

# MCAA-FOCUSED CONSTRUCTION TECHNOLOGY REPORT



# MCAA

Mechanical Contractors Association of America

Brought to you by

 **JBKNOWLEDGE**<sup>®</sup>

## MCAA SUPPLEMENTAL REPORT

JBKnowledge conducted the fifth annual Construction Technology Survey in partnership with the Mechanical Contractors Association of America (MCAA), the Construction Financial Management Association (CFMA), and Texas A&M University's Department of Construction Science. Over 2,600 industry professionals responded to the survey between June 20, 2016 and August 1, 2016.

The survey was distributed to over 50,000 construction industry professionals via email, social media, online publications and anywhere else we could share it. 2,604 total responses were logged for this survey. However, to ensure statistical relevance and the highest quality data, 735 of those responses were removed or disqualified for one of the following reasons: 1) The participant was a CPA, consultant, educator, services or technology provider who could not provide relevant feedback on how the solutions and strategies mentioned are used in construction operations; 2) The participant did not provide enough answers to hold statistical significance; 3) The participant submitted unreliable or irrelevant answers, (i.e. answering every question with C, even when it wasn't multiple choice.) Of the 1,869 usable responses, 194 were members of the Mechanical Contractors Association of America.

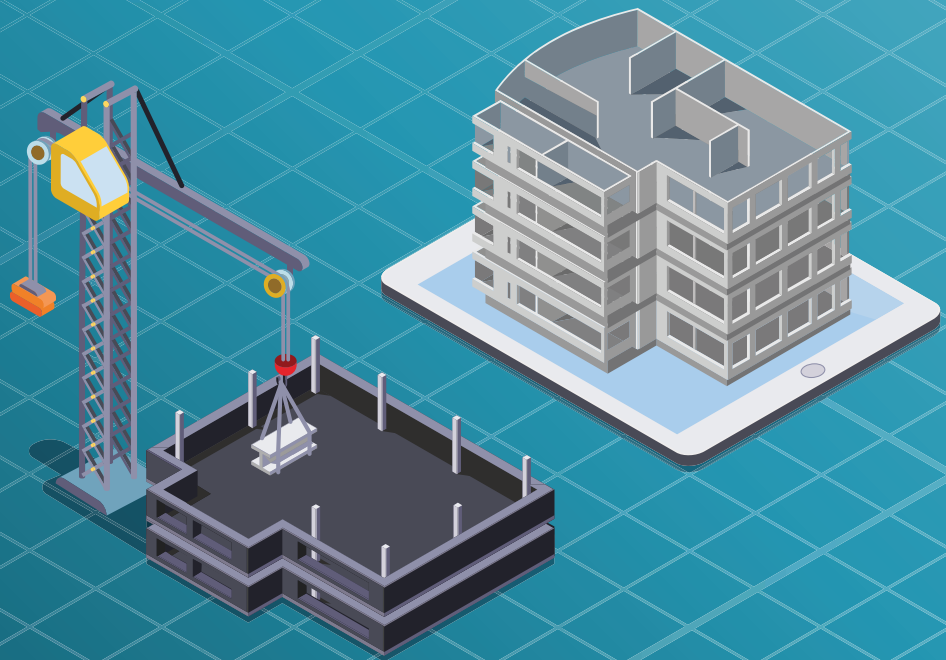
This supplemental report dives into the responses of those MCAA members, to show trends and benchmarks compared to the industry averages. When taking the survey, MCAA members answered a special section of questions that were not available to other survey participants. For those questions, you will not see a broader industry-wide graph for comparison.

The mechanical contractors that participated in the 2016 Construction Technology Survey were critical in understanding the full scope of construction, from owner through general contractor to specialty subcontractors. As one of the demographics that can benefit most from BIM, many of the statistics below are centered around that topic – and it's important to note that mechanical contractors showed incredible progress and innovation in applying BIM compared to industry averages.

We hope this report inspires further analysis and innovation, to push the mechanical contracting profession forward through the use of leading technology.

# Virtual Design & Construction

Dive into how mechanical contractors are approaching VDC and the challenges they face in applying CAD and BIM.



# MCAA

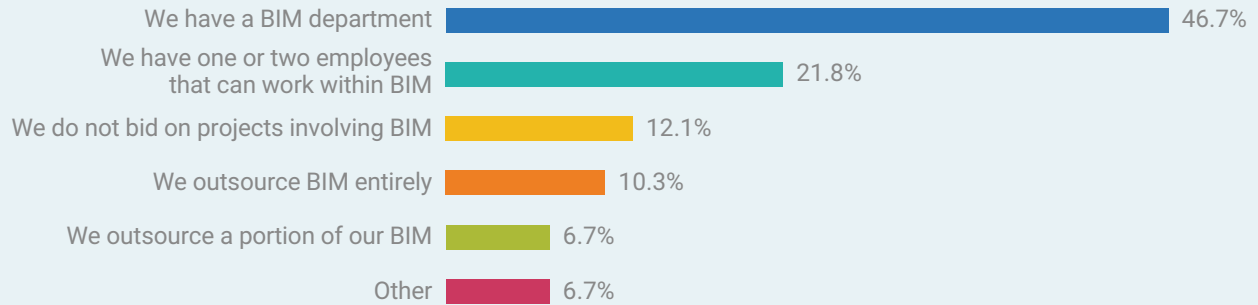
Mechanical Contractors Association of America

Brought to you by





### BIM USAGE



Nearly 50% of the MCAA survey participants state they have a BIM Department within their organization. Almost 22% have at least a couple of team members who can work with BIM. In the larger industry survey, only 33% of companies use BIM Software internally so the data suggests a higher rate of BIM adoption with trade subcontractors. This statistic is not surprising due to the subcontractor focus on prefabrication and efforts to get ahead of the schedule. Additionally, BIM creates an extra benefit of helping them more easily and accurately create shop drawings.

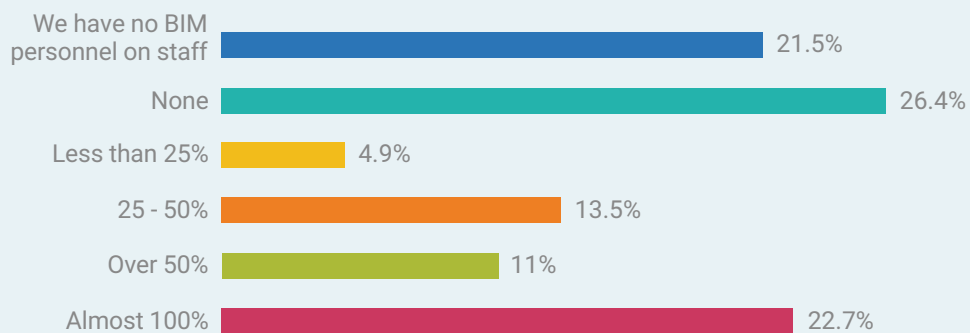
#### Survey Participants Commented:

*"We have five full-time BIM employees and a few more engineers well-trained in Autodesk products that can also help."*

*"Most of our work is residential housing where there have not been any requests to bid using BIM. Our commercial construction is typically performed for smaller GCs producing smaller projects who also have not requested BIM."*



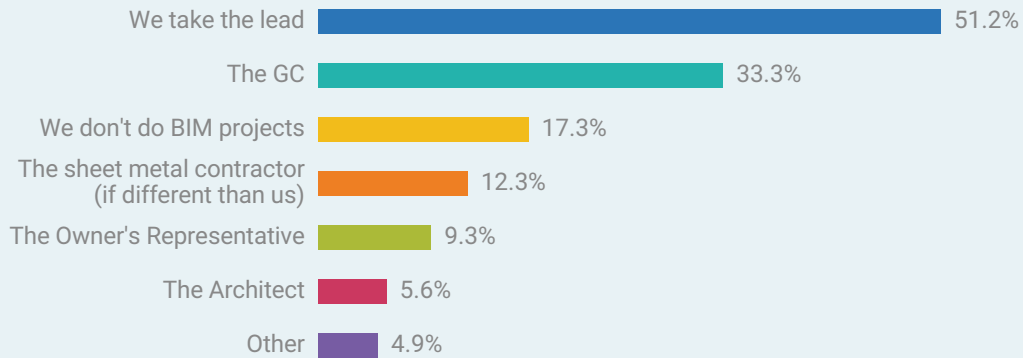
### UNION BIM PERSONNEL



Mechanical contractors were asked, “If you have BIM Staff that draw UA work, what percentage are Union?” The responses to this question show that 34% of MCAA respondents use more than 50% union labor in their shops to draw BIM work on UA jobs. The next highest statistic at 26% is for shops that do not use any union labor to draw UA work. This suggests that members are most often taking an all or nothing approach.



**WHO TAKES LEAD ON BIM?**



Greater than 50% of MCAA members responded that they are taking the lead role in BIM projects. This data point correlates with the higher adoption of BIM by Trade Contractors than the general marketplace. Given the higher level of BIM maturity, it is not surprising to see MCAA members taking the lead - it's often easier for specialty trades to ramp up on BIM, specific to their projects, than a general contractor working to understand BIM from all perspectives of a project. It's interesting to note that survey comments indicated subcontractors often take the lead on BIM and struggle with coordinating with GCs. Comments by members, included below, echo this as well.

**Survey Participants Commented:**

*“The GC will initiate the requirements for meetings, but we take the lead in clash detection because we are further along in our BIM skills than other local contractors. In a lot of instances, we take the lead because we have to, not necessarily because we want to.”*

*“We prefer to take the lead but the CM's are trying to do so although most are not knowledgeable enough. We try to assume the lead while letting CM's save face.”*

When asked the biggest challenge they face in employing BIM, mechanical contractors answered that coordination and training are the top two challenges they faced. Coordination across trades, architects, engineers, GCs and owners is anything but seamless and often affects project timeline and budget. For this reason BIM is often viewed as an inefficiency instead of a value add. Recruiting and training BIM talent is another common challenge. Even if companies find the experienced staff that is needed, continuing education on constantly evolving hardware and software remains difficult.

When asked what mechanical contractors feel they need more training on in order to utilize BIM affectively, the majority answered simply, "Revit." Training employees, developing coordination techniques, field and mobile deployment, syncing with procurement and jobsite scanning were among other items listed.

**Survey Participants Commented:**

*"Our biggest challenge is cost overruns due to educating CM's and owners as to the delta of redesign versus BIM coordination."*

*"Our biggest challenge is getting involved early in the project. We prefer to design/assist in lieu of draw hard bid projects."*

*"We have trouble getting owners to pay for it."*

*"It's hard getting all other trades to do their part - Local contractors, architects and engineers not being up to speed with the BIM process and not being willing to work with us to make it happen."*

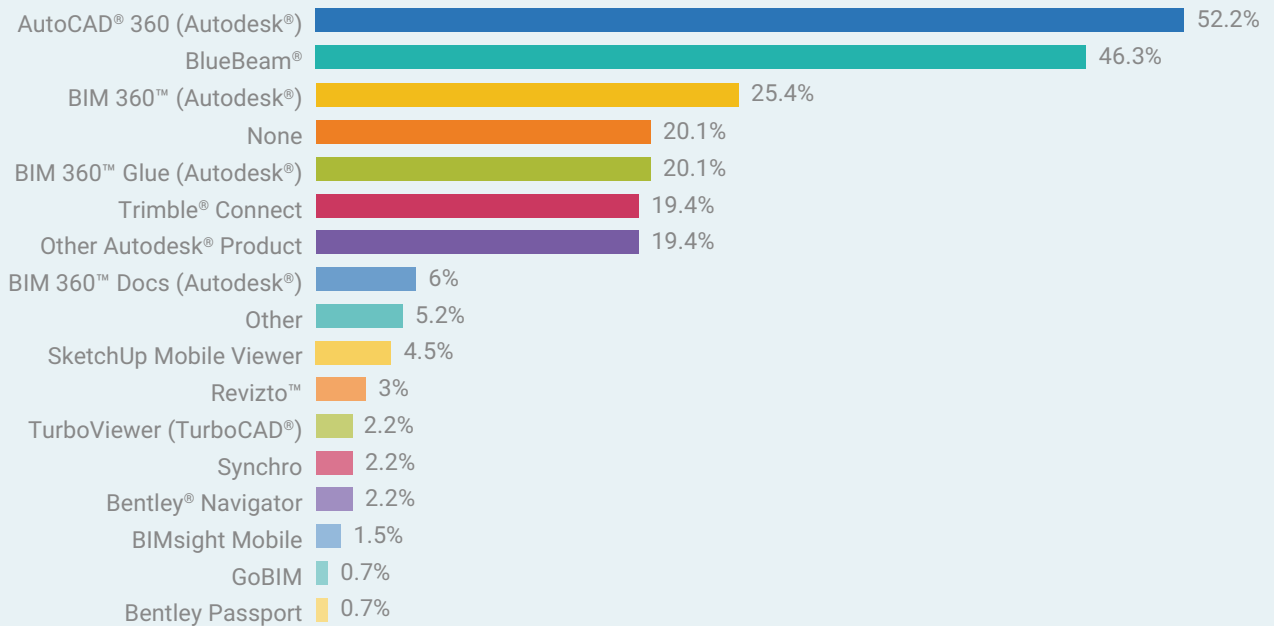
*"Huge file sizes, inconsistent file sharing methods..."*

*"Finding good BIM talent, and educating and training new designer employees is a challenge."*

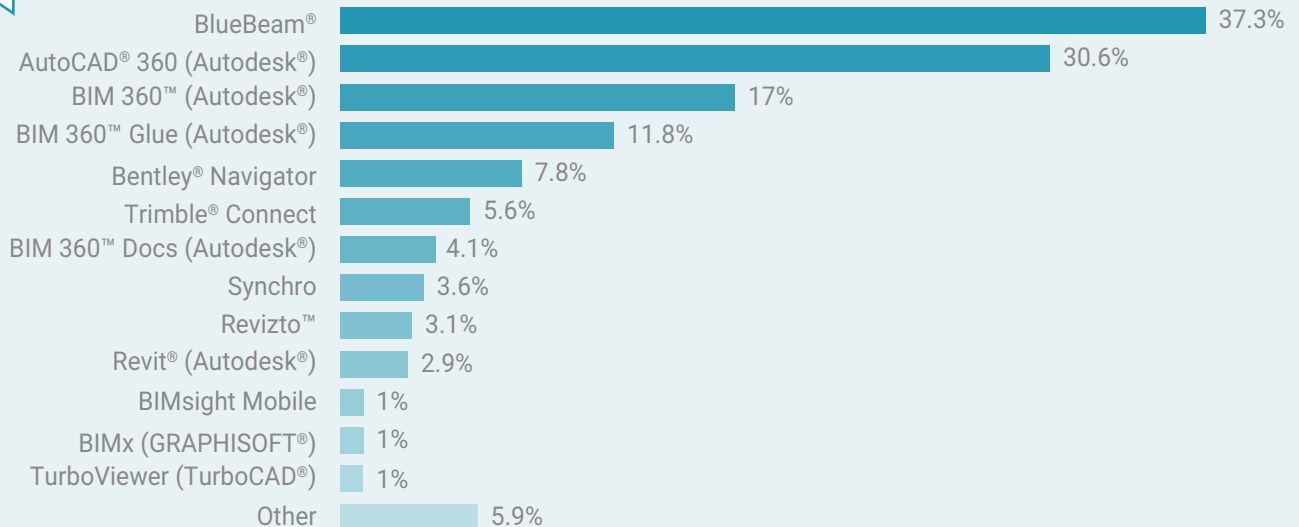
*"The every evolving software - keep up with hardware and technology changes."*



### CAD/BIM MOBILE APPS (MCAA)



### CAD/BIM MOBILE APPS (INDUSTRY)



The mix of CAD/BIM apps employed by MCAA members versus the general marketplace is nearly the same. The level of adoption, however, for MCAA members is higher. For AutoCAD 360 and Bluebeam especially, MCAA respondents usage is roughly 15% higher and for BIM 360 MCAA respondents are almost 10% higher. These statistics align with the fact that mechanical contractors are actively installing equipment from VDC models and are therefore more likely to need these tools in the field.

# Software & Mobile Apps

Explore the software and mobile apps mechanical contractors employ in the office and field to streamline data, resources and communications.



# MCAA

Mechanical Contractors Association of America

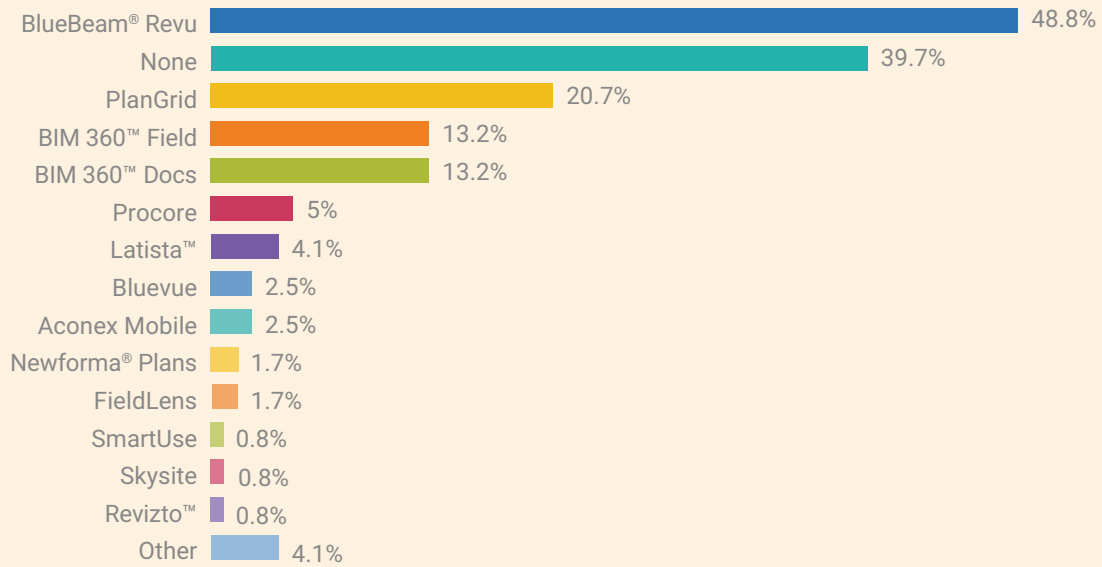
Brought to you by

 **JBKNOWLEDGE**<sup>®</sup>

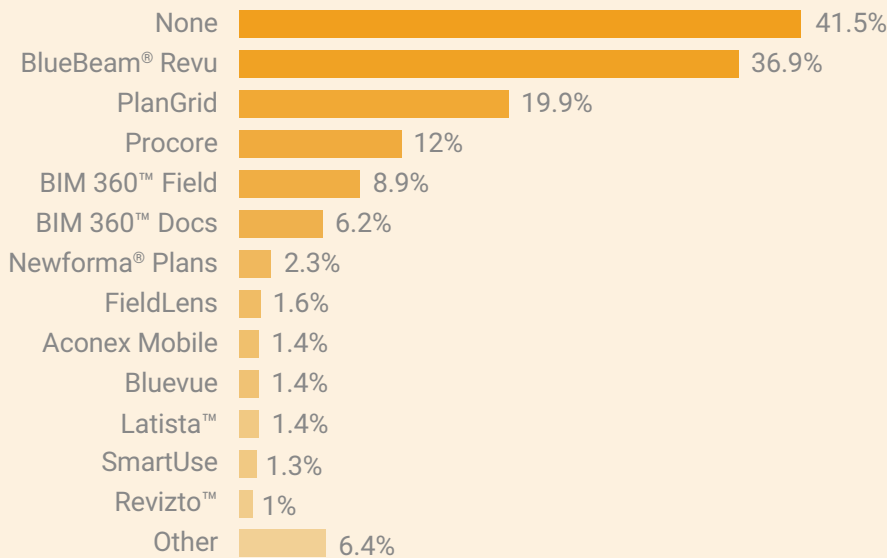




### PLAN MANAGEMENT MOBILE APPS (MCAA)



### PLAN MANAGEMENT MOBILE APPS (INDUSTRY)



#### Survey Participants Commented:

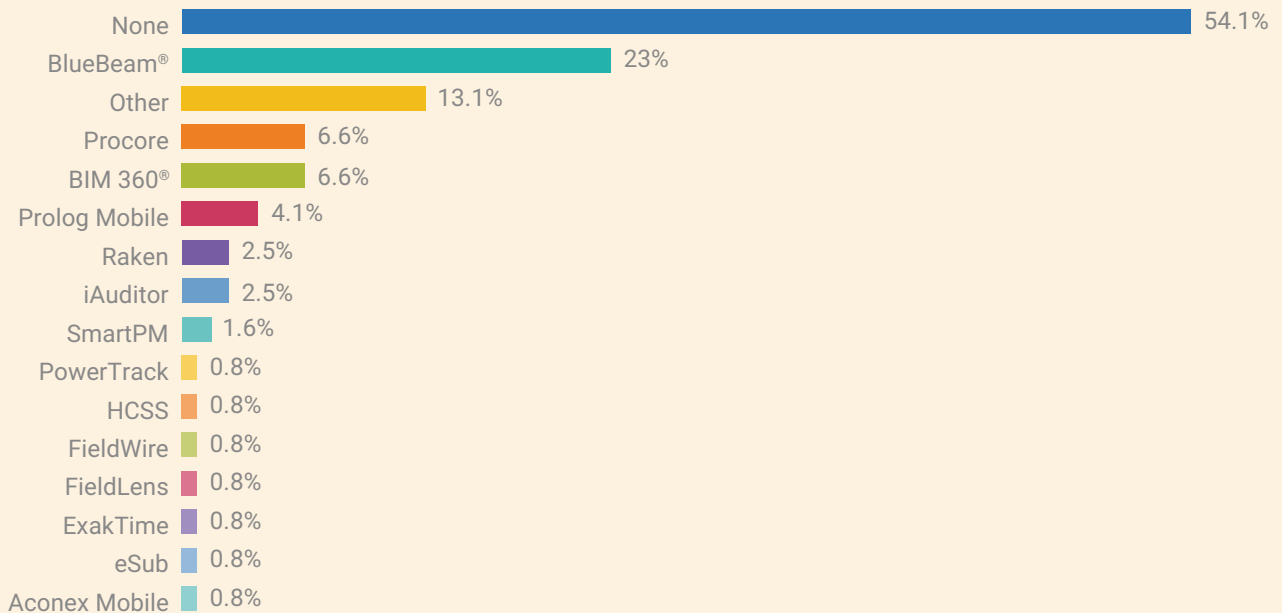
"We also utilize Dropbox™ with other contractors and our more savvy field personnel keep their own sets on GoodReader® because that is their favorite app for viewing PDF plans."

"Plans are all kept on server in-house."

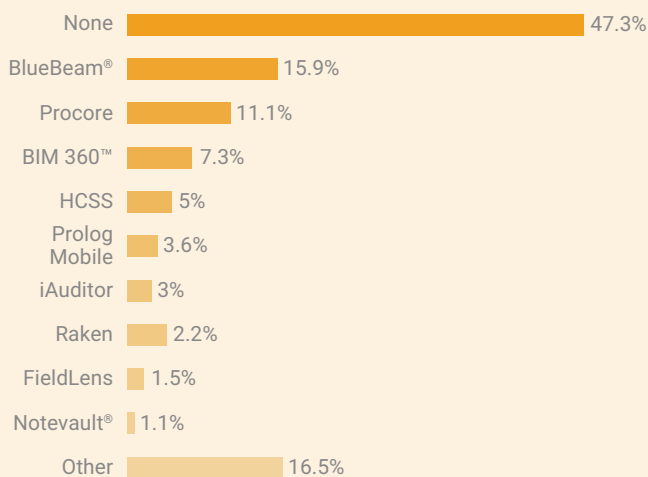
"We mostly have to adapt to software that the different GC's are using."

The number of respondents not using any mobile apps for plan management, roughly 40%, is the same for MCAA respondents as the general marketplace. Bluebeam Revu is the most popular choice for both, however, MCAA adoption again is higher than the marketplace. Comments suggest that many members use multiple solutions driven by what is required by the general contractors.

### DAILY REPORTING MOBILE APPS (MCAA)



### DAILY REPORTING MOBILE APPS (INDUSTRY)



#### Survey Participants Commented:

*"Some of our guys still hand write-in log books. Most do nothing. I've looked into a couple solutions, but nobody wants to pay for it."*

*"We use spreadsheets on mobile phones."*

*"We manage this through email and Dropbox posting."*

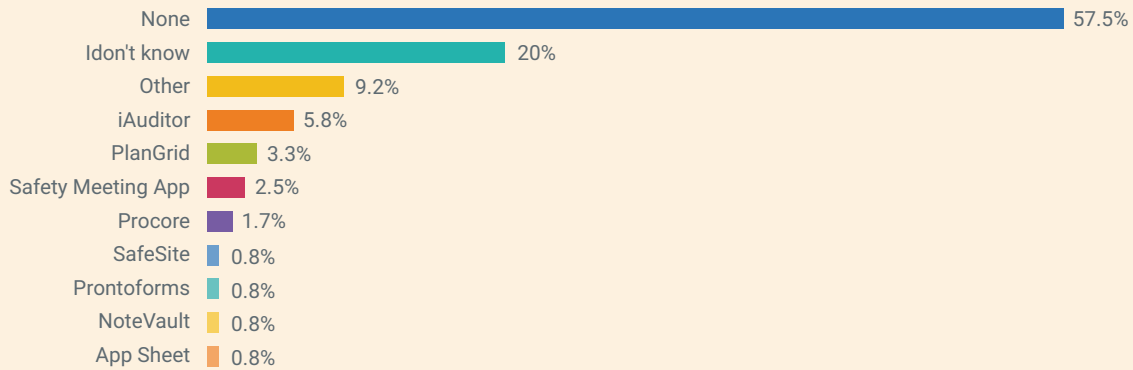
Use of daily reporting apps is a 50/50 proposition for both MCAA members and the general marketplace. The three most popular app choices of Bluebeam, Procore and BIM360 follow the same curve with slightly higher adoption rate by the general marketplace. The important trend to see here, however, is that the most popular choices here have daily reporting functionality along with multiple workflows rather than a point solution strictly for daily reports.

**Survey Participants Commented:**

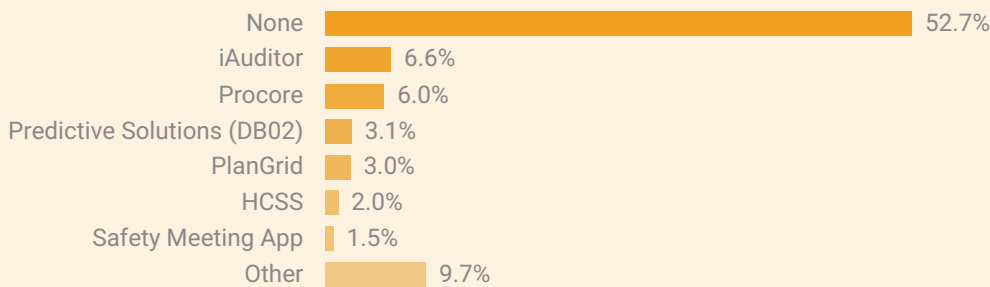
*"Some of our guys still hand-write in log books. Most do nothing. I've looked at Raken and Procore, but nobody wants to pay for it."*



**SAFETY MOBILE APPS (MCAA)**



**SAFETY MOBILE APPS (INDUSTRY)**



**Other includes:**

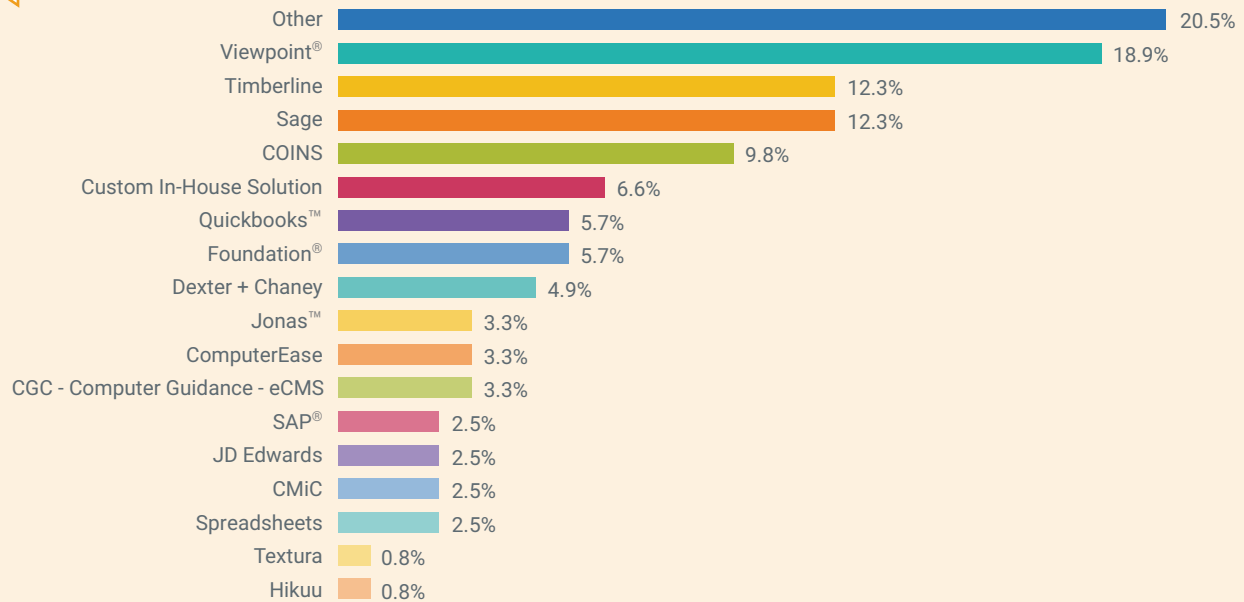
- Custom In-House Solution

Greater than 50% of respondents for both the MCAA members and the general industry do not use a mobile safety app on their construction projects. Responses for point solutions trail below 10% for both as well. Without a clear distinction between MCAA members and the general industry, one is left wondering why so few organizations choose safety apps. Perhaps this is because many firms are only

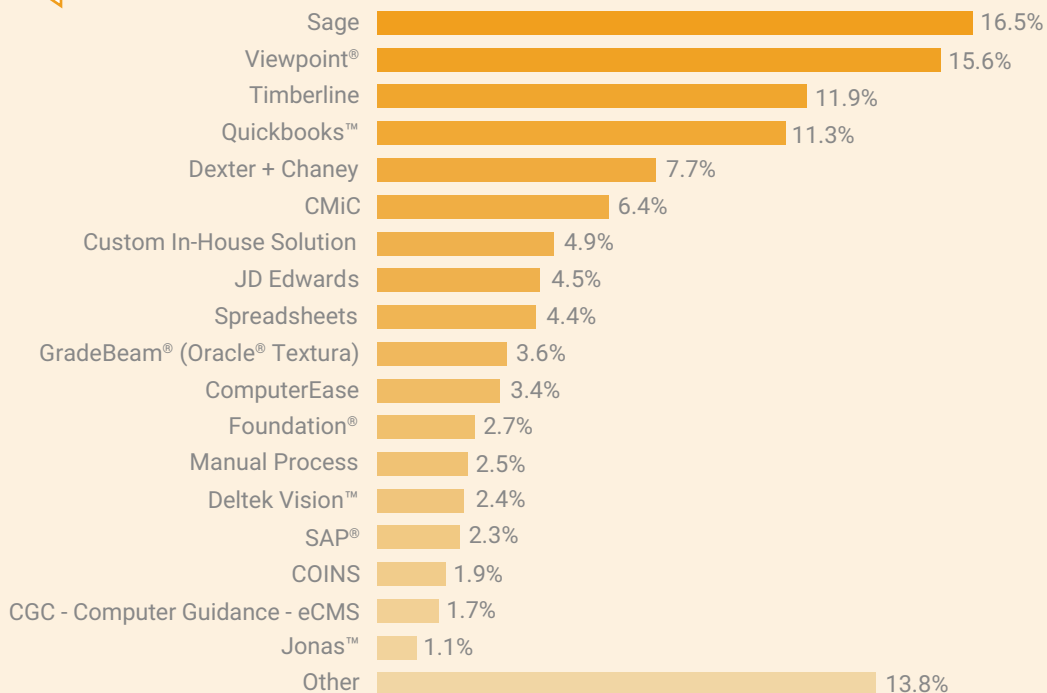
concerned with the data collection required to comply with regulatory agencies and they can collect this data using a number of different tools. As predictive analytics gain traction in the industry we will likely see an increase in adoption of purpose built safety apps. Builders will begin to take a preventative rather than reactionary stance to safety issues.



### ACCOUNTING SOFTWARE (MCAA)



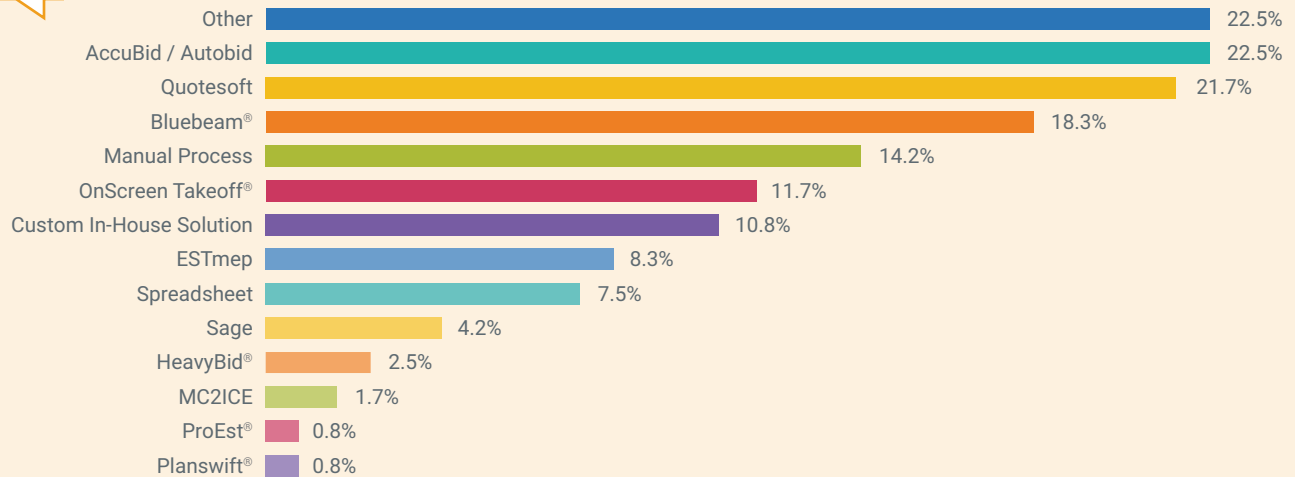
### ACCOUNTING SOFTWARE (INDUSTRY)



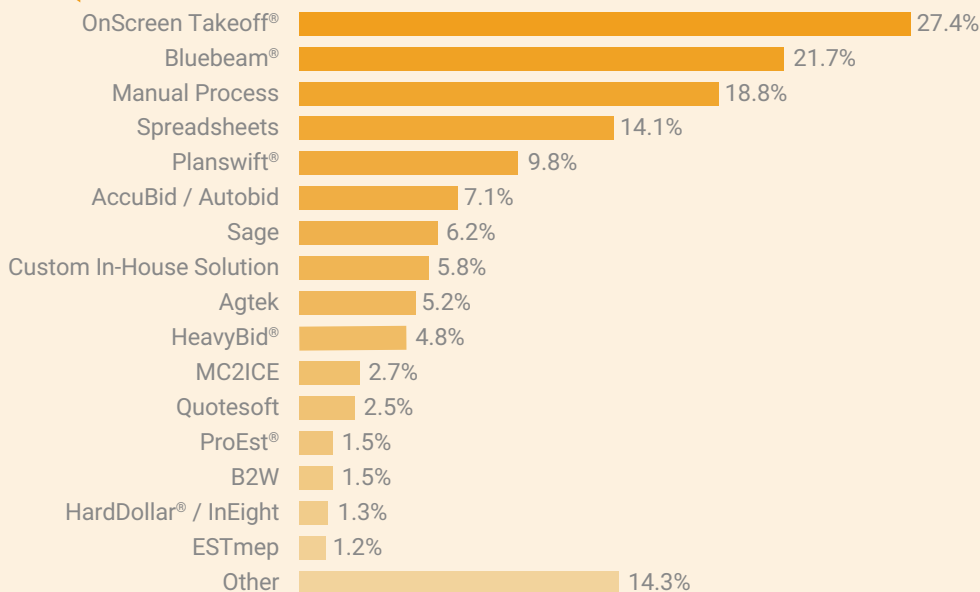
MCAA members and the general industry track fairly closely on the most popular accounting systems. The other category at 21% for MCAA members is nearly double that of the general industry. This is most likely due to the diversity of service management requirements for trade contractors over the general industry.



### TAKEOFF SOFTWARE (MCAA)



### TAKEOFF SOFTWARE (INDUSTRY)



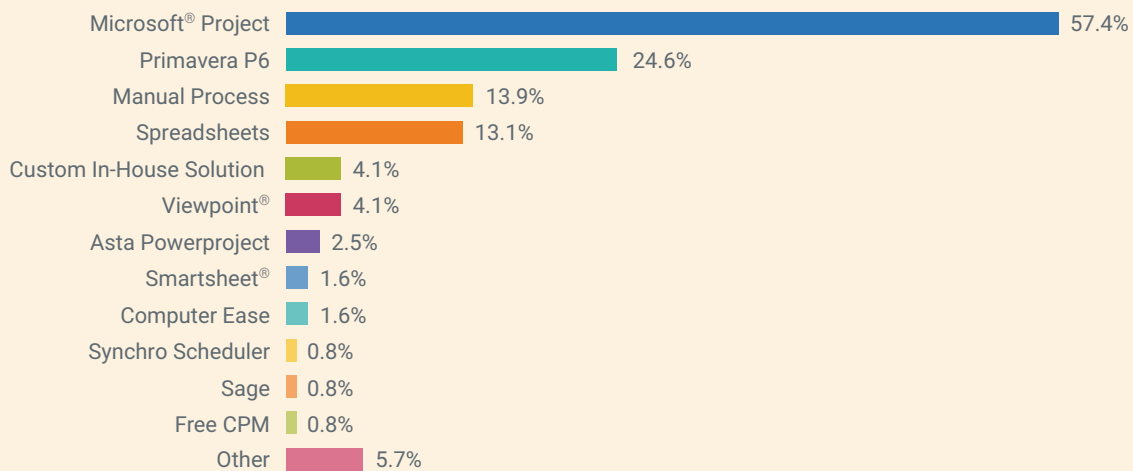
**Other includes:**

- QuickPen
- STACK

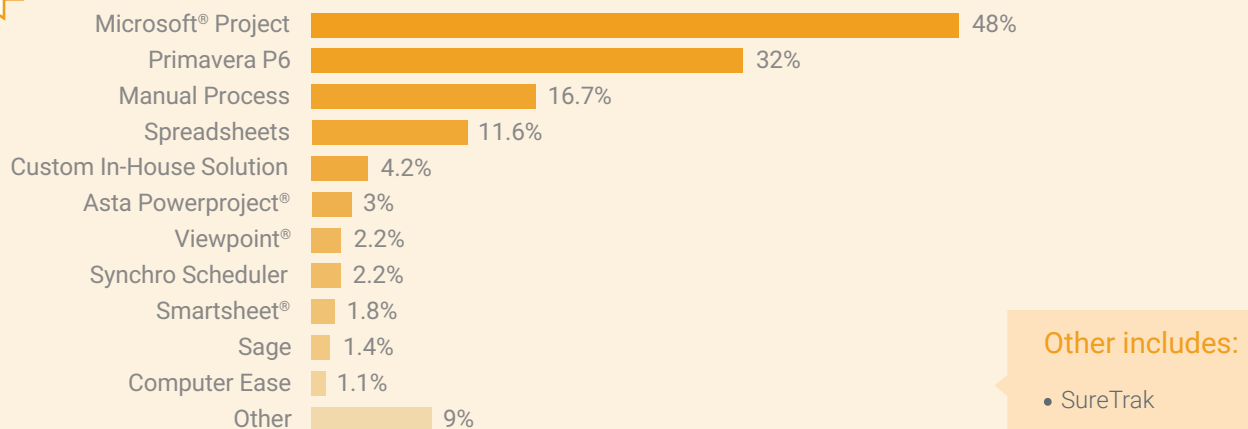
Responses from MCAA members on the takeoff software they employ show a much different mix of solutions with Accubid/AutoBid leading the way. Quotesoft is not far behind and Quickpen is the most popular “other” answer. All of the these takeoff solutions are more tailored for mechanical contractors so the responses are not surprising. A point of concern, however, is that greater than 14% of MCAA members and the general industry are still using manual process for takeoff. This leads to inefficiencies and communication gaps in sharing static spreadsheets versus collaborating via real-time takeoff, audit logs and reviewal processes.



### PROJECT SCHEDULING SOFTWARE (MCAA)



### PROJECT SCHEDULING SOFTWARE (INDUSTRY)



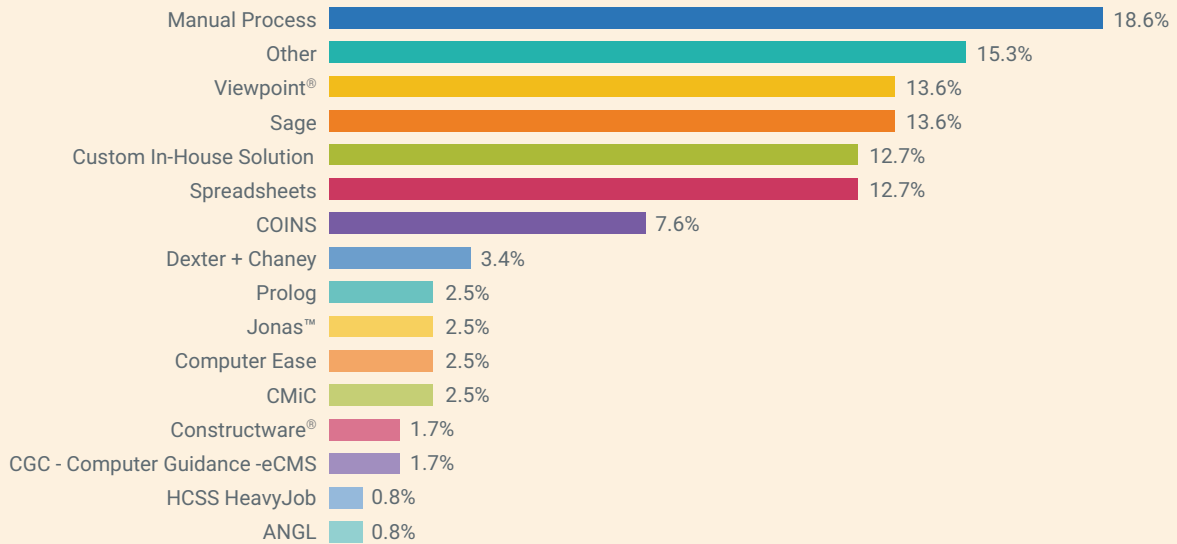
MCAA members and the general industry follow a very similar curve for the most popular project scheduling systems with one notable difference. MCAA members have a higher concentration of Microsoft Project users and a lower concentration of Primavera P6 users. The most likely explanation

for this difference is in the complexity and dedicated staff requirements for Primavera P6. Trade contractors are more often providing input to or conforming with a more complex general contractor schedule so there is not a need to incur the administrative burden required to build and maintain the P6 schedule.

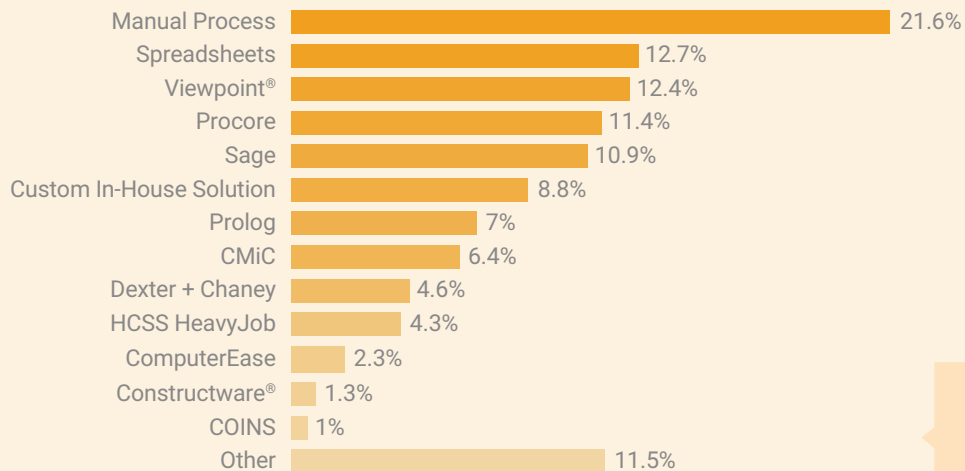
**Survey Participants Commented:**

*"As a sub, we very rarely create the schedules. We have an older version of Primavera that we use when needed."*

**PROJECT MANGEMENT SOFTWARE (MCAA)**



**PROJECT MANGEMENT SOFTWARE (INDUSTRY)**



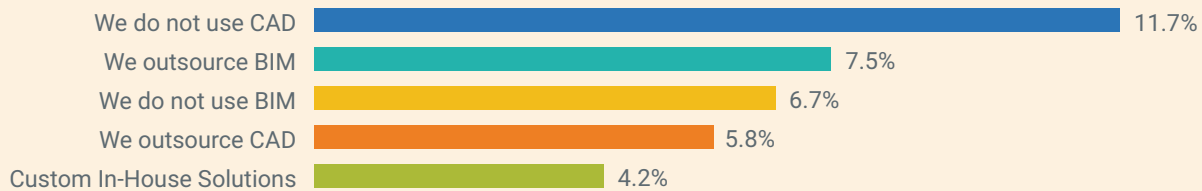
**Other includes:**

- Newforma

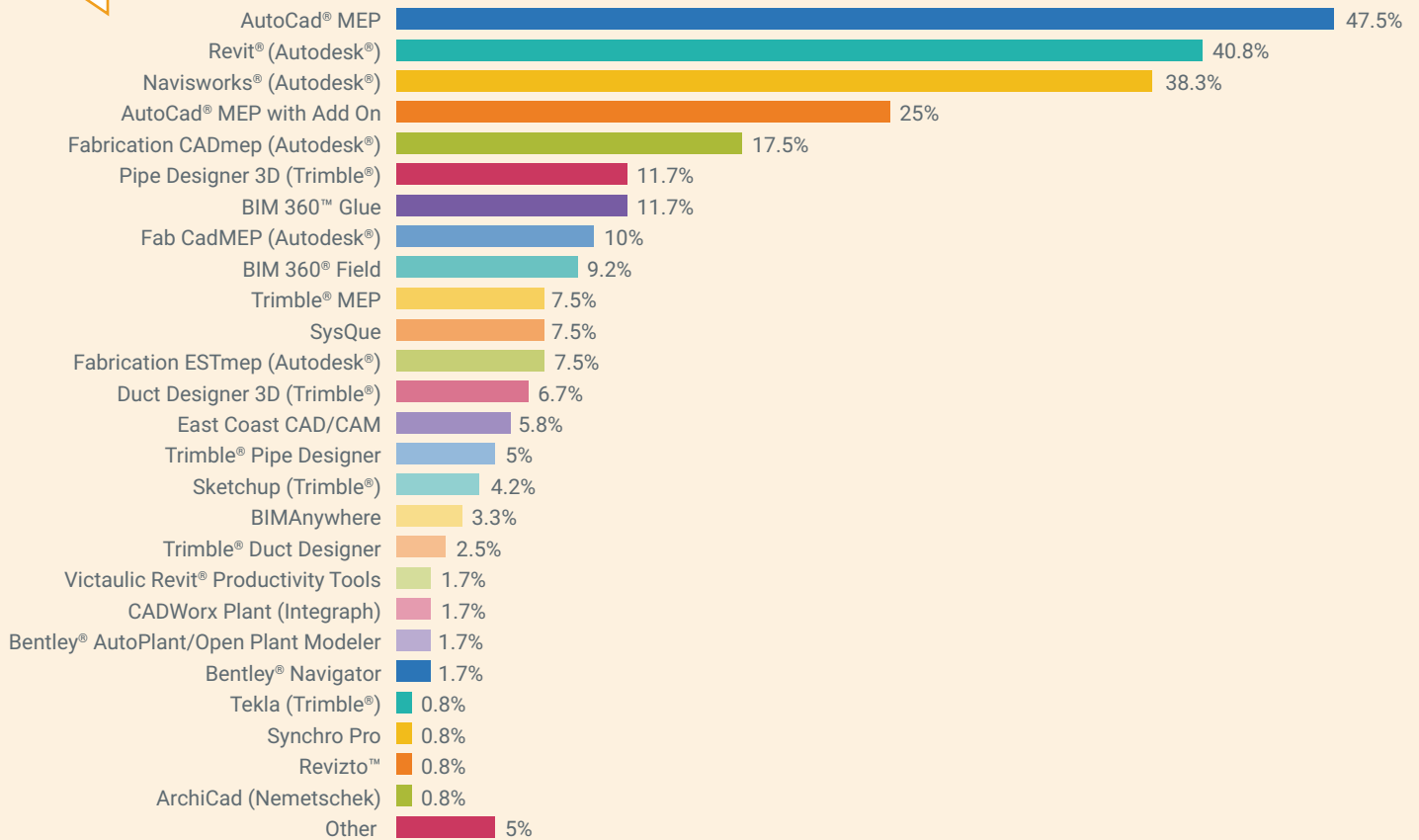
Again, MCAA members and the general industry follow a very similar curve for the most popular project management systems with one notable system. Procore ranks in the top 2 systems for the general industry but does not have any responses from MCAA members. This is likely because Procore is built primarily for GCs managing the overall project instead of trade contractors contributing to the overall project. It is worth noting, however, that roughly 20% of both the MCAA respondents and the general industry are using manual processes for project management. In an increasingly more complex project environment, these manual processes will have trouble keeping up with the visibility and responsiveness demanded by owners and GCs.



**CAD/BIM SOFTWARE (MCAA)**



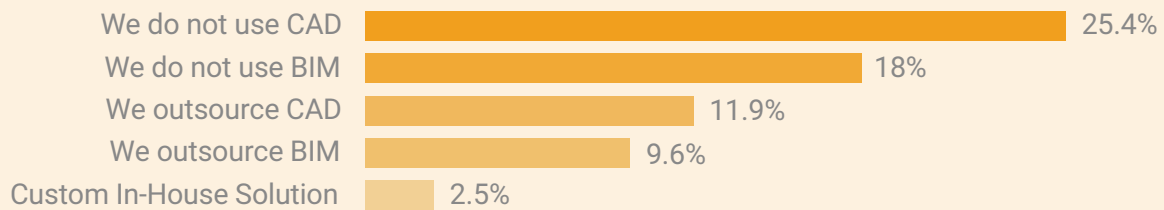
**CAD/BIM SOFTWARE (MCAA)**



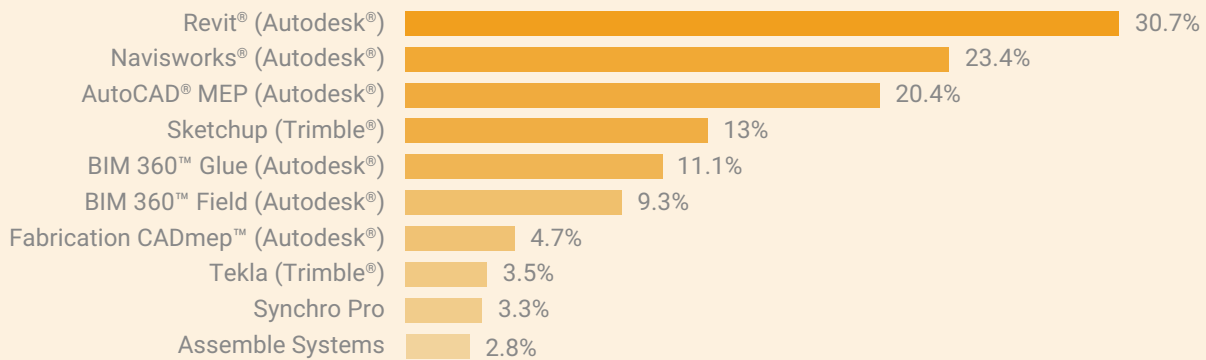




### CAD/BIM SOFTWARE (INDUSTRY)



### TOP 10 CAD/BIM SOFTWARE (INDUSTRY)



Both MCAA and the broader industry share the same top three applications, however, the number of MCAA members using AutoCAD MEP is more than double the general industry causing this application to rise to the top position for MCAA respondents. Beyond Revit and Navisworks, the remaining applications in the MCAA top 10 list focus primarily on specialty design tools for the mechanical trades. This should not be surprising given that construction professionals are more likely reviewing and clashing models rather than performing subsystem design.

# Conclusion



# MCAA

Mechanical Contractors Association of America

Brought to you by



## CONCLUSION

The goal of this MCAA supplemental report is twofold. First, we thought it important to look at some data points specific to MCAA membership. Secondly, since MCAA is a subset of the larger marketplace it would be interesting to see where membership aligns and where there are points of divergence. The analysis is definitely interesting but in several ways not surprising. With the MCAA specific questions, there are clear signs members are driving change in the industry towards adoption and usage of BIM. When compared to the overall marketplace, MCAA members seem to align with the marketplace across most questions but have a stronger adoption rate in BIM software and apps. It will be interesting to see if members continue to be a catalyst for BIM workflows in the future or if the industry catches up.