



CAREER & TECHNICAL EDUCATION

A PATH TO ECONOMIC GROWTH

TITLE IX OUTLAWES SEX DISCRIMINATION in career and technical education (CTE), including training programs offered by any school or organization that receives federal funding. Equal opportunity in CTE can expand economic growth by putting training for middle- and high-wage jobs in reach for all capable students, regardless of gender. Despite Title IX protections, however, women still face hurdles in CTE, where the gender divide has women much more likely to study in areas leading to lower-wage occupations.

Measures to counter gender bias and sex stereotyping in CTE can expand opportunities for women in areas traditionally dominated by men, such as information technology (IT) and other technical fields. At the same time, encouraging gender equity in CTE will reduce barriers for men seeking entry into fields traditionally occupied by women, including high-growth areas in health care. Eliminating discriminatory practices in CTE therefore has important implications for all students.

Expanding opportunity in CTE is an important strategy for ensuring the future health of the U.S. economy. Measures to help women

enroll and succeed in high-wage CTE fields will increase the total pool of skilled workers, for which global demand is growing. Thus, greater

equity in CTE can both reduce the wage gap between male and female workers and benefit the economy as a whole.

CTE and Career Preparation

CTE prepares both youth and adults for a wide range of careers. These careers may require varying levels of education, including industry-recognized credentials, postsecondary certificates, and two- and four-year degrees.

CTE begins early and carries through higher education. It is offered in middle schools, high

schools, career and technical centers, community and technical colleges, and other postsecondary institutions.

TRAINING MILLIONS OF SKILLED WORKERS

According to the U.S. Department of Education's Office of Career, Technical, and Adult Education (OCTAE), almost all high school students take at least one CTE course, and one in four students take three or more courses in a single program area. In 2014, about one in five college students were involved in CTE programs, and millions of adults participated in some form of short-term postsecondary occupational training.

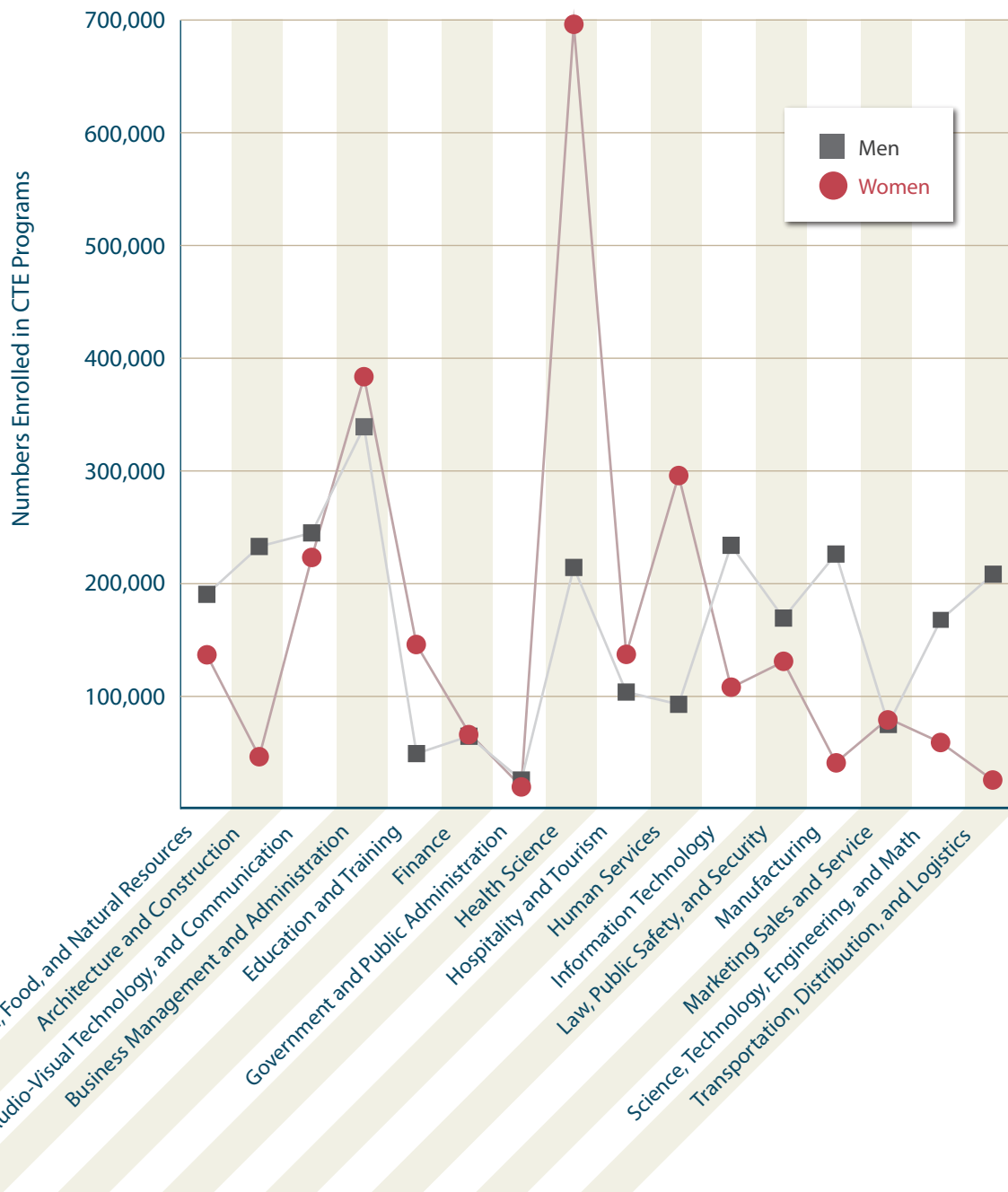
CTE is organized around 16 career clusters¹ based on a set of common knowledge and skills that prepare learners for a full range of opportunities. Figure 1 shows the distribution of enrollment for women and men in these clusters among CTE "concentrators" (students taking at least three different courses in a field). Women dominate in health science and human services, while lagging in architecture and construction, IT, manufacturing, and transportation and logistics.

Interest in postsecondary CTE has grown as the cost of four-year colleges has risen, and as postsecondary training and industry-recognized credentials have become more important in high-growth industries needed to expand the U.S. economy. Nearly 11% of all 18- to 24-year olds in the country are enrolled at a two-year college.² These students make up a large proportion of degree seekers; as of 2014, 42% of college undergraduates were enrolled in community colleges.³

KEY FINDINGS

- 1. Although women have made advances in career and technical education (CTE) since the passage of Title IX, they are still largely restricted to lower-wage fields.** Measures to counter gender stereotypes and eliminate discrimination will increase participation in industries needed to expand the U.S. economy.
- 2. Ensuring gender equity in secondary, postsecondary, and apprenticeship programs in CTE offers the promise of expanding careers** for women in technical and other trades, thus increasing the total pool of skilled workers. It can also improve men's access to high-growth fields dominated by women.
- 3. Increasing female participation in CTE programs that lead to high-wage jobs** can meet local demand for skilled workers, lower the wage gap, and improve the income potential for families.
- 4. Measures such as better tracking and reporting of data, incentives for increasing female participation** in high-wage CTE areas, and sanctions for discrimination can help ensure equal access to CTE.
- 5. Outreach efforts and funding for support services such as child care can attract and retain women** in fields where they are underrepresented. States, schools, other organizations taking part in these efforts are seeing impressive success rates, which will help drive future economic growth.

FIGURE 1:
Enrollment of CTE Concentrators in CTE Programs by Gender and Career Cluster Area, Program Year 2013–2014



SOURCE: Carl D. Perkins Career and Technical Education Act of 2006: Report to Congress on State Performance, Program Year 2013–14. U.S. Department of Education, Office of Career, Technical, and Adult Education (OCTAE), 2016.



For students with young families, CTE offers a path to steady-wage careers. Some 30% of community college students are parents of children under age 18. For women, the figure is close to 40%, including 2 million single mothers.⁴

SHRINKING THE WAGE GAP

Women are more likely than men both to hold four-year degrees and to work in middle-skill occupations that require some additional training or college certification beyond high school completion.⁵ Yet, as Figure 2 shows, women are much less likely than men to work in well-paid middle-skill occupations.

Women are concentrated in fields such as child care, preschool education, home care, and hairdressing—all occupations with median earnings for full-time work that would leave a family of three in near-poverty.⁶ These occupations tend to have much lower earnings than occupations that are more gender balanced or that have a predominantly male workforce. Middle-skill occupations where women dominate (making up 75% or more of the workforce) pay median wages of just 66 cents for every dollar in middle-skill occupations where men similarly dominate. Yet training and educational requirements for female- and male-dominated occupations are broadly equivalent.⁷

Expanding Opportunity in CTE

One of the purposes of Title IX was to expand opportunity in CTE by ending discrimination among education institutions that routinely denied students admission into classes deemed “improper” for their sex. Historically, vocational classes were restricted by gender: men took shop and automotive courses, while

As the current workforce ages, many well-paid occupations in which women make up a minority of workers—such as IT, transportation and logistics, advanced manufacturing, and construction—are projected to have a growing number of job openings for new generations of skilled workers. Through CTE, women can gain the knowledge and skills required to enter these higher-paying, “nontraditional” occupations (defined by law as those in which less than 25% of the workforce is of their gender).

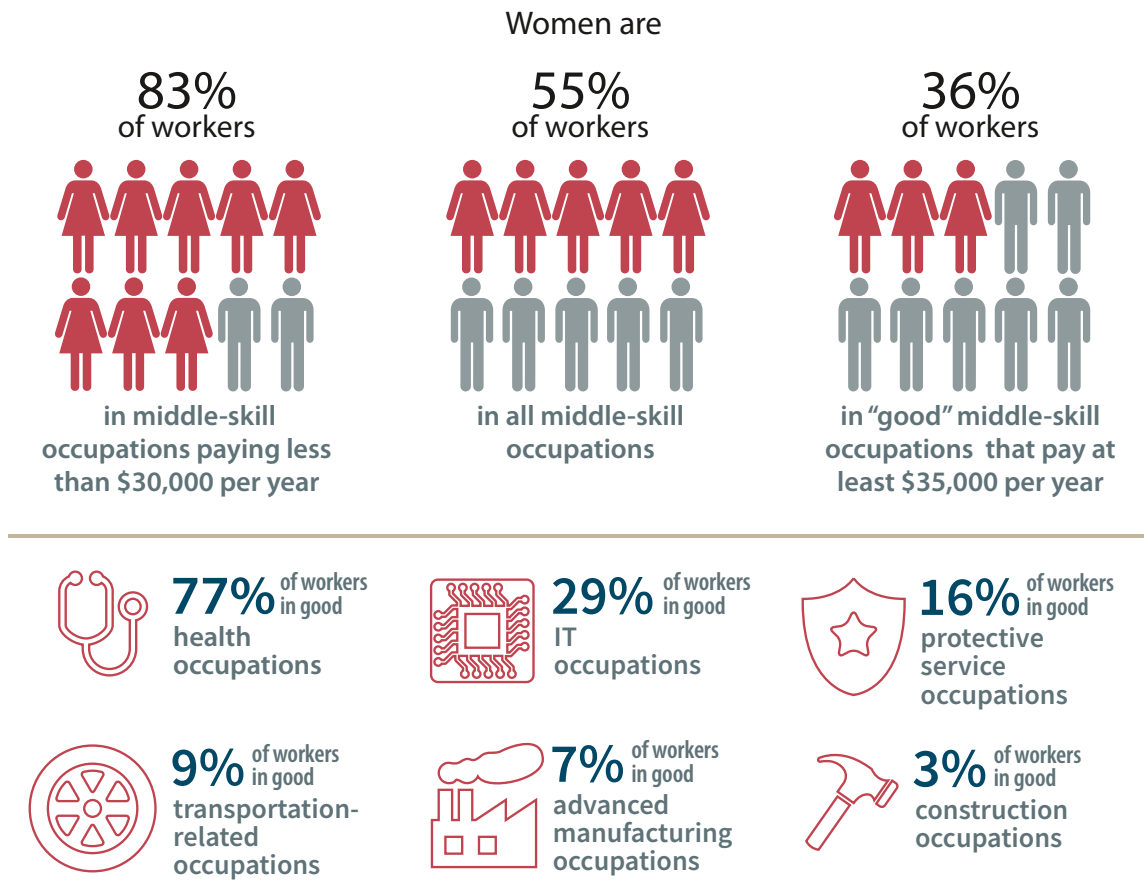
Gaining skills and qualifications in a nontraditional occupation can substantially increase the return on investment in education. For example, 80% of librarians (84% of whom are women) have at least a master’s degree, but their earnings are no higher than those of computer user support staff (75% men), the majority of whom have an associate’s degree or less.⁸

Expanding access to high-paid technical occupations can be a major factor in shrinking the gender wage gap. To achieve this end, participation and achievement in CTE should not be bound by sex separation, gender stereotypes, harassment, or other barriers that prevent girls and women from succeeding. Removing these barriers can help women—including single mothers, pregnant and parenting students, and those seeking to end their reliance on public assistance—become economically self-sufficient.

women took classes in child care, cosmetology, typing, and home economics. This separation reinforced gender stereotypes and limited choice for both women and men.

Title IX made it unlawful for schools to steer students into CTE classes based on their

FIGURE 2:
Women’s Share of Middle-Skill Occupations, 2014



SOURCE: A. Hegewisch, M. Bendick Jr., B. Gault, and H. Hartmann, *Pathways to Equity: Narrowing the Wage Gap by Improving Women’s Access to Good Middle-Skill Jobs*. Institute for Women’s Policy Research (IWPR), 2016.

gender. Further, it required schools to take steps to ensure that disproportionate enrollment of students of one sex in a course was not the result of discrimination.

Despite these protections, many hurdles remain for women in CTE. These hurdles keep women from achieving their full earning potential, with implications for the nation’s economy as a whole.

BARRIERS TO EQUALITY

Barriers to equality in CTE range from a lack of role models and information on nontraditional fields to overt discrimination. Students may also face career counseling biased by gender

stereotyping, unequal treatment by teachers, and various types and degrees of sexual harassment. Although these issues disproportionately affect girls and women, they can impede boys and men as well.

Girls and women are discouraged from pursuing traditionally male training programs in ways that are both subtle—such as an instructor inadvertently allowing male students to monopolize attention—and not so subtle—such as a guidance counselor telling a student that an electronics course is “not for girls.” Those who brave the barriers to take nontraditional courses often face an unwelcoming atmosphere, and many report being harassed.⁹

Men may be similarly discouraged from taking nontraditional courses, including courses in relatively high-growth, high-wage fields such as nursing and paralegal work, as well as in lower-wage fields like child care. Title IX protects men as well as women, so discrimination in these settings is also unlawful.

For those who can overcome barriers, the benefits gained from training in nontraditional CTE areas are substantial. One recent survey found that women who completed training in a nontraditional field were significantly more likely to find employment after program completion than women who trained in other fields.¹⁰

LEADERSHIP FOR CHANGE

In the 45 years since the passage of Title IX, there has been a gradual increase in the number of women and girls in technical and other occupational programs leading to nontraditional careers. According to state-level data from OCTAE, women’s participation in secondary nontraditional CTE programs increased from close to 0% in 1972 to 27.6% nationally in 2013–2014.¹¹

Because of the lack of uniform definitions and reporting procedures, much of this gain is likely attributable to female participation in broadly defined categories such as arts, audiovisual technology, and communications; nonetheless, women have made some progress. Men have also made gains in nontraditional fields for their gender, with those preparing for teaching and nursing careers, relatively high-paying occupations, growing steadily.

The federal statute that funds CTE, the Carl D. Perkins Career and Technical Education Act of 2006 (known as the Perkins Act), requires states to set targets for performance in nontraditional enrollment and completion by gender. A handful of states have boosted female participation and completion to unprecedented levels. For 2015, eight states reported female participation in nontraditional fields of at least 40% at the secondary level, and two reported participation of 40% or more at the postsecondary level—well above the national average (Table 1).

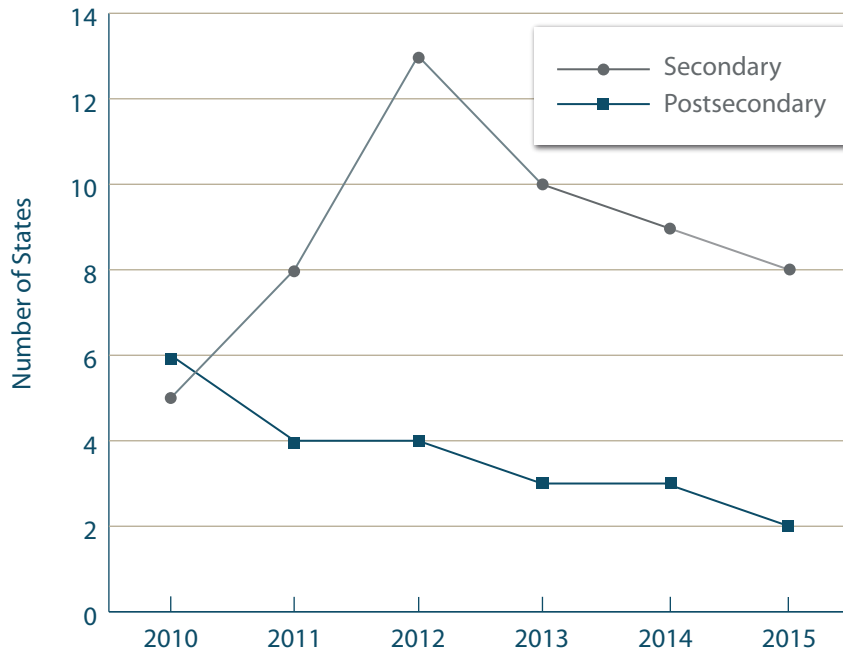
Progress at the state level has been uneven, however. Although overall national averages of

TABLE 1:
States with High Female Participation in Nontraditional Perkins-Funded CTE Programs, 2015

SECONDARY PARTICIPATION OF 40%+	POSTSECONDARY PARTICIPATION OF 40%+
California	Kansas
Utah	Alabama
Washington	
South Dakota	
Texas	
Massachusetts	
Florida	
Arizona	
National average: 34.1%	National average: 32.8%

SOURCE: IWPR and National Alliance for Partnerships in Equity (NAPE) analysis of U.S. Department of Education OCTAE data, April 2017.

FIGURE 3:
Number of States with Female Participation of 40% or More in Nontraditional CTE Programs at the Secondary or Postsecondary Level, 2010–2015



SOURCE: IWPR and NAPE analysis of U.S. Department of Education OCTAE data, April 2017.

women studying in nontraditional CTE fields increased slightly between 2010 and 2015, the number of states making strong progress has actually declined in recent years. In 2015, just 2 states had female participation of at least 40% in nontraditional CTE fields at the postsecondary level, down from 6 in 2010. At the secondary level, the number spiked from 5 states in 2010 to 13 in 2012 before declining to 8 in 2015 (Figure 3).

Despite women’s gains in nontraditional fields as a whole, the rate of female enrollment in certain career clusters remains at stubbornly low levels, with some well beneath the 25% threshold. As shown in Figure 4, women made up a quarter or less of participants in STEM programs nationally (25% at the secondary level and 23% at the postsecondary level), and much lower percentages in manufacturing (14% and 11%, respectively); architecture and construction (15% and 10%); and transporta-

tion, distribution, and logistics (9% and 8%).¹²

Experience shows that obstacles to equity in CTE can be overcome by a commitment to change from the institution’s leadership. Schools that have taken measures designed to reduce gender stereotyping and expand access across programs have had success in enrolling and retaining students in CTE focused on areas that are nontraditional for their gender.¹³ Successful measures include tracking information on program participation and outcomes, assigning staff to





monitor and coordinate activities, providing specialized professional development

for career counselors and educators, forging partnerships with employers, and introducing students to role models. (See the boxed insert near the end of this chapter for examples.)

Title IX and Equity in CTE

As with other areas covered under Title IX, federal statutes and regulations can have a major impact on gender equity in CTE. The Perkins Act, the key statute governing equity in CTE, has undergone several iterations, with accompanying shifts in requirements and funding. Other federal actions have also affected Title IX as it relates to CTE.

A HISTORY OF SHIFTING SUPPORT

Support of CTE, and specifically of women in CTE, has an uneven legislative history. In 1976, Congress amended the Vocational Education Act to require states to hire a “sex equity coordinator.” Each state received \$50,000 to support this position. In 1979, the U.S. Department of Education’s Office for Civil Rights (OCR) issued guidelines to reduce discrimination in vocational education, requiring states to collect and report data, conduct compliance reviews, and provide technical assistance.¹⁴

With passage of the Perkins Act in 1984, Congress put additional muscle behind this effort, requiring states to set aside 3.5% of their CTE funding for programs to eliminate sex bias and stereotyping. Another 8.5% was to serve individuals with significant barriers to occupational skill training, including those returning to the workforce after caring for family members, single parents, and pregnant or parenting teens. By 1997, the number of sex equity programs exceeded 1,400 across the country.¹⁵

In 1998, the reauthorization of the Perkins Act removed most of these requirements and set-asides except for a small reserve of \$60,000 to \$150,000 a year for state “leadership activities” for students preparing for nontraditional careers. The law created performance measures requiring states to increase participation in and completion of nontraditional CTE programs among both men and women, but provided no incentives or sanctions.

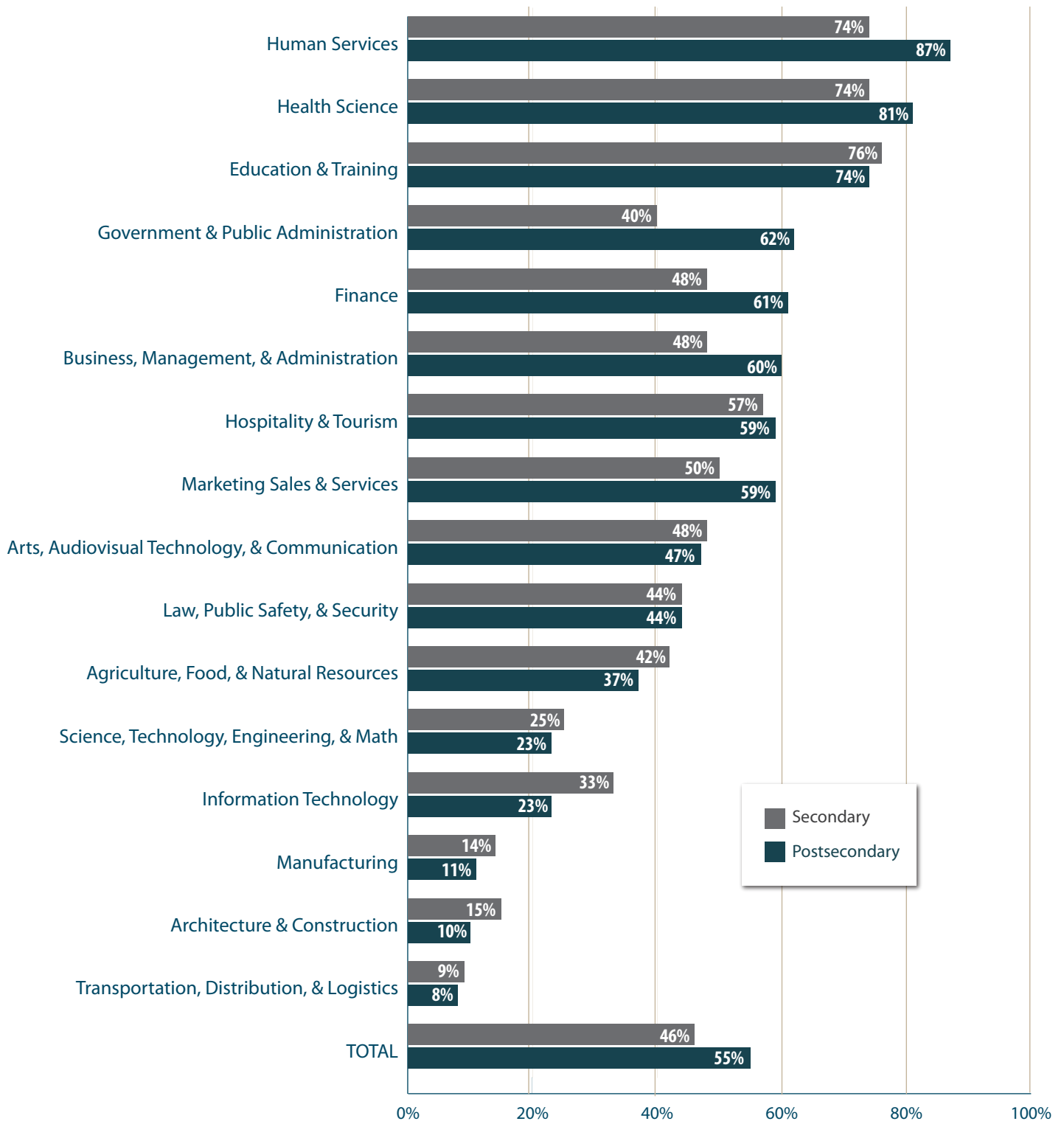
The most recent iteration of the law, adopted in 2006, continued the approach of requiring states to meet negotiated targets for placing men and women into programs leading to nontraditional occupations. This time, however, the law authorized sanctions and required performance triggers for state and local improvement plans. The legislation also retained the state set-asides for students preparing for nontraditional fields.

RECENT LEGISLATION AND GUIDANCE

Although reauthorization of the Perkins Act is still pending, additional legislation and guidance from Congress and the Department of Education have made some advances in expanding opportunity in CTE. The Perkins reauthorization offers additional opportunities for promoting equality in this important area.

The Workforce Innovation and Opportunity Act (WIOA). This legislation, which took effect in 2015, mandates greater integration between job training activities funded through WIOA and CTE activities funded through Perkins. It also mandates state plans outlining goals for

FIGURE 4:
Women’s Share of Secondary and Postsecondary Enrollment by Career Cluster, 2014–2015



SOURCE: IWPR and NAPE analysis of U.S. Department of Education OCTAE data, April 2017.

preparing an educated and skilled workforce in consultation with the state's Perkins agencies.¹⁶

WIOA highlights the critical contribution of apprenticeships in building workers' skills

and establishing pathways to good jobs.¹⁷ Apprenticeships are particularly common in the building trades but are growing in a range of other middle-skill occupations (e.g., chef, dental assistant, law enforcement agent, and truck driver, among others). Apprenticeships are valuable because they offer the opportunity to gain industry-recognized certification while earning a wage. The average starting wage of an apprentice is about \$15/hour; a worker with a completed apprenticeship can expect earnings of \$50,000 and up annually.¹⁸

Apprenticeship programs must follow affirmative action programs to ensure equal opportunity, but even so, only 7% of apprentices are women.¹⁹ Pre-apprenticeship programs, which typically receive some federal funds and thus are subject to Title IX, can play an important role in helping women enter and succeed in apprenticeship programs.²⁰

OCR guidance. In June 2016, OCTAE and OCR teamed up to release a guidance document on Title IX and CTE in the form of a "Dear Colleague" letter.²¹ The document outlines schools' obligations to prevent and remedy sex discrimination in CTE programs, including in recruitment, admissions, and counseling. It also provides information on the prohibition of sexual harassment, the rights of pregnant and parenting students, grievance procedures, and the role of the Title IX coordinator in ensuring equitable opportunity in CTE. Finally, it provides examples of Title IX violations, such as sex-based harassment of women in a male-dominated course, along with required remedies.

Perkins reauthorization. In September 2016, the House passed its version of the Perkins reauthorization legislation (titled the Strengthening Career and Technical Education for the 21st Century Act) with a vote of 405-5. The bipartisan bill incorporated most of the gender equity provisions in the current law, including the state leadership set-aside, the indicator of

RESOURCES ON TITLE IX IN CTE

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SUCCESSFUL CTE EQUITY PROGRAMS

WELDING AT ROSEBURG HIGH SCHOOL

After implementing NAPE's Program Improvement Process for Equity™ (PIPE), Roseburg High School in Oregon saw an eightfold increase in the number of young women in its welding program (from 4 to 38). Welding has high projected job growth and good earnings; it is part of the region's manufacturing workforce development priority.

Roseburg identified the causes for low female enrollment in welding by surveying some 1,300 students. Reasons given included parents' attitudes, scheduling issues, reaction from friends,

and lack of encouragement from counselors. Roseburg responded with a variety of strategies to encourage greater enrollment, including seeking buy-in from welding instructors and organizing open houses to let parents and students explore the facility and learn about career prospects. The school also had students try out all CTE programs before making their enrollment choices.

These measures helped young women feel welcome and provided a low-risk learning environment. Gains in female enrollment have persisted since these changes were made.

MANUFACTURING AT RAISE THE FLOOR

Raise the Floor at Gateway Community and Technical College in Kentucky recruits, trains, supports, and places women in manufacturing jobs. The program began in 2014 to meet projected job openings in manufacturing and to improve opportunity in women's employment.

Raise the Floor connects participants with partner organizations to provide support services, includ-

ing assistance with child care and transportation, as well as help in applying for public benefits. Participants work with a case manager and an academic counselor, and meet regularly with peers to discuss obstacles and successes.

Out of the 77 students who have completed the program, 60 are employed or in school full-time, including 33 who are employed in manufacturing.

NAPE'S STEM EQUITY PIPELINE

NAPE's STEM Equity Pipeline provides a suite of professional development offerings focused on increasing the participation and completion of women in high school and community college STEM fields and in STEM-related CTE programs. By working with state leadership teams, the project has been successful in influencing state policy, increasing resource investment, and integrating gender equity into professional development for STEM and CTE educators in 20 states.

At local pilot sites, teams of administrators, teachers, counselors, and students conduct a performance gap analysis, identify causes for gaps, and implement research-based strategies to increase women's participation in STEM programs. Examples of outcomes include an increase in female participation from 0% to 33% in pre-engineering; from 0% to 43% in design technology; from 12% to 36% in auto technology; and from 15% to 55% in advanced-level math.

CONNECTICUT REGIONAL CENTER FOR NEXT-GENERATION MANUFACTURING

With funding from the National Science Foundation, the Connecticut College of Technology (COT)—a virtual organization serving 12 community colleges—prepares students for STEM careers in high-demand fields such as lasers,

photonics, precision manufacturing, and alternative energy. The program allows high school students to receive credit for dual-enrollment programs in engineering and technology at nearby community colleges.

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SUCCESSFUL CTE EQUITY PROGRAMS (CONT.)

A concerted effort to engage women has had tangible results. For example, women make up a majority of participants in a program that pairs students with peers from four-year institutions to work on joint technology projects. COT encourages female students to mentor each other across

campuses and interact with members of women's professional associations, who participate in events and seminars. Family-friendly policies include child care provision on all campuses, as well as the ability to take classes and even some laboratories online.

BUILDING PATHWAYS BOSTON

Building Pathways is a pre-apprenticeship program in Boston that prepares participants for a career in construction. Supported by construction unions, the program was set up to reach a more diverse pool of apprentices. Through outreach and support, Building Pathways has succeeded in this goal; half of the program's participants are women and more than 90% are people of color.

The 6-week program gives participants basic knowledge about apprenticeship in the build-

ing trades, including the tools and math skills required. A partnership with the Boston Build Trades Council ensures that graduates are connected with the building trades apprenticeship network.

The program also has close partnerships with the Policy Group on Tradeswomen's Issues and local contractors and employers. Working together, they have increased the number of women apprentices in Boston by 260% in just four years.

participation in nontraditional programs, and improvement plan requirements. It also added provisions for conducting a gap analysis of students by gender, race, and special population status to guide state and local planning. The bill eliminated sanctions but increased the rigor of the improvement planning process.

Because the Senate did not complete its own reauthorization proposal in the 114th Congress, the reauthorization process restarted in the 115th Congress. In May 2017 the House again introduced reauthorization legislation, which the Education and Workforce Commit-

tee passed.²² As of this report's release, no further action had been taken.

FUTURE PROGRESS

With a large population of students pursuing CTE, legislation protecting equal access to nontraditional and high-wage fields is critical for advancing economic opportunity among both women and men. In particular, ensuring equity in CTE programs in high-growth technical, health, and other fields will help expand the professional workforce, increasing the nation's overall productivity and competitiveness.

NCWGE Recommendations

- Institutions offering CTE programs should make a concerted effort to reduce gender inequities by training career counselors and educators in their Title IX responsibilities, establishing inclusive outreach efforts, partnering with employers to create a school-to-work pipeline, and introducing role models that counter gender stereotypes.
- Local, state, and federal decision making must include gender equity in CTE as a quality standard before investing in the

development, improvement, or expansion of CTE programs.

- Schools, municipalities, and states should track data on program participation and outcomes in order to identify and address performance gaps. To target improvements that will have the most economic impact, gender-specific data should be cross-tabulated with other demographic characteristics, including race, socioeconomic status, disability, and parental status.
- Apprenticeship and pre-apprenticeship programs in construction and other fields with high projected skill shortages should strive to attract and retain women by target-

ing recruitment efforts, training, and support systems to their needs.

- New legislation should continue to include accountability measures and improvement plans, and should reinstate sanctions, to hold states and municipalities accountable for increasing women's completion of CTE programs that prepare them for high-wage careers.
- Congress should legislate requirements for leadership and investments at the state and local levels to implement research-based strategies for increasing female participation and achievement in nontraditional CTE programs.

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Career & Technical Education: A Path to Economic Growth is part of a larger report, *Title IX at 45: Advancing Opportunity through Equity in Education*. Washington, DC: National Coalition for Women and Girls in Education, 2017. See www.ncwge.org.