

TABLE 131

Impact of producing specialized software or goods or services with specialized software on skill level of workforce, by industry: 2016–18

(Number and percent)

Industry	NAICS code	Companies (number)	Number of workers			Skill level of workers			STEM skills of workers												
			Increased	Decreased	Did not change	Increased	Decreased	Did not change	Increased	Decreased	Did not change	Did not employ									
All industries	11, 21–23, 31–33, 42–81	185,211	14.7	3.0	82.3	29.8	1.3	68.9	23.0	0.7	45.2	31.0									
Manufacturing industries	31–33	9,294	16.2	5.8	78.0	31.5	1.9	66.6	30.4	0.8	50.3	18.5									
Food	311	297	8.1	r	D	79.5	16.5	14.5	r	69.0	8.8	r	D	31.6	48.1						
Beverage and tobacco products	312	60	16.7		D	78.3	21.7	D		73.3	16.7		D	70.0	10.0						
Textile, apparel, and leather products	313–16	198	7.1	r	D	85.9	16.7	D		79.8	10.6	r	0.0	42.4	47.0						
Wood products	321	239	18.3		26.7	r	55.0	r	23.8	D	74.5	13.0	r	D	69.5	16.3					
Paper	322	35	D		D		51.4	r	56.8	r	0.0	43.2	r	62.9	r	0.0	25.7	r	D		
Printing and related support activities	323	997	11.6	r	3.8		84.6		24.1	1.0	r	74.9		20.7		0.7	r	41.7	36.9		
Petroleum and coal products	324	D	0.0		0.0		D		D	0.0		D		D		0.0		0.0	D		
Chemicals	325	187	5.9		D		84.5		18.9	0.0		81.1		17.1		0.0		63.6	19.3		
Pesticide, fertilizer, and other agricultural chemical manufacturing	3253	D	0.0		0.0		D		0.0	0.0		D		0.0		0.0		D	0.0		
Pharmaceuticals and medicines	3254	46	10.9		D		87.0		33.3	r	0.0	66.7		45.7	r	0.0		50.0	r	D	
Soap, cleaning compound, and toilet preparation manufacturing	3256	31	D		0.0		90.3		16.6	r	0.0	83.4		17.2	r	0.0		48.3	34.5	r	
Other chemicals	other 325	108	D		D		81.5		14.0	r	0.0	86.0		6.6		0.0		72.6	20.8	r	
Plastics and rubber products	326	290	11.6	r	5.2		83.2		12.1		D	85.5		10.0	r	D		63.1	24.1	r	
Nonmetallic mineral products	327	79	26.6		D		70.9		16.5	r	D	74.7		15.0	r	0.0		58.7	26.3	r	
Primary metals	331	80	r	D		D		93.8		11.2	r	0.0		88.8		15.0	r	0.0	80.0	D	
Fabricated metal products	332	1,482	19.6		9.6	r	70.7		39.4		4.4	r	56.2		40.4		D	39.2	20.1		
Machinery	333	1,631	22.3		2.1	r	75.6		35.9		0.0	64.1		37.3		0.0		52.8	9.9		
Computer and electronic products	334	1,603	16.1		4.1	r	79.8		30.1		1.2	r	68.7		32.5		D	60.1	7.2		
Communications equipment	3342	229	13.6		0.0		86.4		20.2		0.0	79.8		26.4		0.0		71.3	2.2	r	
Semiconductor and other electronic components	3344	265	12.5	r	13.2	r	74.2		27.5		D	66.8		17.4		0.0		69.0	13.6	r	
Navigational, measuring, electromedical, and control instruments	3345	889	18.6		3.0	r	78.4		33.5		D	65.9		39.4		D		54.1	6.2		
Other computer and electronic products	other 334	220	13.6		D		84.5		30.9		D	69.1		29.0		0.0		62.0	9.1	r	
Electrical equipment, appliances, and components	335	382	30.8		0.0		69.2		44.4		0.0	55.6		49.2		0.0		46.6	4.2		
Transportation equipment	336	359	8.4		1.9	r	89.7		30.1		D	69.1		22.0		D		53.2	r	24.2	r
Automobiles, bodies, trailers, and parts	3361–63	280	6.1		2.5	r	91.5		28.6		D	70.0		19.6	r	D		51.4	r	27.5	r
Aerospace products and parts	3364	59	23.3	r	0.0		76.7		36.7	r	0.0	63.3	r	32.2	r	0.0		64.4	r	D	
Other transportation	other 336	21	0.0		0.0		100.0		D		0.0	81.0	r	D		0.0		42.9	r	D	
Furniture and related products	337	355	25.6	r	6.8	r	67.6		42.6		0.0	57.4		40.6		0.0		34.9	24.5		

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Miscellaneous	339	1,003	7.8	5.9	r	86.3	33.7	D	66.1	29.2	0.0	54.7	16.1	r				
Medical equipment and supplies	3391	466	5.6	12.9	r	81.5	53.6	D	45.7	52.7	0.0	36.4	10.9	r				
Other miscellaneous manufacturing	3399	536	9.5	r	D	90.1	16.2	r	D	83.8	8.6	r	0.0	70.7	20.7	r		
Nonmanufacturing industries	11, 21–23, 42–81	175,917	14.6	2.9		82.5	29.7	1.2	69.1	22.7	0.7	44.9	31.7					
Agriculture, forestry, fishing, and hunting	11	163	r	D		100.0	D	0.0	100.0	D	0.0	D	73.0					
Mining, extraction, and support activities	21	279		1.8	0.0	98.2	36.6	r	0.0	63.4	r	17.5	r	0.0	56.8	25.7	r	
Utilities	22	43		13.7	0.0	86.3	51.2		0.0	48.8		46.5		0.0	46.5	D		
Construction	23	9,371		18.1	2.8	79.1	29.4		2.1	r	68.5	18.5		D	51.6	28.9		
Wholesale trade	42	11,153		9.9	3.0	87.1	26.4		1.0	r	72.6	19.7		D	52.2	27.6		
Retail trade	44–45	13,364		11.9	3.0	85.1	24.3		2.3		73.4	16.3		1.2	r	43.2	39.3	
Transportation and warehousing	48–49	2,373		19.8	6.5	73.7	25.1		1.3		73.6	12.4		0.0		39.7	47.9	
Information	51	9,206		22.2	3.8	74.0	36.4		0.7		62.9	33.3		0.5		49.9	16.2	
Publishing	511	4,068		23.5	3.4	73.1	34.7		0.7	r	64.6	33.9		0.3	r	55.8	10.0	
Newspaper, periodical, book, and directory publishers	5111	321		8.4	r	20.0	r	71.6	20.2		D	79.8	13.7		0.0		49.5	36.8
Software publishers	5112	3,746		24.8	2.0	73.2	36.0		0.7		63.3	35.6		0.4	r	56.3	7.7	
Telecommunications	517	740		15.5	r	4.5	r	80.0	35.1		D	64.5	30.9		D	39.2	29.2	
Data processing, hosting, and related services	518	2,958		23.4	3.2	73.4	39.5		D		60.0	34.2		D		48.9	16.3	
Other information	other 51	1,441		19.8	6.0	r	74.2	35.6		1.6	r	62.8	30.8		D		41.2	27.1
Finance and insurance	52	9,632		17.3	2.6	80.1	28.0		0.0		72.0	20.0		0.0		40.0	40.0	
Real estate and rental and leasing	53	6,609		9.1	2.0	r	88.9	20.1		D		79.7	9.2		D		40.2	50.4
Lessors of nonfinancial intangible assets (except copyrighted works)	533	113	r	100.0	0.0		D	D		0.0		D	D		0.0		D	D
Other real estate and rental and leasing	other 53	6,495		7.5	2.0	r	90.5	19.6		D		80.3	9.3		D		40.1	50.4
Professional, scientific, and technical services	54	66,529		15.0	2.4	82.6	33.2		0.6		66.2	28.6		0.2		48.8	22.3	
Legal services	5411	4,486		8.4	4.2	87.4	25.0		1.9	r	73.1	12.8		D		27.6	59.6	
Accounting, tax preparation, bookkeeping, and payroll services	5412	9,085		10.9	2.1	87.0	22.3		D		77.6	15.5		0.0		51.0	33.5	
Architectural, engineering, and related services	5413	8,588		13.4	1.5	85.1	32.5		0.6	r	66.9	30.7		0.5	r	58.9	9.9	
Specialized design services	5414	1,196		8.1	r	D	87.7	24.9		0.0		75.1	14.9		0.0		43.9	41.1
Computer systems design and related services	5415	30,073		16.2	1.9	81.9	35.7		0.3		64.0	32.6		0.1	r	51.7	15.6	
Management, scientific, and technical consulting services	5416	8,304		19.1	3.5	77.4	41.3		1.5	r	57.2	34.8		D		42.9	21.4	
Scientific research and development services	5417	979		23.4	1.7	r	74.9	42.4		0.0		57.6	48.9		0.0		43.2	8.0
Advertising, public relations, and related services	5418	1,320		13.5	2.3	84.2	29.2		0.9		69.9	24.4		D		42.5	32.9	
Other professional, scientific, and technical services	5419	2,500		20.5	3.0	r	76.5	33.6		0.0		66.4	30.5		0.0		36.2	33.4

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Management of companies and enterprises	55	88	r	D	0.0	D	D	0.0	D	D	0.0	D	D		
Administrative and support and waste management and remediation services	56	8,611		18.7	4.4	76.9	28.9	4.2	66.9	18.9	2.0	r	39.4	39.7	
Educational services	61	2,634		23.4	D	75.0	41.5	D	56.9	30.8	0.0		26.5	42.7	
Health care and social assistance	62	18,351		13.1	2.3	84.6	26.9	1.5	71.6	16.6	1.3		42.5	39.6	
Health care services	621–23	17,018		12.1	2.2	85.7	27.3	1.4	71.3	17.9	1.4		44.2	36.6	
Social assistance	624	1,333		26.3	D	70.6	21.4	D	75.5	D	0.0		21.8	78.1	
Arts, entertainment, and recreation	71	2,164		4.5	r	7.1	r	88.4	20.9	D	77.0	13.6	D	36.1	45.4
Accommodation and food services	72	6,864		12.9	6.1	81.0	23.2	2.4	r	74.4	12.2	3.0	r	30.8	54.0
Other services	81	8,474		9.7	2.5	r	87.8	29.5	2.1	r	68.4	24.3	0.0	35.9	39.8

D = withheld to avoid disclosing data for individual companies; data are included in higher-level totals. r = relative standard error > 50%.

NAICS = 2017 North American Industry Classification System; STEM = science, technology, engineering, and mathematics.

Note(s):

Detail may not add to total because of rounding or unavailable NAICS detail for select records beyond the 4-digit industry classification. Industry classification is based on dominant establishment payroll. Statistics are representative of companies located in the United States.

Source(s):

National Center for Science and Engineering Statistics and Census Bureau, 2019 Annual Business Survey: Data Year 2018.