ELECTRICAL CONTRACTOR

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Topline Report by Renaissance Research & Consulting, New York

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2022 ELECTRICAL CONTRACTOR PROFILE STUDY
TOPLINE REPORT

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BACKGROUND and PURPOSE

For over fifty years, ELECTRICAL CONTRACTOR magazine has sponsored its exclusive "Profile of the Electrical Contractor." This survey is conducted biannually among its subscribers and aims to provide the most complete "picture" of the contracting industry available from the electrical contractor's point of view. The survey provides electrical contractors with an indication of where their business "fits" into the overall industry, while at the same time providing information that is used to guide and refine the magazine's editorial content.

METHODOLOGY

The survey was conducted by internet among subscribers to ELECTRICAL CONTRACTOR magazine. In addition, in 2022, as in 2020 and 2018, about 100 members of the ELECTRICAL CONTRACTOR Subscriber Research Panel also participated in the survey. The field period for the survey began on January 26, 2022, and ran through April 15, 2022, which was the deadline for the July 2022 article. A total of 843 completed the survey during that time period.

As postal mail participation (also called the "print" sample, since they received their printed survey via postal mail) had dwindled, for the first time in 2022, the survey was only offered on the internet.

Because we were not able to invite those on the "print" list through emails, we attempted to attract them to participate through a magazine cover tip-in, which is essentially a second cover to draw special attention to an advertisement or other information. All subscribers received cover tips in January. A full-page advertisement was also placed in the March issue of the magazine.

Since there was no print sample, the data were not weighted. Data were also not weighted in 2020. In that case, there was no weighting since the proportion of the total attributable to the print list was so low weighting would distort the total statistics.

Each respondent who received the survey through the internet was sent up to seven follow-up emails. An incentive was offered for participation in the survey: For each completed survey, ELECTRICAL CONTRACTOR would contribute $5 to charity, up to a total of $10,000. In addition, as was the case since 2018, the magazine also offered a sweepstakes drawing for a chance to win one of **ten** $150 Amazon e-gift cards. In 2018 and 2020, the drawing was for one of **five** $150 Amazon e-gift cards.

The internet option was first introduced in 2004.

As was the case since 2004, the survey was produced in different versions. Starting with the 2008 Profile study, there were four versions of the survey, which differed from each other on fewer than 10 questions. The first 30 questions were common to all versions. Since 2018, there have been 7 versions.
For the first time in the 2018 Profile, we also identified Subscriber Panel members who participated in the study as part of our email survey invitation and also separately solicited Panel members to participate in the Profile survey by mailing them a separate survey link. In total, 136 Panel members participated in the 2022 Profile Study.

This research was conducted by New York, NY-based Renaissance Research & Consulting, Inc. (www.renaiss.com), an independent marketing research firm that has, as one of its specialties, market research for the construction industry.

Statistics

The margin of error on the total sample of 843 is +/– 2.8x% for percentages around 50% (i.e., we are confident that a reported 50% will fall between 53% on the plus side and 47% on the minus side 90% of the time). Please note that different rules apply to testing of averages, which were also tested at the 90% level of confidence and are noted in the report.

A significant difference in the total sample between 2022 with a sample size of 843 and 2020, where the sample size was 1635 is at least 1.7% at the 90% confidence level.

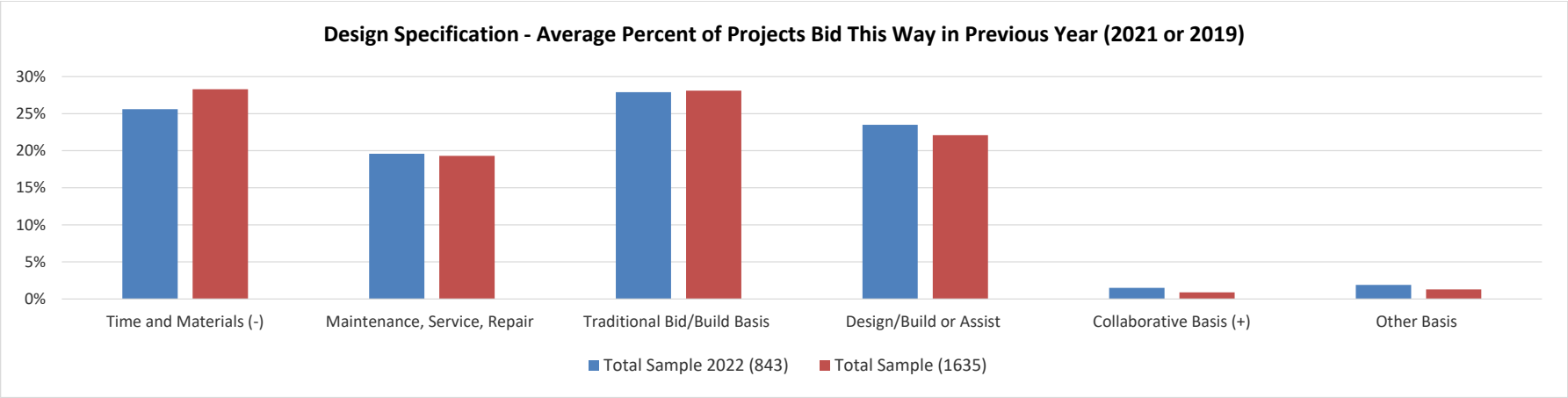
The report uses a few different graphics to indicate significant differences:

- In this example, the electrical contractors working in firms with 1-9 employees (column 'b') are significantly older than those who work in firms with 10+ employees.

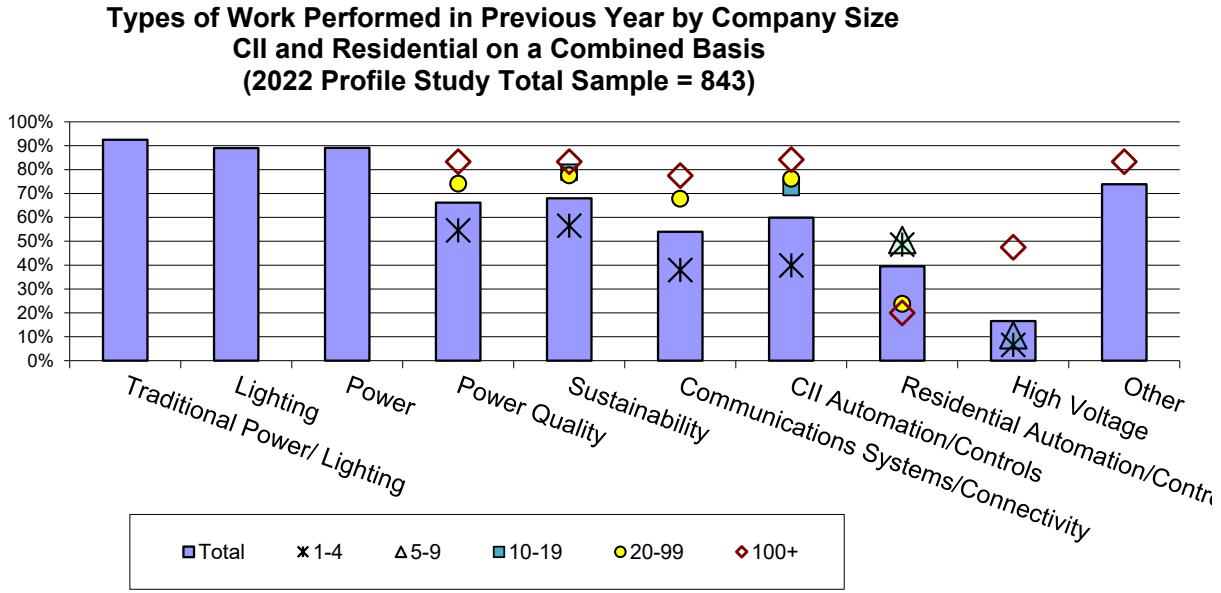
Average Age of Electrical Contractor in 2022 and Earlier (Q11)				
		Firm Size		
	Total	1-4	1-9	10+
		(a)	(b)	(c)
Average Age (2022 Study) N=843	59.3 (increase from 2020)	61.9 (increase from 2020)	61.2>c (increase from 2020)	56.9 (increase from 2020)
Average Age (2020 Study) N=1635	57.9	59.9	59.3 (decline from 2018) **>c**	55.2 (increase from 2018)
Average Age (2018 Study) N=1597	58.2	60.6	**60.0 >c**	53.8
Average Age (2016 Study) N=2419	57.3	58.7	**58.5>c**	54.1
Average Age (2014 Study) N=2722	56.2	57.4	**57.1>c**	53.3
Average Age (2012 Study) N=1024	56.1	57.5	**57.2>c**	52.6
Average Age (2010 Study) N=1077	53	53.8	**53.8>c**	50.4
Average Age (2008 Study) N=1157	51.2	52. 6	**52. 1**>c	49.2

The bolding and the arrow indicate significant difference and the direction of the difference.

Alternatively, on a column or bar chart, a (+) or (-) next to the title indicates a significant difference compared to its pair. In this example from the current study, the average revenue from Design/Build or Assist rose significantly vs. two years earlier.



How to read scatter plots: Subgroups that are shown above the blue bar are significantly larger than average, while those within the bar are smaller than average. Subgroups that are average are not shown.



KEY FINDINGS

The overall theme appears to be one of resilience and flexibility for the industry as well as consolidation. In spite of the many upheavals of the past two years—COVID-19, the war between Russia and Ukraine, supply chain and worker shortages—the electrical contractors who participated in the survey fared remarkably well.

- Continuing a trend that we observed in 2020, electrical contracting firms have continued to get larger. As of the 2022 Profile Study, only a bare majority of firms are small, defined by the magazine as having 1-9 employees (56%) and/or revenue of $1 million or less (50%).

- Compared to two years ago, the proportion of firms with 1-4 employees declined statistically significantly, while the proportion of firms with 10+ employees grew at each of the size breaks of 10-19, 20-99 and 100+ employees.

- The same thing happened in the case of revenue. Compared to two years ago there are significantly *fewer* firms with revenue of under $1 million and significantly *more* firms with revenue of over $2.5 million—in total and at each of the revenue breaks—$2.5 million to less than $10 million, $10 million to less than $25 million and $10 million or more.

- In spite of all of the COVID-19 pandemic-induced upheaval, most firms that participated in the 2022 Profile Study reported that their firm stayed the same in terms of number of employees (61%). About two in ten reported either increasing (20%) or decreasing (17%).

- However, compared to two years ago, *fewer* firms said that they stayed the same and *fewer* firms said that they increased in number of employees. In contrast, firms that said that they now had fewer employees posted a statistically significant increase. All of these changes were modest but nevertheless statistically significant.

    - What is outside of the scope of this study is the extent to which some electrical contracting companies may have gone out of business and thus were not in a position to participate in this study to report their status.

- Confidence in the growth of the economy is dramatically more negative than was the case two years ago, when the percentage reporting that they were extremely or very confident in the economy dropped to 25% from 53%.

- One reason may be the finding that perceptions of conditions were much better before the beginning of COVID-19 in terms of these four key measures: Profitability, Revenue, Supply Availability and Staffing. Although none returned to their pre-COVD levels, Revenue and Profitability are recovering.

- A different measurement taken at two points in time may offer some corroborating evidence. We asked electrical contractors about their firm's ability to find trained workers (yes or no) and, separately, about their difficulty in retaining trained workers in a tight job market,

    - In both cases, the percentages were statistically unchanged from two years ago: in the 2022 study, 68% reported difficulty finding trained workers and 27% had difficulty retaining training workers. Since the 2020 Profile Study took place during the beginning of the pandemic (February – April of 2020), these results may in fact be referring to the period *during* COVID-19, rather than *before* it.

- The average age of electrical contractors posted a significant increase (to 59.3 from 57.9) compared to two years earlier, after having remained constant in the 2020 Profile Study.

- Nevertheless, electrical contractors in larger firms of 10+ employees continue to be substantially and significantly younger on average (56.9 years old) compared with electrical contractors in firms with 1-9 employees (61.2 years old).

- A higher percentage of electrical contractors are now college educated: about 6 in 10 electrical contractors have some college education (61%). The percentage that at least attended college rose significantly vs. two years ago when it was 57%. At the same time, having trade or vocational school as their highest level of education posted a significant decline to 27% from 31%.

- About 4% of the electrical contractors participating in this study are female, statistically unchanged from two years ago.

Average revenue from CII work has increased, mostly due to increased industrial work while residential work has declined, mostly due to both less single-family as well as multi-family housing; non-building has also increased, due to utility work.

- Power generation/substations and Electric vehicle charging also rose, although from a small base.

At the same time, average revenue from new construction, modernization/retrofit and maintenance/service and repair is unchanged from what was reported in the 2020 Profile Study report. New construction has not recovered to the level reported in the 2008 Profile Study (43% in 2007).

The 2022 Profile Study brought more evidence that electrical contractors are continuing to move away from standard power and wiring to high(er) tech and more value-added areas such as Lighting and Industrial systems/controls.

- In 2022, with one exception—a decrease the average revenue from Electric Power Transmission and Distribution—there are no significant differences among the total sample in average revenue from the electrical projects included in this study. This once again indicates that the dramatic decline in the percentage of average revenue from Electric Power Transmission and Distribution observed four years ago (from 43% in 2016 to 25% in 2018) was not an anomaly.

    - Rather, the two top sources of revenue continue to be Lighting (26.0% average revenue) and Electric Power Transmission and Distribution (21.2% average revenue, in spite of its sharp decline from 2016.) The next highest average revenue source is Communications/Data Systems (8.4%, statistically unchanged from 2020).

Electrical contractors continue to work on a very wide variety of projects.

- Traditional Power and Lighting (93%)
- Lighting (89%)
- Power (89%)
- Automation /Control Systems (75%)
- Other (an amalgam of Maintenance/service/repair, Pre-Fab, HVAC Mechanical and Water Utilities or Wastewater Treatment Plants (75%)
  Sustainability (68%)
- Power quality (66%)
- Communication Systems/Connectivity (54%)
- High-Voltage (17%)

Compared with two years ago when looking at results for CII and Residential on a combined basis:

- Although Traditional Power and Lighting are performed by almost all electrical contractors, the percentage working in this broad field is down slightly but significantly (95% to 93%) from two years ago, mostly due to a slight decline in Lighting (89% from 92%).

- Sustainability as a category is unsurprisingly higher rising to 68% from 64%, particularly due to more electrical contractors working on Electric vehicle charging equipment and/or Solar/photovoltaics.

- Although Power Quality is statistically unchanged as an overall category, more electrical contractors report having worked on Backup Power/UPS, TVSS/lightning surge suppression and/or Energy management/power quality.

- More electrical contractors report having worked on Network/VOIP/Broadband and/or Fiber optics than was the case two years earlier.

- Automation/Control Systems is mixed: more electrical contractors report having worked on Security, Building automation systems and/or Programming and commissioning, while fewer report having worked on Home automation and/or Home theater/sound or VDV.

- A higher percentage of electrical contractors reported having worked on Water utilities and/or water treatment plants than was the case two years ago.

- In the case of CII construction, almost all of the differences from two years ago are gains, including Power and its component parts, Communication Systems/Connectivity (overall and its individual components), in Sustainability, Electric vehicle charging equipment and/or Solar/photovoltaics and/or Smart or Net metering and many aspects of Automation Control/Systems. Working on Water utilities and/or water treatment plants, and Pre-Fabrication also increased from two years earlier.

    - The only exception is lamps, which declined slightly but significantly from two years ago.

In contrast to CII construction, in the case of residential construction, almost all of the changes are losses, particularly in the areas of Traditional Power and Lighting but also in the areas of Communications Systems/Connectivity and in Automation Controls. Are these declines traceable to fewer electrical contractors working in residential construction?

- Use of BIM (Building Information Modeling) was up again from the levels observed in 2020. In 2020 it was up for the first time since 2012 when this question was first asked. Across the total sample, 31% of firms say that they use BIM, (up from 27% two years earlier). On average, BIM is now used on 9.2% of projects, statistically unchanged from the 8.2% measured in 2020, two years earlier. Further, almost three-quarters of the very largest firms, those with 100+ employees, make use of BIM on an average of 34% of projects.

- Given this list of high-tech project types and approaches (such as BIM), it should not be surprising that 60% of electrical contracting firms have a professional relationship with an engineer, statistically unchanged from two years ago. Although these relationships are more prevalent among larger firms—it is 83% among firms with 10+ employees vs. 46% of firms with 1-9 employees, even 37% of firms with 1-4 employees report working with engineers.

- Continuing a story we reported in 2020, in 2022 the way that electrical contractors bid jobs is remarkably consistent: Time and Materials, and Maintenance, Service and Repair—both added in the 2020 Profile Study, based on their high number of volunteered mentions in 2018—were once again, mentioned most often on an ANY use basis (78% and 74%, respectively). Traditional Build/Build, mentioned by 63% and Design/Build or Assist, mentioned 60%, form a second tier. On a Collaborative Basis or Other received the least mentions at 10% and 4%, respectively.

- The only two statistically significant differences were that Collaborative building and “Other” basis both posted a significant increase, but off of a small base.

- In terms of average revenue (which adds to 100%), the top three design specifications are Traditional Bid/Build (28%), Time and Materials (26%) and Design/Build or Design/Assist (24%) basis. Maintenance, Service and Repair (on a combined basis) accounts for an average of 20%. Only about 2% of projects were bid on a Collaborative basis or on some "Other" basis in 2021.

Electrical contractors continue to have wide discretion to influence brand choice.

- As has been the case in recent Profile Studies, about three-quarters of electrical contractors report having a "high" or "medium" ability to influence the overall electrical design or specifications with building owners and/or design team members

- The breakdown is comparable—41% "high" level of influence and 37% medium level of influence.

    - There are no statistically significant differences compared with two years earlier, either among the total sample or among firms with 1-9 or 10+ employees.

- Electrical contractors were also asked about their current level of collaboration with these key trades: Mechanical, HVAC, Plumbing and Systems Integrator from other trades.
    - In 2022, project collaboration is higher with Mechanical, HVAC and with Systems integrators from other trades than with the Plumbing trade. There have been no statistically significant differences levels of collaboration between 2020 and 2022. In 2020, project collaboration posted a statistically significant increase with Systems integrators from other trades than it was the case in 2018.

- In 2022, for the first time, Profile respondents were also asked about their ability to influence product choices in other trades.

    - In the case of Mechanical, HVAC and Systems integrator from other trades, electrical contractors say that they have either a high or medium level of product influence about one-third of the time. The main exception is in the case of Plumbing, where electrical contractors say that they are able to influence products purchased only about 20% of the time.

- Almost 8 in 10 electrical contracting firms say that they receive <u>incomplete</u> plans and specs and about 80% report receiving <u>incorrect</u> plans and specs, both of which afford the electrical contractor the opportunity to influence the project and its specifications.

    - In fact, from a separate set of questions, respondents were asked how much discretion they have in original brand selection of in making a brand substitution. Overall, contractors are able to make brand selections about 60% of the time; 64% in the case of firms with 1-9 employees and 60% in the case of firms with 10+ employees.

    - Although average influence declined among the total sample driven by firms with 1-9 employees, firms with 10+ employees, on average remain able to influence purchases 60% of the time.

- Availability and price continue to top the list of reasons for original brand selection and/or substitution. In fact, availability rose dramatically and statistically significantly to 85% from 70% two years ago in the case of brand substitution. This should not be surprising given the problems with supply chains.

Starting in the 2020 Profile Study, we asked a number of questions about administration. We learned that:

- There continues to be a very consistent split of approximately 80%/20% between the average percentage of the workforce that is considered on-site electrical workers vs. the average for being considered primarily business/office workers (The actual split is 78%/22%). This question was asked of the 592 firms that have more than 3 employees.

- Safety continues to be a key factor in the bid process: Across the total sample, 48% say that they are required to have a prequalified standards and safety program in place in order to bid on a project. (71% in the case of firms with 10+ employees vs. 30% of firms with 1-9 employees, statistically unchanged from two years earlier).

    - Nevertheless, about 6 in 10 firms (63%, up significantly from 59% two years ago) say that they already have a certified safety program or that they plan to institute one in 2022; having a certified safety plan increases steadily with company size (from 37% among firms with 1-4 employees and up to 92% among firms with 100+ employees).

- More than one-half of firms have worked on government projects since 2020 (58%); 59% said that they expect to work on government projects in 2022.

    - Regardless of the time frame of the work, more of the participation is closer to home, that is, work for local entities > state > federal projects.

    - Once again, larger firms are far more likely to perform government work (~80% among firms with 10+ employees vs. about 40% to 45% among firms with 1-9 employees.)

Training

- About 80% of electrical contractors say that they, or someone in their firm, has taken training in the past 12 months or plans to take training in the next 12 months to improve or broaden skills or for certification. This training could be in the form of on-line, correspondence or classroom training. There is no statistically significant difference between the percentages that took training (79%) vs. those who plan to take training (80%). Further, there is no change in the percent taking training or planning to take training versus two years ago.

- Because of the pandemic, in 2022, we asked about whether the training was or will be "hybrid", that is whether it was a combination of online and in-person demonstrations and/or testing. Regardless of whether they participated in hybrid training, we asked whether the hybrid approach would continue into the future.

    - About one-half (52%) has already or will take hybrid training. 70% think that the hybrid approach will continue into the future.

We asked about leisure activities in the 2022 Profile Study and found almost 9 in 10 listed one or more activity with home improvement (busman's holiday!) taking the top spot at 49%. Travel (43%) and Fishing and hunting (37%) were also quite popular.

▲"WHO" ARE THE ELECTRICAL CONTRACTORS?

Size of Firms

A bare majority of the electrical contractors interviewed continue to work for small firms in terms of both their number of employees and their revenue: 56% have between 1 and 9 employees (down substantially and statistically significantly from 66% two years ago) and 50% have annual revenues of less than $1 million (down from the 62% reported in the 2020 Profile Study).[1]

- Consistent with this, in 2022, a significantly higher percentage of the total was made up of larger firms (44% of firms now have 10+ employees vs. 34% in 2020 and 29% in 2018) and 39% of firms now have annual revenue of more than $1 million compared with 31% in 2020 and 27% reported in the 2018 Profile Study).

A decline in the percentage of smaller firms also took place between 2014 and 2016, but then stabilized as of the 2018 Profile Study. (The 2018 results are not shown.)

- As shown on the next page, there are significantly fewer firms with 1-4 employees and more firms with 10+ employees—10+ in total and at each of the size breaks of (10-19, 20-99, 100+). Also on the next page there are significantly fewer firms with revenue of under $1 million and more firms with revenue of over $2.5 million—in total and at each of the revenue breaks—$2.5 million to less than $10 million, $10 million to less than $25 million and $10 million or more.

  Table 4, Q2A //Table 6, Q3

[1] Note that some of the higher revenue may be due to the pandemic-induced inflation in the cost of materials

The combined categories of 1-9 Under $1 million are not shown

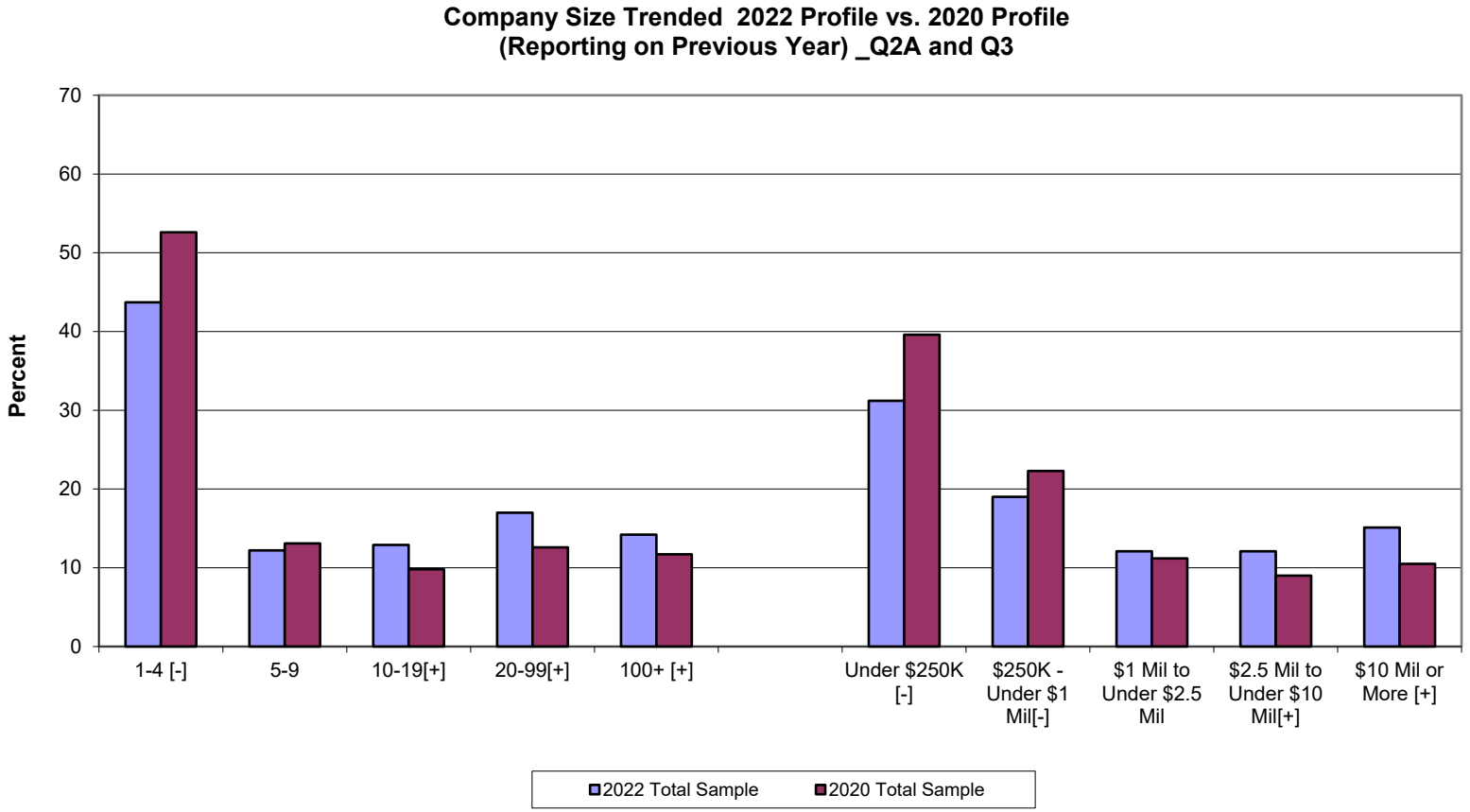


Table 4-1, Q2A //Table 6-1, Q3

(+) or (-) next to the title indicates a significant difference compared to its pair

Revenue and Number of Employees

The subgroups are shown for context only and have not been significance tested. This is because we have a concern that the question may have been misinterpreted or misunderstood. Otherwise, it is difficult to explain, for example, how a how firm with 100+ employees could have a yearly revenue as low as $2.5 million.

Number of Employees by Firm Revenue 2022 Profile Study_Q3								
	Total	1-4	5-9	1-9	10+	10-19	20-99	100+
	(843)	(368)	(103)	(471)	(372)	(109)	(143)	(120)
	%	%	%	%	%	%	%	%
Less than $ 1 Million	50	88	58	82	10	26	6	1
Less than $250K	31	67	10	55	1	4	1	0
Between $250K and <$1 Million	19	21	49	27	9	22	6	1
$ 1 Million or More	39	2	34	9	77	63	86	80
Between $1 Million and <$2.5 Million	12	2	30	8	17	47	9	0
Between $2.5 Million and <$10 Million	12	0	4	1	26	16	48	9
Between $10 Million and <$25 Million	6	0	0	0	14	1	25	14
$25 Million or More	9	0	0	0	20	0	4	57
Don’t Know/Not Answer	11	10	8	9	12	11	8	19

Table 6

Firm Revenue by Number of Employees
2022 Profile Study vs. 2020 Profile Study (Reporting on Previous Year) (Q3)

	Total		1-4		5-9		10-19		20-99		100+	
	2022	2020	2022	2020	2022	2020	2022	2020	2022	2020	2022	2020
	(843)	(1635)	(368)	(860)	(103)	(215)	(109)	(160)	(143)	(206)	(120)	(192)
	%	%	%	%	%	%	%	%	%	%	%	%
Less than $1 Million	50<	**62**	88	92	58	70	26	25	6	10	1	3
Less than $250K	31<	**40**	67	71	10	11	4	4	1	2	0	0
Between $250K and <$1 Million	19<	**22**	21	22	49	59	22	21	6	7	1	3
$ 1 Million or More	**39>**	31	2	1	34	24	63	68	86	84	80	82
Between $1 Million and <$2.5 Million	12	11	2	1	30	22	47	49	9	19	0	4
Between $2.5 Million and <$10 Million	**12>**	9	0	0	4	2	16	19	48	46	9	8
Between $10 Million and <$25 Million	**6>**	4	0	0	0	0	1	0.6	25	15	14	16
$25 Million +	**9>**	7	0	0	0	0	0	0	4	3	57	53
Don't Know/No Answer	**11>**	7	10	6	8	6	11	7	8	7	19	16

Table 6

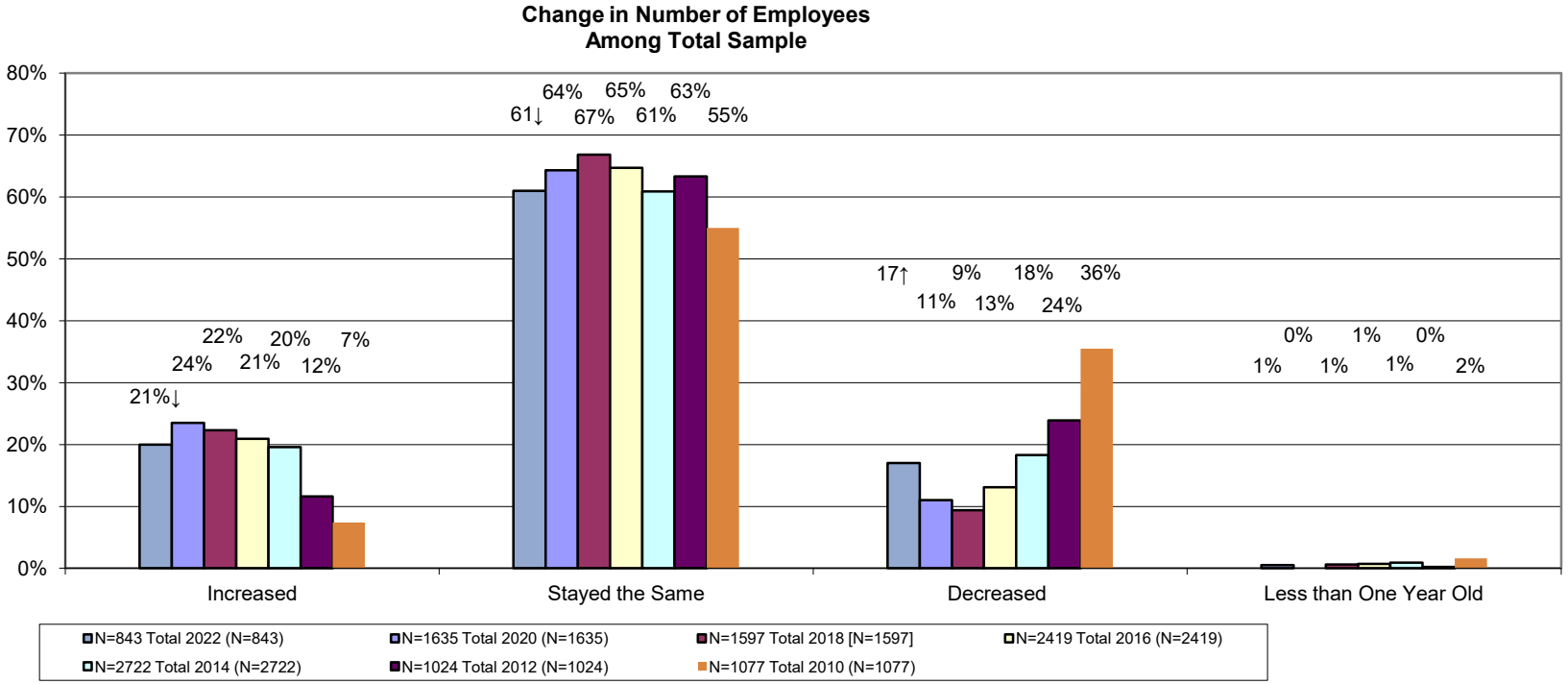
< Indicates a significant difference at the 90% level of confidence among the total sample

Change in Company Size During Past 12 - 18 Months

In spite of all of the COVID -19 pandemic-induced upheaval, most firms that participated in the 2022 Profile Study reported that their firm stayed the same in terms of number of employees (61%). About two in ten reported either increasing (20%) or decreasing (17%).

Across the total sample, compared to two years ago fewer firms either stayed the same or increased while a higher percentage of the total sample decreased in number of employees.

- What is outside the scope of this study is the extent to which some electrical contracting companies may have gone out of business and thus were not in a position to participate in this study to report their status.



The symbols ↓↑ indicate significant changes at the 90% level of confidence vs. 2020

Change in Company Size (Cont.)

- Most firms stayed the same
- The percentage that added employees is statistically equal to the percentage that lost employees (about 20% each)
- Fewer firms increased; more firms lost employees
    - However, the percentage of firms losing employees was **nothing like the 2010 Profile when 36% reported losing employees**

Change in Company Size During Past 12 - 18 Months 2022_Q2B							
		Total					
Q2B, Table 5	2022	2020	2018	2016	2014	2012	2010
	(843)	(1635)	(1597)	(2419)	(2722)	(1024)	(1077)
Increased	20%	**<24%**=	22%	21%	**20%>**	**12%>**	7%
Stayed the Same	61%	**<64%** =	67%	65%>	61%=	**63%>**	55%
Decreased	**17%>**	11%=	9%	<13%	**<18%**	**<24%**	**<36%**

Compared to two years ago, fewer firms in both size breaks (1-9 and 10+) increased in size while more firms in both size breaks lost employees.

- Note that fewer firms with 1-9 employees gained staff (7%) compared with 36% of larger firms that added employees.

	Change in Company Size During Past 12 - 18 Months 2022_Q2B														
		1-9 Employees							10+ Employees						
	2022	2020	2018	2016	2014	2012	2010		2022	2020	2018	2016	2014	2012	2010
	(471)	(1075)	(1122)	(1744)	(2039)	(759)	(780)		(372)	(558)	(469)	(665)	(668)	(258)	(285)
Increased	7%	**<10%**	10%	11%	**12%>**	6%=	5%		36%<	**49%=**	**53%>**	**47%>**	**42%>**	**27%>**	15%
Stayed the Same	76%	78%	**80%>**	**75%>**	70%=	**72%>**	67%		41%=	38%=	36% =	38%	35%=	**37%>**	23%
Decreased	**14%>**	10%	9%	<12%	**<17%**	**<20%**	**<26%**		**21%>**	13%>	10%	<15%	**<23%**	**<35%**	**<61%**

Table 5

Bolded numbers > and < indicate statistically significant differences in the direction of the arrow

Confidence in Growth of the Economy Over the Next Few Years

Confidence in the growth of the economy is dramatically more negative than was the case two years ago; the percentage reporting that they were extremely or very confident in the economy dropped significantly to 25%: from 53%.

The percentage choosing the middle point of "somewhat" confident is statistically unchanged while the percentage that say that they are "not very or not at all" confident jumped to 32% from 9% two years earlier.

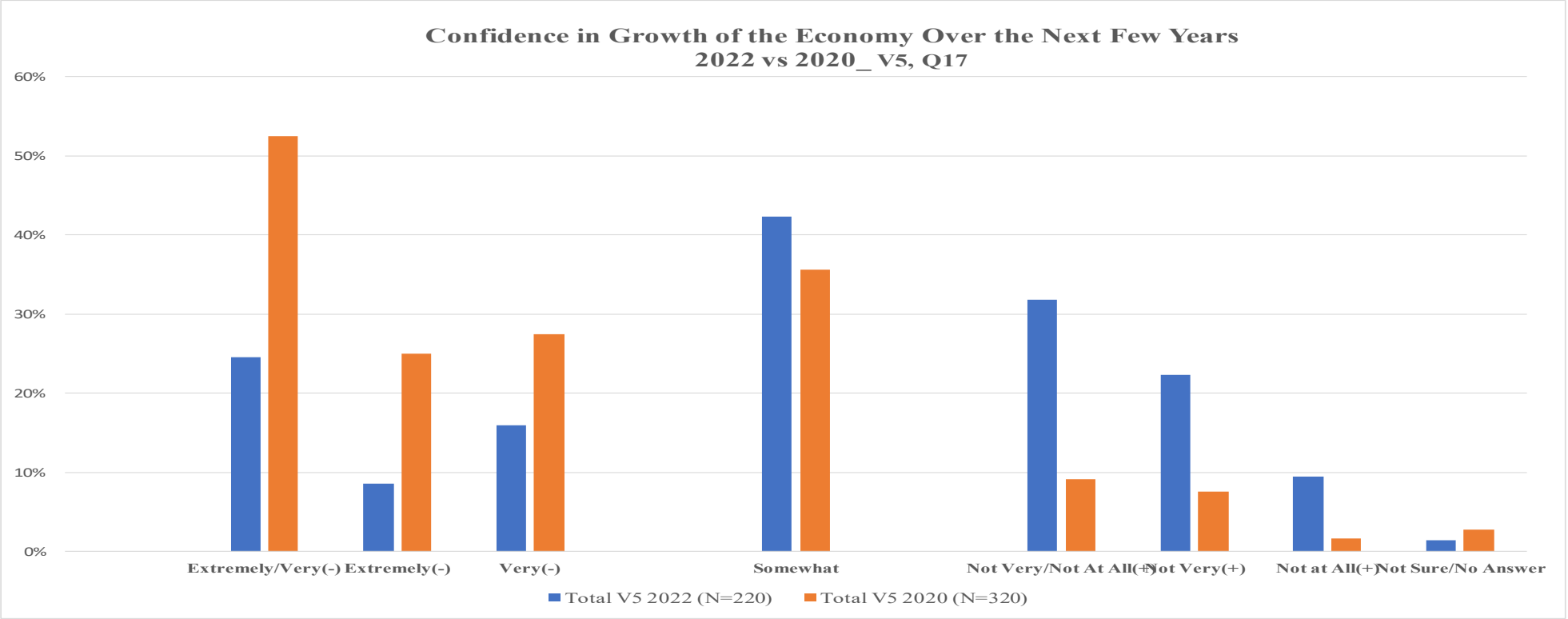


Table 141

+/- next to the data labels indicate statistically significant differences from 2020 among the total sample

Which Groups Stand Out in Terms of Confidence in the Growth of the Economy Over the Next Few Years?

- Those in firms that added employees and/or electrical contractors aged 65+ are more likely to be confident in the growth of the economy over the next few years compared with other subgroups. Those in the Northeast and/or those whose firms stayed the same size or that lost employees are less likely to be confident

- Those in the North Central states are more likely than those in the Northeast to be at least somewhat optimistic about the economy over the next few years

Confidence in Growth of the Economy Over the Next Few Years_V5_Q17											
	Total V5 2022	1-9 Employees	10+ Employees	35-54	55-64	65+	Increased	Stayed the Same	Decreased	Northeast	North Central
Version 5, Q17	(220)	(124)	(96)	(59)	(89)	(67)	(41)	(143)	(36)	(54)	(64)
	%	%	%	%	%	%	%	%			
Extremely/Very	25					**<33**	**39>**				
Extremely	9						**24>**	**6>**	*0*	*4*	
Very	16			*9*		**<25**					
Somewhat	42	*37*	**<49**	**58>**		*28*	*29 vs. 56*		**<56** vs. 29	*30*	**<53**
Not Very/Not At All	32	**39>**	*23*	*20*						**46>**	*16*
Not Very	22									**32>**	*13*
Not at All	10	**15>**	*3*	*2*				**12>**	*3*		*3*
Not Sure/No Answer	1										

Table 141

Empty cells are not significantly different than the total sample

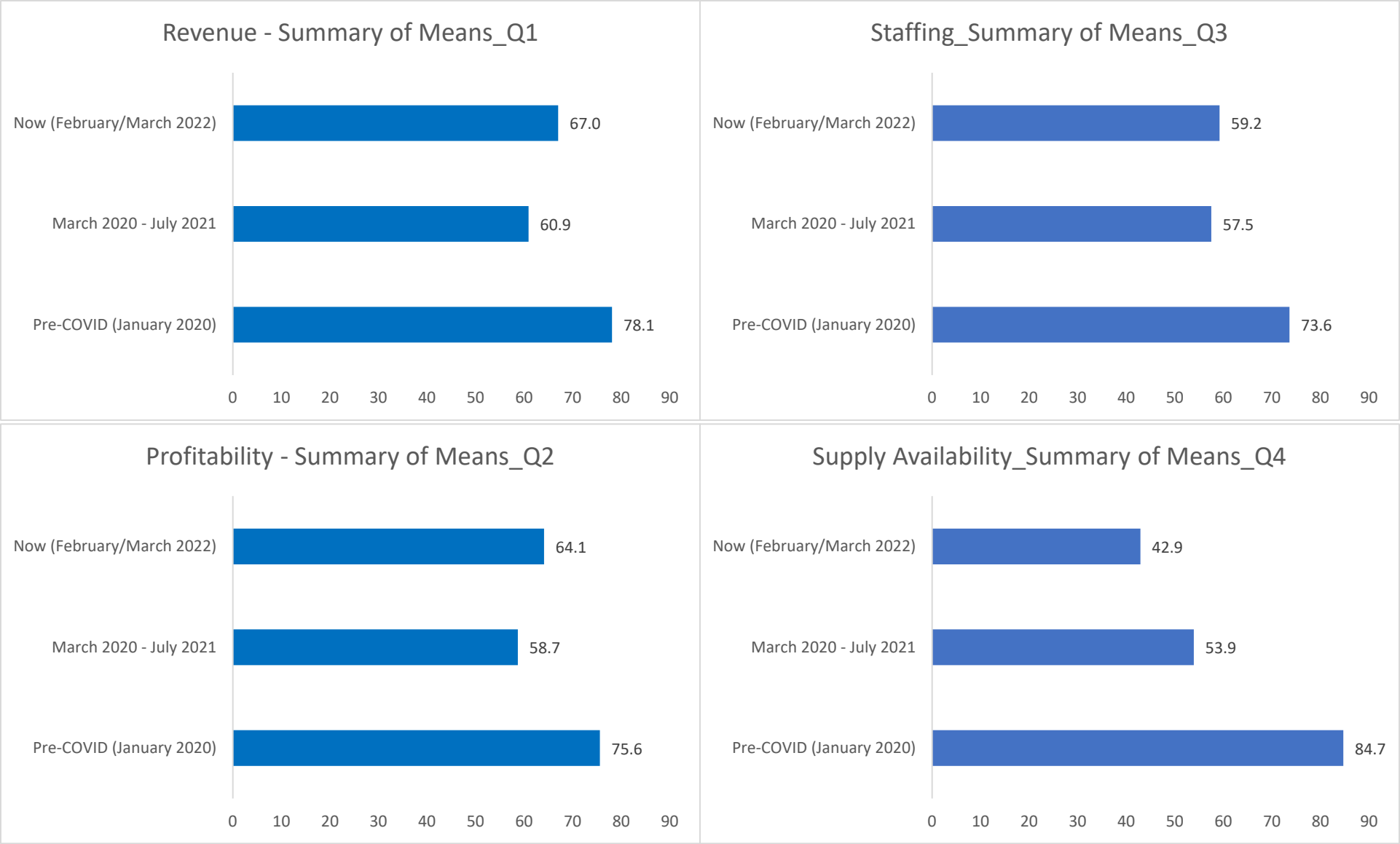
Bolded numbers > and < indicate statistically significant differences in the direction of the arrow

One reason for the low level of confidence may be that perceptions of conditions have not improved to pre-pandemic levels in terms of Revenue, Profitability, Ability to Staff and Supply Chain Conditions. This is shown by the lengths of the bars at these three points in time: just before COVID-19, From March 2020 through July 2021, and "Now" (February/March 2022). Note that this question was asked "after the fact" rather than at the three points in time and may be subject to recollection bias, that is, that memories might get distorted over time.

As noted, the levels of satisfaction were higher pre-pandemic and that none returned to their pre-pandemic levels although revenue and profitability are recovering.

Levels of Satisfaction, Pre-pandemic to the Present

Mean attribute rating Scale_(0 = very poor, 100 = terrific)



Other Firm Characteristics Including Administration

(NECA Membership, Use of IBEW Labor, Percent of Workforce that is Business/Office Worker vs. Onsite Electrical Workers, Requirements to Bid on a Project, Business Development and Number of Years in Business, Difficulty Finding and Retaining Skilled Workers)

- 24% of firms in this survey are NECA members, a statistically significant increase from the 18% reported in the 2020 Profile Study. As noted in the past, NECA membership skews to larger firms. As was the case two years ago, NECA membership is significantly higher among firms with 20+ employees (rather than 10+ employees as was the case in 2018.)
    - NECA membership is 10% among firms with 1-9 employees but 42% among firms with 10+ employees. Further, as shown below, membership likelihood increases with company size:
        - NECA membership is 26% among firms with 10-19 employees; 45% among firms with 20-99 employees and 54% among firms with 100+ employees.

Firm is a NECA Member 2022_Q10A								
		Number of Employees						
	Total	1-4	5-9	1-9	10+	10-19	20-99	100+
	(843)	(368)	(103)	(471)	(372)	(109)	(143)	(120)
Yes, Firm is a NECA Member	24	7	**<19**	10	**<42**	26	**<45**	**<54**

Table 56

- As noted above, compared with two years ago, NECA membership rose among the total sample and also among firms with 10-19 employees (26% from 17% in the 2020 Profile Study report). This reverses the decline that took place between 2020 and 2018 (when NECA membership dropped to 18% in 2020 from 26% in 2018). [2018 results are not shown]

Firm is a NECA Member – Trended_Q10A																
			Number of Employees													
	Total		1-4		5-9		1-9		10+		10-19		20-99		100+	
	2022	2020	2022	2020	2022	2020	2022	2020	2022	2020	2022	2020	2022	2020	2022	2020
	(843)	(1635)	(368)	(860)	(103)	(215)	(471)	(1075)	(372)	(558)	(109)	(160)	(143)	(206)	(120)	(192)
Yes, Firm is a NECA Member	**24>**	18	7	6	19	15	10	8	42	38	**26>**	17	45	36	54	56

Table 56

Firm Uses IBEW Labor

- About one quarter of electrical contracting firms interviewed make use of IBEW labor
- Use of IBEW labor rises with the number of employees
- Note that fully 20% of firms with 5-9 employees make use of IBEW compared to only 8% of firms with 1-4 employees

Firm Uses IBEW Labor -2022 (Q10B)								
		Number of Employees						
	Total	1-4	5-9	1-9	10+	10-19	20-99	100+
	(843)	(368)	(103)	(471)	(372)	(109)	(143)	(120)
	%	%	%	%	%	%	%	%
Yes	25	8	**<20**	10	**<43**	24	**<41**	**<63**

Table 57

< Indicates a significant difference at the 90% level of confidence in the direction of the arrow

- Use of IBEW labor *rose* significantly compared with two years ago in total and among firms with 10+ employees. However, none of the differences were significantly different by individual subgroup size segments such as 10-19, 20-99 or 100+.

Firm Uses IBEW Labor Trended (Q10B)																
			Number of Employees													
	Total		1-4		5-9		1-9		10+		10-19		20-99		100+	
	2022	2020	2022	2020	2022	2020	2022	2020	2022	2020	2022	2020	2022	2020	2022	2020
	(843)	(1635)	(368)	(860)	(103)	(215)	(471)	(1075)	(372)	(558)	(109)	(160)	(143)	(206)	(120)	(192)
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Yes	**25>**	19	8	8	20	17	10	10	**43>**	37	24	17	41	35	63	56

Table 57

On-site vs. Office Workers

- There continues to be a very consistent approximately 80%/20% split between the average percentage of the workforce that is considered on-site electrical workers vs. the average for being considered primarily business/office workers. (The actual split is 78%/22%.) This question was asked of the 592 firms that have more than 3 employees. [Q10C, Table 59]

    - Interestingly, the only exception in 2022 is among firms with 5-9 employees—their average of onsite workers is slightly, but statistically significantly, higher than for any of the other subgroups (81% on site electrical workers/19% business/office workers).

    - Going back in time, in 2020, the average split was 23.5% office workers and 77.5% on-site electrical workers among firms with 100+ employees, but that difference did not emerge in the 2022 Profile Study.
      Table 62,- Q10F

Special Designations

The vast majority of firms (83%) do not claim/qualify for any of the designations listed below. Further, the vast majority of firms that do qualify (14%/17%) qualify for only a *single* designation. While 17% of firms report having these designations, as shown two pages ahead, a higher percentage (22%) cite these designations as a requirement for bidding a job, perhaps negatively affecting their ability to qualify for this work.

- Two company size groups—those with 5-9 (vs. firms with 1-4 employees) and those with 20-99 (vs. firms with 100+ employees)—are more likely to report qualification in one or more of these designations.

Firm Qualifies for Any of These Designations – 2022_Q10F								
		Number of Employees						
	Total	1-4	5-9	1-9	10+	10-19	20-99	100+
	(843)	(368)	(103)	(471)	(372)	(109)	(143)	(120)
	%	%	%	%	%	%	%	%
Any Designation	17	12	**<25**	15	19	21	**22>**	13
Minority-Owned Business (MBE)								
Yes	8	7	11	8	9	10	**13>**	3
Women-Owned Business (WBE)								
Yes	7	4	**<14**	6	9	6	**<11**	8
Disabled Veterans Business (DBVE)								
Yes	3	2	6	3	3	4	1	**<5**
Hubzone								
Yes	2	0	**<2**	1	**<3**	5	4	2
Number of Designations: Only 1								
Only 1	14	11	**<18**	13	15	18	15	10
Number of Designations: Only 2+								
2+	3	1	**<7**	2	4	3	**7**	3

Table 62

- Among the total sample, those qualifying for a designation increased significantly from two years ago, possibly driven by firms with 5-9 employees, specifically for women-owned businesses and businesses owned by disabled veterans.

Firm Qualifies for Any of These Designations –Trended_(Q10F)																
			Number of Employees													
	Total		1-4		5-9		1-9		10+		10-19		20-99		100+	
	2022	2020	2022	2020	2022	2020	2022	2020	2022	2020	2022	2020	2022	2020	2022	2020
	(843)	(1635)	(368)	(860)	(103)	(215)	(471)	(1075)	(372)	(558)	(109)	(160)	(143)	(206)	(120)	(192)
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Any Designation	**17>**	13	12	11	**25>**	15	15	12	19	16	21	19	22	19	13	10
Minority-Owned Business (MBE)																
Yes	8	7	7	6	11	9	8	6	9	9	10	8	13	12	3	5
Women-Owned Business (WBE)																
Yes	7	6	4	4	**14>**	7	6	5	9	9	6	**<13**	11	9	8	6
Disabled Veterans Business (DBVE)																
Yes	**3>**	2	2	2	**6>**	1	3	2	**3>**	1	4	1	1	2	5	2
Hubzone																
Yes	**2>**	1	0	**<1**	2	1	1	1	**3>**	1	**5>**	0	4	3	2	1

Table 62

-- Requirements to Bid a Project

- Across the total sample, almost one-half (48%) say that they are required to have a prequalified standards and safety program in place in order to bid on a project. As we noted two years ago, what is really going on is that small firms—those with 1-4 employees—are far *less* likely to have these requirements placed on them. Around 51%-57% of firms with 5-9 or with 10-19 employees encounter this requirement compared with 24% of firms with 1-4 employees. In contrast, three-quarters of firms with firms with 20+ employees encounter these requirements.

- Across the total sample, about one in five (22%) say that they are required to have man-hour requirement for women/minorities or veterans in order to bid on a project. Once again, this requirement falls more heavily on larger firms and increases significantly and steadily from 8% among firms with 1-4 employees to 32% for firms with 20-99 employees and to almost 50% for firms with 100+ employees.

- Nevertheless, about 6 in 10 firms (63%, up significantly from 59% two years ago) say that they already have a certified safety program or that they plan to institute one in 2022; having a certified safety plan increases steadily with company size.

- As we noted two years ago, the need to meet standards to bid a job rises with company size, starting with firms with 5-9 employees

- There appears to be a shortfall between the percentage of firms that are required to show female/minority/veteran man-hour requirements as shown below at 22% and the percentage of electrical contracting firms that report these designations, Any designation, while 17% claim these designations (Any designation) shown two pages earlier.

Prequalified Standards and a Certified Safety Program Needed to Bid a Job (Q10D) - 2022								
		Number of Employees						
	Total	1-4	5-9	1-9	10+	10-19	20-99	100+
	(843)	(368)	(103)	(471)	(372)	(109)	(143)	(120)
	%	%	%	%	%	%	%	%
Yes	48	24	**<51**	30	**<71**	**<57**	**<76**	**<77**
Female/Minority/Veteran Man-Hour Workforce Requirement Needed to Bid a Job								
Yes	22	8	**<21**	11	**<36**	26	**<32**	**<49**
Prequalified Standards and a Certified Safety Program In Place or Will be Added in 2022 (Q10E)								
Yes	63	37	**<71**	45	**<86**	**<74**	**<90**	**<92**

Tables 60 and 61

-- Separate Divisions

- As was the case two years ago, four in ten electrical contracting firms (41%) currently have a separate division or department that handles service and maintenance. Larger firms are about twice as likely to have a separate service and maintenance unit compared with smaller firms.

- About two in ten electrical contracting firms (22%) currently have a separate low-voltage division. Larger firms are almost four times more likely to have a low-voltage unit compared with smaller firms.

- About two in ten firms have a separate business development unit (20%) and about one in ten has a separate HVAC unit (12%). Once again, in both cases, larger firms are more likely than smaller firms to have these separate units.

    - As shown on the next page, the only statistically significant difference compared with two years ago is that smaller firms are now about four times more likely to have a separate business development unit than was the case in the 2020 Profile Study (12% vs. 3%)

Presence of Separate Division or Department That Handles the Following Work -2022			
	Total	1-9	10+
	(843)	(471)	(372)
	%	%	%
Separate Service and Maintenance Unit [Q7c]			
Currently Has	41	28	**<57**
Plans to Open in Next 1-2 Years	5	5	4
Total Current or Planned	45	33	**<61**
Separate Low-Voltage Unit [Q7a]			
Currently Has	22	10	**<38**
Plans to Open in Next 1-2 Years	6	5	6
Total Current or Planned	28	15	**<44**
Separate Business Development Unit [V5, 16]	(220)	(124)	(96)
Currently Has	20	12	**<30**
Separate HVAC Voltage Unit [7b]			
Currently Has	12	7	**<19**
Plans to Open in Next 1-2 Years	3	3	3
Total Current or Planned	15	10	**<21**

Tables 40, 41, 42 and 140

- Having a separate business development unit rose substantially among firms with1-9 employees, rising among firms with 1-4 employees (to 8% from 3%) and among firms with 5-9 employees to 24% from 6% (results for 1-4 and 5-9 are not shown).

- On the other hand, there is a strongly directional *decrease* in the percentage of firms with 10+ employees reporting a separate business development department in the 2022 Profile Study than in the 2020 Profile Study.

- The reason for this is unclear. It could be related to manpower/supply issues: possibly, over the past 2 years, a number of 10+ firms no longer felt the need (or reason) to devote dedicated people to getting new business. This hypothesis would have to be explored separately.

Presence of Separate Division or Department That Handles the Following Work						
	Total		1-9		10+	
	2022	2020	2022	2020	2022	2020
	(843)	(1635)	(471)	(1075)	(372)	(558)
	%	%	%	%	%	%
Separate Service and Maintenance Unit [Q7c]						
Currently Has	41	40	28	31	57	57
Plans to Open in Next 1-2 Years	5	4	5	4	4	4
Total Current or Planned	45	44	33	36	61	61
Separate Low-Voltage Unit [Q7a]						
Currently Has	22	22	10	12	38	40
Plans to Open in Next 1-2 Years	6	5	5	5	6	6
Total Current or Planned	28	27	15	17	44	46
Separate Business Development Unit [V5, 16]	(220)	(320)	(124)	(210)	(96)	(110)
Currently Has	20	16	**12>**	3	30(*)	**<41(*)**
Separate HVAC Voltage Unit [7b]						
Currently Has	12	12	7	9	19	17
Plans to Open in Next 1-2 Years	3	3	3	3	3	4
Total Current or Planned	15	15	10	12	21	21

Tables 40, 41, 42 and 140

Bold percentages are significantly higher than *italicized* percentages (*) difference is just short of statistical significance

-- Employee Relations

Electrical contractors were asked a series of questions about hiring and retaining workers, their use of contract labor and the extent of their government work.

In the then current job market (from end of January through April 15, 2022), across the total Version 5 sample, 68% said that they had difficulty finding trained workers; separately, 27% said that they had difficulty *retaining* trained workers. Note that the second question (retaining) was not contingent on answers to the first question (difficulty finding trained workers).

- Larger firms have significantly more trouble **both finding and retaining trained** workers.

Extent of Difficulty in Finding or Retaining Trained Workers			
Version 5_Question 18 - 19	2022 Profile Study		
	Total	Number of Employees	
		1-9	10+
	(220)	(124)	(96)
	%	%	%
Difficulty in Finding Trained Workers	68	58	**<u><81</u>**
Difficulty in Retaining Trained Workers	27	18	**<u><39</u>**

Tables 142 and 143

- However, this was also the case two years ago, that is, these percentages have not changed significantly from two years ago.

Extent of Difficulty in Finding or Retaining Trained Workers -- Trended						
Version 5_ Question 18 – 19	Profile Study					
	Total		Number of Employees			
			1-9		10+	
	2022	2020	2022	2020	2022	2020
	(220)	(320)	(124)	(210)	(96)	(110)
	%	%	%	%	%	%
Difficulty in Finding Trained Workers	68	65	58	60	81	76
Difficulty in Retaining Trained Workers	27	29	18	23	39	41

Tables 142 and 143

-- Participation in Government Work

Almost 6 in 10 of the electrical contractors who participated in Version 5 of the survey have done government work since about 2020, also since 2018 (not shown). About 5 in 10 say that they expect to do government work in 2022. Note that in both instances, work for a local government is most prevalent and federal is mentioned least. Larger companies are more likely than smaller companies to do each of these types of work and to work for more than one governmental entity.

- The 58% that report having worked for a governmental entity is statistically unchanged from 2020 [Version 5, Q21], or planning to do so (59%)

As was the case two year ago Local>State> Federal **Involvement with Government Projects – 2022 Profile Study**							
Version 5_Q22a and 22b	Completed Government Work Since About 2020				Expect to Work on Government Projects in 2022		
	Total	Number of Employees			Total	Number of Employees	
		1-9	10+			1-9	10+
	(220)	(124)	(96)		(220)	(124)	(96)
	%	%	%		%	%	%
Mentioned Any	58	44	**<77**		59	44	**<78**
Local	49	38	**<64**		51	38	**<67**
State	32	19	**<50**		31	18	**<47**
Federal	17	5	**<32**		18	7	**<32**
Mentioned Only 1	28	28	28		28	27	30
Mentioned 2+	30	15	**<49**		31	17	**<48**

Tables 145 and 146

Bold percentages are significantly higher than *italicized* percentages in the direction of the arrow

-- Length of Time Firm Has Been in Business

Across the total sample, 89% of the firms in this survey have been in business for more than 10 years! On average, the electrical contracting firms that participated in this study have been in business an average of 34.7 years.

- As was the case two years ago, smaller firms tend to be newer than 30 years old (actually 27.9 years), while firms with 10+ employees are more likely than smaller firms to have been in business for 43 or more years. In fact, 53% of companies with 100+ employees have been in business for 50 years or more (not shown).

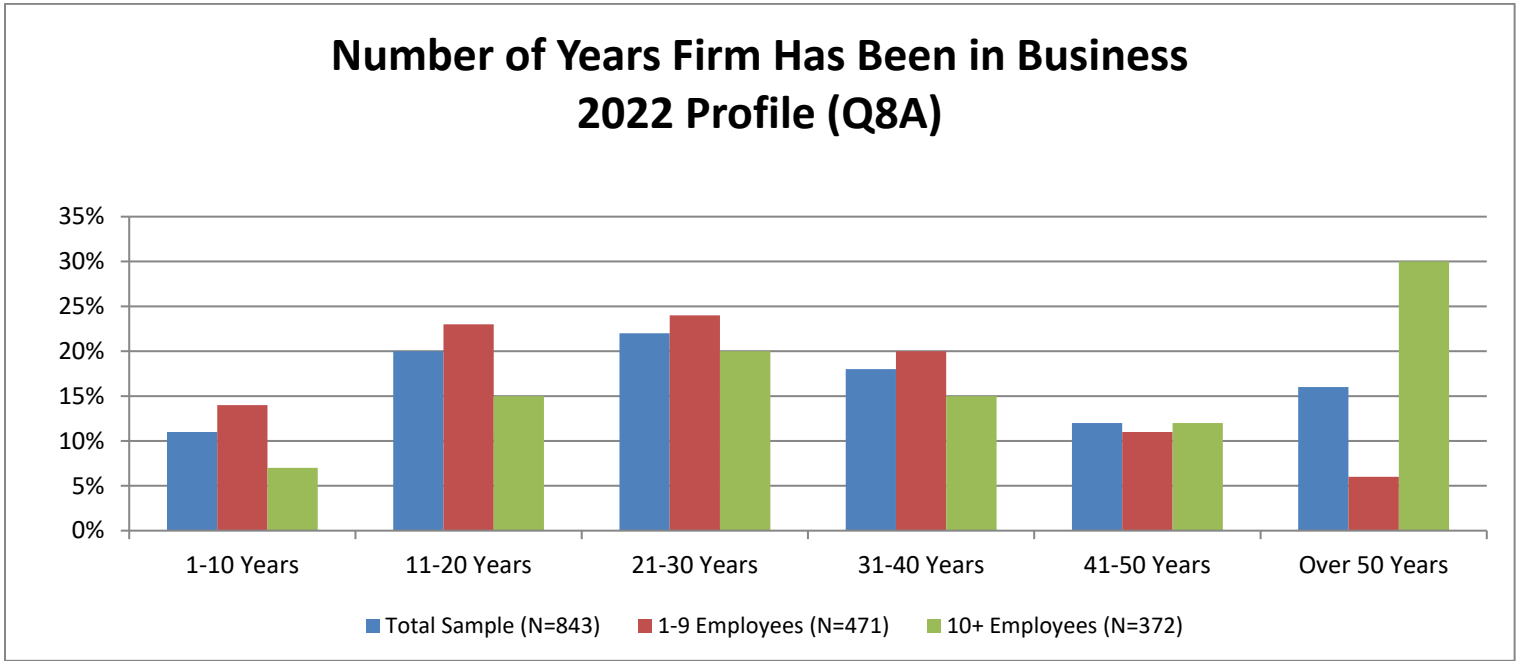


Table 43

Number of Years Firm Has Been in Business (Q8A) –2022 Profile Study			
	Total	1-9	10+
	(843)	(471)	(372)
	%	%	%
1-10	11	**14>**	7
11-20	20	**23>**	15
21-30	22	24	20
31-40	18	20	15
41-50	12	11	12
More than 50 years	16	6	**<30**
Average Years in Business	34.7	27.9	**<43.1**

Table 43

- However, in 2022 there are also somewhat *fewer new businesses* compared with two years ago: **firms that have been in business 1-10 years is down from 15% to 11% of the sample, driven by firms with 1-9 employees, while firms in business** 50+ years in business rose (to 16% from 13%)…perhaps this is another indication of consolidation, and could it also be another reason for pessimism on the part of electrical contractors?

Number of Years Firm Has Been in Business (Q8A)—Trended						
	Total		1-9		10+	
	2022	2020	2022	2020	2022	2020
	(843)	(1635)	(471)	(1075)	(372)	(558)
	%	%	%	%	%	%
1-10	11	**<15**	14	**<18**	7	8
11-20	20	19	23	21	15	15
21-30	22	21	24	23	20	19
31-40	18	21	20	23	15	17
41-50	12	11	11	9	12	15
More than 50 years	**16>**	13	6	5	30	28
Average Years in Business	34.7	32.4	27.9	26.8	43.1	43.1

Table 43

"WHO" WORKS FOR CONTRACTING FIRMS?

Age of Respondents

Regardless of company size (number of employees), the survey respondents tend to be at least middle aged, rather than young. Across the total sample, only 1% are aged 18-34, 26% are between the ages of 35 –54, 38% are aged 55-64 and 35% are aged 65+.

- Compared with two years ago, the percentage of respondents aged 18-34 declined slightly but significantly to 1% from 3%. The proportion aged 35-54 also dropped vs. two years ago to 26% from 29%. At the same time, the percentage of electrical contractors that are aged 55 or older rose to 73% from 68% two years earlier. In this case, the increase was driven almost entirely by respondents aged 65-74 (to 29% from 25%) rather than from those who are older than 75 (6% in both 2022 and in 2020).

- Given those age shifts, it should not be surprising that the average respondent age rose significantly to 59.3 from 57.9 two years ago.

- The mean rose among firms with 1-9 employees to 61.2 years from 59.3 years, and also among firms with 10+ employees to 56.9 years (from 55.2).

    - Note that historically, electrical contractors working in larger firms tend to be younger

Average Age of Electrical Contractor in 2022 and Earlier (Q11)				
		Firm Size		
	Total	1-4	1-9	10+
		(a)	(b)	(c)
Average Age (2022 Study) N=843	59.3 (increase from 2020)	61.9 (increase from 2020)	61.2>c (increase from 2020)	56.9 (increase from 2020)
Average Age (2020 Study) N=1635	57.9	59.9	59.3 (decline from 2018) **>c**	55.2 (increase from 2018)
Average Age (2018 Study) N=1597	58.2	60.6	**60.0 >c**	53.8
Average Age (2016 Study) N=2419	57.3	58.7	**58.5>c**	54.1
Average Age (2014 Study) N=2722	56.2	57.4	**57.1>c**	53.3
Average Age (2012 Study) N=1024	56.1	57.5	**57.2>c**	52.6
Average Age (2010 Study) N=1077	53	53.8	**53.8>c**	50.4
Average Age (2008 Study) N=1157	51.2	52. 6	**52. 1**>c	49.2

Table 63

- When looked at by the age brackets shown below, the percentage of respondents in the 2022 Profile who are aged 18- 34 and 35-54 declined (18-34 from 2.7% to 1.3%; 35-54 from 29% to 26%. This latter decline was caused by a decrease in electrical contractors aged 35-44 from 9.8% to 7.1%).

- At the same time, the percentage of respondents in the 2022 Profile who are aged 55 or older increased to 73% from 68% two years earlier. In this case, the increase was driven almost entirely by respondents aged 65-74 (29% from 25%), rather than by those who are older than 75. [Table 63-1]

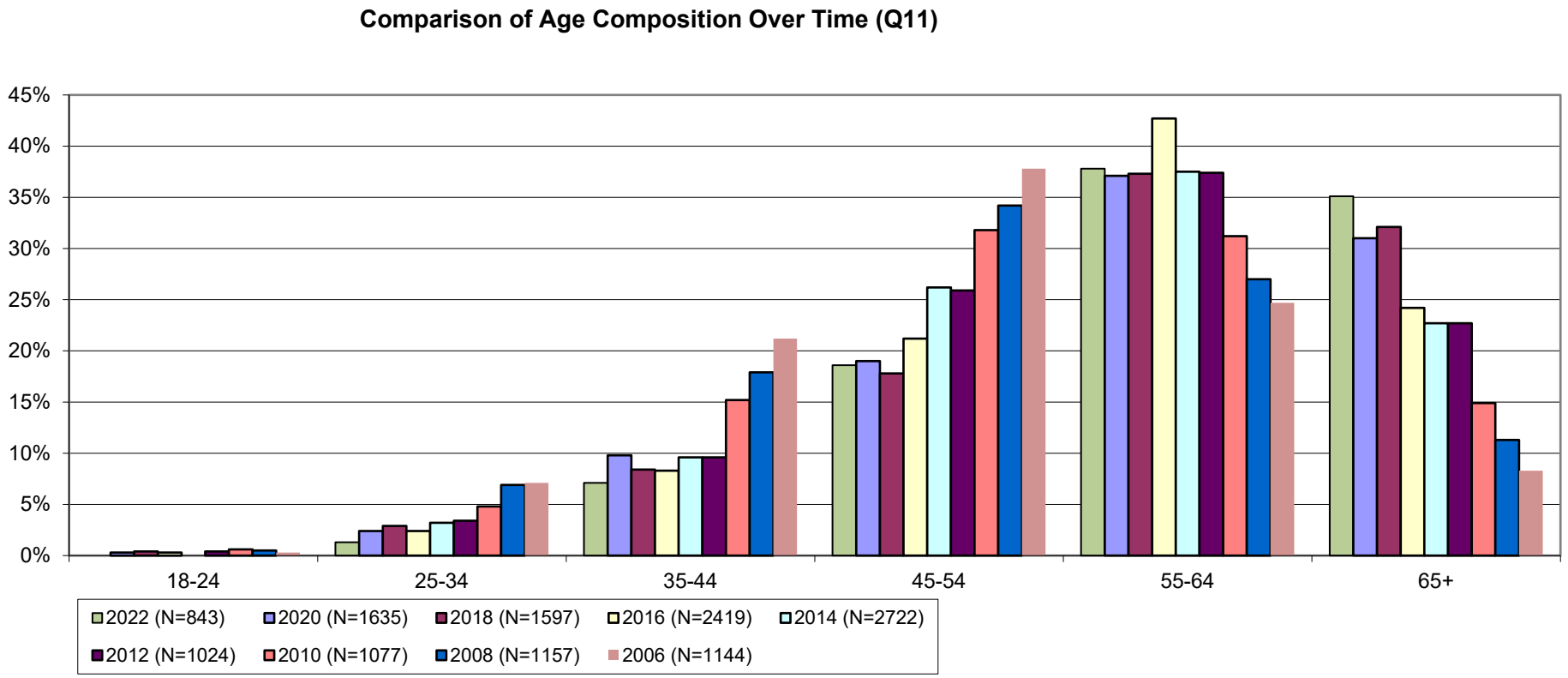


Table 63

-- Length of Time Electrical Contractor Has Been in the Industry

On average, survey participants have been in the industry for 33.9 years. This is a statistically significant increase from the average of 32.4 years reported in 2020. We found 7% of you have been in the industry more than 50 years, which is a slight, but statistically significant increase from the 5% reported in 2020. As was the case in 2020, not surprisingly, 92% with that much experience are older than 65.

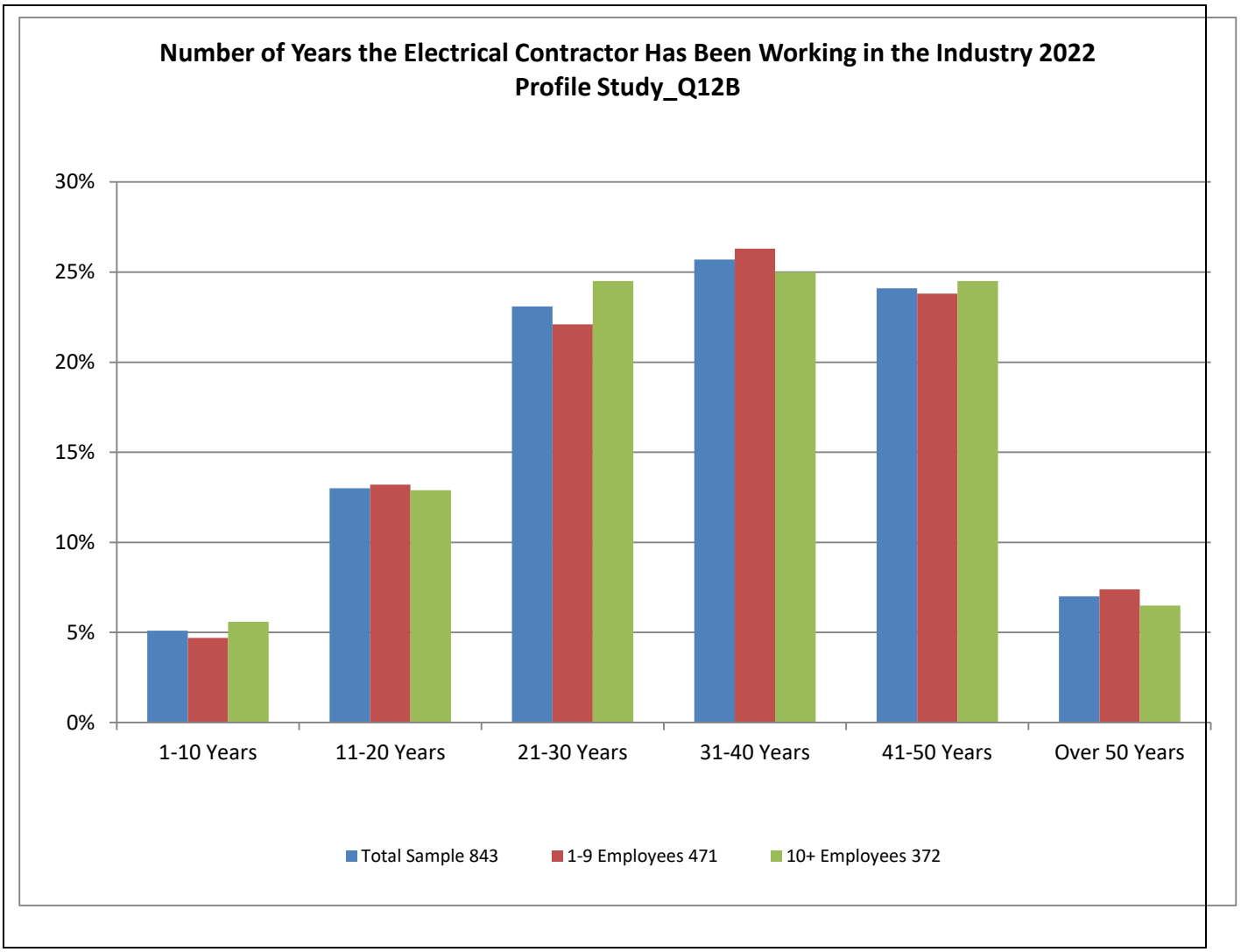


Table 65, Q12B

Respondent Education

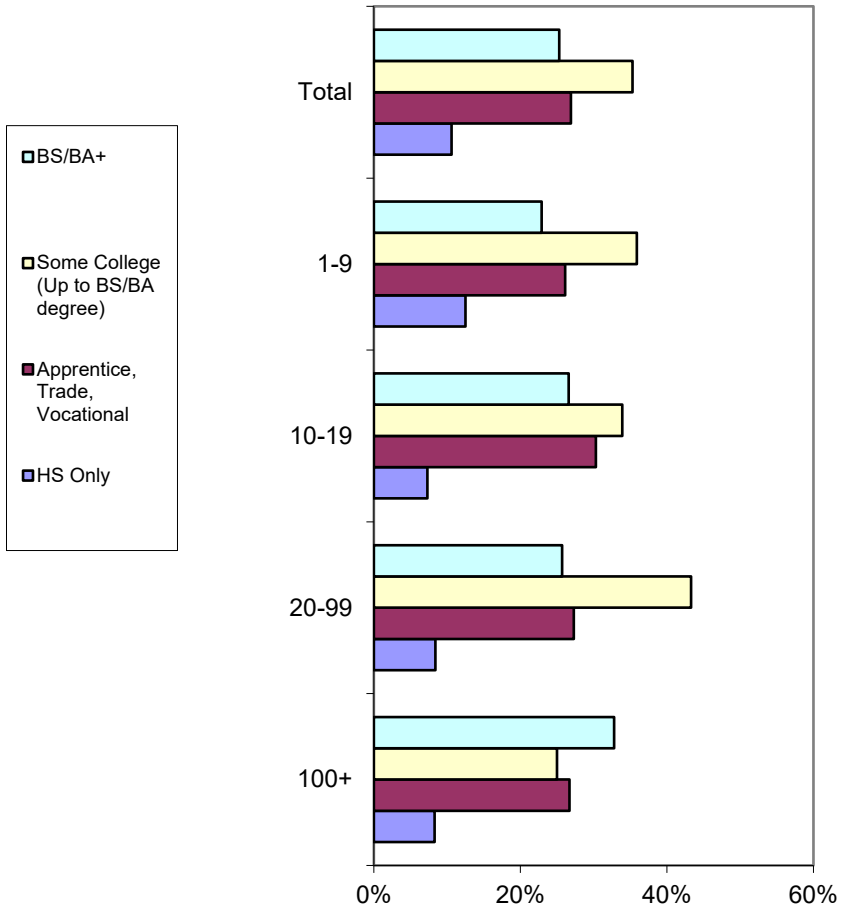
About 6 in 10 electrical contractors have some college education (61%). The percentage that at least attended college rose significantly vs. two year ago when it was 57%.

In a departure from earlier years, the any college/no college split does not vary by company size, although those in firms with 10+ employees are significantly more likely to hold a bachelor's degree or higher (28% in firms with 10+ employees vs. 23% in firms with 1-9 employees.) This is shown on the next page in the chart on the left.

- In 2022, the percent that report trade or vocational school as their highest level of education declined from 31% to 27%.

- Earlier years not shown.

Respondent Education by Number of Employees
2022 Profile Study_Q12A



Respondent Education
Among Total Sample
2022 Profile Study_Q12A

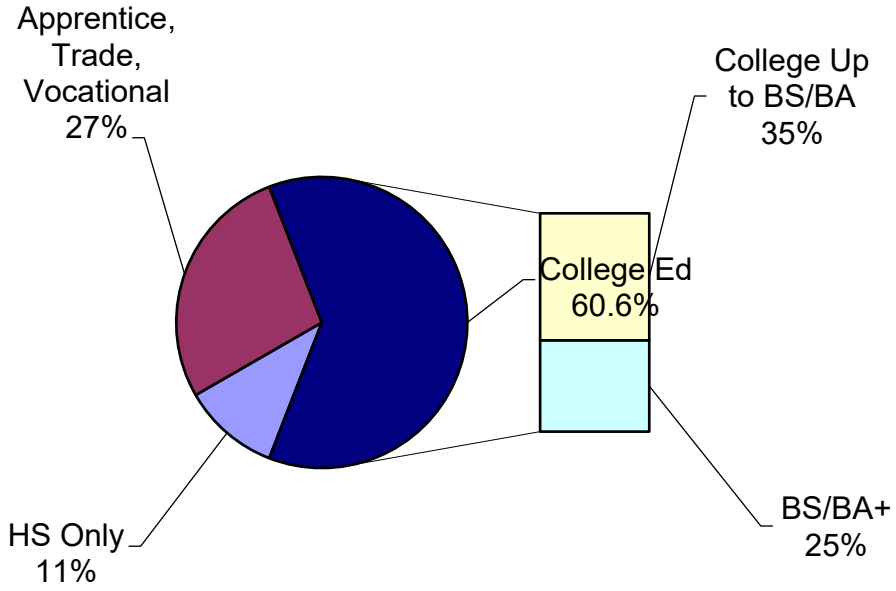


Table 64

Level of Responsibility

- About 7 in 10 of the sample are owners/top management, statistically unchanged from two years earlier. About 10% of the sample are Master Electrician or equivalent title, which declined significantly from 14% two years ago, 7% are project managers, statistically unchanged; 7% have some "other" title, also unchanged from two years earlier. Those who say that they are field management declined slightly but significantly to 1.9% from 3.2%.

Level of Responsibility_Q13A						
	Total		Number of Employees			
			1-9		10+	
	2022	2020	2022	2020	2020	2020
	(843)	(1635)	(471)	(1075)	(372)	(558)
	%	%	%	%		
Owner/Top Management	72	69	**82>**	77	**60>**	55
Master Electrician or Equivalent Title	10	**<14**	9	**<16**	10	12
Project Management	7	6	1	1	14	16
Field Management	2	**<3**	1	1	3	**<8**
Other	8	6	5	5	12	10

Table 67

- In the 2022 Profile Study, Owners/Top Managers are more prevalent in the West (78%) while Master Electricians or Equivalent are most prevalent in the Northeast (15%) and least prevalent in the West (5%).

- Not surprisingly, Owner/Top Managers are most prevalent among those who are 65+ (76%) Those aged 35-54 are less likely to be Owners (65%) and more likely to be Project managers 13%). (Not shown)

Gender

- 4% of the electrical contractors who participated in this survey are women, statistically unchanged from 2020. The female electrical contractors interviewed are less likely to work in very small firms (1-4 employees and/or with revenues of under $250K). They are more likely to be aged 35-54 and/or to be located in the West.

Table 66, Q12C

Where Purchases are Made

Consistent with earlier ELECTRICAL CONTRACTOR research (Panel studies and the 2020 Profile Study), about 60% of electrical contractor purchases are made at Electrical distributors and about 20% at Big-box stores. Note that this question was asked in terms of 2021—rather than 2022—purchasing behavior.

Compared with the 2020 Profile Study, there are no statistically significant differences ***among the total*** sample. However, a few *subgroup* differences did emerge: The average percentage of purchases at Electrical distributors rose substantially and significantly among firms with 20-99 (to 83% from 67%) and among firms with 100+ employees (to 80% from 62%). Direct from the manufacturer declined among firms with 100+ employees (from 21.9% to 9.4%), but there were no other significant differences to account for the sharp increase in purchases from Electrical distributors.

In the second part of this question, we asked electrical contractors about their expectations for 2022 purchases compared with 2021. Two sources posted large and significant expected increases for 2022 purchases: Electrical distributors (from +6.7% to +17.8%) and Big-box stores (from +4.0% to +10.2%).

- The expected decrease in purchasing from Electrical distributors among firms with 1-4 employees measured in 2020 not only did not materialize, but also declined to zero from the 7.2% measured in 2020. (Subgroups are not illustrated)

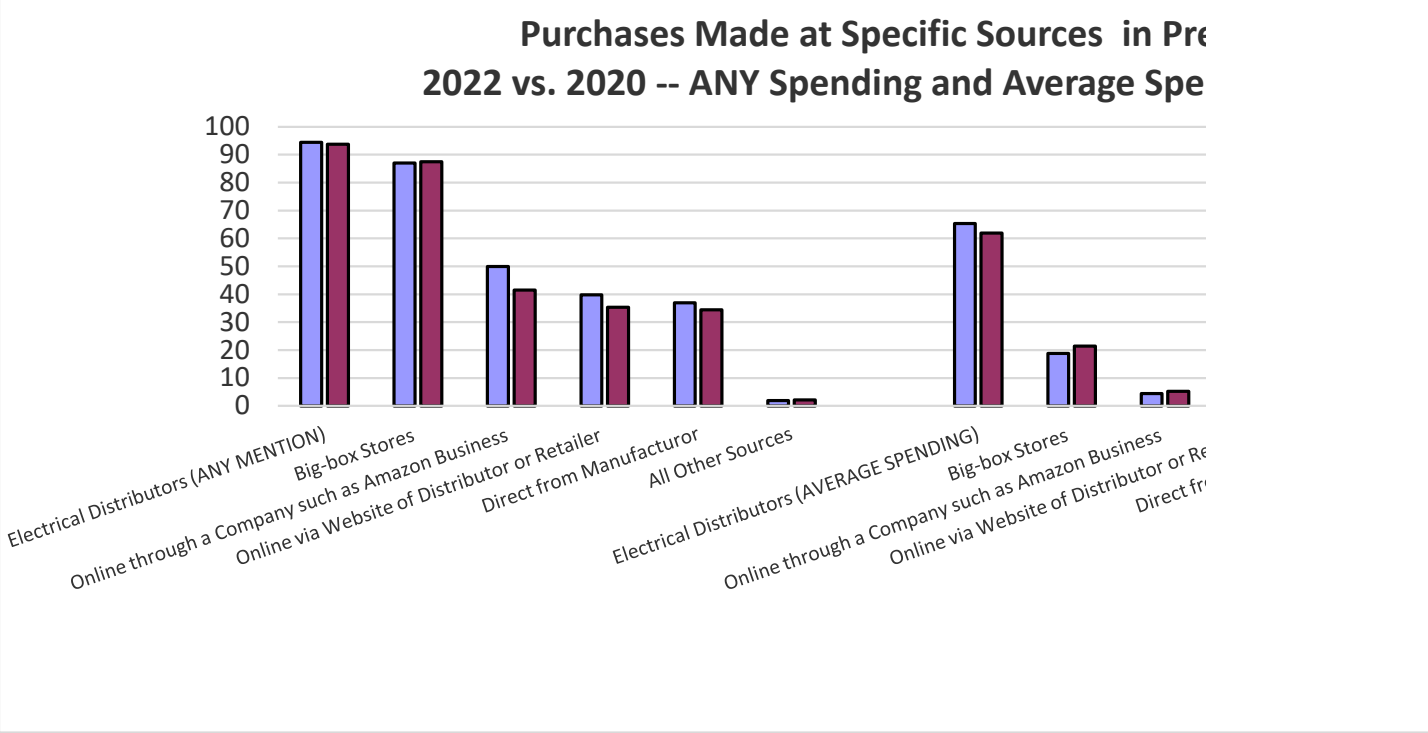


Table 99
+/- next to the data labels indicate statistically significant differences from 2020 among the total sample

Perhaps surprisingly, electrical contractors were most likely to say that the number of supply sources since the start of COVID-19 *stayed the same*: 51%, while approximately equal percentages said that it increased, 23%, as decreased, 18%. This question was first asked in the 2022 Profile Study and cannot be trended.
(V4, Q15C, Table 415)

Perhaps it is also surprising that in spite of supply chain issues, more of the electrical contractors interviewed said that procurement is handled on an *ad-hoc* (as needed basis)—that is, there is no single person or group that is assigned to this task (52%).

- 20% said that their firm had a dedicated part-time procurement officer (who also performs other tasks.

- 13% of the electrical contractors interviewed said that their firm had a dedicated full-time procurement officer.

This question was first asked in the 2022 Profile Study and cannot be trended.
(V4, Q15D, Table 416)

Sources Used to Keep Abreast of Electrical Contractor Industry News, Problem-Solving Ideas and New Product Technology

In this question, we asked the entire sample of 843 electrical contractors to tell us—from a list of 14 items—which sources they used to keep abreast of electrical contractor industry news, problem-solving ideas and new technology. In contrast to 2020, the 2022 list included both media (as in 2020) as well as non-media sources such as vendors (i.e., distributors and retailers) and seminars, webinars and word-of-mouth.

As shown below, trade magazines are chosen the most often, by far. Social Media and podcasts score particularly low on this measure.

The trade magazine results are equally strong both among small and large firms. More electrical contractors aged 65+ rely on trade magazines compared with those aged 35-54. However, all of the other sources score lower than trade magazines with the 35-54 age group. In fact, note the 62-point-plus point difference between trade magazines and social media, even among electrical contractors aged 35-54 or 55-64 years old.

This question was not trended because the list of sources used was different, as was the question wording. However, in 2020, trade magazines (either in print or online) was also chosen most often, 84%, which was 19 percentage points ahead of its next closest competitor—newsletters from trade publications.

Sources Used to Keep Abreast of Electrical Contractor Industry News, Problem- Solving Ideas and New Product Technology (Select all that apply)

Table 220

Bold percentages are significantly higher in the direction of the < or > at the 90% level of confidence. Italicized percentages are smaller than the bolded

	Total (843)	1-9 Employees (471)	10+ Employees (372)	Aged 35-54	Aged 55-64	Aged 65+ (296)
Trade magazines (either print or online)	90%	89%	90%	*86%*	90%	**<93%**
Distributors	66%	*59%*	**<74%**	**73%>**	65%	*<61%*
Manufacturer's Websites	59%	58%	61%	**64%>**	60%	*56%*
Trade magazine or industry website	55%	*50%*	**<61%**	57%	55%	55%
Manufacturer's Catalogs (Printed or Online)	50%	48%	53%	48%	49%	53%
Word of mouth	49%	49%	48%	54%	50%	>45%
Search engines	44%	43%	45%	46%	42%	45%
Trade shows	39%	*31%*	**<49%**	35%	43%	38%
Webinars	31%	*22%*	**<42%**	33%	31%	29%
Retailers (Such as Lowe's or Home Depot)	27%	**32%>**	*22%*	30%	25%	29%
E-Newsletters	25%	*20%*	**<31%**	27%	25%	24%
Seminars (Live/In person)	24%	*18%*	**<31%**	23%	25%	24%
Social media (such as Linkedin, Facebook, Instagram, Twitter or You Tube)	14%	13%	15%	**24%>**	13	*8%*
Podcasts	6%	*5%*	**<8%**	6%	7%	6%
Mentioned only 1 source	4%	5%	3%	4%	5%	3%
Mentioned 2-3 sources	15%	**17%>**	*13%*	13%	15%	17%
Mentioned 4+ sources	77%	*73%*	**<82%**	80%	77%	76%

Those who use each source were asked to rate that source on trustworthiness. As shown below, users tend to rate the sources that they use very highly on trustworthiness, the main exceptions are word of mouth, search engines, retailers, social media and podcasts.

Sources Used to Keep Abreast of Electrical Contractor Industry News, Problem-Solving Ideas and New Product Technology—Use and Average Trustworthiness Rating

Tables 220 and 221	Total (843)	Total (843)
	Use this source	Trustworthiness Rating (Average)
Trade magazines (either print or online)	90%	79.7
Distributors	66%	76.1
Manufacturer's Websites	59%	77.6
Trade magazine or industry website	55%	79.5
Manufacturer's Catalogs (Printed or Online)	50%	79.6
Word of mouth	49%	62.5
Search engines	44%	61.5
Trade shows	39%	73.5
Webinars	31%	76
Retailers (Such as Lowe's or Home Depot)	27%	66
E-Newsletters	25%	73.2
Seminars (Live/In person)	24%	80.2
Social media (such as Linkedin, Facebook, Instagram, Twitter or You Tube)	14%	53.3
Podcasts	6%	65.2

The red font is meant to highlight lower mean trustworthiness ratings.

Types of Work Performed

--Types of Work Performed in Previous Year

Electrical contractors were shown a list of up to 46 different project types and were asked to indicate which they had performed in the previous year. Starting in 2014, the project types were asked separately for Residential and CII construction.

- Three new project types were added in 2022, under the heading of High-Voltage: Distribution, Substations, Transmission

Overview of CII and/or Residential Work Performed (Combined Basis)

When asked about the types of work performed in the previous year (regardless of whether Residential or CII), almost all firms worked on Traditional Power and Lighting (93%). Note that there is a great deal of overlap across this category: 89% worked on Lighting and the same percentage, 89%, worked on Power.

- About three-quarters worked on various aspects of a category called "Other" (which includes Any Electrical Maintenance/Service/Repair, HVAC Mechanical, Pre-Assembly/Prefabrication of Electrical Components and/or Water Utilities or Wastewater Treatment Plants.
- About three-quarters work on some aspect or aspects of Automations/Controls: 60% worked on CII Automation/Controls*, and 40% worked on Residential Automation Controls*.
- About two-thirds worked on Sustainability (68%) and/or Power Quality (66%).
- 54% worked Communications Systems/Connectivity.
- 17% worked on a new category called High-Voltage.

As shown on the next page, participation *decreased* in a number of categories compared with what was reported in 2020.

*CII and Residential Automation/Controls are shown separately on the tables starting on pages 52 and 53.

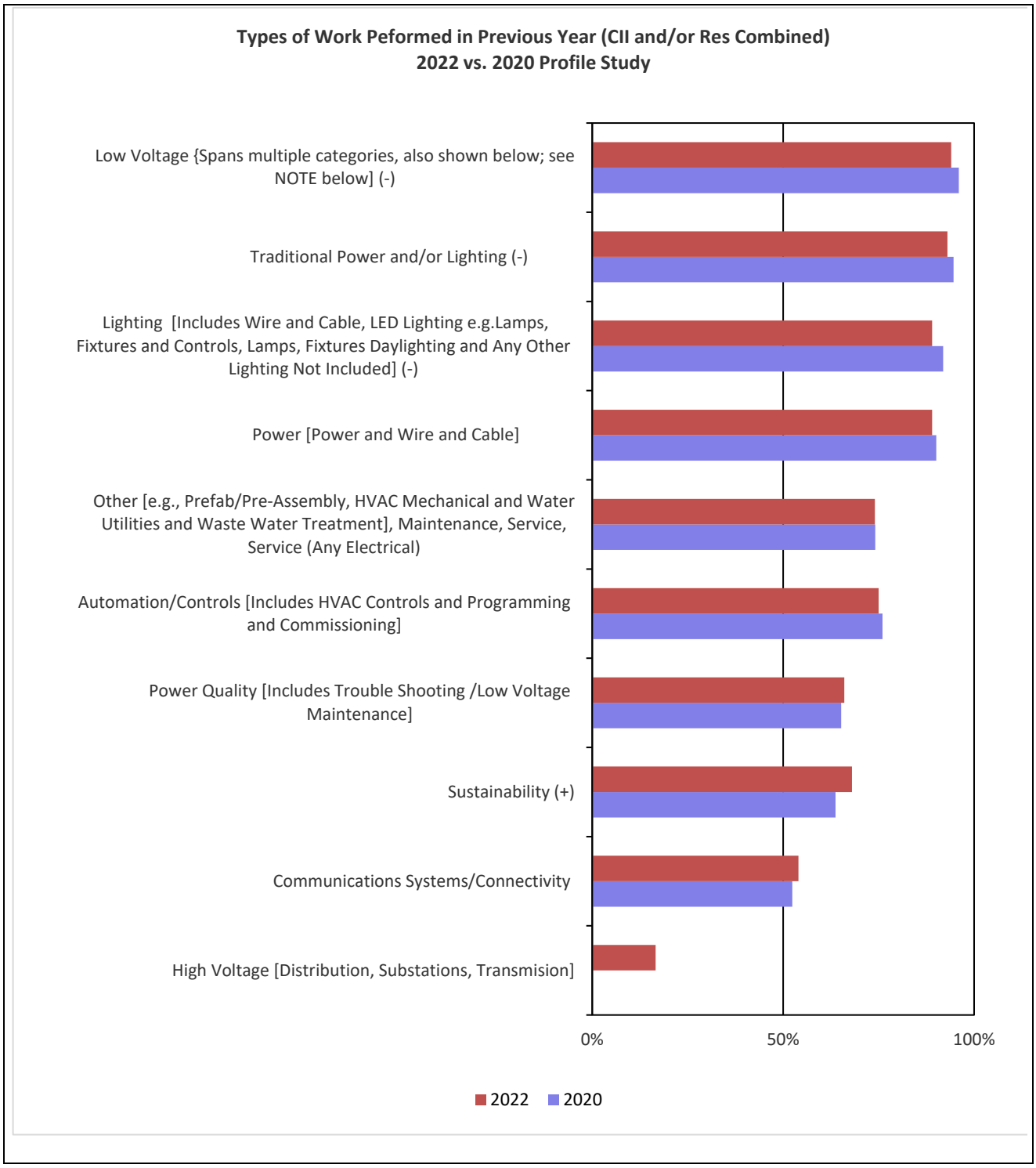


Table 38

NOTE: LOW-VOLTAGE (NET) IN THIS TABLE - INCLUDES: NETWORKING, FIBER OPTICS, STRUCTURED WIRING/CABLING, DATA CENTERS, TROUBLE SHOOTING/MAINTENANCE OF LOW-VOLTAGE SYSTEMS, LED LIGHTING, LIGHTING CONTROLS, HOME AUTOMATION, FIRE/LIFE SAFETY, SECURITY, HOME THEATER/SOUND, AUTOMATED BUILDING SYSTEMS, INDUSTRIAL CONTROLS, SOUND AND VIDEO, PROGRAMMING AND COMMISSIONING, HVAC CONTROLS

+ indicates a statistically significant increase compared with 2020 results

The individual project types that make up each category are shown on the next page in total[2] and by whether the work was done in Residential or CII construction.

Three new project types were added in 2022: High-Voltage—which is a CII category and but not a Residential category—and is composed of Distribution, Substations, and Transmission.

As we've said in previous Profile reports, certain types of work lend themselves more to CII projects than to Residential projects.

Note that there is repeated evidence throughout this report that electrical contractors are continuing to work in somewhat non-traditional areas. For example, 40% worked on either HVAC Controls and/or HVAC Mechanical; 18% work on ***both*** HVAC Controls **and** HVAC Mechanical [not shown]. 17% worked on Water Utilities/Wastewater Treatment Plant projects in the previous year (up statistically significantly from 13% two years earlier.)

94% performed Low-Voltage work[3], mentioned here because it is <u>not</u> traditional power (although it often ties into it!).

Tables 39 (CII and Residential); 37 (CII) and 35 (Residential)

[2] Without regard to whether the work was done in Residential or CII construction

[3] NOTE: LOW-VOLTAGE (NET) - IN THIS TABLE - INCLUDES: NETWORKING, FIBER OPTICS, STRUCTURED WIRING/CABLING, DATA CENTERS, TROUBLE SHOOTING/ MAINTENANCE OF LOW-VOLTAGE SYSTEMS, LED LIGHTING, LIGHTING CONTROLS, HOME AUTOMATION, FIRE/LIFE SAFETY, SECURITY, HOME THEATER/SOUND, AUTOMATED BUILDING SYSTEMS, INDUSTRIAL CONTROLS, SOUND AND VIDEO, PROGRAMMING AND COMMISSIONING, HVAC CONTROLS

Types of Work Performed by Company in 2021 vs. 2019

Residential and/or CII Construction on a Combined Basis [Q6}

(Base Answering (843)	ANY	RES	CII
COMMUNICATIONS SYSTEMS/CONNECTIVITY	**54**	**20**	**48**
Structured Wiring/Cabling	45	16	40
Networking VOIP/ Wire-less/Broadband, etc.)	34	10	30
Data Centers	25	3	24
Fiber Optics: (Communications and Security)	27	3	26

SUSTAINABILITY	ANY **68**	RES **37**	CII **51**
Energy Efficiency Projects/ Upgrades (non-LEED)	40	14	34
Electric Vehicle Charging Equipment	40	26	24
LEED Projects	23	6	20
Solar/Photovoltaics	24	11	17
Energy Audits (includingThermal Imaging)	18	4	16
Smart or Net Metering	16	6	13
Cogeneration	9	3	7
Energy Storage	11	4	8
Geothermal	6	3	3
Wind Generation	4	1	3
Smart Grid Technology	4	1	4
Fuel Cells	2	1.1	2
Microgrids	3	0.8	3

POWER QUALITY	ANY **66**	RES **32**	CII **53**
Backup Power/UPS	54	21	43
Trouble Shooting/ Maintenance of Low-voltage Systems	41	19-	34
TVSS/Lightning Surge Suppression	39	15	33
Energy Management/Power Quality	25	5	23

LOW-VOLTAGE	94	59	77

Tables 34, 36 ,38

Base Answering (843)	ANY	RES	CII
TRADITIONAL POWER/LIGHTING	**93**	**61**	**76**
Lighting	89	59	72
LED Lighting (Including Lamps, Fixtures and Controls)	86	55	67
Lighting Fixtures	80	50	62
Ballasts or LED Drivers	68	36	58
Lamps	64	38	49
Lighting Controls	70	38	53
Daylighting/Shading Systems	25	8	22
Any Other Lighting Not Included Above	23	10	19
Power	89	58	71
Wire and Cable	84	54	67
Power	82	53	64

AUTOMATION/CONTROL SYSTEMS	ANY **75**	RES **40**	CII **60**
Fire/Life Safety (including Alarms/Detectors)	50	23	39
HVAC Controls	37	16	30
Security: CCTV/Access/Motion, etc.	44	17	36
Industrial Controls (including PLCS and VFDS and Switchgear)	38	NA	38
Home Automation/Smart Home/Connectivity	20	20	NA
Home Theater/Sound or VDV	12	12	NA
Building Automation Systems/Facilities Connectivity	26	NA	26
Programming and Commissioning	22	4	20
Sound and Video or VDV	21	NA	21

OTHER	ANY **74**	RES **42**	CII **61**
MSR (Any Electrical)	68	39	57
HVAC (Mechanical)	21	10	16
Pre-Assembly/Prefabrication of Electrical Components	20	5	18
Water Utilities or Wastewater Treatment Plants	17	NA	17
HIGH-VOLTAGE	**17**	NA	**17**
Distribution	15	NA	**15**
Substations	9	NA	**9**
Transmission	5	NA	**5**

TRENDED RESULTS

The table on the next page shows the same resuIts, now trended, with differences from the 2020 resuts shown only by the symbol of + or -

Note that the results are slightly different for the total sample when commercial and residential construction are viewed on a combined basis than for CII and residential separately.

CII and Residentail on a combined basis:

- Although Traditional Power and Lighting are performed by almost all electrical contractors, the percentage working in this broad field is down slightly but significantly (95% to 93%) from two years ago, mostly due to a slight decline in Lighting (89% from 92%).

- Sustainability as a category is unsurprisingly higher rising to 68% from 64%, particularly due to more electrical contractors working on Electric vehicle charging equipment and/or Solar/photovoltaics.

- Although Power Quality is statistically unchanged as an overall category, more electrical contractors report having worked on Backup Power/UPS, TVSS/lightning surge suppression and/or Energy management/power quality.

- More electrical contractors report having worked on Network/VoIP/Broadband and/or Fiber optics than was the case two years earlier.

- Automation/Control Systems is mixed: More electrical contractors report having worked on Security and/or on Building automation systems and/or on Programming and commissioning while fewer report having worked on Home automation and/or Home theater/sound or VDV.

- A higher percentage of electrical contractors reported having worked on Water utilities and/or water treatment plants than was the case two years ago.

- In the case of CII construction, almost all of the differences from two years ago are gains, including Power and its component parts, Communication Systems/Connectivity (overall and its individual components), in Sustainability, Electric vehicle charging equipment and/or Solar/photovoltaics and/or Smart or Net metering and many aspects of Automation Control/Systems. Working on Water utilities and/or water treatment plants, and Pre-Fabrication also increased from two years earlier.

    - The only exception is lamps, which declined slightly but significantly from two years ago.

- In contrast to CII construction, in the case of residential construction, almost all of the changes are losses, particularly in the areas of Traditional Power and Lighting but also in the areas of Communications Systems/Connectivity and in Automation Controls. Are these declines traceable to fewer electrical contractors working in residential construction?

Seven work types: Industrial controls, Building automation systems, Sound and video or VDV and Water utilities/waste, plus the High-Voltage categories of Substations, Distribution and Transmission, do not pertain to Residential construction and were therefore not asked.

Two work types: Home automation/smart home/connectivity and Home theater/sound or VDV – do not pertain to CII construction and were therefore not asked.

Types of Work Performed by Company in 2021 vs. 2019

Residential and/or CII Construction on a Combined Basis [Q6]

Base Answering	ANY	RES	CII
COMMUNICATIONS SYSTEMS/CONNECTIVITY	54	20^{-}	**48^{+}**
Structured Wiring/Cabling	45	16^{-}	**40^{+}**
Networking VOIP/ Wireless/Broadband, etc.)	**34^{+}**	10	**30^{+}**
Data Centers	25	3^{-}	**24^{+}**
Fiber Optics: (Communications and Security)	**27^{+}**	3	**26^{+}**

	ANY	RES	CII
SUSTAINABILITY	**68^{+}**	37	51
Energy Efficiency Projects/ Upgrades (non-LEED)	40	14	34
Electric Vehicle Charging Equipment	**40^{+}**	**26^{+}**	**24^{+}**
LEED Projects	23	6^{-}	20
Solar/Photovoltaics	**24^{+}**	11	**17^{+}**
Energy Audits (including Thermal Imaging)	18	4	16
Smart or Net Metering	16	6	**13^{+}**
Cogeneration	9	3	7
Energy Storage	11	4	8
Geothermal	6	3	3
Wind Generation	4	1	3
Smart Grid Technology	4	1	4
Fuel Cells	2	1.1	2
Microgrids	3	0.8	3

	ANY	RES	CII
POWER QUALITY	66	32^{-}	53
Backup Power/UPS	**54^{+}**	21	**43^{+}**
Trouble Shooting/ Maintenance of Low-voltage Systems	41	19^{-}	34
TVSS/Lightning Surge Suppression	**39^{+}**	15	**33^{+}**
Energy Management/Power Quality	**25^{+}**	5	**23^{+}**

LOW-VOLTAGE	94^{-}	59^{-}	77

The symbols (+) and (-) indicate significant differences at the 90% level of confidence versus the 2020 profile (each reporting on the previous year)
Profile Study (each reporting on the previous year)

Tables 34, 36, 38

Base Answering	ANY	RES	CII
TRADITIONAL POWER/LIGHTING	93^{-}	61^{-}	76
Lighting	89^{-}	59^{-}	72
LED Lighting (Including Lamps, Fixtures and Controls)	86^{-}	55^{-}	67
Lighting Fixtures	80	50^{-}	62
Ballasts or LED Drivers	68^{-}	36^{-}	58
Lamps	64^{-}	38^{-}	49^{-}
Lighting Controls	70	38^{-}	53
Daylighting/Shading Systems	25	8	22
Any Other Lighting Not Included Above	23	10^{-}	19
Power	89	58^{-}	**71^{+}**
Wire and Cable	84	54^{-}	**67^{+}**
Power	82	53^{-}	**64+**

	ANY	RES	CII
AUTOMATION/CONTROL SYSTEMS	75	40^{-}	60
Fire/Life Safety (including Alarms/Detectors)	50	23^{-}	**39^{+}**
HVAC Controls	37	16^{-}	**30^{+}**
Security: CCTV/Access/Motion, etc.	**44^{+}**	17^{-}	**36^{+}**
Industrial Controls (including PLCS and VFDS and Switchgear)	38	NA	38
Home Automation/Smart Home/Connectivity	20^{-}	20^{-}	NA
Home Theater/Sound or VDV	12^{-}	12^{-}	NA
Building Automation Systems/Facilities Connectivity	**26^{+}**	NA	**26+**
Programming and Commissioning	**22^{+}**	4^{-}	**20^{+}**
Sound and Video or VDV	21	NA	21

	ANY	RES	CII
OTHER	74	42^{-}	61
MSR (Any Electrical)	68	39^{-}	57
HVAC (Mechanical)	21	10^{-}	16
Pre-Assembly/Prefabrication of Electrical Components	20	5	**18+**
Water Utilities or Waste Water Treatment Plants	**17^{+}**	NA	**17^{+}**

HIGH-VOLTAGE	**17**	NA	**17**
Distribution	15	NA	**15**
Substations	9	NA	**9**
Transmission	5	NA	**5**

Here are the actual results from 2021 compared with 2019

Types of Work Performed by Company in 2021 vs. 2019

Residential and/or CII Construction on a Combined Basis [Q6]

(Base Answering	(843)		(1635)
COMMUNICATIONS SYSTEMS/CONNECTIVITY	2021 54		2019 52
Structured Wiring/Cabling	45		45
Networking VOIP/ Wireless/Broadband, etc.)	**34**$^{+}$	>	29
Data Centers	25		23
Fiber Optics: (Communications and Security)	**27**$^{+}$	>	19

	2021		2019
SUSTAINABILITY	**68**$^{+}$	>	64
Energy Efficiency Projects/ Upgrades (non-LEED)	40		38
Electric Vehicle Charging Equipment	**40**$^{+}$	>	31
LEED Projects	23		24
Solar/Photovoltaics	**24**$^{+}$	>	20
Energy Audits (including Thermal Imaging)	18		16
Smart or Net Metering	16		14
Cogeneration	9		9
Energy Storage	11		9
Geothermal	6		5
Wind Generation	4		4
Smart Grid Technology	4		4
Fuel Cells	2		3
Microgrids	3		3

	2021		2019
POWER QUALITY	66		65
Backup Power/UPS	**54**$^{+}$	>	49
Trouble Shooting/ Maintenance of Low-voltage Systems	41		41
TVSS/Lightning Surge Suppression	**39**$^{+}$	>	34
Energy Management/Power Quality	**25**$^{+}$	>	20

Table 38

> and < indicate significant changes at the 90% level of confidence vs. the 2020 Profile Study (each reporting on the previous year) (+)/(-) indicates a significant difference at the 90% level of confidence

Base Answering	(843)		(1635)
TRADITIONAL POWER/LIGHTING	2021 93^{-}	<	2019 **95**
Lighting	89^{-}	<	**92**
LED Lighting (Including Lamps, Fixtures and Controls)	86^{-}	<	**89**
Lighting Fixtures	80		82
Ballasts or LED Drivers	68^{-}	<	**74**
Lamps	64^{-}	<	**71**
Lighting Controls	70		73
Daylighting/Shading Systems	25		25
Any Other Lighting Not Included Above	23		24
Power	89		90
Power	82		81
Wire and Cable	84		84

	2021		2019
AUTOMATION/CONTROL SYSTEMS	75		76
Fire/Life Safety (including Alarms/Detectors)	50		49
HVAC Controls	37		36
Security: CCTV/Access/Motion, etc.	**44**$^{+}$	>	40
Industrial Controls (including PLCS and VFDS and Switchgear)	38		34
Home Automation/Smart Home/Connectivity	20^{-}	<	**26**
Home Theater/Sound or VDV	12^{-}	<	**17**
Building Automation Systems/Facilities Connectivity	**26**$^{+}$	>	22
Sound and Video or VDV	21		18
Programming and Commissioning	**22**$^{+}$	>	18

	2021		2019
OTHER	74		74
MSR (Any Electrical)	68		70
HVAC (Mechanical)	21		22
Pre-Assembly/Prefabrication of Electrical Components	20		17
Water Utilities or Wastewater Treatment Plants	**17**$^{+}$	>	13

Here are the actual results from 2021 compared with 2019

Types of Residential Work Performed by Company in 2021 vs. 2019 [Q 6}

Base Answering	(843)		(1635)
COMMUNICATIONS SYSTEMS/CONNECTIVITY	2021 20	<	2019 **26**
Structured Wiring/Cabling	16	<	**22**
Networking VOIP/ Wire-less/Broadband, etc.)	10		12
Data Centers	3	<	**5**
Fiber Optics (Communications and Security)	3		3
SUSTAINABILITY	2021 37		2019 37
Energy Efficiency Projects/ Upgrades (non-LEED)	14		16
Electric Vehicle Charging Equipment	**26**	>	21
Solar/Photovoltaics	11		10
LEED Projects	6	<	**8**
Smart or Net Metering	6		6
Geothermal	3		4
Cogeneration	3		3
Energy Storage	4		4
Wind Generation	1		1
Energy Audits (including Thermal Imaging)	4		4
Smart Grid Technology	1		1
Microgrids	0.8		0.4
Fuel Cells	1.1		0.6
POWER QUALITY	2021 32	<	2019 **37**
Trouble Shooting/ Maintenance of Low-voltage Systems	19	<	**22**
Backup Power/UPS	21		21
TVSS/Lightning Surge Suppression	15		17
Energy Management/Power Quality	5		5

Base Answering	(843)		(1635)
TRADITIONAL POWER/LIGHTING	2021 61	<	2019 **69**
Lighting	59	<	**66**
LED Lighting (Including Lamps, Fixtures and Controls)	55	<	**63**
Lighting Fixtures	50	<	**57**
Lamps	38	<	**48**
Ballasts or LED Drivers	36	<	**46**
Lighting Controls	38	<	**44**
Daylighting/Shading Systems	8		9
Any Other Lighting Not Included Above	10	<	**13**
Power	58	<	**65**
Wire and Cable	54	<	**59**
Power	53	<	58

AUTOMATION/CONTROL SYSTEMS	2021 40	<	2019 **48**
Fire/Life Safety (including Alarms/Detectors)	23	<	**28**
Home Automation/Smart Home/Connectivity	20	<	**26**
HVAC Controls	16	<	**20**
Security: CCTV/Access/Motion, etc.	17	<	**21**
Home Theater/Sound or VDV	12	<	**17**
Programming and Commissioning	4	<	**6**

OTHER	2021 42	<	2019 **49**
Maintenance/Service/Repair (Any Electrical)	39	<	**47**
HVAC (Mechanical)	10	<	**13**
Pre-Assembly/Prefabrication of Electrical Components	5		5

Bold and > or < indicate significant changes at the 90% level of confidence vs. two years ago

Table 34

Here are the actual results from 2021 compared with 2019

Types of CII Work Performed by Company in 2021 vs. 2019 [Q6, Table 36]			
Base Answering	(843)		(1635)
COMMUNICATIONS SYSTEMS/CONNECTIVITY	2021 **48**	>	2019 42
Structured Wiring/Cabling	**40**	>	36
Networking VOIP/ Wire-less/Broadband, etc.)	**30**	>	25
Data Centers	**24**	>	20
Fiber Optics Communications and Security)	**26**	>	18
SUSTAINABILITY	2021 51		2019 48
Energy Efficiency Projects/ Upgrades (non-LEED)	34		32
LEED Projects	20		20
Energy Audits (including Thermal Imaging)	16		14
Solar/Photovoltaics	**17**	>	13
Electric Vehicle Charging Equip[f]	**24**	>	17
Smart or Net Metering	**13**	>	11
Cogeneration	7		7
Energy Storage Systems	8		6
Wind Generation	3		3
Geothermal	3		2
Fuel Cells	2		3
Smart Grid Technology	4		3
Microgrids	3		2
POWER QUALITY	2021 53		2019 50
Backup Power/UPS	**43**	>	38
Trouble Shooting/ Maintenance of Low-voltage Systems	34		31
TVSS/Lightning Surge Suppression	**33**	>	27
Energy Management/Power Quality	**23**	>	18
Table 36			
> and < indicate significant changes at the 90% level of confidence vs. two years earlier			

Base Answering	(843)		(1635)
TRADITIONAL POWER/LIGHTING	2021 76		2019 76
Lighting	72		73
LED Lighting (Including Lamps, Fixtures and Controls)	67		68
Lighting Fixtures	62		63
Ballasts or LED Drivers	58		60
Lamps	49	<	**53**
Lighting Controls	53		54
Daylighting/Shading Systems	22		21
Any Other Lighting Not Included Above	19		19
Power	**71**	>	68
Wire and Cable	**67**	>	62
Power	**64**	>	60
AUTOMATION/CONTROL SYSTEMS	2021 60		2019 57
Fire/Life Safety (including Alarms/Detectors)	**39**	>	36
Industrial Controls (including PLCS and VFDS, Switchgear)	38		34
HVAC Controls	**30**	>	26
Security: CCTV/Access/Motion, etc.	**36**	>	30
Building Automation Systems/Facilities Connectivity	**26**	>	22
Sound and Video or VDV	21		18
Programming and Commissioning	**20**	>	17
Home Automation/Smart Home/Connectivity	N/A		
Home Theater/Sound or VDV	N/A		
OTHER	2021 61		2019 61
Maintenance/Service/Repair (Any Electrical)	57		57
Pre-Assembly/Prefabrication of Electrical Components	**18**	>	15
HVAC (Mechanical)	16		15
Water Utilities or Wastewater Treatment Plants	**17**	>	13

The differences by category by number of employees are shown below:

- As was often the case in the past, larger firms—20-99 and 100+—are more likely to work on more and different types of projects. The two main differences from 2020 are, firstly, that there are fewer differences at all by subgroup, and secondly, that firms with 5-9 employees are no longer more likely to work on the highest number of projects. You may recall that in the 2020 Profile Study it was firms with 5-9 employees—rather than the largest firms—that were more likely than average to participate in more of the categories—7 of the 9 categories listed below. In 2020, we observed that firms with 10-19 employees and firms with 100+ employees are each more likely than average to participate in 5 of the categories. Another difference is that we added High-Voltage in 2022.

    - As was the case in the past, firms with 1-4 employees are more likely than average to work in only one of the categories listed below: Residential Automation Controls. As was the case in 2020, firms with 5-9 employees are also more likely than average to work in this area. [2020 results are not shown.]

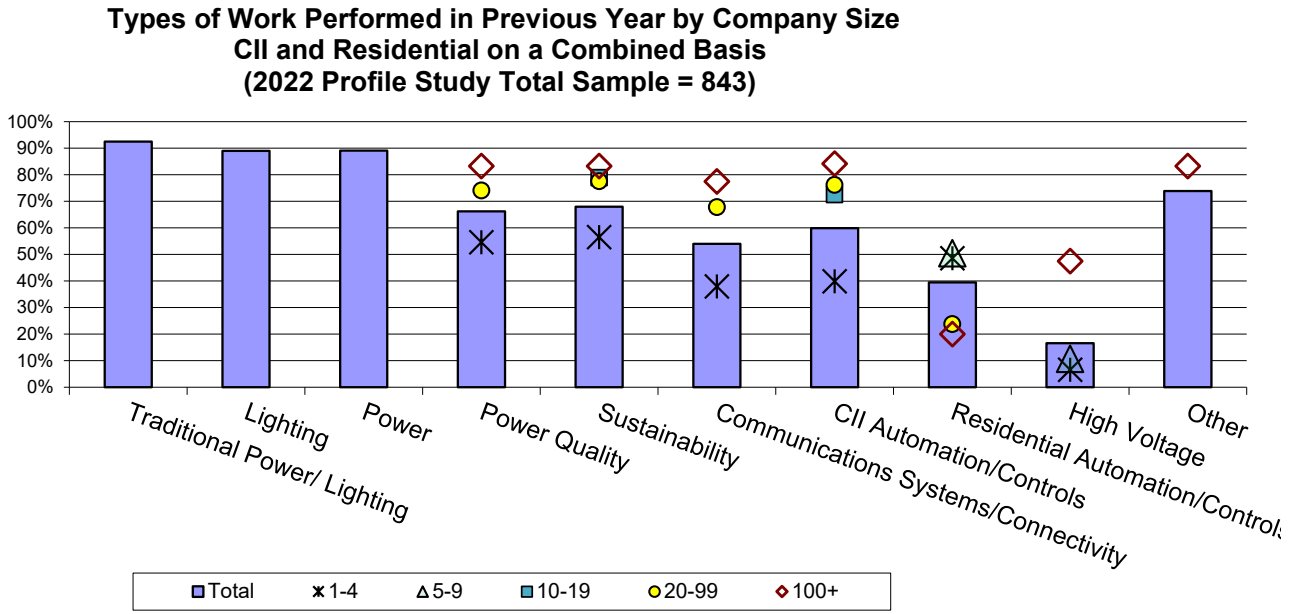


Table 38

On the next few pages, we look at the individual project types that make up the broad categories shown in the chart above by number of employees. Among firms working in Residential and/or CII on a combined basis:

Among firms working in Residential and/or CII on a combined basis:

- Firms with **100+** employees are the most likely to perform the many types of work shown on the next page. Specifically, firms with **100+** employees are **more** likely than average to perform 19 of the 26 listed project types. (This is indicated by the cells with bold percentage numbers.)

- Firms with **20-99** are **more** likely than average to perform 18 of the 26 listed project types.

- Firms with **10-19** employees are **more** likely than average to perform the Traditional Power/Lighting project types of Lamps and/or Ballasts or LED Drivers and/or the Automation /Controls project types of Fire/Life Safety alarms and/or Industrial controls.

- Firms with **5-9** employees are generally *average* in terms of performing each of the types of work listed on the next page (as indicated by the blank cells). They—along with firms with 1-4 employees—are *more* likely than average to perform work Home Automation/Smart Home/Connectivity. Firms with 5-9 employees, also along with firms with 1-4 employees, are *less* likely to perform work in Fiber Optics, Building Automation and/or Sound and Video VDV, all of which are essentially CII projects.

- Firms with **1-4** employees and firms with **1-9** employees are *less* likely than average to perform almost all of the types of work shown on the next page. Further, they are only *more* likely than average to perform two types of work including Home Automation/Smart Home/Connectivity and Home Theater/Sound or VDV.

Types of Work Performed in Previous Year by Number of Employees
Total Sample (2022 Profile Study) Residential and/or CII Construction on a Combined Basis
[Q6, Tables 38 and 39]

	Total	1-4	5-9	1-9	10-19	20-99	100+
	%	%	%	%	%	%	%
Power	82	*78*		*79*			**88**
Wire and Cable	84	*80*		*80*		**90**	
LED Lighting (Including Lamps, Fixtures, and Controls)	86						
Lighting Fixtures	80	*77*					
Lamps	64	*57*		*58*	**72**	**71**	
Lighting Controls	70	*59*		*62*		**78**	**84**
Ballasts or LED Drivers	68	*61*		*62*	**79**	**75**	
Daylighting/Shading Systems	25	*8*		*12*		**45**	**48**
Any Other Lighting Not Included Above	23	*13*		*15*		**33**	**43**
Structured Wiring/Cabling/Connectivity	45	*29*		*33*		**62**	**70**
Networking (VOIP/Wireless/Broadband, etc.)	34	*20*		*23*		**41**	**65**
Fiber Optics (Communications and Security)	27	*9*	*19*	*11*		**45**	**67**
Data Centers	25	*11*		*13*		**35**	**60**
Backup Power/UPS	54	*41*		*44*		**66**	**78**
Troubleshooting/Maintenance of Low-Voltage Systems	41	*32*		*34*			**60**
TVSS/Lightning Surge Suppression	39	*23*		*26*		**54**	**69**
Energy Management/Power Quality	25	*12*		*14*		**36**	**58**
Fire/Life Safety (Including Alarms/Detectors)	50	*35*		*38*	**58**	**62**	**75**
HVAC Controls	37	*33*		*33*			**54**
Security: CCTV/Access/Motion, etc.	44	*28*		*32*		**54**	**73**
Industrial Controls (Including PLCs and VFDs)	38	*20*		*25*	**48**	**47**	**68**
Home Automation/Smart Home/Connectivity	20	**24**	**28**	**25**		*15*	*8*
Home Theater/Sound or VDV	12	**14**		**14**		*8*	*3*
Building Automation Systems/Facilities Connectivity	26	*13*	*17*	*14*		**39**	**61**
Sound and Video or VDV	21	*10*	*15*	*11*			**48**
Programming and Commissioning	22	*10*		*13*		**27**	**50**

Empty Cells Indicate no difference from Total Sample; bold indicates larger than average; *italics* indicates smaller than average

The types of work on the next page are in the categories of Sustainability and "Other" (miscellaneous) project types. Among firms working in Residential and/or CII on a combined basis:

- Firms with **100+** employees execute the most sustainability projects and perform most categories above average, with only two types at average: Geothermal and Fuel cells.

- Firms with **20-99** employees perform more types of sustainability projects than smaller firms. Specifically, firms with **20-99** employees are more likely than average to perform non-LEED energy efficiency projects, electric vehicle charging projects, LEED projects and Energy Audits (Including Thermal Imaging) as well as Smart or Net metering. In addition, firms of this size are more likely than average to work on Pre-fabrication of electrical components.

- Firms with 10-19 employees are generally average in terms of the types of work that they perform, while firms with 1-9 employees are either average or below average.

- Firms with **1-4** employees are *less* likely than average to perform most of the types of sustainability or any of the other work types shown on this page

The last section of rows on the next page also shows how many categories (such as Traditional Power and Lighting or Sustainability) and specific project types (such as electric vehicle charging equipment) are worked on by firms of various sizes.

- Not surprisingly, larger firms work on many more individual projects and in many more categories. However, fully 42% of firms with 1-4 employees work on 5 or more of the 7 categories and 60% work on 12 or more of the project types.

Types of Work Performed in Previous Year by Number of Employees, Total Sample (2022 Profile Study) Residential and/or CII Construction Combined [Q6, Tables 38 and 39]							
	%	**%**	**%**	**%**	**%**	**%**	**%**
	Total	**1-4**	**5-9**	**1-9**	**10-19**	**20-99**	**100+**
Energy Efficiency Projects/Upgrades (Non-LEED)	40	*28*	*29*	*28*		**53**	**64**
LEED Projects	23	*10*	*10*	*10*		**39**	**54**
Electric Vehicle Charging Equipment	40	*32*		*34*		**49**	**48**
Solar/Photovoltaics	24	*14*		*17*			**53**
Energy Audits (Including Thermal Imaging)	18	*7*	*13*	*9*		**27**	**42**
Cogeneration	9	*5*	*3*	*5*			**26**
Smart or Net Metering	16	*10*		*11*		**22**	**34**
Geothermal	6						
Energy Storage	11	*8*		*8*	*6*		**24**
Wind Generation	4	*2*		*2*			**13**
Fuel Cells	2						
Microgrids	3		*1*	*2*	*1*		**10**
Smart Grid Technology	4	*2*		*2*			**13**
HVAC (Mechanical)	21	*18*		*19*			**34**
Pre-Assembly/Prefabrication of Elec Components	20	*10*		*11*	*10*	**28**	**53**
Water Utilities or Wastewater Treatment Plants	17	*8*		*9*			**43**
Maintenance/Service/Repair (Any Electrical)	68						**76**
Any HVAC (Controls ***or*** Mechanical)	40	*36*		*36*			**58**
HVAC Controls *and* Mechanical	18	*16*		*16*			**31**
Any Low-voltage	94						
Distribution	15	*6*	*8*	*6*			**43**
Substations	9	*4*	*4*	*4*	*5*		**35**
Transmission	5	*3*		*3*			**18**
Only 1 of 7 Categories	4	**6**		**5**			*0*
2	9	**15**		**13**	3	*3*	*4*
3	12	**17**		**15**		*8*	*4*
4	15	**17**		**17**			*6*
5	22	*20*	**29**		**31**		*12*
6	25	*19*		*21*			**32**
All 7	11	*3*	4	3			**38**
Mentioned 1-9 Types	27	**44**	*17*	**38**	*13*	*14*	*8*
Mentioned 10-11 Types	10	**13**		**13**			*2*
Mentioned 12+ Project Types	60	*40*		45	**76**	**73**	**85**
Mentioned 12-19	33	29	**45**		**50**		19
Mentioned 20 + (out of up to 44+ Project Types	27	10	20	13		41	66

Among firms working on CII projects:

- Larger firms are more likely than smaller firms to work on CII projects. As shown below, firms with 100+ employees are above average in performing **all** of the listed CII project types. (This is indicated by the cells with bold percentage numbers.) Firms with 20-99 employees are essentially tied (above average on 23 of the 24 listed CII project types) while firms with 10-19 employees are above average on 11 of the listed CII project types.
- In contrast, firms with 1-4 employees are *below* average on all of the listed CII projects.
- Firms with 5-9 employees (which often act more like larger firms compared with firms with 1-4 employees) are more likely than average to work on Lighting fixtures, Power and LED lighting. Interestingly, they are no different than the average on almost all of the remaining project types shown on this page.

Types of Work Performed in Previous Year By Number of Employees, CII (2022 Profile Study)
[Q6, Tables 36 and 37]

	Total	1-4	5-9	1-9	10-19	20-99	100+
	%	%	%	%	%	%	%
Wire and Cable	67	*49*		*54*	**77**	**85**	**86**
Lighting Fixtures	62	*45*	**69**	*50*	**73**	**78**	**77**
Power	64	*47*	**72**	*52*	**73**	**80**	**87**
LED Lighting (Including Lamps, Fixtures, and Controls)	67	*51*	**74**	*56*	**76**	**82**	**83**
Lamps	49	*33*		*37*	**62**	**66**	**66**
Ballasts or LED Drivers	58	*43*		*47*	**70**	**72**	**73**
Lighting Controls	53	*30*		*37*	**64**	**76**	**83**
Daylighting/Shading Systems	22	*5*		*8*	**30**	**41**	**48**
Any Other Lighting Not Included Above	19	*8*		*9*		**30**	**43**
Structured Wiring/Cabling/Connectivity	40	*22*		*25*		**59**	**69**
Networking (VOIP/Wireless/Broadband, etc.)	30	*15*		*18*		**40**	**63**
Fiber Optics (Communications and Security)	26	*8*	*18*	*10*	**22**	**45**	**65**
Data Centers	24	*10*		*12*		**34**	**58**
Backup Power/UPS	43	*22*		*28*		**62**	**78**
Troubleshooting/Maintenance of Low-Voltage Systems	34	*20*		*23*		**43**	**58**
TVSS/Lightning Surge Suppression	33	*15*		*18*		**50**	**68**
Energy Management/Power Quality	23	*10*	*17*	*12*		**34**	**58**
Fire/Life Safety (Including Alarms/Detectors)	39	*19*		*23*	**49**	**59**	**72**
Industrial Controls (Including PLCs and VFDs and Switchgear)	38	*20*		*25*	**48**	**47**	**68**
HVAC Controls	30	*21*		*22*		**38**	**53**
Security: CCTV/Access/Motion, etc.	36	*18*		*21*		**50**	**72**
Building Automation Systems/Facilities Connectivity	26	*13*	*17*	*14*		**39**	**61**
Sound and Video or VDV	21	*10*	*15*	*11*			**48**
Programming and Commissioning	20	*8*		*11*		**27**	**49**
Home Automation/Smart Home/Connectivity	**N/A**						
Home Theater/Sound or VDV	**N/A**						

Empty Cells Indicate no difference from Total Sample; bold indicates larger than average; *italics* indicates smaller than average

Among firms working on CII projects, continued:

- Mirroring the findings from the previous page, larger firms are far more likely than smaller firms to work on CII projects. As shown on the next page, firms with 100+ employees are above average in performing almost all of the listed projects. These projects are in the categories of Sustainability, "Other" (miscellaneous) and High-voltage. Note that only the largest firms are above average on the three components of High-voltage.

- The likelihood of working on CII projects rises with company size (once the threshold of 10 employees is reached). Firms with 20-99 employees are above average on 9 of the 23 listed project types; firms with 10-19 employees are above average on only two of the listed types. Low-voltage CII work is more likely be performed by firms with 10 or more employees.

- Firms with 1-4 or 5-9 employees are not above average in performing any of the CII projects shown on the next page. Note however, that firms with 5-9 employees are more likely to be *average* rather than below average on most of these project types.

The last section of rows on the next page also shows how many categories (such as Traditional Power and Lighting or Sustainability) and specific project types (such as electric vehicle charging equipment) are worked on by firms of various sizes.

- Not surprisingly, larger firms work on many more individual projects and in many more categories. The contrast is particularly stark for firms working on CII projects. Although 25% of firms with 1-4 employees work in 5 or more of the categories, the figure rises to 69% among firms with 100+ employees.

Types of Work Performed in Previous Year by Number of Employees, CII (2022 Profile Study) [Q6, Tables 36 and 37]							
	Total	**1-4**	**5-9**	**1-9**	**10-19**	**20-99**	**100+**
	%	%	%	%	%	%	%
Energy Efficiency Projects/Upgrades (Non-LEED)	34	*17*	*25*	*19*	**41**	**50**	**63**
LEED Projects	20	*7*	*7*	*7*		**38**	**53**
Solar/Photovoltaics	17	*7*		*8*			**51**
Energy Audits (Including Thermal Imaging)	16	*5*		*6*		**25**	**42**
Electric Vehicle Charging Equipment	24	*10*		*12*		**43**	**46**
Cogeneration	7	*2*	*2*	*2*			**26**
Smart or Net Metering	13	*6*		*7*		**20**	**33**
Energy Storage	8	*5*	*5*	*5*			**23**
Wind Generation	3	*1*		*1*			**13**
Geothermal	3	**2**		*2*			**8**
Fuel Cells	2						
Smart Grid Technology	4	*2*		*2*			**12**
Microgrids	3	*2*	*1*	*2*	*1*		**10**
Pre-Assembly/Prefabrication of Electrical Comp'nts	18	*7*		*9*	*10*	**27**	**53**
HVAC (Mechanical)	16	*11*		*12*			**32**
Water Utilities or Wastewater Treatment Plants	17	*8*		*9*			**43**
Maintenance/Service/Repair (Any Electrical)	57	*46*		*50*		**64**	**74**
Any HVAC (Controls ***or*** Mechanical)	32	*23*		*24*		**39**	**55**
HVAC Controls *and* Mechanical	14	*10*		*10*			**29**
Any Low-voltage	77	*63*		*67*	**86**	**91**	**91**
Distribution	15	*6*	*8*	*6*			**43**
Substations	9	*4*	*4*	*4*	*5*		**35**
Transmissions	5	*3*		*3*			**18**
Only 1 of 6 Categories	5	**9**	*1*	**7**		*2*	
2	9	**13**		**13**	*3*	*4*	*4*
3	10	**13**		**12**			*3*
4	12	*10*	**22**				*6*
5	15	*11*		*12*	**25**	**20**	
6	20	*11*		*14*		**27**	**31**
All 7	11	*3*	*3*	*3*			**38**
Number of Project Types (ANY)	1	**2**					
Mentioned 1-9 Types	26	**40**		**37**	*17*	*14*	*8*
Mentioned 10-11 Types	7		**14**	**9**			*1*
Mentioned 12+ Project Types	47	*21*		*27*	**62**	**70**	**83**
Mentioned 12-19	24	*14*	**33**	*18*	**42**	**32**	
Mentioned 20 + (out of 44) Project Types	23	*8*	*15*	*9*		**37**	**61**

Empty Cells Indicate no difference from Total Sample; bold indicates larger than average; *italics* indicates smaller than average

In the same way that CII projects are the province of large firms, residential projects are the bailiwick of small firms—those with 1-4 employees, but also those with 5-9 employees. As you'll see on the next few pages, there are also some differences between firms with 1-4 vs. those with 5-9 employees.

As we noted two years ago, what is particularly interesting here is that small firms perform so many aspects of Traditional Power/Lighting along with many aspects of Power Quality, Automation/Controls Systems, Electrical Maintenance/Service/Repair, HVAC Controls or Mechanical and Low-voltage work, within the context of residential construction.

Types of Work Performed in Previous Year by Number of Employees, Residential (2022 Profile Study)
[Q6, Tables 34, 35]

	Total	1-4	5-9	1-9	10-19	20-99	100+
	%	%	%	%	%	%	%
Power	53	**66**	**66**	**66**		*36*	*29*
Wire and Cable	54	**65**	**66**	**65**		*38*	*28*
Lighting Fixtures	50	**64**	**59**	**63**		*30*	*25*
LED Lighting (Including Lamps, Fixtures, and Controls)	55	**70**	**69**	**70**	*46*	*35*	*28*
Lamps	38	**44**	**48**	**45**		*26*	*23*
Lighting Controls	38	**45**	**51**	**47**	29	*26*	*25*
Ballasts or LED Drivers	36	**42**		**43**		*22*	*23*
Daylighting/Shading Systems	8	*6*					
Any Other Lighting Not Included Above	10						
Structured Wiring/Cabling/Connectivity	16		**23**	**19**			*9*
Networking (VOIP/Wireless/Broadband, etc.)	10						
Fiber Optics (Communications and Security)	3						**7**
Data Centers	3						
Troubleshooting/Maintenance of Low-Voltage Systems	19	**22**	**25**	**23**		*13*	*8*
Backup Power/UPS	21	**29**	**29**	**29**		*11*	*7*
TVSS/Lightning Surge Suppression	15		**21**				*6*
Energy Management/Power Quality	5						*2*
Fire/Life Safety (Including Alarms/Detectors)	23	**26**	**31**	**27**		*13*	*15*
HVAC Controls	16	**22**		**22**		*4*	*8*
Home Automation/Smart Home/Connectivity	20	**24**	**28**	**25**		*15*	*8*
Home Theater/Sound or VDV	12	**14**		**14**		*8*	*3*
Security: CCTV/Access/Motion, etc.	17		**23**	**19**		*9*	
Programming and Commissioning	4						
Building Automation Systems/Facilities Connectivity	**N/A**						
Industrial Controls (Including PLCs and VFDs and Switchgear)	**N/A**						
Sound and Video or VDV	**N/A**						

Empty Cells Indicate no difference from Total Sample; bold indicates larger than average; *italics* indicates smaller than average

Among firms working on residential projects, continued:

- In the context of residential construction, the smallest electrical contractors are also above average in doing Sustainability work—especially non-LEED projects, as well as LEED projects, Cogeneration and Microgrids compared with larger firms.

- What is interesting is that firms with ***1-4 employees are <u>not</u> more likely than average to work on Electric vehicle charging equipment.*** On the other hand, firms with 5-9 employees are more likely than firms with 1-4 employees and larger firms to work on electric vehicle charging equipment as well as Solar/photovaltaics, Geothermal, Communications/Systems Connectivity and on HVAC controls **<u>and</u>** mechanical projects.

- Small firms of both sizes—1-4 and 5-9 employees—are more likely to work on residential Low-voltage projects than firms of any other sizes.

- Note that firms that do residential work tend **not** to work on all of the project types or categories. In contrast, larger firms working in CII tend to work on many more project types compared with smaller firm.

Types of Work Performed in Previous Year by Number of Employees, Residential (2022 Profile Study) [Tables 34, 35]							
	Total	**1-4**	**5-9**	**1-9**	**10-19**	**20-99**	**100+**
	%	%	%	%	%	%	%
Energy Efficiency Projects/Upgrades (Non-LEED)	14	**19**		**18**		*9*	*6*
Fuel Cells	1						
Electric Vehicle Charging Equipment	26		**35**	**30**			*7*
Solar/Photovoltaics	11		**21**	**14**		*7*	*5*
LEED Projects	6	**7**		**7**			
Smart or Net Metering	6						*3*
Geothermal	3		**8**	**5**			*1*
Cogeneration	3	**4**		**3**	*1*		*1*
Energy Audits (Including Thermal Imaging)	4						
Wind Generation	1						
Energy Storage	4			**6**			*2*
Smart Grid Technology	1						
Microgrids	1	**2**		**2**			
Pre-Assembly/Pre-Fabrication of Electrical Components	5						
HVAC (Mechanical)	10			**13**		*6*	*7*
Water Utilities or Wastewater Treatment Plants	**N/A**						
Maintenance/Service/Repair (Any Electrical)	39	**51**		**50**		*25*	*14*
Any HVAC (HVAC ***or*** Mechanical)	19	**25**		**25**		*6*	*9*
HVAC Controls *and* Mechanical	8		**14**	**10**		*3*	
Any Low-voltage	59	**75**	**71**	**74**		*37*	*30*
Only 1 of 6	7						
2 of 6	10	**16**		**14**		*2*	*6*
3 of 6	10	**14**		**13**	*6*		*7*
4 of 6	12	**18**		**16**		*8*	*3*
5 of 6	14		**28**	**17**		*6*	*4*
All 6	10						*6*
Number of Project Types							
Mentioned 1-9 Types	31	**45**		**41**		*15*	*14*
Mentioned 10-11 Types	10		**17**	**13**			*4*
Mentioned 12+ Project Types	21		**31**	**25**		*16*	*13*
Mentioned 12-19	17		**25**	**20**		*11*	*8*
Mentioned 20 + (out of 43) Project Types	5						

Empty Cells Indicate no difference from Total Sample; bold indicates larger than average; *italics* indicates smaller than average

Low-Voltage: Firms' Active Engagement in Systems Integration or Data Centers

To put the following results into context, across the total sample 94% perform low-voltage work:

In the 2022 Profile Study, 22% of firms said that they currently have a separate low-voltage division, unchanged from 2020 when it was also 22%. As was the case two and four years ago, larger firms (those with 10+ employees) are more likely to have a separate low-voltage divisions (38% in 2022), statistically unchanged from two years ago. As was the case in 2020, larger firms are no longer more likely to plan to add a low-voltage division in the next 1-2 years, although that was the case in the 2016 and 2018 Profile Study reports. As we noted two years ago, perhaps firms have already added the separate units they had planned earlier! [Separate low-voltage division findings are not illustrated below, but can be found on page 28.]

More than one-half of the electrical contractors interviewed are actively involved in systems integration or data centers (56%): Low-voltage systems integration was mentioned most often (46%). Design or specification of low-voltage systems received the next the next most mentions at 36%, followed by Installation of data or telecom centers (28%) and Commissioning and programming (26%). Two in ten are involved in the Design or specification of data or telecom centers.

Compared with two years ago, active involvement rose overall (Any) and in the cases of Low-voltage integration and in the case of Design or Specification of Low-voltage systems.

Firm's Active Engagement in Systems Integration or Data/Telecom Centers (Version 5_Q15 and Version 6_Q17 Total Sample in 2022 and in 2020)

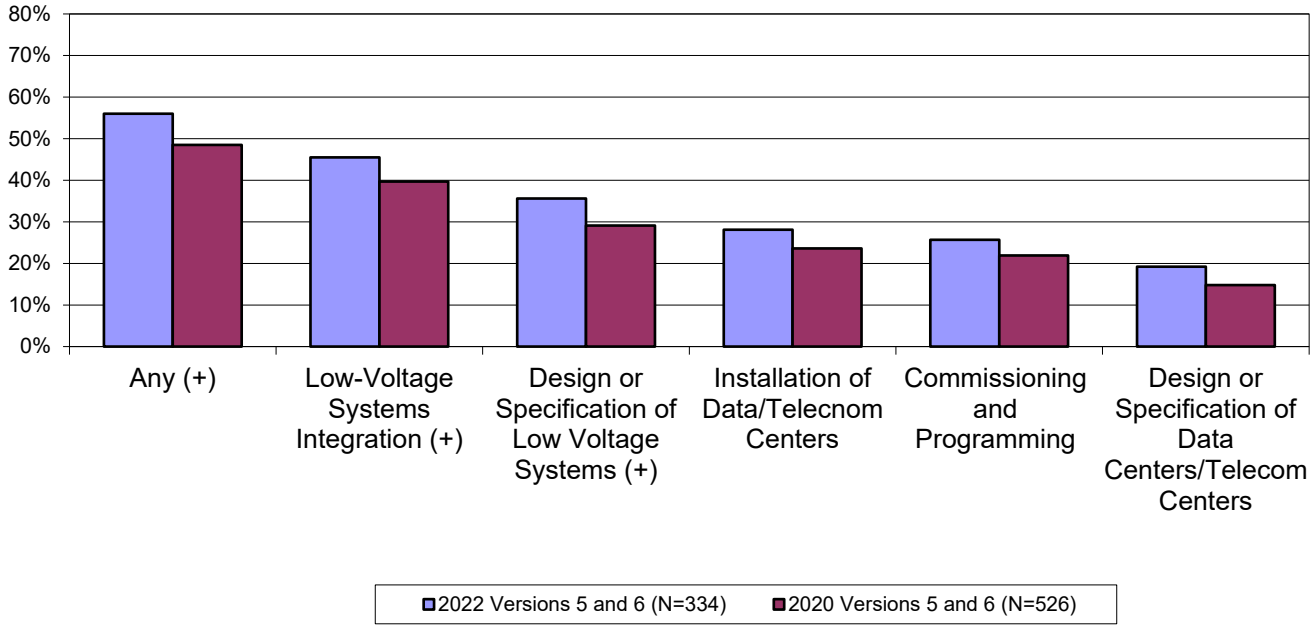


Table 257

(+) indicates a statistically significant increase vs. 2020

Roles Played by Firm in Integrated Systems, continued

Electrical contractors were asked to indicate the extent to which they specify, install or both specify **and** install selected integrated systems. Mirroring the findings from two years ago:

- 61% of electrical contractors say that they both **specify *and* install Lighting**. This is about double the percent that *only* install.

- For most of the other integrated systems, the percent that both specify **and** install is in the range of about 20% to 25%, with the exception of HVAC (not including controls) where it is 10%. Specifying without installing is in the single digits.

The few statistically significant differences from two years ago are shown below. In the case of security, more now work in this category—as installers. Fewer firms only specify Fire/Life Safety systems.

Roles Played by Firm in Integrated Systems
2022 Profile Study

	Specify *Only*	Install *Only*	Specify *and* Install	Don't Work in This Category	No Answer
Version 7 Q17 Base (163)	%	%	%	%	%
Security	3	30>21	25	42< 55	2
Fire/Life Safety	2<6	33	29	36	2
Lighting (including Controls)	3	28	61	8	2
Communications (VDV, etc.)	1	34	25	40	2
Building Controls (including HVAC)	1	34	18	46	2
HVAC (Not Including Controls)	3	26	10	60	2

Tables 207-→210

> or < indicates significant difference from 2020 results; only significant differences are shown

▲"WHERE" DO CONTRACTORS PERFORM THE WORK?

Number of States

Four in ten electrical contracting firms perform their work in multiple states; as we noted two years ago, issues of licensing and certification may suppress working in multiple states. The proportion of electrical contracting firms working in 2 or more states rose significantly in the 2022 Profile Study to 40% from 36% (continuing an upward trend from 33% in 2018. Note that the proportion working in 3+ (25% vs. 21%), 4+ (16% vs. 13%) and 5+ states (12% vs. 10%) each also rose significantly compared with two years ago.

These findings are consistent with respondent companies skewing larger (pages 12, 13 and 15) and shown below.

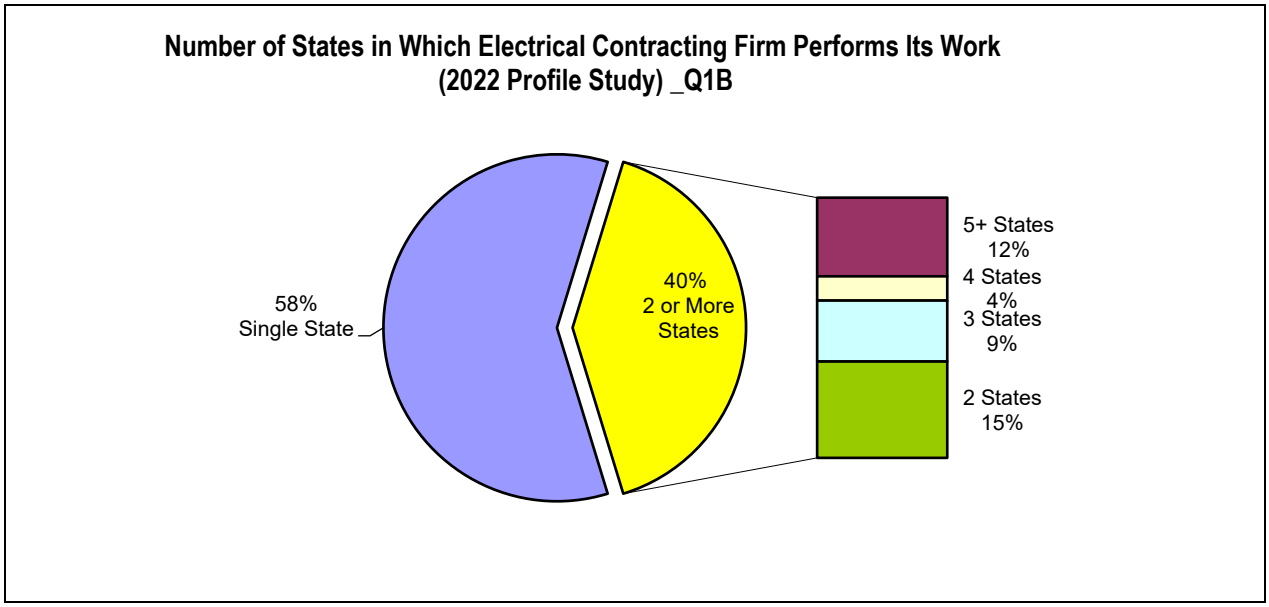


Table 3

Not surprisingly, larger firms are more likely to work in multiple states. This was also the case in earlier Profile Studies.

Number of States in Which Electrical Contracting Firm Performs Its Work (2022 Profile Study) _Q1B					
	Total	1-4	5-9	1-9	10+
Work in 2+ states (2022)	40%	*25%*	**<32%**	*27%*	**<58%**
Work in 2+ States (2020)	36%	*24%*	**<34%**	*26%*	**<56%**
Work in 2+ States (2018)	33%	*21%*	**<35%**	*24%*	**<55%**
Work in 2+ States (2016)	32%	22%	**30%**	*24%*	**<54%**
Work in 2+ States (2014)	31%	*20%*	**<37%**	*23%*	**<55%**

Bold percentages are significantly higher than *italicized* percentages in the direction of the arrow

Table 3

Types of Work: By Sector (New Construction vs. Modernization vs. Maintenance and Repair)

In the 2022 Profile study, on average, 39% of electrical contractor revenue comes from Maintenance/Service or Repair, 32% from New Construction and 30% from Modernization/Retrofit. All are statistically unchanged compared with two years ago. Note that new construction—which accounted for 43% of revenue on average in 2007 (not shown)—has not yet recovered.

As was the case in earlier Profile studies, New Construction (the blue bar) plays a proportionally larger role to firms with 20+ employees than to smaller firms, while Maintenance/Service/Repair—on a combined basis—(the gold bar) accounts for a proportionally larger share of revenue among smaller firms. Maintenance *Contracts* continue to play a proportionately bigger role to larger companies.

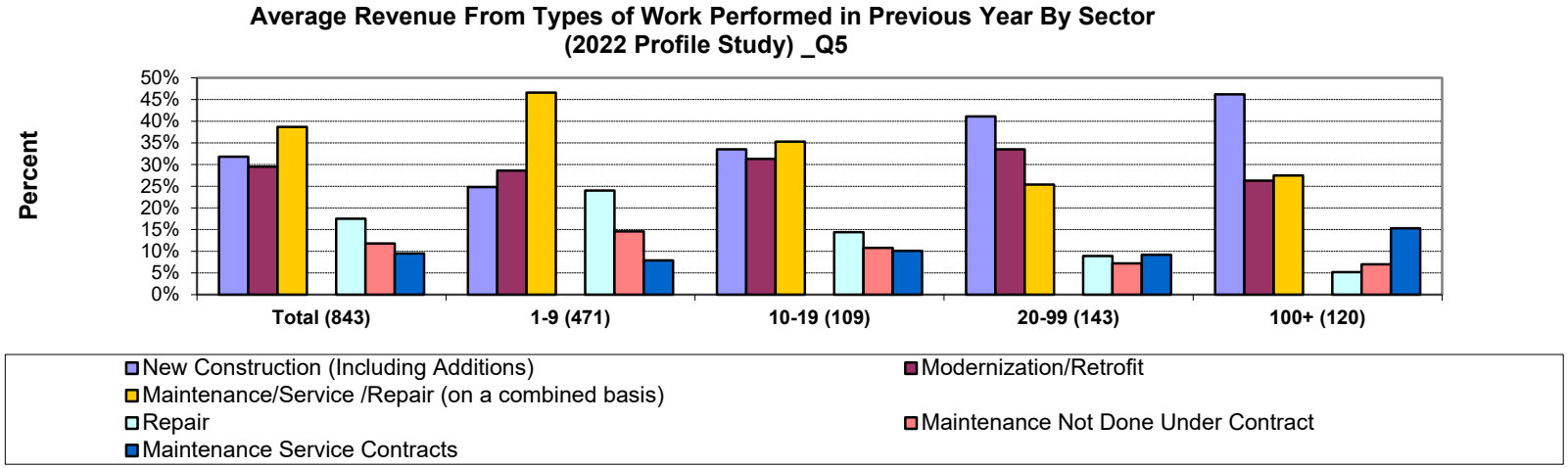


Table 32

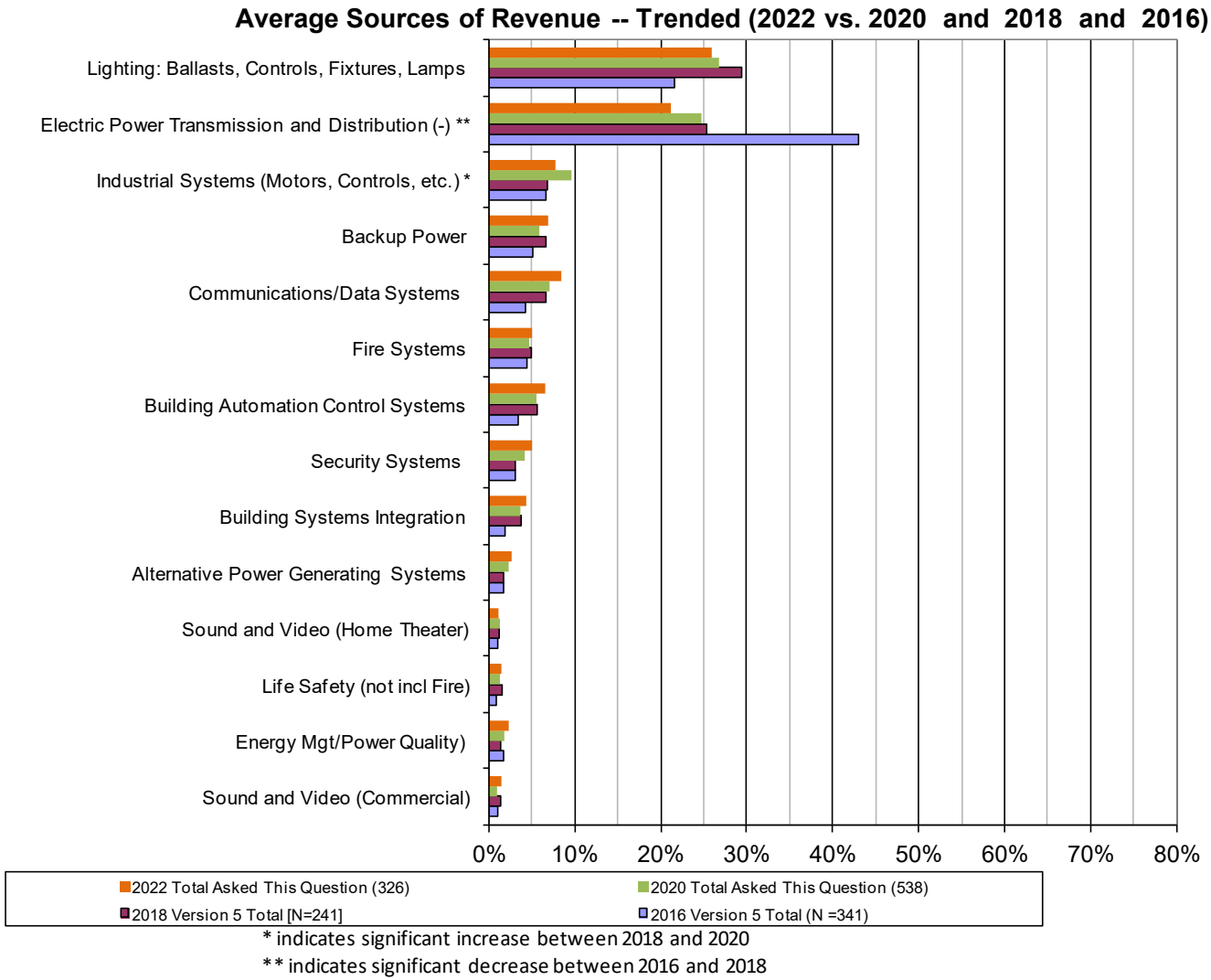
The average percent of revenue from new construction declined among firms with 1-9 employees. That is the only statistically significant change vs. 2020 results.

Average Percent of Sales/Revenue from Specific Sectors (Q5)						
	Total		1-9 Employees		10+ Employees	
	2022	2020	2022	2020	2022	2020
New Construction	31.8%	32.9%	*24.8%*<	**27.9%**	40.5%	42.4%
Modernization/Retrofit	29.5%	28.2%	28.6%	28.3%	30.6%	27.9%
Maintenance/Service/Repair	38.7%	39.0%	46.6%	43.8%	28.9%	29.6%
Repair	17.5%	18.8%	24%	23.2%	9.3%	10.1%
Maintenance/Service Contracts	9.5%	8.6%	7.9%	7.2%	11.4%	11.4%
Maintenance Not Done Under Contract	11.8%	11.6%	14.6%	13.4%	8.2%	8.1%

Table 32

Bold percentages are significantly higher than *italicized* percentages in the direction of the arrow

Electrical contractors were given a list of 14 project types and were asked how much of their revenue came from each of these sources. The averages are shown below. This was the question that showed the dramatic shift away from Electric Power Transmission and Distribution to higher-value categories such as Lighting in 2016. In the most recent wave, Electric Power Transmission and Distribution also declined significantly among the total sample from a mean of 24.8% to 21.2% two years earlier. It was the only statistically significant difference among the total sample compared with the 2020 Profile Study. [Table 255]



This chart shows the sources of revenue by number of employees. For example, Lighting plays a larger role to firms with 1-9 employees than to firms with 10+ employees, while Industrial Systems, Fire systems and Life Safety systems play a proportionally larger role to firms with 10+ employees than to firms with 1-9 employees.

Please see the legend for the few subgroup differences that emerged. All are starred (*).

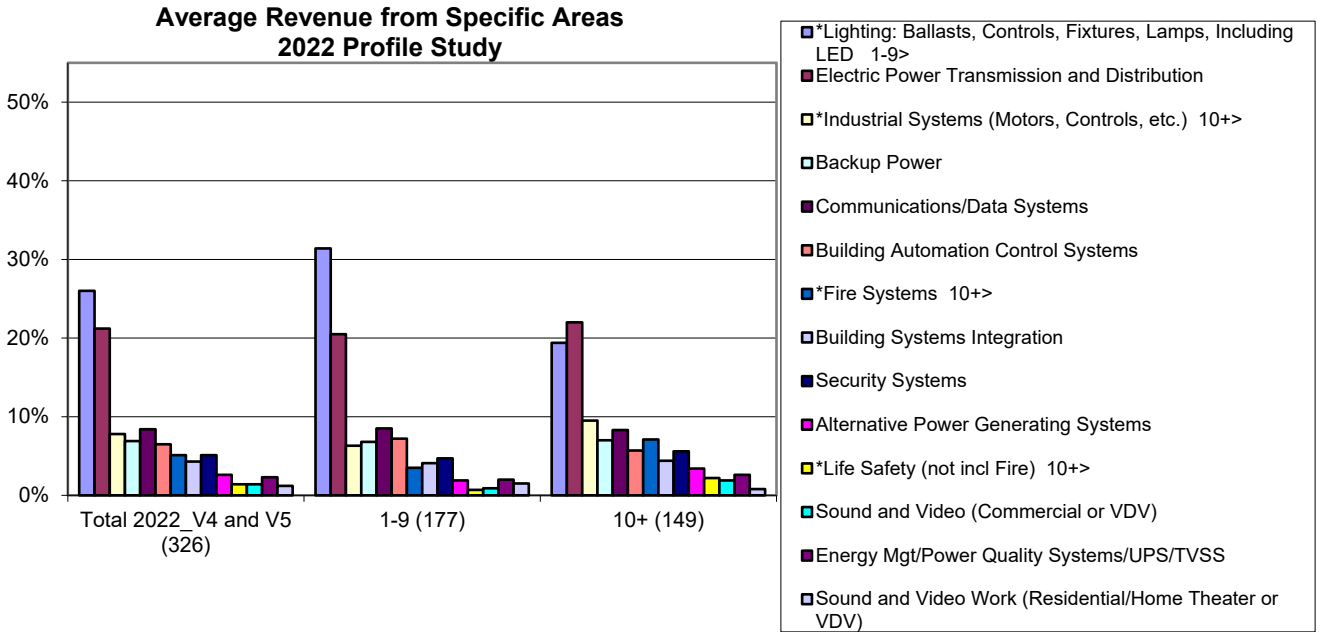
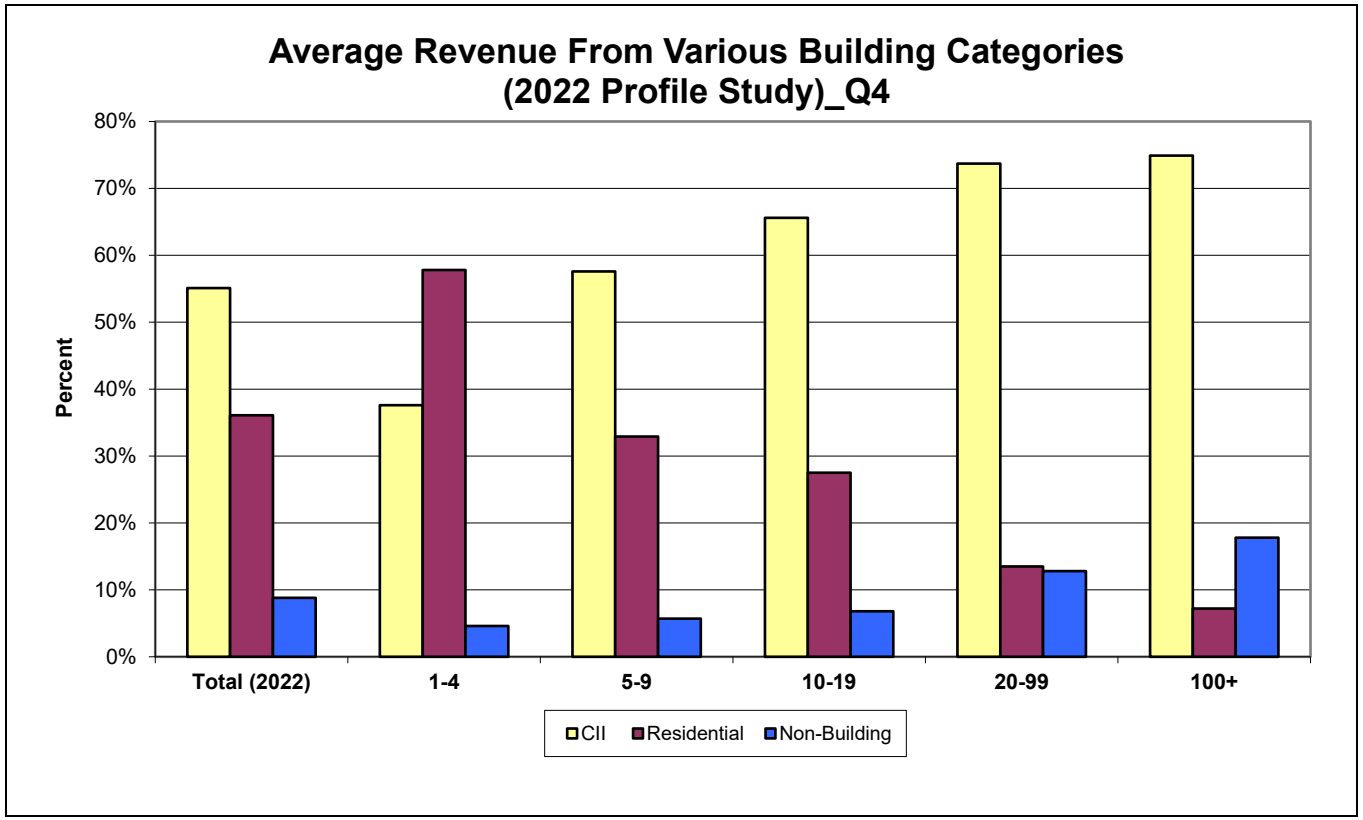


Table 255

Work in Various Building Categories (Residential vs. CII and Non-Building)

Across the total sample, electrical contractors continue to get more of their average revenue from CII (Commercial, Industrial, Institutional and Public Places), 55% on average, than from Residential projects, 36% on average. Non-Building projects (Transportation/Lighting and Utility) account for about 9% of the contractors' business.

Table 23



As shown in the table below, the proportion of revenue from CII and from non-building rose significantly compared to two years ago among the total sample, while the proportion of revenue from residential construction posted a significant decline.

- Although not shown below, average revenue from Industrial work increased among the total sample (to 16.7% from 13.6%) as well as among firms with 5-9 employees (to 20.6% from 13.8%) and among firms with 100+ employees (to 27.1% from 21.6%). Average revenue from Non-building including Utilities also rose among firms with 5-9 employees (Non-building to 9.5% from 6.1%, and Utility to 6.7% from 3.2%).

	Average Revenue in Previous Year From Specific Categories (Q4)											
	Total		**1-9**		**10+**		**10-19**		**20-99**		**100+**	
	2022	**2020**	**2022**	**2020**	**2022**	**2020**	**2022**	**2020**	**2022**	**2020**	**2022**	**2020**
	(843)	(1635)	(471)	(1075)	(372)	(558)	(109)	(160)	(143)	(206)	(169)	(192)
CII	**55.1%>**	*50.9%*	42%	40.5%	71.7%	71.2%	65.6%	66.8%	73.7%	73.8%	74.9%	72.0%
Residential	*36.1%*	**<41.8%**	52.3%	54.4%	15.6%	17.4%	27.5%	27.7%	13.5%	16.8%	7.2%	9.6%
Non-Building	**8.8%>**	*7.3%*	5.7%	5.1%	12.7%	11.4%	6.8%	5.5%	12.8%	9.5%	17.8%	18.4%

Table 23

CII = **Commercial** (Offices, Stores, Hospitality, etc.); **Institutional** (Schools/Hospitals/Stadiums/Parks/Terminal/Cultural/Correctional, etc.); **Industrial** (Manufacturing Plants/Process Industries/Factories/Warehouses, etc.); **Residential**: Single Family; Multifamily (1-5 stories); Multifamily (6+ stories); **Non-Building:** Line Work (Overhead/Underground Construction/Transmission & Distribution/Maintenance and Repair, Transportation Lighting, and Communications (Airport Runway/Highway/Street Lighting including Parking Garages and Traffic Controls/Electric Signage/Traffic Calming Signs); Power Generation and/or Substations; Distributed Generation/Alternative Energy; Smart Grid; Electric Vehicle Charging Equipment; Energy Storage was first added in 2016.

Bold percentages are significantly higher than *italicized* percentages in the direction of the arrow

Types of Residential and CII Work Performed

As has been observed in recent Profile Studies, while the greatest portion of electrical contractors' revenue comes from CII work, Single-Family housing accounts for the *single* largest source of revenue (30.9% in the 2022 Profile Study). Also, as shown in the chart below, within the housing category, a higher percentage of revenue comes from Multifamily housing with 1-5 stories compared with taller Residential buildings. This was also the case two and four years ago.

As was also the case for at least the last eight years, within the broad CII category, a greater percentage of electrical contractors' revenue is from Commercial construction (27.8%) than from Industrial (16.7%) or Institutional projects (10.6%).

- In the 2022 Profile Study, compared with the 2020 Profile Study, the percentage of average revenue from all types of residential housing dropped significantly, mostly due to the drop in Single-Family housing but also to the drop in multi-family housing over 6 stories high. Separately, there was a slight, but significant decline in smart grid technology. At the same time, the following sources of revenue increased compared to two years earlier: Industrial, Utility, Power generating transmissions/substations and Electric vehicle charging stations.

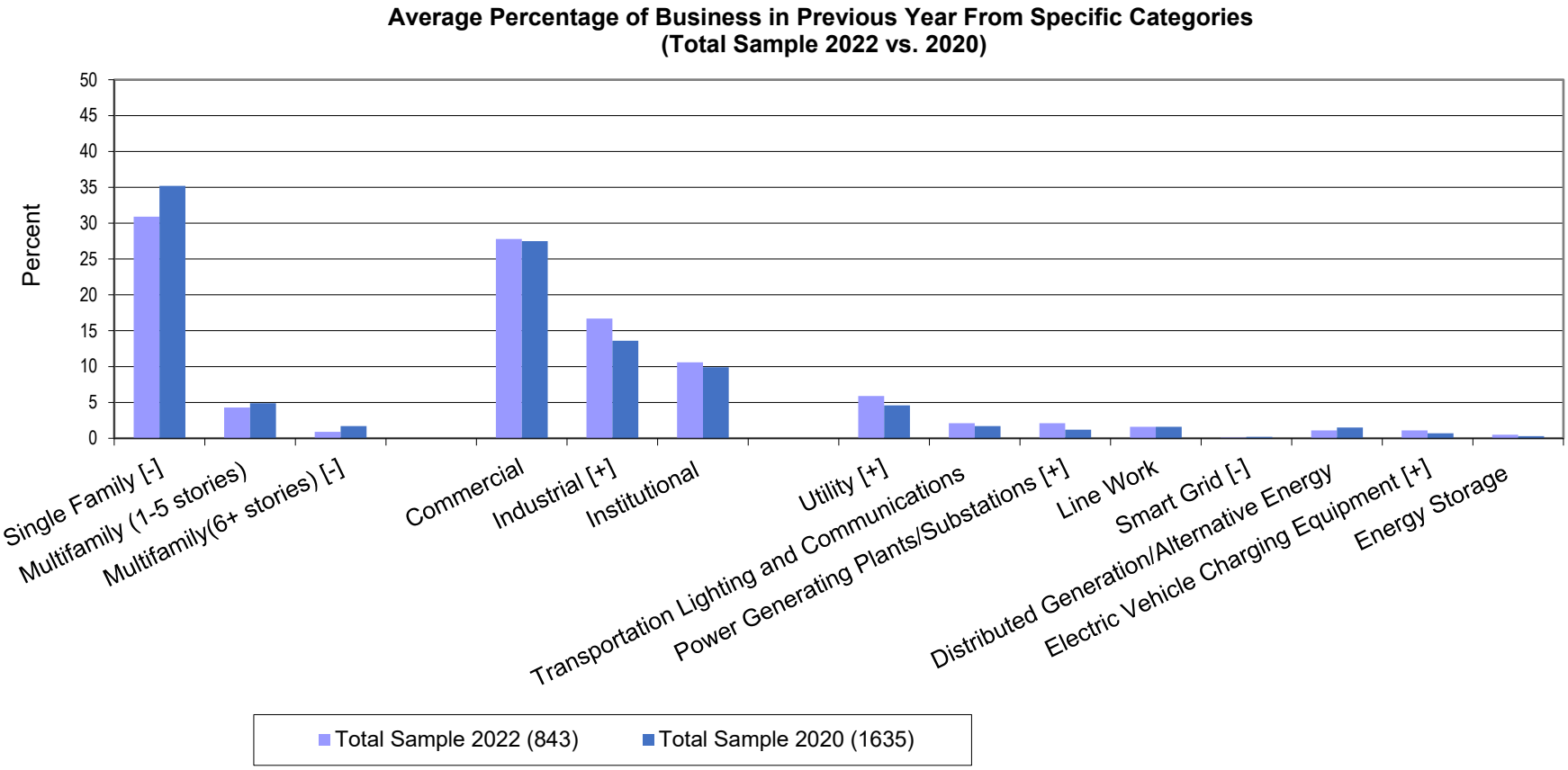


Table 23

+/- next to the data labels indicate statistically significant differences from 2020 among the total sample

As noted in previous Profile reports, while Single-Family projects account for a high percentage of revenue across the total sample, this type of work is extremely important to electrical contracting firms with 1-9 employees. On average, these small firms derive almost one-half of their revenue from Single Family projects.

- Electrical contracting firms with 10-99 employees derive the greatest percentage of their revenue from Commercial projects. Firms with 10+ employees derive a disproportionate percentage of their revenue from Industrial work (even higher among firms with 20+ employees) and/or Institutional work (highest among firms with 100+ employees).

- In addition, electrical contracting firms with 20+ employees get a disproportionate percentage of their revenue from Utility/Non-Building work (even higher among firms with 100+ employees). Note that Utility accounts for about two-thirds of the Non-Building category (5.9% of 8.8%).

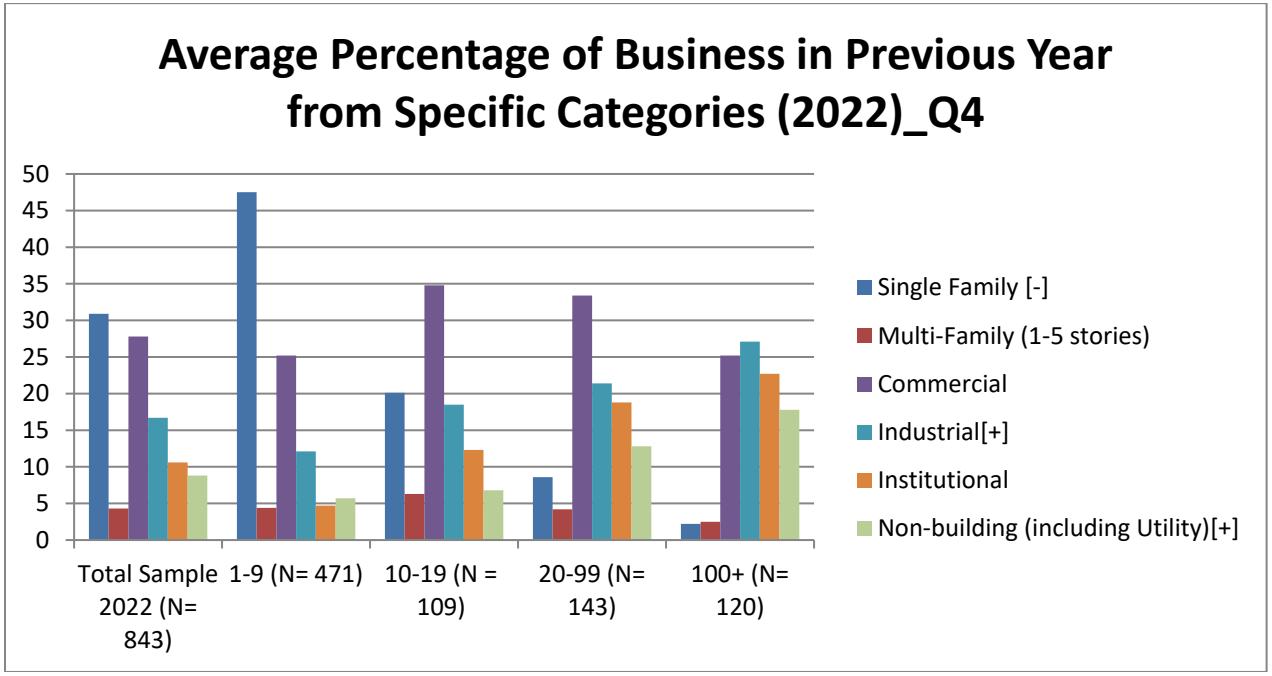


Table 23

+/- next to the data labels indicate statistically significant differences from 2020 among the total sample

▲ "HOW" DO CONTRACTORS PERFORM THEIR WORK?

Roles in Specification/Types of Project Delivery (Design/Build or Design/Assist)

Compared with two years ago, the way that electrical contractors bid jobs is remarkably consistent: Time and Materials and Maintenance, Service and Repair—both added in the 2020 Profile Study, based on their high number of volunteered mentions in 2018—were once again, mentioned most often.

- The only two statistically significant differences were that Collaborative building and "Other" basis both posted a significant increase, but off of a small base.
    - A significantly higher percentage of electrical contractors performed ANY work on a Design/*Assist* basis in 2021 than in 2019 (33% vs. 27%). The percentage performing ANY Design/Build work held steady at about 54% both years (not shown).

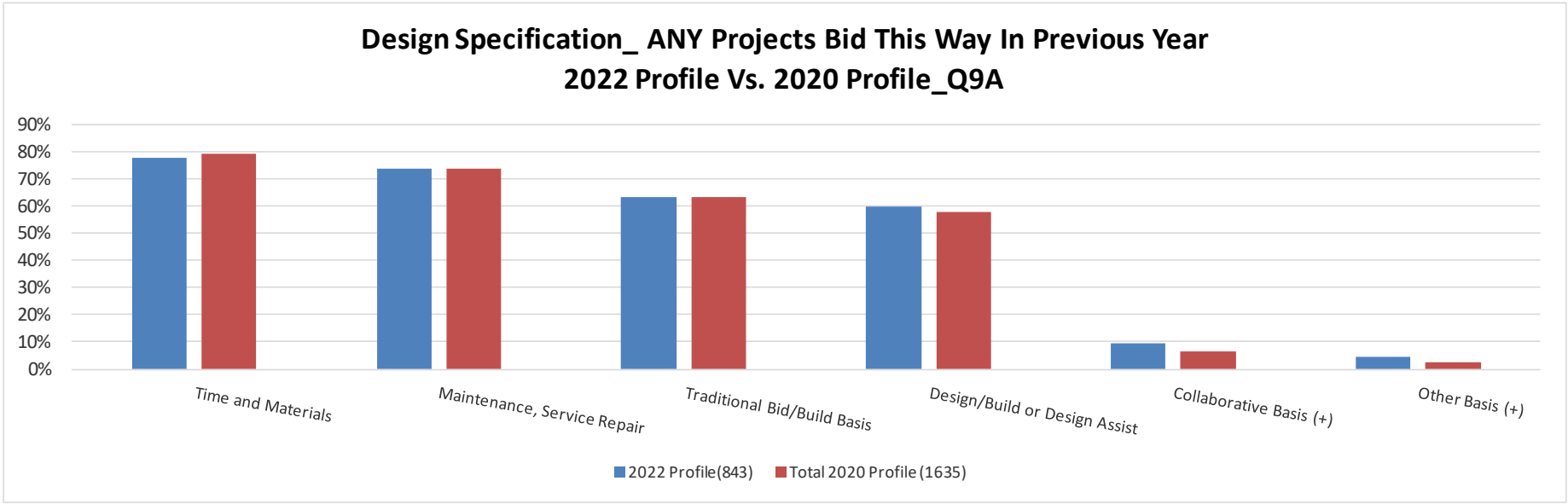


Table 54

(-) and (+) indicate statistically significant differences from the 2020 Profile Study

The chart on the previous page shows whether the electrical contractor does ANY work on this basis. The next few pages focus on the *amount* of work done, expressed as average revenue.

As shown below, on average, the top three design specifications are Traditional Bid/Build (28%), Time and Materials (26%) and Design/Build or Design/Assist (24%) basis. Maintenance, Service and Repair (on a combined basis) accounts for an average of 20%. Only about 2% of projects were bid on a Collaborative basis or on some "Other" basis in 2021.

Compared with two years earlier, Time and Materials accounts for significantly less average revenue while Collaborative basis accounts for more average revenue (on a much smaller base).

- Although not shown, average revenue from Design/Assist rose slightly but significantly to 6% from 5%.

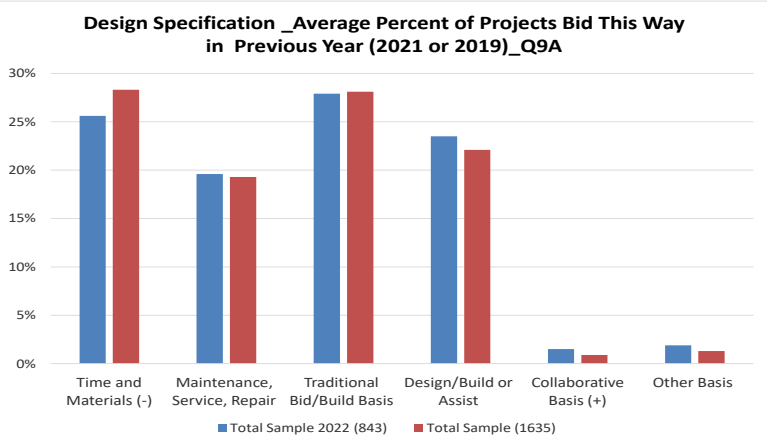


Table 53

(-) and (+) indicate statistically significant differences from the 2020 Profile Study

Smaller firms get significantly more of their average revenue from Time and Materials and/or from Maintenance Service or Repair compared with larger firms. In contrast, larger firms get significantly more of their average revenue from Traditional Bid/Build projects, projects bid on a Design/Build or Design Assist on a combined basis and, to a much lesser extent, from Collaborative building.

- In 2018, before Time and Materials and Maintenance/Service and Repair were answer choices, the average percent of revenue from Design/Build or Design/Assist on a combined basis was significantly higher among firms with 1-9 employees. Since 2020, when the new options of Time and Materials and Maintenance/Service/Repair were offered, this is no longer the case. [Earlier years are not illustrated.]

Design Specification _Average Percent of Projects Bid This Way in 2021								
Table 53-1, Q9A	**Total**	**1-4**	**5-9**	**1-9**	**10+**	**10-19**	**20-99**	**100+**
	%	%	%	%	%	%	%	%
Time and Materials	25.6	**35.6**		**33.8>**	*15.4*	*20.8*	*15.1*	*10.7*
Traditional Bid/Build	27.9	*20.2*		*21.6*	**<35.8**		**39.4**	**36.1**
Design/Build or Design/Assist	23.5	*16.0*		*18.3*	**<30.0**	**27.9**	**29.8**	**32.1**
Maintenance, Service and Repair	19.6	**25.4**		**23.6>**	*14.5*		*12.6*	*14.5*
Collaborative Basis	1.5	*0.8*	*0.6*	*0.7*	**<2.6**			**3.7**

Table 53

Empty cells are not significantly different than the total sample
Bolded numbers > and < indicate statistically significant differences in the direction of the arrow

Note the relative importance of Design/*Assist* in the 2022 Profile Study among firms with 100+ employees.

- This was also the case in the 2020 and 2018 Profile Studies (not shown).

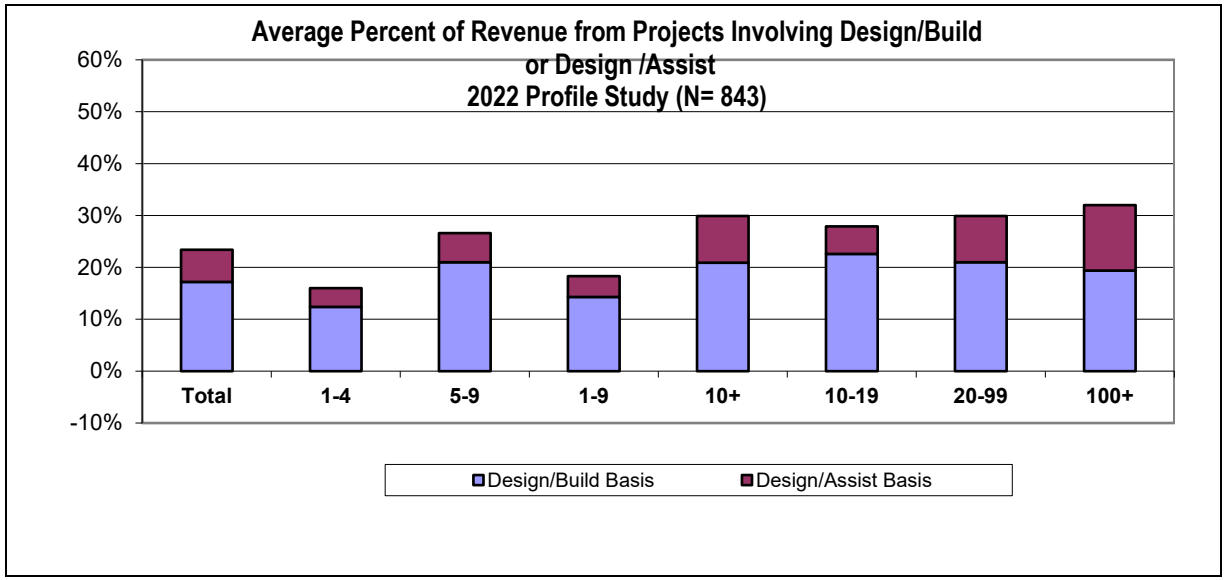


Table 53

BIM (Building Information Modeling)

Electrical contractors were asked to estimate the percentage of the time that they or someone in their firm uses BIM (Building Information Modeling). This question was first asked in the 2012 Profile Study.

As shown below, across the total sample, the use of BIM had been fairly steady between 2012 and 2018 but both **"Any"** use and **average** use rose significantly between 2018 and 2020.

"Any" use rose significantly again between 2020 and 2022, while **average** use is statistically unchanged compared with two years ago.

Use of Building Information Modeling (BIM)_Q9B												
	2022		2020		2018		2016		2014		2012	
	Any Use	Average	Any Use	Average	Any Use	Average	Any Use	Average	Any Use	Average	Any Use	Average
Survey Year (Current Use)	↑31.1	9.2	↑27.2%	↑8.2%	22.1%	6.5%	22.3%	6.0%	23.7%	7.1%	20%	5.8%

Table 55

↑ indicates a statistically significant increase compared with two years earlier

Once again in 2022—as we mentioned in the past three Profile Study reports (in 2016, 2018 and 2020)—looking at BIM usage among the total sample obscures a larger finding: that while BIM usage is low among firms with 1-4 employees, it increases as firm size increases. The increase in "Any" use and average use is evident among firms as small as 5-9 employees or 10-19 employees, but the increase is really dramatic among firms with 100+ employees.

- Although "Any" BIM usage rose significantly among the **total sample** compared to two years ago, none of the individual employee size subgroups (1-4, 5-9, etc.) posted significant increases. *Average* use is unchanged among the total sample and among the subgroups compared with two years earlier.

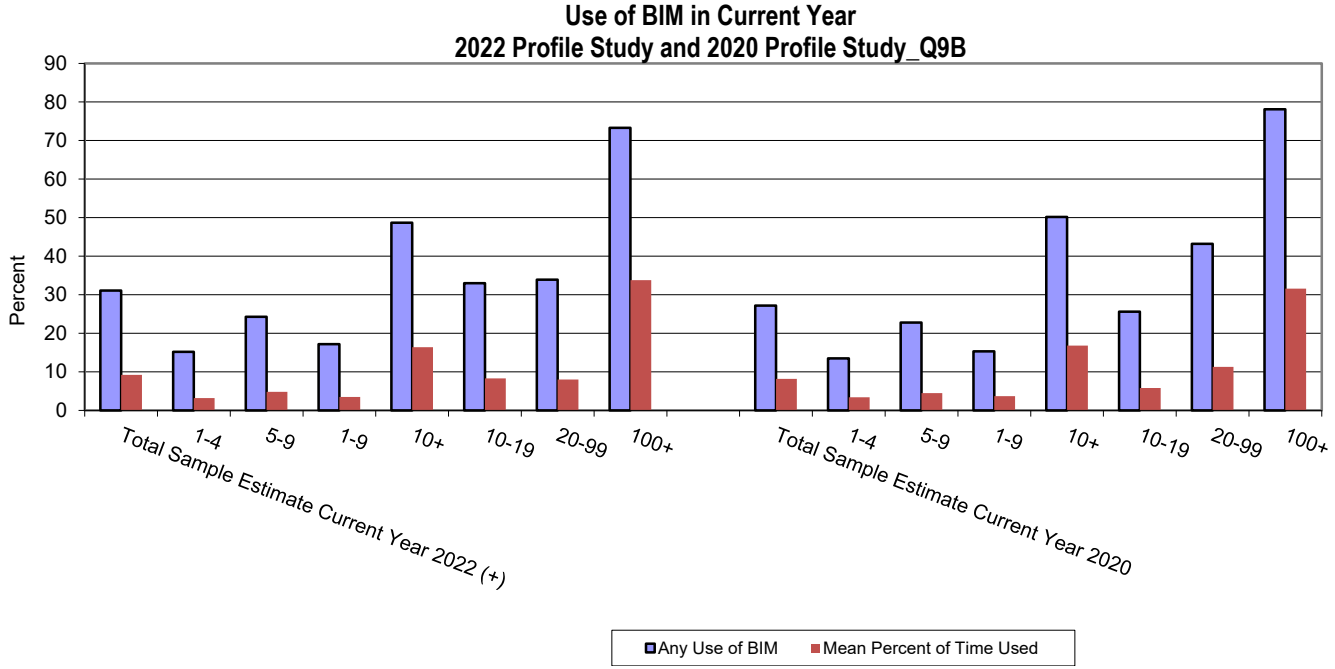


Table 55

(-) and (+) indicate statistically significant differences from the 2020 Profile Study

Completeness and Correctness of Plans and Specifications

The prevalence of incomplete and incorrect plans and specs is quite high, particularly on an ANY basis.

- Across the total sample, almost 8 in 10 electrical contractors said that they receive ANY **incomplete** plans and specs (79%, up significantly from 71% two years ago). On average, 37% of the plans and specs that they received were incomplete, statistically unchanged from two years earlier.

- Across the total sample, approximately the same proportion—8 in 10—electrical contractors said that they receive ANY **incorrect** plans and specs (78%, up significantly from 70% two years ago). On average, 31% of the plans and specs that they had received were incorrect, statistically unchanged from two years earlier.

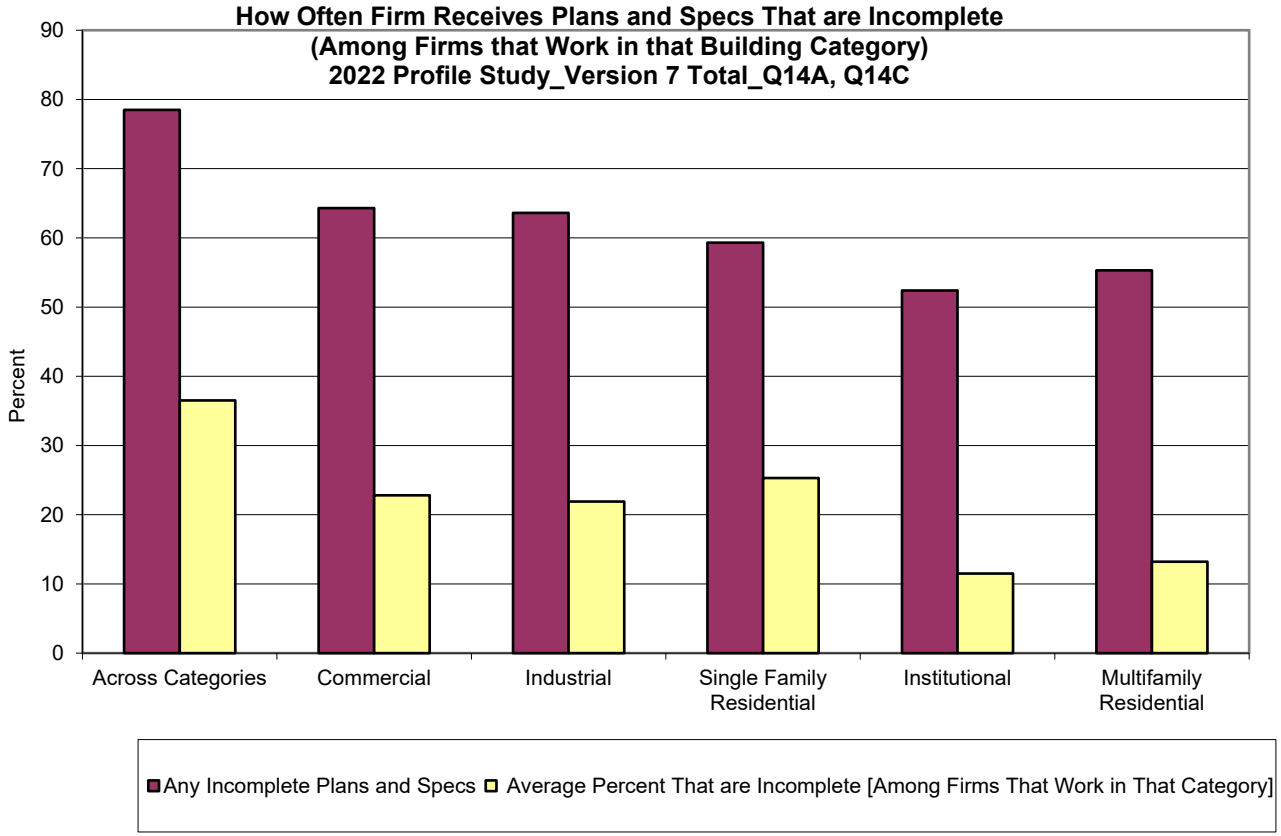
The presence of incomplete and incorrect plans and specs provides a greater opportunity for electrical contractors to influence/ make brand decisions.

	Completeness and Correctness of Plans and Specs			
Version 7, Q14A and Q14B	**ANY**		**Mean**	
	2022	**2020**	**2022**	**2020**
	(163)	(211)	(163)	(211)
Incomplete Plans and Specs	**79%>**	71%	37%	33%
Incorrect Plans and Specs	**78%>**	70%	31%	27%

Tables 168, 169

Incomplete Plans and Specs: Although almost 80% of electrical contractors report receiving ANY *incomplete* plans and specs, the percent varies somewhat by building type, within a 12-point range (from 64% in the case of commercial and industrial construction to 52% in the case of institutional construction). The mean percentage of incomplete plans and specs also varied within a 13-point range from 25% in the case of single-family housing to 12% in the case of institutional construction. In reality though, single-family, commercial and industrial are at the higher end of the scale, while multifamily and institutional are at the lower end of the scale.

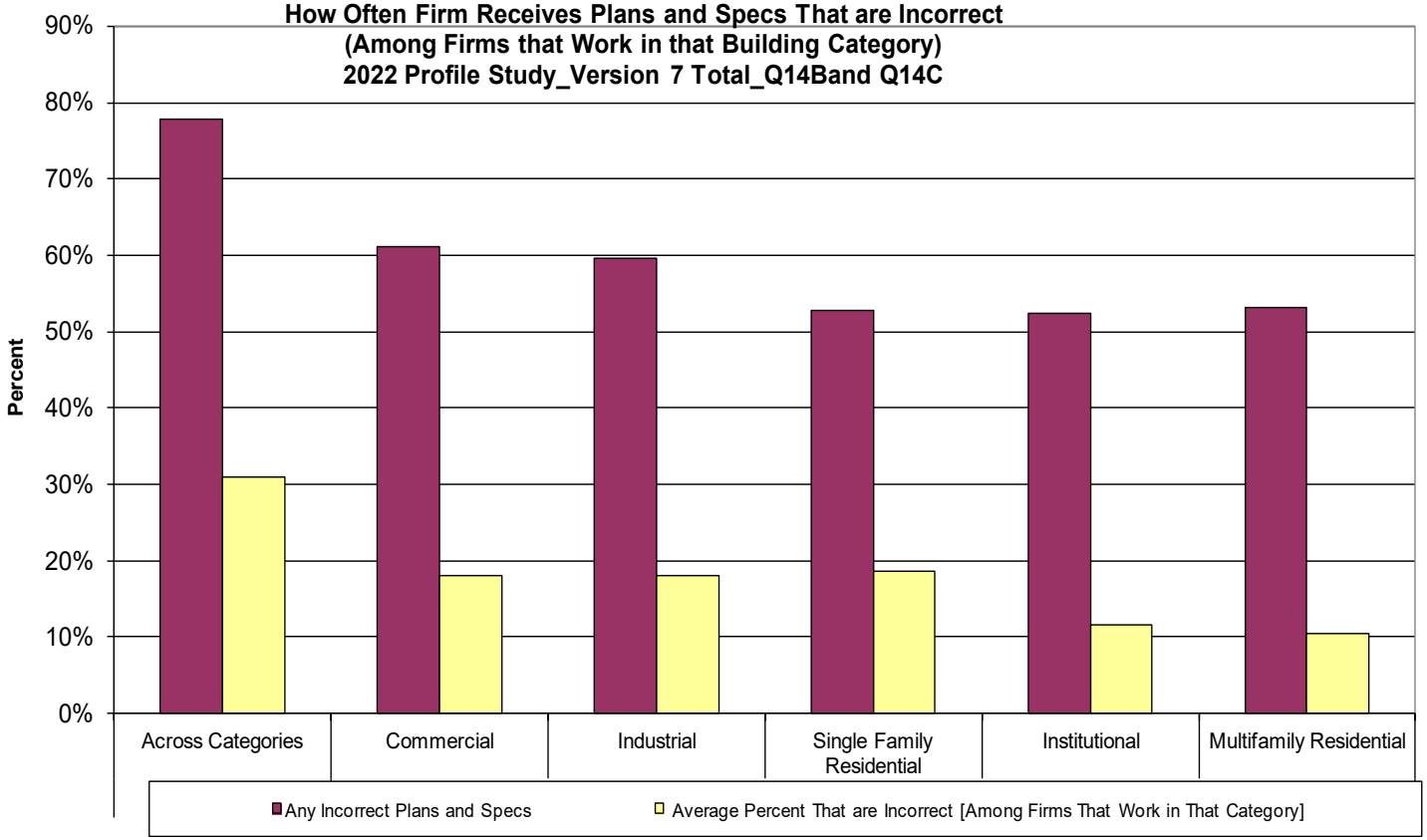
- Compared with two years ago, significantly more electrical contractors reported receiving ANY incomplete plans and specs as did receiving incomplete plans and specs in the case of commercial and/or single-family housing according to those who work in those categories. The mean percent of incomplete plans and specs (among those who work in those categories) posted a significant increase in the case of commercial and/or industrial plans and specs (trended data not shown).



Tables 168, 180-181

Incorrect Plans and Specs: Although almost 80% of electrical contractors report receiving ANY *incorrect* plans and specs, the percent varies somewhat by building type, within a 9-point range (from 61% to 52%). The mean percentage of incorrect plans and specs also varied within a 9-point range from 19% in the case of single-family housing to 10% in the case of multifamily housing. In reality, though, commercial, industrial and single-family housing are at the higher end of the average scale while institutional and multifamily housing are at the lower end of the scale.

- Compared with two years ago, significantly more electrical contractors reported receiving ANY incorrect plans and specs as did receiving incorrect plans and specs in the case of commercial and/or single-family housing according to those who work in those categories. The mean percent of incorrect plans and specs (among those who work in those categories) posted a significant increase compared with two years ago only in the case of industrial construction. (Trended data not shown).



Tables 169, 192, 193

Role of Engineers within Electrical Contracting Firms

Starting with the 2016 Profile Study, electrical contractors were asked about the professional relationship(s) that their firm has with engineers:

- Consulting Relationship, that is, the engineer is *not* on staff
- On staff or in a separate engineering division
    - These questions were asked independent of each other since we did not want to assume that one type of relationship would rule out the other.

In the current wave, across the total sample, six in ten firms (60%) have a professional relationship with an engineer, statistically unchanged from the 2020 Profile Study level of 53%.

- As in the past, in 2022, *consulting* relationships continue to be more prevalent (55%, which is a statistically unchanged from the 2020 level of 51%). In addition, 20% report having an engineer on staff and/or having a separate engineering division, which is also statistically unchanged from two years ago. 15% have **both** a consulting relationship as well as having an engineer on staff or a separate engineering division. Once again, this is statistically unchanged from the 2020 findings.

Not surprisingly, the practice of working with engineers is far more common among large firms and the prevalence rises with firm size, especially among firms with 100+ employees, where the level rises to 90% (not shown). However, even among firms with 1-4 employees, 37% have a professional relationship with an engineer (not shown).

- Compared with two years ago, *more* firms with 1-9 employees now have an engineer on staff/in a separate division and/or have both an engineer on staff or in a separate division and a consulting relationship with an engineer.

- In contrast, *fewer* firms with 10+ employees have both an engineer on staff/separate division and a consulting relationship with an engineer.

The high prevalence of working with engineers speaks to the complexity of much of the work performed by electrical contractors.

Professional Relationship With Engineer(s)—Trended									
V7_15A/B			2022 Profile Study			2022 Profile Study	2020 Profile Study	2022 Profile Study	2020 Profile Study
	TOTAL		**1-9**	**10+**		**1-9**	**1-9**	**10+**	**10+**
	(163)		(100)	(63)		(100)	(137)	(63)	(74)
	%		%	%		%	%	%	%
Any Professional Relationship	60		46	**<83**		46	36	83	85
Consulting (Not on staff)	55		43	**<75**		43	34	75	82
On staff/separate division	20		16	27		**16>**	6	27	38
Both	15		13	19		**13>**	**4**	19	**<35**

Table 194

Bold percentages are significantly higher than *italicized* percentages

Blank cells are not statistically different from the total sample

Project Collaboration/Level of Influence

As has been the case in recent Profile Studies, in 2022 almost 8 in 10 electrical contractors continue to report having a "high" or "medium" ability to influence the overall electrical design or specifications with building owners and/or design team members

- About 4 in 10 describe their level of influence as "high"—41%—while an almost equal percentage—37%—characterize their level of influence as "medium."

- There are no meaningful differences by company size (1-9 vs. 10+) [Not shown].

    - There are no statistically significant differences compared with two years earlier, either among the total sample or among firms with 1-9 or 10+ employees [Not shown].

Ability to Influence Overall Design or Specifications With Building Owner and/or Design Team--2022 Profile Study Version 7 Total Sample

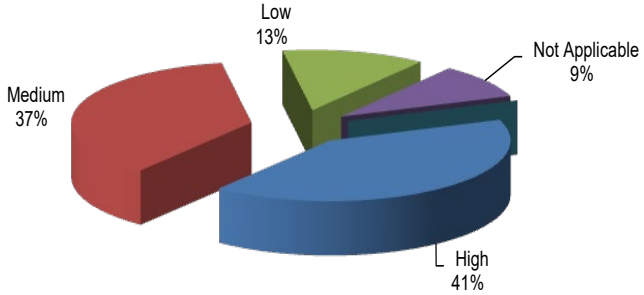


Table 195

Electrical contractors were also asked about their current level of collaboration with these key trades: Mechanical, HVAC, Plumbing and Systems Integrator from other trades.

- In 2022, project collaboration is higher with Mechanical, HVAC and with Systems integrators from other trades than with the Plumbing trade. There have been no statistically significant differences levels of collaboration between 2020 and 2022. In 2020, project collaboration posted a statistically significant increase with Systems integrators from other trades than it was the case in 2018.

    - With one exception, there are no meaningful differences by number of employees (not shown). The only exception involves Plumbing, where a significantly higher percentage of firms with 1-9 employees report having a "medium" level of project collaboration (32%) compared with firms with 10+ employees (14%).

Current Level of Project Collaboration 2022 Profile Study (Q16A/B)					
	Building Owner/Other Design Team Members (Q16A)	Mechanical (Q16B)	HVAC (Q16B)	Plumbing (Q16B)	Systems Integrator from Other Trades (Q16B)
Base: Version 7 (N=163)	%	%	%	%	%
High or Medium	78	58	58	39	56
High	41	22	22	14	18
Medium	37	36	36	25[4]	38
Low	13	23	21	31	22
Not Applicable	9	19	21	29	22
Don't Know/No Answer	0	0	0	0	1

Tables 195 and 196, 197, 198, 199

[4] In 2022, this percentage differs by number of employees: it is 32% among firms with 1-9 employees and 14% among firms with 10+ employees.

In 2022, for the first time, Profile respondents were also asked about their ability to influence product choices in other trades.

As shown below, in the case of Mechanical, HVAC and Systems integrator from other trades, electrical contractors say that they have either a high or medium level of product influence about one-third of the time. The main exception is in the case of Plumbing, where electrical contractors say that they are able to influence products purchased only about 20% of the time.

- Note that almost all of the time the level of product influence is "medium" rather than "high."

- With one exception, in the case of Plumbing there are no differences by number of employees (not shown).
  - In the case of Plumbing, small EC firms report a statistically significantly higher level of product influence (7%) compared with 2% for firms with 10+ employees. However, overall, electrical contractors only exert a high degree of product influence 5% of the time.

- This question was first asked 2022 and therefore cannot be trended.

Current Level of Product Influence
2022 Profile Study_V7 (Q16C)

		Mechanical (Q16C)	HVAC (Q16C)	Plumbing (Q16C)	Systems Integrator from Other Trades (Q16C)
Base: Version 7 (N=163)		%	%	%	%
High or Medium		33	32	20	36
High		7	9	5	9
Medium		26	23	15	27
Low		36	33	37	33
Don't Know/No Answer		32	35	44	33

Tables 417, 418, 419 and 420

Brand Specification Options

Respondents were shown a list of four options and were asked what percentage of the specifications that their company receives fall into each category. On average, a "single" or proprietary brand is specified about one-quarter of the time. In all other cases, other factors—multiple brands, "or equal to" or performance specified—come into play.

- With the exception of a single or proprietary brand, which is significantly higher among firms with 1-9 employees (33% vs. 19% for firms with 10+ employees), there are no other statistically significant differences between firms with 1-9 and 10+ employees in terms of brand specification options.

- Further, receiving a specification for a single /proprietary brand rose among firms with 1-9 employees compared with two years earlier (to 33% from 25.1%). There are no statistically significant differences among firms with 10+ employees compared with two years earlier.

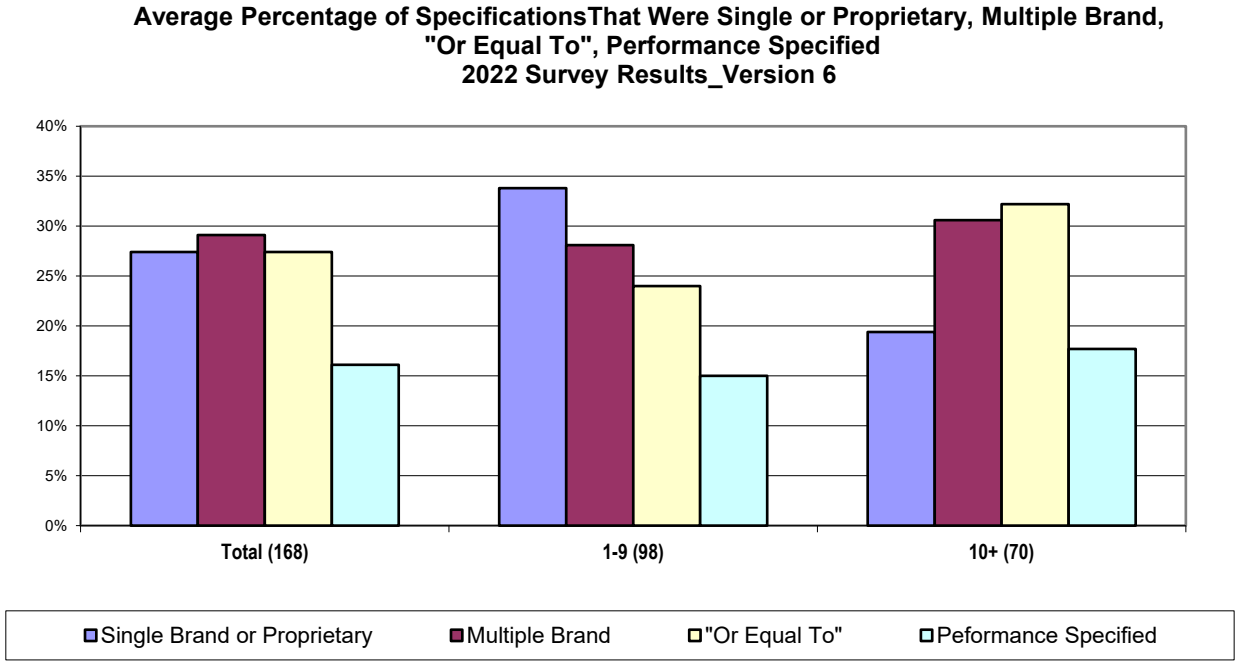
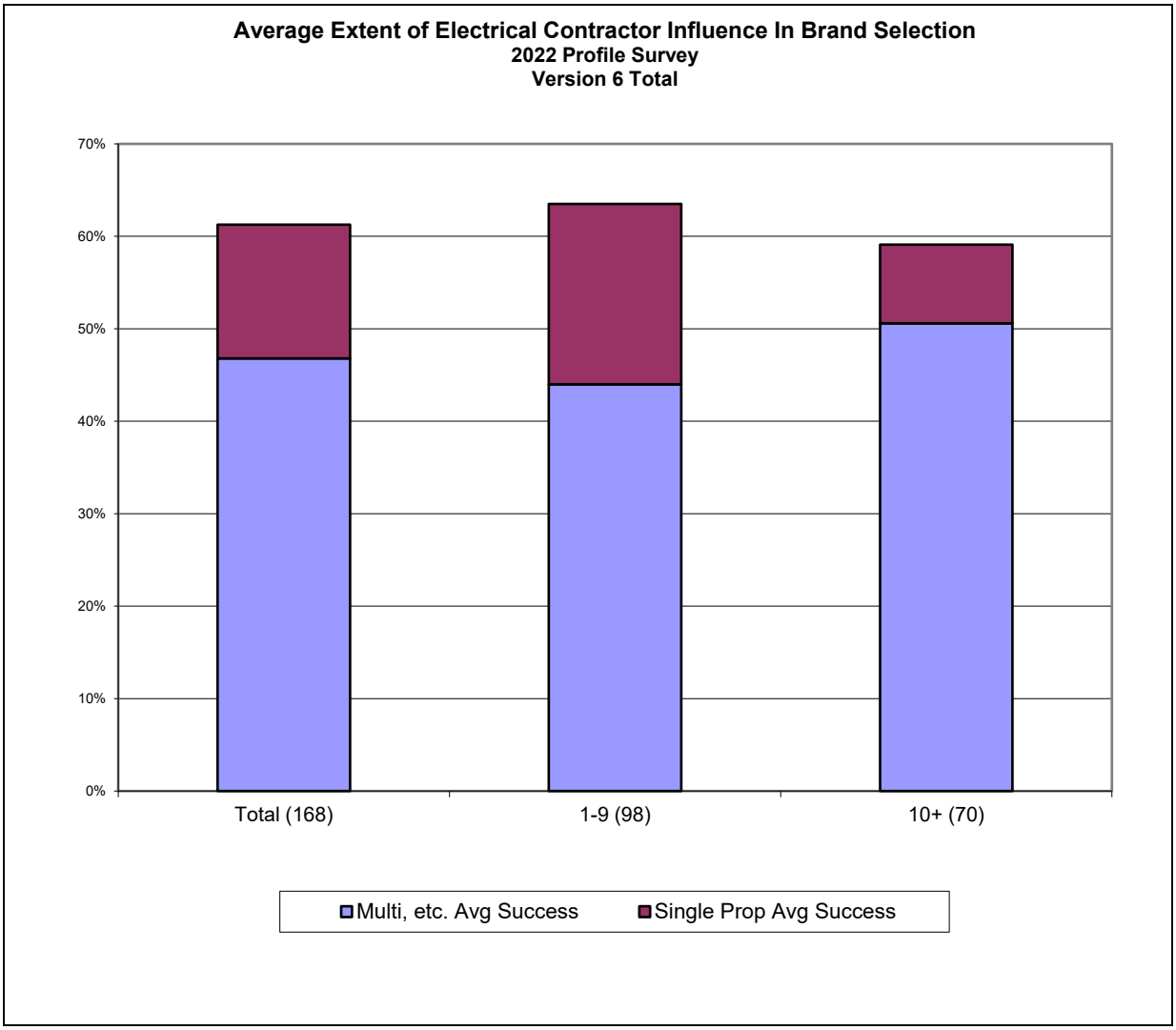


Table 152

Respondents were then asked how much discretion they have in making a brand selection. Overall, contractors are able to make the brand selection about 60% of the time; 64% in the case of firms with 1-9 employees and 60% in the case of firms with 10+ employees.

- Although average influence declined among the total sample driven by firms with 1-9 employees, firms with 10+ employees, on average remain able to influence purchases 60% of the time.



Tables 152,154, 160

"Where a 'single or proprietary' specification is indicated, what percentage of the time are you or someone in your firm able to successfully make a substitution?"
"Where 'multiple or equal or performance' specification is indicated, what percentage of the time do you or someone in your firm make the brand decision for installation?"

Main Reasons for Original Brand Selection and Substitution [2022]

Original Brand Selection: Among the total sample, Availability and Price trump all other attributes as a top-3 reason for original brand selection. Note that as a first choice, Availability completely overshadows all of the other attributes. (This has been the case since at least the 2014 Profile Study.)

Compatibility with existing systems, which was first asked in 2014, has resonance with 30% of electrical contractors. It is now essentially comparable with Prior experience. Made in America, Ease of installation, Durability, Specific features and Manufacturer reputation each score between 17% and 14% as top 3 features.

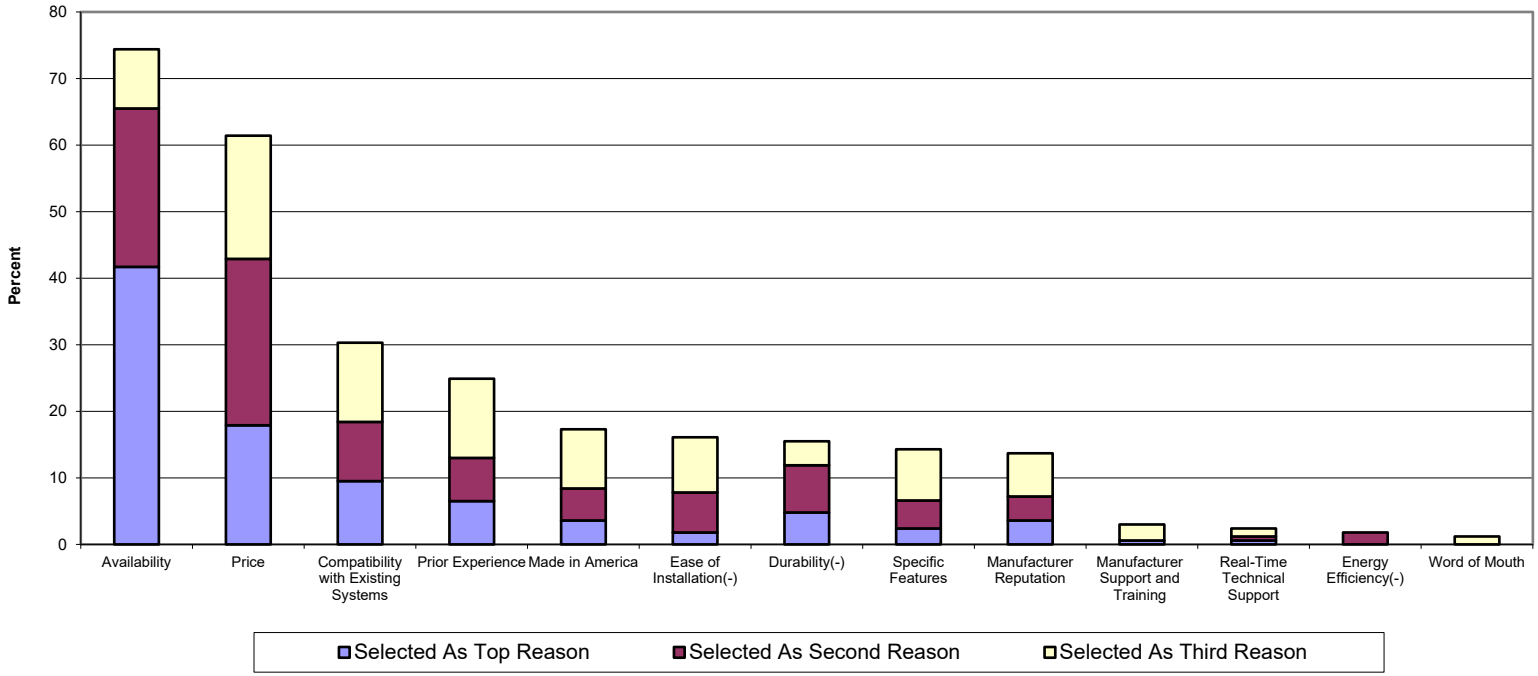
Manufacturer support and training, Real-time technical support, energy-efficiency and Word of mouth score in the low single figures.

- Among the total sample, three reasons declined significantly compared with their 2020 ratings. They are Ease of installation, Durability and Energy efficiency.

Once again, it is somewhat surprising that Energy Efficiency does not play a larger role as a top-3 reason for original brand selection. By way of explanation, as we noted in the 2020 Profile report:

- One hypothesis is that energy efficiency takes place long after the project has been specified and installed and there is no mechanism for the electrical contractor to be tied to the energy savings.

Top 3 Reasons for Original Brand Selection
Base: 2022 Version 6_Q16B Total (N= 168)



(-) indicates a significant difference between 2022 (N = 168) and 2020 (N=207) totals

Tables 161,162, 163 and 165

Top 3 Reasons for Original Brand Selection—Trended

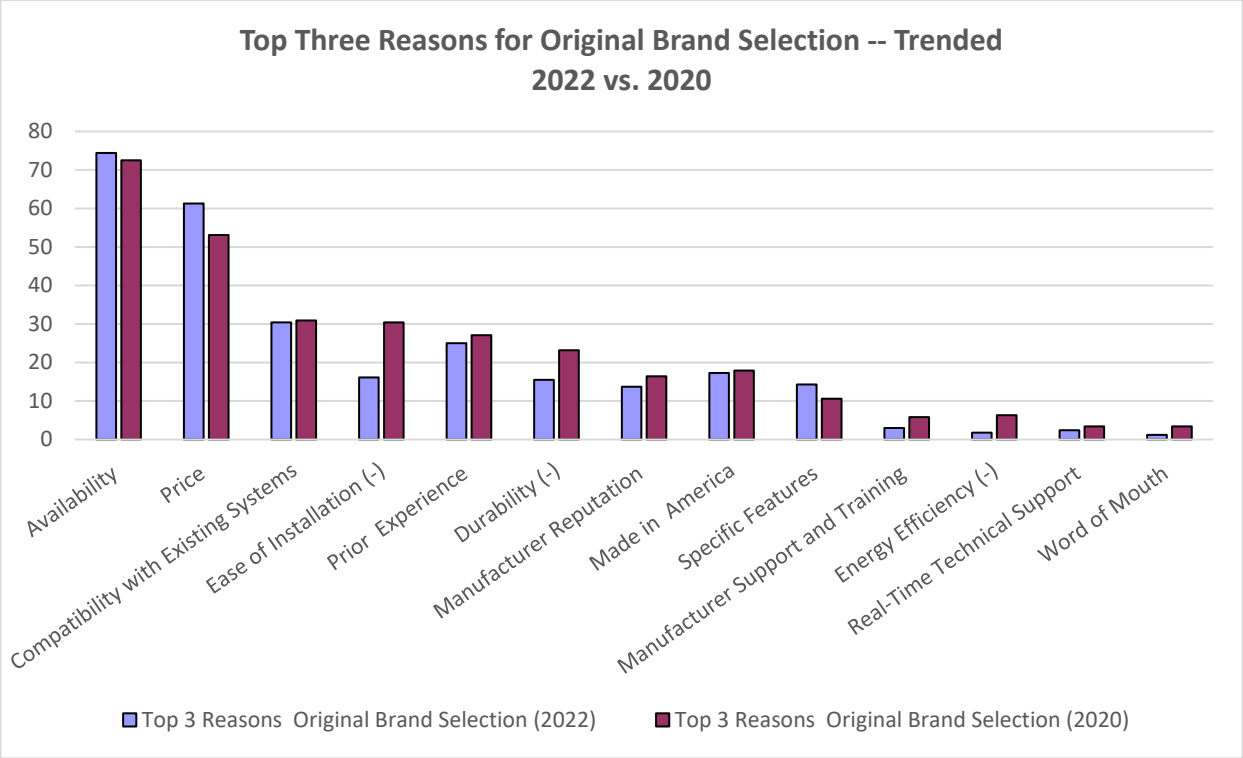
The 2022 results generally mirror the 2020 results. Availability continues to be the leading top-3 reason for original brand selection as does Price. Note that as a first and top-3 choice, Availability completely overshadows all of the other attributes. This has been the case since at least 2018.

- In the previous pages, we noted that among the total sample, three attributes declined compared with two years ago: Ease of installation, Durability and Energy efficiency. The chart on this page also shows the results from two years ago for comparison and context.

- There are a few differences by number of employees since 2020.

    - Among firms with 1-9 employees: Price has risen as a top-3 reason from 44% to 58% while three attributes received significantly fewer mentions: Ease of installation (to 16% from 31%), Manufacturer reputation (to 10% from 18%) and Word of mouth (to 1% from 4%) [Not shown].

    - Among firms with 10+ employees: Ease of installation dropped to 16% from 30%; Energy efficiency dropped to 0% as a top-3 mention from 7% two years ago.

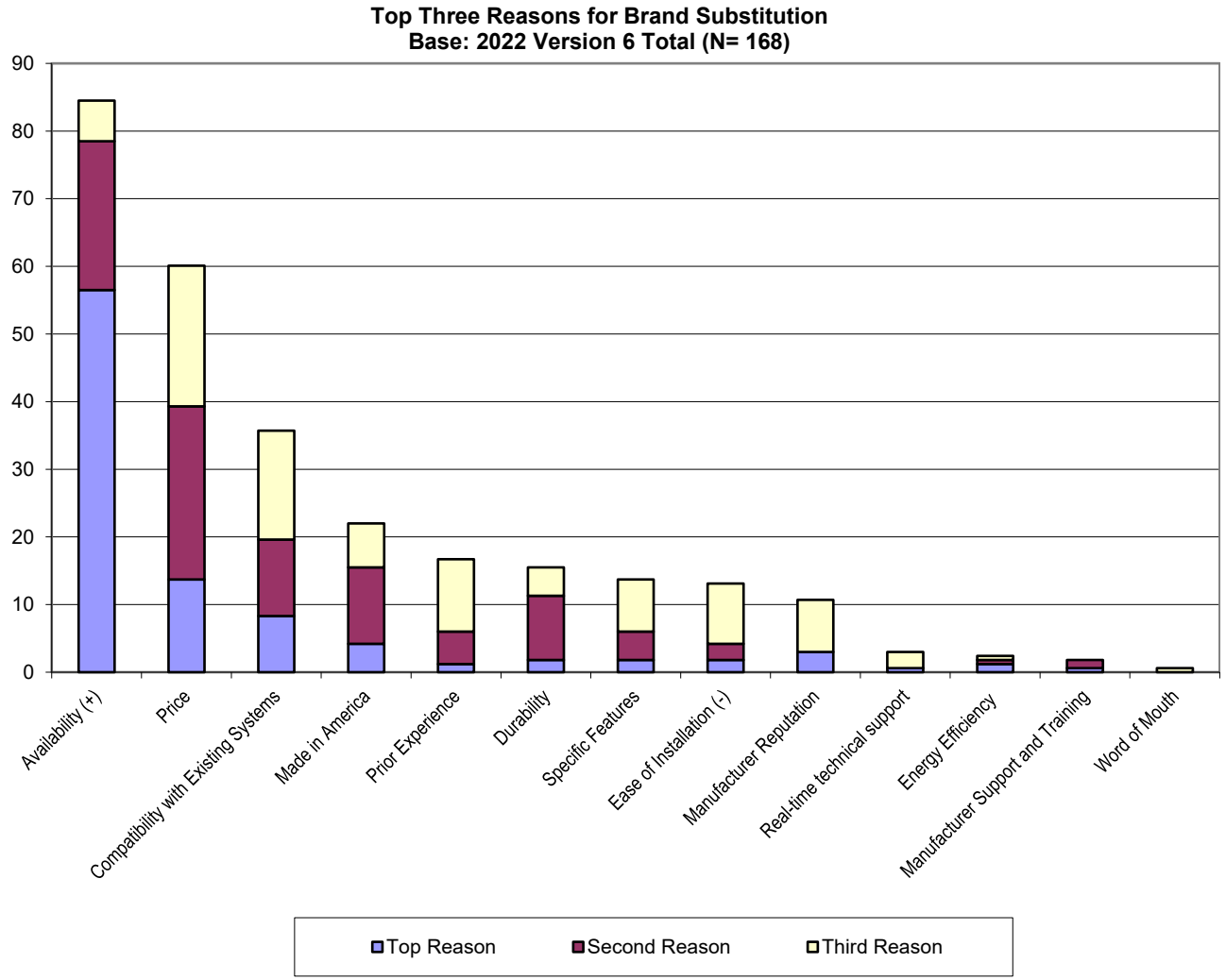


Tables 161, 162, 163 and 165
(-) indicates a significant difference between 2022 (N= 168) and 2020(N=207)

Brand Substitution: In 2022, the top-3 reasons for brand substitution mirror those for original brand selection. Among the total sample, Availability and Price trump all other attributes as a top -3 reason for brand substitution. Note that as a first and top-3 choice, Availability completely overshadows all of the other attributes. This was also the case since 2016.

Compatibility with Existing Systems, which was first asked in 2014, had resonance with 36% of electrical contractors. Made in America, by itself, forms the next tier, mentioned by 22% on a top-3 reasons basis. Prior experience, Durability, Specific features, Ease of installation and Manufacturer reputation were chosen by between 11% and 17% of electrical contractors on a top-3 reason basis for making a brand substitution. Only a handful chose Real-time technical support, Energy efficiency, Manufacturer support/training or Word of mouth.

Compared with two years ago, mentions of Availability, which were already high, rose significantly while mentions of Ease of installation posted a significant decline among the total ample. These significant differences were observed among the total sample as well as among firms with 1-9 and 10+ employees. In addition, Prior experience was mentioned significantly less often in 2022 among firms with 1-9 employees compared to two years ago [Not shown].



Tables 155,156,157 and 159
(-) indicates a significant difference between 2022 (N= 168) and 2020(N=207)

Top 3 Reasons for Brand Substitution—Trended

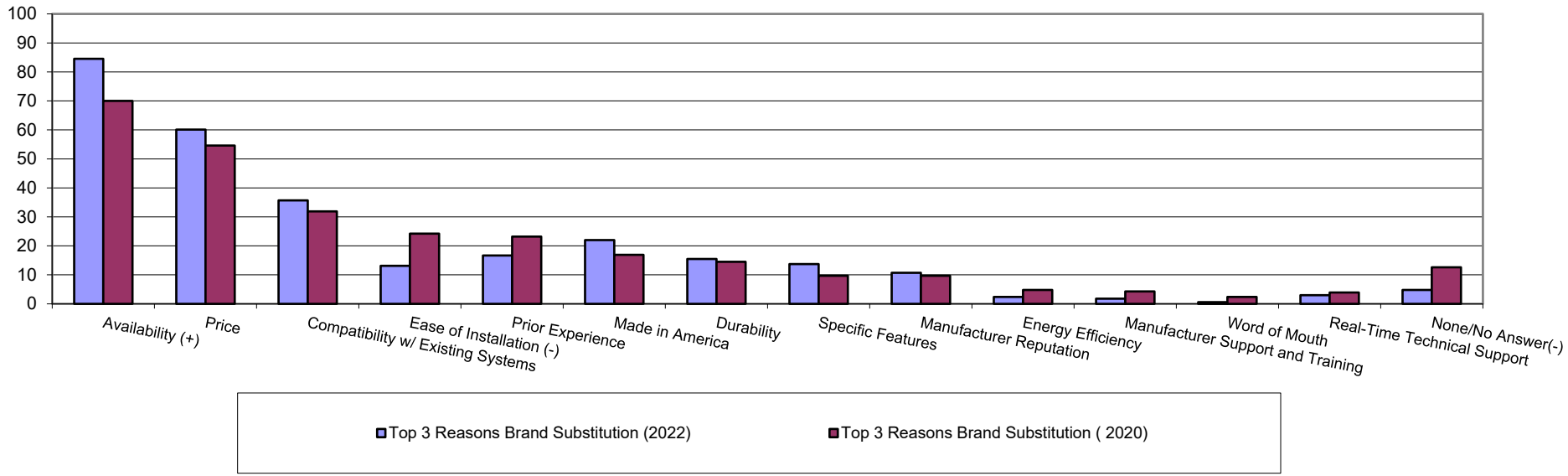
As we found in the case with Original brand selection, the 2022 results for Brand substitution generally mirror the 2020 Profile results: Availability and Price, but especially Availability, tower over all other reasons. Compatibility with existing systems is solidly in third place.

- A noted above, compared with two years ago, mentions of Availability, which were already high, rose significantly while mentions of Ease of installation posted a significant decline among the total ample. The chart on this page also shows the results from two years ago for comparison and context.

- There are a few differences by number of employees since 2020:

    - Compared with two years ago, mentions of Availability, which were already high, rose significantly while mentions of Ease of installation posted a significant decline. These significant differences were observed among the total sample as well as among firms with 1-9 and 10+ employees. In addition, Prior experience was mentioned significantly less often in 2022 among firms with 1-9 employees compared to two years ago. [Subgroup findings are not shown.]

Top 3 Reasons for Brand Substitution—Trended
Version 6 Total (2022 Vs. 2020)



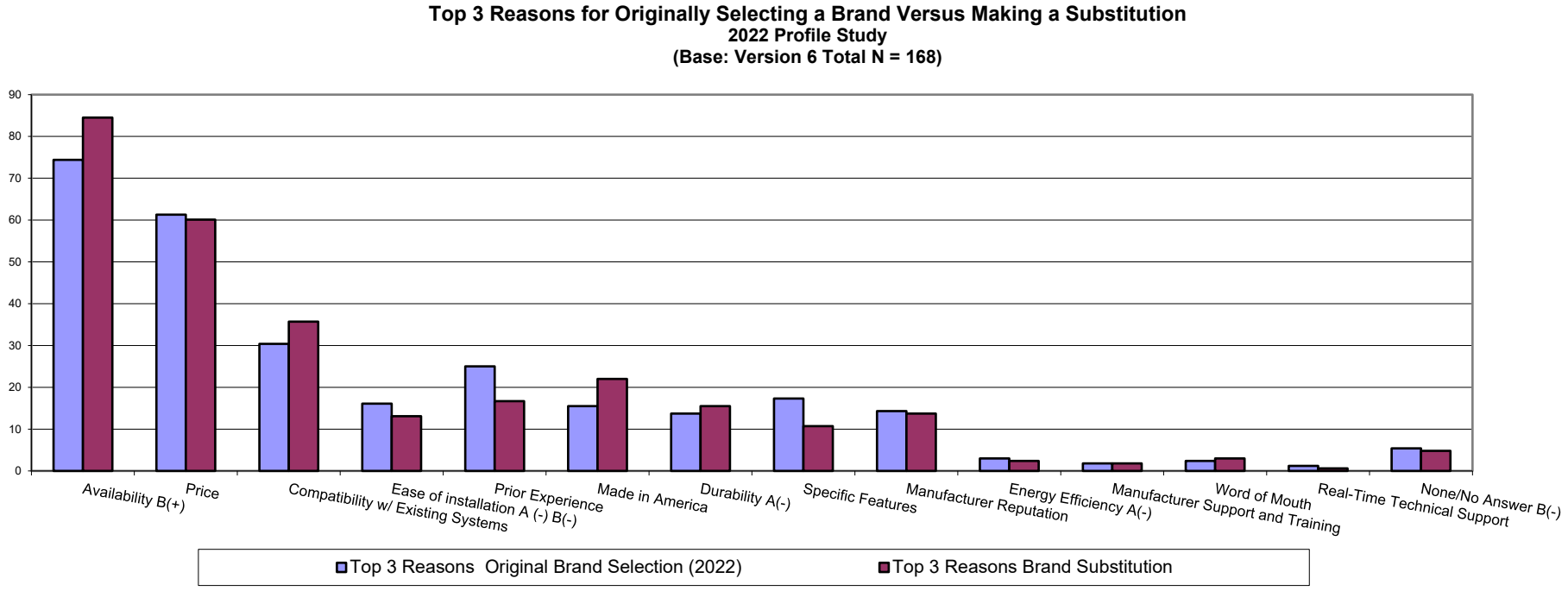
(-) Indicates a significant decline and (+) Indicates a significant increase from 2020 to 2022

Comparison of Main Reasons for Original Brand Selection vs. Substitution

This chart shows 2022 results for the reasons for original brand selection and for brand substitution in the same place. Regardless of whether the context is original brand selection or brand substitution, Availability and Price receive substantially more mentions than any of the other attributes as a top-3 reason for originally selecting a brand and for brand substitution. Compatibility with existing systems, which was first introduced in 2014 emerges in third place for both original brand selection and in the case of brand substitution.

- Please note that the stat testing is versus two years ago *within* original or brand substitution *rather than* as a statistical comparison between reasons for original vs. substitution in the current wave. Availability is the only attribute that has more mentions in 2022 than in 2020 as a reason for **brand substitution**. Mentions of Ease of installation declined as a top 3 reason for brand substitution compared with two years ago.

- None of the reasons for **original** brand selection received more mentions in 2022 than in 2020. Three received fewer mention than was the case two years ago: Ease of installation, Durability and Energy efficiency.

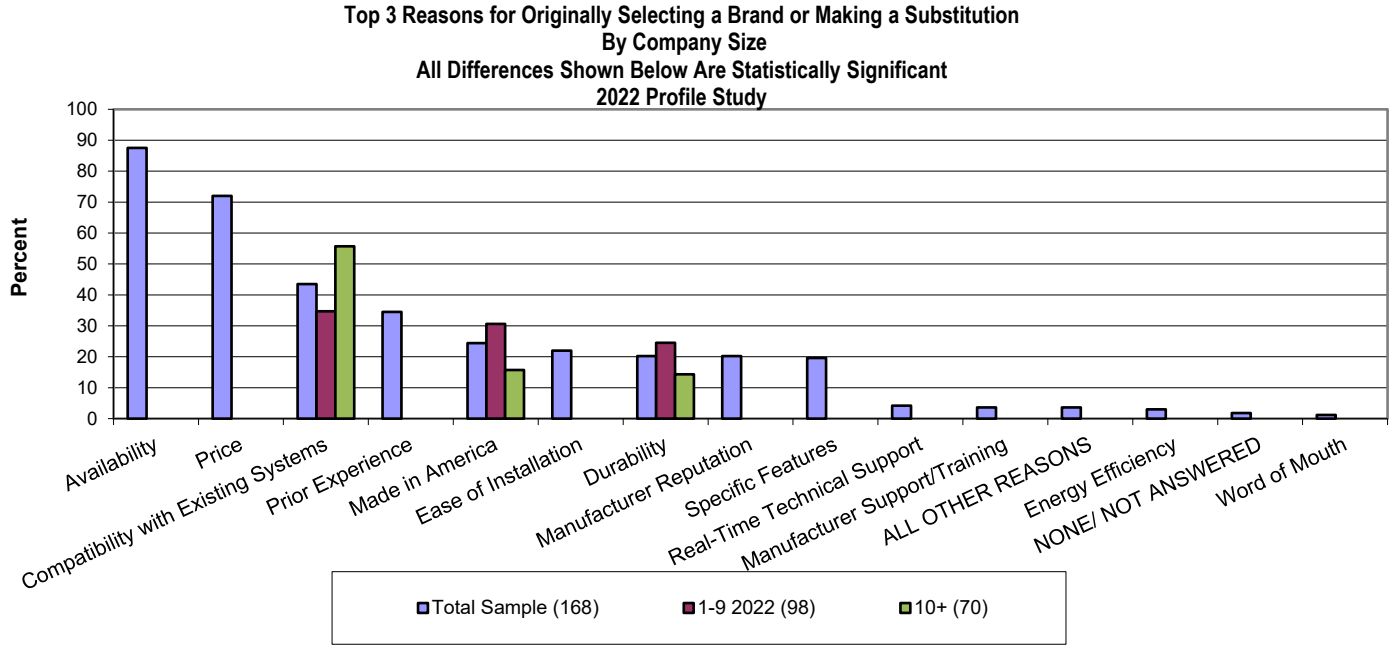


A(-) indicates a significant decline between 2022 (N= 168) and 2020 (N=207) Orginally Selecting a Brand totals
B(-) indicates a significant decline and B(+) indicates a significant increase between 2022 (N= 168) and 2020 (N=207) Making a Substitution total

Of the 13 reasons for original brand selection/brand substitution (on a combined basis), those in small companies are more likely than their larger counterparts to mention Made in America and/or Durability. Firms with 1-9 employees are less likely than those with 10+ employees to mention Compatibility with existing systems.

- There is no longer a difference on Price and/or Manufacturer Support/Training in the 2022 Profile Study between 1-9 and 10+ employee companies. Both of these had been more important to larger firms than smaller firms in 2020.

- The higher importance of Made in America to firms with 1-4 employees compared with firms with 5-9 employees also did not emerge in the 2022 Profile Study. The higher importance of American-made to the very smallest firms had been the case in both 2020 and in 2018 but no longer in 2022.



Brand Choice: Main Reasons for Original Brand Selection /Substitution – By Age

There are relatively few differences by respondent age.

- Respondents who are aged 35-64 are more likely than those aged 65+ to cite Availability.
- Those aged 35-54 are more likely than those aged 55-64 to mention Manufacturer Reputation and less likely to mention Prior Experience.

Main Reasons for Original Brand Selection/Substitution —By Respondent Age
2022 Profile Study (Only Statistically Significant Differences Are Shown)

	Total Sample (168)	35-54 (48)	55-64 (51)	65+ (67)
	%	%	%	%
Availability	88	**94**	**94>**	*78*
Price	72			
Compatibility with Existing Systems	44			
Prior Experience	35	*25*	**<45**	
Made in America	24			
Ease of Installation	22			
Durability	20			
Manufacturer Reputation	20	**29>**	*12*	
Specific Features	20			
Real-Time Technical Support	4			
Manufacturer Support/Training	4		*0*	
All Other Reasons	4			
Energy Efficiency	3	*0*		
None/Not Answered	1.8		*0*	
Word of Mouth	1			

Bold percentages are significantly higher than *italicized* percentages

Blank cells are not statistically different from the total sample

▲TRAINING and TOPICS OF INTEREST

Will Take/Have Taken Training and What Was Studied

About 80% of electrical contractors say that they, or someone in their firm, has taken training in the past 12 months or plans to take training in the next 12 months to improve or broaden skills or for certification. This training could be in the form of on-line, correspondence or classroom training. There is no statistically significant difference between the percentages that took training (79%) vs. those who plan to take training (80%). Further, there is no change in the percent taking training or planning to take training versus two years ago.

Because of the pandemic, in 2022, we asked about whether the training was or will be "hybrid," that is whether it was a combination of online and in-person demonstrations and/or testing. Regardless of whether they participated in hybrid training, whether the hybrid approach would continue into the future.

- About one-half (52%) has already or will take hybrid training. 70% think that the hybrid approach will continue into the future.

NEW: Hybrid Course Work | Source: V1/2, Q14C2, Q14C3, Table 413

Interest in most of the individual courses is statistically unchanged compared to two years ago. The main differences is that significantly more electrical contractors are interested in Personnel/Leadership (44%), Project Management Training (24%) and Cabling as a category (23%).

Courses Taken or Will Take

	2022 (102)	2020 (239)	2018 (233)	2016 (350)	2014 (560)
	%	%	%	%	%
Have Taken Training in Past 12 Months	83	79	74	70	76
Will Take Training in Next 12 Months	85	80	77	78	74
Courses Taken or Will Take					
Base	(92)	(195)	(189)	(282)	(414)
	%	%	%	%	%
MENTIONED ANY	98	96	97	98	97
NEC Changes	54	50	54<	**71**	67
LIGHTING (Net)	37	40	46<	**58**	58
Lamp Technology, incl. LED	17	21<	**33**	39	33
Controls/Systems	24	27	33<	**44**	50
Drivers/Ballasts	13	18	23<	**30**	35
Lighting Design	16	17	18<	**26**	31
Safety (Electrical/Personal/On-site/Jobsite	53	**53>**	37	42	47
Grounding/Bonding	44	**43>**	32<	**49**	50
AUTOMATION/CONTROLS (Net)	35	32	32<	**43**	**<52**
Fire/Life Safety Systems	15	18	20	23	**<30**
Building Automation Systems	8<	**15**	15	17	**<25**
Security Systems	12	14	13	13	**<20**
Home Automation Systems	8	12	9<	**23**	20
Electrical Testing and Maintenance	28	28	27<	**34**	N/A
GREEN/SUSTAINABLE (Net)	32	**32>**	23<	**40**	39
Alternative Energy Systems	11	15	11<	22	24
Electric Vehicle Charging Stations	22	**18>**	10	14	13
Green/Sustainable Building/Energy Audits	7	7	7	8	10
LEED Certification	4	6	6<	**12**	12
Energy Use Regulations	5	8	6<	**11**	12
Community Solar	N/A	N/A	6	10	N/A
Energy Storage	10	**13>**	6	9	8

Bolded numbers > and < indicate that the percentage is higher or lower at the 90% level of confidence

Tables 68, 69 and 72

Courses Taken or Will Take

	2022 (90) %	2020 (195) %	2018 (189) %	2016 (282) %	2014 (414) %
CABLING (Net)	**23>**	14<	**23<**	33	37
Data and Telecom: Cable, Conduit, etc.	**16>**	7<	**15**	19	23
Power	13	8<	**14<**	24	24
Data and Telecom: Testing	**11>**	5<	**13**	16	18
Estimating/Financial Management	23	**26>**	13<	**19**	21
Estimating	22	24	N/A	N/A	N/A
Financial Management	4	9	N/A	N/A	N/A
Power Quality	14	15	14	19	21
Design/Build	9	12	11<	**25>**	19
How to Use New Software	15	12	9<	**15**	N/A
Developing New Business Opportunities	5<	**12**	8<	**21**	17
Increasing Productivity	13	11	9<	**17**	20
Electrical System Design or BIM	11	10	9<	**22**	18
Systems Integration	14	9	9	11	**<21**
Internet of Things	7	7	7	N/A	N/A
HVAC	9	6	10	N/A	N/A
Sound and Video/VDV (Residential)	10	6	7	11	12
Sound and Video/VDV (Commercial)	10	6	5<	**11**	13
Pre-Fab/Off-site Building	5	5	3<	**10**	N/A
Renovation/MACS/Maintenance	1<	**5**	3<	**9**	**<17**
Collaborative Building (Including IPD)	3	4	2<	**5**	N/A
Line Work	7	3	4<	**8**	8
Drones	3	2	2	N/A	N/A
NEW In 2020					
Code Compliance (non_OSHA)	27<	**37**	N/A	N/A	N/A
OSHA Code Compliance	26	35	N/A	N/A	N/A
Personnel/Leadership	**44>**	24	N/A	N/A	N/A
Project Management Training	**24>**	15	N/A	N/A	N/A
Foreman Development	17	10	N/A	N/A	N/A
Executive Leadership	12	7	N/A	N/A	N/A
Lean, Agile, Six Sigma	1	4	N/A	N/A	N/A
New In 2022					
Safety and Wellness	23	N/A	N/A	N/A	N/A
LED Fixtures	23	N/A	N/A	N/A	N/A
Mentioned 1	17	19	24>	9	12
Mentioned 2	10	8	**<15**	**11>**	7
Mentioned 3 or more	71	**69>**	58<	**78**	78
Mentioned 6 or more	49	42	35<	**50**	49

Tables 68,69 and 72

For both training and certification, sources appear to be tiered, with more electrical contractors turning to organizations or associations than to manufacturers or to vocational or trade schools.

With one exception, there are very few differences by number of employees:

- The exception is that larger firms (10+ employees) are more likely to get certification from manufacturers than are smaller firms (1-9 employees).

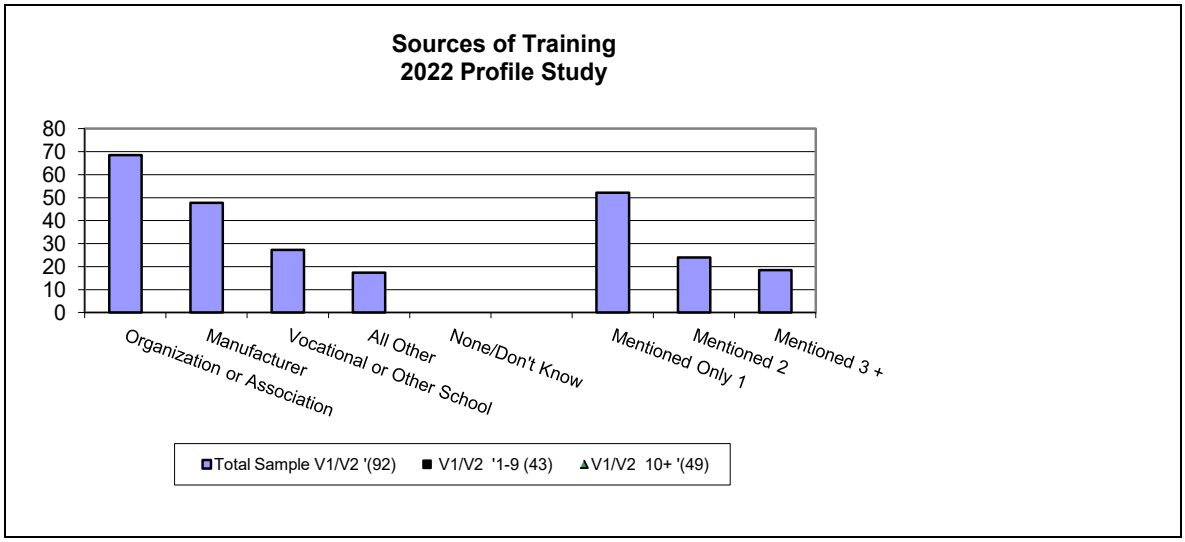


Table 70

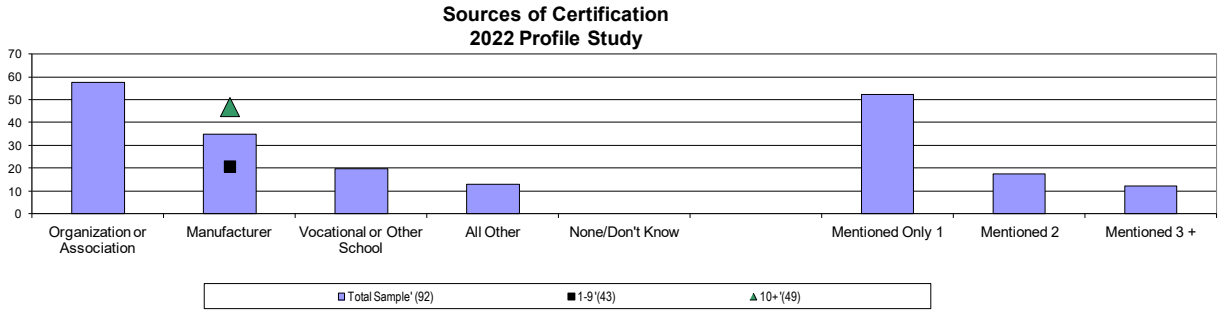


Table 71

▲ LEISURE ACTIVITIES

When not at work, electrical contractors can't get enough of working with their hands, as home improvement took the top spot at 49% among the list of activities we inquired about. Travel (43%) and outdoorsy pursuits such as hunting and fishing (37%) and camping (28%) were also among the more-popular activities.

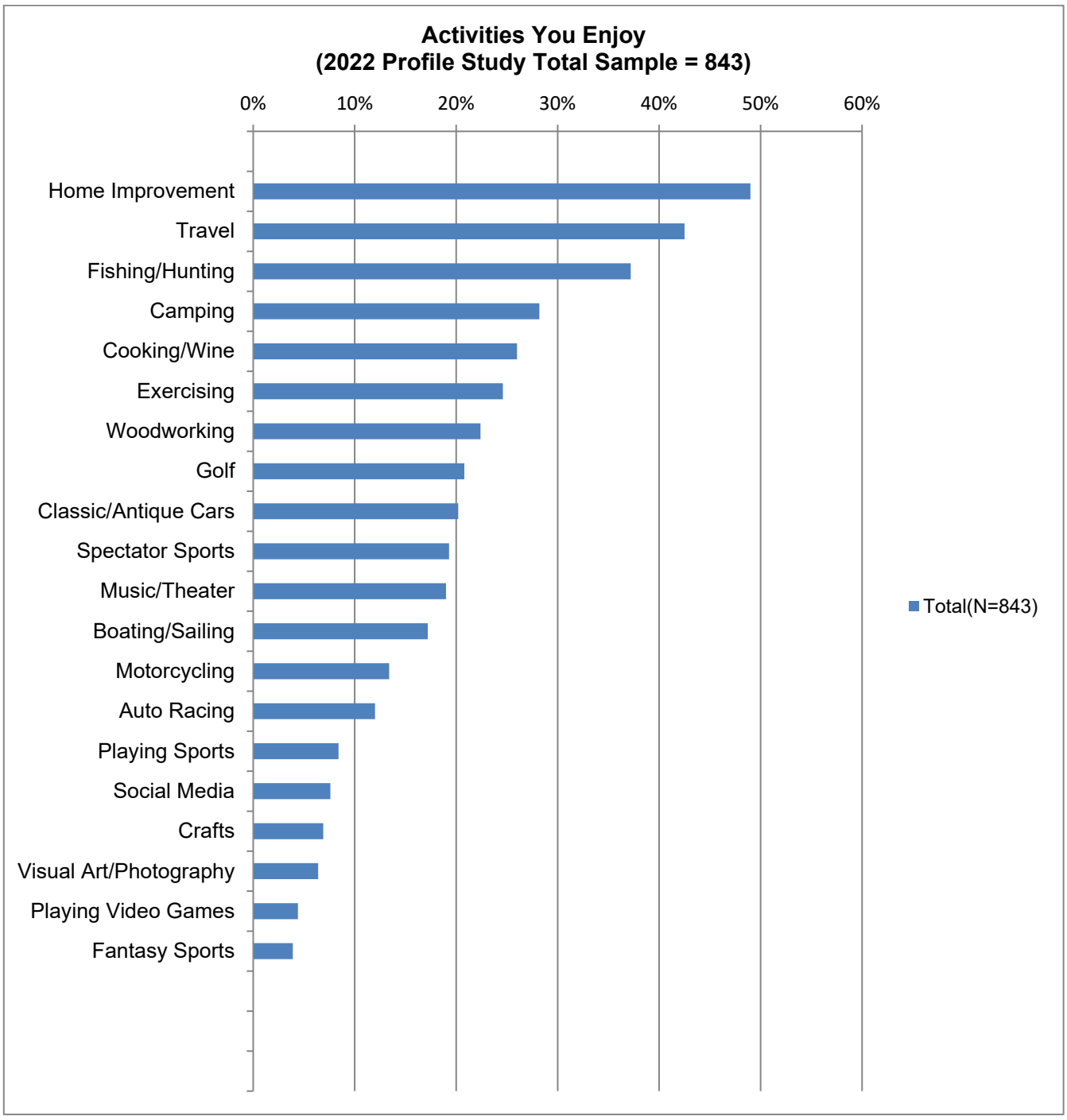


Table 222