

Issue BRIEF

Women in Manufacturing: Michigan's M-CAM Experience



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ABOUT THIS PROJECT

The lessons in this brief are drawn from Social Policy Research Associates' (SPR's) evaluation of the Michigan Coalition for Advanced Manufacturing (M-CAM) TAACCCT grant. M-CAM is a coalition of eight community colleges in Michigan that used grant funds to strengthen four career pathways—Welding/Fabrication, Production, Multi-Skilled/Mechatronics, and CNC Machining.



ABOUT THE TAACCCT GRANTS

The Trade Adjustment Assistance Community College and Career Training (TAACCCT) grants were funded by the U.S. Department of Labor, Employment and Training Administration. TAACCCT funding assists community colleges in expanding and improving training programs that can be completed in two years or less for high-demand, high-skilled occupations.

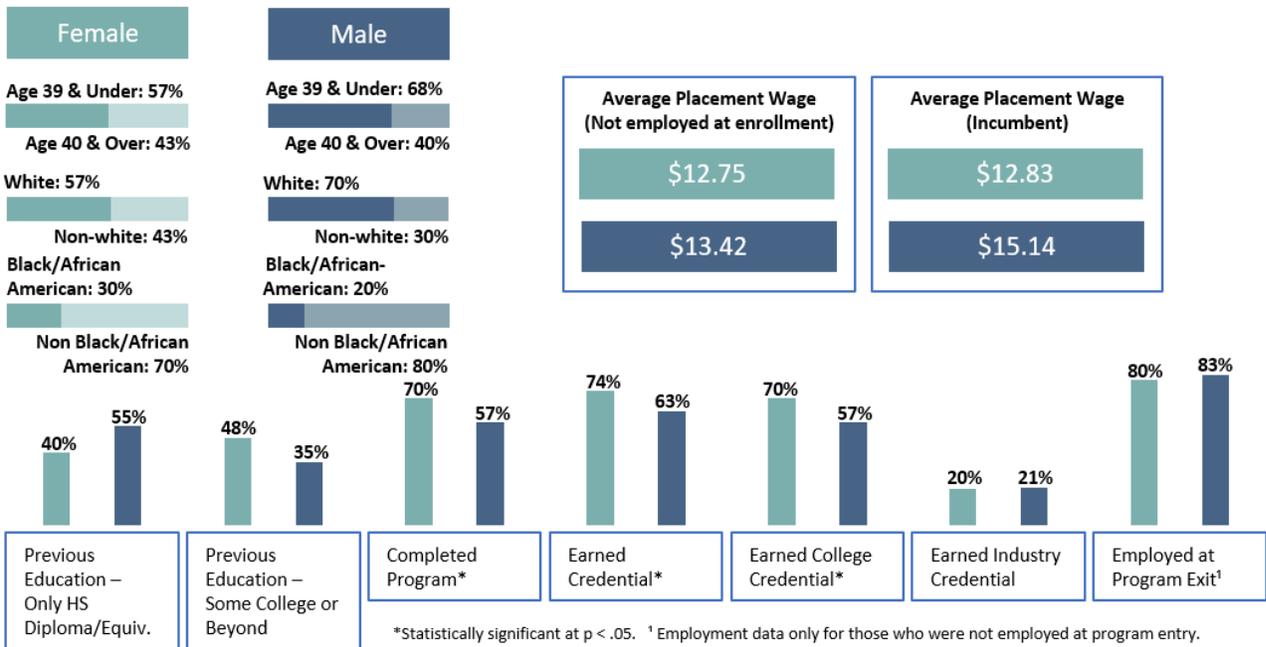
Women make up 47 percent of the labor force, but only 29 percent of the manufacturing industry.ⁱ For industry, women represent a partial solution to a pronounced shortage of skilled manufacturing workers, and research has shown that increasing the representation of women in manufacturing companies leads to increased innovation, return on equity, and profitability.ⁱⁱ For women, manufacturing can represent good jobs and careers—and an opportunity to participate in “chipping away at the glass ceiling.”ⁱⁱⁱ As one female manufacturing student explained, “Welding is a job that’s got a lot of open positions and it pays well and it’s a skill. So, there’s a lot of reasons to do it.”

This brief describes women’s participation and experiences in manufacturing training programs developed and enhanced as part of the Michigan Coalition for Advanced Manufacturing (M-CAM) program. Drawing on data from 501 female students enrolled at eight community colleges in Michigan over a three-year post-recession period (2014–2017), we identify women’s motivations for pursuing manufacturing training, satisfaction with the training programs, and education and employment outcomes. This information can inform community college efforts to improve pathways into the manufacturing industry for women who are new to the field as well as to support advancement in the field for those with prior experience.

WHAT WE LEARNED

- Female students were older, more diverse, and more educated than their male peers.
- Women were more likely to complete their advanced manufacturing programs and earn credentials than were men.
- When placed into jobs, however, woman received lower wages and were less satisfied with their job placements than were men.
- Although they were comfortable in the classroom, female students were aware that manufacturing is a male-dominated industry. Some younger women with no prior experience in manufacturing expressed trepidation about entering the workforce.
- Women valued the academic and support services offered throughout the program and credited them with positively influencing their success.
- To increase recruitment of women into manufacturing, community colleges and employers might consider increasing the visibility of women role models, forming partnerships focused on achieving gender parity, increasing outreach to young women, and better educating women on average wages in the industry and how to ask employers for better pay.

Exhibit 1: Key Statistics



By the Numbers: Women in M-CAM

There were 501 women enrolled in M-CAM TAACCCT grant-funded programs across the participating colleges—13 percent of the total enrollees. The average age of female participants was 37; 57 percent were 39 and under. Fifty-seven percent of female participants were White, while 30 percent were Black/African American. By comparison, male participants were younger (average age 34) and more White (70%).

These women had varied educational and professional experiences and levels of educational attainment prior to enrolling in the training, but on the whole, they were slightly better educated than their male counterparts. Approximately 40 percent of women had only a high school diploma or equivalent, compared to 55 percent of men. Forty-eight percent had completed at least some years of college or vocational school, compared to 35 percent of men. However, only 10 percent of the women had a bachelor’s degree or beyond, compared with 12 percent of men.

Women participants were more commonly enrolled in noncredit certificates than for-credit programs. The Production pathway was the most popular, while the CNC Machining pathway was the least. (Unfortunately, production also yielded the lowest mean starting wage for nonincumbent participants, as discussed below.) While the number of female participants was far lower than male participants, women completed their programs more frequently than did men, to a statistically significant degree. Similarly, women earned credentials significantly more often than men.

The reasons for the gender differential in completion and credential attainment are complex, but two possibilities emerge from the administrative and interview data that are worth exploring in more depth in future research. First, women were more likely to enroll in noncredit manufacturing programs, which tend to be shorter and thus more likely to be completed and yield a credential during the period of the grant. Second, gender may influence whether a student will take advantage of available support. One female student said that, while she was eager to access support services, many of the men in the program were reluctant to do so (perhaps acting on cultural notions that equate masculinity with not asking for help).

For those not employed at enrollment, the average placement wage for women participants was \$12.75 per hour, compared to \$13.42 for men. For incumbent workers, the average placement wage for women was \$12.83, compared to \$15.14 for men. Further research can look more closely at these numbers, controlling for previous experience and education, and tracking pay increases as experience is gained. The women interviewed expressed hope that starting on

a lower rung of the career ladder could lead to increased wages with further experience and training. For example, one female participant with previous experience said, of undertaking training, “I’m hoping it will make me more financially secure ... I’m hoping I can just keep going up [in pay] from there and have a little bit more financial freedom at home.”

Experiences and Perspectives of Women in M-CAM

Survey results indicate that women (like their male counterparts) were largely satisfied with the training, counseling, academic support, personal help, and job search assistance that they received from their programs. As one interviewee noted about the instructors, “they’ve all been so helpful and patient with me, and if there’s things I’m not catching onto, they really help with the [class]work and the homework.” Other women interviewed described experiences with instructors and support staff in their programs that had positively influenced their success.

The women students we interviewed were satisfied with their training programs, and felt that faculty and their male peers were welcoming and supportive. They were, however, acutely aware of and sensitive to the fact that there were few women enrolled in their courses and said that this sometimes made them feel uncomfortable. Furthermore, although they were performing well in their classes, two young women who were interviewed worried about moving into industry, where they feared they might face discrimination or harassment. This concern was not expressed by women who already had industry experience or who had been previously exposed to manufacturing.

Even though women were satisfied with their training programs, survey results show that after completing their training, they were significantly less satisfied with their placement job than were men (71% of women expressed satisfaction with their job compared to 87% of men), with most identifying low pay as the reason for dissatisfaction. The experience of female M-CAM participants supports research showing that a wage gap between men and women continues to characterize manufacturing employment. In three of the four pathways (CNC Machining, Multi-Skilled, Production, and Welding), the mean placement wage for women participants was lower than it was for men. (The exception was CNC Machining, where female participants placed into employment earned slightly higher than male participants.)

“The first day, everyone else is in their seats. You’re the only woman and you just stop in the doorway. Whoa, I am the only woman here. Are they going to hate me? No, they’re not going to hate me. They’re mature enough and they’re there to weld. So they don’t pay much attention all you’ve got to do is be willing to listen to them cuss.”

- 25-year-old female, Welding student

Challenges Facing Women in Manufacturing

- **Enrollment of women remains low despite a perception among faculty and female students that women are particularly well suited to some manufacturing fields.** There was a perception among faculty and among female students that women are particularly well suited to some manufacturing fields. Yet the rate of training program entry for women remains very low. Nearly 30 percent of manufacturing employees are women, and yet only 13 percent of M-CAM students were women.
- **M-CAM was particularly challenged in recruiting young women into manufacturing.** The average age of women in M-CAM was three years older than the average age of men, and women participants were 11 percent more likely to be 40 or over. The younger women we interviewed expressed more hesitation about going into manufacturing than did the older women. While the women interviewed said they felt comfortable in the classroom, some of the younger ones with more limited work experience expressed reluctance to actually enter the field, which continues to be identified as a “man’s field.”

- *Older women students whom we interviewed often had had trouble being hired due to gaps in their work histories related to raising children or caring for a loved one.* Older women students commonly had experience in the field of manufacturing, and yet they had struggled to reenter the workforce after having taken extended time off to raise their children or care for family members. The M-CAM program provided these women with an opportunity to sharpen and update their skills, and to regain the confidence they needed to reenter the workforce.
- *Across the age spectrum, women without experience who are entering the field are being hired at lower wages.* Literature suggests that women tend to accept lower starting wages. Colleges can play a role in educating female students about what a competitive wage is for someone in their field, with their level of experience and education, and can provide them with training in how to negotiate competitive hourly rates or salaries.

“Just the constant reminder or the awareness of [being the only woman] I feel like could have some significant long-term impacts on my identity and my mental health You’re constantly adjusting yourself from outside—like what other people see—and you don’t blend into the background as much.... And there’s really nothing I can do to stop that either. Like [with] race and gender, you can’t hide those things so it’s sort of like an unsolvable problem unless other women decide to join [the field].”

- 25-year-old female, Welding student

Implications for Manufacturing Employers and Community Colleges

Our research findings suggest that the following strategies could help increase the number of women entering manufacturing training programs and the manufacturing industry:

- **Increase the visibility of female role models**, through recruitment of women instructors and pairing women students with industry mentors, thereby helping to normalize the presence of women in the industry.^{iv}
- **Establish partnerships focused on gender parity in the manufacturing industry.** Community colleges can seek partnerships with manufacturing companies that have made explicit commitments to gender diversity and parity within their own companies, effectively supporting a systemwide commitment to gender inclusion in the industry.
- **Increase outreach to young women**, by building pipeline programs and making sure that high school programs are diverse and gender inclusive. One female participant described a construction-focused program at her high school as illustrative: “Not on paper [was it closed to women], but it wasn’t really welcome for the female students. No female students ever really were involved in it.” The perceived or real openness of feeder programs obviously influences the number of women prepared to enter college-level training programs and thus the industry at large.
- **Provide additional job search and placement assistance to women.** Women would benefit from additional information on what competitive wages are for their fields, how to advocate for a higher hourly wage, and how to explain gaps in their work history to potential employers.

About This Series

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ⁱ U.S. Bureau of Labor Statistics, “Labor Force Statistics from the Current Population Survey,” 2016, <https://www.bls.gov/cps/cpsaat18.htm>, accessed July 2, 2017.

ⁱⁱ *Women in Manufacturing Study: Exploring the Gender Gap* (Deloitte, Manufacturing Institute, and APICS, 2015), 8, <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/manufacturing/us-mfg-women-in-manufacturing-2015-study.pdf>; *Women in Manufacturing: Stepping Up to Make an Impact That Matters* (Deloitte, Manufacturing Institute, and APICS, 2017), 6, www.themanufacturinginstitute.org/News-Articles/2017/04/~/_/media/3B9BF94AEF0A46A5B755D17F1F1336BC.ashx.

ⁱⁱⁱ Natalie Schilling, “The Coming Rise of Women in Manufacturing,” *Forbes*, September 20, 2013, <https://www.forbes.com/sites/forbeswomanfiles/2013/09/20/the-rise-of-women-in-manufacturing/#652ec0b91d98>. However, a pronounced wage gap between men and women persists in the manufacturing industry; see Bridget Bergin, “Why the Gender Pay Gap Matters for Manufacturing,” *Manufacturing.net*, March 17, 2015, <https://www.manufacturing.net/blog/2015/03/why-gender-pay-gap-matters-manufacturing>.

^{iv} *Women in Manufacturing*, 14.

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