Women's Work:
Realities and Possibilities for Arizona

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Research Report

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THE UNIVERSITY OF ARIZONA

Summary

Making up 45% of the full-time workforce, women are a cornerstone of the Arizona economy.[1] Across Arizona, women who work full-time are most commonly employed in human services, working as nurses, medical assistants and teachers, and in administrative, customer service, and retail positions. Although such positions are vital to the economy, many jobs in these fields offer relatively low wages and may not provide adequate income for women—especially single mothers needing to support their families.

In recent years, the participation of single mothers in the workforce has increased markedly. However, 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, typically seen as a driver of higher-wage jobs, is often a limiting factor; only about 1 in 6 (17%) single mothers have a four-year college degree. However, despite the low wages that many Arizona workers with limited education earn, there are fields in which modest additional education or training can yield relatively big payoffs.

This is an update of a prior report[2] in which we identified 36 mid-skill, higher-wage fields as promising options for workers in Arizona looking for careers that enable self-sufficiency. In this report, we identify 28 such fields. Notably, women are underrepresented in the majority of these "promising" occupations. Nearly two-thirds (61%) of the fields employ more men than women, and nearly half (46%) of the promising careers represent non-traditional occupations for women (i.e., women are less than 25% of the workforce in that field).

For this report, a promising occupation is defined by 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 or an apprenticeship,
4) Has at least 150 annual average job openings statewide,
5) The number of jobs in the field statewide is projected to grow between 2020 and 2030, and
6) Has a median hourly wage of at least $20/hour

Beyond that final criterion for an hourly wage, the list of 28 promising careers is further restricted to those that pay a median annual wage of at least $50,000 – an amount estimated to be necessary for self-sufficiency in many single-parent families across Arizona. Recent inflation in costs of living have increased the self-sufficiency wage estimates faster than wages themselves have increased. For example, in our prior report, the self-sufficiency standard for a single parent with a preschooler in Pima County was approximately $40,440 (2016 dollars); that same family in 2022 needs approximately $50,680. Relaxing the criteria to careers that earn over $40,000, we identify 55 promising fields. This is more that were identified in the earlier report which used similar criteria, likely because while wages have not kept pace with rampant inflation, they too have risen in recent years.

In addition to these analyses, we also share insights gleaned from a series of key-informant interviews conducted with professional staff working to support, train and place certificate students in the Tucson area. Ultimately, efforts to help women navigate the process of enrolling in training programs and make informed choices about career options, as well as advocate for male-dominated fields to be more accessible and hospitable to women, are all important for supporting Arizona families and the economy. To that end, this report also includes evidence-based suggestions on how to support women pursuing mid-skill, higher-wage jobs, often in non-traditional fields.

A note about the data:

These data reflect the most recent data available at the time of writing. There is a substantial lag time between data collection, processing, and release to the public from agencies such as the Bureau of Labor Statistics and the U.S. Census. To stabilize the estimates, American Community Survey data are reported in 5-year increments, Thus, in order to pull non-overlapping data, we used the 2016-2020 and 2011-2015 windows for all American Community Survey Public Use Microdata Sample data. All wages in this report are reported in 2020 dollars except where noted; self-sufficiency standard data referenced in this report use 2022 dollars. This temporal mismatch means that wage estimates in this report are likely slightly underestimated compared to 2022 job earnings given rising inflation rates in 2021 and 2022. Further details about the data are available in Appendix 1: Methods.

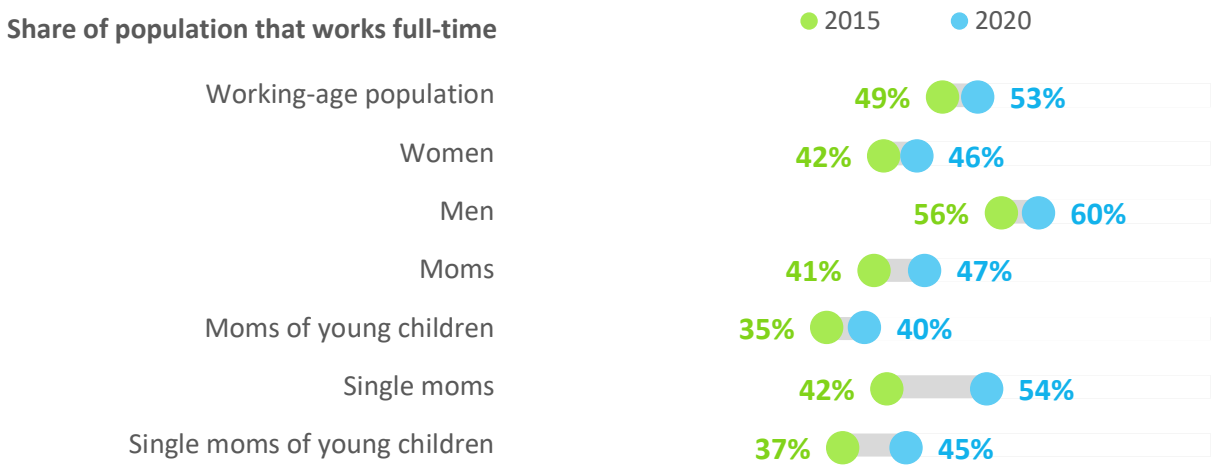
Full-time work has increased in recent years, especially for single mothers

Across all demographics, a greater proportion of adults were working full-time in 2020 compared to 2015 (Figure 1). Although men remain more likely to be engaged in the full-time workforce, the growth in full-time employment was larger for mothers (+6 percentage point change), especially single mothers (+12 percentage points) than for the overall population. In fact, single mothers are over-represented in the workforce; they comprise only 2.8% of the working-age population, but 5.4% of the full-time workforce.[3]

Data are not yet available to illustrate the full effect of the COVID-19 pandemic on labor participation rates, but nationwide, COVID-19-related job losses disproportionately impacted women in low-paying service occupations. In a 2021 survey, 50.4% of all women reported they had stopped working or reduced their hours, at least temporarily, as a result of the COVID-19 pandemic.[4,5]

This report examines three groups of particular interest to the Women's Foundation for the State of Arizona in detail: women overall; mothers of young children, defined as children under age 6; and single mothers of young children.

Across all demographics, a higher proportion of people worked full-time in 2020 than in 2015.



Source: U.S. Census Bureau (2022). 2016-2020 and 2011-2015 American Community Survey Public Use Microdata Samples. Estimates by CRED.

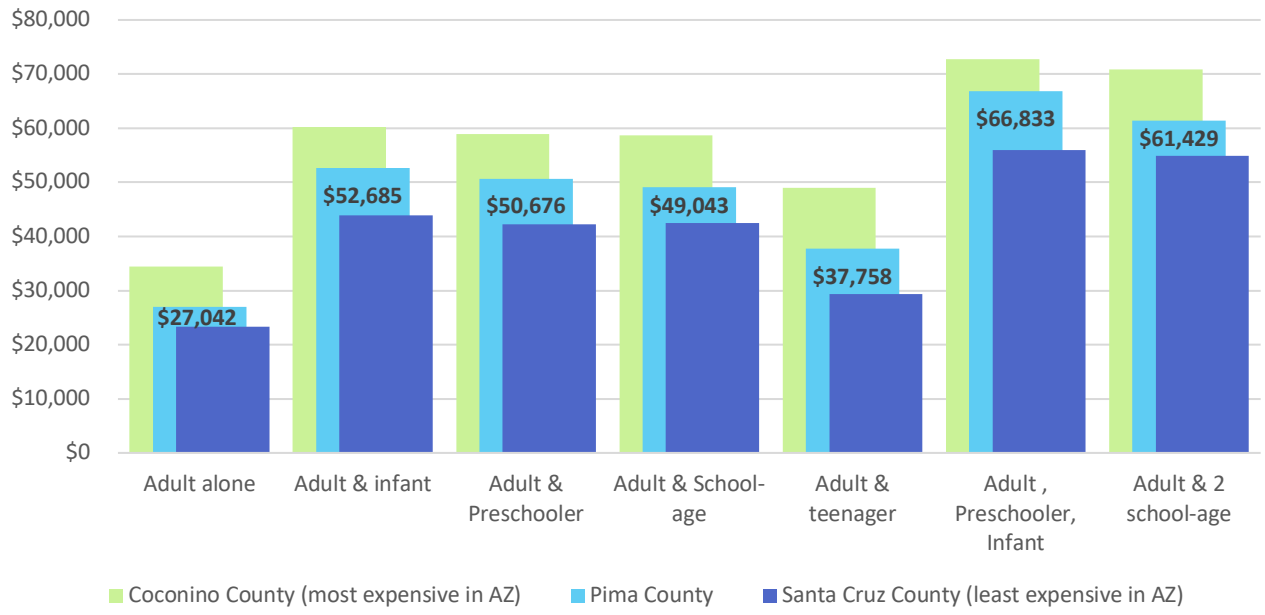
Figure 1. Proportion of segments of the adult population who work full-time.

Achieving self-sufficiency, even while working full-time, is challenging for single parents with young children

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., public programs including the Supplemental Nutrition Assistance Program (SNAP), Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), Temporary Assistance for Needy Families (TANF), and Medicaid/AHCCCS). Self-sufficiency standards indicate the wages needed to attain that independence. Although Arizona's minimum wage of $13.85 is nearly double the federal minimum wage of $7.25, anyone supporting children on the minimum wage is unlikely to meet the self-sufficiency standard. Notably, a majority of the state's minimum-wage workers are women.[6]

In Arizona, the median self-sufficiency standard for a single parent with a preschooler is approximately $47,892 (2022 dollars), but the standard varies substantially by family type and county of residence (Figure 2).[7] Single parent families in Arizona with young children need to earn at least $40,000, and often more, depending on family structure and location, to be self-sufficient. In Pima County, for example, a single-parent family with just one child needs about $50,000 to fully cover anticipated expenses. In Arizona's more expensive counties, like Coconino, this figure is closer to $60,000. It is also worth noting that these self-sufficiency estimates account for current needs but do not include savings to address future needs, such as retirement or job loss.[8]

Single parent families with young children need to earn at least $40,000, and often more, depending on family structure and location, to be self-sufficient.



Source: Center for Women's Welfare, University of Washington. Arizona – 2022 Self Sufficiency Standard. Arizona Self-Sufficiency Standard. https://selfsufficiencystandard.org/arizona/

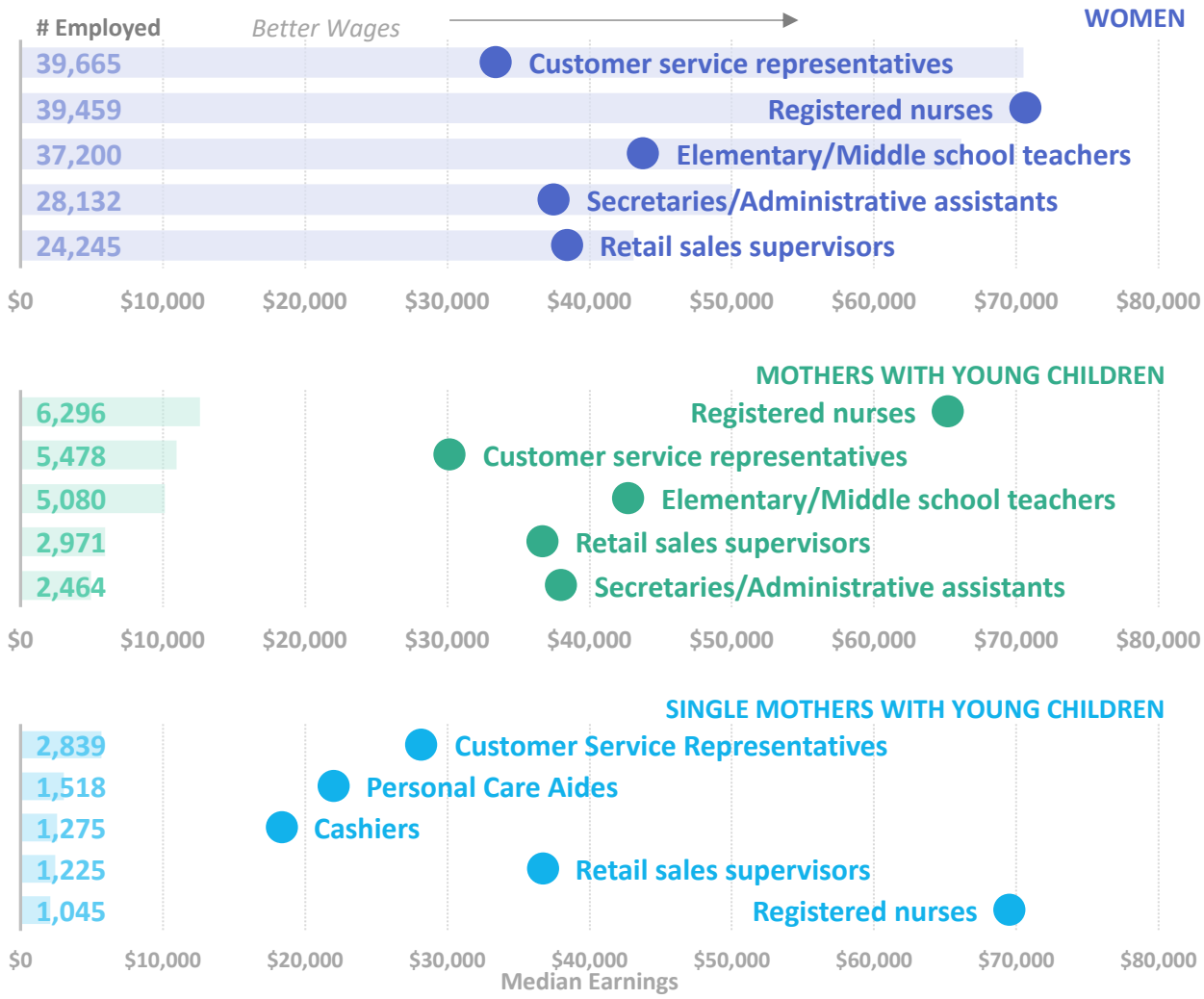
Figure 2. Self-sufficiency standards for a variety of family types in Pima County, as well as the most (Coconino) and least (Santa Cruz) expensive counties in Arizona.

Women are most commonly employed in human-service-focused fields

Across Arizona, full-time-working women are most commonly employed in human-service-focused fields, including jobs as customer service representatives, registered nurses, elementary and middle school teachers, secretaries and administrative assistants, and in retail positions (Figure 3). Although vital to the economy and social systems, these jobs may not provide adequate income for women to support their families. 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."[9]

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



Note: Dots indicate the median earnings for that career within that group; bars indicate the number of women working in that career in Arizona. 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.

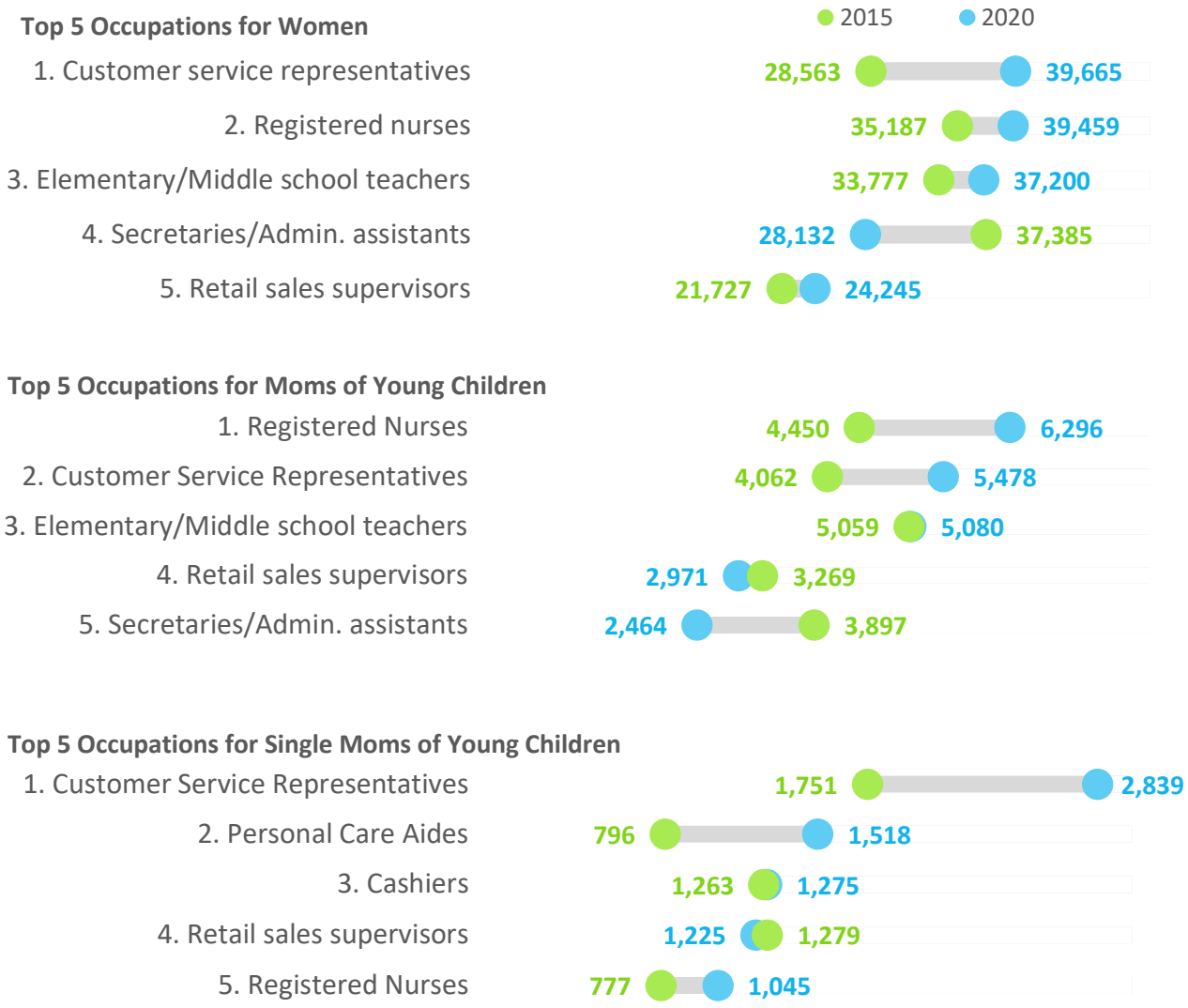
Source: U.S. Census Bureau (2022). 2016-2020 American Community Survey Public Use Microdata Sample. Estimates in 2020 dollars by CRED.

Figure 3. Top 5 full-time occupations and median wages for working-age women, mothers of young children, and single mothers of young children

Fields where women are employed have shifted over the last five years

As greater proportions of women have engaged in full-time work, certain fields have grown, whereas others have shrunk. Specifically, over 11,000 more women are employed in customer service positions compared to the prior five years (**Error! Reference source not found.**). Conversely, women appear to be leaving secretarial and administrative assistant roles; the field has shrunk by over 9,000 women. Patterns for mothers of young children and single mothers of young children generally echo the patterns seen for women overall, except for retail supervisor positions, which have increased for women overall but decreased slightly among mothers of young children (both single and married).

Women have left secretarial and administrative assistant roles, and customer service representative positions have grown



Source: U.S. Census Bureau (2022). 2016-2020 American Community Survey Public Use Microdata Sample. Estimates by CRED.
Figure 4. Shifts in top 5 occupations for women, mothers of young children, and single mothers of young children

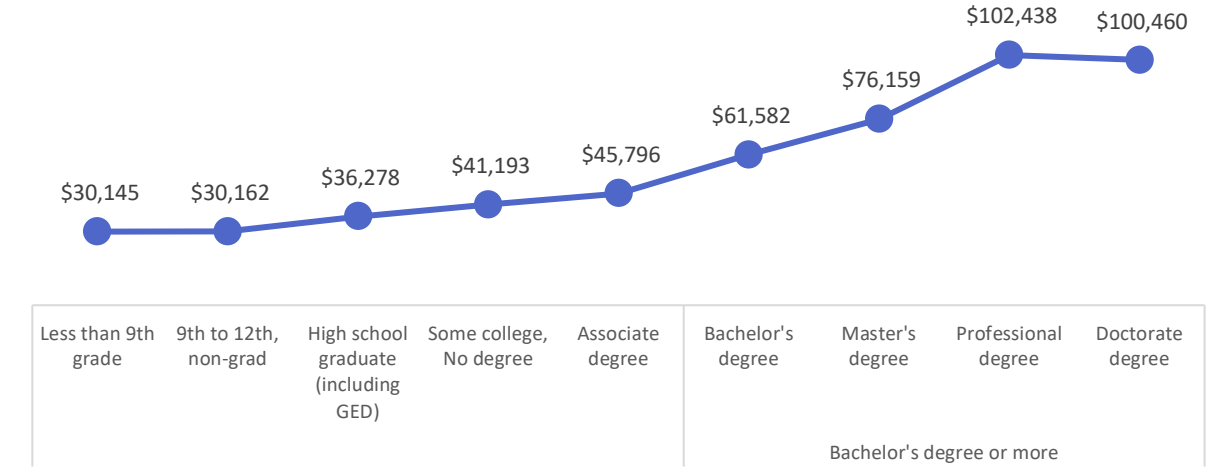
The figures above show that, even among full-time workers, single mothers of young children are typically employed in comparatively low-wage fields. The most popular job for single mothers of young children, customer service representative, employs more single mothers than the next two most popular fields combined, while only yielding median earnings of $28,200. Another two of the top jobs for single mothers of

young children, cashiers and personal care aides, are uniquely popular among this demographic despite the very low wages ($18,410 and $22,035, respectively).

Notably, *even when employed in the same fields as other women*, single mothers often earn less. For example, the median customer service representative salary for women overall is $33,419; for single mothers of young children, it is $28,197. Among the five most commonly held occupations for single mothers of young children, only one, registered nurse, provides a median wage higher than $40,000 (Figure 3). Thus, even when working full time, single mothers of young children are likely to be in or near poverty and need assistance to make ends meet for their families.

Education plays a leading role in wages

One driver of the disparities in earnings between single mothers with young children and other women is the difference in education. Among women nationally, there is a steady increase in wages as education increases (**Error! Reference source not found.**). Analyses by Economic Policy Institute found that wages are 47% higher for women who are college graduates than women who are high school graduates.[10]

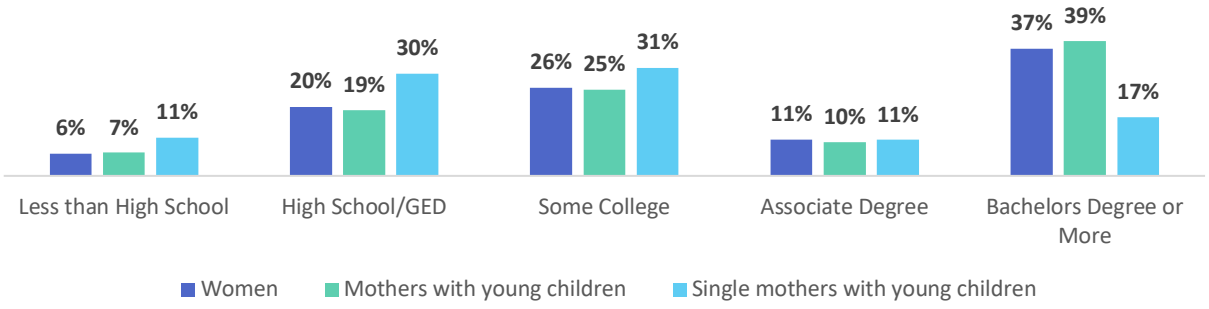


Source: U.S. Census Bureau (2022). 2021 Current Population Survey (CPS) Annual Social and Economic (ASEC) Supplement.

Figure 5. Median wages of full-time working women in the U.S., by educational attainment

In Arizona, single mothers of young children are at a disadvantage educationally. Educational attainment across all mothers with young children is similar to that of women overall (**Error! Reference source not found.**). However, compared with women overall, single mothers with young children are twice as likely to lack a high school diploma or GED (11% vs 6%) and half as likely to have completed a four-year college degree (17% vs. 37%).[i] Given the strong correlation between education and earnings, single mothers of young children face an uphill battle when finding work that can support their family.[11] Many single mothers are interested in increasing their educational attainment, with about 4,200 single mothers of young children and about 10,100 single mothers of older children currently enrolled in education and training programs statewide.[12]

Single mothers of young children in Arizona have comparatively low educational attainment



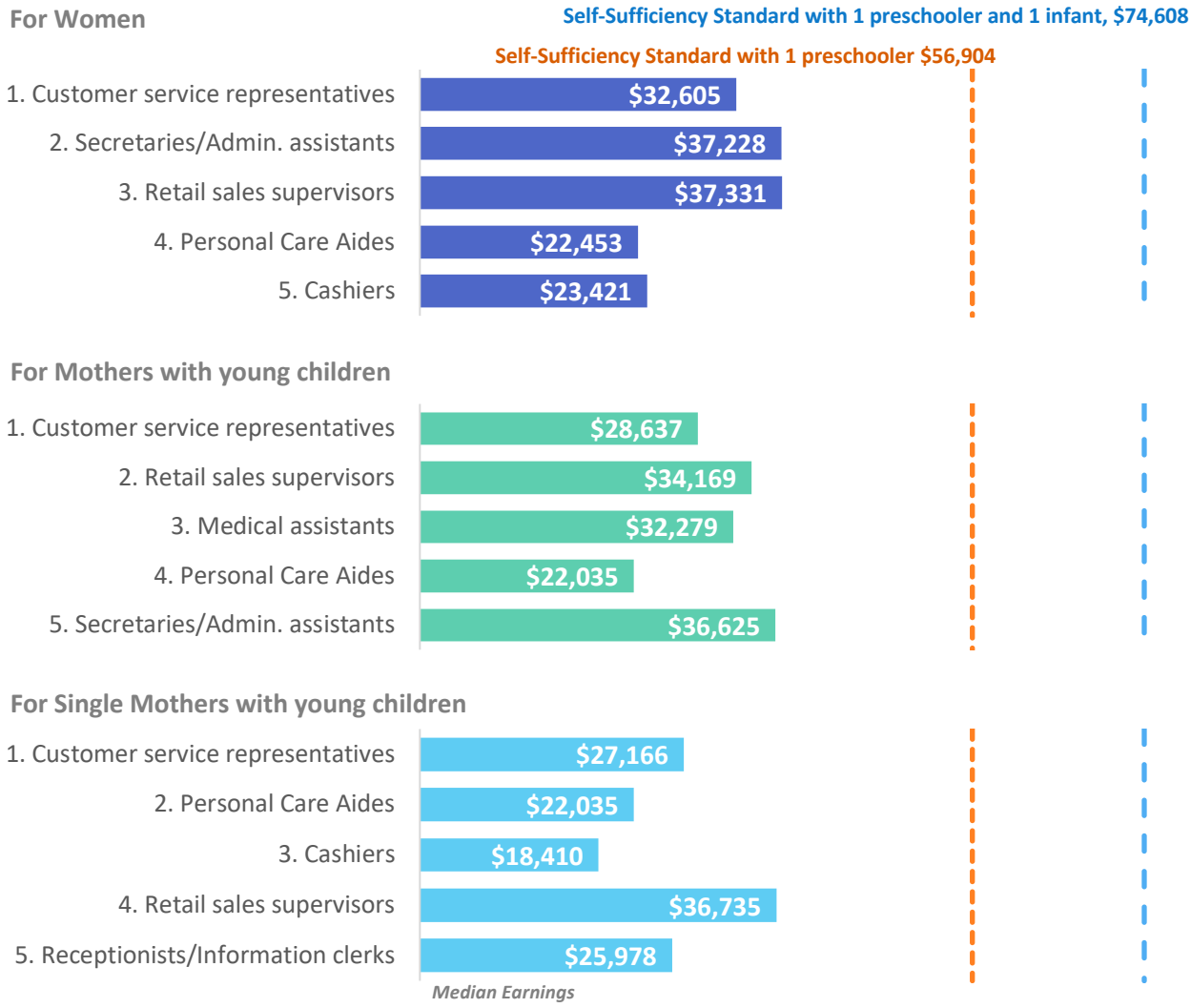
Source: U.S. Census Bureau (2022). 2016-2020 American Community Survey Public Use Microdata Sample. Estimates by CRED.

Figure 6. Educational attainment of full-time working-age women, mothers of young children, and single mothers of young children

Low educational attainment among mothers of young children limits earning potential

In Arizona, there are over half a million (509,541) full-time working women who lack a college degree (two- or four-year). Over 80,000 of those are single mothers.[12] In Maricopa County, where most Arizonans live, a single-parent family with one preschooler needs about $56,900 to meet basic needs without assistance; a single-parent family with an infant and a preschooler needs about $74,600 (2022 dollars).[13] The careers in which women without a 4-year degree are most commonly employed have median earnings that are far lower than these self-sufficiency standards (Figure 7). Thus, given current estimates for self-sufficiency wages, many full-time working parents in Arizona are likely to struggle to support their families.

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 Maricopa County (2022 dollars). Please note that wage data from the ACS PUMS represent 2020 dollars.

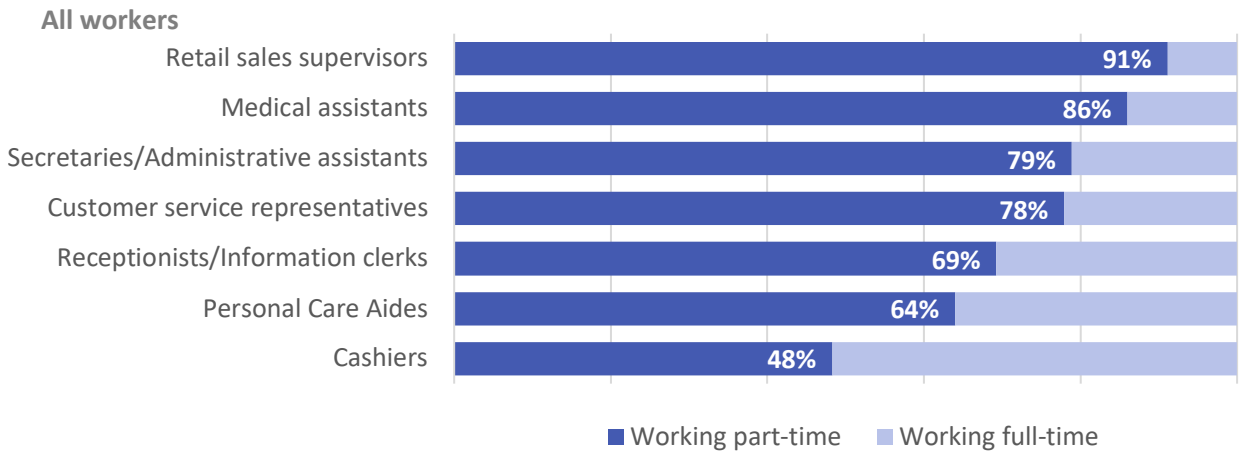
Source: U.S. Census Bureau (2022). 2016-2020 American Community Survey Public Use Microdata Sample. Estimates by CRED. Self-Sufficiency Standard in Maricopa County drawn from Kucklick et al. (2022), a research collaboration between the UW Center for Women's Welfare and WFSA accessed at https://womengiving.org/research/.

Figure 7. Top 5 occupations for women, mothers with young children, and single mothers with young children with less than a 4-year degree

Of the most popular careers, registered nursing is the only one that is likely to enable self-sufficiency for women with less than a four-year degree. While registered nursing only requires an associate degree, over two-thirds (68%) of people currently working as registered nurses have a four-year degree or more.[12] Thus, while registered nursing could be considered a mid-skill, higher-wage field, trends indicate that this occupation is becoming a higher skill, higher-wage job. Thanks to stackable credentials in nursing, it is possible to leverage lower-level credits (e.g., from an associate degree in nursing) toward a higher degree, which is not true in all fields.

For mothers in dual-earner households, mothers with family members providing free child care, or women without dependent children, the wages for the most commonly held careers may support basic needs. It is important to acknowledge that women are drawn to these jobs for a variety of reasons, from the flexibility to work from home as a customer service representative, to a desire to help people in need as a personal care aide. Our goal in highlighting the low wages associated with these jobs is not to disparage personal choices, but to illustrate the challenges facing workers, especially single-mother workers with limited education. For single mothers who are the sole provider for their young children, the jobs they are likely to hold do not enable self-sufficiency, even when someone is working full-time – or even overtime. 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 (2022). 2016-2020 American Community Survey Public Use Microdata Sample. Estimates by CRED.

Figure 9. 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 9). 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 – often referred to as precarious scheduling – in shift work, limited job opportunities, a lack of child care, or other variables force them into part-time work situations.[14,15] Those with lower levels of education are especially vulnerable to the instability of shift work and the added stress it can place upon a family.[16–18] Regardless of whether part-time status is desired or not, it pushes annual wages even lower – both because of the reduction in hours worked and because part-time jobs tend to pay less per hour than comparable full-time jobs – and means that women are less likely to qualify for any employee benefits. Low-income workers, especially the bottom 10% of earners, are also less likely to have jobs that offer paid sick days or paid vacation, healthcare benefits, or retirement plans.[19–21]

There are promising careers that women with less education can pursue that support self-sufficiency

Promising Career Requirements

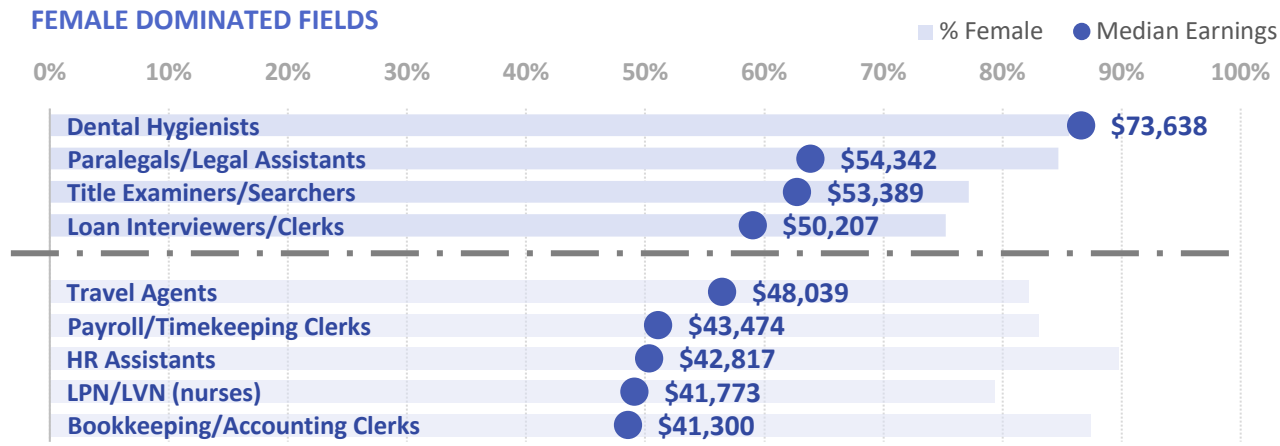
- Less than 4-year degree
- Moderate on-the-job training or less
- Growing occupation statewide
- 150+ annual openings in Arizona
- Median annual wage of $50,000+

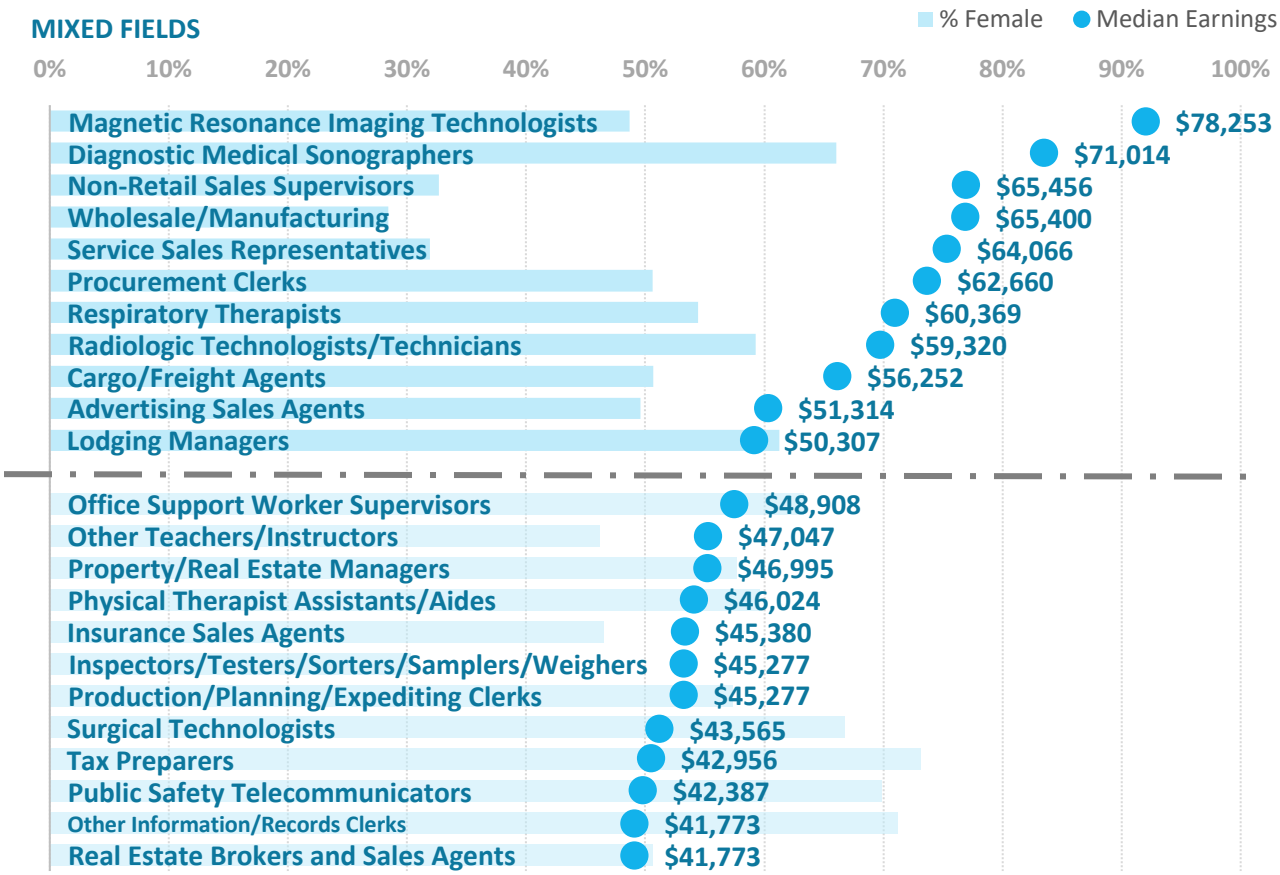
Despite the low wages typically paid to Arizona workers without college degrees, there are fields in which modest additional education or training past a high school diploma or GED can yield relatively big payoffs. We identified 28 mid-skill, higher-wage fields as potentially promising options for workers in Arizona looking to progress toward self-sufficiency. According to labor databases, all of the included occupations require less than a four-year degree, and most employees in the given field do not have a four-year degree.[ii] They also require less than five years of experience and no more than moderate on-the-job training, are in growth areas projected to have at least 150 annual openings in Arizona, and pay a median wage of at least $50,000 a year. This wage threshold would cover the Arizona median self-sufficiency standard wages of $49,215 for a single parent and an infant, $47,892 for a single parent and a preschooler, $48,091 for a single parent and a school-age child, and even $49,646 for the three-person household containing a single parent, teenager, and school-age child.[7]

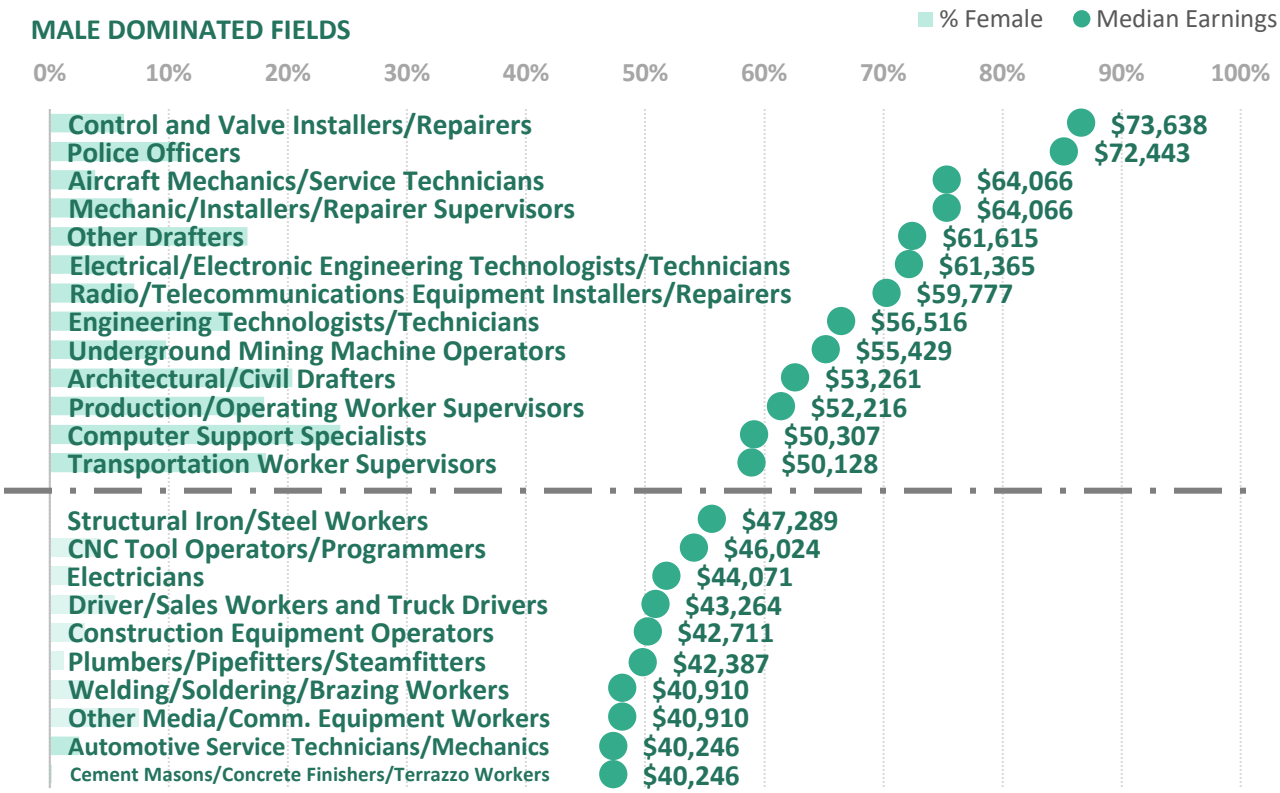
Given the regional variability in living costs and the finite nature of early childhood costs, we have also included a lower-threshold of jobs paying at least $40,000, which is conceivably enough for a single parent of a teenage child to support her family in many places in Arizona. Using this threshold, there are 55 promising fields. It is worth reiterating that the wages represented here are medians. Table 3. Promising Occupations (Source: BLS Occupation & Wage Data)Table 3 in Appendix 2: Tables 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) for these fields. This may better approximate the earnings that a recent graduate could anticipate in their first in-field job. In our qualitative work, we heard that newly-trained graduates were sometimes frustrated by being offered lower initial wages than expected based on what was advertised by their training program or workforce development partners. Helping prospective students understand the range of potential incomes, the opportunities (or lack thereof) for advancement, and ways to increase a starting wage (e.g., highlighting practical work experience, even if in another field) can be beneficial. While training programs help to elevate work skills and wages, the rise to total self-sufficiency may not be immediate, even in these promising fields.

As evident in Figure 11, very few of these mid-skill, higher-wage "promising" occupations are dominated by women. Nearly two-thirds (17) of the 28 fields employ more men than women (54% of the expanded list of 55). Furthermore, using the Workforce Innovation and Opportunity Act's[22] categorization of "non-traditional" careers as ones where the opposite gender comprised more than 75 percent of the workforce, nearly half (46%; 42% in the expanded category) of the promising careers represent non-traditional occupations for women (Figure 11). Ten of the 28 (36%) promising occupations employ more women than men, and only four (14%) are traditionally dominated by women. Despite the relatively low rates of participation in the traditionally male-dominated trades, the number of women in these fields is at an all-time high – and growing.[23]

There are 28 promising mid-skill higher-wage fields with median wages over $50,000: 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. It is important to note that the wages in these figures 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.

Source: U.S. Census Bureau (2022). 2016-2022 American Community Survey Public Use Microdata Sample. Estimates by CRED.

Figure 11. Median earnings and share of women in promising occupations by whether the field is dominated by women, men, or mixed

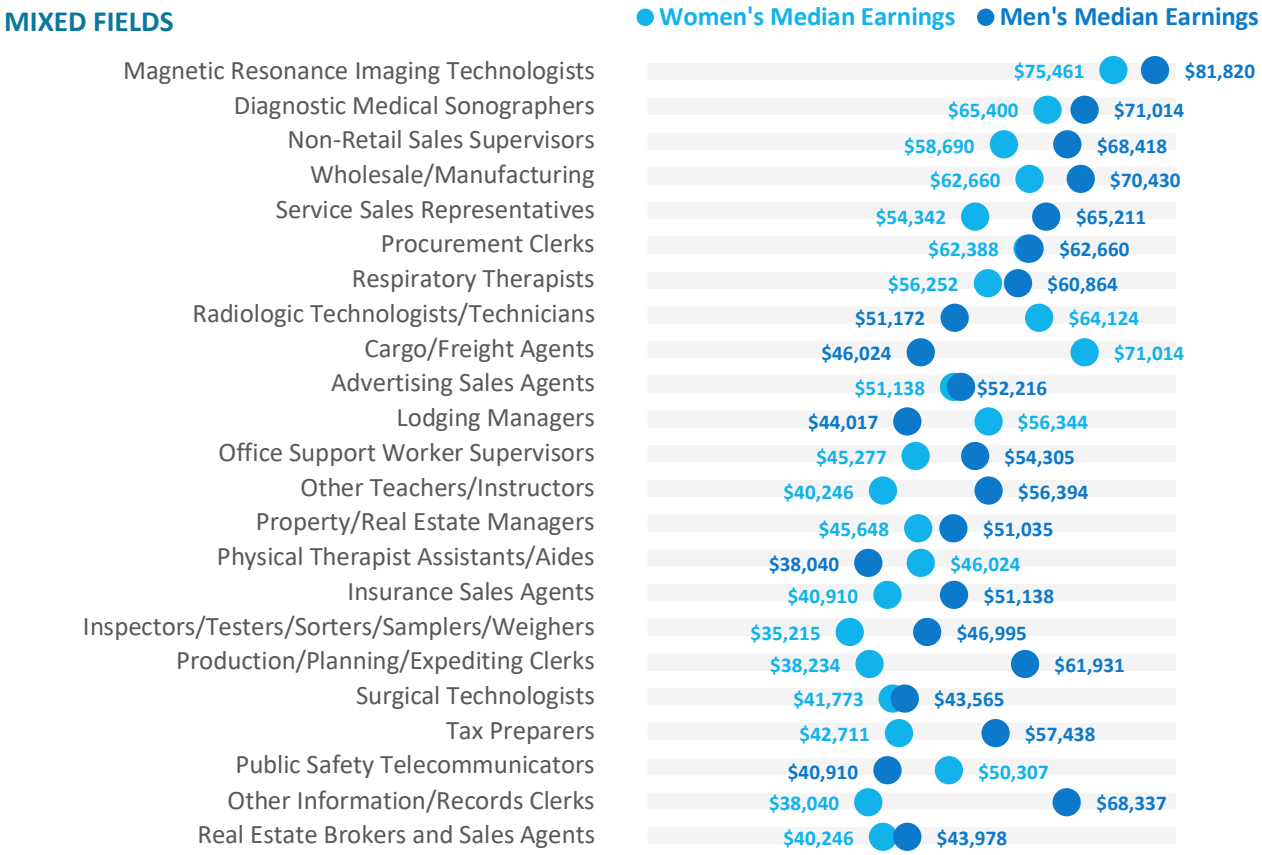
The relative absence of women in well-paying, mid-skill careers is conspicuous, but not unique to Arizona. Few women nationally, and even internationally, opt for work in traditionally male-dominated fields despite benefits like higher pay, unionized structures which may offer better benefits, and career ladders with stipulated increases in wages (often missing in occupations dominated by women). A number of researchers have documented the challenges that women face in choosing and working in fields dominated by men.[4,24–27] 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, to physical safety impediments, as well as concerns about work-life balance.[24–26,28–31] Supporting women entering these fields is likely to require targeted, long-term efforts to ameliorate the substantial gender barriers facing them.

A caveat on the promise of "promising careers"

Encouraging women to embrace new fields is not a straight path to earning wages equal to men in those fields. Wage gaps between men and women are a well-documented issue,[iii] part of which is attributable to women working in lower-paying fields (e.g., child care providers, medical assistants). However, this phenomenon persists even in fields where men and women are employed in relative balance with one another, as illustrated in Figure 13.

Factors associated with wage disparities within a given career are an area of active research. For example, some recent research suggests that women are willing to trade lower wages for shorter commutes; this appears to be especially true for women with children.[32] Other possibilities include working fewer hours (but still working full-time), fewer changes in employers (often a successful tactic to get a raise), the earnings penalty of giving birth, the devaluation of female-dominated workforces, social norms, and personality traits.[33–38] Gender disparities have even been found within online anonymous gig-economy jobs, underscoring how complex the issue is.[39] Thus, while the hope is that supporting women in their efforts to secure jobs in these higher-wage fields will lead to higher earnings for women, the path is not perfect.

12***Even when men and women are employed in similar numbers, the gender wage gap persists across most promising fields.***



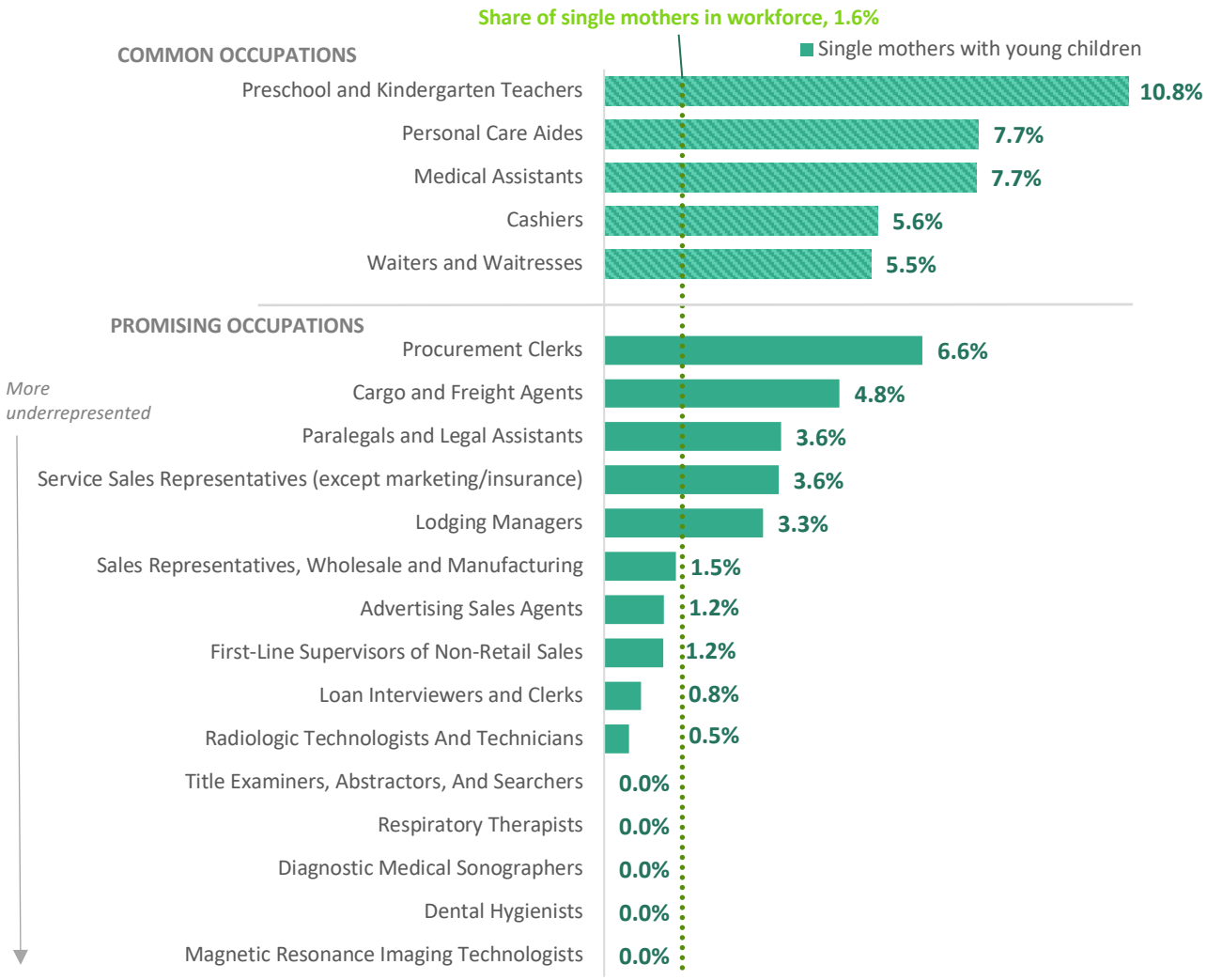
Source: U.S. Census Bureau (2022). 2016-2020 American Community Survey Public Use Microdata Sample. Estimates by CRED.

Figure 13. Difference in median earnings between men and women in the same field.

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

In the full-time Arizona workforce, single mothers make up 5.4% of employees, with single mothers of young children making up 2.0% of employees. Both of these groups of women are over-represented in low-wage careers, including personal care aides, medical assistants, cashiers, and customer service representatives (**Error! Reference source not found.**). As noted earlier, fields dominated by men are not the only occupations that can provide a mid-skill, higher-wage career. In fact, some of the promising fields, such as procurement clerks, also have relatively high concentrations of single mothers (**Error! Reference source not found.**). With appropriate training, education, and support for identifying, understanding, and navigating potentially novel careers, single mothers of young children could transition into promising fields, including those with 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. "Common occupations" are those employing the highest number of single mothers with young children in fields where 80% or more of employees have less than a bachelors degree.

Source: U.S. Census Bureau (2022). 2016-2020 American Community Survey Public Use Microdata Sample. Estimates by CRED.

Figure 14. 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 and mothers who are engaged in the workforce, it is important to support women in making well-informed career choices that enable them to adequately provide for their families. In this section, we highlight strategies to support women on a path towards jobs that are safe, fulfilling, and provide self-sufficient and family-sustaining wages. Much of this section remains the same as our earlier report. Although we have included citations from more recent literature, the challenges that existed four years ago very much still exist today, and the calls for systemic change, especially within male-dominated fields, persist. It is worth emphasizing that the implementation of many of these strategies requires a commitment from the employers themselves. Work to improve pipelines into careers will be ineffective if the workplace itself is hostile to working women and those with family responsibilities.[26,27]

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.[40–42] For example, early socialization about what kinds of interests are appropriate for girls and boys may lead to 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.[43] Early exposure to tools and trades within families is common among women working in skilled and technical trades, even when the family and chosen trades are different.[13, 35, 39 44] One study also found that while men were far more likely to have family in their industry (construction), women reported more non-familial connections in their industry, again underscoring the importance of social connections in helping to illuminate pathways.[45]

Nationally, high school boys and girls are similarly enrolled in science courses;[13,14] however, technology and engineering courses remain heavily dominated by boys.[46] Though women made up 61 percent of associate degree awardees in 2015, men were awarded 86 percent of degrees in engineering, 87 percent of degrees in engineering technologies, and 79 percent of degrees in computer sciences.[47–49] 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. [50] 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.[51,52] 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.[53]

Targeted outreach and education 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.[54] Parallel efforts are also needed among school counselors and teachers, who can promote trades or work in male-dominated fields to girls.[55] Even in a 2021 survey, only 2% of women working in manufacturing had heard about the field from a high school counselor.[55] Suggestions also include having all-girls classes available in high school trade programs.[44] 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.[56]

Provide ongoing career counseling and advice

The pipeline of career counseling begins with helping people consider and ultimately select a career path; prepare for, embark on, and successfully complete the necessary training; navigate licensure or other subsequent requirements; network with prospective employers; look for, apply for, and interview for jobs; identify their priorities in a job; evaluate prospective employers; negotiate and advocate for themselves; manage workplace challenges; and seek opportunities for advancement or plan for a new

position. A trusted source of information is vital at all these stages for presenting options, serving as a sounding board, and helping someone navigate their journey.

In the short term, some of the most promising careers for mothers might include those that pay self-sufficient wages, are projected to have reasonable growth rates in Arizona, and already employ many women, suggesting that the workplace culture is generally tolerable for women. Outside of traditionally male-dominated trades, there are career options meeting the promising criteria in the areas of health, sales, and clerical fields. As noted earlier, however, 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 outlooks for various, similar-sounding occupations. In one example, a key informant noted how many women came to her expressing interest in the medical assistant program while also expressing a longer-term desire to become a nurse. An advisor who understands stackable credentials could perhaps help such a person map a path of stackable credentials towards that final goal.

Economically focused advice is important. For women working in the trades, a majority noted that opportunities for high wages and good benefits as key motivating factors, whereas only about a third reported they were drawn to the field because they were mechanically inclined.[4] This suggests that, given sound information about career choices, women will pursue non-traditional fields specifically for the economic opportunity. A related area of support centers on evaluating employment package offers. One key informant noted that a woman she works with needed guidance on choosing between one job that pays $17.50/hour but offers a comprehensive benefits package and another that pays $18/hour with few or no benefits.

It is also necessary for career counselors and coaches to be aware of how one's legal history could affect available career choices. Licensure requirements in some fields may pose hurdles – possibly insurmountable ones – for people with a recent felony conviction. For example, nurses may only apply for a license 3 years after total completion of a felony sentence, including any parole or court supervision.[57]

Finally, there is an important role for informed career counseling that happens outside of institutions of higher learning. Key informants discussed how some training programs offer certificates that are not actually necessary – or even confer an advantage – when seeking a job in some fields. Some employers are so eager for employees that they will provide in-house, on-the-job training at no cost. Conversely, for-profit training programs can make it difficult to tell which programs are a valuable investment of a student's time, money, and energy. Partnering with local employers to discuss specific skill sets needed and available opportunities can be helpful to those who are providing advice.[58]

Encourage career and technical education and opportunities for out-of-classroom learning

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, higher-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,[59] and women are often unaware of opportunities in nontraditional fields.[60–62] However, research has shown that funding pipelines that guide women into these careers has been successful.[63] 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.[62,64] 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 [65] can help women identify relevant opportunities.

Pre-apprenticeship programs are another route for entry into trades fields that could be more widely utilized. These programs, frequently run by non-profit organizations, are relatively short-term programs (e.g., 7-21 weeks), often have an exploratory approach where participants can explore a variety of fields before committing to further training in one, and provide assistance in securing a subsequent apprenticeship.[66] These can also be an opportunity for female-only classes and cohorts to amplify the sense of belonging in the field.[4] A survey of women working in construction found that a pre-apprenticeship program was the third most important factor, after wages and benefits, in helping them succeed. 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.)[67] 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.[68]

The opportunity to gain on-the-job experience during training programs, as in apprenticeship programs, is seen as valuable by both employers and employees.[4] Such programs provide a way to build skills and progress in a career path without incurring debt. Several promising careers traditionally dominated by men use an apprenticeship model (e.g., electrician, plumber, carpenter). Registered Apprenticeship[iv] programs tend to result in higher earnings.[69] Although such programs often take years to complete, they typically provide benefits in addition to payment for hours worked. [4] Women are underrepresented in these apprenticeships, especially in skilled trades.

The advantages of on-site training extend beyond the trades. During our key informant interviews, we heard that most, if not all, participants in programs with internships (i.e., embedding with an employer) had secured employment from those hosts prior to graduation. That short-term on-site experience with an employer was reportedly weighted as heavily as a year of experience elsewhere. Conversely, participants in classroom-only programs struggled with a perceived lack of experience. Workforce development programs are giving increased consideration to programs that provide paid employment coupled with on-the-job training and classroom instruction.[70]

Increase access to informal social/professional networks, role models, and mentors

As in many careers, access to promising mid-wage jobs often happens through connections in social and professional networks. These networks and sources of support cross the web of friends, families, teachers, preceptors, career coaches, coworkers, supervisors, and mentors. One study found that social support outranked financial support in terms of helping apprentices complete their programs.[71] Social support networks can also help buffer the ill effects of workplace harassment and discrimination.[42]

When working in fields traditionally dominated by men, women have less access to support from professional networks and, as a result, less opportunity to secure jobs, training, or opportunities for advancement.[26,72] Women in traditionally male-dominated fields may also be at a disadvantage if job progression depends on continued training by senior employees who don't 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.[25,26,44,56,65] In one 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), and a systematic review identified mentorship as a key theme in scholarship on women working in male-dominated trades.[25,73] Where female mentors and role-models exist, they are described as "hugely important."[55,66]

Across the country, groups are working to build these networks and extend that much-needed support. For example, Chicago Women in Trades works to train, connect, and advocate for women working in the

trades, while also providing technical assistance to employers around best practices.[74] As this group exemplifies, while there is value in programs supporting women directly, it is also critical to have complementary efforts that are working to transform workplaces into more hospitable environments for female employees. Despite the efforts of this group and others, there is a dearth of coordinated approaches to improve gender equity and inclusion in male-dominated workplaces.[26,44]

Research points to resilience as a common factor among women who are successful in the trades. [27,62] While some suggest trainings for women aimed at helping them become more resilient, others argue that strategies to transform workplace culture are needed:

> *"For women in male-dominated work, theories of resilience, therefore, fail to provide an emancipatory framework... A transformative approach can apply a gendered lens to workplace stressors and can intervene to create support strategies that are specifically designed to change culture and transform organizational culture through improved gender inclusivity and awareness."*[26]

Some strategies that employers could undertake to create more gender-inclusive organizations include developing cohorts or buddy systems that explicitly provide opportunities for women in non-traditional occupations to work together, identifying women mentors and providing networking opportunities for women in the field, having official policies and channels to address issues of discrimination, and creating family-friendly workplace policies .[26,30,75] 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.[76]

One research team calls for more financial mechanisms to enable women to attend conferences and other events that could help them network with other women in their field.[44]

Address concerns about balancing family and work

The career choices women make in attempting to balance work and family may be based on preferences or on constraints imposed by gendered expectation.[77] Barriers may also emerge if potential employers are concerned about the family responsibilities women may carry, regardless of whether a given woman actually has or anticipates any caregiving responsibilities.[15,16,20] 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.[78] However, a recent survey of over 2,600 women actually working in the construction trades found that over half had children, and about 20% had a young child.[4] A quarter of those working mothers were single mothers, suggesting it is possible to successfully balance motherhood and a career in a skilled trade.

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 many people's lives. Many employees cobble together an array of caregivers to help meet their child care needs while they work or attend school.[55] In training programs, the provision of block scheduling, on-site child care, or subsidies to support childcare (or eldercare), have improved rates of student completion.[62] Staff dedicated to helping 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.[28,79] 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 a minimum number of fully paid hours per week in industries where staffing needs may shift at the last minute.[80] Conversely,

workers also cite concerns over work inflexibility – an issue particularly salient for single parents – and challenges balancing childcare and transportation.[65,68]

Ensure that workplaces address safety needs of women

Work-related injuries are prevalent in some female-dominated fields, e.g., back injuries from lifting patients in nursing,[81] However there may be unique physical challenges for women working in traditionally male-dominated fields. The phenomenon of the "default male" affects workers in male-dominated fields, but also most other aspects of life.[82] Tools, personal protective equipment, safety practices – all of these have typically been designed based on male bodies, with problematic implications for women.[28,82–85] For women to avoid injuries, physical differences need to be considered and accounted for. Encouraging employers to identify and procure proper attire and equipment (including on-site bathroom facilities), at no additional cost to female employees, can support women's workplace satisfaction as well as their physical health.[86,87]

Pregnant women are an especially vulnerable group when it comes to more physically-demanding trades. In one survey, 63% of parents noted that they had considered leaving their trade over a lack of pregnancy accommodations.[4] Policies and sources of supplemental funding (e.g., outside funds to support either hiring a temporary replacement or fund wages while the person is not working that allow employers to keep the pregnant person on active payroll so that they maintain their benefits) can reduce strain on employers, especially small firms, and potentially help make employers less resistant to employing women. Unions can also help to advocate for positive change on behalf of employees and create pregnancy-friendly policies for union-sponsored healthcare plans.[488]

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.[4,67,89–92] 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.[31,49,65,68,93,94] Sexual harassment, a means of male dominance, is a noted problem among both education programs and occupations that are dominated by men.[72,95–97] A 2020 study found that 71% of women working in construction felt that "gender diversity is still a serious issue that needed remedying," compared to only 40% of men.[98] This set of gender-based stressors can amount to hostile work environments, limit opportunities for advancement, and drive women from their training and professions, in addition to wearing on their mental health.[27,28,45,55,99,100]

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 outside help to address harassment and discrimination, to set goals for enrolling and employing women, and to provide systems to monitor the worksite for issues of gender equality and to assure safety and fair opportunities.[25,42,45,56] Male-dominated workplaces can also help by creating and supporting groups of female coworkers to reduce isolation, which may give women more voice and power in speaking up against workplace hostility.

Union membership seems to be one mechanism for dampening the effects of gender-based discrimination for women working in non-traditional fields.[4] In a 2021 survey, female union members were more likely to report that they felt they were treated comparably to men in terms of pay, access to desirable shifts, layoffs, and recruitment than non-union women in the trade.[55]

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

This report 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 self-sufficient 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, in addition to massive amounts of unpaid labor, women also do most of the paid caregiving for children, elderly, and disabled members of our society – 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 because of our economic model.

Furthermore, many careers that lower-income women are seeking (e.g., medical assistant, early childhood educator) come with notoriously low wages. Choosing a career path because of a desire to have the career, that is, not simply being driven by future earnings potential, is important to professional fulfillment and life satisfaction. Thus, while it is important to help women explore traditionally male-dominated fields *in case they are excited by that previously unconsidered career path*, it is also important to advocate for adequately valuing the work women are commonly drawn to. Part of the long-term solution for elevating women in the economy must include professionalizing and valuing the paid and unpaid work they are already doing.

A deeper dive: Perspectives from the field

In addition to the secondary data, we conducted a series of key informant interviews with professionals in Pima County directly involved in career and technical education fields. Key informants worked at institutions of higher education (we interviewed both faculty and staff), hiring agencies, and workforce development agencies. Through these interviews, we sought to provide additional context about the promising careers, including the wage and employment prospects within them.

The enduring effects of the COVID-19 pandemic

In interviews related to clinical fields (e.g., medical assistants, phlebotomists, lab technicians), key informants affirmed that the pandemic had increased demand for trained employees due to both attrition from the field and an increased demand for medical services. This demand has led to competition among employers that results in benefits like signing and retention bonuses. One key informant suggested that medical assistants were getting $1,000 incentives, phlebotomists might see signing bonuses of $5,000, and medical lab technicians could receive as much as $10,000 to stay for two years. Despite these short-term infusions, data suggest that wages are not keeping pace with inflation, even in high-demand fields. [101]

The allure of the medical assistant career

It is worth noting that throughout qualitative data collection for this project, we repeatedly heard about how women are drawn to low-wage professions in caring-oriented fields, such as medical assistants and child care providers. Medical assistant training programs often have waiting lists and can barely meet the demand of those seeking training in this field. Why are so many people eager to enroll in a training program that promises to pay barely more than minimum wage? Based on the insights shared during key informant interviews, there are multiple factors at play.

In addition to the allure of a relatively short, accessible (i.e., minimal prerequisites) certificate program, the typical workplace setting for medical assistants was perceived to offer both practical and relational benefits for single working mothers. In contrast to other healthcare professions that can work in hospitals and skilled nursing facilities, medical assistants work *only* in outpatient settings. These outpatient settings typically have weekday business hours, comfortable workspaces, and a more predictable workload. These factors were viewed as advantageous for maintaining a stable childcare routine and having time to spend with children in the evenings. The nature of the work performed by medical assistants was perceived to include high levels of positive patient and staff interaction, with lower levels of risk to one's own health and responsibility for patient outcomes. One key informant described the satisfaction of being a patient's first touchpoint at their appointment and helping the patient to feel cared for when they likely feel anxious about their medical appointment. In addition to relationships with patients, the social environment of the workplace was reported to be a big draw for working single mothers. Frequently, students entering medical assistant programs in Southern Arizona have a female friend or family member already working as a medical assistant. The combination of positive encouragement to enroll in the program and having relationships with people working in the profession was seen as highly motivating for working mothers.

Unfortunately, despite increases in demand and wages, it still appears that medical assistants, and other popular certificate-level careers among women, e.g., phlebotomists, are unlikely to earn family-sustaining wages. A key informant noted that a local hospital, for example, does offer a $1,000 signing bonus for medical assistants, but the bonus does little in the long run to offset wages in a field that locally (and across Arizona) top out[v] around $22/hour, even in 2022, after pandemic- and inflation-related economic shifts.[102]

Another key drawback of medical assistant programs is that they aren't the base of something "stackable" – i.e., the credits for the MA certificate could not contribute to an AA or BA degree in a related field (unlike the credits need for a licensed practical nurse, for example).[vi] For those who desire a life-long career as a medical assistant, this isn't a problem. But for prospective students who are thinking of a medical assistant training program as a start on a path to other jobs in healthcare, some additional advising is warranted.

Tempting technicians

Key informants highlighted other fields that they would deem as good options for mid-skill higher-wage fields, especially for women who are interested in working in a health care field. Below we profile what we learned about these fields through interviews and other sources as noted.

- Medical laboratory technician (MLT)
    - This AA degree offered at Pima Community College requires 63 credits (comparable to the BCT program), includes a co-op placement in the field, is estimated to cost students about $7,500, has extremely high success rates of placing graduates with employers, and leads to a career with an annual median wage of over $54,000 and where recent graduates are often offered hefty signing bonuses.
    - This wasn't identified in our process because in labor databases "Clinical laboratory technologists and technicians" is identified as a career that requires a bachelor's degree. While it is true that many in the field have a bachelor's degree, and that someone with a bachelor's degree is able to sit for a higher-level exam, locally, lab technicians are reported to be in high demand with only an associate degree.
    - Some barriers to entry and success were noted. This is portrayed as a rigorous, science- and math-heavy program, with multiple prerequisites. It can only be completed as a full-time program.
- Radiologic technician
    - At Pima Community College, the radiologic technician AAS program is viewed as a highly competitive program with a long waiting list of applicants, even though it is longer (74 credits) and there are multiple prerequisites. The most recent wage data indicates that radiologic technologists and technicians in the Tucson area have a median hourly wage of $35.06 and median annual earnings of $72,930.[103]
- Respiratory therapist
    - Compared to the radiation technician program, the respiratory therapist program at Pima Community College is reportedly easier to get into, admitting 32 students each fall. The program requires 68 credits and can be completed across four semesters and a summer session (21 months). The hourly median wage in the Tucson area was $29.41 in 2022, with a median annual wage of $61,180. [103]
- Surgical technologist
    - This AAS program takes four semesters and 60 credits to complete at Pima Community College. The most recent wage data indicates that surgical technologists in the Tucson area have a median hourly wage of $28.07 and median annual earnings of $58,390.[103]
- Diagnostic medical sonographers
    - This promising career gets high marks for offering the highest wages and having a gender-balanced workforce. However, at present, there are no programs in Southern Arizona training medical sonographers and only two in the state.[104]
- Dental assistant

    - Dental hygienists are famously some of the best paid mid-skill, higher-wage employees. Dental assistants are less often mentioned but were seen by key informants as good positions that only require a certificate. A key informant estimated that newly trained dental assistants might start at $18-$20/hr, and can move up to $21-$25/hr in clinical management. The most recent wage data for the Tucson area shows a median hourly wage of $20.97 for dental assistants.
    - The dental assistant program at Pima Community College is listed as 29.5 credits spanning two semesters.
- Veterinary technician
    - The perception of the key informants is that all of those "pandemic puppies" (i.e., pets acquired during the stay-at-home restrictions during the COVID-19 pandemic) now need veterinary care, and thus demand for veterinary technicians has surged. Like other fields, this increase in demand is reported to have driven up wages. However, 2022 data indicates a median hourly wage of only $17.65 for veterinary technicians and technologists in the Tucson area, with an annual median wage of $36,700. Given the 61 credit, five-semester program, veterinary technician offers little return on the investment.

The final program that came up in conversation was not in a health care field and represents a skill that has applications in many kinds of jobs and for a variety of employers.

- Computer aided design (CAD)
    - Students of the CAD program can complete a basic certificate in two semesters, or an advanced one in three. Those credentials are stackable in to an AAS degree, and then potentially into credits for a four-year degree as well. The program trains about 20 students per year in a variety of industry-specific software (e.g., AutoCAD, Revit) as well as manual machining. Students choose one of two paths: mechanical/electromechanical or construction, which can then lean towards civil engineering or design and architecture.
    - This job is tied to the construction economy. Right now, land development and building are "hot"– and presumably will continue to be, given the federal infrastructure bill – making these students very in-demand and able to accept a job offer well before they complete the training program. Students with the AAS (vs. just the certificate) seem to secure more recession-proof jobs.
    - The mechanical/electromechanical path does tend to be predominately male, but there are several single moms in the CAD program overall.
    - The department at Pima Community College, currently headed by a woman, intentionally schedules their classes at strategic times to allow for pick up and drop off of school-aged children. A key informant estimated that about 1 in 7 students in Pima's CAD program is a single parent.
    - Graduates continue to receive training on the job, and typically get bumps in pay to go along with those advancing skills. The key informant estimated that someone with a certificate might start at $16-$18/hr, then get a $2-3/hr raise after the first year, and again the next year. An AAS degree confers higher starting wages.

Empower women

Selecting a career path, changing a career path, navigating the balance between family and jobs – these are challenges that many women face. These challenges are amplified for single mothers who carry the full weight of their family's economic security. Along with these efforts to identify promising

occupations for people looking to earn self-sufficient and family-sustaining wages, it is imperative to remember the unique needs, hopes, and desires of each person. Most people don't make exclusively financial decisions when it comes to careers, and according to multiple key informants, nurturing someone's existing interests and skills while helping to address potential barriers can play a bigger role in success than any single training program. As one key informant put it, "It is so important, and so empowering, to be able to have a choice. I try and instill in our students – you do have a choice… You have the power to go out there and see what's best for you. It's also about understanding what your needs are, your top things that you need to be successful in a job … Know there are so many opportunities, and you don't have to settle."

Appendix 1: Methods

The 2016-2020 American Community Survey Public Use Microdata Sample person-level file served as the primary source of data for our analyses.[105] Data were accessed and analyzed in R (version 4.2.1) using the srvyr package version 1.1.2 and tidycensus package version 1.3.[106,107]

We centered our analyses on full-time, year-round working individuals, defined as individuals working at least 40 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 (35 hours per week or more) and includes workers who may work full time on a 9-month academic schedule (e.g., teachers or school support staff).[108] Our analyses were also limited to working-age individuals, defined as between the ages of 18 and 64. Given our inclusion of young adults (ages 18 to 24), some of the individuals included in our analyses are still pursuing higher education: 8% of women working full-time, 3% of mothers with young children, and 10% of single mothers with young children reported that they were enrolled in school in addition to working. We chose to include these individuals in analyses since their current educational attainment, prior to completing the educational programs in which they are enrolled, affects their current earnings and employment prospects. In our analyses, all dollar values were converted to 2020 dollars for consistency throughout the report using the inflation adjustment factor included in the 2016-2020 ACS PUMS file. Using 2020 dollars also allowed direct comparison with the Bureau of Labor Statistics survey data collected through surveys in the field from November 2020 to May 2021. Median wages are reported to reflect wage and salary 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 2016-2020 ACS PUMS file. Promising occupations were identified by examining data from the BLS Occupational Employment and Wage Statistics (OEWS)[109] and Employment Projections (EP)[110,111] program for Arizona and identifying occupations that met the following criteria:

7) Requires no more than an associate degree,
8) Requires no more than five years of work experience in a related occupation,
9) Requires no more than moderate-term on the job training or an apprenticeship,
10) Has a median hourly wage of at least $20/hour
11) Has at least 150 annual average job openings, and
12) The number of jobs in the field is projected to grow between 2020 and 2030.

Due to slight differences in occupation codes used in the BLS and the ACS PUMS files, 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., *Industrial Engineering Technologists and Technicians* and *Civil Engineering Technologists and Technicians* were collapsed into a single *Other Engineering Technologists and Technicians* 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 hour. Still, in some cases, one occupation within the collapsed category may be more desirable than others. For example, in the *Computer Use Specialists* occupation category, *Computer Network Specialists* have a median hourly wage of $29 compared to $23 for *Computer User Support Specialists*. Similarly, in the *Physical Therapy Assistants and Aides* category, *Physical Therapy Assistants* have a median wage of $28 compared to $14 for *Physical Therapy Aides.*

After identifying promising occupations from BLS OEWS and EP data based on the entry-level requirements, median wage, and projected growths, we then merged these data with the ACS PUMS data to examine the

actual earned wages reported by individuals in Arizona surveyed between 2015 and 2020. From there, given how much the self-sufficiency standard varies by child age, family size, and location, as well as the mismatch in the 2022 dollars used in the 2022 self-sufficiency standard and the 2020 dollars used in the wage datasets available, we chose to include occupations with median annual wages of at least $50,000 per year (strict definition) or $40,000 per year (expanded definition) reported in the PUMS. According to 2020 ACS estimates, the average family-size for a single-female-headed household was 3.24, and the range of self-sufficiency standard wages for 3-person households ranged from $28,466 (2022 dollars; $26,119 in 2020 dollars) for a single parent with two teenagers in Santa Cruz County to $77,136 (2022 dollars; $70,777 in 2020 dollars) for a single parent with two infants in Maricopa County. Our selected thresholds represented a mid-point in these ranges across the state, in line with the statewide average self-sufficiency standard of $56,712 (2022 dollars; $52,037 in 2020 dollars) for single-parent families with two children and $46,690 (2022 dollars; $42,841 in 2020 dollars). After excluding occupations that did not meet the annual wage requirements, our final list of promising occupations included 28 fields using the strict criteria, and 55 fields using the expanded income criteria.

Interview methods

Using publicly available information, the research team identified people working in career and technical education, workforce development, job placements, and hiring in the Tucson area. We aimed to identify and recruit key informants who could speak to the idea of how the local landscape of certain jobs, especially those that do tend to attract a lot of women (e.g., medical assistant, phlebotomist), may be different than the story told by major labor databases. Per our Institutional Review Board, we were constrained in identifying key informants by the limitations of publicly available information (i.e., names and phone numbers). We reached out to prospective key informant interviewees via phone and email to explain the project and invite them to participate in an interview sharing their experiences working in career and technical education and job placement. In some cases, the person we reached out to invited additional people, who were included among the interviewees. We reached out to 16 people. Eleven responded to our requests and 9 were interviewed via Zoom by a member of the research team. The interviews were recorded and transcribed, and key information and themes were identified through collaborative processes within the research team.

We thank all the key informants who generously shared their time with us to discuss mid-skill jobs, training women who are balancing school with family responsibilities, and the current employment landscape.

Appendix 2: Tables

Table 1. Top occupations occupied by women with gender breakdown, sorted by women's median earnings (Source: 2016-2020 ACS PUMS)

Occupational Title	All Workers		Men		Women		
	#	Median Earnings	#	Median Earnings	#	Median Earnings	% of Workforce
Registered Nurses*^°	45,531	$71,014	6,072	$75,684	39,459	$70,645	87%
Medical and Health Services Managers	12,332	$71,593	3,222	$75,461	9,110	$69,424	74%
Financial Managers	25,573	$71,593	11,801	$82,601	13,772	$65,456	54%
Education and Childcare Administrators	15,909	$66,406	5,616	$74,455	10,293	$61,931	65%
Accountants and Auditors	28,618	$62,660	10,860	$65,400	17,758	$61,365	62%
Other Managers	65,908	$70,570	42,569	$77,729	23,339	$60,369	35%
Human Resources Workers	14,316	$54,342	3,839	$56,252	10,477	$54,332	73%
Office and Administrative Support Supervisors	24,016	$48,908	8,820	$54,305	15,196	$45,277	63%
Elementary/Middle School Teachers*^°	47,210	$44,271	10,010	$45,648	37,200	$43,779	79%
Bookkeeping, Accounting, and Auditing Clerks	17,156	$41,300	2,155	$41,773	15,001	$41,300	87%
Retail Sales Supervisors*^°	56,228	$41,773	31,983	$45,648	24,245	$38,440	43%
Secretaries/Administrative Assistants*^	29,767	$37,596	1,635	$42,284	28,132	$37,479	95%
Billing and Posting Clerks	10,202	$37,372	1,230	$34,463	8,972	$37,372	88%
Customer Service Representatives*^°	62,894	$33,692	23,229	$34,596	39,665	$33,418	63%
Office Clerks, General	15,900	$32,605	2,964	$35,796	12,936	$32,033	81%
Medical Assistants	12,083	$32,033	1,330	$31,330	10,753	$32,033	89%
Nursing Assistants	13,098	$29,898	2,202	$32,033	10,896	$29,455	83%

Occupational Title	All Workers		Men		Women		
	#	Median Earnings	#	Median Earnings	#	Median Earnings	% of Workforce
Receptionists and Information Clerks	17,864	$29,178	2,958	$28,830	14,906	$29,178	83%
Retail Salespersons	36,224	$33,203	21,978	$37,596	14,246	$28,197	39%
Waiters and Waitresses	15,512	$25,627	5,484	$30,184	10,028	$23,911	65%
Cashiers	22,657	$24,148	7,918	$26,160	14,739	$23,064	65%
Personal Care Aides	19,705	$22,975	3,935	$25,064	15,770	$22,498	80%
Janitors and Building Cleaners	31,835	$26,084	21,582	$29,898	10,253	$21,737	32%
Cooks	27,552	$23,523	17,710	$24,998	9,842	$21,355	36%
Maids and Housekeeping Cleaners	15,427	$20,887	2,147	$23,421	13,280	$20,123	86%

Table 2. Top occupations occupied by women by subgroup, sorted by earnings for mothers (Source: 2016-2020 ACS PUMS)

Occupational Title	Mothers		Mothers of Young Children		Single Mothers of Young Children		
	#	Median Earnings	#	Median Earnings	#	Median Earnings	% of Workforce
Registered Nurses*^°	15,275	$69,405	6,296	$65,211	1,045	$69,547	2%
Other Managers	8,336	$60,369	2,352	$53,261	646	$43,474	1%
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	1,536	$53,389	848	$50,307	461	$48,295	4%
Elementary/Middle School Teachers*^°	14,801	$43,264	5,080	$42,711	679	$44,906	1%
Production, Planning, and Expediting Clerks	1,492	$42,956	1,001	$40,910	584	$45,277	9%
Social Workers All Other	2,602	$42,387	1,056	$41,300	497	$35,796	5%
Claims Adjusters, Appraisers, Examiners, and Investigators	2,171	$37,842	947	$35,215	516	$34,774	5%
Retail Sales Supervisors*^°	7,001	$37,331	2,971	$36,724	1,225	$36,735	2%
Secretaries/Administrative Assistants*^	8,577	$36,625	2,464	$38,013	789	$33,101	3%
Insurance Claims/Policy Processing Clerks	2,066	$36,192	975	$35,236	664	$37,372	8%
Customer Service Representatives*^°	12,801	$32,605	5,478	$30,184	2,839	$28,197	5%
Shipping, receiving, and inventory clerks	1,080	$32,197	617	$32,197	584	$32,197	7%
Medical Assistants	4,379	$31,845	2,417	$31,705	925	$31,330	8%
Office Clerks, General	4,577	$31,705	1,610	$31,072	601	$25,154	4%
Packers and Packagers, Hand	1,408	$28,258	769	$35,215	509	$35,215	10%
Receptionists and Information Clerks	4,294	$28,172	1,698	$27,171	940	$25,978	5%
Nursing Assistants	3,705	$28,172	1,354	$27,153	602	$26,108	5%
Laborers and Freight, Stock, and Material Movers	1,695	$25,154	650	$22,824	463	$21,931	2%
Waiters and Waitresses	2,304	$23,911	1,258	$24,998	852	$21,355	5%
Preschool and Kindergarten Teachers	3,190	$22,975	1,303	$22,210	730	$22,092	11%
Personal Care Aides	5,491	$22,453	2,382	$22,035	1,518	$22,035	8%
Cooks	3,769	$21,302	1,238	$23,911	719	$21,355	3%
Cashiers	4,163	$21,129	1,807	$20,123	1,275	$18,410	6%
Janitors and Building Cleaners	4,010	$20,887	1,220	$22,423	765	$20,887	2%
Maids/Housekeeping Cleaners	5,491	$19,842	1,267	$16,303	722	$14,949	5%
Childcare Workers*	3,110	$16,017	1,084	$7,608	629	$16,017	7%

*Top 5 Occupation for Women, ^ Top 5 Occupation for Mothers with Young Children, ° Top 5 Occupations for Single Mothers with Young Children. Note that many child care workers are self-employed and operating at "break-even," leading to low earnings.

Table 3. Promising Occupations (Source: BLS Occupation & Wage Data)

	Occupational Title	2020 Jobs (estimate)	Projected Growth	Avg. Annual Openings	Typical Entry Education	Typical Training	Required Work Experience	Median Wage	25th Perc. Wage	75th Perc. Wage
Medical	Licensed Practical & Licensed Vocational Nurses	7,480	39%	963	Certificate	None	None	$29	$23	$30
	Surgical Technologists	2,436	42%	308	Certificate	None	None	$28	$23	$29
	Dental Hygienists	3,723	41%	428	Assoc. deg.	None	None	$38	$37	$46
	Diagnostic Medical Sonographers	1,804	53%	257	Assoc. deg.	None	None	$39	$37	$48
	Magnetic Resonance Imaging Technologists	1,279	39%	158	Assoc. deg.	None	<5 years	$38	$36	$46
	Occupational Therapy Assistants & Aides	1,166	71%	277	Assoc. deg.	None	None	$29	$21	$32
	Physical Therapist Assistants & Aides	3,325	60%	713	Assoc. deg.	None	None	$28	$18	$31
	Radiologic Technologists & Technicians	5,154	40%	640	Assoc. deg.	None	None	$30	$28	$37
	Respiratory Therapists	3,637	60%	437	Assoc. deg.	None	None	$29	$28	$36
Trade	Radio & Telecommunications Equipment Installers & Repairers	4,725	26%	717	Certificate	Moderate OTJ training	None	$29	$23	$37
	Aircraft Mechanics & Service Technicians	4,270	27%	505	Certificate	None	None	$30	$23	$38
	Automotive Service Technicians & Mechanics	15,850	14%	1,886	Certificate	Short-term OTJ training	None	$22	$16	$29
	Driver/Sales Workers & Truck Drivers	34,762	32%	5,475	Certificate	Short-term OTJ training	None	$23	$19	$28
	Other Media & Communication Equipment Workers	1,142	35%	174	Certificate	Short-term OTJ training	None	$23	$18	$30
	Cement Masons, Concrete Finishers, & Terrazzo Workers	7,321	24%	911	None	Moderate OTJ training	None	$23	$18	$24
	Drywall Installers, Ceiling Tile Installers, & Tapers	4,381	33%	559	None	Moderate OTJ training	None	$23	$18	$25
	Underground Mining Machine Operators	1,391	19%	204	None	Moderate OTJ training	None	$22	$19	$29
	Pipelayers	1,334	13%	161	None	Short-term OTJ training	None	$23	$21	$27
	Carpenters	20,273	26%	2,619	HS diploma, GED	Apprenticeship	None	$23	$18	$28
	Electricians	14,564	35%	2,269	HS diploma, GED	Apprenticeship	None	$23	$18	$29
	Plumbers, Pipefitters, & Steamfitters	10,407	30%	1,523	HS diploma, GED	Apprenticeship	None	$23	$18	$30
	Sheet Metal Workers	2,933	27%	387	HS diploma, GED	Apprenticeship	None	$23	$18	$29
	Structural Iron & Steel Workers	1,829	33%	278	HS diploma, GED	Apprenticeship	None	$23	$18	$29
	Bus Drivers, Transit & Intercity	4,624	38%	815	HS diploma, GED	Moderate OTJ training	None	$23	$18	$29
	Computer Numerically Controlled (CNC) Tool Operators & Programmers	1,660	15%	218	HS diploma, GED	Moderate OTJ training	None	$22	$18	$24
	Construction Equipment Operators	9,013	20%	1,215	HS diploma, GED	Moderate OTJ training	None	$23	$22	$29

Trade	Control & Valve Installers & Repairers	1,861	11%	176	HS diploma, GED	Moderate OTJ training	None	$31	$29	$38
	Miscellaneous Production Workers, Including Equipment Operators & Tenders	3,565	10%	438	HS diploma, GED	Moderate OTJ training	None	$28	$18	$37
	Other Installation, Maintenance, & Repair Workers	2,909	23%	400	HS diploma, GED	Moderate OTJ training	None	$22	$17	$24
	Welding, Soldering, & Brazing Workers	5,983	26%	870	HS diploma, GED	Moderate OTJ training	None	$23	$18	$27
	First-Line Supervisors of Landscaping, Lawn Service, & Groundskeeping Workers	4,543	19%	599	HS diploma, GED	None	<5 years	$23	$19	$24
	First-Line Supervisors of Mechanics, Installers, & Repairers	11,271	20%	1,324	HS diploma, GED	None	<5 years	$30	$23	$38
	First-Line Supervisors of Production & Operating Workers	7,615	23%	1,004	HS diploma, GED	None	<5 years	$30	$23	$38
	Supervisors of Transportation & Material Moving Workers	11,787	26%	1,723	HS diploma, GED	None	<5 years	$24	$19	$30
	Cargo & Freight Agents	1,712	32%	249	HS diploma, GED	Short-term OTJ training	None	$23	$17	$29
	Electrical & Electronic Engineering Technologists & Technicians	3,310	11%	357	Assoc. deg.	None	None	$32	$28	$37
Architecture & Engineering	Architectural & Civil Drafters	2,641	15%	308	Assoc. deg.	None	None	$29	$23	$36
	Civil Engineering Technologists and Technicians	1,490	10%	158	Assoc. deg.	None	None	$28	$21	$29
	Industrial Engineering Technologists and Technicians	1,417	25%	181	Assoc. deg.	None	None	$30	$29	$37
	Other Drafters	1,812	18%	218	Assoc. deg.	None	None	$29	$23	$45
Service Economy	Massage Therapists	3,872	48%	720	Certificate	None	None	$21	$18	$24
	Travel Agents	1,973	20%	289	HS diploma, GED	Moderate OTJ training	None	$23	$15	$30
	First-Line Supervisors of Non-Retail Sales	6,048	8%	604	HS diploma, GED	None	<5 years	$30	$24	$39
	Lodging Managers	1,275	33%	202	HS diploma, GED	None	<5 years	$29	$22	$38
	Other Teachers & Instructors	3,608	36%	614	HS diploma, GED	None	<5 years	$23	$15	$28
	Exercise Trainers & Group Fitness Instructors	7,531	38%	1,662	HS diploma, GED	Short-term OTJ training	None	$23	$15	$29
	Food Service Managers	6,080	29%	949	HS diploma, GED	Short-term OTJ training	<5 years	$29	$23	$38
IT	Computer User Support Specialists	19,456	23%	2,013	Some college, no degree	Moderate OTJ training	None	$23	$18	$30
	Computer Network Support Specialists	4,123	24%	432	Assoc. deg.	Moderate OTJ training	None	$29	$22	$37

Office	Bookkeeping, Accounting, & Auditing Clerks	28,908	11%	3,665	Some college, no degree	Moderate OTJ training	None	$21	$18	$23
	Advertising Sales Agents	1,997	10%	278	HS diploma, GED	Moderate OTJ training	None	$23	$14	$30
	Inspectors, Testers, Sorters, Samplers, & Weighers	8,665	4%	1,077	HS diploma, GED	Moderate OTJ training	None	$22	$18	$28
	Insurance Sales Agents	8,915	27%	1,142	HS diploma, GED	Moderate OTJ training	None	$23	$18	$30
	Payroll & Timekeeping Clerks	3,518	1%	365	HS diploma, GED	Moderate OTJ training	None	$23	$18	$24
	Police officers	10,089	7%	861	HS diploma, GED	Moderate OTJ training	None	$32	$29	$37
	Procurement Clerks	1,752	11%	186	HS diploma, GED	Moderate OTJ training	None	$22	$18	$23
	Production, Planning, & Expediting Clerks	8,242	28%	1,177	HS diploma, GED	Moderate OTJ training	None	$23	$18	$29
	Public Safety Telecommunicators	1,859	17%	216	HS diploma, GED	Moderate OTJ training	None	$23	$18	$27
	Real Estate Brokers & Sales Agents	9,638	17%	1,064	HS diploma, GED	Moderate OTJ training	None	$23	$15	$29
	Sales Representatives of Services, Except Advertising, Insurance, Financial Services, & Travel	27,731	27%	4,300	HS diploma, GED	Moderate OTJ training	None	$29	$19	$38
	Sales Representatives, Wholesale & Manufacturing	22,925	18%	2,836	HS diploma, GED	Moderate OTJ training	None	$28	$19	$38
	Tax Preparers	1,767	19%	247	HS diploma, GED	Moderate OTJ training	None	$23	$18	$37
	Title Examiners, Abstractors, & Searchers	1,416	21%	178	HS diploma, GED	Moderate OTJ training	None	$23	$19	$28
	First-Line Supervisors of farming, fishing, & forestry workers	1,489	9%	231	HS diploma, GED	None	<5 years	$28	$23	$32
	Property, Real Estate, & Community Association Managers	10,393	10%	935	HS diploma, GED	None	<5 years	$27	$18	$38
	Supervisors of Office & Administrative Support Workers	32,706	13%	3,869	HS diploma, GED	None	<5 years	$29	$22	$35
	Loan Interviewers & Clerks	6,947	17%	783	HS diploma, GED	Short-term OTJ training	None	$23	$18	$27
	Other Information & Records Clerks	3,727	12%	468	HS diploma, GED	Short-term OTJ training	None	$20	$16	$23
	Other office & Administrative Support Workers	2,594	18%	358	HS diploma, GED	Short-term OTJ training	None	$22	$14	$23
	Human Resources Assistants, Except Payroll & Timekeeping	2,407	14%	289	Assoc. deg.	None	None	$22	$18	$23
	Paralegals & Legal Assistants	6,928	28%	1,036	Assoc. deg.	None	None	$24	$19	$30

OTJ = On the job

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Notes

[i] We include women and mothers as young as 18 years old, so some individuals may still be pursuing higher education.

[ii] The two exceptions to this are Paralegals and Advertising Sales Agents, where the split between those with and without a bachelor's degree is an even 50-50.

[iii] Regardless of the causes, analyses of national data show that at every level of education, men earn higher average wages than women. Moreover, this pay gap increases with education.[112] In some promising news, there are recent data that suggest that in mid-wage ranges, the gap between men and women has closed slightly, possibly because of a pandemic-related increase in demand and wages in fields that employ high numbers of women. Specifically, whereas the overall gap between men and women increased during this same time range, middle-wage women in 2022 were paid an average of 15.4% less than peer men, compared to 16.2% less in 2019.[113]

[iv] 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). There are over 38 programs currently offered in Arizona, ranging from electricians, auto mechanic, substation operator, and computer support specialist. Additional details about apprenticeships as workforce training programs in Arizona can be found at www.azapprenticeship.com.

[v] Wages for the 90th percentile of earners are still in the $22 range for most regions of Arizona.

Area Name	Hourly median wage	Hourly 90th percentile wage
Phoenix-Mesa-Scottsdale, AZ (0038060)	$19.27	$22.87
Lake Havasu City-Kingman, AZ (0029420)	$17.28	$21.86
Flagstaff, AZ (0022380)	$18.03	$21.71
Prescott, AZ (0039140)	$18.00	$21.46
Arizona nonmetropolitan area (0400001)	$17.61	$21.17
Tucson, AZ (0046060)	$17.72	$21.10
Yuma, AZ (0049740)	$17.32	$20.75
Sierra Vista-Douglas, AZ (0043420)	$17.53	$20.68

Source: Bureau of Labor Statistics. May 2022 State OEWS Data.

[vi] There was a suggestion in one interview that different accrediting bodies may have different implications for how stackable the MA program is, and that the credential could become stackable someday.