

TABLE 132

Impact of producing specialized software or goods or services with specialized software on worker types, by industry: 2016–18

(Number and percent)

Industry	NAICS code	Companies (number)	Production workers				Nonproduction workers				Supervisory workers				Nonsupervisory workers														
			Increased	Decreased	Did not change	Did not employ	Increased	Decreased	Did not change	Did not employ	Increased	Decreased	Did not change	Did not employ	Increased	Decreased	Did not change	Did not employ											
All industries	11, 21–23, 31–33, 42–81	185,211	8.7	1.9	55.0	34.4	7.6	2.1	64.6	25.7	6.6	1.5	67.8	24.1	7.9	1.6	65.8	24.7											
Manufacturing industries	31–33	9,294	11.1	6.0	74.1	8.8	10.6	2.5	77.7	9.2	9.2	2.0	79.4	9.4	9.8	2.2	75.8	12.2											
Food	311	297	8.8	r	D	64.3	14.8	r	4.0	r	D	69.4	14.8	r	9.8	r	D	61.6	16.8	7.7	r	D	64.6	15.8	r				
Beverage and tobacco products	312	60	16.7		D	78.3	0.0		16.7		D	78.3	0.0		D		D	83.3	0.0		D		D	83.3	0.0				
Textile, apparel, and leather products	313–16	198	9.6	r	D	64.1	19.2	r	12.6	r	D	67.7	16.7	r	14.1	r	D	66.2	16.7	r	6.6	r	D	62.1	24.7				
Wood products	321	239	11.3	r	D	64.4	5.0		D		D	84.9	7.5		9.6	r	D	77.0	11.3		3.3	r	D	48.1	r	40.2	r		
Paper	322	35	D		D	40.0	r	D		D		0.0	85.7		D		0.0	82.9	r	D		D		0.0	85.7		D		
Printing and related support activities	323	997	10.3	r	3.4	72.8	13.5	r	8.7	r	1.8	r	70.0	19.5	13.1	r	2.5	66.6	17.9		9.1	r	1.6	r	69.3	20.0			
Petroleum and coal products	324	D	0.0		0.0	D	0.0		0.0		0.0		D	0.0		0.0		D	0.0		0.0		0.0		D	0.0			
Chemicals	325	187	5.9		D	78.6	6.4	r	4.3		D	87.7	4.8	r	3.7		D	84.5	8.6	r	5.3		D	86.6	4.8	r			
Pesticide, fertilizer, and other agricultural chemical manufacturing	3253	D	0.0		0.0	D	0.0		0.0		0.0		D	0.0		0.0		D	0.0		0.0		0.0		D	0.0			
Pharmaceuticals and medicines	3254	46	10.9		D	73.9	D		10.9		D	82.6	0.0		10.9		D	82.6	0.0		19.6		D	73.9	0.0				
Soap, cleaning compound, and toilet preparation manufacturing	3256	31	D		0.0	90.3	0.0		0.0		0.0		87.1		D		0.0	100.0	0.0		0.0		0.0		87.1		D		
Other chemicals	other 325	108	D		D	78.7	D		D		0.0		91.7		D		0.0	82.4	14.8	r	D		0.0		93.5		D		
Plastics and rubber products	326	290	4.5		5.2	85.9	D		10.0	r	5.2		82.8		D		3.4	6.6	r	85.2		D		8.6	r	D	86.6		D
Nonmetallic mineral products	327	79	20.3		6.3	r	58.2	15.2	r	16.7	r	11.5	r	56.4	15.4	r	15.2	r	D	67.1	16.5	r	16.5	r	D	46.8	35.4		
Primary metals	331	80	r	8.8	r	D	91.3	0.0		D		0.0	100.0	0.0		8.6	r	0.0	91.4	0.0		D		D	97.5	0.0			

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			Increased	Decreased	Did not change	Did not employ	Increased	Decreased	Did not change	Did not employ	Increased	Decreased	Did not change	Did not employ	Increased	Decreased	Did not change	Did not employ												
Fabricated metal products	332	1,482	12.9	9.5	r	76.1	1.5	r	15.0	r	D	76.3	7.0	r	9.6	r	D	85.2	5.0	r	13.6	r	D	72.1	12.4					
Machinery	333	1,631	17.5	3.9	r	67.6	11.0	r	10.5		D	82.7	6.4	r	10.6		0.0	83.4	6.0	r	13.4		D	80.3	5.8	r				
Computer and electronic products	334	1,603	8.0	3.2		79.4	9.4		10.9		3.9	79.0	6.3		8.3		3.1	81.6	7.0		7.5		2.4	82.1	8.0					
Communications equipment	3342	229	3.1	0.0		88.7	8.2	r	9.6	r	0.0	83.8	6.6	r	D		0.0	91.7	7.4	r	3.5		0.0	87.0	9.6	r				
Semiconductor and other electronic components	3344	265	8.4	r	9.5	r	61.5	20.6	r	3.0		12.6	r	76.1	8.3	r	10.7	r	7.6	r	71.9	9.9	r	3.4		5.3	r	79.3	12.1	r
Navigational, measuring, electromedical, and control instruments	3345	889	9.4		2.7	r	82.4	5.5		14.4		3.3		77.1	5.3	r	10.2	r	3.0	r	80.7	6.1		10.2		2.7	r	80.9	6.2	
Other computer and electronic products	other 334	220	6.8		D		79.1	12.7	r	5.9		D		85.5	8.2	r	3.6	r	D		87.7	8.2	r	5.0		D		86.4	8.2	r
Electrical equipment, appliances, and components	335	382	11.0		D		80.6	8.4	r	10.5		D		86.4	3.1		7.1		D		86.9	6.0		11.3		0.0		81.6	7.1	
Transportation equipment	336	359	6.0		5.5	r	70.5	17.9	r	6.4		1.9	r	76.9	D		7.2	r	D		75.5	D		5.3		1.9	r	77.7	D	
Automobiles, bodies, trailers, and parts	3361–63	280	3.6		7.1	r	69.3	20.0	r	6.4		2.5	r	72.5	D		5.7	r	D		73.6	D		5.4		2.5	r	73.6	D	
Aerospace products and parts	3364	59	D		0.0		74.6	D		8.5		0.0		91.5	0.0		D		0.0		83.1	0.0		8.5		0.0		91.5	0.0	
Other transportation	other 336	21	0.0		0.0		81.0	r	D		0.0		0.0	100.0	0.0		0.0		0.0		81.0	r	D		0.0		0.0		100.0	0.0
Furniture and related products	337	355	24.5	r	D		60.8	8.7	r	21.4	r	D		64.5	9.9	r	23.1	r	D		57.7	14.9	r	16.1	r	0.0		73.5	10.4	r
Miscellaneous	339	1,003	4.4	r	6.8	r	81.6	7.2		9.3		1.0	r	76.9	12.8		1.8		D		84.8	12.5		5.3	r	2.7	r	75.1	16.9	
Medical equipment and supplies	3391	466	4.1		14.6	r	78.5	2.8	r	2.8		D		84.3	10.7	r	2.4	r	D		91.2	4.3		2.1	r	5.8	r	75.6	16.5	
Other miscellaneous manufacturing	3399	536	4.5	r	D		84.1	10.8	r	14.7	r	D		70.5	14.7		0.9	r	0.0		79.3	19.8		7.8	r	D		74.8	17.4	

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Nonmanufacturing industries	11, 21–23, 42–81	175,917	8.6	1.7	53.9	35.8	7.5	2.0	64.0	26.5	6.4	1.4	67.3	24.9	7.8	1.6	65.2	25.4										
Agriculture, forestry, fishing, and hunting	11	163	r	D	0.0	74.2	D	D	0.0	100.0	0.0	D	0.0	100.0	0.0	D	0.0	76.1	D									
Mining, extraction, and support activities	21	279	3.2	r	0.0	71.5	25.3	r	D	0.0	74.2	25.1	r	1.8	0.0	92.2	6.1	r	D	0.0	86.0	13.3	r					
Utilities	22	43	14.0	0.0	65.1	20.9	r	11.6	0.0	83.7	D	11.6	0.0	88.4	0.0	11.6	0.0	88.4	0.0									
Construction	23	9,371	13.8	D	59.4	26.2	8.2	D	69.8	21.5	13.7	D	67.4	17.9	8.1	D	67.8	24.1										
Wholesale trade	42	11,153	4.7	0.8	r	58.1	36.4	7.4	1.1	r	71.0	20.5	6.1	1.1	r	71.7	21.1	8.4	1.1	r	67.2	23.3						
Retail trade	44–45	13,364	5.0	2.2	56.4	36.4	6.7	2.3	62.2	28.8	4.1	2.5	64.7	28.7	4.6	2.5	65.8	27.1										
Transportation and warehousing	48–49	2,373	11.3	4.2	r	46.6	37.8	4.9	r	0.5	r	58.5	36.1	13.4	0.5	r	62.8	23.3	9.7	2.4	r	55.2	32.7					
Information	51	9,206	10.9	2.7	56.0	30.4	11.6	3.4	68.8	16.2	11.4	1.2	74.3	13.1	13.3	2.8	70.1	13.8										
Publishing	511	4,068	9.8	2.7	r	59.3	28.2	12.9	3.6	71.9	11.6	12.1	1.1	77.7	9.1	14.4	3.4	73.6	8.6									
Newspaper, periodical, book, and directory publishers	5111	321	1.9	r	20.1	r	62.0	16.0	1.6	r	21.1	r	64.4	12.9	r	D	3.1	r	82.2	13.7	r	1.9	r	21.6	r	64.6	11.9	r
Software publishers	5112	3,746	10.5	1.2	59.0	29.3	13.8	2.1	72.6	11.5	13.0	0.9	77.4	8.7	15.4	1.8	r	74.5	8.3									
Telecommunications	517	740	8.8	r	1.5	r	46.9	42.8	4.9	5.7	r	64.8	24.7	9.6	r	3.8	r	64.0	22.6	4.5	5.7	r	68.0	21.8				
Data processing, hosting, and related services	518	2,958	11.6	3.4	55.5	29.5	13.5	1.8	67.8	16.9	11.6	1.1	r	75.3	12.0	14.4	2.0	68.8	14.8									
Other information	other 51	1,441	14.0	2.0	r	51.9	32.1	7.6	5.1	r	63.9	23.4	9.6	D	68.2	22.0	13.0	r	1.3	63.3	22.5							
Finance and insurance	52	9,632	9.4	1.5	r	50.9	38.2	9.8	1.7	59.3	29.2	5.9	1.0	r	62.8	30.3	11.2	1.3	r	60.9	26.6							
Real estate and rental and leasing	53	6,609	3.4	D	54.0	42.0	5.7	0.0	55.9	38.4	0.9	r	D	66.0	32.5	3.8	1.3	r	57.3	37.6								
Lessors of nonfinancial intangible assets (except copyrighted works)	533	113	r	D	0.0	D	D	D	0.0	D	0.0	0.0	0.0	100.0	0.0	D	0.0	D	D									

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Other real estate and rental and leasing	other 53	6,495	2.6	D	54.1	42.7	5.0	0.0	55.9	39.1	1.0	r	D	65.4	33.1	3.0	r	1.3	r	58.3	37.4	
Professional, scientific, and technical services	54	66,529	8.6	1.3	53.3	36.8	7.2	1.8	65.3	25.7	5.8		1.2	67.1	25.9	8.2		1.6		66.3	23.9	
Legal services	5411	4,486	4.8	0.7	r	40.7	53.8	4.8	3.2	r	52.6	39.4	5.8	1.3	r	52.2	40.7	8.4	3.7		53.6	34.3
Accounting, tax preparation, bookkeeping, and payroll services	5412	9,085	4.4	1.1	r	51.7	42.8	5.8	1.9	r	64.9	27.4	2.3	D	69.0	28.3	6.3	2.3	r	66.8	24.6	
Architectural, engineering, and related services	5413	8,588	8.2	1.1		62.9	27.8	5.4	1.7		72.3	20.6	6.2	0.4	r	74.9	18.5	6.2	0.4	r	77.7	15.7
Specialized design services	5414	1,196	D	D	51.9	43.4	D	D	65.1	28.0	D	0.0	65.4	31.9	D	0.0	63.8	33.4				
Computer systems design and related services	5415	30,073	9.5	0.9		56.1	33.5	7.5	1.0		67.1	24.4	6.0	1.2		68.3	24.5	8.5	1.1		67.2	23.2
Management, scientific, and technical consulting services	5416	8,304	10.2	3.1		43.7	43.0	9.3	2.4		61.9	26.4	7.7	2.4		63.5	26.4	10.3	2.5		62.1	25.1
Scientific research and development services	5417	979	12.6	1.7	r	56.8	28.9	16.0	3.1	r	68.8	12.1	12.4	D	75.4	11.6	15.7	3.1	r	69.4	11.8	
Advertising, public relations, and related services	5418	1,320	6.8	2.7	r	54.7	35.8	7.7	4.3		65.4	22.7	4.4	D	73.0	22.6	7.2	2.0		69.6	21.2	
Other professional, scientific, and technical services	5419	2,500	16.6	D	46.9	34.6	11.1	4.0	r	53.0	31.9	8.5	4.1	r	52.9	34.5	9.9	D		50.2	37.9	
Management of companies and enterprises	55	88	r	D	0.0	D	D	D	0.0	D	D	0.0	0.0	D	D	0.0	0.0	D	D		D	D
Administrative and support and waste management and remediation services	56	8,611	10.9	3.1		50.7	35.3	7.9	4.0		61.9	26.2	5.2	3.1		68.6	23.1	7.9	2.0	r	62.7	27.4

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Educational services	61	2,634	8.6	D	41.0	50.3	11.8	0.0	61.7	26.5	12.3	0.0	60.7	27.0	11.8	0.0	66.6	21.6
Health care and social assistance	62	18,351	8.9	2.0	52.5	36.6	8.2	2.7	60.8	28.3	6.4	2.5	67.7	23.4	7.5	1.6	64.6	26.3
Health care services	621–23	17,018	9.6	1.9	54.4	34.1	8.8	3.0	61.3	26.9	6.4	2.4	68.2	23.0	7.9	1.7	64.2	26.2
Social assistance	624	1,333	0.0	D	28.9	68.1	0.0	0.0	54.0	46.0	D	D	61.1	28.3	D	0.0	68.3	28.3
Arts, entertainment, and recreation	71	2,164	D	7.1	r 56.5	36.4	D	6.8	r 58.8	32.4	4.7	r 4.9	r 60.5	29.9	D	D	67.4	25.7
Accommodation and food services	72	6,864	12.8	4.0	r 46.7	36.4	9.2	3.9	49.8	37.1	9.2	D	63.0	26.9	6.4	D	59.0	33.0
Other services	81	8,474	8.4	0.9	r 61.7	29.0	2.2	r 1.7	r 69.6	26.5	2.9	D	68.7	27.9	3.0	D	67.1	29.2

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.

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.