SmartMarket Report

Dodge Construction Network™

Safety Management in the Construction Industry 2023

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Dodge Construction Network

About Dodge Construction Network

Dodge Construction Network is a solutions technology company providing an unmatched offering of data, analytics, and industry-spanning relationships to generate the most powerful source of information, knowledge, insights, and connections in the commercial construction industry. The company powers long-standing and trusted industry solutions to timely connect and enable decision-makers across the entire commercial construction ecosystem. For more than a century, Dodge Construction Network has empowered construction professionals with the information they need to build successful, growing businesses.

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Introduction

Since 2012, Dodge Construction Network and CPWR have partnered to conduct research on safety management in construction. Many things have changed since that time, and for this report, we took a fresh look at the most relevant topics and challenges in the industry today, and created new benchmarks for studying trends in the future. These topics include:

- **Planning for Safety:** Consideration of safety even during the planning process before construction begins is clearly shown as beneficial in the data, and multiple viewpoints add additional value to this process. In addition, there is sufficient use of pre-task planning for there to be widespread understanding of it, but also an opportunity to increase its frequency throughout the industry.
- **PPE for Everybody:** Only 63% of construction companies that have less than 20 employees provide personal protective equipment (PPE) designed for women or others who are smaller or larger than the average American male. Even though this is a common practice at large companies, this leaves many workers exposed to hazards due to poor-fitting PPE.
- **Heat Exposure:** With heat records continuing to be toppled every summer, it is not surprising that nearly 1 in 5 contractors had a heat-related illness or injury at their company in the last three years. The data also shows that around half of contractors have addressed this issue in some way in the last three years, and it benchmarks the use of various strategies to manage it.
- **Mentoring and Training:** Mentoring can be a critical way to pass knowledge to less experienced workers, a high priority in construction given the average age of the workforce and the looming likelihood of retirement for many workers. The study shows that safety procedures are the most common focus of mentor programs, but only 51% of all contractors, and 43% of specialty trade contractors, currently offer a mentor program, and more training for those participating in these programs is needed.
- **Mental Health:** Over half of contractors would like to have more training and information on managing worker mental health and the risks of suicide and opioid use. Currently 59% offer a program to tackle substance use or mental health, but strategies like having a peer network are still relatively uncommon. This is clearly an emerging area, and it will be important to track industry engagement with it over time.
- **Technology Use:** New technologies on the jobsite have the promise of providing more accurate information for pre-task planning, better data on jobsite conditions, reduced exposure to hazards, and better ways to manage and monitor worker health and well-being. This study reveals the use of technology onsite and how it has changed since 2021. It also shows that contractors still struggle with utilizing the data they gather to improve safety.

All of these topics reveal opportunities for improving safety on construction sites by allowing companies to measure their performance in these areas against industry benchmarks and offering potential solutions for them to consider adopting; by providing institutions that fund training and information materials with insights on the needs of the industry; and by providing a basis for tracking how these areas change over time.

Dodge Construction Network thanks CPWR for its partnership in this effort and NIOSH for recognizing the value of this repeated series to inform the industry about safety management practices in use.

Donna Laquidara-Carr, PhD, LEED AP
Industry Insights Research Director, Dodge Construction Network

Donna Laquidara-Carr currently provides editorial direction, analysis and content to Dodge Construction Network's *SmartMarket Reports*. Prior to this position, she worked for nearly 20 years with DCN's Dodge division, where she gained detailed insight into the construction industry.

Steve Jones
Senior Director, Industry Insights Research, Dodge Construction Network

Steve Jones leads Dodge Construction Network's Industry Insights Research division. He is active in numerous industry organizations and frequently speaks at industry events around the world. Before DCN, Jones was vice president with Primavera Systems (now part of Oracle), a global leader in project management software. Prior to that, he was principal and a Board of Directors member with Burt Hill, a major A/E firm (now merged with Stantec).

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The case study on pages 31 and 32 reveals the strategies Webcor uses to build a safety culture at their organization, including conducting executive safety walks.

Above: Photo courtesy of Webcor
Cover: Photo courtesy of Webcor

Executive Summary

Planning for Safety Produces Better Outcomes

Contractors can start addressing safety before construction begins by creating a health and safety plan for the project. Only 36% of those creating these plans have their safety and health director involved. Even given that a share of the contractors' companies may not be large enough to have a safety and health director role, there is still clearly an opportunity for many more to have them be part of the planning process. Those that do so more frequently experience increased worker engagement with safety, reduced recordable injury rates , improved productivity and more predictable costs than those that do not.

As the chart at upper right shows, pre-task planning is also frequently utilized by many companies, but there is still room for growth, especially among smaller organizations. The study examines the use of 13 pre-task planning activities by contractors(see page 13), and the chart at lower right shows that the majority of those who use seven or more of these activities experience many of the same benefits as do those who create a health and safety plan before construction begins, including reduced recordable injury rates and improved productivity. These benefits clearly demonstrate the value of active planning for safety, and continual reinforcement at the task level.

Right-Sized PPE Is Not Universally Offered

Over one third of small contractors do not provide PPE designed for people other than the average American male. Right-sized PPE is essential to protect worker safety.

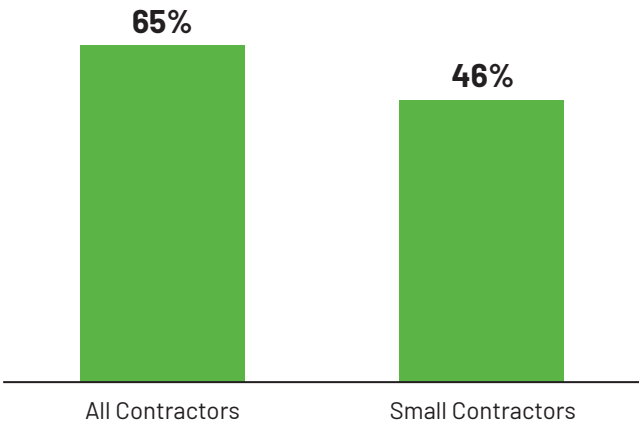
Contractors Are Increasingly Addressing Heat Exposure as an Important Safety Practice

According to the US Environmental Protection Agency, temperatures in the contiguous 48 states in the US have been rising at a more rapid pace since 1970 than they had previously, with nine of the warmest years on record occurring in the last 25 years. With many construction sites occurring in open air and the boom of construction projects in warm states like Arizona, Florida and Texas, heat exposure is an increasing hazard.

As the chart on the following page at upper right makes clear, many contractors are taking this threat seriously. With nearly 1 in 5 companies reporting that they have had staff suffer heat-related illnesses or injuries in the last three years, this is clearly an area of wide concern. In fact, over half of the contractors state that their company has made changes in the last three years to help prevent these incidents.

Utilize Pre-Task Planning Frequently or Always

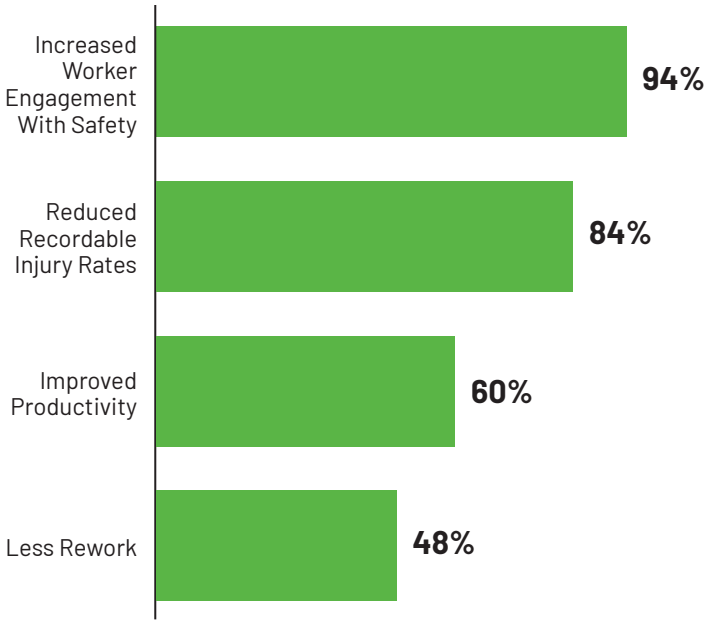
Dodge Data & Analytics, 2023



Top Benefits Experienced From Pre-Task Planning

(According to Those Using Seven or More PTP Activities)

Dodge Data & Analytics, 2023



Executive Summary

Clearly, though, there is more that contractors can do. One third (34%) still do not have a written heat safety program. Also, while the use of water, rest and shade to manage heat exposure is nearly ubiquitous, most of the other nine methods included in the study are used by less than half of contractors. These include administrative controls, such as scheduling work for cooler times of day, using PPE designed to keep workers cooler or having an emergency response plan. Only 10% conduct physiological monitoring, which could reveal workers in distress.

Safety Is Often Prioritized in Contractors' Mentoring Programs

As the chart at lower right reveals, about half of contractors have a mentor program at their companies. A positive sign is that when they do, it commonly focuses on safety procedures. However, as promising as these findings are, over 60% of contractors do not offer safety mentoring, and many companies do not train their mentors for that role. These findings suggest that increasing mentoring, and preparing those put in that role, could help contractors improve the safety culture at their companies.

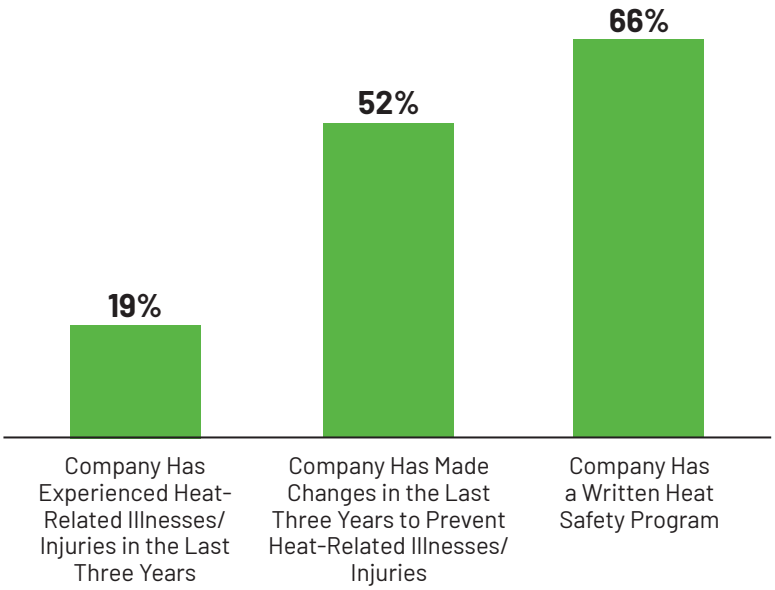
Growth Expected in Use of Training Assets

The study measured the use of two training assets: online safety training and the Foundations for Safety Leadership Training.

- Nearly two thirds (64%) currently use online training, and over one quarter of them expect to increase their use of this tool. However, non-users are less interested in this tool, with only a tiny share who expect to start using it in the next two years.
- The Foundations for Safety Leadership Training is currently used at the companies of 49% of the respondents. This is a growth of 9 points since the use was first measured by DCN in 2017. Notably, there is also an increase in the share who don't know whether their companies utilize it or not, from 11% in 2019 to 25% in 2023. This may suggest that the industry currently needs more exposure to it, now that six years have elapsed since its launch.

Heat Exposure Impacts and Responses

Dodge Data & Analytics, 2023



Mentoring Programs at Contractor Companies

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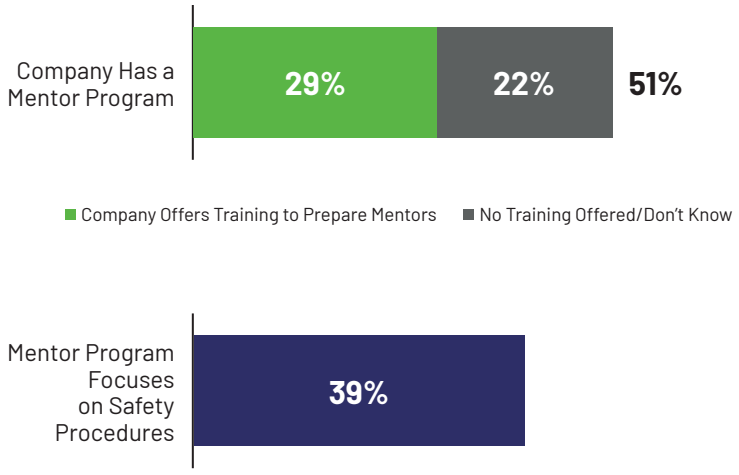


Executive Summary

Contractors Seeking More Information and Training on Mental Health Issues

As the chart at upper right makes clear, contractors have a keen interest in learning more about mental health, suicide and opioid overdoses. This finding supports a general engagement with the larger issue of worker well-being by contractors, one that includes frequent offering of anti-harassment training, as the chart below demonstrates.

However, programs that offer help on these issues are not yet commonplace in the industry. Certainly, there is an opportunity for the industry at large to provide more support as well, especially for smaller companies. Even more important, information about existing resources that contractors can utilize also needs to be more widely disseminated.

Contractors Are Engaging Technology, But Still Not Fully Utilizing Data to Improve Safety

The majority of the contractors in the study utilize at least one type of digital or emerging technology on their jobsites. Some of the most common include building information modeling, drones and laser scanning, which are all utilized by over one third. Many other technologies, such as remotely controlled equipment and predictive analytics, are used by less than 20%.

Promisingly, the top reason contractors cite for using technology is to improve safety, even over increased productivity.

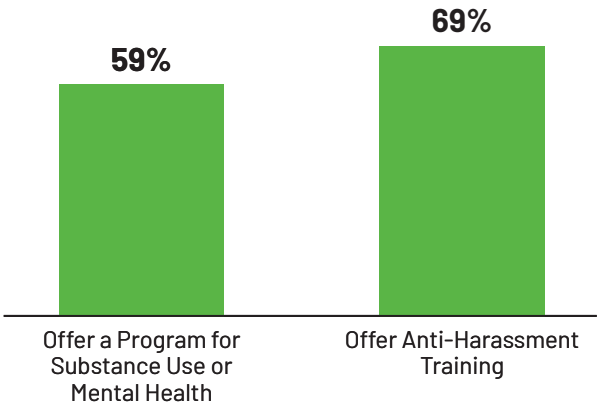
However, the ability to utilize data to improve safety is still emerging in the industry. Nearly half (47%) either don't gather any safety data or do not use most of the data they do collect to improve their safety program. This will be an interesting area to watch as better tools emerge that help contractors analyze safety data and place it into the context of broader industry practices.

Top Three Topics Contractors Would Like to Have More Information/Training About

Dodge Data & Analytics, 2023

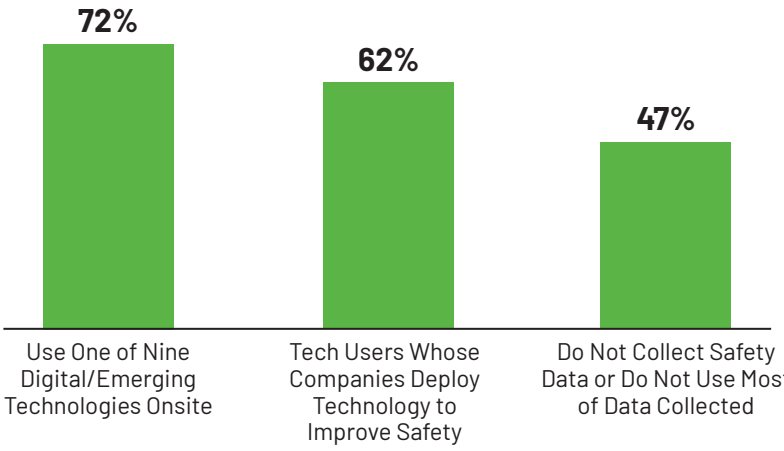
Share of Contractors Offering Programs/Training for Mental Health/Substance Use/Anti-Harassment

Dodge Data & Analytics, 2023



Use of Technology and Safety

Dodge Data & Analytics, 2023



Data: Introduction

The approach to managing safety on the construction site has evolved since the first *Safety Management in the Construction Industry SmartMarket Report* in 2012, and this latest report features data on several new topics that have gained prominence in safety programs since that first report. However, a few items were asked in previous surveys, and the analysis in the report captures the longitudinal findings.

The topics in the current study include:

- Planning for Safety: Both the inclusion of safety in the planning processes before construction begins and the prevalence of pretask planning are included in this section.
- PPE: The availability for appropriately sized PPE for women and other groups is explored in this section.
- Heat Exposure: This section looks at the degree to which the industry is adjusting its response to heat in the last few years and the utilization of various measures to help protect employees, as well as measures to determine the risk of exposure.
- Mentoring and Training: In addition to examining the share of companies that provide mentoring, the analysis also includes how many of those companies prepare the participating mentors with training. It also explores the frequency with which mentoring focuses on several topics, including safety. The training analysis includes the degree of use of online training and the slow but steady growth in the use of Foundations of Safety training by contractors. It also provides information on the top topics that contractors would like to have more training and information about.
- Mental Health and Well-Being: This topic was first examined in 2021, and the current study continues to look at the degree to which contractors offer programs to their employees that provide assistance with mental health, substance misuse and suicide. It also looks at the prevalence of anti-harassment training offered in the industry, along with the frequency with which specific types of harassment are included.
- Technology: The study creates a benchmark for the use of various technologies onsite, ranging from BIM to exoskeletons, that can impact safety. It also examines the degree to which contractors can successfully utilize the data they currently gather to improve their safety programs.

Articles and case studies throughout the report also provide additional context on many of these topics.

Note About the Data

The findings in this report are based on an online survey conducted by Dodge Construction Network in May and June 2023, using the Dodge Contractor Panel and in partnership with several contractor associations.

Three analytic variables are used to examine the data.

- In many cases throughout the report, the findings are shown by company size. This variable, more than any other, produces notable differences in the results. Company sizes are based on the number of employees, consistent with previous reports.
  - Small: Fewer than 20 employees
  - Midsize: 20 to 99 employees
  - Large: 100 or more employees

- Findings are also analyzed by the type of company: general contractors and specialty trade contractors. The category of general contractor as cited in the charts and text of this report also includes construction manager, design-builders and civil/engineering contractors. For simplicity, in the text and the chart, all these respondents are put into a general contractor category. Those who identify themselves as working at general construction companies make up 71% of the general contractor responses.

- For a few questions, especially those involving training or policy, the responses are also analyzed by whether a company solely has union craft workers, a combination of union and non-union workers or solely employs non-union workers.

Further information on the respondents to the survey can be found in the Methodology section on page 48.

Data: Planning for Safety

Preconstruction Project Planning

Good safety planning frequently begins before construction starts, and it benefits from a variety of perspectives. However, sourcing those perspectives needs to be a standard practice in preconstruction planning.

Contractors were asked which of the five roles or types of companies shown in the chart at upper right are normally involved in preconstruction planning. The pie chart below shows the range in the total number of entities involved.

While it is common practice to include estimators and project owners in the planning process, that is not the case with health and safety directors, who are only included by a little over one third of respondents.

- The low response rate (11%) of small companies (10 or fewer employees) suggests that many do not have a safety and health director role at their companies.
- And while it is more likely that midsize (10 to less than 100 employees) and particularly large (100 employees or more) companies will have an employee in that role, their response rates are still surprisingly low (23% and 57%, respectively).

The important contribution of safety directors during preconstruction planning may allow companies to minimize hazards and create meaningfully safer jobsites.

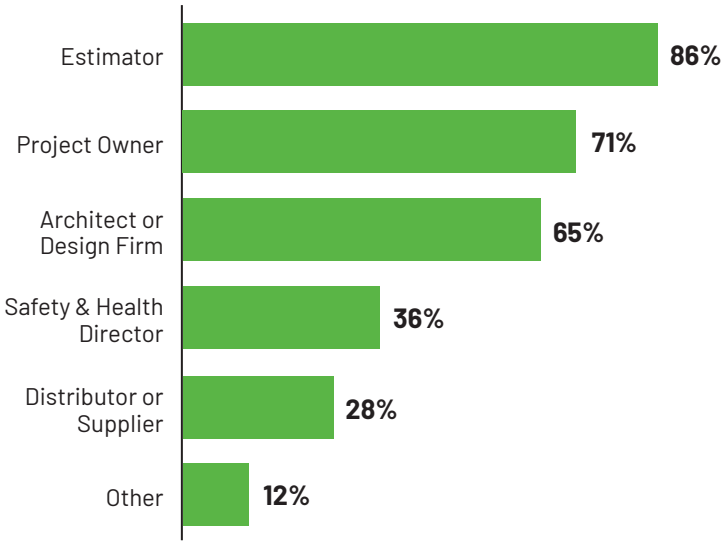
On a more promising note, though, a number of respondents wrote in other types of roles, saying that superintendents, and on a few occasions, foremen, are active members of their project planning team. The actual share of companies that engage these roles is probably notably higher than those who chose to write them in, which is a hopeful sign since field staff can be essential to identifying and addressing safety issues in advance.

Distributors or suppliers can also contribute insights into safer installation of their products, so their inclusion by some of the contractors is also worth noting. Specialty trade contractors (34%) more frequently engage them than do general contractors (22%), probably due to the fact that they benefit more directly from the insights provided.

Overall, there is no common practice in the industry for how many different roles and companies are engaged in pre-project planning. Respondents are relatively evenly split between those who only get two or fewer of the roles cited above involved, those who engage three and those who engage four to six. Increasing the number of perspectives in preconstruction planning has the potential to improve safety for everyone once construction is underway.

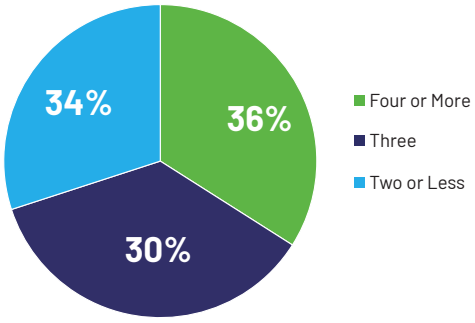
Roles/Companies Normally Involved in the Planning Process Before Construction Begins

Dodge Data & Analytics, 2023



Number of Roles/Companies Involved in Planning Before Construction Begins

Dodge Data & Analytics, 2023



Benefits of Having a Health and Safety Plan Before Construction Begins

Contractors were asked about the benefits of creating health and safety plans before construction begins. Recognition that this activity leads to benefits on their projects is nearly universal, with only one out of 298 respondents seeing no value in this activity.

Top Benefits

Over 70% of contractors report that creating a health and safety plan before construction begins leads to increased worker engagement with safety and reduced recordable injury rates. High worker engagement has been well demonstrated to increase safer behaviors onsite, so it is not surprising to see near parity across the analytic variables shown in the chart for these benefits. Workers can be more attuned to hazards and manage them better if a company plans for them in advance.

Factors Impacting Benefits Achieved

The benefits reported from creating health and safety plans before construction begins relate directly to the practices of engaging multiple companies in preconstruction planning and of making sure that a safety director is involved. The share who report experiencing all six of the benefits shown below is much higher among the respondents that do both.

An important difference is in the rates of improved productivity reported. Nearly half of those who engage many different roles/companies in preconstruction planning or who include safety directors in that process report increased productivity as a result. Although construction schedules are always tight, and contractors often need to make hard choices that will keep their projects on schedule, these findings suggest that investing in this additional engagement during the planning stage can definitely benefit the overall project timeline even if it requires more time and effort up front.

Variance by Company Type and Size

Notably, there are no significant differences in the benefits reported by general and specialty trade contractors. However, large contractors more frequently experience increased worker engagement with safety (82%), improved productivity (46%), more predictable costs (33%) and less rework (28%) than do smaller companies.

Benefits Experienced From Creating Health and Safety Plans Before Construction Begins

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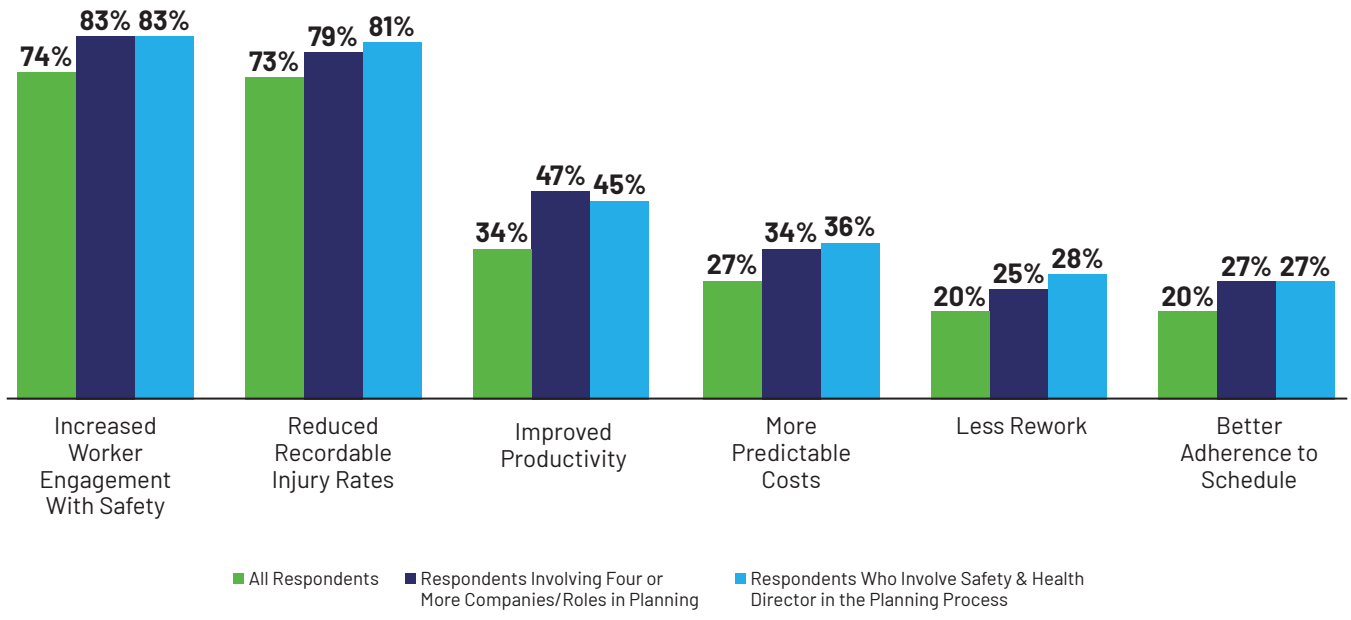


Planning for Safety

Drivers for Contractors to Conduct Health and Safety Planning Before Construction Begins

While understanding the potential benefits of preconstruction health and safety planning (see page 9) is an important driver for contractors to engage in the practice, other factors may also influence their decision.

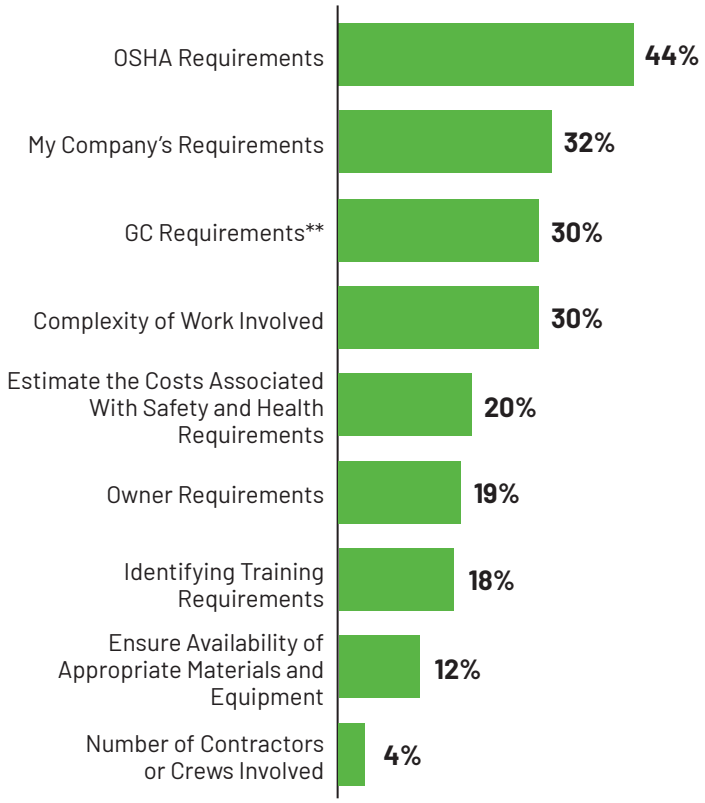
Contractors were asked to select their top two reasons from the list of options shown in the chart at right.

- OSHA requirements are the most influential. This demonstrates that, while contractors take safety seriously and are engaged in improving it, there is also a critical role for regulations to help drive the best safety practices.
  - Notably, OSHA requirements are selected by more general (50%) than specialty trade (38%) contractors.
  - They are also selected by more small (59%) and midsize (47%) companies than large ones (36%).
- The next tier of factors demonstrates that the industry is also holding itself to a high standard, with company requirements a top influence for about a third of contractors. This includes their own company requirements, and, if they are acting as subcontractors, the requirements of the companies they are working for.
- Contractors are also more likely to engage in this kind of planning on a complex project. In particular, large companies consider complexity important, with even more (40%) selecting it as one of their top two reasons than OSHA requirements (36%). This is likely due to the fact that large companies are more likely to be involved in highly complex projects than are smaller companies.
- General contractors more frequently select estimating the cost associated with safety and health requirements in their top two (25%) than do specialty trade contractors (14%).
- Owner requirements are selected by only 19% among their top two reasons. Owners frequently have significant influence on contractor priorities (especially general contractors, who typically have owners as their clients). So this finding suggests that owners are not often setting safety performance requirements that would drive more preconstruction safety planning. This highlights an opportunity for owners to have a greater influence on jobsite safety performance.

Overall, these findings suggest that government, owners and contractors can all help encourage wider use of safety planning before construction begins.

Top Reasons Contractors Plan for Health and Safety Before Construction (Selected in Top Two)

Dodge Data & Analytics, 2023



** Asked of trade contractors only.

Planning for Safety

Use of Pre-Task Planning

Contractors were also asked how frequently they engage in pre-task planning, (PTP), which the survey defined as follows:

- "A process performed before each task starts on an active construction project. Its purpose is to discuss the steps of the task, the hazards and how the hazards will be controlled. This process may also be known as JHA (job hazard analysis), JSA (job safety analysis), morning huddle, etc."

As page 16 reveals, the use of pre-task planning leads to many benefits, including increasing safety and improving productivity.

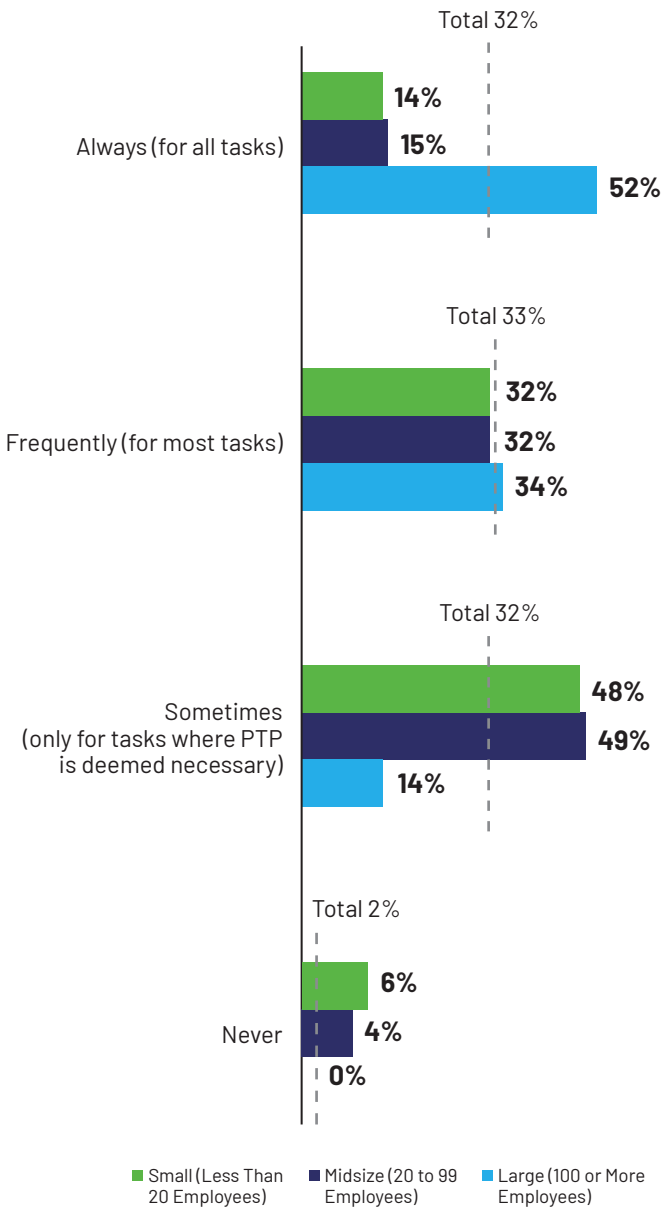
While nearly all of the contractors surveyed (98%) utilize PTP at least some of the time, they vary considerably in the degree to which they utilize it.

- Overall, the construction industry is nearly evenly split between those who always use it (for all tasks), those who use it frequently (for most tasks) and those who only use it sometimes (only when deemed necessary).
- As the chart at right clearly reveals, size of company is directly correlated with the use of PTP. Over half of large companies utilize it on all tasks, and most of the rest use it frequently. In contrast, nearly half of midsize and small contractors use it only when it is deemed necessary, and very few utilize it for all tasks.
- Notably, there is no significant difference in the frequency of use of PTP between general contractors and specialty trade contractors.
- Unions also appear to encourage the use of PTP. Companies that only have union craftworkers on their jobs tend to frequently (36%) or always (39%) use PTP, and those with a mix of union and non-union craftworkers on their projects report similar engagement (32% and 39%, respectively). In contrast, far fewer of those with only non-union craftworkers (20%) utilize PTP.

Encouraging wider use of PTP would help better prepare the workforce for the challenges they might face and empower workers to increase their own safety.

Utilize Pre-Task Planning (PTP)

Dodge Data & Analytics, 2023



Planning for Safety

Engagement With Pre-Task Planning

To better understand the use of pre-task planning (PTP) in the industry, contractors were asked about the degree to which they engage with PTP in two different ways. First, they were asked which of their staff were involved in it, and then they were asked about the frequency of its use. Both of these impact the benefits that they are able to achieve from its use (see page 16).

Roles Involved in PTP

Contractors were asked how many of the five positions shown in the chart at upper right are normally involved in PTP.

As that chart reveals, findings vary notably by company size. While large companies generally engage supervisors, workers and safety managers more than midsize or small firms, the midsize companies more frequently engage superintendents. These findings are surprising in that they do not necessarily reflect the greater resources typically available to larger companies (other than perhaps the safety managers). They may instead result from more formal processes of engagement in place at larger organizations that standardize greater involvement by more positions.

There are also differences in engagement by type of company, with general contractors more frequently involving superintendents (74%) and safety managers (55%) than do specialty trade contractors (55% and 43%, respectively).

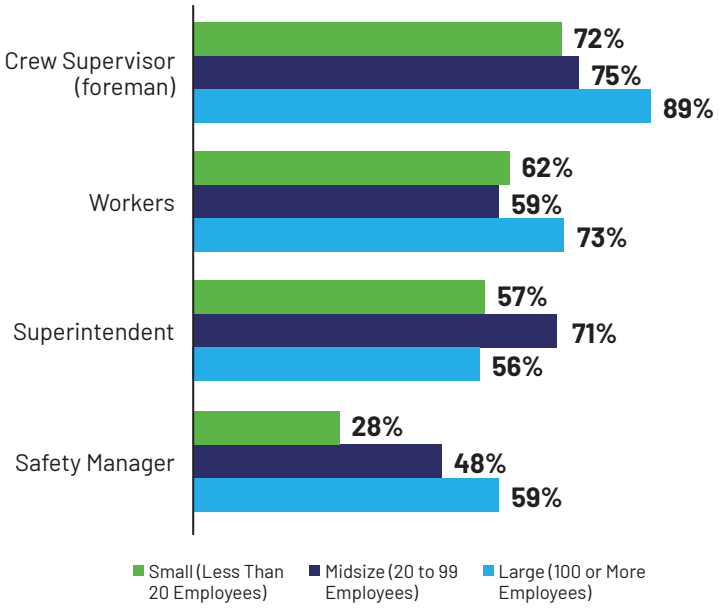
Contractors were also offered the option to add a role missing from the list, and nearly all who did so mentioned that project managers are also involved in PTP.

Frequency of Use of PTP

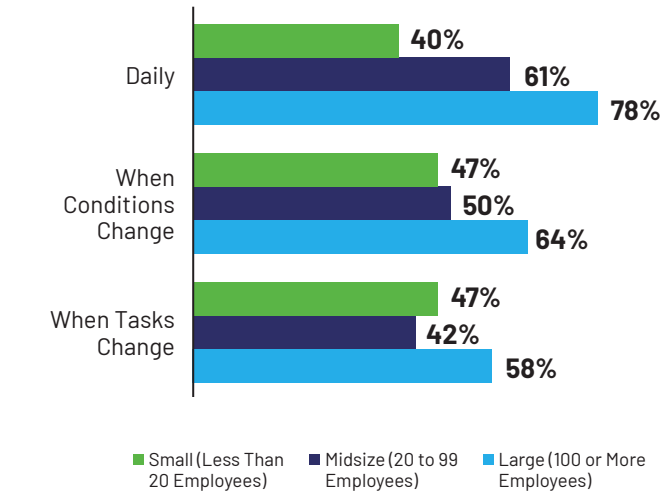
Contractors were asked when PTP occurs on their projects. They were allowed to select all the options that apply from the chart at lower right. As it reveals, larger companies tend to utilize PTP more frequently. However, there are no significant differences between general contractors and specialty trade contractors in these responses.

The most common practice (65%) is for PTP to occur daily onsite. Over half also find that it occurs anytime conditions change (56%) and 50% say that it happens anytime the task changes. While addressing changing conditions is certainly important, a regular daily cadence of planning for hazards reinforces workers' awareness and knowledge of the hazards they face and can also encourage greater worker input.

Involved in Pre-Task Planning
(According to Those Using PTP)
Dodge Data & Analytics, 2023



When Pre-Task Planning Occurs on Projects
(According to Those Using PTP)
Dodge Data & Analytics, 2023



Planning for Safety

Use of Pre-Task Activities

Contractors were asked to select the PTP activities they engage in from the list of 13 shown in the charts on this page and the next. The ones shown in the chart at right are utilized by 40% or more of contractors, while those on the next page are less commonly used.

IDENTIFICATION OF HAZARDS

While all PTP involves identification of hazards associated with jobsite tasks, three particularly thorough practices are widely utilized.

- 71% of respondents identify hazards associated with each step of every task that can help prepare workers to deal with specific hazards in a safer way. This is a common practice at large companies, and it is also among the most widely used by midsize and small companies. However, it is not universally adopted, so there is still the potential for many contractors to adopt this practice.
- 66% discuss the hazards posed by other crews. This practice is more common among specialty trade contractors (72%) than it is among general contractors (60%). This is understandable since trades frequently work in close proximity to each other and their scopes are often physically adjacent or intertwined. To fully understand the hazards they face onsite, they need to incorporate the ones created by those working around them.
- 58% conduct daily walkthroughs to understand site conditions, with large companies leading (77%) and midsize companies lagging (44%). It is also more widely used by general contractors (64%) than specialty trade contractors (51%).

DETERMINING HOW TO MANAGE HAZARDS

The most frequent practice identified in the survey is as fundamental to the PTP process as the basic identification of hazards: discussing ways to control each hazard (utilized by 75%). This practice is one example where having a diverse set of roles involved in the PTP process, and especially workers dealing with the hazards onsite, can provide more solutions and insights about the best way to manage hazards.

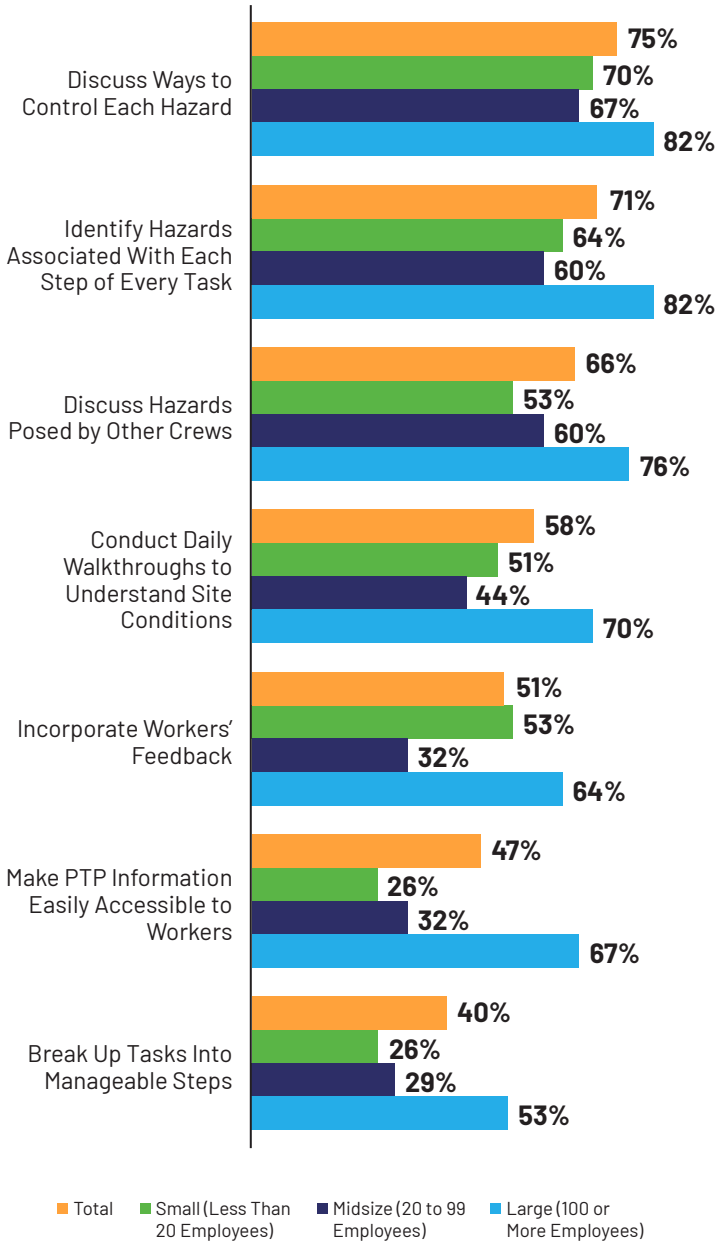
Two other activities in this category are used by 40% or more contractors.

- 51% incorporate workers feedback into their response of how to manage hazards. Midsize firms lag significantly and would likely benefit from greater worker engagement.
- 47% make PTP information widely available, although large companies far exceed small and midsize ones in this practice.

Most Widely Used Pre-Task Planning Activities

(According to Those Using PTP)

Dodge Data & Analytics, 2023



Use of Pre-Task Activities CONTINUED

Worker Engagement in PTP

Getting worker input into the pre-task plan is not uncommon, with over half of workers engaging in this activity, as previously noted. However, it is rarer for workers to be in charge of PTP meetings.

- Surprisingly, slightly more companies offer formal training to workers to lead PTP meetings than those who actually allow their workers to lead them. It is possible that a few contractors may have selected this who provide formal training to their superintendents, supervisors or other roles. Still, very few small or midsize companies allow workers to take the lead in this way, and it is a much more common practice among large companies.
- Ultimately, the success of a PTP program depends on what the workers are able to get out of it. Therefore, gathering feedback from workers on the content and delivery of PTP can help a program be substantially more successful. Currently, fewer than 20% of small or midsize companies do so, and even at large firms, fewer than half get this input.
- While daily meetings are commonplace, getting end-of-shift reviews with job crews is the least common activity measured. Given the way that workforce shortages have increased hours for workers, it is probably not surprising that many companies are reluctant to ask more of their crews after their shifts end. Still, getting input on the usefulness of the PTP information provided and on new hazards that may have been observed while those ideas are still fresh would make the PTP process more robust.

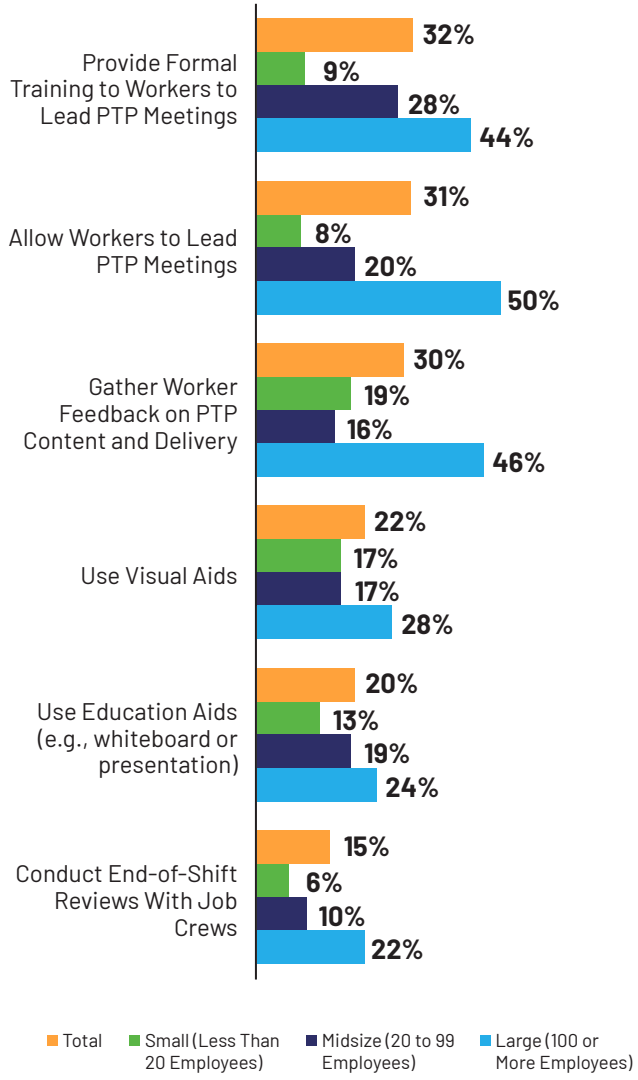
Conducting PTPs

Many of the PTP activities that are used by fewer than one quarter of contractors involve how they conduct PTP, including use of visual or educational aids. These may offer opportunities for companies to better engage their staff and convey critical information about how to safely conduct tasks onsite.

Less Widely Used PTP Activities

(According to Those Using PTP)

Dodge Data & Analytics, 2023



Supplemental Information Included in Pre-Task Plans

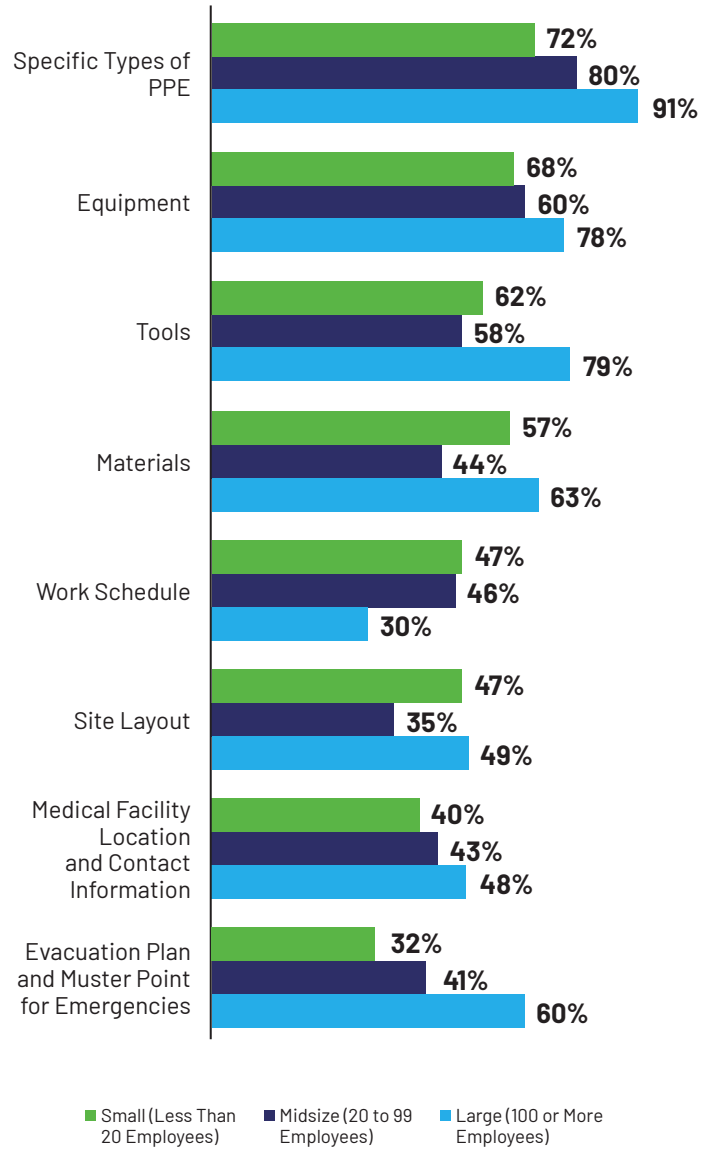
Contractors using PTP were asked whether they include several types of supplemental information in their pre-task plans, shown in the chart at right. While the share who include individual items varies, especially between company sizes, overall 99% of the contractors using PTP include at least one item.

- By far, the most common item addresses specific types of personal protective equipment (PPE). This recognizes the importance of appropriate PPE for specific hazards. Small contractors include this information much less frequently than do large ones, but it is still their most common item, with 72% including it.
- Equipment and tools are included by about two thirds of respondents (70% and 68%, respectively). Tools are the one item included more frequently by specialty trade contractors than by general contractors. Also, midsize companies less frequently include these than small or large companies.
- Materials are the only other item included by more than 50%, and again, less frequently by midsize companies than by small or large ones.
- Over 40% include work schedules, site layout, medical facility location and contact information, and evacuation plans and muster points.
  - Work schedules are more commonly included by small and midsize companies than by large ones, a significant deviation from the general trend for supplemental information.
  - Site layout, not surprisingly, is more commonly included by general contractors than by specialty trade contractors, since general contractors are generally responsible for the overall site layout.
  - Notably, there is no significant difference by company size in the share who provide information on medical facilities.

These findings demonstrate a commitment on the part of companies of all sizes to provide good information to their workers as part of the PTP process. They also provide a good checklist for companies seeking to increase the useful information that they can offer.

Supplemental Information Included in Pre-Task Plans (According to Those Using PTP)

Dodge Data & Analytics, 2023



Planning for Safety

Benefits From Utilizing Pre-Task Planning

Contractors who use pre-task planning (PTP) were asked about the benefits they achieve from its use. The chart below compares the benefits reported by advanced users (i.e., those who conduct PTP daily, involve three or more roles from within their company in PTP and use seven or more of the PTP practices included in the survey) with the total findings for all PTP users.

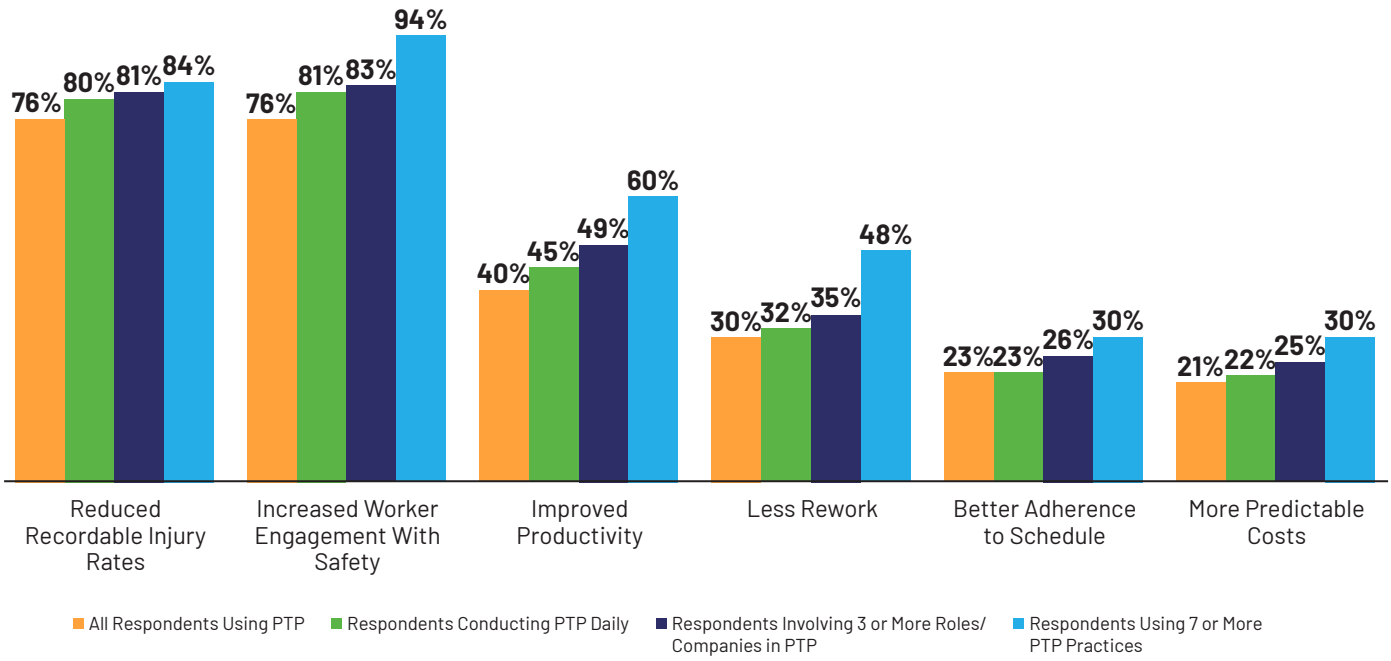
- Importantly, over three quarters PTP users, regardless of frequency or level of engagement, report improved safety, whether from reduced recordable injury rates or increased worker engagement with safety.
- There is a notable boost in these benefits and improved productivity among those who conduct PTP daily or who engage multiple roles in their company in the planning process.
- The highest benefit, though, comes from a deeper engagement with multiple PTP activities.
  - Nearly all (94%) report increased worker engagement with safety.
  - Almost two thirds (60%) report improved productivity due to their PTP engagement. This clearly demonstrates that, for the majority of contractors, spending the time to thoroughly engage in PTP has an overall positive impact on their project productivity. This is particularly important since most contractors recognize the benefits of addressing safety challenges, but many have tight deadlines for projects that may limit what they think they can do in advance.
  - Almost half (48%) also report less rework. This likely contributes to increased productivity on their jobsites. Reduced rework can also potentially have a positive impact on quality, and help with schedule and budget adherence. Therefore, it is not surprising to see that those with a deeper engagement in PTP activities also more frequently experience better cost and schedule performance.

While there were no variations in the experience of benefits between general and trade contractors, two benefits were experienced significantly more frequently by large companies (100 employees or more) than by smaller ones: increased worker engagement in safety (87% versus 65%) and improved productivity (50% versus 32%).

It is also notable that the overall experience of benefits from PTP nearly mirrors those experienced from creating health and safety plans before construction begins. Both demonstrate the importance of planning, but the similarity in responses may also suggest that some contractors may be aware of and are tracking some benefits more than others.

Benefits From Using Pre-Task Planning (According to Those Using PTP)

Dodge Data & Analytics, 2023



Planning for Safety

Drivers for Utilizing Pre-Task Planning

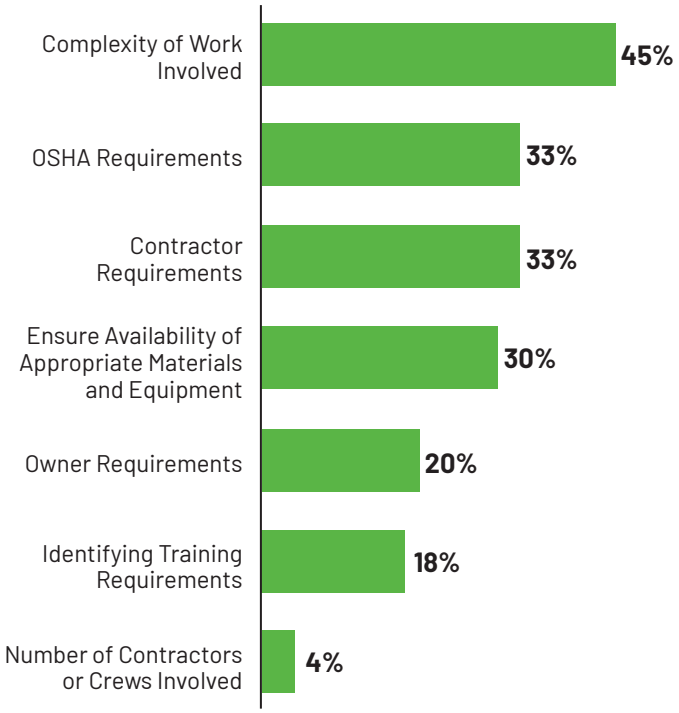
Contractors whose companies conduct pre-task planning (PTP) were asked to select the top two reasons that they do so from the list of options in the chart at right. They were also given the opportunity to provide additional reasons in an open text field.

- Complexity is the top driver. This may be particularly important for the 32% of contractors who use PTP only for tasks where it is deemed necessary (see page 11): It is likely that greater complexity spurs that decision.
- 10% of contractors provided other top reasons and nearly all of them reference increasing employee safety. That suggests that this would have been a much more widely selected option had it been included in the list, but the goal of the open text field was precisely this: to uncover additional key drivers for engaging in PTP.
- Approximately one third select OSHA requirements, contractor requirements and ensuring the availability of appropriate materials and equipment among their top options. It is likely that having the appropriate materials and equipment on hand is one way in which PTP helps improve productivity on the jobsite.
- While there is no significant difference in the selection of items by general and specialty trade contractors, the size of the company is influential in the importance of owner requirements. Small and midsize companies (those with fewer than 100 employees) are more influenced by owner requirements than are large companies (29% versus 10%).
- Interestingly, the least frequently selected factor is the number of contractors or crews involved. Other findings demonstrate that consideration of the hazards posed by other crews is a relatively common practice among those using PTP (see page 13). This factor is slightly more influential among midsize companies (8%) than large or small ones (2%), but it is clearly not a main driver for utilizing PTP.

While these findings highlight the importance of OSHA as a driver of best practices for safety management on construction sites, they also clearly indicate the critical role of a contractor's culture and prioritization in their use of PTP.

Top Reasons That Companies Conduct Pre-Task Planning (Selected in Top Two by Those Using PTP)

Dodge Data & Analytics, 2023



Data: Right-Sized PPE

Providing Right-Sized PPE for Workers

Use of Right-Sized PPE

Personal protective equipment is one of the most widely used means of keeping workers safe onsite, but for many types of PPE, correct fit is important for it to provide the full amount of protection it is supposed to. Therefore, contractors were asked whether their company provides PPE designed to fit women and others who are different in size than the average male.

As the pie section of the chart below shows, most companies (85%) provide a range of PPE options to their workers. However, as with many safety tactics covered in this study, the adoption is not even across the industry. Large companies are much more likely to provide PPE that fits people other than an average American male than are small companies.

Providing PPE that fits is also far more common among companies that employ only union craft workers (94%) than those who only employ non-union workers (76%).

Top Reasons Why PPE in Different Sizes Are Not Utilized by Contractors

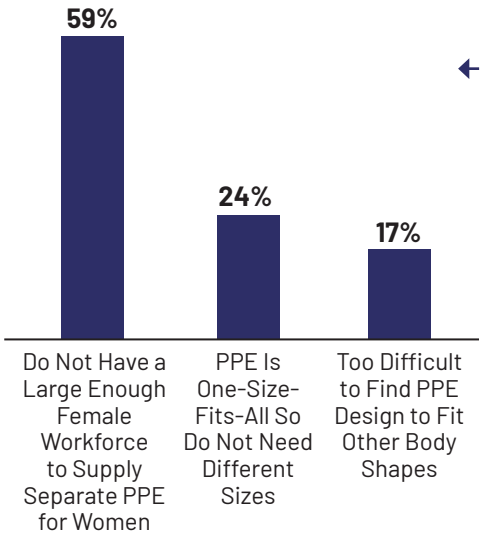
The contractors who do not offer PPE in different sizes to their workers were asked to indicate their agreement with a series of statements about why they do not do so. Their responses are shown in the vertical bar chart on the left below.

- The greatest agreement was with the statement that they do not have a large enough female workforce to supply separate PPE. Over half agreed with this statement.
- Only a quarter stated that they do not do so because PPE is one-size-fits-all, and even fewer state that it is difficult to find PPE.

Taken together, these findings suggest that most of the industry is aware of the need and value of supplying right-sized PPE, and that they do not have any difficulty procuring it. It also suggests further research is needed on why right-sized PPE is not universally used.

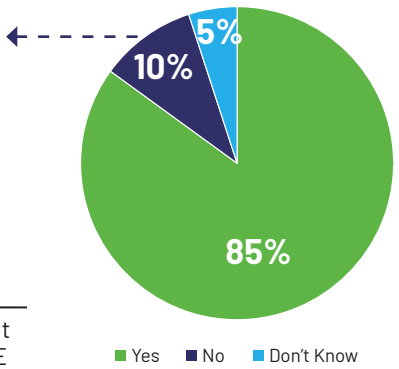
Reasons For Not Providing

Dodge Data & Analytics, 2023



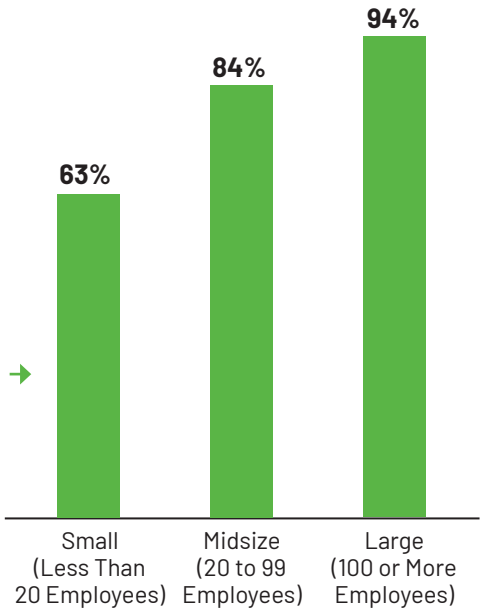
Company Provides PPE Designed to Fit Women or Other Workers Who Are Smaller/Larger Than the Average American Male

Dodge Data & Analytics, 2023



Those Who Provide PPE Designed for People Other Than the Average American Male (by Size of Company)

Dodge Data & Analytics, 2023



SIDEBAR ARTICLE

One Size Does Not Fit All in the Construction Industry: Right-Sized PPE

Personal protection equipment (PPE) is one of the easiest and least expensive ways to prevent accidents on a construction site, but to do its job correctly, the safety equipment must fit correctly, so workers can rely on it.

Creating a New Hazard

"When we have improperly fitted PPE, it's creating a new hazard," says Katie E. Stryker, assistant vice president, risk control with CNA Insurance. "You are creating a situation where the improper fit may cause an incident to occur. This could mean welding sparks getting caught in a cuff when you've rolled up the coveralls to fit you. Or it could mean your oversized vest gets caught on something that is sticking out like a ladder as you are walking past, and that can create an injury."

Need for PPE for Women

When it comes to poorly fitting PPE, women are most affected by one-size-fits-all type gear. Their bodies are naturally sized and shaped differently from men and simply scaling down men's sizes doesn't usually work.

"There are certain anthropomorphic features that are different between a man and a woman, including hips and breasts," says Kathleen Dobson, safety director for St. Louis-based Alberici Constructors. "Finger length and width are different, the arch in the foot is usually higher in women, and they get pregnant."

Stryker remembers a few years ago when she conducted infrared electrical inspections with fire-rated gear and she didn't have the appropriate undergarments for the job. "I was reporting to a male boss and I didn't always feel comfortable speaking up at the time and saying 'I don't think I have the appropriate gear and how can we get the right gear,'" she says.

She shares this story because it illustrates the importance of employers having an open communication line about PPE solutions, "so that the onus is not put on the wearer to speak up and say 'this doesn't seem right or this doesn't fit right' because that creates a challenging dynamic—one where you don't want to be seen as complaining, but you also want something to protect you."

PPE Challenges Faced by Women

A 2022 study by the Canadian Safety Association (CSA) found that the significance of this is twofold.

- Protective clothing and other PPE that are designed based on men's proportions cannot be simply scaled down linearly to fit women.
- Good quality anthropometric data representative of the contemporary working population are critical for the inclusive design of PPE.

The study, which surveyed nearly 3,000 Canadian women who use PPE daily, found that:

- 50% said it does not fit properly.
- 43% said it is uncomfortable to wear.
- 35% said the selection of women-specific PPE is inadequate.

New Mindset Needed in the Industry

Dobson, who has been in the construction industry for 24 years, says "some of the exact same issues" with ill-fitting PPE are still going on today that she remembers from the 1990s.

"I would see women working in the field, wearing gloves that obviously didn't fit for the task they were doing, or being issued one-size-fits-all harnesses," she says. "Employers would say, 'Hey, what we have available is a large or extra large size, and if it doesn't work for you, then just make it work,' so people were using duct tape and trying to make a harness fit, and doing crazy things that did nothing to really protect them when they were using PPE."

She says there are some contractors and manufacturers that have a "keen awareness" of the need for more PPE options for women, but there are still a lot of companies that feel all you have to do is make the gear smaller and it's going to work for women. "It's a 'pink it and shrink it' mindset," she says. "It's putting something on the market and saying it's designed for women just because it's pink or lavender."

Updated Regulations

OSHA got involved in the issue on July 19, when it announced a notice of proposed rulemaking to clarify the PPE standard for the construction industry. The current standard does not state clearly that PPE must fit each affected employee properly, which OSHA's general industry and maritime standards do. The proposed change would clarify that PPE must fit each employee properly to protect them from occupational hazards, said the announcement.

The proposed rule clarifies the existing requirement, and OSHA says it does not expect the change will increase employers' costs or compliance burdens. The proposed revision would align the language in OSHA's PPE standard for construction with standards for general industry and maritime. ■

Data: Dealing With Heat Exposure

Changes Made to Deal With Heat-Related Illnesses/Injuries

Experience of Heat-Related Illnesses or Injuries

Contractors were asked whether they had experienced heat-related illnesses or injuries in the last three years. Overall, 19% agreed that this has occurred, but with notable differences by size of company, as noted in the chart at upper right. It is not surprising that large companies would be more likely to experience an incident, just due to the higher number of employees and projects.

With severe heat growing as a problem around the country, the share of companies whose employees are vulnerable to these illnesses or injuries will grow higher. If contractors can avoid these issues, it will benefit their workers and their projects. Having a plan in place will also allow a schedule to consider the likelihood of time lost due to heat exposure, which will ultimately be far less time than that lost by a worker made ill. In addition, workers struggling with the heat are more likely to make mistakes that could impact the safety, quality of work and schedule on a project.

Changes Made in the Last Three Years to Prevent Heat-Related Illnesses or Injuries

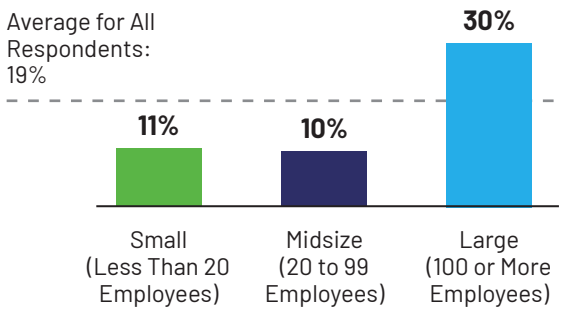
Contractors were asked whether their company has made any changes in the last three years to prevent heat-related illnesses and injuries. Over half (51%) state that changes have been made, reflecting not only the hotter-than-average weather in the last few years, but also growing industry awareness of and education about the need to address this challenge.

As the chart at right reveals, more large companies have made these changes than midsize and small ones. This may be because they have had a greater number of employees experience a heat-related illness or injury. But other influences may also be factors in this, including having a safety manager, their awareness of industry trends or experience doing work in an area known for high heat.

- Interestingly, 62% of those who work for companies that use union craft workers report that they have made these changes, compared with just 35% of those with only non-union craft workers. This suggests that the unions may be promoting ways to reduce heat-related illnesses and injuries.
- While the difference is not large enough to be statistically significant, it is noteworthy that a larger share of specialty trade contractors (55%) have made these changes than have general contractors (48%).

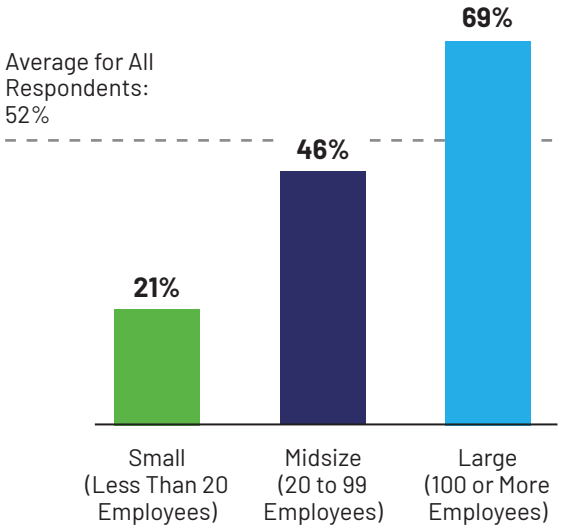
Company Has Experienced Heat-Related Illnesses or Injuries in the Last Three Years

Dodge Data & Analytics, 2023



Company Has Made Changes in the Last Three Years to Prevent Heat-Related Illnesses or Injuries

Dodge Data & Analytics, 2023



Dealing With Heat Exposure

Changes Made to Deal With Heat-Related Illnesses/Injuries CONTINUED

Approach to Preventing Heat Illness or Stress

Contractors were also asked to identify among the options shown in the chart at right those that best describe their company's approach to heat stress and illness prevention.

Fortunately, most of the respondents believe that their company prioritizes preventing heat illness, with only 9% who say it is not an issue in their workplaces. In fact, the majority (66%) work at companies with written heat safety programs in place.

- Significantly more contractors who have a written safety plan (24%) experienced a heat-related illness or injury at their company in the last three years. Among those who make heat illness prevention a priority but do not have a written plan, only 11% experienced such an illness/injury.
- A written plan also seems to be either the result of or associated with a greater driver to address heat-related issues, since 62% of those with such a plan say that they have made changes in the last three years to prevent these challenges, compared with only 38% of those who prioritize these challenges but do not have a written plan.

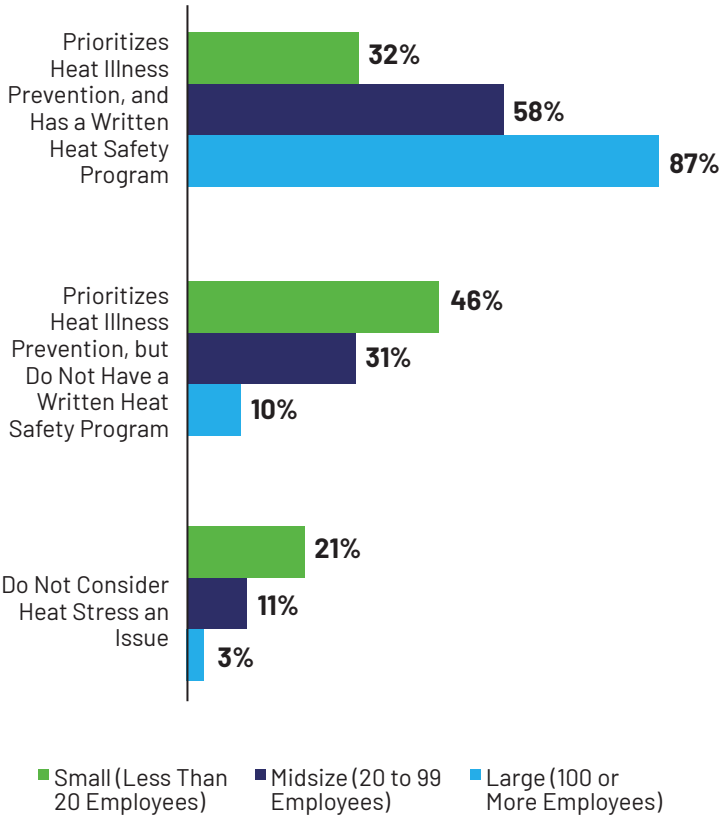
As made clear in the chart at right, large companies are far more likely to create a written plan. There are also a few other notable variations in how different types of companies approach the prevention of heat illness or stress.

- It is more common for specialty trade contractors to prioritize heat illness prevention but not have a written heat safety program (30%) than it is for general contractors (20%).
- Only 4% of companies that employ only union craft workers believe that heat stress is not an issue at their workplaces.

These findings suggest that although companies are paying close attention to heat safety, many of their approaches need to be formalized into a written program to encourage widespread awareness and compliance.

Company Approach to Heat Stress and Illness Prevention

Dodge Data & Analytics, 2023



Dealing With Heat Exposure

Methods for Managing Heat Exposure

Contractors were asked to select the methods they use to manage heat exposure from the list of options in the chart at right. Notably, out of the 298 contractors who participated in the survey, only two do not deploy any of these methods, demonstrating that nearly all contractors, even those who stated that heat stress is not an issue (see page 23), are taking measures to help their workers manage heat.

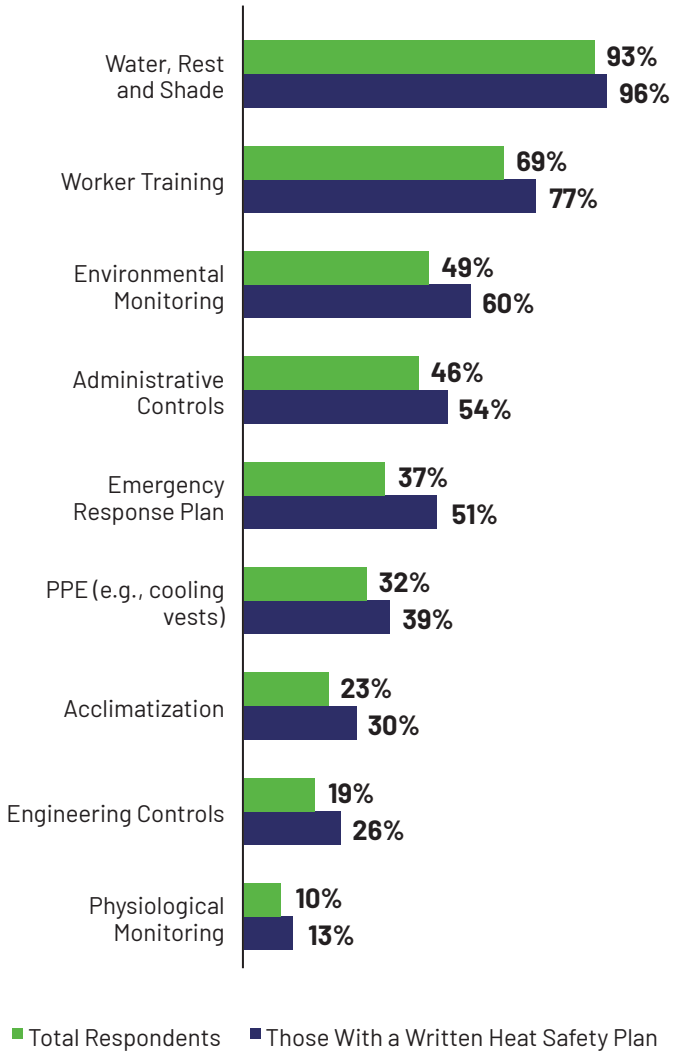
Providing water, rest and shade is the most common solution, but there are some notable variations in use, both among the different methods and by different categories of contractors.

- Companies with a written safety plan tend to use all of these methods more than those that do not have a plan, with the most notable differences in use for worker training, environmental monitoring and having an emergency response plan.
- Larger companies also utilize all these approaches significantly more than smaller ones, except for physiological monitoring. One of the most striking size-related differences is in the use of administrative controls, such as scheduling work for cooler parts of the day. These are utilized by 63% of large companies, compared with only half as many (31%) smaller ones.
- Specialty trade contractors use worker training more frequently than general contractors do to help manage heat exposure (75% versus 63%). This is encouraging since it means the training is being offered to those doing the work.
- General contractors, on the other hand, more frequently have emergency response plans than do the trades, 43% versus 31%. This also makes sense given the general contractors' overall responsibility for the jobsite.

Generally, these findings demonstrate an opportunity for many in the industry to increase their response to the risks posed by heat exposure through wider adoption of moderately used approaches like environmental monitoring, which involves measurement of heat and humidity, and of lesser used strategies such as specific PPE designed to help with hot conditions.

Use of Methods for Managing Heat Exposure

Dodge Data & Analytics, 2023



Dealing With Heat Exposure

Means of Assessing Heat Risk

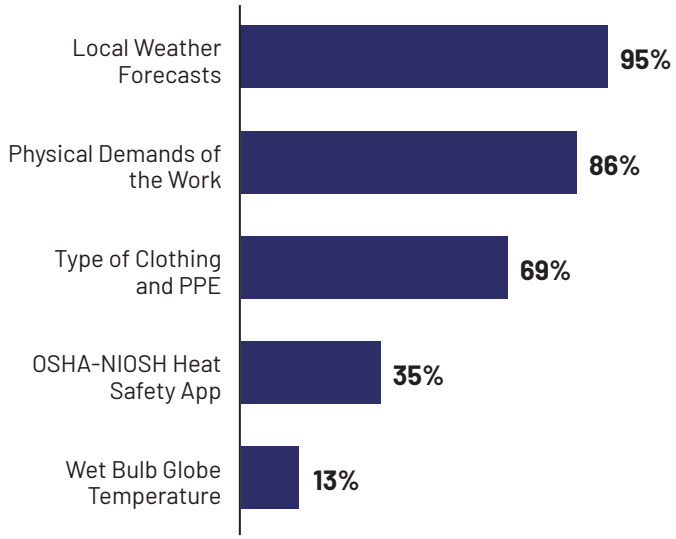
Contractors were also asked to indicate which of the means to assess heat risks listed in the chart at right that they use to manage their jobsites.

These findings demonstrate that most contractors take assessing heat risk seriously, but they also show that a few of the methods and tools available to do so could be more widely utilized in the industry.

- Not surprisingly, nearly all pay attention to local weather forecasts and rely on them to determine the heat risks that their workers face. However, small companies lag behind larger ones in their use of this basic approach, 84% versus 96%. Since this is easily accessible to all, those who are not currently doing so could easily adopt the practice.
- Promisingly, most contractors (86%) also consider the physical demands of the work, and there are no differences in size or type of firm for these responses.
- Another common consideration is the type of clothing and PPE. This is again another area where small firms could benefit from more attention, since only 47% currently consider this, compared with 69% of midsize companies and 75% of large ones.
- The OSHA-NIOSH Heat Safety App is more widely utilized by specialty trade contractors (44%) than it is by general contractors (27%). It is also widely used at large companies (54%).
- Only a couple of contractors provided additional ways to gauge the heat risk their workers would be exposed to, and they mentioned that they use onsite recorders and weather stations.

Means Used to Assess Risks Posed by Heat by Contractors

Dodge Data & Analytics, 2023



SIDEBAR ARTICLE

Responding to a Warmer Climate

Construction workers are on the front lines of climate change. By the mid-2000s, outdoor workers in the US can expect to experience a three- to fourfold increase in the number of days when the heat index tops 100°F. Added to heat's direct stress—the number one weather-related cause of death—comes the risk of related safety incidents. Compared with a day at 60°F, a day over 100°F is associated with a 10 to 15 percent increase in traumatic workplace injuries. And while heat may be the most widely known climate-related hazard, outdoor workers' potential exposure to others, such as air pollution (including smoke), ultraviolet radiation, extreme weather and natural disasters, and vector-borne diseases (such as Valley Fever) is also on the rise. According to a 2023 assessment of the occupational safety and health hazards of climate change,[1] "morbidity, mortality and injury rates related to climate change hazards appear to be increasing, as is the economic burden," among outdoor workers most of all.

Resources for Managing Climate-Related Challenges

OSHA has launched a Heat Illness Prevention campaign. President Biden has announced worker-focused protective measures. The U.S. Department of Labor, Centers for Disease Control and Prevention, and construction industry organizations have issued guides to mitigating the effects of extreme weather hazards. Across the construction industry, safety leaders are becoming increasingly aware of the need to account for climate impacts in their safety plans.

Examples of Strategies Being Deployed by Contractors

Changes at Boston-based JM Electrical Company exemplify the kinds of initiatives that many firms are taking. JM's safety manager, Kevin Kolhonen, starts each workday by checking the weather. If he sees a prediction for rising temperatures and potential for heat exhaustion, he sends out an email blast to the firm's leadership and site supervisors to prepare. That includes providing tent canopies to ensure crews performing rooftop work have access to shade, encouraging workers wherever possible to go indoors for breaks out of the heat, and being extra vigilant in observing for signs of heat stress. The company has also arranged for chilled water delivery to its jobsites when a general contractor isn't taking care of that, and has equipped site supervisors with coolers in which to store the water on ice.

JM's worker orientation process now includes a climate change section to help new hires understand how extreme temperatures could affect them out in the field. For existing workers, sessions on heat stress and cold stress have been incorporated into the company's incentive-based online training platform, with a $20 Amazon gift card for taking them. Site supervisors have trained on the symptoms of heat and cold stress and on temperature-related precautions and practices, with annual meetings reinforcing the most current information and best practices.

The company has also kitted out its workers with higher-performance hot- and cold-weather clothing. And as a fun, hands-on, and risk-free way for staff to grapple with weather-related hazards, last year, JM's annual vendor fair featured a mobile winter-driving simulator.

Looking ahead, Kolhonen highlights the industry's aging workforce as a factor with the potential to compound the risks of climate impacts. "That's something to keep an eye on, as far as what's being asked of certain people," he says.

These and other strategies form part of a formalized update to the company's safety manual and programs. "Leadership here at JM is taking the bull by the horns," says Kolhonen. "I'd like to say that JM's a leader in the industry—we're doing our best to be number one—but I think everyone's starting to realize the importance of climate change."

Increased Attention to the Impacts of Climate on Workers Still Needed

Even so, a number of significant aspects of climate-related impacts on workers are still poorly understood. According to the OSHA climate hazard assessment, these include the mental and physical health effects of exposure to air pollution, UV radiation, changes in the built environment (such as new construction scenarios and expanded construction demands) and inequities from the disproportionate impacts of climate change across different sectors of society. Also poorly understood are climate-related hazards' economic costs for both workers and employers.

The upshot, say the study's authors, is that "a bolder front must be opened up…to address the needs of workers exposed to climate-related hazards." ■

[1] P. A. Schulte, B. L. Jacklitsch, A. Bhattacharya, H. Chun, N. Edwards, K. C. Elliott, M. A. Flynn, R. Guerin, L. Hodson, J. M. Lincoln, K. L. MacMahon, S. Pendergrass, J. Siven & J. Vietas (2023) Updated assessment of occupational safety and health hazards of climate change, Journal of Occupational and Environmental Hygiene, 20:5-6, 183-206, DOI: 10.1080/15459624.2023.2205468

Data: Mentoring and Safety Training

Mentoring

Mentoring is recognized as a best practice at construction companies for many reasons, with a very important one being the way that it can improve safety. Mentoring can be a valuable way to enhance the safety culture at a company and ensure that valuable safety expertise is shared with less experienced staff.

Contractors were asked about the topics that are a focus of their mentor programs and whether they offer training to those who provide mentoring. They also had the option of indicating that they don't have a mentor program at their company. Their responses are shown in the charts on this and the following page.

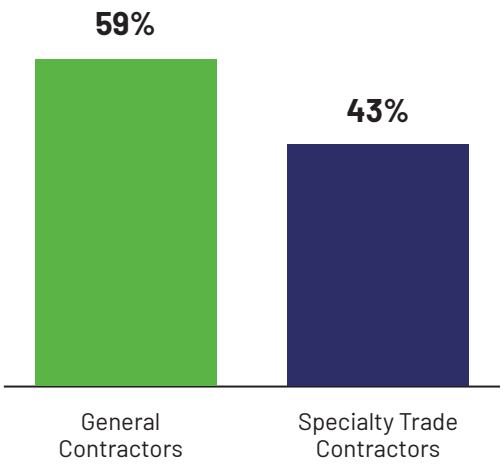
Frequency of Mentor Programs

The chart below shows the frequency of mentor programs among the respondents, revealing that about half (52%) of them have a mentor program at their organizations.

- Mentor programs are more common among general contractors (59%) than among specialty trade contractors (43%).
- In addition, 60% of large companies report that they have a mentor program, significantly more than midsize (43%) or small (37%) companies. This is consistent with other findings that show the prevalence of more formalized approaches to company policy and management in large organizations than among smaller ones.

Company Has a Mentor Program

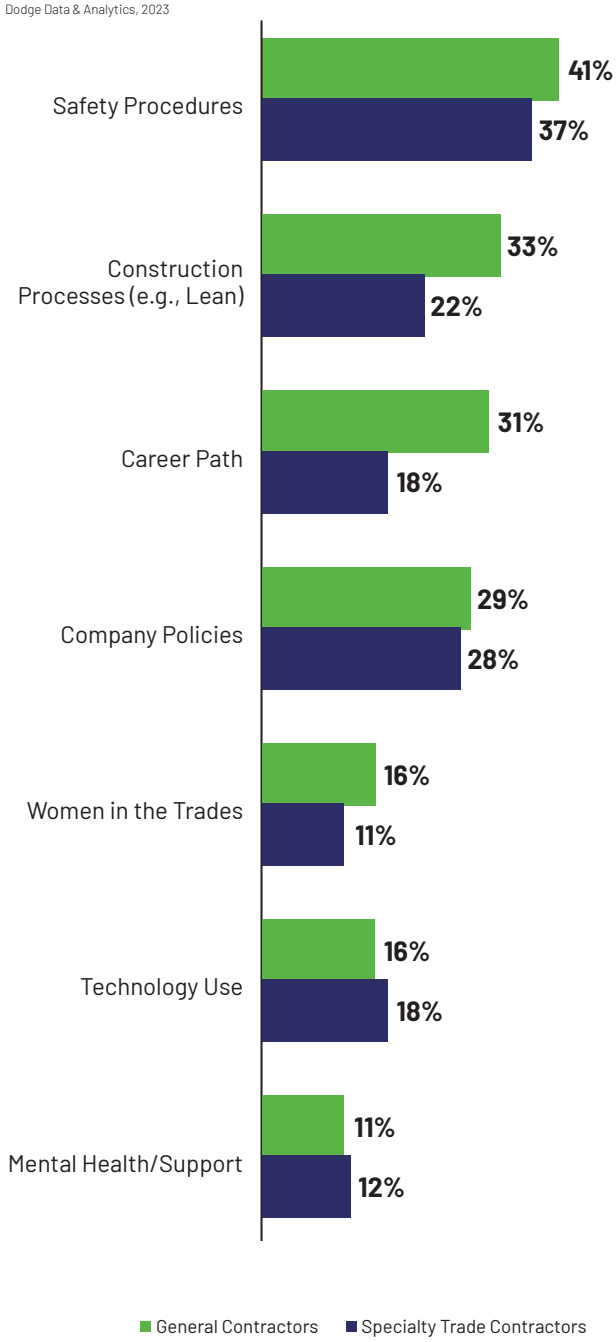
Dodge Data & Analytics, 2023



Topics That Are a Focus of Mentor Program

(According to All Contractors)

Dodge Data & Analytics, 2023



Mentoring and Safety Training

Mentoring CONTINUED

Topics Included in Mentor Programs

The chart at right on the previous page shows the topics that are included in mentor programs across the industry. (Please note that it reflects the overall share of those with a program focused on each topic, not just the share of those who offer mentor programs. This is in order to capture the overall frequency rate in the industry of mentor programs focused on each topic.)

Safety procedures are the focus of the largest share of mentor programs, with 39% of the contractors selecting this option, well over half of the 52% of contractors who offer any kind of mentoring program at all. There are no statistically significant differences by company type or size, suggesting safety is widely recognized across the industry as a key area for mentoring.

This is in sharp contrast to the distribution of those who focus on many of the other topics. As the chart reveals, there are significant differences between GCs and specialty trade contractors on the share who provide career path or construction process mentoring, with far more GCs than trade contractors offering each. In addition, large companies include every mentoring topic other than safety more often than small companies.

All of the other topics included in the study also have an impact on employee safety and well-being, so an increased emphasis on mentoring for each could be one more means to improve safety in the industry.

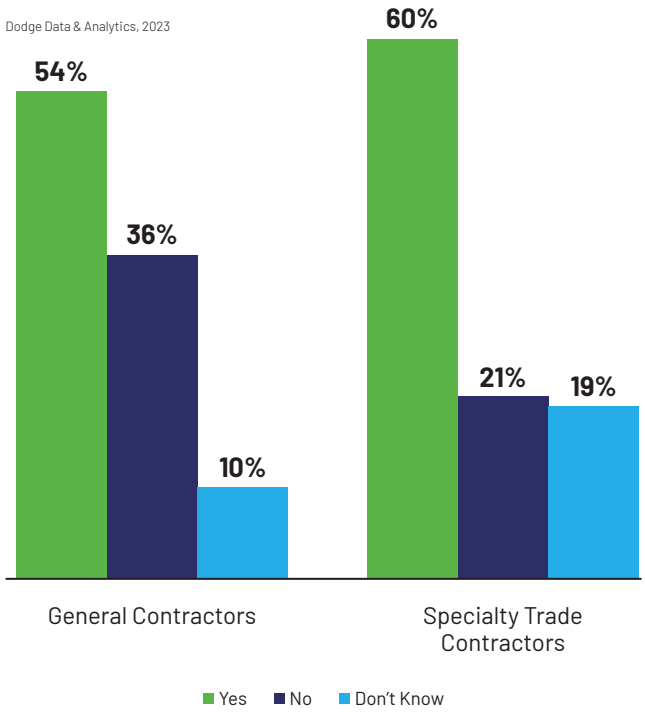
Training Offered to Prepare People to Provide Mentoring

Mentoring requires its own skills, in addition to expertise on specific subject matters at a company. Training on how to mentor is likely to improve the experience for both the mentor and the person being mentored, and help the company gain more from the time put into the relationship by each.

Despite the fact that GCs more frequently offer mentor programs, those that do lag slightly behind specialty trade contractors in the share that offer training to those that provide mentoring, as the chart at right reveals. There is also no significant difference between small, midsize and large companies in this area.

These findings highlight an opportunity for more training on mentoring in the industry, in addition to the opportunity to increase mentoring activity overall.

Offers Training to Prepare People Who Provide Mentoring (According to Those Whose Company Has a Mentor Program)



Mentoring and Safety Training

Online Safety Training

Contractors were asked whether they use online safety training, the types of training utilized and the degree to which they plan to use it in the future.

64% report that they currently use online training. That is virtually the same share that reported using it in the survey conducted two years ago by DCN (63%). While large companies (77%) utilize online training more frequently than midsize (57%) or small (45%) companies, there is no significant difference between GCs and specialty trade contractors in its use.

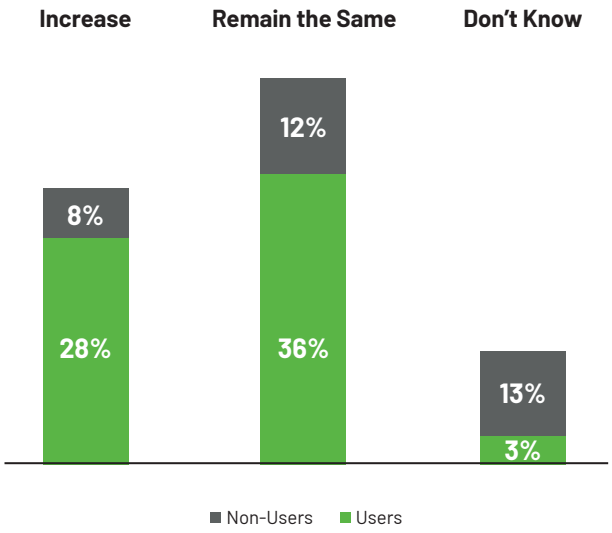
Asynchronous training is used by nearly all who utilize this approach, which is not surprising since this is a unique advantage of online training and least likely to disrupt productivity or impact project schedules.

The use of online training is likely to grow, even if the number of users may not change dramatically. Only 23% of non-users expect to use it in the next three years, but they only account for 8% of all the contractors surveyed. Instead, growth in the use of online safety training is likely to come from current users increasing their use, which includes 28% of all the contractors in the study. Notably, these predictions about future use also mirror the previous study, which may suggest that online training activity has increased, even though almost no growth was shown in the total share using this approach.

Expected Change in the Use of Online Training

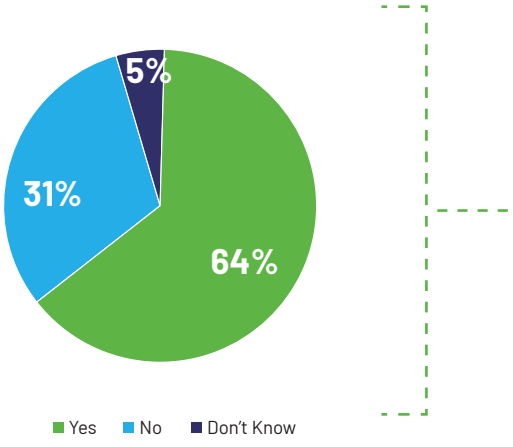
(According to Those Who Do and Do Not Use It Currently)

Dodge Data & Analytics, 2023



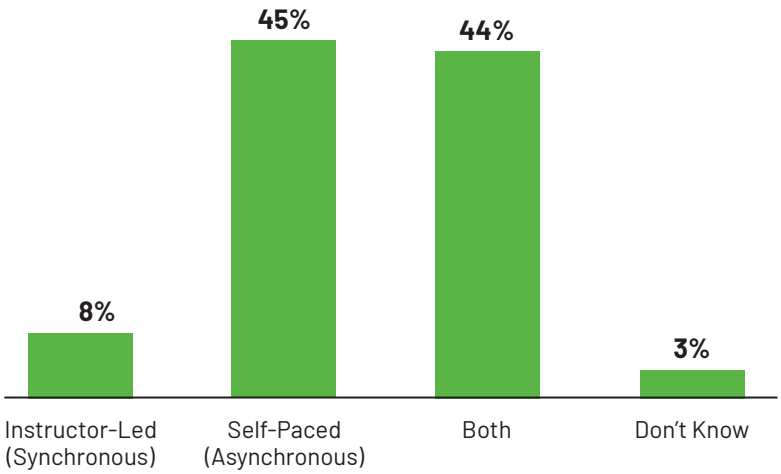
Company Uses Online Health and Safety Training

Dodge Data & Analytics, 2023



Types of Online Training Used

Dodge Data & Analytics, 2023



Mentoring and Safety Training

Foundations for Safety Leadership Training

Since 2017, the survey has included a question about whether respondents utilize the Foundations for Safety Leadership Training module. It helps promote a better safety climate on projects by providing information on five leadership skills that can be used to effectively communicate and work with jobsite workers. It was added by OSHA as an elective to their 30-hour construction course in January 2017.

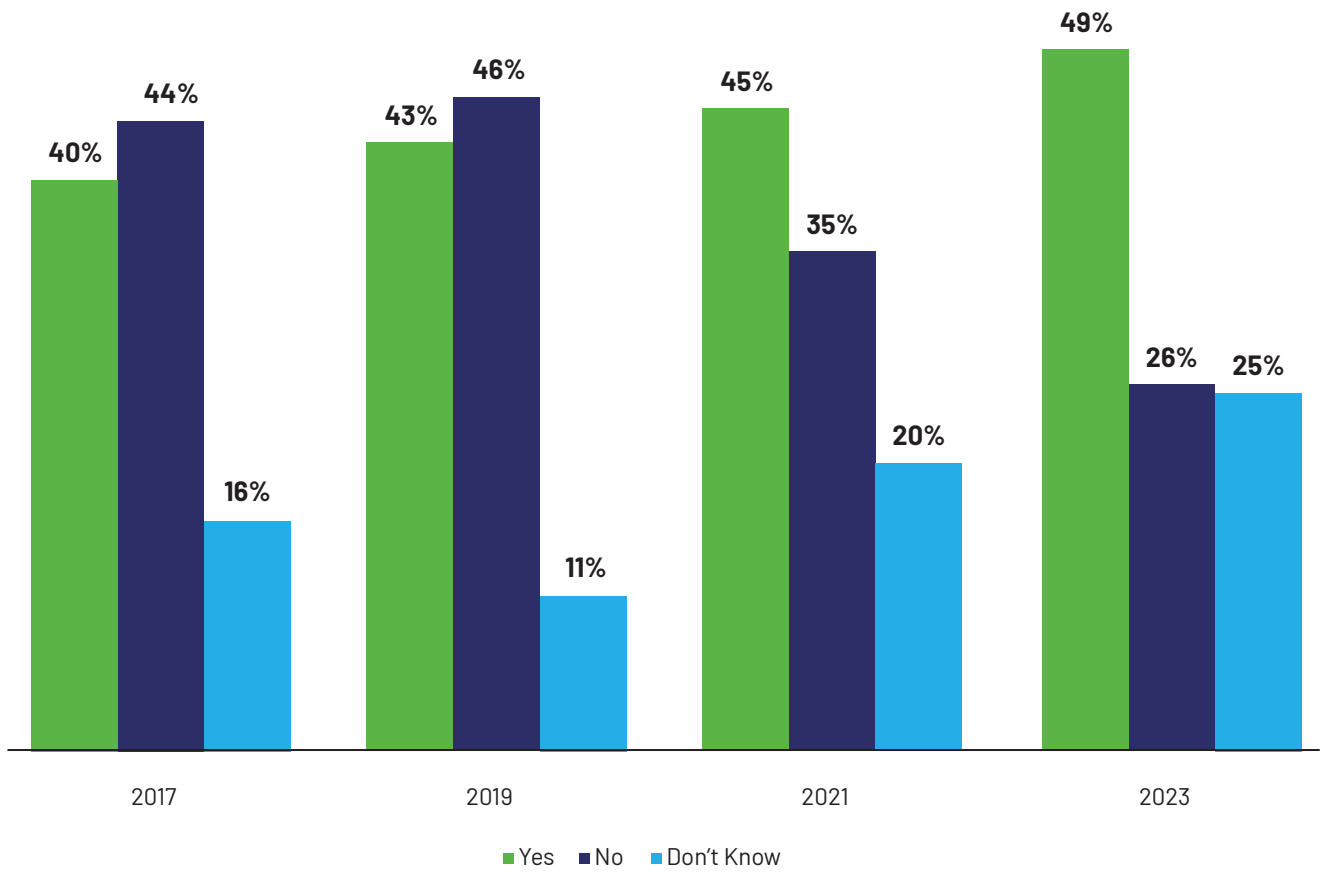
Notably, those saying that they have utilized the module have increased steadily by small increments since 2017, a growth of 9 percentage points over the six years since this was first asked.

However, the chart also suggests that there may be a need for more industry outreach to increase awareness about this program. The share of those who are not sure whether or not their company has been using it has increased sharply since 2019, from 11% to 25%. Correspondingly, those who are certain that it is not being used have also declined considerably, from 46% in 2019 to 26% in 2023. Reducing the share who don't appear to be familiar with this training is likely to create a bigger increase in those who are using it.

Notably, there are no significant differences in those who are using it by type or size of company.

Foundations for Safety Leadership Training Utilized by Supervisors, Foremen or Other Site Workers

Dodge Data & Analytics, 2023



Mentoring and Safety Training

Desired Topics for Additional Training/Information

From the list of topics shown in the chart at right, contractors were asked to select any that they would like to see more frequently addressed in webinars, factsheets, infographics or toolbox talks.

Mental health, suicide and opioid overdose stands out as the topic of greatest interest for contractors, selected by 52% overall. This is a striking finding considering that the rest of the list consists of many well-known hazards that still plague the construction industry.

- Respondents from large companies (62%) more frequently select it than those from small companies (34%), with midsize falling in-between at 49%.
- Notably, though, there are no significant differences between general and trade contractors on their interest in finding out more about this topic, suggesting that this is recognized as an industry-wide problem.

There is a cluster of options that are of moderate interest to the industry, selected by between 27% and 34%. These include lifting and ergonomics, power tool, and ladder safety, as well as heat. (For more information about how contractors are dealing with the risk of heat exposure, see pages 23 to 25.) There are no differences by company size or type in the level of interest in these topics.

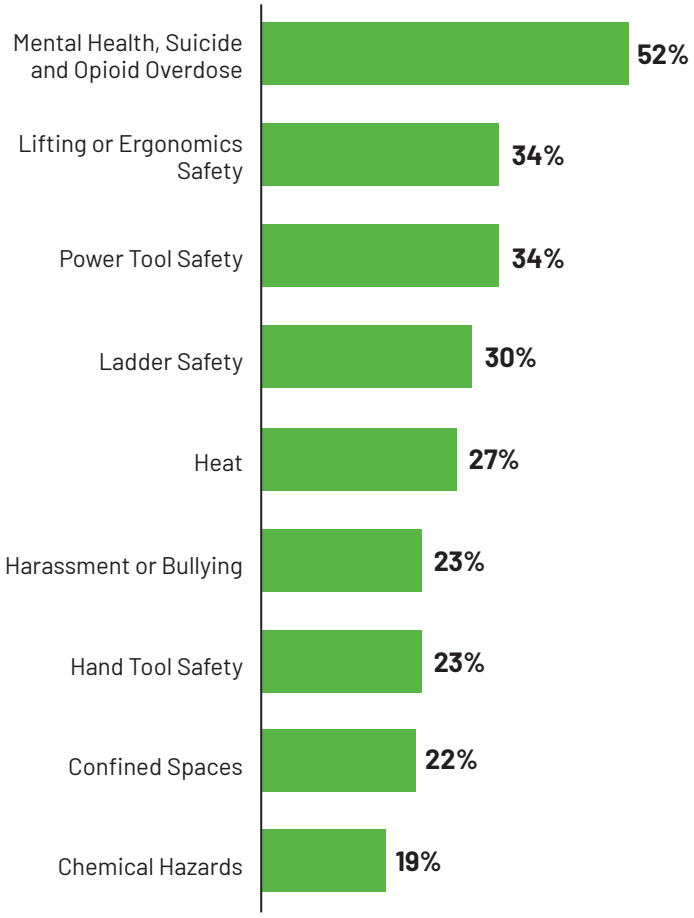
Around one quarter are also seeking information on harassment or bullying, hand tool safety and confined spaces. Again, interest is about the same for all these topics except confined spaces, which general contractors (28%) express more interest in than specialty trade contractors (16%).

A few respondents (5%) also chose to write in a topic in the "other" option text box. Some topics that were mentioned include demolition hazards, fall protection, fleet safety, leadership programs for foremen, human and organizational performance, hot work and trench safety.

This dispersion of responses suggests that, outside of the top selections, interest in learning is broadly diverse, defying industry-wide generalizations but underscoring a keen desire to better understand numerous aspects of health, safety and wellness in the construction industry.

Desired Topics for Additional Training/ Information

Dodge Data & Analytics, 2023



Mentoring: An Essential Element in Safety Culture

According to adult learning theory, people retain about 10 percent of the information taught through conventional methods, such as illustrated talks and videos. That means most of what workers learn about safety happens on the job. Workplace mentoring programs structure the side-by-side, hands-on learning that happens anyway to optimize its safety impact. Mentoring programs improve and express a company's safety culture, specifically supporting the most at-risk workers; the programs develop leadership skills and workplace morale; and they save time and money.

Yet, while mentoring programs are common among companies with recordable incident rates of 0.5 and below, across the industry overall, "a structured, focused mentoring program that's deliberate about safety is not as common as it should be," says David Lynn, president of Peak Safety Performance, a South Carolina-based workplace safety consultancy. On-the-job mentoring may happen informally, he says, but "in general, safety has to be intentional. Luck is not a strategy."

Elements of an Effective Program

Instead, Lynn identifies three key elements to an effective mentoring program. First, identify who you're going to mentor. That's fairly easy, since people who are new to a jobsite are the ones most at risk. A formal mentoring program typically includes a way to see who they are, whether with a colored hard hat, hi-visibility vest, distinctive shirt or helmet sticker. At McCarthy Building Companies, each project team chooses its own way to make program participants visible. "The more that we allow our project teams and supervisors to come up with cool and innovative ideas on their own," says Pat Devero, McCarthy's vice president for national safety, "the more that they're going to take ownership of the program."

Second, designate safety mentors who are recognized as informal leaders in the workforce and who can be trusted to pass along good information. Finding quality mentors may be easier said than done, given both the shortage of skilled and qualified trade professionals and the priority of hiring local workers, who are often completely inexperienced, especially on projects in remote areas. Nevertheless, Devero says, "number one, no doubt in my mind, is being very, very selective about who those mentors are and making sure that you are more than comfortable having them guide other people in doing the right thing." As a bonus, says Lynn, a mentorship program is a great opportunity for safety professionals and project leaders to engage with the informal leaders in their workforce and to foster their development.

Third, identify what, specifically, the substance of the mentorship should be, and communicate it clearly to the mentor, with periodic reinforcement. The substance will vary from company to company, as will the details of how the mentorship program operates. A caveat for anyone setting up a mentorship program, however, is to avoid overburdening it with administrative tasks. "If someone has to keep files organized and updated for 600 people coming onto a job, it becomes an overwhelming exercise," says Lynn "You have to streamline the process and integrate it with the systems you already have."

Safety Culture Context

Key to the success of mentorship is its relationship to the company's larger safety culture. "An individual's decision-making is based on their influences," says Devero. "The mentoring and influencing is what drives somebody to want to do the right thing." When the executive level conveys to salaried employees that safety is the company's top value—more important than budget, schedule or the RFP that won the job—and when that message carries all the way through to jobsite mentors, "that's when we see positive impact," Devero says.

Achieving that clarity of messaging entails safety mentoring company-wide, especially in times of rapid growth. And while mentoring at McCarthy looks different at the management level, consisting primarily of a set of messages that are continually reinforced through company-wide communications and practices, "safety mentoring is completely lateral across all levels of our organization, from the executive level, to the project managers and superintendents, to our trade and craftworkers," says Devero. "It is critical to our operations and to maintaining our safety culture across our organization."

Structured mentoring programs may not yet be as common industry-wide as they should be, but that may be about to change. "I see a formalized mentoring program becoming more of an industry expectation," says Devero, "and even a requirement from some clients. I could see the industry moving in that direction very, very quickly." ■

CASE STUDY

Safety Culture at Webcor

Safety has become a major concern in the construction industry, with companies developing programs and forming teams to monitor data surrounding accidents, injuries, near-misses and other jobsite data. However, to San Francisco-based Webcor, a commercial general contractor and builder, safety is more than a program or a series of numbers: It is a way of life on the job.

"We are building a culture of active caring where every individual on our project sites considers anybody working next to them as someone they are responsible for helping them to stay safe," says Matt Rossie, Webcor president and CEO.

The Value of Open Communication for Safety

Rossie says that while Webcor is proud of the usual markers that account for a solid safety program, such as a low EMR [Experience Modification Rating] and zero injuries, accidents and citations, the company focuses on open communication regardless of seniority or title.

"We actually look at other things as well," says Rossie. "We are trying to get people into a culture of reporting near-misses as well. That is extremely important because that can help us understand where we have weaknesses and where that next potential accident may come from."

Recognizing the Need to Build a Safety Culture

Webcor's safety journey began about 10 years ago, during a roundtable with other general contractors from around the country, says Mario Rodriguez, Webcor safety director. One topic of discussion was a fatal accident at a jobsite, and when a Webcor executive told the gathering that his company had never had a fatal accident, everyone in attendance wanted to know the secret. But there was no secret, says Rodriguez. "We were just lucky."

This started an internal conversation among Webcor executives to create "a robust system that takes different approaches to minimize risk," says Rodriguez.

Rossie says they examined what was happening at Webcor relative to safety and thought the company was not doing enough. "We were getting to the point where we were changing from a strict compliance approach to safety, to something that is much more about building a safety culture, where everybody is not afraid of the next time a safety guy is going to walk through the jobsite," says Rossie. "We were in a cops and robbers mentality, where everybody on the jobsite was trying to avoid complying with safety, and we sent out the safety manager to beat them over the head. And now [our attitude is:] We are at the pool, and everybody in the pool is a lifeguard."

Webcor recognizes that company culture is critical to improving safety.

Utilizing Outside Expertise

To assist with the new safety mentality, Webcor's executive board hired an external consultant named Sherry Perdue, co-founder and senior partner with Blacksburg, Virginia-based Safety Performance Solutions. As a human organizational and performance safety expert, Perdue helped to pilot Webcor's route to a new culture of safety.

"She laid the roadwork for our executive team to come up with a new 'Speak up for Safety' slogan that leads our culture," says Rodriguez. The company now has an approach that starts from the top down, where everyone acts on what they see and hear from other team members, and are not afraid to speak up, he says.

Getting Feedback From Trade Partners

To help encourage employees to voice their concerns, Webcor created an app called Webcor Save and started an 800-hotline, where employees and other workers on a jobsite can anonymously report what they see, express grievances and offer suggestions. The hotline goes directly to Rodriguez and Webcor's executive committee, and QR codes for the app are posted all around jobsites for all project team members to access.

Rodriguez says employees and subcontractors are the ones "on the front lines" and they are probably the best at seeing potential risks. "Whenever there is a problem that is brought up by the crafts, the crafts usually know the solution, so we want their feedback," he states.

A couple of years ago, the company

Safety Culture at Webcor CONTINUED

received an anonymous suggestion on the Webcor app from a subcontractor doing mass excavation on a large jobsite. The subcontractor was finding unknown utilities and suggested that instead of using hand digging, the team should try using a hydro-vacuum. "We immediately stopped activities and looked at what he was finding, and we ended up having a new procedure that changed the way we do ground penetration activities, and we have a safer way to excavate," says Rodriguez.

Zach Gill, corporate director of EHS with Legence (parent company of Therma), says Webcor's safety culture is distinctive. "From project to project it varies little, and they seek input from trade partners to make their projects safer, and I think this also allows the trades to see that their concerns or ideas are being heard," says Gill, who worked with Webcor while he was with Southland Industries in Union City, California. "Webcor sets up their projects with trained leaders and most of the projects also have dedicated safety staff that helps facilitate the safety conversations and actions."

Gill worked with Webcor on projects at San Francisco International Airport and Moscone Center in San Francisco. He says two things come to mind when working with Webcor on safety. "They aren't afraid to invest in the latest technology, which allows us to plan in advance for a safer project, and they don't shy away from recognition, even from their top leaders whom I've walked jobsites with in the past."

Leadership Engagement With Safety

Executive Safety Walks are another way the company promotes its safety culture. Led by Rossie or another company executive, Executive Safety Walks begin with a meeting between project leadership to discuss safety issues and concerns, and to review safety statistics. The executives then tour the site to get a firsthand look at project safety measures, while speaking with front-line workers to get their opinions on safety and to gauge their openness to voicing concerns.

An Executive Safety Walk onsite.

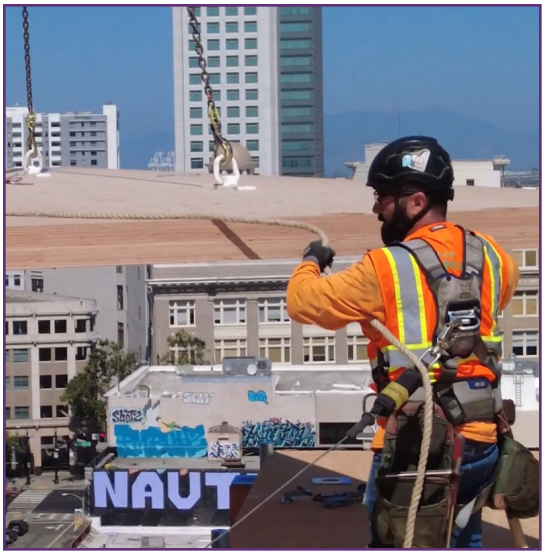
Next, executives meet privately with the highest-ranking onsite subcontractor representatives to hear their "specific and candid insights and concerns," and to reinforce Webcor's safety culture, which requires everyone, no matter position in the company, to participate.

"Seeing this visible, in-person demonstration of our commitment to the safety of their people leads subcontractors to have a higher degree of trust in Webcor," says Rossie. "That works to everybody's benefit."

The Walk concludes in a final meeting with project leaders, where executives discuss findings and outline actions to address any emerging issues. Executives follow up within days to ensure the implementation of corrective measures.

Webcor's Executive Safety Walks have been so successful that the company recently released an interactive guide explaining them. The guide is available to organizations seeking to enhance safety by combining leadership visibility and trust-building actions executives take during and after a Safety Walk.

"Safety innovations should never be proprietary," says Rossie. "By releasing this guide, we aim to encourage other construction companies to adopt it. No matter where you work, you should be confident that your company is doing everything possible to ensure your safety and well-being every day."



Trade contractor expertise helps inform safety at Webcor.

Images Courtesy of Webcor

SIDEBAR ARTICLE

Mental Well-Being: Strides and Hurdles

In just a few short years, the construction industry's take on mental health has transformed from widespread ignorance and inaction to rapidly growing awareness and initiative. With suicide accounting for about 5,000 industry deaths per year, compared with accidents accounting for less than 1,000, that change can't happen fast enough.

"Construction is hard on our bodies, and it's hard on our minds," says Rick Reams, vice president of safety and quality at Murphy Company, a mechanical contracting firm. "It's been eye-opening for people to recognize the severity of the problem."

Collaboration for Change

But construction is an industry of problem-solvers, and that recognition has led to broad, cross-sector collaboration for change. Over the last five or so years, a rapidly growing number of programs and initiatives have been directed at destigmatizing mental health and expanding the construction sector's definition of safety to focus on whole-person well-being. Examples include:

- the formation of the Construction Industry Alliance for Suicide Prevention
- the launch of Construction Suicide Prevention Week
- AGC of America's mental health and suicide prevention task force
- industry associations and labor unions' development of education materials on mental health and suicide prevention
- two national summits, with plans for a third under way
- the global "Get Construction Talking" movement led by Procore and B1M
- research initiatives from such organizations as the Center for Workplace Mental Health and the Center for Construction Research and Training

"We've heightened awareness, we're creating more jobsite interventions, we're starting to be able to direct people to care more quickly," says Cal Beyer, human risk capital and well-being consultant. "So many organizations are going beyond toolbox talks. They're coming to summits, learning new skills. This is becoming, finally, an ecosystem approach."

Miles to Go

Despite these strides, significant hurdles still remain, and Beyer identifies five key priorities for moving forward. First is the need to continue integrating the theme of workplace well-being into diversity, equity, inclusion and belonging initiatives. Coming to grips with the prevalence of workplace bullying, harassment, discrimination and retaliation in the construction industry would foster worker well-being while also helping to attract the hundreds of thousands of new workers that the industry needs.

Another area for further development pertains to quantifying the human and financial costs of subpar behavioral health. The costs of such impacts as decreased productivity, increased risks to safety and quality, tardiness, presenteeism and absenteeism can add up to a significant burden for employers that could well outweigh the costs of removing barriers to care, for example, with paid time off to attend appointments or expanding the number of services provided by Employee Assistance Plans (EAP).

Even though insurance companies are seeing a significant increase in the volume of calls and activity under EAPs, for many, accessing support is still difficult. A part of the solution that deserves a closer look is the role of technology in closing some of the gaps. Telehealth options such as peer-to-peer counseling, coaching, mindfulness training and telecounseling can reduce the wait-time for help.

In the meantime, one of the most effective strategies for protecting mental health and overall worker well-being, says Beyer, is musculoskeletal injury prevention. As well as acting as a direct stressor, chronic pain can impact mental health through sleep deprivation, fatigue and opioid use. Fatigue management is a priority in its own right: Construction is exhausting work, and it can be hard to recharge without paid time off, especially in heavy/highway industries where night shifts are more common.

And finally, the elephant in the room: substance misuse. The National Safety Council reports that 19% of construction workers have a substance misuse issue, and the Substance Abuse Mental Health Services Association has previously reported (in 2015 and 2016) that construction has a high rate of heavy and binge drinking. There's a case to be made for the industry taking responsibility for reducing these rates, both through changing the culture in which substance misuse is accepted and through supporting individual workers in freeing themselves from addiction.

"We're really in the infancy of what we can do with mental wellness programs," says Reams. "From the amazing success stories that we have, the survivors' stories, we know that these programs work. This effort has saved lives." ■

Anti-Harassment Training

Increasingly, construction companies are interested in helping their workers address mental health and well-being challenges. One way to do so is to make the jobsite a positive place to work. Making sure that harassment is not a part of the culture on the site can be a critical way to ensure the mental health and well-being of all employees.

Frequency of Offering Anti-Harassment Training

The chart at right shows how many construction companies offer anti-harassment training to jobsite workers, supervisors, foremen, managers or company leaders. Among those, the chart at the upper right on the following page shows how frequently that training is offered.

- Promisingly, over two thirds (69%) currently offer training, suggesting that the majority of contractors in the industry recognize this as an area that should be addressed to help create a better worksite. However, there are still many contractors that would benefit from offering this training.
- The majority typically offer this training once a year.

VARIATION BY SIZE OF COMPANY

Nearly all large companies (89%) offer some anti-harassment training. They also more frequently offer it on a regular cadence rather than only when it is needed than do small or midsize companies: 13% offer it only when needed versus 32% of midsize companies and 26% of small ones.

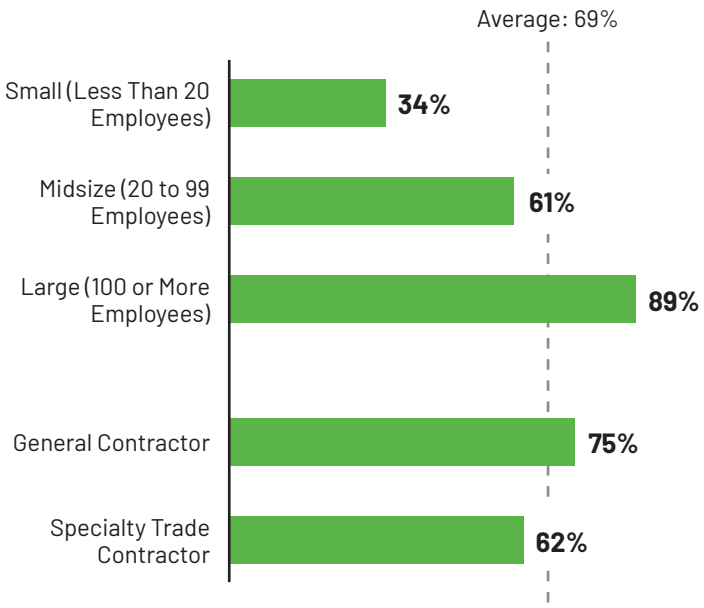
This is important because the need for it may not always be evident to those who make the training decisions. Repetition also reinforces the messaging, and an investment in regular training can also indicate to employees that company leadership takes this issue seriously, which is an important factor for a culture-related issue like this.

The most common cadence with which large companies offer this training, though, matches the rest of the respondents, with the biggest share (70%) reporting that it is provided once a year.

These findings suggest that more support may be needed from the industry to help small companies in particular provide this training to their workers. It may be particularly important given the shortage of skilled workers. Having a good culture onsite is particularly important to worker retention, and small companies may benefit from looking into available resources on this topic.

Offers Anti-Harassment Training

Dodge Data & Analytics, 2023



Anti-Harassment Training CONTINUED

VARIATION BY TYPE OF COMPANY

General contractors more frequently offer anti-harassment training than do specialty trade contractors. However, there are no significant differences in the frequency with which they offer the training.

OTHER VARIATIONS

Companies with union craftworkers, whether they hire union workers exclusively or in combination with non-union workers, more frequently offer some anti-harassment training than do those that hire non-union workers exclusively (85% versus 42%). Some unions, such as the ironworkers, offer national anti-harassment training.

In addition, it is far more common for those who exclusively hire non-union craftworkers to only offer the training when needed (39%) even if they offer it, rather than in a regular cadence.

Topics Covered in Anti-Harassment Training

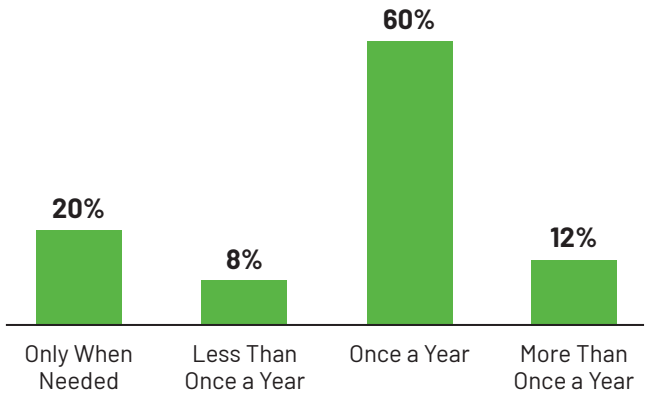
Contractors whose companies offer anti-harassment training were asked whether the training includes the five topics shown in the chart at lower right. Sexual and racial harassment are common elements of the training offered currently, and all five topics tend to be included in the majority of the training offered.

There are no significant differences between general and trade contractors in the topics they offer in this training. However, large companies are far more likely than midsize or small ones to offer training on harassment based on either sexual orientation (88% versus 62%) or gender identity (82% versus 54%).

Frequency With Which Anti-Harassment Training Is Offered

(According to Those Whose Company Offers This Training)

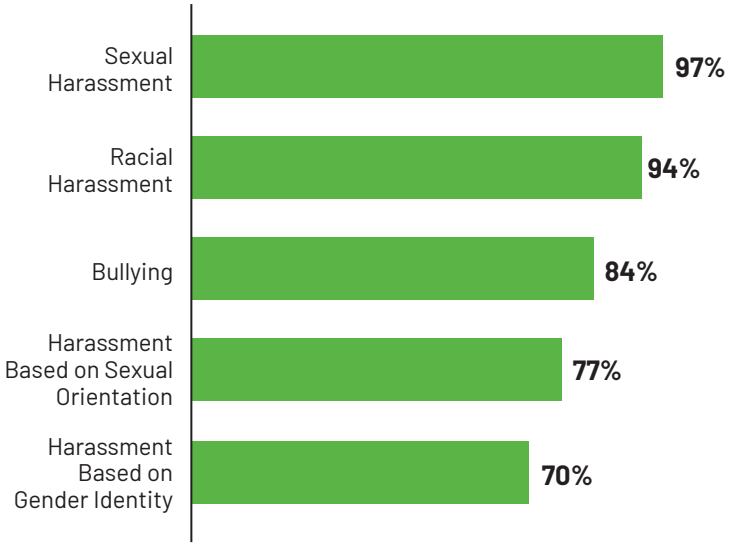
Dodge Data & Analytics, 2023



Topics Included in Anti-Harassment Training

(According to Those Whose Company Offers This Training)

Dodge Data & Analytics, 2023



Worker Health and Well-Being

Mental Health and Substance Use Programs

Another way in which contractors are focusing on the health and well-being of their workers is to try to address issues of mental health, addiction and suicide. Not only are these three factors related, but as this study shows, the industry is keenly interested in more education and training in how to respond to these challenges (see page 31).

Companies That Provide Programs for Substance Use or Mental Health

In order to establish a current industry baseline for this critical topic, the survey asked contractors whether their company provides a program for substance use or mental health. The findings are shown in the chart at upper right.

- Overall, 59% have a program in place. While this is an encouraging finding, the other 41% are leaving many workers at risk.
- Unfortunately, only 29% of small companies offer these programs.
- There are no significant differences, though, in the share of general and specialty trade contractors who provide these services.
- Those who employ union craftworkers (either exclusively or as part of their workforce) more frequently provide these programs than those who only employ non-union workers (69% versus 44%).

Perceived Value in Having a Program for Substance Abuse or Mental Health

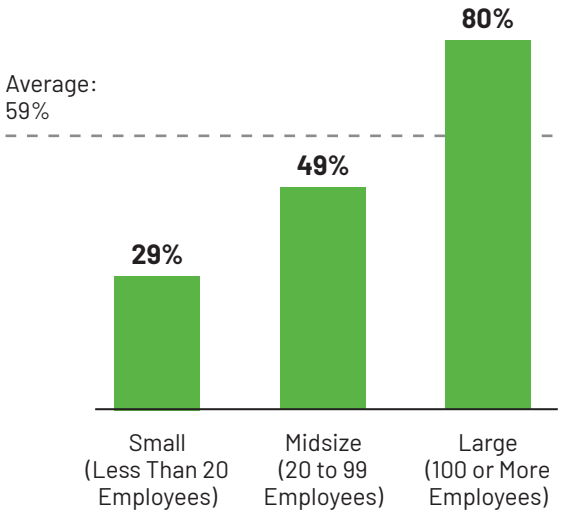
Those not currently offering these programs were asked whether they think their company would benefit from doing so. The chart at lower right shows a relatively even split between those who think it would, those who think it would not and those who are uncertain, with slightly more saying no than the other two groups.

PERCEIVED VALUE BY ROLE

Analyzing the findings by role shows that leadership (C-level, owner, partner) needs to be convinced of the value of these programs, but is not outright resistant to it. 38% respond that they don't know whether their organization would benefit or not, more than either those who think it would (29%) or think it would not (33%). They also account for 57% of the total group of uncertain responses, even though leadership roles only account for 43% of all respondents. This high degree of uncertainty among those in charge suggests the possibility that they could be persuaded to consider these programs if they seem viable for their company and would have a positive impact.

Company Provides a Program for Substance Use or Mental Health

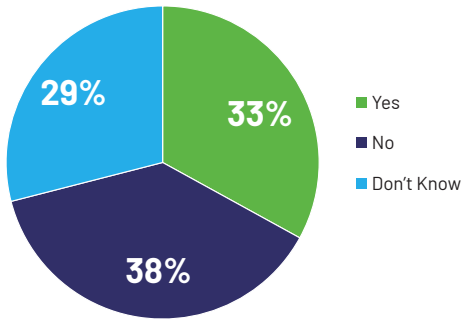
Dodge Data & Analytics, 2023



Company Would Benefit From a Program for Substance Use or Mental Health

(According to Those Whose Company Does Not Currently Have These Programs)

Dodge Data & Analytics, 2023



Mental Health and Substance Use Programs CONTINUED

Use of a Peer Network for Substance Use or Mental Health Issues

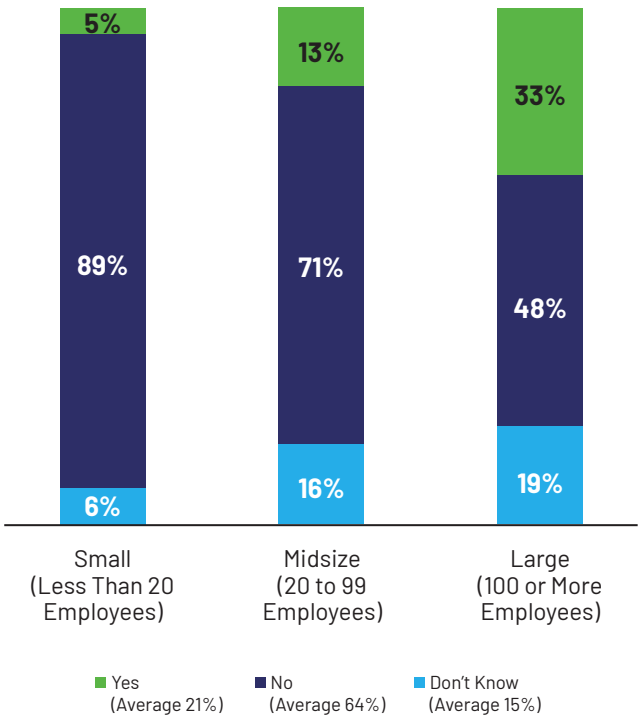
One tool that many have found effective is to have a peer network in place for substance use or mental health issues. Peers can be easier to relate to, with many feeling like their challenges are better understood by their peers than by others.

However, setting up a peer network requires resources devoted to this effort, so it is not surprising that larger companies are far more likely to have peer networks in place than small or midsize ones. However, what is surprising is that large companies also have the highest share who are not aware of whether a peer network is in place or not. This is probably due to many respondents being in company or project leadership in the office, rather than out in the field.

- There are no significant differences in the use of peer networks between general and specialty trade contractors.
- 27% of companies that employ union craftworkers have these networks, compared with 10% of those that exclusively employ non-union workers.

Organization Has a Peer Network in Place for Substance Use or Mental Health Issues

Dodge Data & Analytics, 2023



CASE STUDY

Building a Toolbox for Worker Well-Being

Ask a roomful of construction workers if they've ever had a mental health challenge, and you know nobody will raise their hand. But ask who's ever had a crazy girlfriend, a pregnant wife? Who's thought that that person has maybe lost their mind? And the hands go up. Who thought they'd never get through it? The hands stay up. "That would qualify, folks," says Terri Olson, vice president and CFO of OE Construction, a Colorado-based, 50-employee, excavation and underground utility company. "So who are you going to reach out to: family, friends, your employer? Because you need to get a support system in place."

Olson is describing a key piece of OE Construction's approach to integrating mental health into the company's safety culture. "We tend to call it worker well-being now," she says. "That seems to be easier for folks to get engaged with." The aim is to preempt emergencies by normalizing life's challenges and putting systems in place to deal with them. "Like fall protection," Olson says, "it's just what you do."

Image Courtesy of OE Construction

Focusing on Culture at a Small Company

Even with fewer resources than larger companies typically have, building a worker-focused culture has been an OE priority since Olson's younger son founded the family-run company 17 years ago, and all the more so since her older son, an engineering student who had worked summers at OE, died by suicide 12 years ago. As a result of the impact of that loss on the family and on his coworkers at the firm, "it became even more important that we focus on the whole person," says Olson.

Similar to many companies with fewer than 100 employees, OE doesn't have the resources to support a full-blown HR department or a full-time safety person. Olson wears an HR hat in addition to her CFO hat, with support from another employee with an HR background. Safety is delegated to certain key people in the company, with ongoing support from a safety consultant on contract. But even with the limited means of a smaller company, OE has built a toolbox of tried and tested resources for supporting worker wellness.

Role of Leadership

Regardless of company size, the foundation for the success of a mental health initiative is leadership. "You have got to get engagement all the way through the entire organization," says Olson. "It has got to go all the way to the top." Olson herself has been known to call a doctor's office to advocate on behalf of an employee reaching out for help. "You can't just pass them off to this link, or that hotline, and maybe you'll get an appointment, maybe you won't," she says. "If someone's willing to step up and be real, to let you know that they're suffering a crisis in their life or just a tough time, you better believe." Her message to employers who think a crisis in their employee's personal life isn't their problem: "Yes it is," says Olson. "Yes, it is. That guy's a wreck. He's a safety incident waiting to happen."

Tackling the Challenge

In the early days of prioritizing mental well-being, OE's approach focused on integrating key messages into safety training, particularly those aimed at normalizing mental health conversations, and promoting resources that were available through the company's Employee Assistance Plan (EAP). As with many EAPs, however, mental health support was limited, and appointments were often hard to get. (Getting an appointment in Spanish was next to impossible.)

A turning point came in 2021, when AGC of Colorado convened a mental health task force to investigate tools for addressing mental illness and suicide in the industry. The initiative included a pilot program in which a representative sampling of member

companies, including OE Construction, engaged with Youturn Health, a virtual treatment program for behavioral health, substance use and suicidal ideation. Trained peer coaches (including Spanish speakers) work one-on-one to evaluate an employee's resiliency, mental health, substance use and suicide risk, and then to offer customized resources in response. In addition to a large online library of engaging videos addressing a range of life's challenges, "the most important part, and the reason I got involved," says Olson, is that Youturn provides ongoing, individual support for up to six months, where the responsibility for engagement is on the coach, not the employee. The program is also available to family members at no extra cost.

Because the use of Youturn is confidential, the first clue Olson had about uptake within OE was an invoice for five employees' engagement that month. "Then I'm like, 'OK, this is working,'" she says. When AGC Colorado's pilot ended, OE signed up with Youturn directly "for a very reasonable fee and at no charge to our employees," says Olson. She calls it the "warmline," and says it's reassuring just knowing it's there.

One day an employee in OE's accounting department called to say she couldn't come in to work. When Olson asked if she was okay—"we had to teach people to ask, 'Are you okay,'" she says—the employee said that she wasn't, that her husband was suicidal. (Olson shares this story with the permission of her employee.) Olson reminded her of the Youturn program they had just launched, and the employee called. Within an hour, the employee and her husband each had a peer counselor who connected them with mental health resources. The husband's counselor made the calls to get him an appointment with a professional. "And they didn't stop," says Olson. "They said, 'Do you want us to call you, text you, email you? What's our method of communication?' They were touching that family daily for quite some time." The employee came back to work. She said, "You saved our life."

This is what you should be telling people, says Olson: "Life happens at a moment's notice. There's nothing wrong with having challenges. So recognize that. Recognize how it impacts you and the people around you."

Building the Toolbox

For companies wanting to build a toolbox of mental wellness resources, Olson says the first step is to figure out what you currently have, identify what's missing, and then—most important—talk to people: "I'd go to the jobsite and say, 'We're working on this. What's important to you?" They might not know, so try things. Get key people to beta test a resource and spread the word if they think it's helpful. Talk to other firms, too, and find out what they're doing that works. Additional tools may include bringing in speakers on such topics as techniques for self management, and promoting resources available from the Construction Industry Alliance for Suicide Prevention. "You can be a small company and introduce these concepts and programs, and it's not going to sink your company," says Olson. "We are living proof of that."

Image Courtesy of OE Construction

Use of Technology on the Jobsite

Overall Use

The technologies that are being utilized on jobsites can be a critical tool to support better safety management. To better understand what contractors are currently using, they were asked whether they use any of the nine technologies shown in the chart at right. The share whose companies do not use any of these technologies is shown in the chart below.

Only 28% of contractors report that they do not use any of these technologies, which demonstrates the degree to which jobsites have become more digitally sophisticated. However, as with many of the other factors impacting safety that are measured in this study, small companies lag considerably in the adoption of technology overall compared with midsize companies. Meanwhile, use of at least one of these technologies is quite common among large companies.

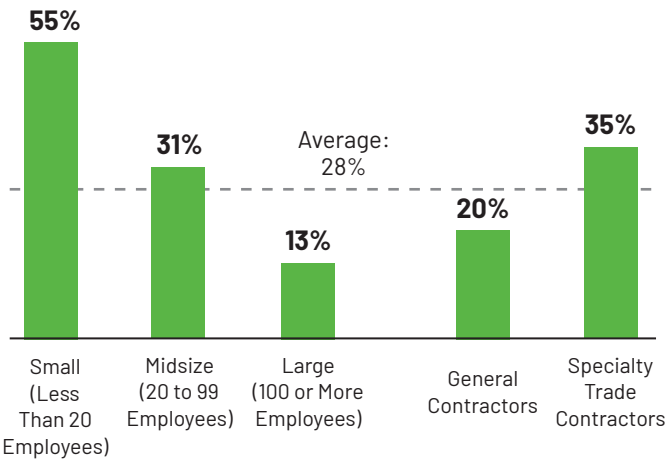
General contractors also use at least one of these technologies more frequently than do specialty trade contractors, but the difference between them is much narrower than that between small and large companies.

Types of Technology Used

As the chart at right reveals, three of the nine technologies are far more widely used than the others: building information modeling (BIM), drones and laser scanning. However, even BIM is only used by 47% of the contractors surveyed. This demonstrates that there is no single

Do Not Use Any Emerging Technologies

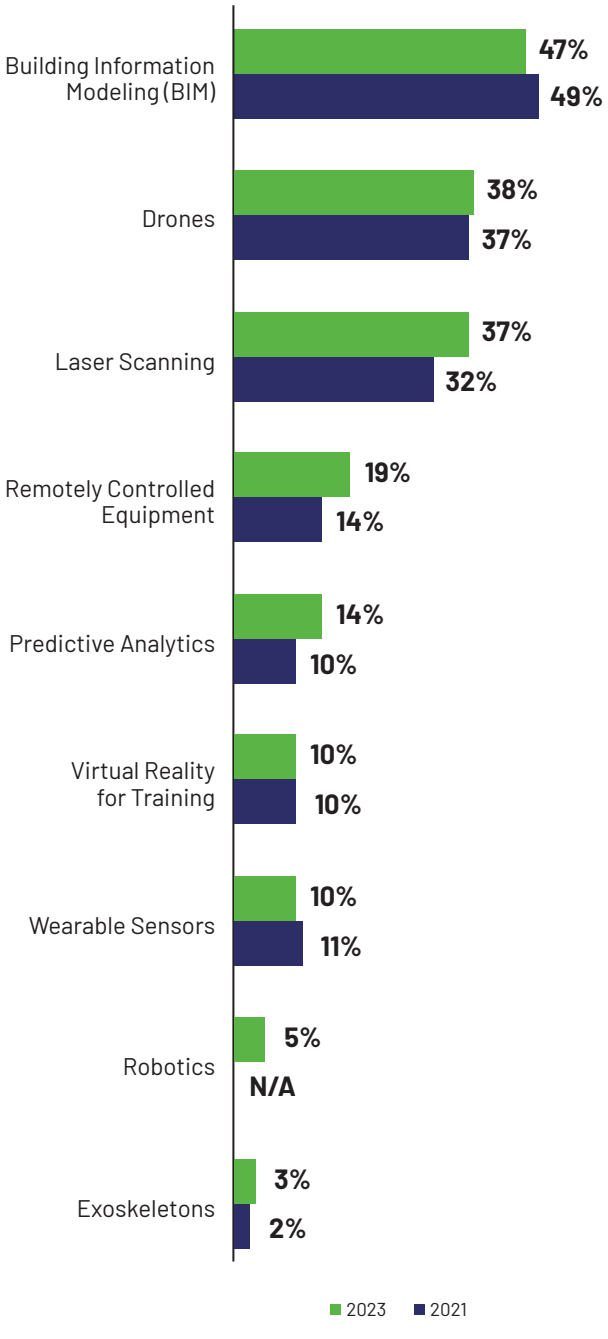
Dodge Data & Analytics, 2023



Use of Specific Technologies

(Reported in 2023 and in 2021)

Dodge Data & Analytics, 2023



Use of Technology on the Jobsite CONTINUED

technology from this list that has become commonplace on jobsites in the US.

The findings in the current study are contrasted with those from the previous study in 2021. In the past two years there has been growth in the use of laser scanning, remotely controlled equipment and predictive analytics. All of these are connected to the importance of gathering and utilizing data on the jobsite.

The share of respondents using the other technologies has stayed relatively consistent, with increases or decreases within 2 percentage points of the findings in 2021. Instead, most of the growth in utilization has involved existing users using these technologies more widely on their projects (see below).

VARIATION BY SIZE AND TYPE OF COMPANY

A significantly bigger share of large companies use all of these technologies than do smaller companies with two exceptions: wearable sensors and exoskeletons.

Use of these technologies is similar for general and trade contractors, with the exception of drones, which are used more by GCs (52%) than by the trades (25%).

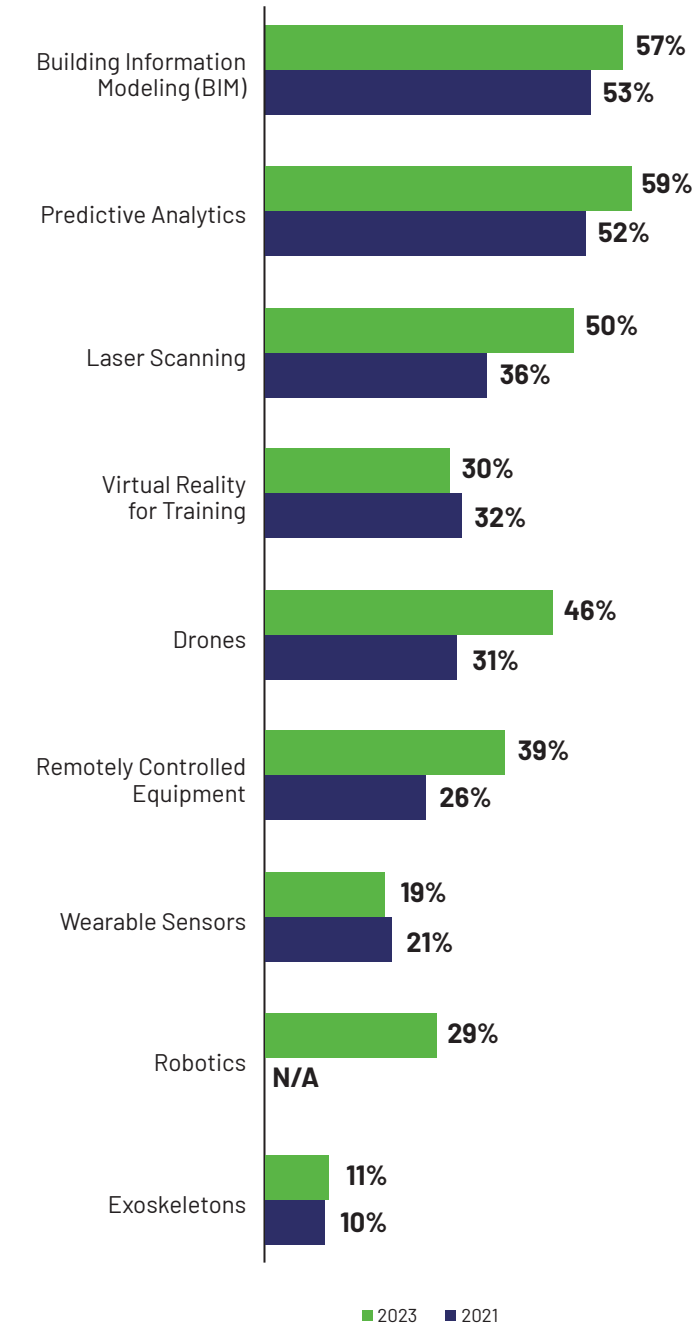
Frequency of Use of Technologies Onsite

In addition to whether or not technologies are utilized at all, contractors who use them were asked how frequently they do so. The chart at right represents the share who report using each technology frequently or very frequently.

- Two out of three of the categories that experienced a small decline in overall users (BIM and drones) saw existing users intensify their engagement.
- Predictive analytics still only has a small percentage who use it, but those who do deploy it frequently. This clearly demonstrates the growing importance of data for construction companies to support programs like this.
- Laser scanning, drones and remotely controlled equipment had the highest increase in intensity of use between 2021 and 2023. Clearly, users of each find them valuable since they are deploying them more often.
- Use of wearable sensors seems to have leveled off, both in the share using them at all and in the share who use them frequently. It is possible that cost is a limiting factor on growth for this technology.
- Robotics and exoskeletons are emerging technologies, but those using robotics are doing so on almost one third of their projects. Exoskeletons are not as widely implemented.

Use Technology Frequently/Very Frequently
(According to Those Using It)

Dodge Data & Analytics, 2023



Technology and Safety

Reasons for Using Technology

Contractors using technology were asked to select the reasons they do so from the options shown in the chart at right.

Promisingly, 62% of the contractors report using technology to improve safety. Among small contractors, it is the top driver, and it is the second highest for midsize and large ones. There is no difference in the general and specialty trade contractor response to this issue. This finding demonstrates the importance of tracking how different technologies impact safety to help the industry better understand where their investments will make the biggest difference.

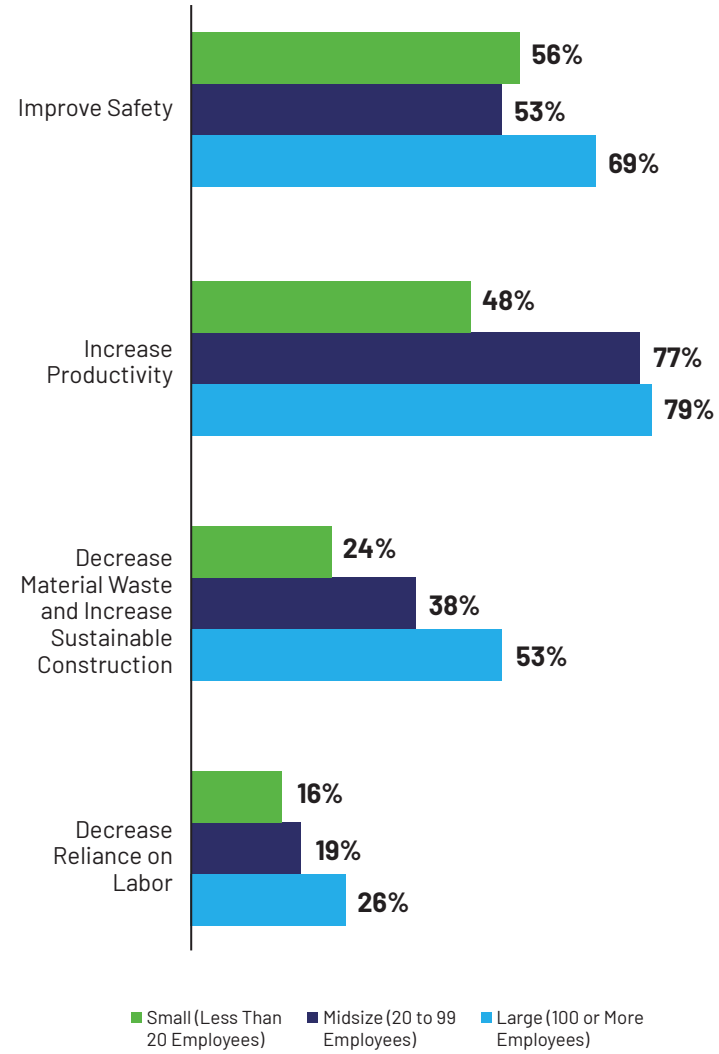
However, safety is not the top factor. An average of 75% of respondents use technology to increase their productivity. Clearly the share of small contractors is much lower at 48%. Since technology is much more widely used by midsize and large contractors anyway, they naturally represent the majority seeking to increase productivity in order offset workforce challenges and boost profit margins.

Interestingly, though, only 22% overall seek to decrease their reliance on labor through their use of technology, and the small differences shown in the chart between companies by size are not statistically significant.

Large companies, though, are the biggest proponents of using technology to decrease material waste and increase sustainability.

Why Contractors Use Technology

Dodge Data & Analytics, 2023



Use of Data to Support Safety Programs

The emergence of machine learning and artificial intelligence in the technology tools used by contractors makes having good data a high priority. This requires data that is timely, complete, accurate and consistent, and several recent studies by DCN reveal that many in the industry struggle with access to and effective use of the data from their projects.

Safety is one critical area that better data can improve. Safety data can reveal trends that can help companies determine where they need to focus their efforts to improve safety, through investment in better gear to protect employees, safer project layout, increased training on certain areas and many other measures.

76% of contractors currently gather data on safety. However, nearly one quarter of them (24%) do not utilize most of the data they gather. Currently, only about half (53%) are able to utilize safety data effectively and deploy it to identify problem areas or develop policies and procedures.

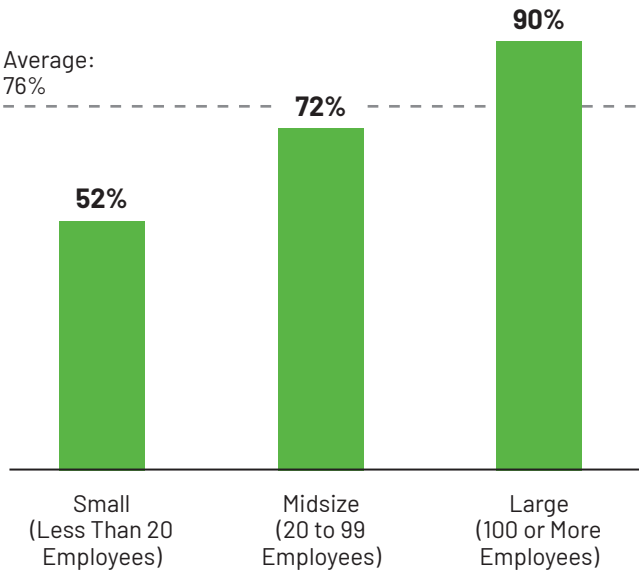
These findings are consistent between general and specialty trade contractors. The size of the company, rather than the type of company, is much more closely correlated with challenges in utilizing data to improve safety.

Variation by Company Size

As the charts at right show, small companies in particular struggle with the challenge of utilizing safety data. Even among large companies, though, nearly one quarter (23%) do not find that they can utilize most of the data they gather. Clearly this is a challenge that technology companies need to help the industry address, with better tools but also with more information on best practices for gathering and utilizing good data.

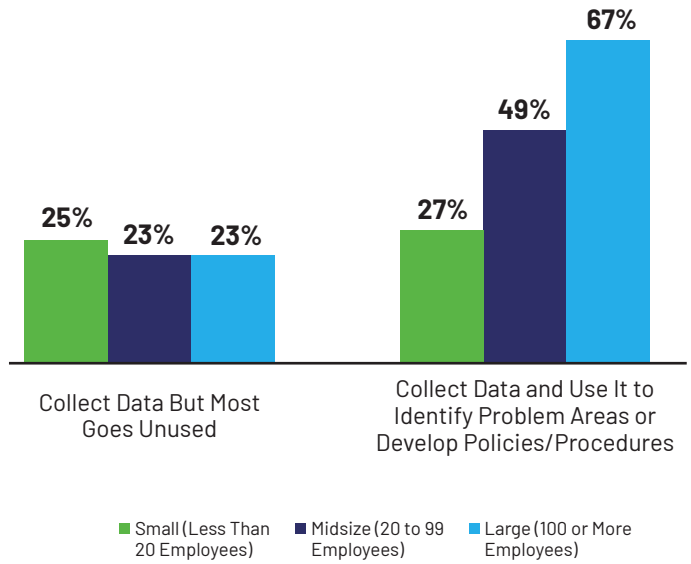
Contractors That Gather Safety Data

Dodge Data & Analytics, 2023



Contractors' Use of Data to Support Safety Programs

Dodge Data & Analytics, 2023



DATA SIDEBAR

Data-Driven Fleet Safety

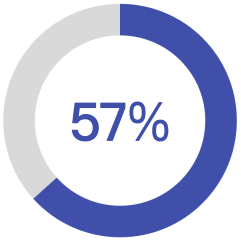
One sign of good safety management is when safety is considered as part of all the activities at a company. Improved safety through better operation and maintenance of a contractor's fleet of vehicles and equipment are an important, but sometimes overlooked, part of that approach. Dodge Construction Network recently conducted a study in partnership with Motive, published in *Safety on the Move: Automated Fleet Management and the Future of Safety for Contractors*, that examines how gathering and analyzing data can help contractors to improve safety in this area.

The study included a survey of 155 mechanical, plumbing, electrical, concrete and home building contractors in the US, and was conducted in the first quarter of 2023.

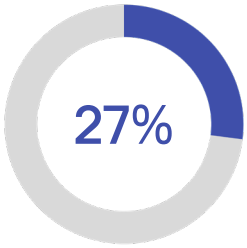
Impacts of Risky Vehicle and Equipment Operation

Contractors were asked whether they had experienced an accident or near miss with their vehicles on the roads or with the equipment they operate on their jobsites in the last five years. The findings revealed that vehicles accidents/near misses were far more common than ones involving equipment. However, the impacts of issues with equipment are more severe than those with vehicles (see charts below and on the following page). These findings suggest that both of these areas need to be addressed by contractors, given the frequency of vehicle incidents and the severity of incidents with equipment.

The study reveals that most contractors (76%) track vehicle safety information, but the vast majority of them rely on paper forms (45%) or excel spreadsheets (13%), with only 18% automating their fleet safety tracking. Similarly, 62% of contractors track driver behaviors, but only 25% of the



Experienced Vehicle Accidents/ Near Misses



Experienced Equipment Accidents/ Near Misses

Top Project Impacts of Vehicle Accidents/Near Misses

Productivity Decline: **57%**

Schedule Delays: **39%**

Top Financial Impacts of Vehicle Accidents/Near Misses

Increased Cost of Insurance: **53%**

Decline in Profitability: **33%**

Data-Driven Fleet Safety CONTINUED

contractors surveyed use automated means to do so. This means that, even among the contractors gathering this data, most are relying on incident reporting and do not have an objective gauge of good driver behavior.

Fleet Maintenance

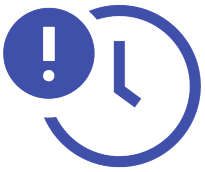
The study also examines the impact of fleet maintenance on safety.

Two thirds of contractors report that they experience safety issues because of fleet maintenance issues, so it is a common occurrence. However, only 43% currently keep track of equipment maintenance and service. Utilizing software to manage their maintenance is even more uncommon, with only 25% either using software designed to manage equipment or taking advantage of programs that incorporate artificial intelligence (AI) to predict their maintenance needs.

However, the investment in these tools is paying off for those who have already made them. 80% of those using automated data-driven fleet maintenance management find that it improves safety on their projects. And, as the findings on the previous page reveals, keeping the equipment functioning safely for its operators is likely to also impact their ability to meet schedules, enhance productivity and increase profitability on their projects. ■

Top Project Impacts of Equipment Accidents/Near Misses

Productivity Decline:
62%



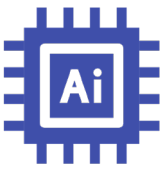
Schedule Delays:
60%

Top Financial Impacts of Equipment Accidents/ Near Misses

Decline in Profitability:
60%

Impact of Automating Fleet Maintenance on Safety

66%
of contractors experience safety issues due to the need for improved fleet maintenance.



75%
of contractors do not yet use software designed to manage equipment or AI to predict maintenance needs.

80%
of the contractors using software to manage equipment or AI to predict maintenance report that it improves safety on their projects.

CASE STUDY

Rosendin Embraces Technology for Modern Jobsite Safety

Construction sites have always been a dangerous place for workers, and currently,with new equipment and delivery methods, some companies are embracing technology to keep up with added safety risks.

"What we've learned over time within the construction industry is that change is the only constant," says Shayne Stevens, senior corporate safety director for San Jose, California-based Rosendin, one of the nation's largest electrical contractors.

Stevens says 20 years ago it might have sounded "kind of crazy" to use data and analytics to improve safety on a construction site, but today, when you analyze the data, and look at the details and read the trends, "it's really important to improving the company's production, quality, morale and safety. And for us, it's about getting as many people as possible engaged in our processes as we possibly can."

Image Courtesy of Rosendin

Building a Data-Driven Safety Program

The company focuses much of its safety data on leading and lagging indicators. "Leading indicators are the things that we're getting ahead of that we are measuring; that are going to help us achieve the outputs that we want," says Stevens. "Lagging indicators are the things that have already happened and that we can learn from."

Rosendin's current safety program began last year, when the company realized it was getting so big that it needed to develop its own "playbook" of customized safety solutions to help reduce incident rates, says Dr. Jad Chalhoub, Rosendin director of business analytics. Therefore, the first thing they did was form a data-driven safety team, led by Chalhoub. The team then gathered all the data it could, including what type of accidents were occurring, where they were occurring and on what types of projects.

"We started looking at anything the data could tell us, such as which days are the most dangerous, which types of jobs are the most dangerous and what times of the year are most dangerous," says Chalhoub.

Once the team started identifying some of the leading indicators as to what made a job safer or less safe, they then began adding things to the equation like training data and regional weather patterns on jobsites.

What the Data Reveals

One of the key findings that the data yielded was that most of the incidents were happening toward the peak of the project, during the "ramp-up," when work is busiest and crews start getting pushed harder. "And the reason they're pushed harder is because we missed something during the slower times of the project: We didn't have enough supervision planned out, or we didn't get material in time. Then we are late, and we're trying to make up for our time. So planning that increase in urgency on the project was an important theme that we have identified," he says.

Data also showed that while Friday is commonly thought to be the worst day for injuries, it is actually Monday, due to what workers do on weekends. Additionally, rainy days with more than one inch per day of rain were shown to increase the risk of injuries.

Creating a Data Lake

The team's safety information goes into a program called Rosendin Data Lake, which aggregates and streamlines all of the company's data sources in a single location. "The real magic happens when you start bringing data from multiple sources," says Chalhoub. "It's not just the safety information or information from our ERP [enterprise resource planning] systems, or training information; it's all of them together, and we put it all in Rosendin Data Lake, which we keep building and expanding."

He says Rosendin has taken an educational approach to its data lake. "We are hoping that the lessons and insights learned from our data analytics are going to become instinctive and pervasive throughout the company," says Chalhoub.

Rosendin Embraces Technology for Modern Jobsite Safety

Image Courtesy of Rosendin

Impact of Using Data

Stevens says Rosendin's safety program is working because they have seen a drop in the rate of recordable incidents/injuries.

"When COVID hit, the entire industry saw an increase in recordable injuries," he says. "Coming out of COVID, we put our programs back in place at Rosendin, adjusted our business, and from last year, we've seen a consistent drop. Usually with more man hours you see more injuries, but our man-hours grew and our incident rates dropped."

"Once we see fewer incidents due to the parameters we put into place, then we want to analyze that data again and determine why it's working and how we can get even better," says Stevens.

Deploying Technology

Besides Rosendin Data Lake, the company employs QR codes, video simulation, virtual reality and artificial intelligence (AI) to improve safety.

"We partnered with Milwaukee Tool, and they helped us build a poster where employees can go and scan a QR code for each tool that is being used. The code will give them a quick overview of how to use that tool properly and how to reference the operator's manual," says Stevens.

Employees also have access to a separate QR code posted around jobsites that will pull up JHA (job hazard analysis) information, showing employees how to properly do any job on the project, while also describing possible hazards involved and safety measures to mitigate those hazards.

Falls, which are the leading cause of death in the construction industry, are also being investigated through technology by Rosendin. The company's Training Department recently created a simulation of what would happen to the human body following a fall from a height of 12 and 20 feet.

Using ballistic dummies that are 95% direct re-creations of the human body, the Rosendin team got real results, on camera, while in a controlled setting. A medical doctor provided an onsite analysis of the injuries sustained immediately after each fall, including the possible cause(s) of death. The video showcases fall hazards unique to the workplace, along with hazard elimination and minimization through use of proper PPE.

Other safety technologies used at Rosendin include:

- A software platform that combines reality capture and AI-powered analytics to help companies create an interactive 360° digital view of projects.
- Virtual reality training for forklift and scissor lift operators.
- An anonymous hotline to report employee concerns.
- A company app that contains employee resources such as safety forms and manuals.

These measures give their employees the tools they need to improve safety onsite.

Methodology

Dodge Construction Network conducted the 2023 *Safety Management in the Construction Industry* survey to examine multiple topics on jobsite practices related to safety management, safety practices and communication, including pre-task planning, the use of personal protective equipment (PPE), heat exposure, mentoring, training, communicating about safety, onsite technology use, and mental health and substance use .

The survey is the sixth in a series of studies conducted by Dodge on safety management. The previous surveys were conducted in 2012, 2015, 2017, 2019 and 2023. While many elements were updated or added in the current study, a few data points collected was consistent with previous safety surveys, and where relevant, presented in a longitudinal format in this report.

The research was conducted through an online survey of contractors from May 8th to June 27th, 2023. It was sent to the following:

- The DD&A Contractor Panel was used to reach general and specialty contractors throughout the United States. This panel contains a representative sample of construction contractors across the US.
- The survey was also sent to members of five industry associations, each of which was responsible for sending the survey to its members.
  - Associated General Contractors of America
  - Mechanical Contractors Association of America
  - National Electrical Contractors Association
  - National Insulation Association
  - Sheet Metal and Air Conditioning Contractors' National Association
  - The Association of Union Contractors

In order to gain an industry-wide perspective, the survey was open to all contractors (general and trade) who did work in the United States in the last three years. Given the sample from which the response was drawn, though, the majority of the contractors participating in the study work primarily on commercial/civil construction projects, with only 9% who stated that more than half of their company's work is on one-or two-family residential projects.

On average, the survey took 12 minutes to complete.

Survey Respondents

A total of 298 contractors responded to the survey.

- 153 of the respondents are general contractors, construction management companies, design-build firms, engineering and heavy civil contractors. These are identified as general contractors in the analysis and in the charts.
- 145 of the respondents are specialty trade contractors.
- Job roles of respondents include largely decision-makers in the construction industry:
  - C-level, Owner, Partner, Principal: 29%
  - SVP or VP: 9%
  - Director: 18%
  - Manager (Project Manager, Safety Manager, etc.): 30%
  - Estimator: 14%

ANALYTICAL VARIABLES

In addition to the longitudinal comparisons to previous surveys conducted by Dodge, three variables are used in the analysis of the data throughout this report.

- Company Size
  - Small companies with fewer than 20 employees: 19%
  - Midsize companies with 20 to 99 employees: 36%
  - Large companies with 100 or more employees: 45%
- Company Type
  - General contractors (category also includes construction management companies, design-build firms and engineering contractors): 51%
  - Specialty trade contractors: 49%
- Employs Union Craftworkers
  - Only employs union craftworkers: 36%
  - Employs union and non-union craftworkers: 25%
  - Employs only non-union craftworkers: 39%

Resources

Organizations, websites and publications to help you get smarter about safety management in the construction industry.

Dodge Construction Network

Dodge Construction Network
Main Website:
www.construction.com
Dodge Construction Central:
https://www.construction.com/solutions/dodge-construction-central
Market & Competitive Intelligence:
www.construction.com/products/construction-market-data
Sweets:
www.construction.com/products/sweets
SmartMarket Reports:
www.construction.com/toolkit/reports

ACKNOWLEDGEMENTS:

We would like to thank CPWR for partnering with us since 2012 on this research and helping us identify the key topics to investigate.

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We also thank all the people who contributed their insights, images and experiences, including the thought leaders featured in this report and those who provided us with case studies or shared their insights in our feature articles.

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Associated General Contractors of America: **www.agc.org**
Mechanical Contractors Association of America:
www.mcaa.org
National Electrical Contractors Association:
www.necanet.org
National Insulation Association**: https://insulation.org**
Sheet Metal and Air Conditioning Contractors'
National Association: **www.smacna.org**
The Association of Union Constructors: **www.tauc.org**

OTHER RESOURCES

American Foundation for Suicide Prevention:
https://afsp.org
Construction Industry Alliance for Suicide Prevention:
https://preventconstructionsuicide.com
Construction Safety Council: **https://buildsafe.org**
Culture of Care: **https://buildculture.org**
International Code Council: **www.iccsafe.org**
National Alliance on Mental Illness**: https://nami.org**
National Institute of Occupational Safety and Health
(NIOSH): **www.cdc.gov/niosh/index.htm**
NIOSH *Total Worker Health®* Program:
www.cdc.gov/niosh/twh/default.html
Occupational Safety and Health Administration:
www.osha.gov
Prevention Through Design Website:
https://designforconstructionsafety.org

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