

Women's Work: Realities and Possibilities for Arizona

2019 Research Brief

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Women's Work: Realities and Possibilities for Arizona

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Summary

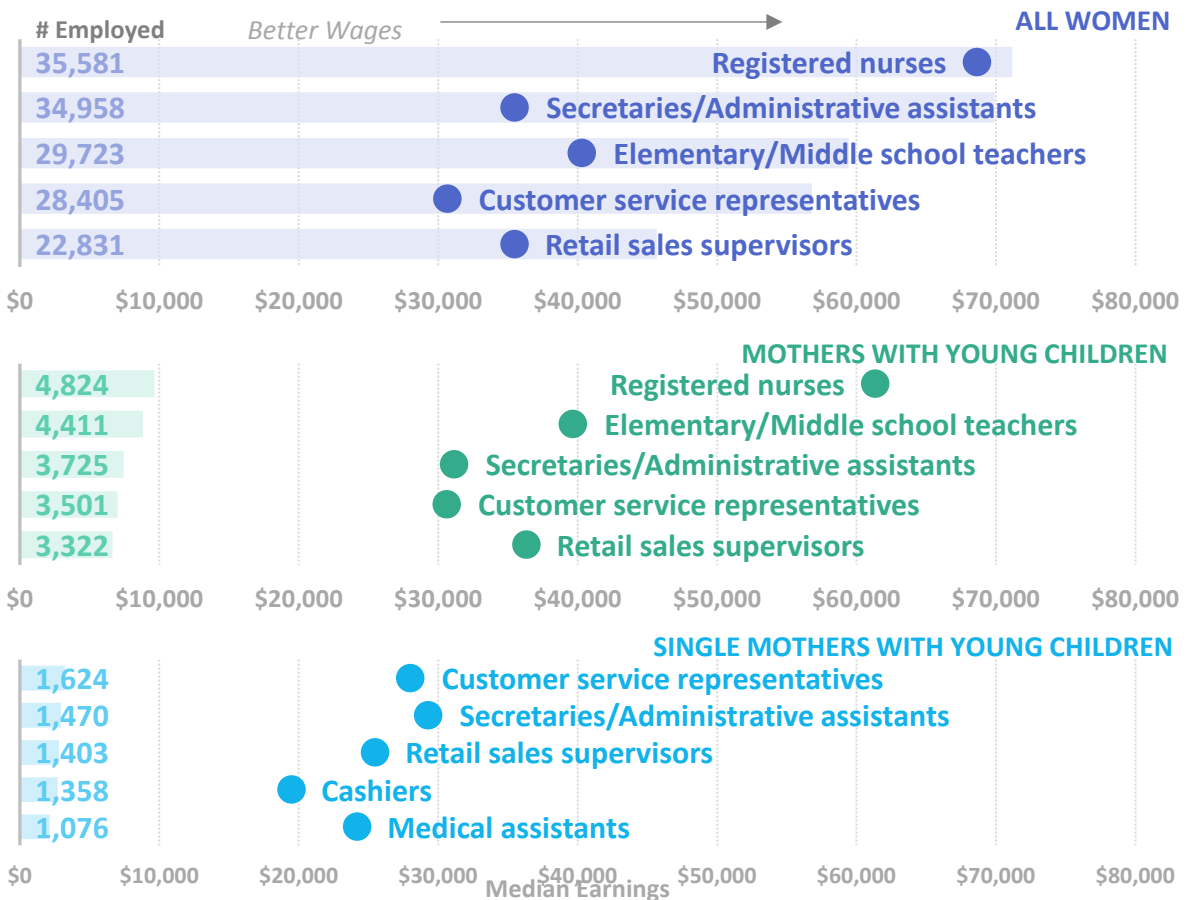
Across Arizona, full-time working women are most commonly employed in human service fields, such as nurses, medical assistants and teachers, and in administrative, customer service and retail positions. Although vital to the economy, many of these jobs may not provide adequate income for women, especially single mothers of young children, to support their families. Even when working full time, single mothers are likely to be in or near poverty and need assistance to make ends meet for their families. Education is often a limiting factor; only 16 percent of single mothers have a four-year college degree. However, despite the low wages typically paid to Arizona workers with limited educational attainment, there are fields in which modest additional education or training can yield relatively big payoffs. In this brief, we identify 36 mid-skill high-wage fields as promising options for workers in Arizona looking for careers that enable self-sufficiency. Notably, women are underrepresented in the majority of these “promising” occupations. Nearly two-thirds of the fields employ more men than women, and nearly half of the promising careers represent non-traditional occupations for women (i.e., women are less than 25% of the workforce in that field). Efforts to make these fields more accessible and hospitable to women, along with efforts to help women make informed choices about career options, are important to supporting Arizona families and the economy. The brief concludes with evidence-based suggestions on how to support women pursuing mid-skill, high-earnings jobs, often in non-traditional fields.

Single mothers of young children work in fields where achieving self-sufficiency is challenging

Across Arizona, full-time working women are most commonly employed in human-service focused fields, including as registered nurses, secretaries and administrative assistants, elementary and middle school teachers, and in customer service and retail positions (Figure 1). Although vital to the economy, these jobs may not provide adequate income for women to support their families. The concept of self-sufficiency means that people employed full-time will be able to meet the needs of themselves and their families without the use of public assistance (e.g., SNAP, WIC, TANF, Medicaid/AHCCCS). For example, in Pima County, the self-sufficiency standard¹ for a single parent with a preschooler is approximately \$40,440 (2016 dollars).¹ Many full-time workers earn less than this amount. Among the careers where women currently work in large numbers, only registered nurses could consistently expect to earn a wage that enables them to support their family independently, without the help of public assistance.

These state trends reflect national patterns; many of the fields identified as top occupations for women in Arizona overlap with 22 occupations identified by the Institute for Women’s Policy Research as the “largest, low-wage, female-dominated, growing occupations.”²

Single mothers with young children are employed in lower wage occupations than women overall.



Note: Estimates are for full-time, year-round working age women, defined as women ages 18-64 who are working at least 50 weeks per year for 35 hours or more a week. Young children is defined as children ages 5 or younger.

Source: U.S. Census Bureau (2018). 2012-2016 American Community Survey Public Use Microdata Sample. Estimates by CRED.

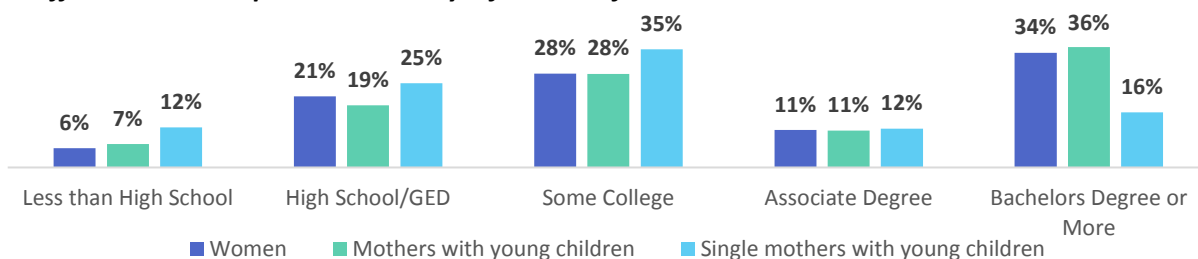
Figure 1. Top 5 full-time occupations for working-age women, mothers of young children, and single mothers of young children

Single mothers of young children face even more challenges. They are more likely to be employed in lower paying fields, including cashiers and medical assistants. Even when employed in the same fields as other women, single mothers earn less. Among the five most commonly held occupations for single mothers of young children, none provide a median wage higher than \$30,000 (Figure 1). Even when working full time, these mothers are likely to be in poverty or near poverty and need assistance to make ends meet for their families.ⁱⁱ

One driver of the disparities in earnings between single mothers with young children and other women is the difference in education. The educational attainment across mothers with young children as a whole is similar to that of women overall (Figure 2). Single mothers, however, have completed four-year college at less than half the rate of other women (16% vs. 34% for women overall).ⁱⁱⁱ Single mothers are also twice as likely to have less than a high school education (12% vs 6%). Given the strong correlation between education and earnings,³ single mothers of young children face an uphill battle when finding work that can support their family.

Figure 2. Educational attainment of full-time working-age women, mothers of young children, and single mothers of young children

The differences in occupations are likely a function of educational attainment

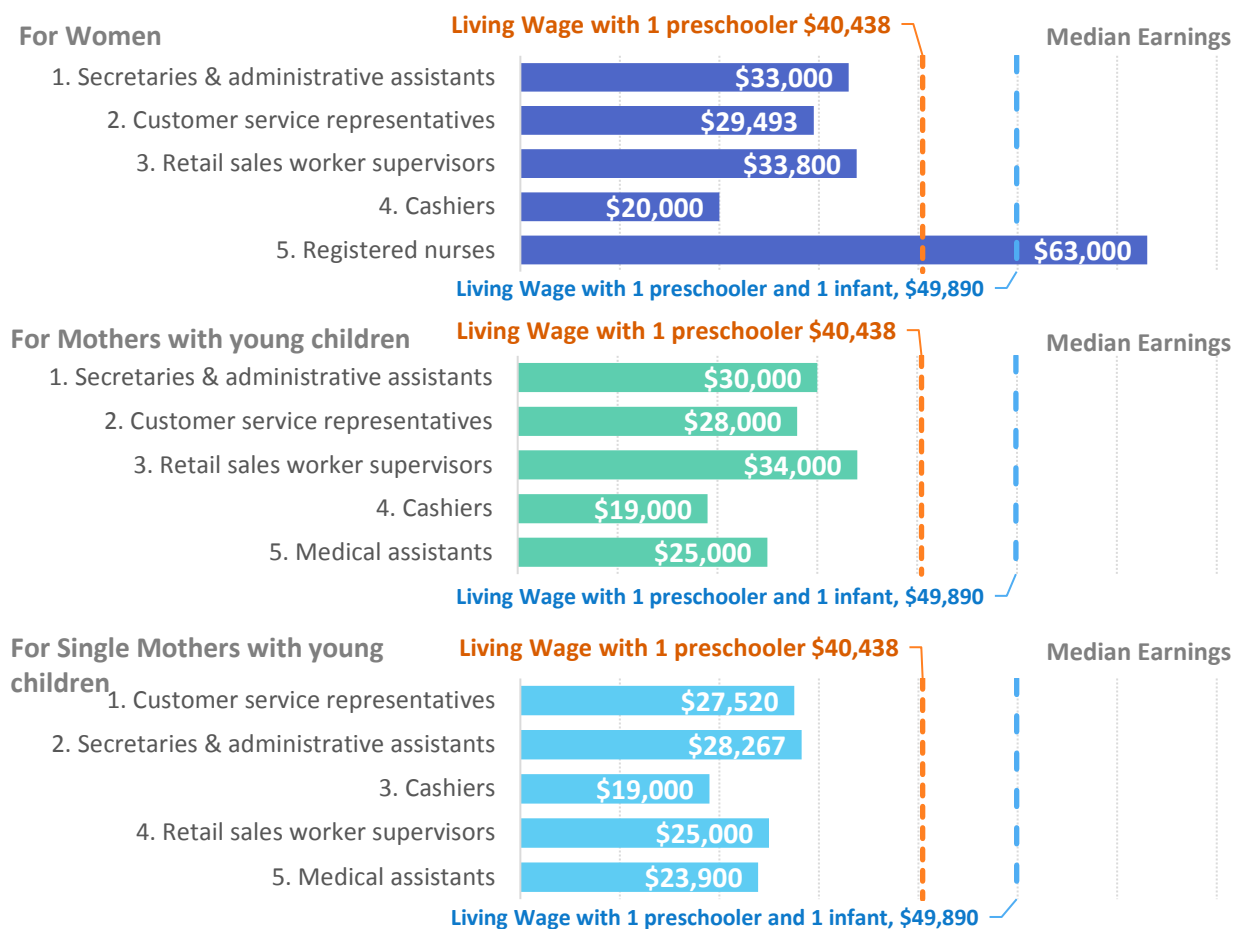


Source: U.S. Census Bureau (2018). 2012-2016 American Community Survey Public Use Microdata Sample. Estimates by CREED.

Low educational attainment among mothers of young children limits earning potential

For employed women, there is a clear correlation between education level and earnings.⁴ In Arizona, there are nearly half a million (448,180) full-time working women who lack a college degree (two or four year). Over 70,000 of those are single mothers. Taking a closer look at full-time working women without a four-year college degree, we see that Arizona mothers, particularly single mothers, are likely to struggle to support their families. A single-parent family with one preschooler needs about \$40,440 to meet basic needs without assistance; a single-parent family with an infant and a preschooler needs an estimated \$49,890 (2016 dollars).¹ The careers in which women, particularly mothers and single mothers with young children, are most commonly employed typically have far lower median earnings.^{iv} Low-income workers, especially the bottom 10% of earners,^v are also less likely to have jobs that offer paid sick days or paid vacation, healthcare benefits, or retirement plans.⁵⁻⁷

None of the top 5 occupations for mothers without a 4-year degree provides a self-sufficient wage.



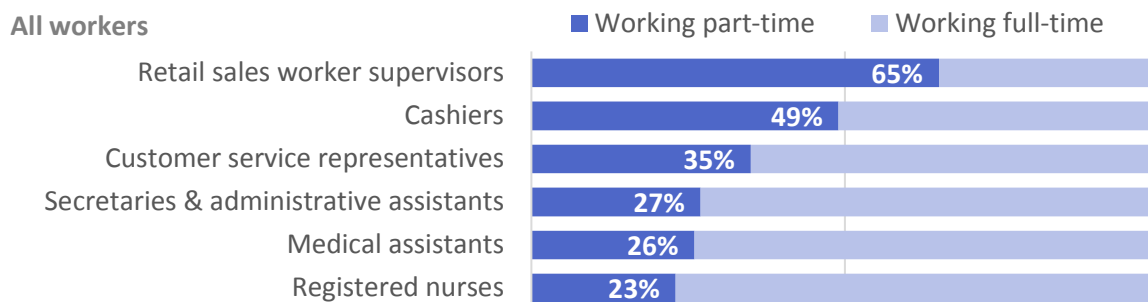
Note: Estimates are for full-time, year-round working age women, defined as women ages 18-64 who are working at least 50 weeks per year for 35 hours or more a week. Young children is defined as children ages 5 or younger. Self-sufficiency wage is for Pima County (2016 dollars). Source: U.S. Census Bureau (2018). 2012-2016 American Community Survey Public Use Microdata Sample. Estimates by CRED. Living wage in Pima County drawn from Pearce, D.M. (2012).

Figure 3. Top 5 occupations for women, mothers with young children, and single mothers with young children with less than a 4-year degree

The only career that is likely to enable self-sufficiency for women with less than a four-year degree, registered nurse, requires at least an associate degree, and nearly two-thirds (61%) of women working as registered nurses have a four-year degree or more. An associate degree is currently sufficient, but the field of registered nursing is moving toward requiring higher educational attainment. The percent of registered nurses with a 4-year degree or higher educational attainment is increasing by nearly two percent per year.^{50,51} The Institute of Medicine has set a goal that 80 percent of registered nurses have a bachelor’s degree by 2020.⁵² Although registered nursing remains a mid-skill, high wage field in the short-term, longer-term trends indicate that this occupation is becoming a higher skill, high wage job.

For women without families, or mothers who are in dual-earner households or who have a partner to provide child care, the wages in the most commonly held careers may be able to support basic needs.^{vi} However, among single mothers who are the sole provider for their young children, the careers they are likely to hold do not allow for self-sufficiency, even when working full-time. Furthermore, the self-sufficiency estimates above account for current needs, but do not include savings to address future needs, such as retirement or job loss.^{vii 8}

The top occupations for women and mothers with less than a 4-year degree also tend toward part-time work.



Note: Full time is defined as working at least 50 weeks per year for 35 hours or more a week.

Source: U.S. Census Bureau (2018). 2012-2016 American Community Survey Public Use Microdata Sample. Estimates by CREED.

Figure 4. Share of part-time workers in the most popular occupations for women and mothers without a bachelor's degree

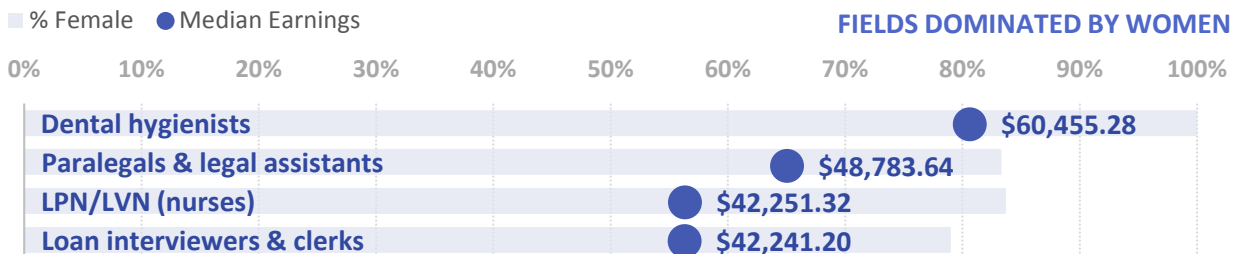
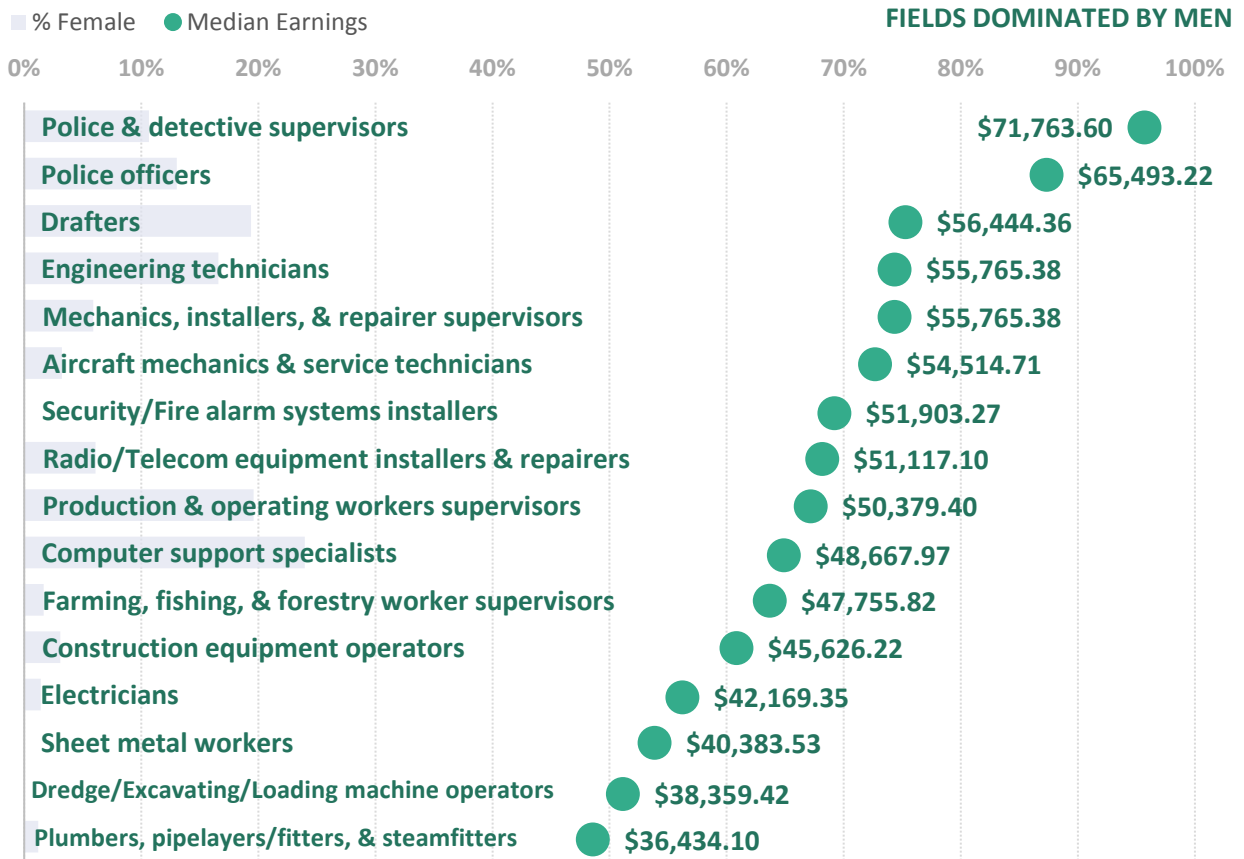
Moreover, women without a four-year degree are more likely to be employed part-time (Figure 4). This option may be desirable for some mothers of young children with an additional earner in the household, giving them more flexibility to spend time with or coordinate care for their young children. Other women may wish to work full-time but may be in jobs where weekly fluctuations in shift work, limited job opportunities, a lack of child care, or other variables force them into part-time work situations.^{viii} Regardless of whether part-time status is desired or not, it pushes annual wages even lower and means that women are less likely to qualify for any employee benefits.

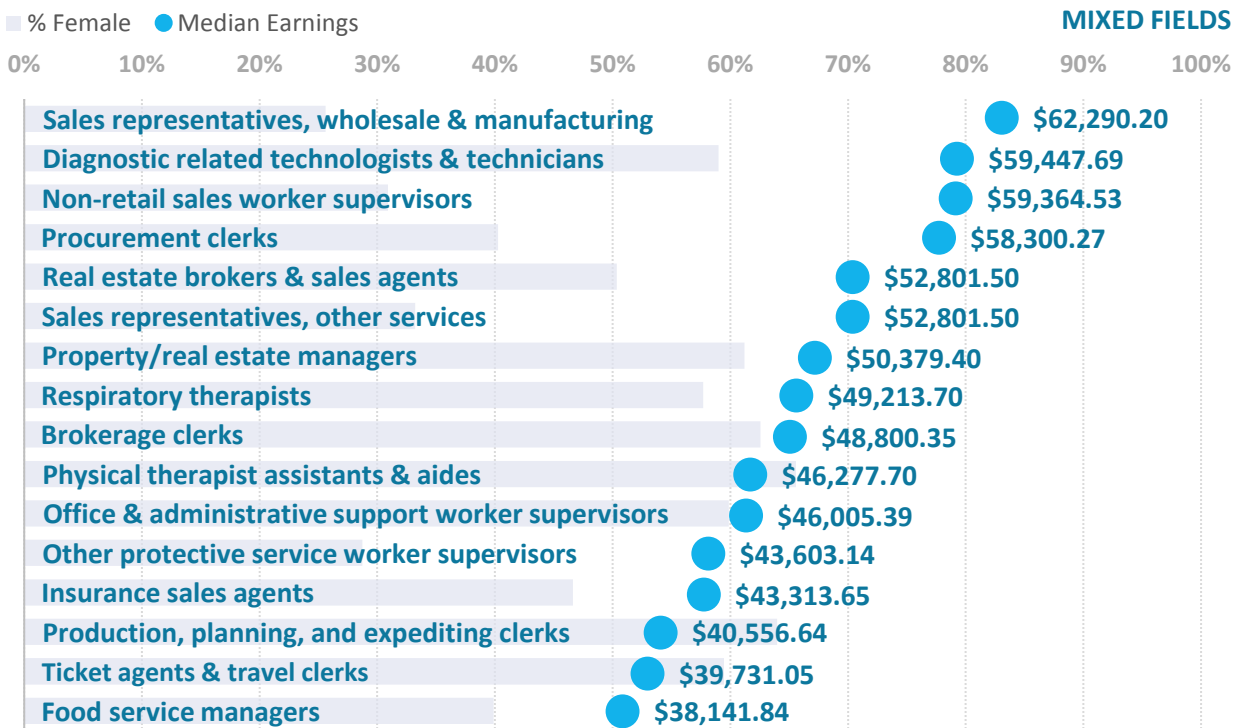
There are careers that women with less education can pursue that support self-sufficiency, but many are dominated by men and pose barriers to entry

Despite the low wages typically paid to Arizona workers with limited educational attainment, there are fields in which modest additional education or training can yield relatively big payoffs. We identified 36 mid-skill high-wage fields that may be promising options for workers in Arizona looking to progress toward self-sufficiency. These occupations do not require a four-year degree, require less than five years of experience, typically require no more than moderate on-the-job training, are in growth areas that are projected to have at least 150 annual openings in Arizona, and pay a median wage of more than \$20 per hour.^{ix} It is important to note that the wages in the figures below are the median earnings – meaning roughly half of employees earn more than that wage, roughly half earn less. The earnings of someone just beginning their career would likely be lower. Table 4 in the appendix lists the earnings of those at the 25th percentile of earners (meaning they earn more than about one-quarter of employees, and less than about three-quarters of employees), which may better approximate the earnings that a recent graduate could anticipate in their first step on the career ladder.

In Arizona, these “promising” occupations are more likely to be held by men. Nearly two-thirds (23) of the 36 fields employ more men than women. Furthermore, using the Workforce Innovation and Opportunity Act’s⁹ categorization of “non-traditional” careers as ones where the opposite gender comprised more than 75 percent of the workforce, nearly half of the promising careers represent non-traditional occupations for women (Figure 5). Thirteen of the 36 promising occupations employ more women than men, and only four are traditionally dominated by women.

There are 36 promising mid-skill high-wage fields: 16 are dominated by men, and 4 are dominated by women.





Note: Estimates are for full-time, year-round working age persons, defined as persons ages 18-64 who are working at least 50 weeks per year for 35 hours or more a week. *Dominated by women* is defined as occupations where 75% or more workers are women. *Dominated by men* is defined as careers where 75% or more workers are men.

Source: U.S. Census Bureau (2018). 2012-2016 American Community Survey Public Use Microdata Sample. Estimates by CREED.

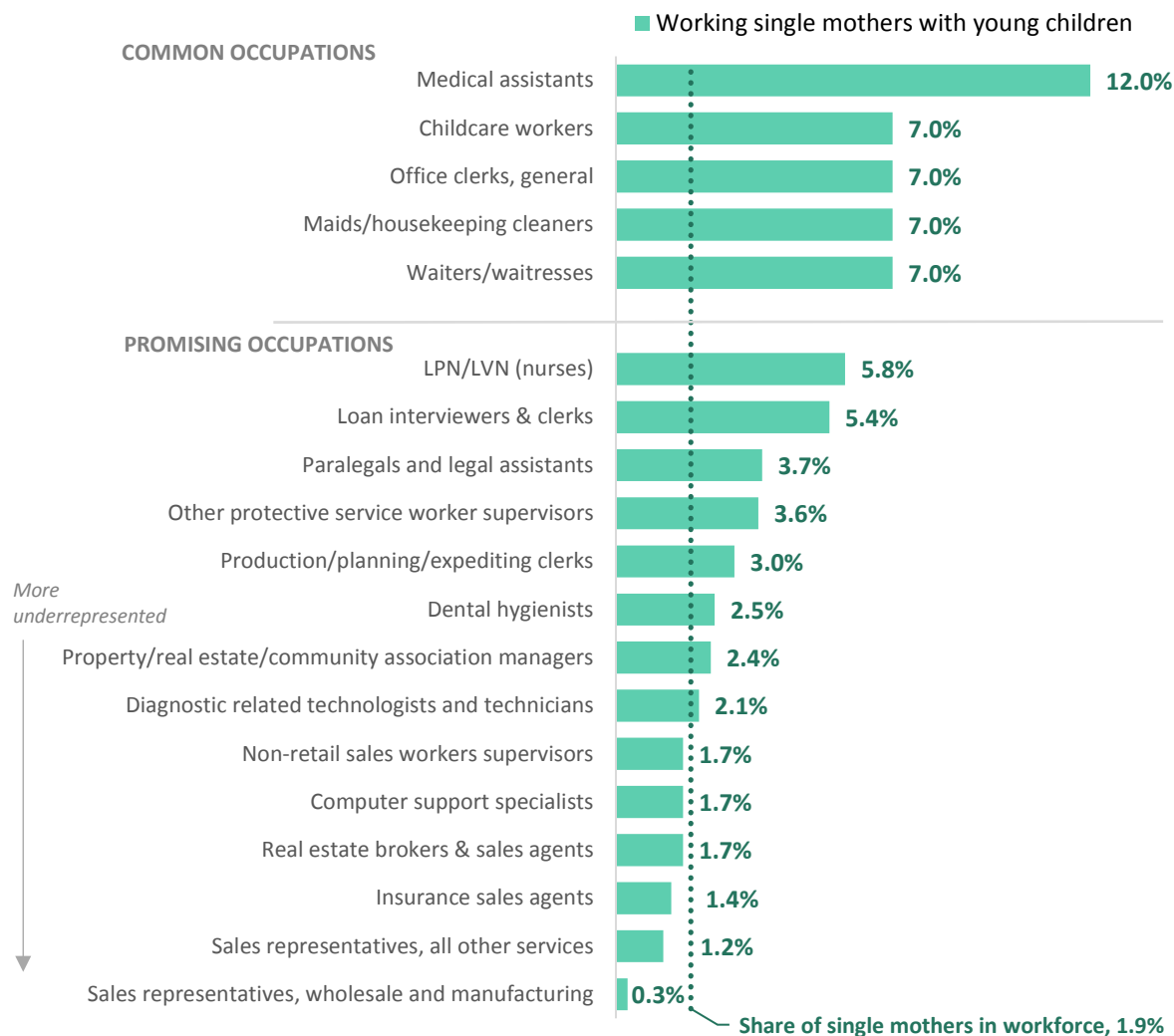
Figure 5. Median earnings and share of women in promising occupations by whether the field is dominated by women, men, or mixed

The preponderance of mid-skill careers that are non-traditional for women is not unique to Arizona. Despite benefits to some fields dominated by men that include higher pay, unionized structures which may offer higher benefits, and career ladders with increasing wages (which are often not available in many occupations dominated by women),¹⁰ many women avoid these fields. A number of researchers have documented the challenges that women face in choosing and working in fields dominated by men.¹¹⁻¹³ Women interested in occupations traditionally dominated by men face an array of barriers, from a lack of exposure to the field, to stigma, to outright hostility, as well as concerns about work-life balance.^{14-22; x} Supporting women entering these fields is likely to require targeted, long-term efforts to ameliorate the substantial gender barriers facing them.

Single mothers of young children are well-represented in certain promising fields

In the full-time Arizona workforce, single mothers with young children make up 1.9 percent of employees, with younger single mothers (under 35 years old) with young children making up 1.4 percent of all employees. Both of these groups of women are over-represented in low-wage careers (medical assistants, childcare workers, office clerks, maids, and waitresses; Figure 6). Providing them support to move to higher-paying jobs can benefit them, their families, and Arizona. As noted earlier, fields dominated by men are not the only occupations that can provide a mid-skill, high-wage career. With appropriate training and education, single mothers of young children could transition into promising fields that typically have fewer gender barriers to entry.

Single mothers with young children are well-represented in some promising fields but not all.



Note: Estimates are for full-time, year-round working age persons, defined as persons ages 18-64 who are working at least 50 weeks per year for 35 hours or more a week.

Source: U.S. Census Bureau (2018). 2012-2016 American Community Survey Public Use Microdata Sample. Estimates by CRED.

Figure 6. Presence of single mothers with young children in common and promising occupations

Among the promising occupations, single mothers with young children are well-represented among nurses and loan clerks. Mothers entering these fields are more likely to encounter others like themselves and have colleagues who understand the challenges they face. Promising, mixed-gender occupations where single mothers – particularly younger (under 35) single mothers -- are under-represented include several of the sales-related fields (e.g., insurance sales agents, wholesale sales representatives; real estate sales agents) and computer support specialists. Fewer than expected young single mothers are currently working as diagnostic technologists. These fields may be occupations where targeted outreach, recruitment, training, and support activities could help young women begin promising careers.

Promising Practices and Resources

Given the number of women who are engaged in the workforce, relying on a career to support their families, it is important to support women in making wise, well-informed career choices that enable them to adequately provide for their families. An emphasis on mid-skill, high-earnings jobs benefits women, families, and the Arizona economy. The following are strategies across a span of ages and locations, from childhood to the workplace, to support this effort.

Promote early exposure to less traditional occupations

Children are exposed to the concept of gender-specific roles early in life, and begin to mentally organize their career choices along gender lines and perceptions of accessibility, rejecting choices that do not align with their gender or seem inaccessible.^{23,24} For example, early socialization about what kinds of interests are appropriate for girls and boys may lead to prohibition or discouragement of girls' engaging in hands-on coding and engineering, and this lack of exposure can lead to a lack of belief in their abilities in computing and technical occupations.^{25,26} Early exposure to tools and trades within families – though not necessarily the same trade that the women eventually pursued – is common among women working in skilled and technical trades.^{13, 35, 39}

Nationally, though high school boys and girls have similar patterns of science course enrollment,^{13,14} enrollment in technology and engineering courses remain heavily dominated by boys.²⁷ In 2015, though women made up 61 percent of associate degree awardees, men were awarded 86 percent of degrees in engineering, 87 percent of degrees in engineering technologies, and 79 percent of degrees in computer sciences.^{14,28,29} Research indicates that interest in STEM fields is shaped early on, suggesting that efforts to expose and engage pre-high school girls in engineering and technology activities could be important in closing this gap.²⁷ Activities with young women and girls that directly confront gender issues, such as a discussion of underrepresentation of women in science, have been shown to help.^{30,31} Even simple changes in language (e.g., replacing the singularly masculine “fireman” with the paired phrasing “fireman or firewoman”) help to broaden girls' interest in occupations traditionally dominated by men.³²

Targeted outreach and education to girls about skilled trades through activities such as career fairs, summer camps, visits to schools, and subsidized summer employment may help foster women's interest in nontraditional fields.³³ Designing and funding pre-apprenticeship training programs that offer trade-specific math skills, physical fitness development, Occupational and Health Administration training, and job shadowing through mechanisms such as JTED can help develop a more robust pipeline into skilled trade careers.³³

Provide targeted career advice and counseling

In the short term, some of the most promising careers into which it would be useful to guide women seeking to advance their education include those that pay living wages, are projected to have reasonable growth rates in Arizona, and already employ many women, suggesting that the culture of the workplace is generally tolerable for women. There are sound options meeting these criteria in the areas of health, sales, and clerical fields. As noted earlier, however, the health careers are wide-ranging, with some well-paying positions (e.g., dental hygienists, diagnostic sonographers), and others paying wages that may not enable self-sufficiency (e.g., medical assistants, home health aides, phlebotomists). It is important that school, community college, and job placement agencies are well-informed about the variability in career tracks and provide a clear discussion of benefits, challenges, and job outlook about various, similar-sounding occupations. Partnering with local employers to discuss specific skill sets needed and available opportunities can be helpful to those who are providing advice.³⁴

Encourage career and technical education

Advancing career and technical education programs is important for the economy as the needs of the labor market change. Given that many of the mid-skill, high-wage, growing field careers often offer better earnings potential than careers traditionally dominated by women, helping interested women understand and pursue occupations in skilled trades, engineering, and computer sciences is essential. Occupations traditionally dominated by men may not be consistently presented to women as options in course and career counseling,¹⁶ and women are often unaware of opportunities in nontraditional fields.^{34–36} However, research has shown that funding pipelines that guide women into these careers has been successful.³⁷ Strategies have included active outreach to and recruitment of women students, using recruitment materials that feature women, using inclusive language, and including detailed information on potential earnings and educational requirements of specific occupations.^{34,38} Furthermore, use of unbiased alternative career assessment tools such as *The Nontraditional Employment for Women Career Assessment*

*Survey, Nontraditional Self-Assessment Survey, and the Nontraditional: Is That For Me STEP-UP Assessment from The Northern New England Tradeswomen Association*¹⁰ can help women identify relevant opportunities.

Increase participation by women in specific career pipelines

A number of promising careers traditionally dominated by men use an apprenticeship model (e.g., electrician, plumber, carpenter). Registered Apprenticeship^{xi} programs tend to result in higher earnings, and women are underrepresented in these apprenticeships, especially in skilled trades.³⁹ Concerns of women in construction apprenticeships have included lack of information and understanding about the skills needed, wage potential, and the challenges of these jobs (e.g. time to work up to higher wages, unpredictable hours, long commutes, physical demands.)³⁹ Mentoring, career counseling, and training in realistic skills (e.g., wiring, building tasks) prior to obtaining skilled trade jobs can help build self-efficacy, confidence, technical and coping skills among women who may be interested in this type of work.¹⁹

Increase access to informal social/professional networks and role models

As in many careers, access to promising mid-wage jobs often happens through connections in social and professional networks. In jobs traditionally dominated by men, women have less access to these networks, and as a result, less opportunity to secure a career or training opportunity.¹⁷ Similarly, once in a job, if job progression depends on continued training by senior employees, women may be at a disadvantage in a field traditionally dominated by men that may not embrace change. In occupations where there are few women, the lack of role models may make it hard to see a path forward or envision oneself successfully climbing the career ladder in the field. Identifying mentors and role models is critical.^{10,33} In one recent study of women in technology, women reported that the top two barriers they face in the technology workplace are lack of mentors (48 percent) and lack of women role models (42 percent).⁴⁰

As St. Rose & Hill note: “Research suggests that women who persevere in nontraditional fields must be resilient, despite the barriers they face. Successful women in nontraditional and STEM fields can serve as role models and mentors for female students, offer suggestions and strategies for success, and reinforce the message that women can be successful in these fields” (pg. 44).³⁴ Developing cohorts that explicitly provide opportunities to group women in non-traditional occupations together, has also been a successful strategy for helping women persist in these fields. Similarly, it can be helpful to have women represented on recruitment teams and to have a woman as a contact person for prospective employees in fields traditionally dominated by men.⁴¹

Address concerns about balancing family and work

The career choices women make in attempting to balance work and family are in some instances based on preferences, and in others, constraints imposed by gendered expectation.²¹ Women may seek occupations where they perceive less potential conflict between their job and their family and personal needs.^{24,26} Even before they have families, young women may abandon intentions to pursue jobs traditionally dominated by men due to concerns about the degree to which these occupations are family-friendly and flexible.¹⁸ Women workers cite concerns over work inflexibility – an issue particularly salient for single parents – and challenges balancing childcare and transportation.^{10,19} Some barriers to entering a field come from potential employers concerned about the family responsibilities women may carry, regardless of whether the women actually have or anticipate any caregiving responsibilities.^{15,16,20}

Regardless of the field, it is important to acknowledge and address the crucial role that caregiving, for either children or elderly family members, plays in the lives of many. Career and technical education (CTE) programs that address these responsibilities, for example by providing block scheduling, on-site child care, or subsidies to support childcare (or eldercare), have improved rates of student completion.³⁴ Providing dedicated staff to help students not only navigate academic issues, but also non-academic issues, such as finding funding for emergency needs like rent and bills, may also help retain students in these programs. At a higher level, policies that support families (e.g., paid family leave, guaranteeing the availability of sick days, efforts to make quality child (or elder) care accessible and affordable) will support the advancement of

women in the workplace.⁴² Similarly, policies that promote predictable and stable schedules or guarantee a certain number of hours allow workers to plan for childcare needs and manage budgets. “Reporting pay” and “guaranteed minimum hours” laws support workers in being able to count on at least a certain number of fully paid hours per week in industries where staffing needs may shift at the last minute.²

Work to reduce harassment, hostility, and active opposition to women in non-traditional occupations

From construction to law enforcement, women have reported harassment and isolation at worksites dominated by men.^{13,20,22,39,43} Whether in training or once in the job, women face discrimination, stereotyping, relegation to tasks historically assigned to women, harassment, and work cultures characterized by aggression and conflict.^{10,14,19,44,45} Sexual harassment, a means of male dominance, is a noted problem among academic programs and occupations dominated by men.^{17,44,46,47}

As part of a long-term strategy for change, there is a need to provide resources and training to employers to address these issues within worksites dominated by men. Employers may benefit from help to address harassment and discrimination, to set goals for enrolling women in Registered Apprenticeships, and to provide ways to monitor the worksite to assure safety and opportunities.³³ Again, creating and supporting a cohort of women in a particular occupation can help reduce isolation which may give women more voice and power in speaking up against workplace hostility.

Work to elevate the status of what is traditionally women’s work

This research brief has focused on examining what can be done in the short-term to move women, particularly single mothers, towards work that allows them to be self-sufficient. We have recommended fields and occupations where they can make a living wage today, with minimal training and experience. It is important to recognize that much of the work women are currently doing, though poorly paid, is essential for the functioning of a healthy economy. For example, women are carrying the majority of the paid caregiving for children, the elderly, and the disabled -- labor needs that will only continue to grow as baby boomers age. This work, however, does not allow them to provide for their own families. Part of the long-term solution for elevating women in the economy must include professionalizing and valuing the important work they are already doing.

Appendix 1. Variability by county

Although identifying promising careers in Arizona offers valuable information, it is important to realize that there are variations in job prospects across the state. Urban areas (e.g., Tucson and Phoenix) will have different outlooks than more rural areas. The Arizona Office of Economic Opportunity provides projections for 11 sub-regions across the state: Phoenix, the balance of Maricopa County, northeastern Arizona, Coconino, La Paz & Mohave, Pima, Pinal, Santa Cruz, southeastern Arizona, Yavapai, and Yuma. Only two fields arose as promising in all 11 regions: *First-Line Supervisors of Office and Administrative Support Workers* and *Sales Representatives, Services, All Other*.

Occupations that were likely to play important roles in the economy in some areas were much less important in others. For example, construction and building inspectors are expected to be the second most open career in northeastern Arizona but ranked 155th in ten-year openings in Phoenix. Similarly, *Correctional Officers and Jailers* are the top-ranked occupations in growth in Pinal and southeastern Arizona, and relatively less important elsewhere. In Santa Cruz County, which has a much smaller economy, the database only listed three occupations with growth that one could pursue with mid-level education and hope to make at least \$20 an hour: *Sales Representatives, Services, All Other*; *First-Line Supervisors of Office and Administrative Support Workers*; and *Detectives and Criminal Investigators*.^{xii}

Table 1 lays out the occupations that were ranked among the top 40 in number of 10 year openings in more than 5 regions, along with the rank in each of the regions. Blanks appear if the occupation was not listed for that region at all or if it did not make the top 40.

Table 1. Occupations ranked in the top 40 for number of openings in the next 10 years by region in Arizona

Occupation	Rank of number of ten-year openings in the region											# (of 11) regions where ranked in top 40
	Coconino	La Paz/Mohave	Maricopa	Northeast AZ	Phoenix Area	Pima	Pinal	Santa Cruz	Southeast AZ	Yavapai	Yuma	
First-Line Supervisors of Office and Administrative Support Workers	1	2	1	4	1	1	3	2	4	1	2	11
Sales Representatives, Services, All Other	7	10	2	23	3	3	10	3	7	6	8	11
First-Line Supervisors of Construction Trades and Extraction Workers	3	4	6	34	6	6	9		5	4	7	10
First-Line Supervisors of Mechanics, Installers, and Repairers	6	3	13	7	13	11	5		6	12	14	10
Heavy and Tractor-Trailer Truck Drivers	2	1	4	8	2	2	2			3	1	9
Electricians	4	16	7	33	7	7			3	8	5	9
Plumbers, Pipefitters, and Steamfitters	8	23	8	36	8	8	21			9	15	9
Property, Real Estate, and Community Association Managers	12	15	16	6	18	13	20		12		19	9
Production, Planning, and Expediting Clerks	10	19	11	21	12	15	11			16	10	9
Police and Sheriff's Patrol Officers	14	13	38	32	19	16	7			7	12	9
Operating Engineers and Other Construction Equipment Operators	9	7	17	35	20	18	4			10	4	9
Food Service Managers	5		10	1	17	23	6		8	18	13	9
Postal Service Mail Carriers	22	24		29	31	29	15		16	26	25	9
Licensed Practical and Licensed Vocational Nurses		6	18		24	12	14		21	5	11	8
First-Line Supervisors of Production and Operating Workers		12	12	13	10	19	8			11	6	8
Radiologic Technologists		17	35	12	34	25	25		19	21		8
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products		5	5	11	5	4	12			2		7
Correctional Officers and Jailers	23	9		10	23	10	1		1			7
Paralegals and Legal Assistants	18	8	19		16	17	18				27	7
First-Line Supervisors of Non-Retail Sales Workers	15	22	15		15	21			9		16	7
Dental Hygienists	16	20	32	28		28			18	14		7
First-Line Supervisors of Police and Detectives	24	28		18			19		22	24	28	7
Insurance Sales Agents			9	17	9	14			13		17	6
Aircraft Mechanics and Service Technicians		18	27		21	24	13				22	6
Computer Network Support Specialists	21		21	16	26	27			10			6
Electrical and Electronics Engineering Technicians		26	26	26		34			17		26	6
Refuse and Recyclable Material Collectors			29	19	28				15	15	21	6
Real Estate Sales Agents		11	20		22	22					9	5
Web Developers	17		24		29	32			20			5
Construction and Building Inspectors	20			2		40				20	29	5
First-Line Supervisors of Fire Fighting and Prevention Workers		14		24			23		23	19		5

Appendix 2: Methods

The 2012-2016 American Community Survey Public Use Microdata Sample individual file served as the primary source of data for these analyses. Data were analyzed in R using the survey package version 3.29.⁴⁸ We focused our analyses on full-time, year-round working individuals, defined as individuals working at least 50 weeks per year for 35 hours per week. This threshold was chosen as it both matches the definition of full time work used by the Bureau of Labor Statistics and limits the possibility that differences in earnings between groups are due to significantly different working hours.⁴⁹ Our analyses were also limited to working-age individuals, those between the ages of 18 and 64. Given our inclusion of younger individuals, some of the individuals included in our analyses are still pursuing higher education: nine percent of women working full-time, 11 percent of mothers with young children, and 13 percent of single mothers with young children reported that they were enrolled in school in addition to working. However, we chose to include them in our analysis as their current educational attainment affects their current earnings and employment prospects. All dollar values were converted to 2016 dollars for consistency throughout the report using the inflation adjustment factor included in the 2012-2016 ACS PUMS file. Median earnings are reported to reflect wage, salary, and self-employment income and not any other income received through sources such as public benefits or investments.

Top occupations for women were defined by determining the occupations most frequently held by women and specific subgroups of women in terms of raw numbers in the 2012-2016 ACS PUMS file. Promising occupations were identified by examining data from the Bureau of Labor Statistics (BLS) Occupational Employment Statistics and identifying occupations that met the following criteria:

- 1) Requires no more than an associate degree,
- 2) Requires no more than five years of work experience in a related occupation,
- 3) Requires no more than moderate-term on the job training,
- 4) Has a median hourly wage of at least \$20 per hour,
- 5) Has at least 200 annual average job openings, and
- 6) Projected number of jobs in the field is projected to grow over the next 10 years.

We identified 48 fields matching this description. We then excluded two occupations, *detectives and criminal investigators* and *web developers*, where the majority of workers employed in these fields in Arizona had a bachelor's degree. This suggested that someone may not be as competitive in these fields with only an associate degree. Due to slight differences in occupation code reporting in the BLS and the ACS PUMS data, some occupations had to be collapsed together to examine data from the ACS PUMS. For most of these collapsed categories, wages and worker characteristics were highly similar (e.g., *architectural and civil drafters*, *electrical and electronics drafters*, *mechanical drafters*, and *drafters*, all others were collapsed into a single *drafters* occupation). However, in some cases, collapsed occupations were dissimilar in wages and worker characteristics. Collapsed occupation codes were only retained where the weighted average wage exceeded \$20 per hours. Still, in some cases, one occupation within the collapsed category may be more desirable than others. For example, in the *plumbers, pipefitters, pipelayers, and steamfitters* occupation category, *plumbers, pipefitters, and steamfitters* have a median hourly wage of \$22 compared to \$19 for pipefitters. Similarly, in the *physical therapy assistants and aides* category, *physical therapy assistants* have a median wage of \$28 compared to \$12 for *physical therapy aides*. We also eliminated two careers that met other criteria but had a negative rate of growth.

Appendix 3: Tables

Table 2. Top Occupations for Women with Gender Breakdowns (Source: 2012-2016 ACS PUMS)

Occupation Title	Workers		Men		Women		% of Workforce
	#	Median Earnings	#	Median Earnings	#	Median Earnings	
Registered nurses*^	41,147	\$68,642	5,566	\$68,850	35,581	\$68,642	86%
Secretaries and administrative assistants*^°	37,216	\$35,487	2,258	\$35,369	34,958	\$35,487	94%
Elementary and middle school teachers*^	38,138	\$40,894	8,415	\$42,378	29,723	\$40,304	78%
Customer service representatives*^°	45,498	\$31,145	17,093	\$31,681	28,405	\$30,670	62%
First-line supervisors of retail sales workers*^°	52,948	\$40,304	30,117	\$45,679	22,831	\$35,487	43%
Miscellaneous managers, including funeral service managers and postmasters and mail superintendents	58,456	\$70,596	38,033	\$76,044	20,423	\$61,250	35%
Accountants and auditors	25,629	\$60,194	10,310	\$67,289	15,319	\$52,802	60%
Cashiers°	21,025	\$20,447	6,305	\$22,840	14,720	\$20,278	70%
Bookkeeping, accounting, and auditing clerks	16,335	\$37,374	2,195	\$37,674	14,140	\$36,961	87%
First-line supervisors of office and administrative support workers	23,132	\$46,005	9,280	\$51,117	13,852	\$44,621	60%
Receptionists and information clerks	15,213	\$27,376	1,795	\$30,342	13,418	\$26,604	88%
Nursing, psychiatric, and home health aides	16,160	\$28,031	3,141	\$30,228	13,019	\$26,581	81%
Personal care aides	16,232	\$21,121	3,219	\$21,283	13,013	\$21,121	80%
Maids and housekeeping cleaners	14,906	\$18,709	2,095	\$21,469	12,811	\$18,250	86%
Retail salespersons	32,573	\$31,145	20,235	\$35,782	12,338	\$26,401	38%
Office clerks, general	13,911	\$31,681	2,039	\$36,954	11,872	\$30,731	85%
Financial managers	21,510	\$65,905	10,974	\$72,672	10,536	\$60,057	49%
Social workers	12,969	\$37,281	2,449	\$35,581	10,520	\$37,374	81%
Waiters and waitresses	14,059	\$21,266	4,345	\$20,152	9,714	\$22,069	69%
Janitors and building cleaners	27,570	\$23,320	19,233	\$25,345	8,337	\$20,278	30%
Childcare workers	9,077	\$19,725	1,069	\$20,865	8,008	\$19,009	88%
Medical assistants°	8,771	\$29,528	1,042	\$26,473	7,729	\$29,700	88%
Health practitioner support technologists and technicians	9,920	\$32,243	2,492	\$31,999	7,428	\$32,288	75%
Billing and posting clerks	8,768	\$32,243	1,414	\$28,297	7,354	\$32,715	84%
Hairdressers, hairstylists, and cosmetologists	7,215	\$26,401	926	\$25,190	6,289	\$26,401	87%
Insurance claims and policy processing clerks	8,224	\$35,291	2,066	\$40,304	6,158	\$34,258	75%
Teacher assistants	5,733	\$20,070	768	\$22,299	4,965	\$19,570	87%

*Top 5 Occupation for Women, ^ Top 5 Occupation for Mothers with Young Children, ° Top 5 Occupations for Single Mothers with Young Children

Table 3. Top Occupations for Women by Subgroup (Source: 2012-2016 ACS PUMS)

Occupation Title	Mothers		Mothers of Young Children		Single Mothers of Young Children		
	#	Median Earnings	#	Median Earnings	#	Median Earnings	% of Workforce
Customer service representatives*^°	8,960	\$31,869	3,501	\$30,620	1,624	\$28,007	4%
Secretaries and administrative assistants*^°	11,022	\$33,221	3,725	\$31,145	1,470	\$29,279	4%
First-line supervisors of retail sales workers*^°	7,418	\$35,487	3,322	\$36,336	1,403	\$25,485	3%
Cashiers°	4,051	\$20,092	1,993	\$19,482	1,358	\$19,497	6%
Medical assistants°	3,778	\$28,506	1,881	\$25,380	1,076	\$24,199	12%
Maids and housekeeping cleaners	5,831	\$17,380	1,658	\$17,372	1,034	\$13,077	7%
Personal care aides	4,303	\$21,534	1,530	\$20,857	988	\$19,240	6%
Waiters and waitresses	2,707	\$20,447	1,416	\$20,418	981	\$19,664	7%
Office clerks, general	4,324	\$29,527	1,706	\$25,345	947	\$22,436	7%
Registered nurses*^	12,818	\$66,328	4,824	\$61,341	805	\$56,627	2%
Receptionists and information clerks	4,542	\$27,183	2,010	\$25,516	746	\$25,390	5%
Elementary and middle school teachers*^	11,814	\$40,304	4,411	\$39,666	641	\$40,894	2%
Nursing, psychiatric, and home health aides	4,695	\$25,928	1,548	\$23,178	616	\$22,640	4%
Childcare workers	2,901	\$18,160	1,359	\$19,677	612	\$17,993	7%
Miscellaneous managers, including funeral service managers and postmasters and mail superintendents	7,051	\$63,565	2,350	\$71,552	601	\$53,867	1%
Retail salespersons	3,103	\$30,228	1,295	\$28,329	566	\$22,007	2%
Health practitioner support technologists and technicians	2,586	\$31,693	1,126	\$29,862	517	\$25,779	5%
Social workers	3,741	\$38,127	1,525	\$40,481	446	\$32,824	3%
Bookkeeping, accounting, and auditing clerks	4,340	\$37,918	1,358	\$33,010	430	\$29,682	3%
Insurance claims and policy processing clerks	2,259	\$32,686	693	\$30,936	408	\$29,627	5%
Janitors and building cleaners	3,256	\$20,152	638	\$21,499	388	\$22,450	1%
Accountants and auditors	5,768	\$55,489	1,986	\$49,120	378	\$35,991	1%
Financial managers	3,943	\$51,247	1,424	\$44,610	369	\$47,989	2%
First-line supervisors of office and administrative support workers	4,590	\$44,353	1,395	\$37,050	348	\$34,865	2%
Billing and posting clerks	2,921	\$31,688	774	\$29,569	341	\$24,461	4%
Hairdressers, hairstylists, and cosmetologists	2,125	\$26,358	954	\$25,345	327	\$15,721	5%
Teacher assistants	1,890	\$18,336	466	\$19,016	315	\$18,718	5%

*Top 5 Occupation for Women, ^ Top 5 Occupation for Mothers with Young Children, ° Top 5 Occupations for Single Mothers with Young Children

Table 4. Promising Occupations (Source: BLS Occupation & Wage Data)

Occupational Title	2016 Jobs	Projected Growth	Avg. Annual Openings	Typical entry education	Typical Training	Required Work Experience	Median Wage	25th Perc. Wage	75th Perc. Wage
First-Line Supervisors of Police and Detectives	2,160	7%	150	High school diploma or equivalent	Moderate term on the job training	<5 years	\$44	\$35	\$51
Dental Hygienists	2,870	33%	290	Associate's degree	None	None	\$43	\$38	\$47
Diagnostic Medical Sonographers*	1,910	48%	210	Associate's degree	None	None	\$40	\$33	\$46
Nuclear Medicine Technologists*	300	32%	30	Associate's degree	None	None	\$39	\$35	\$45
Magnetic Resonance Imaging Technologists*	980	33%	90	Associate's degree	None	<5 years	\$37	\$32	\$43
Radiologic Technologists*	3,710	33%	340	Associate's degree	None	None	\$31	\$25	\$37
Cardiovascular Technologists and Technicians*	820	34%	80	Associate's degree	None	None	\$22	\$17	\$36
<i>Detectives and Criminal Investigators^</i>	5,210	2%	340	High school diploma or equivalent	Moderate term on the job training	<5 years	\$39	\$35	\$41
Police and Sheriff's Patrol Officers*	8,750	7%	630	High school diploma or equivalent	Moderate term on the job training	None	\$33	\$26	\$37
Telecommunications Equipment Installers and Repairers, Except Line Installers*	2,980	4%	320	Postsecondary nondegree award	Moderate term on the job training	None	\$33	\$25	\$37
Electrical and Electronics Engineering Technicians*	2,830	15%	300	Associate's degree	None	None	\$31	\$25	\$36
Aerospace Engineering and Operations Technicians*	560	11%	60	Associate's degree	None	None	\$30	\$26	\$42
Industrial Engineering Technicians*	2,120	18%	230	Associate's degree	None	None	\$27	\$22	\$35
Engineering Technicians, Except Drafters, All Other*	2,250	16%	240	Associate's degree	None	None	\$27	\$21	\$33
Civil Engineering Technicians*	830	15%	90	Associate's degree	None	None	\$25	\$20	\$31
Mechanical Engineering Technicians*	670	14%	70	Associate's degree	None	None	\$25	\$19	\$31
Electro-Mechanical Technicians*	510	14%	50	Associate's degree	None	None	\$24	\$20	\$31
Environmental Engineering Technicians*	180	19%	20	Associate's degree	None	None	\$24	\$18	\$31
<i>Web Developers^</i>	3,670	21%	360	Associate's degree	None	None	\$30	\$25	\$40
Electrical and Electronics Drafters*	600	23%	70	Associate's degree	None	None	\$29	\$25	\$37
Architectural and Civil Drafters*	1,820	17%	200	Associate's degree	None	None	\$28	\$24	\$32
Mechanical Drafters*	630	18%	70	Associate's degree	None	None	\$28	\$22	\$36
Drafters, All Other*	410	29%	50	Associate's degree	None	None	\$24	\$19	\$30
Aircraft Mechanics and Service Technicians	5,280	14%	500	Postsecondary nondegree award	None	None	\$29	\$23	\$35
First-Line Supervisors of Mechanics, Installers, and Repairers	10,200	16%	1,090	High school diploma or equivalent	None	<5 years	\$28	\$22	\$36

Occupational Title	2016 Jobs	Projected Growth	Avg. Annual Openings	Typical entry education	Typical Training	Required Work Experience	Median Wage	25th Perc. Wage	75th Perc. Wage
First-Line Supervisors of Non-Retail Sales Workers	7,480	14%	810	High school diploma or equivalent	None	<5 years	\$28	\$18	\$39
Physical Therapist Assistants*	1,430	51%	280	Associate's degree	None	None	\$28	\$22	\$32
Computer Network Support Specialists*	5,290	19%	510	Associate's degree	None	None	\$28	\$21	\$38
Computer User Support Specialists*	14,840	20%	1,470	Some college, no degree	None	None	\$23	\$18	\$29
Respiratory Therapists	2,290	50%	250	Associate's degree	None	None	\$27	\$24	\$30
Food Service Managers	6,830	23%	960	High school diploma or equivalent	None	<5 years	\$26	\$18	\$31
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products*	20,940	12%	2,460	High school diploma or equivalent	Moderate term on the job training	None	\$25	\$18	\$36
Licensed Practical and Licensed Vocational Nurses	6,560	32%	740	Postsecondary nondegree award	None	None	\$25	\$22	\$29
First-Line Supervisors of Production and Operating Workers	9,160	14%	1,070	High school diploma or equivalent	None	None	\$25	\$19	\$34
Security and Fire Alarm Systems Installers	1,520	26%	220	High school diploma or equivalent	Moderate term on the job training	None	\$24	\$18	\$29
Surgical Technologists*	2,250	35%	280	Postsecondary nondegree award	None	None	\$24	\$21	\$28
Real Estate Sales Agents*	6,780	12%	730	High school diploma or equivalent	Moderate term on the job training	None	\$24	\$13	\$36
Real Estate Brokers*	2,490	11%	260	High school diploma or equivalent	None	<5 years	\$24	\$18	\$36
First-Line Supervisors of Office and Administrative Support Workers	34,340	15%	4,050	High school diploma or equivalent	None	<5 years	\$24	\$18	\$30
Property, Real Estate, and Community Association Managers	7,970	20%	810	High school diploma or equivalent	None	<5 years	\$23	\$16	\$32
Paralegals and Legal Assistants	5,830	21%	760	Associate's degree	None	None	\$23	\$17	\$30
Radio, Cellular, and Tower Equipment Installers and Repairs*	470	28%	70	Associate's degree	Moderate term on the job training	None	\$23	\$18	\$30
First-Line Supervisors of Farming, Fishing, and Forestry Workers	1,600	8%	230	High school diploma or equivalent	None	<5 years	\$23	\$17	\$30
Electricians	11,270	29%	1,740	High school diploma or equivalent	Apprenticeship	None	\$23	\$18	\$28
Plumbers, Pipefitters, and Steamfitters*	8,390	34%	1,300	High school diploma or equivalent	Apprenticeship	None	\$22	\$18	\$28

Occupational Title	2016 Jobs	Projected Growth	Avg. Annual Openings	Typical entry education	Typical Training	Required Work Experience	Median Wage	25th Perc. Wage	75th Perc. Wage
Brokerage Clerks	2,000	22%	270	High school diploma or equivalent	Moderate term on the job training	None	\$22	\$19	\$27
Operating Engineers and Other Construction Equipment Operators	7,260	18%	990	High school diploma or equivalent	Moderate term on the job training	None	\$22	\$18	\$27
Life, Physical, and Social Science Technicians, All Other*	1,360	19%	200	Associate's degree	None	None	\$22	\$18	\$29
Chemical Technicians*	1,000	16%	120	Associate's degree	Moderate term on the job training	None	\$21	\$16	\$29
Excavating and Loading Machine and Dragline Operators*	1,080	18%	150	High school diploma or equivalent	Moderate term on the job training	<5 years	\$22	\$18	\$26
Sales Representatives, Services, All Other	20,340	21%	3,090	High school diploma or equivalent	Moderate term on the job training	None	\$21	\$14	\$30
Reservation and Transportation Ticket Agents and Travel Clerks	4,830	10%	570	High school diploma or equivalent	Short term on the job training	None	\$21	\$14	\$27
Production, Planning, and Expediting Clerks	7,480	23%	1,000	High school diploma or equivalent	Moderate term on the job training	None	\$21	\$16	\$28
Structural Iron and Steel Workers	1,570	39%	250	High school diploma or equivalent	Apprenticeship	None	\$21	\$16	\$28
First-Line Supervisors of Protective Service Workers, All Other	2,050	14%	240	High school diploma or equivalent	None	<5 years	\$21	\$16	\$27
Insurance Sales Agents	8,960	25%	1,170	High school diploma or equivalent	Moderate term on the job training	None	\$20	\$16	\$30
Heavy and Tractor-Trailer Truck Drivers*	25,770	13%	3,230	Postsecondary nondegree award	Short term on the job training	None	\$20	\$17	\$25
Procurement Clerks	2,440	6%	280	High school diploma or equivalent	Moderate term on the job training	None	\$20	\$17	\$24
<i>Refuse and Recyclable Material Collectors^A</i>	2,630	15%	370	No formal educational credential	Short term on the job training	None	\$20	\$17	\$23
Sheet Metal Workers	2,810	32%	430	High school diploma or equivalent	Apprenticeship	None	\$20	\$16	\$25
Loan Interviewers and Clerks	18,130	30%	2,500	High school diploma or equivalent	Short term on the job training	None	\$20	\$14	\$25
<i>Commercial Pilots^A</i>	1,700	21%	210	High school diploma or equivalent	Moderate term on the job training	None	NA	NA	NA

^AExcluded from analysis in this paper due to high proportion of workers with a Bachelor's degree or higher or lack of available data. *Part of a collapsed occupation category in the ACS PUMS data. Occupations in collapsed categories that did not meet growth, wage, education, training, and work experience requirements were excluded from this table.

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Notes

ⁱ Reported in 2016 dollars to align with the 2016 data.

ⁱⁱ Depending on the number of children she’s raising, a single mother making between \$19,000 and \$30,000 could be eligible for a number of public assistance benefits. Notably, at this income level, even if the income is above the threshold for a certain type of assistance, the income is still considered insufficient to support basic needs.

Household size	2016 Federal	SNAP & free	AHCCCS	WIC & reduced	KidsCare
	Poverty Level	school meals	eligibility	price school	eligibility
	100% FPL	eligibility	threshold	lunch eligibility	threshold
		threshold	threshold	threshold	threshold
	100% FPL	130% FPL	138% FPL	185%	200% FPL
2 people	\$ 16,020	\$ 20,826	\$ 22,108	\$ 29,637	\$ 32,040
3 people	\$ 20,160	\$ 26,208	\$ 27,821	\$ 37,296	\$ 40,320

ⁱⁱⁱ Some of this disparity is driven by age. The median age for all working women is 42 years, for moms with young children overall it is 32, and for single moms with young children it is 29. Additionally, since we include women and mothers as young as 18 years old, some individuals may still be pursuing higher education. In the sample we analyzed, 9% of women, 11% of mothers of young children, and 13% of single mothers with young children reported that they were currently enrolled in school in addition to working full-time

^{iv} It should be noted that the relatively similar occupations of *Personal care aides* and *Nursing, psychiatric, and home health aides*, with median earnings of \$20,770 and \$25,000 respectively, appear as separate occupations in the data, but if they were combined, they would be among the top five most common careers for all three subgroups, and the most common occupation among single mothers with young children. The Bureau of Labor Statistics lists these together in their occupational outlook handbook: <https://www.bls.gov/ooh/healthcare/home-health-aides-and-personal-care-aides.htm>

^v For example, 22 percent of workers in the bottom tenth of earners have access to paid sick leave, compared to 34 percent in the bottom quartile of earners and 89 percent in the third quartile of earners.

^{vi} Making a living wage matters for dual-income households as well as single-income households. In dual-income household, an increase in women’s wages contributes positively to overall family income⁵³. Additionally, rates of divorce remain steady around 45 percent in the U.S., and divorce and widowhood have been widely shown to substantially negatively affect women’s financial well-being, in large part due to women’s lower lifetime earnings^{54,55}. Earning a living wage, even in dual-income households, is important to women’s long-term financial stability.

^{vii} The BEST Index provides an estimate of what a family needs to earn to both account for current needs *and* set aside savings for the future, including emergency and retirement needs. Based on this estimate, a single-parent family with one infant and one preschooler in Pima County would need to earn \$61,872, over \$10,000 higher than the self-sufficiency estimate. Savings for homeownership and children’s education would require an additional \$350 per month, or \$4,200 per year, bring the total needed earnings to \$66,072.⁸ Even these higher estimates afford only a modest lifestyle, as “each BEST Index component is a conservative estimate of need, and the BEST does not include any “extras” such as vacations, entertainment, electronics, gifts or meals out.”

^{viii} According to the Bureau of Labor Statistics, about one in five women work part-time voluntarily, with family and personal obligations most frequently cited as the reason for working part-time. However, many women work part-time involuntarily. Lambert et al. found that more than a quarter of all hourly women workers and 15 percent of all salaried women workers wanted to work more hours if it meant higher pay. In retail and hospitality occupations in particular, workers most commonly cited lack of available hours as the reason they did not work more, as workers in these sectors often have little control over their work schedules^{56,57}.

^{ix} Note that a wage of \$20 per hour reaches a maximum annual pre-tax earning of \$41,600 for workers working 40 hours a week for 52 weeks a year (or with paid vacation). The occupations in the figure below may reflect slightly

lower earnings if full-time workers work between 35 and 40 hours per week and take unpaid vacation. A worker working 35 hours per week for 50 weeks a year at \$20/hr would earn \$35,000.

^x Understanding the barriers women face, the Department of Labor has a *Women Build, Protect, and Move America* web portal with information for employers and workers particularly focused on careers in transportation, construction and protective services.⁵⁸

^{xi} Registered Apprenticeship programs are a federal program operated by the Dept. of Labor and State Apprenticeship agencies that combine on-the-job training and technical education. They can be offered by employers (e.g., Tucson Electric Power Company) or educational institutions (e.g., Tucson Unified School District). A study of Registered Apprenticeships in 10 states found that graduates of these programs had higher earnings than non-participants and that benefits exceeded costs. A list of registered apprenticeship programs available in Tucson is available here: <https://des.az.gov/sites/default/files/media/RegisteredApprenticeshipProgramListTucson.pdf>

^{xii} As we discuss further in the methods section, we largely excluded detectives from our analyses given that the majority of those currently employed do have at least a bachelor's degree.