5.68%	50	West Virginia	63.24%	-8.07%

D. FAMILY LIFE TO WORKFORCE MOBILITY VARIABLES USED FOR HIERARCHICAL CLUSTER ANALYSIS

The ease with which women can move from family commitments to employment can greatly affect female labor force attachment. Increasing this attachment is crucial for improving advancement opportunities for women in the workforce. To capture family life to workforce mobility this paper uses parental leave score and child-care cost.

D1. Parental Leave Score

The parental leave score comes from the National Partnership for Women and Families scoring of states based on their government's policies for leave available to new parents for 2016. Paid leave is emphasized in the scoring because of its unique economic benefits for families and governments. Research showed that women who had paid leave were more likely to have worked longer leading up to the birth of a child and to return to work within the year than women who did not have paid or unpaid leave.³² Furthermore, women who have paid leave are more likely to have higher wages in the year following the birth of a child, and their families are less likely to need public assistance, controlling for other factors that might affect the use of these programs.³³ Women working part-time or hourly may lack access to paid leave, further encouraging these females to exit the labor force when becoming pregnant.

Protections offered by the private sector, which employs the majority of the population, were valued higher than those offered to state employees. Varying points were awarded to each state for laws that provide help for pregnant women or new parents in the following categories:³⁴

- Paid family leave (covers both parents)
- Paid medical/pregnancy disability leave
- Paid sick days
- Job-protected family leave
- Job-protected leave for pregnancy, childbirth, or related medical conditions
- Flexible use of sick time
- Nursing mothers' workplace rights
- Pregnancy accommodations

APPENDIX

Table D1. Parental Leave Score

Rank	State	Parental Leave Score	Rank	State	Parental Leave Score
1	California	155	26	Florida	20
2	New York	135	26+	Iowa	20
3	Rhode Island	125	26+	Kansas	20
4	Connecticut	120	26+	New Hampshire	20
5	Hawaii	110	26+	North Carolina	20
6	New Jersey	100	26+	Ohio	20
7	Oregon	95	26+	Virginia	20
8	Vermont	85	33	Indiana	15
9	Illinois	70	33+	New Mexico	15
9+	Massachusetts	70	33+	North Dakota	15
11	Minnesota	65	36	Kentucky	10
11+	Washington	65	36+	Pennsylvania	10
13	Maine	60	36+	Texas	10
14	Colorado	50	39	Alabama	0
15	Louisiana	45	39+	Arizona	0
15+	Wisconsin	45	39+	Georgia	0
17	Maryland	40	39+	Idaho	0
18	Arkansas	35	39+	Michigan	0
19	Alaska	30	39+	Mississippi	0
19+	Delaware	30	39+	Missouri	0
19+	Montana	30	39+	Nevada	0
19+	Nebraska	30	39+	Oklahoma	0
19+	Utah	30	39+	South Carolina	0
24	Tennessee	25	39+	South Dakota	0
24+	West Virginia	25	39+	Wyoming	0

APPENDIX

D2. Childcare Cost as a Percentage of the Median Income

To capture childcare costs, we used Child Care Aware’s 2016 data for the average center-based childcare cost for a four-year-old as a percentage of the median income for each state.³⁵ This data is not indicative of pre-kindergarten cost, which in many states is currently under debate to be a universal offering. This measure allows us to understand how much of a family’s income may be taken up by the cost of childcare. Child Care Aware’s dataset is only complete, with every state represented, for the four-year-old age grouping, which is why childcare cost for this group was used. Childcare costs at age four, in early childhood, can affect longer-term labor force decisions for women.

The burden of childcare cost is particularly heavy on parents with low incomes. The average cost of childcare takes up nearly all of the income of a family at the poverty level in certain states.³⁶ This likely means that a parent will not work to avoid childcare costs and the role of caring for a child is more often taken on by women, especially where gender-based wage gaps are larger and women have lower income potential relative to men.

APPENDIX

Table D2. Childcare Cost as Percentage of the Median Household Income for a Married-Couple Family

Rank	State	Childcare Cost as % of Med. Income	Rank	State	Childcare Cost as % of Med. Income
1	Mississippi	6.40%	25	Maine	9.80%
2	Alabama	6.50%	27	Tennessee	9.90%
2+	Louisiana	6.50%	28	Wyoming	10.00%
4	South Carolina	7.50%	29	Pennsylvania	10.10%
5	Arkansas	7.70%	29+	West Virginia	10.10%
6	South Dakota	7.80%	31	North Carolina	10.20%
7	Kentucky	8.00%	32	Kansas	10.30%
8	Missouri	8.30%	33	Rhode Island	10.40%
8+	Utah	8.30%	34	Connecticut	10.50%
10	Georgia	8.40%	35	Montana	10.60%
10+	Maryland	8.40%	36	New Mexico	10.90%
10+	North Dakota	8.40%	37	Arizona	11.00%
13	Texas	8.60%	37+	California	11.00%
14	Michigan	8.70%	37+	Illinois	11.00%
15	Delaware	8.80%	40	Alaska	11.20%
15+	Oklahoma	8.80%	41	Wisconsin	11.30%
17	New Jersey	8.90%	42	Vermont	11.50%
18	Ohio	9.30%	43	Washington	11.70%
19	Florida	9.40%	44	Indiana	11.90%
20	Virginia	9.50%	45	Minnesota	12.10%
21	Idaho	9.60%	45+	Oregon	12.10%
22	Hawaii	9.70%	47	Massachusetts	12.20%
22+	Nebraska	9.70%	47+	Nevada	12.20%
22+	New Hampshire	9.70%	49	Colorado	12.40%
25	Iowa	9.80%	50	New York	12.60%

Note: The data used to calculate childcare costs is from Child Care Aware's 2016 ranking of least-affordable, center-based childcare for four-year-olds. This figure was chosen to represent childcare cost because it was the only complete set of related data for all 50 states. This childcare cost was then factored as a percentage of the median income data.

ENDNOTES

1. "Expecting Better: A State-by-State Analysis of Laws That Help Expecting and New Parents, Fourth Edition," National Partnership for Women & Families, August 2016, accessed April 11, 2018, <http://www.nationalpartnership.org/research-library/work-family/expecting-better-2016.pdf>.

2. "Factors Affecting the Labor Force Participation of People Ages 25 to 54," Congressional Budget Office, February 2018, accessed March 28, 2018, <https://www.cbo.gov/system/files/115th-congress-2017-2018/reports/53452-lfpr.pdf>.

3. Punj, Girish, and David W. Stewart. "Cluster Analysis in Marketing Research: Review and Suggestions for Application." *Journal of Marketing Research* 20, no. 2 (1983): 134-48. doi:10.2307/3151680.

4. Of the four primary hierarchical clustering methods, this analysis uses Ward's minimum variance method. This method generates clusters to minimize within-cluster variance. Unique to this Ward's method is its objective of minimizing the trace of W , where W is the pooled within-clusters sum of squares and cross-products matrix.

5. Percentage of total legislators who are female data comes from the Center for American Women and Politics, accessed March 5, 2018. Please note that the website is updated frequently and will not have identical numbers to this analysis.

Average age at first childbirth 2016 data comes from the CDC online database, WONDER. The is tracked through the CDC's National Vital Statistics series on Natality.

Parental leave scores come from the National Partnership for Women and Families Fourth Edition of its Expecting Better series.

The data used to calculate childcare costs is from Child Care Aware's 2016 ranking of least-affordable, center-based childcare for four-year-olds. This figure was chosen to represent childcare cost because it was the only complete set of related data for all 50 states. This childcare cost was then factored as a percentage of the median income data.

Unless otherwise noted, all other data was derived from the 2016 American Community Survey through the following:

Steven Ruggles, Katie Genadek, Ronald Goeken, Josiah Grover, and Matthew Sobek. Integrated Public Use Microdata Series: Version 7.0 [dataset]. Minneapolis: University of Minnesota, 2017.

ENDNOTES

6. "Expecting Better: A State-by-State Analysis of Laws That Help Expecting and New Parents, Fourth Edition," National Partnership for Women & Families, August 2016, <http://www.nationalpartnership.org/research-library/work-family/expecting-better-2016.pdf>.
7. Jessica Jackson, "Hollywood's Diversity Problem: It's Not Just Actors," Milken Institute, March 3, 2017, <https://www.milkeninstitute.org/publications/view/848>.
8. Ibid.
9. California State Legislature, "Senate Bill No. 871: An act to amend Section 6902.5 of, and to add Sections 17053.98 and 23698 to, the Revenue and Taxation Code, relating to taxation, and making an appropriation therefor, to take effect immediately, bill related to the budget," signed by Governor Jerry Brown June 27, 2018, accessed September 26, 2018, https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB871.
10. Vanessa Fuhrmans, "California Becomes First State to Mandate Female Board Directors," *The Wall Street Journal*, September 30, 2018, <https://www.wsj.com/articles/california-becomes-first-state-to-mandate-female-board-directors-1538341932>.
11. Ross C. Devol, I-Ling Shen, Armen Bedroussian, and Nan Zhang, "A Matter of Degrees: The Effect of Educational Attainment on Regional Economic Prosperity," Milken Institute, February 2013, <https://assets1c.milkeninstitute.org/assets/Publication/ResearchReport/PDF/Matter-of-Degrees-FR.pdf>.
12. The National Vital Statistics System from which the average age at first childbirth data was collected only contains all live births in the United States.
- T.J. Mathews and Brady E. Hamilton, "Mean Age of Mothers is on the Rise: United States, 2000-2014," National Center for Health Statistics, January 2016, <https://www.cdc.gov/nchs/data/databriefs/db232.pdf>.
13. Hans Johnson, Sergio Sanchez, "Just the Facts, Immigrants in California," Public Policy Institute of California, May 2018, <http://www.ppic.org/publication/immigrants-in-california/>.
14. S. Karthick Ramakrishnan and Hans P. Johnson, "California Counts: Population Trends and Profiles, Volume 6, Number 4, Second-Generation Immigrants in California," Public Policy Institute of California, May 2005, accessed June 5, 2018, http://www.ppic.org/content/pubs/cacounts/CC_505KRCC.pdf.

ENDNOTES

15. McKinley L. Blackburn, David E. Bloom, and David Neumark, "Fertility timing, wages, and human capital," *Journal of Population Economics*, February 1993, <https://www.jstor.org/stable/pdf/20007387.pdf?refreqid=excelsior%3A4c3c1ffe0472b36194a924e8874f6193>.
16. Hiromi Taniguchi, "The Timing of Childbearing and Women's Wages," *Journal of Marriage and Family*, November 1999, https://www.jstor.org/stable/354020?seq=1#page_scan_tab_contents.
17. David S. Loughran and Julie M. Zissimopoulos, "Why Wait? The Effect of Marriage and Childbearing on the Wages of Men and Women," *The Journal of Human Resources*, Spring 2009, <https://www.jstor.org/stable/pdf/20648900.pdf?refreqid=excelsior%3Ac84a5bc1b96cffd79314a3060560c0cf>.
18. Amalia R. Miller, "The effects of motherhood timing on career path," *Journal of Population Economics*, July 2011, <https://www.jstor.org/stable/pdf/41488341.pdf?refreqid=search%3A23510145f38339669274db3c34b9ba70>.
19. Joe Lee, "Educating a Workforce: Keeping Local Talent," Milken Institute, June 2018, <https://assets1c.milkeninstitute.org/assets/Publication/ResearchReport/PDF/Educating-a-Workforce-Keeping-Local-Talent-FINAL-6.22.18.pdf>.
20. "STEM Jobs: 2017 Update," Economics and Statistics Administration, U.S. Department of Commerce, March 30, 2017, <http://www.esa.doc.gov/reports/stem-jobs-2017-update>.
21. Close the gap CA, "About Us," accessed October 23, 2018, <http://closethegapca.org/about-us/our-story/>.
22. California Federation of Republican Women website materials, accessed October 23, 2018, <http://www.cfrw.org/>.
23. National Women's Political Caucus CA, "Mission," accessed October 23, 2018, <http://nwppca.org/about/mission/>.
24. "Women in State Legislatures 2018," CAWP, accessed June 6, 2018, <http://www.cawp.rutgers.edu/women-state-legislature-2018>.
25. United States Department of Health and Human Services (US DHHS), Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), Division of Vital Statistics, Natality public-use data 2007-2016, on CDC WONDER Online Database, February 2018, accessed March 1, 2018, <http://wonder.cdc.gov/natality-current.html>.

ENDNOTES

26. Hiromi Taniguchi, "The Timing of Childbearing and Women's Wages," *Journal of Marriage and Family*, November 1999, https://www.jstor.org/stable/354020?seq=1#page_scan_tab_contents.
27. Burstein, Nancy R., "Economic Influences on Marriage and Divorce," *Journal of Policy Analysis and Management* 26, no. 2 (2007): 387-429.
28. David S. Loughran and Julie M. Zissimopoulos, "Why Wait? The Effect of Marriage and Childbearing on the Wages of Men and Women," *The Journal of Human Resources*, Spring 2009, <https://www.jstor.org/stable/pdf/20648900.pdf?refreqid=excelsior%3Ac84a5bc1b96cffd79314a3060560c0cf>.
29. Hiromi Taniguchi, "The Timing of Childbearing and Women's Wages."
30. David Beede, Tiffany Julian, David Langdon, George McKittrick, Beethika Khan, and Mark Doms, Office of the Chief Economist, "Women in STEM: A Gender Gap to Innovation, Executive Summary," U.S. Department of Commerce, Economics and Statistics Administration, August 2011, <http://www.esa.doc.gov/sites/default/files/womeninstemagaptoinnovation8311.pdf>.
31. "STEM Jobs: 2017 Update," Economics and Statistics Administration, U.S. Department of Commerce, March 30, 2017, <http://www.esa.doc.gov/reports/stem-jobs-2017-update>.
32. Houser, L., & Vartanian, T. P., "Pay Matters: The Positive Economic Impacts of Paid Family Leave for Families, Businesses and the Public," Center For Women and Work at Rutgers, January 2012, <http://www.nationalpartnership.org/research-library/work-family/other/pay-matters.pdf>.
33. "Expecting Better: A State-by-State Analysis of Laws That Help Expecting and New Parents, Fourth Edition," National Partnership for Women & Families, August 2016, <http://www.nationalpartnership.org/research-library/work-family/expecting-better-2016.pdf>.
34. Please see the full report for in-depth scoring criteria.
- "Expecting Better: A State-by-State Analysis of Laws That Help Expecting and New Parents, Fourth Edition," National Partnership for Women & Families, August 2016, <http://www.nationalpartnership.org/research-library/work-family/expecting-better-2016.pdf>.

ENDNOTES

35. "2017 Appendices, Parents and the High Cost of Child Care," Child Care Aware of America, accessed June 13, 2018, http://usa.childcareaware.org/wp-content/uploads/2018/01/2017_CCA_High_Cost_Appendices_FINAL_180112_small.pdf.

36. "Parents and the High Cost of Child Care 2017 Report," Child Care Aware of America, http://usa.childcareaware.org/wp-content/uploads/2017/12/2017_CCA_High_Cost_Report_FINAL.pdf.

ABOUT THE AUTHOR

Jessica Jackson is a senior research analyst in regional economics at the Milken Institute, conducting research on human capital, innovation, entrepreneurship, and competitiveness. Jackson's previous work includes the "A Hollywood Update: Changes and Transformations in Hollywood Since the Passage of the 2014 California Filmed Production Incentive," "Best-Performing Cities 2017: Where America's Jobs are Created and Sustained," "Best-Performing Cities Europe," "New Skills at Work: Keeping Los Angeles at the Cutting Edge in an Evolving Industry," "Hollywood's Diversity Problem: It's Not Just Actors," "Regional Performance Over Time Case Study: The Bend-Redmond, Ore. Metropolitan Statistical Area," and "Best-Performing Cities China 2016." Prior to joining the Institute, Jackson was a teaching fellow at the University of North Texas, teaching courses in macroeconomics. She holds bachelor's degrees in economics and history from the University of North Texas, where she also earned a master's degree in economics focusing on applied econometrics.