National Center for Science and Engineering Statistics

InfoBrief

The Different Approaches to Design by U.S. Businesses

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This InfoBrief presents data from the 2022 Annual Business Survey (ABS) (data year 2021) on the design approaches used by U.S. businesses. Design is regarded as an important nontechnological input to the innovation process, concerned with how consumers perceive and interact with technological inventions and improvements in products. According to the ABS, 16.1% of companies reported pursuing design as a structured, creative process in 2021, which is similar to the minority of companies that reported product innovation between 2019 and 2021 (9.4%).

The ABS is cosponsored by the National Center for Science and Engineering Statistics (NCSES) within the U.S. National Science Foundation and by the Census Bureau. It collects data related to innovation, intellectual property, technology, and business owner characteristics from both microbusinesses and companies with 10 or more employees. This InfoBrief reviews approaches to design by selected industry, company size, and how design work is constituted and organized.

The ABS combines efforts to collect data that historically came from multiple separate business surveys: the Survey of Business Owners, the Annual Survey of Entrepreneurs, the 2016 Business R&D and Innovation Survey–Microbusiness (BRDI–M), and an innovation survey modeled on Eurostat's Community Innovation Survey. This InfoBrief and the related full set of data tables result from the fifth year of ABS data collection.

Approaches to Design

Design is ubiquitous—there is no such thing as an undesigned product. Every decision made regarding the fabrication of a good or delivery of a service is implicitly a design decision. The question in the 2022 ABS used to differentiate companies with no systematic approach to design from those with a structured, creative approach (referred to as *design-active*) reads as follows:

> We are interested in collecting information on clear design activities defined as part of structured creative processes.
> **Does this business take a structured approach to conducting design activities?**
> **___ Yes ___ No**
>
> Design of goods can include the following: the "look" of manufactured products; function; ease of manufacturing; environmental sustainability or resilience; quality; or architectural design.
> Design of services can include the following: business processes (i.e., design thinking); customer experience; delivery of a service; or user experience (UX) that addresses interaction with goods, services, or digital content by users.

Table 1 provides responses by 2-digit NAICS industry code and company size. Across all industries, 16.1% of companies reported approaching design as a structured process. Industries that have a higher percentage of companies active in design include manufacturing (NAICS 31–33); information (NAICS 51); professional, scientific, and technical services (NAICS 54); and educational services (NAICS 61). Industries with a lower percentage of companies active in design include agriculture, forestry, fishing and hunting (NAICS 11); mining (NAICS 21); retail trade (NAICS 44–45); transportation and warehousing (NAICS 48–49); real estate rental and leasing (NAICS 53); health care and social assistance (NAICS 62); accommodation and food services (NAICS 72); and other services (NAICS 81). Design-active companies are least prevalent in the smallest microbusinesses (1–4 employees).

Table 1

Design-active companies, by selected industry and company size: 2021

(Number and percent)

Industry and company size (number of employees)	NAICS code	Companies (number)	Design activities			
			Number		Percent	
			Yes	No	Yes	No
All industries	11, 21–23, 31–33, 42, 44–45, 48–49, 51–56, 61–62, 71–72, 81	4,874,928	784,863	4,090,065	16.1	83.9
Agriculture, forestry, fishing and hunting	11	19,567	1,213	18,354	6.2	93.8
Mining	21	14,004	1,008	12,996	7.2	92.8
Utilities	22	2,994	338	2,656	11.3	88.7
Construction	23	635,567	102,917	532,650	16.2	83.8
Food and fiber manufacturing	31	38,145	10,036	28,109	26.3	73.7
Nondurable manufacturing	32	54,116	15,990	38,126	29.5	70.4
Durable manufacturing	33	117,022	44,809	72,214	38.3	61.7
Wholesale trade	42	241,440	38,630	202,810	16.0	84.0
Retail trade	44	375,245	46,364	328,881	12.3	87.7
Retail trade	45	170,823	31,258	139,565	18.3	81.7
Transportation and warehousing	48	152,819	14,171	138,647	9.3	90.7
Transportation and warehousing	49	12,636	1,190	11,446	9.4	90.6
Information	51	65,445	19,503	45,942	29.8	70.2
Finance and insurance	52	198,128	25,955	172,173	13.1	86.9
Real estate rental and leasing	53	283,276	29,177	254,099	10.3	89.7
Professional, scientific, and technical services	54	717,229	182,893	534,336	25.5	74.5
Management of companies and enterprises	55	3,153	322	2,831	10.2	89.8
Administrative and support and waste management and remediation services	56	293,539	41,095	252,444	14.0	86.0
Educational services	61	57,078	12,785	44,293	22.4	77.6
Health care and social assistance	62	536,276	63,281	472,995	11.8	88.2
Arts, entertainment, and recreation	71	89,491	13,603	75,888	15.2	84.8
Accommodation and food services	72	455,071	46,417	408,654	10.2	89.8
Other services (except public administration)	81	341,869	39,315	302,554	11.5	88.5
All companies	-	4,874,928	784,863	4,090,065	16.1	83.9
Micro companies						
1–4	-	2,734,191	390,989	2,343,202	14.3	85.7
5–9	-	950,548	159,692	790,856	16.8	83.2
Small companies						
10–19	-	577,397	100,467	476,930	17.4	82.6
20–49	-	399,566	79,913	319,653	20.0	80.0
Medium companies						
50–99	-	115,591	25,661	89,930	22.2	77.8
100–249	-	63,969	17,336	46,633	27.1	72.9

Table 1

Design-active companies, by selected industry and company size: 2021

(Number and percent)

Industry and company size (number of employees)	NAICS code	Companies (number)	Design activities			
			Number		Percent	
			Yes	No	Yes	No
Large companies						
250–499	-	18,124	4,567	13,557	25.2	74.8
500–999	-	7,668	2,270	5,398	29.6	70.4
1,000 or more	-	7880	2,858	5,022	36.1 r	63.9 r

r = relative standard error > 50%.

NAICS = 2017 North American Industry Classification System.

Note(s):
Detail may not add to total because of rounding.

Source(s):
National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

Resources for Design

Design-active companies that take a structured approach to design may differ in their commitment to or coordination of design, manifest as the explicit provisioning of resources for design and a design budget. Among design-active companies, 40.3% reported allocating resources explicitly to design and 11.4% reported having a design budget (table 2). Both percentages increase nominally with company size, with the smallest microbusinesses (1–4 employees) being the least likely to report having a design budget. These findings reinforce the coordination interpretation of the indicators where larger companies may have a greater need to allocate resources explicitly and document expenditures.

Table 2

Resources for design and design budget in design-active companies, by selected industry and company size: 2021

(Number and percent)

Industry and company size (number of employees)	NAICS code	Companies (number)	Design activity commitments			
			Resources (%)		Budget (%)	
			Yes	No	Yes	No
All industries	11, 21–23, 31–33, 42, 44–45, 48–49, 51–56, 61–62, 71–72, 81	750,408	40.3	59.7	11.4	28.8
Agriculture, forestry, fishing and hunting	11	1,151	25.0	75.0	3.9 r	21.2
Mining	21	984	26.8	73.2	12.2	14.5
Utilities	22	327	39.6 r	60.4 r	19.8 r	19.8 r
Construction	23	98,077	39.9	60.1	11.6	28.3
Food and fiber manufacturing	31	9,505	36.0	64.0	11.9	24.1
Nondurable manufacturing	32	15,285	55.8	44.2	13.9	41.9
Durable manufacturing	33	43,025	53.2	46.8	13.9	39.3
Wholesale trade	42	37,252	48.5	51.5	13.6	34.9
Retail trade	44	43,690	35.3	64.7	9.9	25.5
Retail trade	45	30,164	40.4	59.6	11.2	29.2
Transportation and warehousing	48	13,557	23.9	76.1	6.6	17.3
Transportation and warehousing	49	1,123	27.1	72.9	10.7 r	16.3
Information	51	18,813	50.7	49.3	16.8	33.9
Finance and insurance	52	25,092	28.6	71.4	8.9	19.7

Table 2

Resources for design and design budget in design-active companies, by selected industry and company size: 2021

(Number and percent)

Industry and company size (number of employees)	NAICS code	Companies (number)	Design activity commitments			
			Resources (%)		Budget (%)	
			Yes	No	Yes	No
Real estate rental and leasing	53	27,937	28.4	71.6	7.7	20.7
Professional, scientific, and technical services	54	178,183	53.9	46.1	14.3	39.6
Management of companies and enterprises	55	310	61.6	38.4 r	40.1 r	21.6 r
Administrative and support and waste management and remediation services	56	39,252	33.6	66.4	8.5	25.1
Educational services	61	12,285	40.9	59.1	13.8	27.0
Health care and social assistance	62	60,694	28.0	72.0	9.3	18.7
Arts, entertainment, and recreation	71	13,056	31.7	68.3	13.3	18.4
Accommodation and food services	72	43,135	20.2	79.8	6.9	13.3
Other services (except public administration)	81	37,517	25.0	75.0	6.7	18.3
All companies	-	750,408	40.3	59.7	11.4	28.8
Micro companies						
1–4	-	375,378	37.5	62.5	8.3	29.2
5–9	-	152,540	37.7	62.3	10.6	27.1
Small companies						
10–19	-	95,781	42.8	57.2	13.2	29.6
20–49	-	76,295	46.3	53.7	16.7	29.6
Medium companies						
50–99	-	24,536	49.6	50.4	18.9	30.6
100–249	-	16,581	55.1	44.9	24.8	30.3
Large companies						
250–499	-	4,408	62.5	37.5	35.9	26.6
500–999	-	2,191	66.7	33.3	45.9 r	20.7 r
1,000 or more	-	2,702	75.7 r	24.3 r	60.5 r	14.9 r

r = relative standard error > 50%.

NAICS = 2017 North American Industry Classification System.

Note(s):
Detail may not add to total because of rounding.

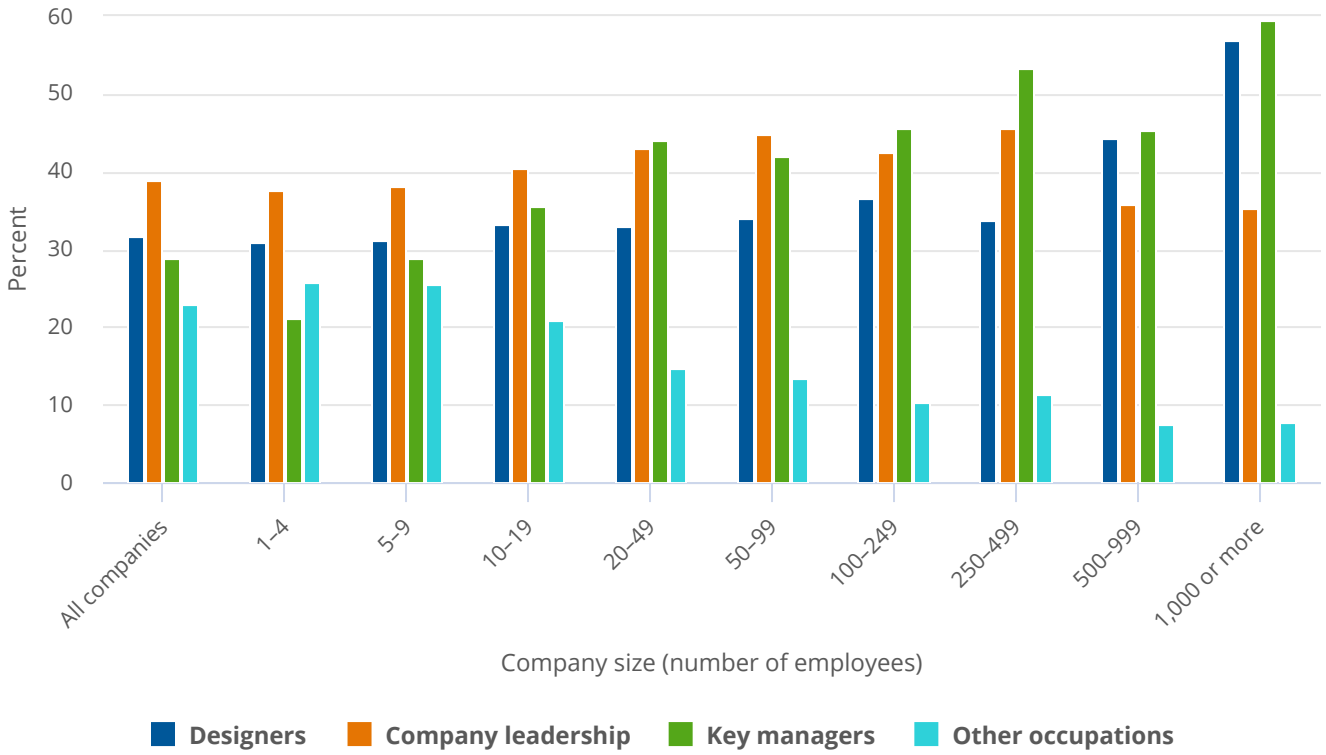
Source(s):
National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

Design Performers

Who is engaged in design activities and how engagement differs by company size are empirical questions. The assumption that design activities are carried out exclusively by professional designers who are either employed or contracted is not supported by the data, which show that companies report design tasks performed by other occupations, such as engineers or craft workers. Company leadership or managers in key departments, such as marketing or web development, may also routinely perform design activities. In design-active companies, company leadership was engaged in design activities most often (38.9%) whereas occupations other than designers were engaged least often (21.3%) (figure 1). Other occupations routinely performing design activities was most often reported by companies with fewer than 5 employees.

Figure 1

Employees or contractors engaged in design activities, by type and company size: 2021



Note(s):
The relative standard error exceeds 50% for other occupations in companies with 250–499 employees; for company leadership, key managers, and other occupations in companies with 500–999 employees; and for company leadership and other occupations in companies with 1,000 or more employees.

Source(s):
National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

Design Organization

Company size is likely to have a large impact on how design activities are organized. The smallest microbusinesses (1–4 employees) report design being performed by those working independently most often and report use of a small team or design department least often (table 3). Design organized around a single, small team demonstrated the least variation across company sizes. The type of organization selected was not exclusive, so larger companies with a central design department could also report some design activities being carried out independently.

Table 3

Organization of design activities, by company size: 2021

(Number and percent)

Company size (number of employees)	Companies (number)	Organization of design employees (%)		
		Independent workers	Small team	Several teams or central department
All companies	750,409	73.7	28.9	6.3
Micro companies				
1–4	375,379	81.5	21.6	2.9
5–9	152,539	71.4	33.0	5.2
Small companies				
10–19	95,780	67.2	35.2	7.8
20–49	76,296	62.7	38.4	11.9
Medium companies				
50–99	24,537	59.7	43.4	16.0
100–249	16,582	47.9	45.9	23.6
Large companies				
250–499	4,409	46.1	41.9	36.7
500–999	2,190	27.0 r	45.6	48.0
1,000 or more	2,698	30.9 r	43.6 r	64.6 r

r = relative standard error > 50%.

Note(s):
Detail may not add to total because of rounding. Multiple choices are allowed so percentages may not add to 100.

Source(s):
National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

Design as Styling, Functional, or Strategic

Different approaches to design in national innovation surveys were first investigated by Statistics Denmark in their 2010 and 2012 Community Innovation Survey.[1] Their design ladder construct had four rungs:

1. Design as *strategic*, a central directing element of the company's business model as the top rung
2. Design as *functional,* integrated throughout the product development process as the second highest rung
3. Design as *styling*, applied as a last finish before product launch as the third highest rung
4. No systematic approach to design as the bottom rung

Companies that self-identified as active in design in the 2022 ABS were asked to classify their design approach with respect to the top three rungs and could select more than one rung. Design as styling was the most common approach selected (64.7%), with design as strategy the least common approach selected (24.1%) (table 4). Design as functional was selected by 39.8% of the companies. This pattern is statistically consistent for companies with fewer than 100 employees. The majority of design-active companies in durable manufacturing (NAICS 33); information (NAICS 51); and professional, scientific, and technical services (NAICS 54) pursued a functional approach to design.

Table 4

Design approach for design-active companies, by selected industry and company size: 2021

(Number and percent)

Industry and company size (number of employees)	NAICS code	Companies (number)	Design approach (%)				
			Styling	Functional		Strategic	
All Industries	11, 21–23, 31–33, 42, 44–45, 48–49, 51–56, 61–62, 71–72, 81	750,409	64.7	39.8		24.1	
Agriculture, forestry, fishing and hunting	11	1,150	54.4	27.2		5.7	
Mining	21	983	39.1	45.5		15.4	
Utilities	22	328	34.9	26.4		32.0	
Construction	23	98,076	66.6	29.2		20.5	
Food and fiber manufacturing	31	9,505	84.0	46.5		20.9	
Nondurable manufacturing	32	15,285	71.8	48.1		22.1	
Durable manufacturing	33	43,025	60.8	62.0		26.9	
Wholesale trade	42	37,251	62.5	47.9		23.8	
Retail trade	44	43,690	71.9	28.1		17.2	
Retail trade	45	30,164	74.7	39.9		24.3	
Transportation and warehousing	48	13,557	45.0	25.5		16.3	
Transportation and warehousing	49	1,123	45.7	22.0		24.4	
Information	51	18,814	72.0	61.5		29.1	
Finance and insurance	52	25,091	58.0	27.6		20.3	
Real estate rental and leasing	53	27,936	69.1	26.7		14.8	
Professional, scientific, and technical services	54	178,184	60.4	52.2		37.4	
Management of companies and enterprises	55	311	38.3	62.3		0.0	
Administrative and support and waste management and remediation services	56	39,251	61.8	30.2		20.5	
Educational services	61	12,284	61.8	45.7		23.7	
Health care and social assistance	62	60,695	61.2	33.3		17.9	
Arts, entertainment, and recreation	71	13,055	73.7	38.8		24.2	
Accommodation and food services	72	43,136	71.6	29.1		13.4	
Other services (except public administration)	81	37,518	67.0	28.2		14.6	
All companies	-	750,409	64.7	39.8		24.1	
Micro companies							
1–4	-	375,379	63.4	37.2		24.6	
5–9	-	152,539	66.8	37.8		22.6	
Small companies							
10–19	-	95,780	66.0	42.2		23.9	
20–49	-	76,296	67.4	46.1		23.6	
Medium companies							
50–99	-	24,537	59.8	47.1		23.9	
100–249	-	16,582	61.7	53.8		26.2	
Large companies							
250–499	-	4,409	59.8	51.4		31.1	
500–999	-	2,190	64.7	64.2		35.7	r
1,000 or more	-	2,698	63.5	71.6	r	36.4	r

r = relative standard error > 50%.

NAICS = 2017 North American Industry Classification System.

Note(s):
Detail may not sum to total due to rounding. Multiple choices allowed so percentages may not sum to 100. "Styling" tabulates positive responses to "Design is used to enhance the appearance and attractiveness of the final good or service." "Functional" tabulates positive responses to "Design is integrated into the development of new goods or services." "Strategic" tabulates positive responses to "Design is a central directing element of the business model."

Source(s):
National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

By State

Design-active companies in all states nominally followed a very similar pattern: a majority of companies pursued a styling approach, a smaller percentage of companies pursued a functional approach, and the smallest percentage of companies pursued a strategic approach (table 5). However, because of the relatively small cell sizes for some states, the only statistically verified conclusion is that a styling approach to design was more prevalent than a strategic approach to design in all states. With the strategic approach as the highest rung on the design ladder, it is notable that a significant number of companies in each state regarded design as a central directing element of their business.

Table 5

Design approach of design-active companies, by state: 2021

(Number and percent)

State	Companies (number)	Design approach (%)		
		Styling	Functional	Strategic
All states	750,409	64.6	39.8	24.1
Alabama	7,771	57.3	35.9	22.1
Alaska	985	50.1	30.4	21.5
Arizona	14,216	63.2	40.1	26.2
Arkansas	5,892	64.2	32.2	20.4
California	102,442	64.8	43.9	26.7
Colorado	21,958	66.4	41.7	25.7
Connecticut	7,552	66.5	41.0	24.6
Delaware	2,428	69.3	46.9	24.3
District of Columbia	1,694	66.0	48.5	36.6
Florida	53,932	65.7	35.5	21.1
Georgia	21,038	60.4	33.8	21.9
Hawaii	3,246	78.1	31.4	21.3
Idaho	5,293	69.5	39.5	25.3
Illinois	28,782	64.9	41.9	23.0
Indiana	14,346	64.9	33.1	22.8
Iowa	8,752	66.9	37.4	21.4
Kansas	6,311	62.8	33.0	21.8
Kentucky	7,672	63.8	37.1	20.5
Louisiana	8,069	65.2	32.2	22.8
Maine	4,271	75.9	40.6	31.0
Maryland	12,944	57.7	43.3	23.1
Massachusetts	13,808	62.7	43.3	29.1
Michigan	20,854	62.6	41.2	23.5
Minnesota	15,002	65.1	41.8	22.9
Mississippi	2,919	67.0	24.0	16.6
Missouri	13,620	66.8	32.9	27.5
Montana	4,279	70.0	30.2	27.5
Nebraska	5,207	61.3	34.9	18.5
Nevada	6,802	65.4	45.3	23.8
New Hampshire	3,290	67.1	45.2	20.8
New Jersey	18,962	59.9	37.1	21.8
New Mexico	4,002	65.5	40.9	25.8
New York	43,682	66.8	41.2	24.1
North Carolina	22,454	64.4	41.1	24.6

Table 5

Design approach of design-active companies, by state: 2021

(Number and percent)

State	Companies (number)	Design approach (%)		
		Styling	Functional	Strategic
North Dakota	1,822	51.6	34.3	19.9
Ohio	22,849	66.6	43.0	21.2
Oklahoma	6,815	60.6	34.3	18.8
Oregon	12,626	70.1	39.2	26.4
Pennsylvania	26,095	65.6	38.5	21.5
Rhode Island	2,600	66.3	41.3	24.2
South Carolina	10,097	64.5	35.1	21.7
South Dakota	2,327	59.9	28.5	16.5
Tennessee	11,208	70.1	38.3	20.3
Texas	52,436	61.7	36.6	25.6
Utah	11,814	70.4	39.5	22.7
Vermont	2,061	63.3	41.2	30.7
Virginia	20,341	62.1	44.2	23.8
Washington	22,662	68.9	45.1	29.4
West Virginia	1,795	62.6	40.9	18.9
Wisconsin	14,404	62.0	35.2	24.5
Wyoming	2,092	73.0	37.9	20.2
Undistributed	11,893	60.2	61.3	31.1

Note(s):
Statistics are representative of companies located in the United States. Undistributed are data not allocated to a specific state. Detail may not sum to total due to rounding. Multiple responses allowed so percentages may not sum to 100. "Styling" tabulates positive responses to "Design is used to enhance the appearance and attractiveness of the final good or service." "Functional" tabulates positive responses to "Design is integrated into the development of new goods or services." "Strategic" tabulates positive responses to "Design is a central directing element of the business model."

Source(s):
National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

Design Employment and Expected Trends

The number of employees or contractors performing design activities nominally increased between 2019 and 2021 across all company sizes; however, these differences are not statistically significant (table 6). Most striking when looking at the data is that the number of employees across the company size categories increases much more than the number of employees or contractors performing design activities in either 2019 or 2021. For example, companies in 2021 with 10–19 employees had on average 3.4 design-related employees or contractors; for a company at the midpoint of this size category, the ratio of those working in design to total employment was about 1 to 5. At the midpoint of the 500–999 employee category, this ratio jumped to greater than 1 to 20. This finding from table 6 and figure 2 reinforces findings drawn from the data in table 3 regarding the organization of design in larger companies: a small team or employees or contractors working independently may provide adequate design capabilities in the larger size companies.

Table 6

Design-related employees or contractors, by company size: 2019 and 2021

(Number)

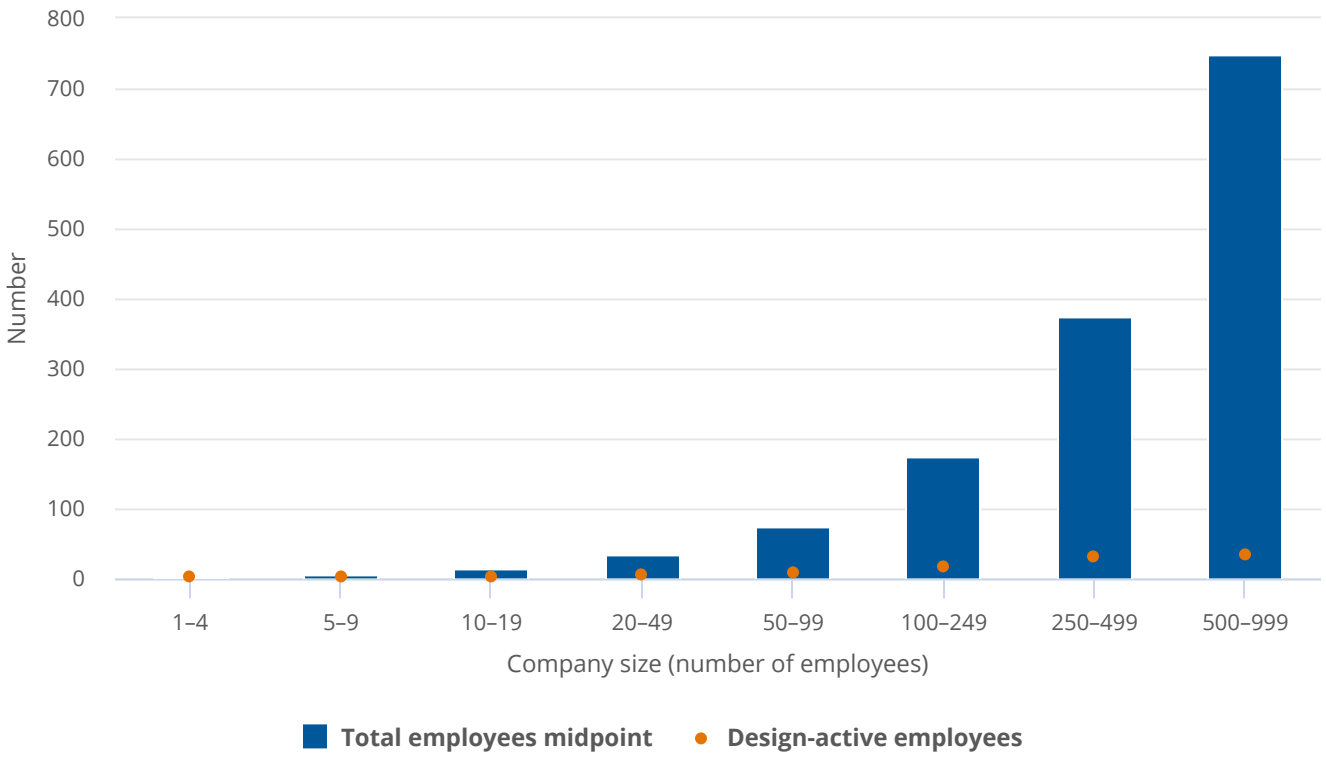
Company size (number of employees)	Companies	Design-related employees or contractors			
		2019		2021	
Micro companies					
1–4	375,379	1.5		1.6	
5–9	152,539	1.9		2.5	
Small companies					
10–19	95,780	3.0		3.4	
20–49	76,296	4.4		4.9	
Medium companies					
50–99	24,537	7.9		9.3	
100–249	16,582	14.6		15.8	
Large companies					
250–499	4,409	28.1		31.3	
500–999	2,190	29.0	r	35.6	r
1,000 or more	2,698	244.7	r	269.9	r

r = relative standard error > 50%.

Source(s):
National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

Figure 2

Average number of design-related employees or contractors relative to the total employees midpoint of the company size category: 2021



Note(s):
The relative standard error of design-active employees exceeds 50% for companies with 500–999 employees.

Source(s):
National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

The suggestive evidence from table 6 that the number of employees or contractors in design may be increasing is reinforced by expected changes in design activity over the next 3 years. Among design-active companies, 36.1% believe that design resources will increase slightly and 8.9% believe design resources will increase substantially (table 7). Among companies that are not currently active in design, 8.7% believe that design resources will increase slightly. While about half of design-active companies expect no change in design resources over the next 3 years, fewer than 5% of design-active companies expect to see design resources decrease. Among companies that are currently not active in design, more than 10% of companies in manufacturing (NAICS 31–33) expect an increase in design resources.

Table 7

Expected future design activity resources for the next three years, by selected industry and company size: 2021

(Percent)

Industry and company size (number of employees)	NAICS code	Design-active companies (%)						Companies not currently active in design (%)					
		Companies (number)	Increase substantially	Increase slightly	No change	Decrease slightly	Decrease substantially	Companies (number)	Increase substantially	Increase slightly	No change	Decrease slightly	Decrease substantially
All industries	11, 21–23, 31–33, 42, 44–45, 48–49, 51–56, 61–62, 71–72, 81	750,409	8.9	36.1	49.9	2.0	2.7	3,912,639	0.9	8.7	87.4	0.9	1.9
Agriculture, forestry, fishing and hunting	11	1,150	0.0	34.4	65.6	0.0	0.0	17,446	0.2 r	3.2	93.7	1.4	1.2
Mining	21	983	13.9 r	22.8	56.7	0.1 r	6.4 r	12,567	0.1 r	4.8	91.8	0.9 r	2.1
Utilities	22	328	8.6 r	29.0	47.6	0.4 r	13.9 r	2,553	3.0 r	8.5	85.7	1.6 r	1.1 r
Construction	23	98,076	6.7	31.1	57.2	2.1	2.5	507,597	0.7	8.1	87.7	1.0	2.4
Food and fiber manufacturing	31	9,505	8.9	44.6	41.7	2.4	2.3	26,622	1.2	11.7	83.9	0.9	2.3
Nondurable manufacturing	32	15,285	8.6	38.3	49.7	2.0	1.3	36,446	1.0	12.1	83.4	1.0	2.5
Durable manufacturing	33	43,025	9.1	41.7	45.4	1.4	2.3	69,338	1.1	12.8	82.7	0.9	2.4
Wholesale trade	42	37,251	10.5	40.0	44.1	2.4	3.0	194,662	0.8	9.5	85.9	1.2	2.4
Retail trade	44	43,690	8.8	35.6	51.3	1.0	2.5	309,911	0.9	9.5	86.6	1.2	1.6
Retail trade	45	30,164	10.8	39.5	43.7	3.6	2.4	134,682	1.2	9.3	86.7	0.9	1.9
Transportation and warehousing	48	13,557	9.1	26.4	58.8	1.2 r	4.0	132,640	1.5	8.4	85.7	1.7	2.6
Transportation and warehousing	49	1,123	2.1 r	30.6	66.0	0.9 r	0.0	10,800	0.8	7.0	89.1	2.2	1.0 r
Information	51	18,814	14.3	42.2	39.9	1.7	1.6	44,163	1.2	10.6	84.7	1.0	2.4
Finance and insurance	52	25,091	10.3	33.8	51.8	1.8	2.4	167,213	0.8	8.9	88.2	0.6	1.6
Real estate rental and leasing	53	27,936	8.0	36.2	50.9	2.1	2.5	243,401	0.7	7.2	89.5	0.9	1.6
Professional, scientific, and technical services	54	178,184	10.2	36.9	46.2	2.7	3.9	518,382	1.3	8.7	86.6	0.9	2.4
Management of companies and enterprises	55	311	0.0	22.3 r	77.7	0.0	0.0	2,725	0.0	7.3	92.7	0.0	0.0
Administrative and support and waste management and remediation services	56	39,251	7.4	35.4	53.7	1.4	1.8	241,844	0.7	7.8	88.6	0.9	1.9
Educational services	61	12,284	7.0	40.5	45.8	2.8	3.9	42,421	1.2	9.8	87.5	0.2 r	1.2
Health care and social assistance	62	60,695	9.2	34.8	51.6	1.4	2.7	453,712	0.9	8.3	88.6	0.7	1.5
Arts, entertainment, and recreation	71	13,055	8.1	36.0	54.1	0.8 r	1.1	72,868	0.7	7.5	90.0	0.6	1.2
Accommodation and food services	72	43,136	8.5	34.6	52.6	2.0	2.0	382,032	1.1	9.1	87.2	1.1	1.4
Other services (except public administration)	81	37,518	7.1	36.0	52.8	2.1	1.9	288,613	0.9	8.7	87.3	1.1	1.9
All companies													
Micro companies													

Table 7

Expected future design activity resources for the next three years, by selected industry and company size: 2021

(Percent)

Industry and company size (number of employees)	NAICS code	Design-active companies (%)						Companies not currently active in design (%)					
		Companies (number)	Increase substantially	Increase slightly	No change	Decrease slightly	Decrease substantially	Companies (number)	Increase substantially	Increase slightly	No change	Decrease slightly	Decrease substantially
1–4	-	375,379	9.0	31.4	53.0	2.5	3.8	2,245,376	0.9	7.8	87.6	1.2	2.4
5–9	-	152,539	9.2	38.4	47.8	2.1	2.3	753,587	1.1	9.8	86.7	0.8	1.6
Small companies													
10–19	-	95,780	9.9	39.8	47.3	1.2	1.5	455,688	0.9	10.2	86.9	0.6	1.3
20–49	-	76,296	8.4	43.3	45.7	1.2	1.2	304,563	0.8	9.3	88.3	0.5	1.0
Medium companies													
50–99	-	24,537	7.2	44.5	46.4	1.3	0.6 r	85,767	1.0	9.8	88.2	0.2	0.8
100–249	-	16,582	7.1	49.7	40.6	1.4	1.0 r	44,597	1.3	10.2	87.7	0.5	0.4
Large companies													
250–499	-	4,409	6.9	42.1	46.9	3.7 r	0.2 r	13,059	1.4	11.9	85.5	0.3 r	1.0 r
500–999	-	2,190	9.8	46.7	41.8	0.7 r	0.6 r	5,224	0.5 r	9.7 r	89.1	0.3 r	0.3 r
1000 or more	-	2,698	8.0 r	52.6 r	36.1 r	1.8 r	0.4 r	4,779	0.6 r	10.8 r	87.8	0.3 r	0.4 r

r = relative standard error > 50%.

NAICS = 2017 North American Industry Classification System.

Note(s):
Detail may not sum to total due to rounding.

Source(s):
National Center for Science and Engineering Statistics and Census Bureau, 2022 Annual Business Survey: Data Year 2021.

Data Sources, Limitations, and Availability

The statistics from the survey are based on a sample; as such, they are subject to both sampling and nonsampling errors (see the survey "Technical Notes"). The estimates in this InfoBrief are based on responses from a sample of the population and may differ from actual values because of sampling variability or other factors. As a result, apparent differences between the estimates for two or more groups may not be statistically significant. All comparative statements in this InfoBrief have undergone statistical testing and are significant at the 90% confidence level unless otherwise noted. Variance estimation in this report was calculated using replicate weights that incorporate full information about the complex sample design of the ABS.

This InfoBrief is designated as an experimental statistical product, the data tables are not official statistics and should not be used to make official statements or inferences about characteristics of the population or economy. NCSES releases experimental statistical products to benefit users in the absence of other relevant information and to improve future iterations of data collection. Experimental statistical products may not meet some of NCSES's quality standards and, as a result, users should assess the utility limitations of these experimental statistics relative to the intended use. Official statistics on design activities are available in Tables 62–65.

For the full ABS 2022 (data year 2021), 300,000 employer companies were sampled to represent the population of 4.9 million employer companies, and the unit response rate was 67.0%. ABS 2022 uses the 2017 North American Industry Classification System (NAICS).

The full set of data tables on R&D, company demographics, innovation, technology, and patent and intellectual property protection from this survey is available at https://ncses.nsf.gov/surveys/annual-business-survey/2022. Individual data tables and tables with relative standard errors and imputation rates from the ABS 2022 are available from NCSES upon request.

NCSES has reviewed this product for unauthorized disclosure of confidential information and approved its release (NCSES-DRN24-068).

Notes

1 Galindo-Rueda F, Millot V. 2015. Measuring design and its role in innovation. *OECD Science, Technology and Industry Working Paper 2015/01*. Paris: OECD Publications.

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