

FUTURE OF WORK

Consumer Technology
Association (CTA)[®]
2019 Annual Survey



Consumer
Technology
Association[™]

FUTURE OF WORK

CTA 2019 Survey

EXECUTIVE SUMMARY

For the third year, CTA surveyed tech industry leaders on current and future workforce issues. The survey was completed by 252 business leaders who identify as part of CTA membership. The results continue to show that tech companies, both large and small, need more employees with technical skills and need to adapt to challenges in finding and retaining qualified people over the next five years.



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CTA 2019 Survey



EASE OF FINDING SKILLED CANDIDATES

Four in five respondents (**80%**) say it is difficult to find candidates with the right skills and abilities. Consistent with results from 2018, most respondents believe software development (**63%**), data analytics (**54%**), engineering (**52%**), and AI/machine learning (**48%**) are the tech skills in highest demand at their company.



RECRUITING EFFORTS

Employee referral (**73%**) is the most used strategy to recruit new talent, no matter the company's size. Rounding out the top three tools and strategies to recruit new talent are online job portals (**67%**) and advertising on social media (**62%**).



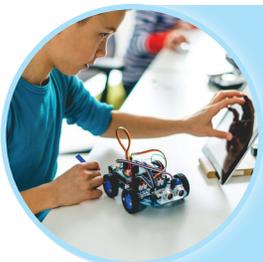
TRAINING AND DEVELOPMENT PROGRAMS

To prepare new employees and retain experienced workers, most respondents (**87%**) say their company offers some form of training and professional development program. One quarter (**24%**) of businesses with fewer than 10 employees report their business does not have any training or professional development program.



DISPLACED / CURRENT WORKERS

More than half of respondents (**57%**) do not anticipate their company will displace workers due to technological advances in the next five years. Of the **29%** of respondents that do anticipate displacement at their company, more than two-thirds (**68%**) plan to reskill and retain the workers.



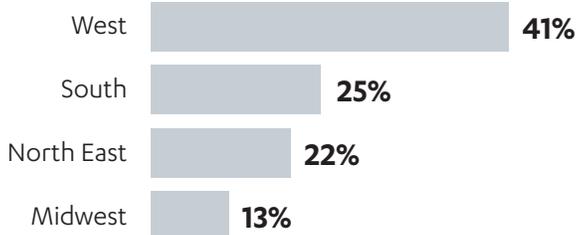
STEM / K-12: FILLING THE PIPELINE

On average, **63%** of respondents say their company does not actively offer, sponsor or otherwise directly support STEM learning opportunities in educational institutions consisting of grades K-12, high school academies or vocational/Career and Technological Education (CTE) schools.

LOCATION

Forty-one percent of respondents completing a portion of the survey represent companies from the western region of the United States. Slightly over half (51%) of respondents primarily work in urban areas. Thirty percent of respondents represent companies with fewer than 10 full-time workers employed in the U.S.

Q. Where in the U.S. is your company located? [Recoded to Census Regions] (n=252)



*Does not sum to 100% due to rounding.

Q. Which of the following best describes the area you primarily work from? (n=249)



COMPANY SIZE

One in three survey respondents represent companies with fewer than 10 full-time workers (30%) and 10 to 100 full-time workers (30%).

Q. Please indicate approximately how many full-time workers your company employs in the U.S. (n=247)

	% of Respondents
Fewer than 10 [NET]	30
Fewer than 5	21
5 to 9	9
10 to 100	30
101 to 500	10
501 to 1,000	6
More than 1,000	21
Don't know/Refused	2

JOB SKILLS REQUIREMENTS

The majority of respondents agree they “will need more employees with technical skills” (86%), “will conduct more job interviews remotely” (63%), and “will hire more employees to work onsite” (57%) within the next five years. Almost half of respondents (49%) report their company will “hire more employees to work remotely” in the next five years, down 15 points from 2018.

Q. What is your level of agreement with the below statements pertaining to future job skills requirements at your business within the next five years? (n=220-221 [varies])

	Strongly Agree & Agree [% NET]	Point Difference from 2018*
We will need more employees with technical skills.	86	-6
We will conduct more job interviews remotely (e.g., video-chat or phone conference).	63	-3
We will hire more employees to work onsite.	57	-6
We will automate certain job functions to remain competitive.	52	-8
We will hire more employees to work remotely.	49	-15
We will hire more part-time or contract workers.	46	-4
We will shift more work outside the U.S. if we can't hire the employees we need here.	27	-11
We will seek to hire more foreign-born workers who have higher technical job skills.	26	-1
Our full-time workforce will be smaller.	22	+1
We will hire more employees who live in rural areas.	21	-2

*Differences calculated using unrounded estimates (+/- 1 pt.).

AUTOMATED JOB FUNCTIONS

Only 8% of respondents say no job functions will be automated in the next five years, with six in ten (59%) saying most or some will be automated. This is especially true among respondents representing companies with more than 1,000 full-time employees (74%).

Of the types of jobs listed, half (50%) of respondents anticipate warehouse operations and customer support will be automated in the next five years.

Q. How much will job functions at your business become automated in the next five years? (n=219)

	Overall (%)	Point Difference from 2018*	By Number of Employees (%)				
			Fewer than 10	10 to 100	101 to 1,000	More than 1,000	Don't know/Refused
ANY [NET]	91	+3	88	90	92	96	100
MOST/SOME [SUBNET]	59	-1	56	53	53	74	100
Most	5	0	5	6	3	4	0
Some	54	-1	52	47	50	70	100
Very few	32	+4	31	37	39	21	0
No functions will be automated	8	-2	11	10	8	0	0
Don't know/Refused	1	-1	2	0	0	4	0

*Differences calculated using unrounded estimates (+/- 1 pt.).





What types of jobs, if any, do you anticipate being automated in the next five years? Select all that apply. (n=210)

	% of Respondents	Point Difference from 2018*
Warehouse operations	50	+8
Customer support	50	+14
Manufacturing	46	+9
Customer Relationship Management (CRM)	42	+1
Back office operations	40	-13
Ordering fast food	37	--
Accounting/Finance	36	+2
Human resources (e.g., vetting candidates and resumes)	34	+11
Operating machinery	32	0
Transportation services (e.g., truck driving, food delivery)	31	--
Marketing/Sales	22	--
Preparing fast food	21	+6
Mortgage origination	20	+7
Paralegal work	18	+7
Other (specify)	6	-5
None of the above	5	+1

Items marked with "--" indicate this answer choice was not provided as an option in 2018.

*Differences calculated using unrounded estimates (+/- 1 pt.).

EASE OF FINDING SKILLED CANDIDATES

Four in five respondents (80%) say it is difficult to find candidates with the right skills and abilities today and 50% say it will become more difficult to fill positions with qualified candidates in the next five years. The majority of companies with 101 to 1,000 employees (64%) and more than 1,000 employees (65%) say it will become more difficult to find qualified candidates to fill positions.

Of the tech skills listed, most respondents believe software development (63%), data analytics (54%), engineering (52%), and AI/machine learning (48%) are in highest demand at their company. These top skills are consistent with results from 2018.



Thinking about your current business requirements, finding candidates with the right skills and abilities today is: (n=211)

	% of Respondents	Point Difference from 2018*
EASY [NET]	4	-5
Easy	1	-1
Somewhat easy	3	-5
Neither easy nor difficult	16	0
DIFFICULT [NET]	80	+6
Somewhat difficult	42	+3
Difficult	37	+2
Don't know/Refused	1	-1

*Differences calculated using unrounded estimates (+/- 1 pt.).



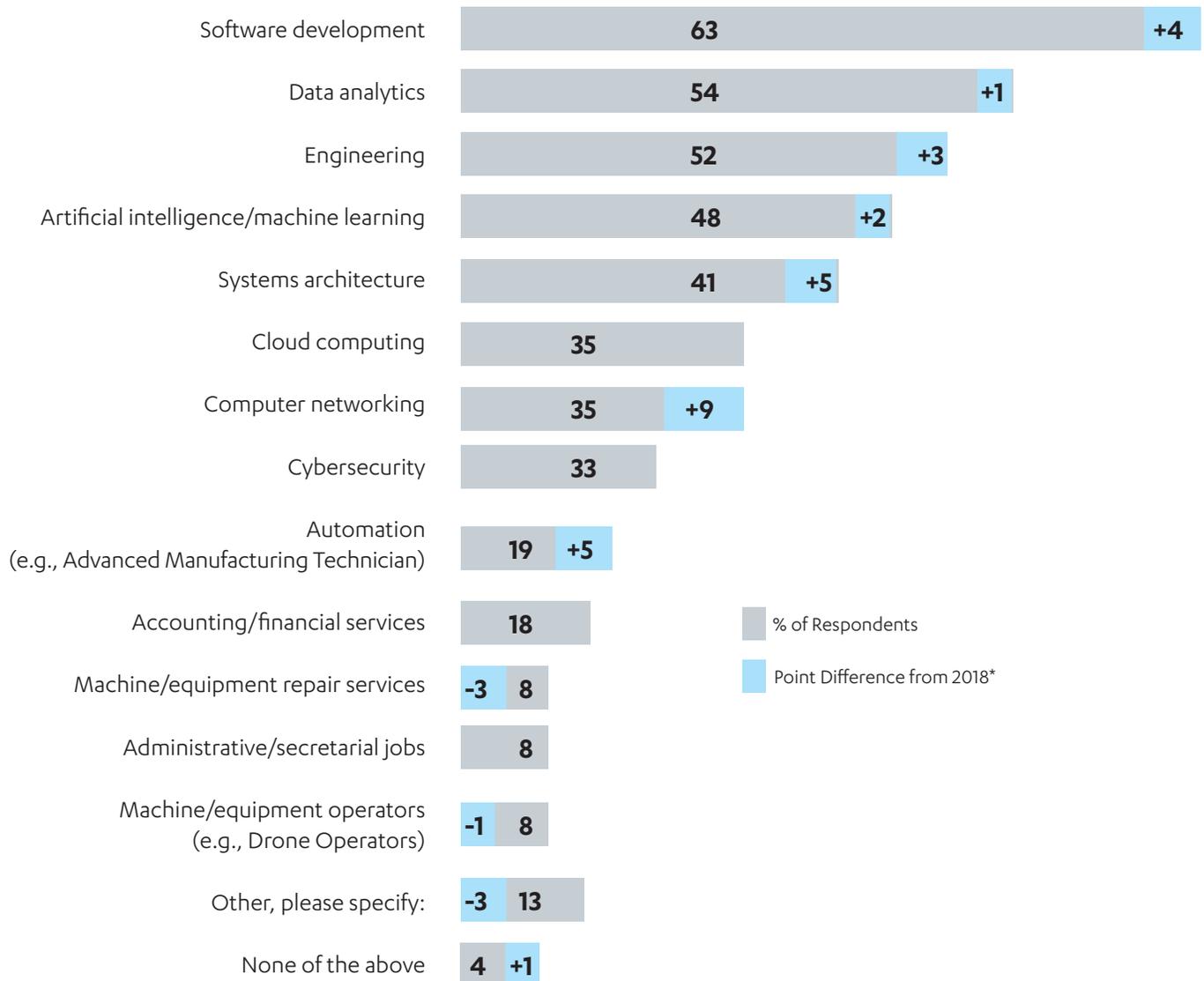
How do you expect finding qualified candidates to fill positions at your company will change in the next five years? (n=211)

	% of Respondents	Point Difference from 2018*	By Number of Employees (%)				
			Fewer than 10	10 to 100	101 to 1,000	More than 1,000	Don't know/Refused
It will become easier	8	+1	16	6	0	4	0
Stay the same	37	+10	47	42	31	26	0
It will become more difficult	50	-9	29	51	64	65	100
Don't know/Refused	5	-1	8	2	6	4	0

*Differences calculated using unrounded estimates (+/- 1 pt.).



What tech skills, if any, do you believe are in high demand at your company? Select all that apply. (n=210)



*Differences calculated using unrounded estimates (+/- 1 pt.).

RECRUITMENT EFFORTS

Employee referral (73%) is the most-used tool and strategy to recruit new talent, no matter the company's size. (See Appendix A). Rounding out the top three tools and strategies are online job portals (67%) and advertising on social media (62%). Other mentions include internships, use of outside recruiters, and working with professional associations. Compared to 2018, results show companies using a greater variety of resources to find employees.

Q. What hiring practices are you using to find qualified candidates? Select all that apply. (n=211)

	% of Respondents	Point Difference from 2018*
Employee referrals	73	--
Using online job portals (e.g., Indeed, Zip Recruiter, Monster.com)	67	+13
Advertising on social media (e.g., LinkedIn)	62	+6
Internships	56	-2
Outside recruiter (e.g., headhunter/employment agency)	49	--
Working with professional associations	37	+2
Participating in job fairs	33	+5
On campus recruiting with universities	30	-4
Working with vocational schools/Career and Technical Education schools	22	+7
Hiring more veterans	21	+3
Apprenticeships	21	-1
On campus recruiting with community colleges	20	--
Train-to-Hire programs	20	0
Sponsor STEM learning opportunities in K-12 years	18	+1
Co-create curriculum with four-year universities	11	0
Co-create curriculum with technical schools	8	-1
Co-create curriculum with community colleges	6	-3
Working with labor unions	4	+3
Other, please specify:	4	-7
None of the above	1	-4

Items marked with "--" indicate this answer choice was not provided as an option in 2018.

*Differences calculated using unrounded estimates (+/- 1 pt.).

NON-SALARY BENEFIT IMPORTANCE

Traditional non-salary benefits such as health insurance (91%), incentive compensation or bonuses (89%), paid time off (88%), and flexible work arrangements (85%) are the most important benefits in retaining employees in the next five years. These top results are consistent with 2018 findings.

Q. How important will each of the following non-salary benefits be in retaining employees at your company in the next five years? (n=199-200 [varies])

	Very Important + Important [%NET]	Point Difference from 2018*
Health insurance (e.g., dental, vision)	91	0
Incentive compensation (bonuses)	89	+1
Paid time off (PTO) (e.g., vacation time, sick leave)	88	+1
Flexible work arrangements (e.g., scheduling, working remotely)	85	-1
Retirement plans (e.g., 401k)	76	-2
Professional development programs to hone soft skills	66	-9
Technical and high-skills training (e.g., IT certifications)	63	-17
Stock options	51	+6
Tuition reimbursement	39	-5
Transportation subsidies	28	-1
Charitable gift matching and CSR	22	+2

*Differences calculated using unrounded estimates (+/- 1 pt.).

88% of respondents indicate their company offers perks or out of the box benefits to employees.



OFFERED PERKS / OUT OF THE BOX BENEFITS

Most respondents (88%) indicate their company offers perks or out of the box benefits to employees, with planned recreational/social activities (47%), open concept/collaborative workspaces (44%), and access to wellness programs (44%) being the most prevalent.

Q. Which, if any, of the following “perks” or “out of the box” benefits does your company currently offer to employees? Select all that apply. (n=199)

	% of Respondents*
ANY [NET]	88
Planned recreational/social activities	47
Open concept/collaborative workspace	44
Access to wellness programs (e.g., gym membership, weight management programs)	44
Free food and drinks	42
Designated tele-working/work from home day(s)	38
Flexible/unlimited vacation policy	33
Pet-friendly office	31
Volunteer time off	25
Meditation rooms/“green” spaces	14
Access to backup childcare	7
Other, please specify:	5
None of the above	12

*New question in 2019 survey



TRAINING AND DEVELOPMENT PROGRAMS

To prepare new employees and retain experienced workers, most respondents (87%) say their company offers some form of training and professional development program, with opportunities to attend conferences and events (63%) and internal training classes (55%) as the most common types.

Q. What types of training and professional development programs does your company currently offer to prepare new employees and retain experienced workers? Select all that apply. (n=200)

	% of Respondents	Point Difference from 2018*
ANY [NET]	87	-2
Conferences and events	63	-6
Internal training classes	55	-3
External training classes	39	-5
Mentor programs	39	-7
Executive coaching	36	-4
Certification programs	34	-1
Tuition reimbursement for higher education	27	-2
Working with vocational, Career and Technical Education and trade schools	10	-1
Other, please specify:	2	-1
None of the above	12	2
Don't know/Refused	2	0

*Differences calculated using unrounded estimates (+/- 1 pt.).

Q. Please tell us more about the external training classes that your company offers to prepare new employees and retain experienced workers. (n=38)

Q. Please tell us more about the certification programs that your company offers to prepare new employees and retain experienced workers. (n=33)

Of the 39% who said their company offers external training classes, respondents commonly mentioned that the external classes are job-specific and have subject matter geared for management and technical skills. These trainings may consist of online courses or industry conferences and are often industry sponsored or affiliated.

Of the 34% who said their company offers certification programs, respondents commonly mentioned that the certification programs are job-specific and costs are often reimbursable by the employer.

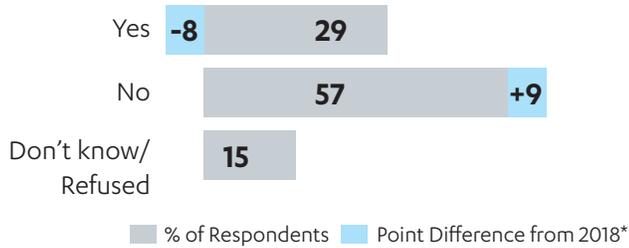
Twenty-four percent of businesses with fewer than 10 employees report their business does not have any training or professional development programs. (See Appendix B).

DISPLACED / CURRENT WORKERS

More than half of respondents (57%) do not anticipate that their company will displace workers due to technological advances in the next five years.

Of the 29% that responded 'yes', over two-thirds (68%) mentioned their company reskills and retains workers when they are displaced or have lost jobs due to advancements in technology – a 16-point increase over 2018 results.

Q. Do you anticipate that your company will displace workers due to technological advances such as computer software applications, artificial intelligence, and/or robotics in the next five years? (n=199)



*Differences calculated using unrounded estimates (+/- 1 pt.).

Q. What actions, if any, does your company currently take when workers are displaced or have lost jobs due to advancements in technology? Select all that apply. (n=57)

	% of 'Yes' Respondents	Point Difference from 2018*
Reskill and retain workers at the company	68	+16
Offer severance package (e.g., lump-sum settlement, monthly payments, etc.)	49	+2
Offer external job placement services	37	+6
Other (specify)	2	-2
None of the above	7	-9

*Differences calculated using unrounded estimates (+/- 1 pt.).

+16 increase in reskilling workers



STEM / K-12: FILLING THE PIPELINE

On average, 63% of respondents say their company does not actively offer, sponsor or otherwise directly support STEM learning opportunities in educational institutions consisting of grades K-12, high school academies or vocational/Career and Technical Education (CTE) schools. Among respondents that do directly support STEM learning opportunities, 23% say their company does so in vocational and CTE schools.

Q. Does your company actively offer, sponsor or otherwise directly support STEM learning opportunities for students in... Select ONE for each. (n=183-186 [varies])

	% of Respondents		
	Yes	No	Don't know/Refused
Vocational/Career and Technical Education Schools	23	56	22
Grades 9-12	21	60	19
High School Academies	16	62	23
Grades 6-8	13	67	20
Grades 3-5	10	69	21
Grades K-2	9	69	23
AVERAGE*	15	63	21

*Does not sum to 100% due to rounding.

23% of respondents who directly support STEM learning opportunities say their company does so in vocational and CTE schools.



INCOMING WORKERS & NEW HIRES

On average, most respondents (57%) say their company does not collaborate with universities, K-12 education systems, community colleges or vocational schools regarding STEM learning in the curricula or informing educators about the specific tech skills needed in the workplace. However, slightly over one-third of respondents (36%) say their company works with four-year universities to inform educators about the specific tech skills needed in the workplace.

Companies with over 1,000 employees report being most collaborative with the listed educational institutions (See Appendix C).

Q. Does your company collaborate with...Select ONE for each. (n=187-190 [varies])

	% of Respondents			Point Difference from 2018*		
	Yes	No	Don't know/ Refused	Yes	No	Don't know/ Refused
Four-year universities to inform educators about the specific tech skills needed in the workplace	36	47	17	-2	+1	+3
Community colleges to inform educators about the specific tech skills needed in the workplace	24	57	19	-1	0	0
K-12 education systems to incorporate STEM learning in the curricula	19	61	20	-6	+1	+5
Vocational schools to inform educators about the specific tech skills needed in the workplace	18	62	20	-1	0	+1
High school academies to inform educators about the specific tech skills needed in the workplace	17	60	23	--	--	--
AVERAGE	23	57	20	-4	0	+3

Items marked with "--" indicate this answer choice was not provided as an option in 2018.

*Differences calculated using unrounded estimates (+/- 1 pt.).

36% of respondents said their company works with four-year universities to inform educators about the specific tech skills needed in the workplace.



WORKFORCE / HIRING CHALLENGES

Q. What workforce or hiring challenges, if any, do you believe your company may face within the next five years? (Please be as specific and detailed as possible.) (n=109)

Over the next five years, respondents mention that it will be difficult to find and retain qualified and experienced contributors who are loyal to a company and who are willing to grow with a company. The need to “adapt the work environment” and “retain a mix of boomer and millennial workers” are cited as growing challenges. More, respondents point out a growing demand for “multi-knowledge” professionals who “combine technical aptitude with soft-skills, such as a good personality and attitude.” Finally, competitive salary requirements and high expectations, especially among young professionals and those who earned advanced degrees, is mentioned as a potential challenge for employers over the next five years. Respondents report a discrepancy between the incoming workforce, who has relied on degree-based programs to advance their careers, and employers, who don’t always view education as a substitute for valuable on-the-job experience in certain roles.



STAFF DEDICATED TO WORKFORCE

Forty-five percent of respondents indicate that their company has dedicated staff in talent acquisition. On the other hand, 44% of respondents indicate that their company does not have any dedicated staff responsible to identify, hire and retain high skilled workers. Almost two-thirds of companies with fewer than 10 employees (60%) and 10-100 employees (64%) do not have staff dedicated to hiring and retaining workers.

Q. In which of the following areas, if any, does your company have dedicated staff person(s) responsible to help identify, hire and retain high skilled workers? Select all that apply. (n=196)

	% of Respondents	Point Difference from 2018*	By Number of Employees (%)				
			Fewer than 10	10 to 100	101 to 1,000	More than 1,000	Don't know/Refused
Talent acquisition	45	-1	18	24	79	92	50
Workforce development	30	+6	15	10	39	78	50
Upskilling current workers	27	+6	22	12	27	58	50
Veteran hiring	16	+8	9	7	18	42	0
Other, please specify:	4	0	4	5	3	3	0
None of the above	44	+4	60	64	21	6	50

*Differences calculated using unrounded estimates (+/- 1 pt.).

EMERGING CORPORATE LEADERSHIP

Fifty-two percent of respondents report they have an emerging corporate leadership team dedicated to one or more of these areas. (n=185)

- innovation
- diversity and inclusion
- workforce development
- data privacy
- education
- future of work



METHODOLOGY

An online survey was administered by CTA from April 9, 2019 through May 13, 2019. The survey was sent to 4,773 members identified as part of CTA's 21st Century Workforce Council, Board of Industry Leaders, Division Executive Board, C-suite members, Apprenticeship Coalition, and HR Contacts provided by the U.S. Jobs team. Representing the U.S.-based companies they work for, a total of 252 respondents completed at least a portion of the survey, resulting in a response rate of 5.3%. The estimated margin of error is 4%.

APPENDIX A

RECRUITMENT EFFORTS BY COMPANY SIZE

Overall, companies with more than 1,000 full-time workers are significantly more likely to find qualified candidates via a variety of means, such as internships, recruiters and job fairs, than companies with fewer full-time workers.

Q. What hiring practices are you using to find qualified candidates? Select all that apply. (n=211)

	% of Respondents	Point Difference from 2018*	By Number of Employees (%)				
			Fewer than 10	10 to 100	101 to 1,000	More than 1,000	Don't know/Refused
Employee referrals	73	--	58	69	86	87	100
Using online job portals (e.g., Indeed, Zip Recruiter, Monster.com)	67	+13	53	69	83	72	50
Advertising on social media (e.g., LinkedIn)	62	+6	50	60	67	76	50
Internships	56	-2	37	55	53	85	0
Outside recruiter (e.g., headhunter/employment agency)	49	--	15	58	64	72	0
Working with professional associations	37	+2	27	28	44	54	50
Participating in job fairs	33	+5	13	17	50	70	0
On campus recruiting with universities	30	-4	19	15	36	63	0
Working with vocational schools/ Career and Technical Education schools	22	+7	16	17	17	41	0
Hiring more veterans	21	+3	16	8	22	48	0
Apprenticeships	21	-1	21	11	11	41	50
On campus recruiting with community colleges	20	--	13	9	25	43	0
Train-to-Hire programs	20	0	16	22	11	30	0
Sponsor STEM learning opportunities in K-12 years	18	+1	6	8	11	54	0
Co-create curriculum with four-year universities	11	0	3	6	3	35	0
Co-create curriculum with technical schools	8	-1	5	5	0	24	0
Co-create curriculum with community colleges	6	-3	5	3	0	17	0
Working with labor unions	4	+3	0	0	6	15	0
Other, please specify:	4	-7	8	0	3	7	0
None of the above	1	-4	2	0	0	0	0

Items marked with "--" indicate this answer choice was not provided as an option in 2018.

*Differences calculated using unrounded estimates (+/- 1 pt.).

APPENDIX B

TRAINING & DEVELOPMENT PROGRAMS BY COMPANY SIZE

Overall, companies with 10 or more full-time workers are significantly more likely to offer professional development programs to prepare new employees and retain experienced workers.

Q. What types of training and professional development programs does your company currently offer to prepare new employees and retain experienced workers? Select all that apply. (n=200)

	% of Respondents	Point Difference from 2018*	By Number of Employees (%)				Don't know/Refused
			Fewer than 10	10 to 100	101 to 1,000	More than 1,000	
ANY [NET]	87	-2	72	89	97	95	50
Conferences and events	63	-6	50	70	71	63	50
Internal training classes	55	-3	34	45	69	88	50
External training classes	39	-5	22	42	37	59	50
Mentor programs	39	-7	36	31	23	68	0
Executive coaching	36	-4	28	25	43	61	0
Certification programs	34	-1	19	27	37	63	0
Tuition reimbursement for higher education	27	-2	0	14	43	71	0
Working with vocational, Career and Technical Education and trade schools	10	-1	2	3	9	32	0
Other, please specify:	2	-1	2	2	0	2	0
None of the above	12	2	24	9	3	2	50
Don't know/Refused	2	0	3	2	0	2	0

*Differences calculated using unrounded estimates (+/- 1 pt.).

APPENDIX C

INCOMING WORKERS & NEW HIRES BY COMPANY SIZE

Companies with over 1,000 employees report being most collaborative with universities, K-12 education systems, community colleges or vocational schools regarding STEM learning in the curricula or informing educators about the specific tech skills needed in the workplace.

Q. Does your company collaborate with...Select ONE for each.

	'Yes' Responses by Number of Employees (%)				Don't know/ Refused
	Fewer than 10	10 to 100	101 to 1,000	More than 1,000	
Four-year universities to inform educators about the specific tech skills needed in the workplace (n=36)	26	34	27	60	0
Community colleges to inform educators about the specific tech skills needed in the workplace (n=32)	20	26	9	38	0
K-12 education systems to incorporate STEM learning in the curricula (n=34)	11	13	3	53	0
Vocational schools to inform educators about the specific tech skills needed in the workplace (n=45)	11	17	3	43	0
High school academies to inform educators about the specific tech skills needed in the workplace (n=68)	8	15	6	43	0
AVERAGE	15	21	10	47	0

Consumer Technology Association™

ABOUT CONSUMER TECHNOLOGY ASSOCIATION:

As North America's largest technology trade association, CTA® is the tech sector. Our members are the world's leading innovators – from startups to global brands – helping support more than 18 million American jobs. CTA owns and produces CES® – the largest, most influential tech event on the planet. Find us at CTA.tech. Follow us @CTAtech.

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**Consumer Technology
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