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Issue Brief: Inequality & Mobility

How union contracts are protecting U.S. workers from automated management and surveillance in the workplace

Evidence from a new national survey and implications for policymakers and union leaders

March 2026 By Alexander Hertel-Fernandez

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Evidence for a Stronger Economy

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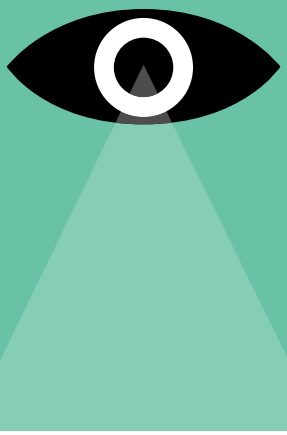
Key Takeaways

- A new survey of unionized U.S. workers surfaces important findings about union members' experiences with provisions related to automated management and surveillance tools in their collective bargaining agreements.
- About 38 percent of union members reported that their union's contract included at least one provision related to automated management and surveillance. The most common provisions were those requiring employers to notify workers about the use of automated management and surveillance tools, while the least common provisions were those giving workers the right to access collected data.
- There were no large differences between public-sector and private-sector union members in coverage of automated management and surveillance in their contracts. These provisions were most common in professional services sectors (finance and information), construction, the Postal Service, transportation, and protective services, while least common for education and retail trade workers.
- The sectors where more union members reported having contracts covering automated management and surveillance tools were not the same sectors in which U.S. workers overall reported higher exposure to automated management and surveillance technologies. This suggests a substantial gap between the workplaces where these tools may be most common and the workplaces where unions are active in bargaining for provisions related to these technologies.
- Workers with lower levels of formal education, Black and Hispanic workers, and younger workers were more likely to report being covered by provisions related to automated management and surveillance. Workers of color tend to be disproportionately subject to automated management and surveillance technologies; this survey shows that union coverage may help offer voice and protection to these workers.
- Union leaders and policymakers alike must work together to ensure more workers are protected from automated management and surveillance technologies. Public policy and expanded union organizing and bargaining can work together to cover workers who otherwise lack protections against these tools.



Overview

Employers are increasingly using electronic and automated tools to collect data on their workers on and off the job and then using that data to inform decisions about workers' pay, schedules, work assignments, working conditions, promotions, discipline, and even terminations.[1] Recent research buttresses investigative reporting and accounts from worker advocates, suggesting that automated management and surveillance tools are widespread across the U.S. workforce.[2]

These technologies include the sensors and cameras that trucking companies install in the cabs of their fleets to track the speed and location of their drivers, as well as whether their drivers are paying attention to the road or becoming distracted.[3] They also include AI-powered assistants that listen into conversations between call-center workers and customers, tracking the tone, emotion, and content of these calls to monitor worker performance and make real-time suggestions for what call-center workers should say.[4] Another common set of these tools includes keystroke logging and application trackers installed on work devices to ensure that workers are staying on task and not engaged in behaviors unsanctioned by their employers, as well as AI-powered cameras that some workers must keep turned on while on their computers to track whether they are staying focused on documents they are supposed to be reading or editing.[5]

In 2024, I surveyed U.S. workers and found that 69 percent of workers reported at least one form of electronic monitoring at work, including 37 percent reporting productivity monitoring, 45 percent reporting camera monitoring, 27 percent reporting location monitoring, and 52 percent reporting device monitoring.[6] That same survey found that 40 percent of workers reported receiving their schedules or work assignments based at least in part on automated decision tools.

In addition to documenting the spread of these tools across U.S. workplaces, a growing body of investigative reporting, worker advocacy accounts, and research has raised concerns about how automated management and surveillance tools can undermine worker health and

safety and workers' access to legal protections, including civil rights, labor, and employment protections. My recent survey, for example, documented a close association between the intensity of automated monitoring of workers, workers' perceived need to work faster than is healthy or safe, and workers' reports of anxiety and injuries.[7]

This research confirms workers' reports from individual sectors and employers that underscore how the combination of continuous productivity monitoring, coupled with explicit or implicit performance targets, contributes to higher rates of mental distress and physical injuries.[8] The automated monitoring and management of warehouse workers employed by Amazon.com Inc. stands out as an especially high-profile example of these risks.[9]

An important open question about the spread of automated management and surveillance tools, however, is how the labor movement is dealing with these technologies. Across the history of collective bargaining in the United States and other countries, unions have long negotiated contract provisions that limit the use of invasive technologies in the workplace, build in requirements for worker consultation or notification when these tools are considered or implemented, and set limits on how technologies can be used.[10]

An important effort by the Berkeley Labor Center's Technology and Work Program has compiled examples of union provisions involving emerging workplace technologies.[11] As that database of union contract provisions reveals, many unions—including those representing public-sector workers, nurses, and professional sports teams—are negotiating requirements for notification of, and limits on, automated management and surveillance tools.

Essential as this extensive compilation of collective bargaining provisions is, there is no comprehensive data on how many union members across the U.S. economy are covered by such contracts. Similarly, while unions may have bargained for protections or provisions related to automated management and surveillance tools, it is an open question whether these provisions are visible to union members and have an impact on workers' day-to-day experiences on the job.

My 2024 survey of workers found that unionized workers were more likely than nonunion workers to report exposure to automated management and surveillance tools on the job.[12] In fact, I found that unionized workers were 33 percent more likely than nonunion workers to report regular automated monitoring of their work and were 82 percent more likely to report regular automated assignment of schedules and tasks. But it remains to be seen whether this difference reflects a higher rate of automated management and monitoring among unionized workers or a heightened awareness of these technologies and their impacts among unionized workers because of union contract provisions related to the disclosure of such technologies.

To explore union members' experiences with collective bargaining over automated management and surveillance tools, I worked with YouGov to field another survey of U.S. workers, this time interviewing 1,634 union members in January and February 2025. It is comparatively unique to reach such a large sample of union members. Similarly unique is that the survey asks about union members' sector of employment, as well as their specific union affiliation—meaning that I can distinguish between union members across different segments of the U.S. economy and the labor movement.

The survey included batteries of items related to automated management and monitoring tools, as well as how members' collective bargaining contracts covered these tools. The survey's findings provide one of the first comprehensive pictures of how unions are grappling with new technologies in the workplace related to automated management and surveillance. My results show that some unions are actively negotiating with their employers over these tools and winning contract provisions that their members perceive and may use in their day-to-day jobs. Workers with access to these contracts feel more empowered to understand and shape the use of technology in their jobs—and these are disproportionately workers of color and workers with lower levels of formal education.

The flip side of these findings is the gaps that they reveal. A majority of union members report lacking provisions that cover automated management and surveillance tools, despite the widespread use of

these tools. Moreover, a majority of union members say they lack input over how these technologies are used in their jobs. And close to half of union members did not feel they had enough information about their collective bargaining agreement to say whether the agreement included provisions on automated management and surveillance. These gaps reveal important work for unions and policymakers to do to protect U.S. workers' rights and voice in the face of new technological developments in the workplace.

This report first looks at the growth of automated surveillance and technologies in U.S. workplaces before detailing the methodology, limitations, and findings of my most recent survey of unionized workers' experiences with these monitoring tools and negotiations over their usage in collective bargaining agreements. It closes with a look at the implications of my findings for both union leaders and policymakers.

The growth of automated management and surveillance in U.S. workplaces

The advent of modern computing and its spread in the workplace provided new opportunities for managers to electronically monitor their workers' activities and productivity—and then use the information gathered from that monitoring to inform decisions about pay, promotions, and performance evaluations. As far back as 1986, a group of computer scientists noted the growing prevalence of "computerized performance monitoring and control systems" and that they were the "subject of controversy," with their advocates arguing that electronic monitoring permitted more accurate assessments of worker productivity and greater organizational control over workers, and detractors arguing that such monitoring may increase worker stress and anxiety, cause speed-ups, and decrease worker job satisfaction and attachment.[13] Early research suggested mixed effects, with managers appreciating the increased control and workers expressing dissatisfaction and greater stress.[14]

In more recent years, electronic monitoring has grown more sophisticated with the development of artificial intelligence, faster computing, smaller handheld devices, and the spread of computers and other electronic devices in the workplace. These trends have permitted more data to be collected on workers' tasks, activities, and outputs more of the time and, in many cases, continuously.[15] The growth of computing platforms for backend corporate management, such as hiring, evaluation, and scheduling, also means that employers can use the high-resolution, high-frequency data they collect on workers to inform partially or fully automated decision-making. I describe these two systems together as automated management and surveillance, or AMS, technologies.

Much news reporting and market research suggest that AMS technologies are increasingly common in the private and public sectors and, in particular, that there may have been a marked increase in employers' use of AMS tools during the COVID-19 pandemic as the prevalence of remote work increased.

Consider the following examples:

- In 2022, reporting by *The New York Times* found that 8 of the 10 largest private-sector businesses deployed AMS tools.[16]
- Gartner, Inc., a private-sector consultancy firm, found that the incidence of large businesses using AMS tools had doubled since the onset of the COVID-19 pandemic.[17]
- International Data Corporation conducted a survey in 2022 of North American employers with at least 500 employees and found that nearly 70 percent of those businesses used AMS tools.[18]
- Surveys of union organizers found that the percentage of private-sector union elections organized under the National Labor Relations Board where employers used AMS tools to discourage union organizing more than doubled from the period of 1999–2003 to 2016–2021, growing from 14 percent to 32 percent.[19]

Important as this work has been, until recently, there has been a dearth of high-quality, representative data on the presence and intensity of AMS tools in the U.S. workforce. The data cited above are either based on reporting on specific subsets of businesses, private-sector research that does not detail survey methodologies or share underlying microdata, or surveys that focus on subsets of workers (such as those involved in union drives). Three more recent studies, however, offer a more rigorous perspective.

First, my 2024 nationally representative survey of 1,273 U.S. workers recruited through YouGov, found that nearly 70 percent of U.S. workers reported at least one monitoring tool being used at their jobs at least some of the time.[20] Monitoring of workers' technological devices was most common, with slightly more than half of workers reporting regular use of computers, smartphones, tablets, or other similar tools. Camera monitoring was the next-most frequently reported form of surveillance, at around 45 percent of workers. About 37 percent of workers reported regular productivity monitoring, and location monitoring was the least-reported tool, with just 27 percent of workers reporting its regular use. Separately, the same survey found that 40 percent of workers either had their work schedules or tasks assigned by automated systems, with 34 percent of workers reporting automated schedule assignment and 32 percent of workers reporting automated task assignment.

Second, the American Job Quality Survey—a joint effort between a team of labor and employment researchers, Jobs for the Future, the Families and Workers Fund, and Gallup—fielded a survey of 18,429 U.S. adults in January and February 2025 who had worked for pay in the past 7 days. That survey included an item asking workers who were employed by an individual or organization to indicate how frequently their employers or clients used technology to monitor their work performance. Twelve percent of U.S. employees reported "a lot" of monitoring, 14 percent reported "some" monitoring, 16 percent reported "a little" monitoring, 40 percent reported no monitoring, and 17 percent were not sure.[21] In all, around 42 percent of employees reported at least some electronic productivity monitoring, similar to the 37 percent estimate reported in my 2024 survey.

Third, a recent Organisation for Economic Co-operation and Development report surveyed employers across six countries about their use of AMS tools, finding that U.S. employers far outstripped managers in other surveyed countries—France, Germany, Italy, Japan, and Spain—in their use of AMS tools.[22] Ninety percent of managers surveyed in the United States reported using algorithmic management of their workers, and, separately, 90 percent of U.S. managers also reported using software to partially or fully monitor their workers, including tracking the time workers were actively working, the completion of their work, the speed of their work, the content of voice calls or emails, and worker health and safety.[23]

Together, these three studies suggest that automated monitoring and management of U.S. workers is common. Yet these studies are limited in speaking to how unions specifically may be bargaining over these provisions and how union contract coverage affects workers' experiences with these technologies in the workplace. Important past research has examined union bargaining over AMS tools in individual sectors, such as for call-center workers,[24] revealing the strategies that individual unions have used and how specific provisions in contracts have changed working conditions for those employed in these workplaces.

Yet we lack a broader picture of how common these union provisions are and of their impact on workers. It is this picture that I seek to explore via my 2025 survey of U.S. unionized workers and in this paper.

The 2025 union member survey questions and methodology

As part of a broader research project with collaborators Max Kiefel of Harvard University and Alan Yan at the University of California, Berkeley, I worked with YouGov to commission a survey of U.S. union members. YouGov interviewed 3,122 respondents, who were then split into a sample of employed U.S. adults and U.S. adults that were current members of unions.[25] The sample of employed U.S. adults went through an individual stratification on union membership. In all, we had 1,634 respondents in the union member sample.

The union member survey included three sets of questions on workers' experiences with automated management and surveillance technologies and their collective bargaining agreements. The first set asked survey respondents who reported being in a union the following prompt: "To the best of your knowledge, does the current union collective bargaining agreement at your main job require your employer to do any of the following things? Please select all that apply." The options for this question included:

- Notify workers before implementing new electronic monitoring or automated tools for tracking workers
- Explain how data collected through electronic monitoring or automated tools for tracking workers will be used
- Limit what data collected through electronic monitoring or automated tools for tracking workers be collected
- Give workers access to data collected through electronic monitoring or automated tools for tracking workers
- Give workers the right to correct data collected through electronic monitoring or automated tools for tracking workers
- Give workers the right to dispute decisions made with data collected through electronic monitoring or automated tools for tracking workers
- Don't know or not sure
- None of the above

The second and third items in this section asked union members how much they agreed or disagreed with the following two items, on a scale that included don't know, strongly disagree, disagree, neither disagree nor agree, agree, and strongly agree:

- I understand how electronic and automated tracking tools affect my job.
- I have meaningful input into how technology is used at my job.

In addition to these items on union contract coverage of AMS provisions, I also examined aspects of union members' contract bargaining. I consider when workers most recently bargained their collective bargaining agreement with the following item: "When did your local union last negotiate your collective bargaining agreement?" Respondents could enter the year or indicate that they did not know when the contract was negotiated or that they did not have a contract in place.

I also consider the process by which unions bargained their contracts. For respondents who indicated that they remembered when their union most recently bargained their contract, I asked the following prompt about the bargaining process: "When your local union last negotiated your collective bargaining agreement, did your local union do any of the following things? Please select all that apply." The options for this question included:

- Created a bargaining committee with members
- Prepared to go on strike
- Surveyed members about their views on the contract
- Invited members to join bargaining sessions
- None of the above

In the results that follow, I break out results by various worker characteristics or describe analyses that adjust for worker characteristics in OLS regressions. These worker characteristics include:

- **Race:** White, Black, Hispanic, Asian, or Other (including multiple races, Native American or American Indian, Middle Eastern, or other)
- **Education:** Less than high school, high school, some college, 2-year degree, 4-year bachelor's degree, or post-graduate degree
- **Region of residence:** Midwest, Northeast, South, or West
- **Sector of employment:** Education, protective services, postal service, government administration, other public sector, farming/agriculture/energy and mining extraction, construction, manufacturing, wholesale trade, retail trade, transportation/warehousing/utilities, information, financial services, professional and business services, education (but not in public sector), health/medical/social services, leisure and hospitality, other services (private sector), and other private sector
- Public versus private employment
- **Age:** 18–34, 35–44, 45–54, 55–64, or 65+

My general approach is to present weighted summary statistics on the three substantive items, as well as the results broken out by demographic characteristics, and OLS regression analysis. In all analyses, I report results including survey weights.

Survey limitations

Before proceeding to the results in the next section, it is important to acknowledge the strengths and limits of focusing on union members' perceptions of their contracts and AMS tools at work. Notwithstanding the unique perspective offered by my results on how union workers are experiencing new technologies in the workplace and coverage of those technologies in their contracts, there are two important limitations worth acknowledging.

First, these results are based on workers' own perspectives and understanding of their workplace and union contracts. This has the strength of focusing on workers' own experiences, which matter for how workers approach their jobs. But this methodology has important limitations, too.

Unions vary enormously in the extent to which individual, rank-and-file members are engaged in the process of bargaining contracts and the extent to which members are taught about their contract once it is in place. Recall that I asked members who were present in their union for the most recent contract negotiation whether their union created a bargaining committee with rank-and-file members, surveyed rank-and-file members about their opinions on the contract, or invited rank-and-file members to join bargaining sessions. Fifty-seven percent of members reported that their union created a bargaining committee, 70 percent reported their union surveyed its members about contract priorities, and 41 percent said their union invited members to join bargaining sessions. These statistics give a sense of the wide variation in union bargaining practices.

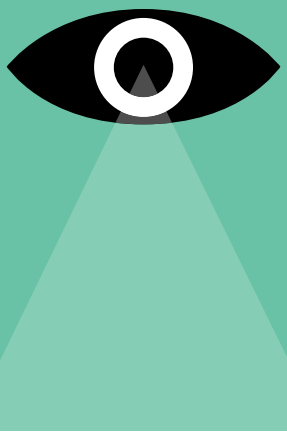
Additionally, workers may have inaccurate or incomplete knowledge about the technologies to which they are exposed in the workplace, as well as the content of their union contracts, or may not be motivated or interested in learning about their contract provisions. Indeed, we saw that substantial proportions of union members reported being unsure of the content of their collective bargaining

agreements: More than 40 percent of union members gave this response. Similarly, around 20 percent of union members said that they did not know how to respond to the item about automated management and surveillance, and about 10 percent of union members said that they did not know how to respond to the item about their influence over technology in the workplace.

Nevertheless, I believe asking union members about their knowledge of their contract still offers a valuable picture of the protections and voice that members think they have, which ultimately determines how they approach their jobs and interactions with their employers. Gaps in what workers think are covered or protected by their contracts still matter since they can affect union members' behaviors. As such, we should bear in mind that the results presented and analyzed below reflect union members' perceptions of their contracts and the use of AMS tools in the workplace.

Second, this survey only reflects one point in time in early 2025. While I did attempt to study how the inclusion of contract provisions changed over time (based on when contracts were negotiated), the results can only speak to union members' understanding of their workplaces at that specific moment.

With these limitations in mind, let's now review the results of my survey.



2025 union member survey results

Two-fifths of union members report contract provisions about AMS tools

In all, 38 percent of union members surveyed reported at least one collective bargaining agreement provision related to automated management and surveillance. Notably, though, 42 percent of union members said that they did not know whether their contract included these provisions, indicating that many union members simply do not engage enough with their contracts to weigh in on the question. Of the 58 percent of union members who could answer this question, the most common provision was notification to workers about automated collection of their data, with 23 percent of union members reporting such protections. The remaining provisions had about the same frequency, ranging from explanations to workers about how data would be collected and used (at 18 percent) to correction of collected data (at 12 percent). (See Table 1.)

The survey also asked about the number of contract provisions reported by union members. Most respondents who reported a CBA provision on AMS tools reported just one or two provisions. Three or more provisions were quite rare for most unions. This suggests that, at least according to union members' own understanding of their contracts, most union agreements are not very extensive when it comes to AMS tools. (See Table A1 in the appendix for more details.)

Table 2 shows the distribution of AMS contract provisions by the sector of the U.S. economy in which union members reported being employed, as well as the total number of survey respondents in each sector. This includes whether the member works in the public or the private sector. (See Table 2.)

We should be cautious of overinterpreting results for industrial sectors with very few respondents, such as leisure and hospitality (27 respondents) or financial services (23 respondents). In general, however, two patterns stand out. First, I did not find differences

Table 1

About two-fifths of unionized workers report contract provisions about AMS tools

Prevalence of U.S. union members reporting provisions related to automated management and surveillance in their collective bargaining agreements

Contract provision	% union members reporting
Notify workers about automated data collection	23.0%
Explain to workers data collection and use	18.0%
Limit how collected data can be used	16.5%
Workers can access collected data	14.5%
Workers can correct collected data	12.2%
Workers can dispute decisions based on collected data	16.1%
Any CBA provision	*37.9%*
Don't know	*41.9%*

Notes: Survey weights applied. Total number of survey respondents is 1,634.
Source: 2025 Union member survey.

between the prevalence of contract provisions about automated management and surveillance between the public and private sectors. This finding is interesting because earlier work has found that public-sector workers reported disproportionately high rates of electronic monitoring and surveillance,[26] yet their unions do not seem to be negotiating for AMS provisions in these contracts, at least according to workers' perceptions.

Second, unions in professional, financial, information, and business services tend to be the most likely to be bargaining for contract provisions related to automated management and surveillance, while education, retail, and manufacturing unions are least likely to do so. Some of these differences may reflect differences in the underlying prevalence of monitoring technologies, but there does not seem to be a one-to-one correspondence. Drawing on earlier research, I found

Table 2

Public- and private-sector workers report about the same level of AMS coverage in their union contracts

U.S. union members reporting provisions related to automated management and surveillance in their collective bargaining agreements by employment sector

Sector	% union members reporting at least one AMS provision	Survey respondents
Education (not public)	16.2%	168
Other private sector	20.3%	112
Retail trade	24.2%	58
Education (public)	27.2%	269
Other services (not public)	28.5%	46
Other public sector	33.1%	218
Manufacturing	43.7%	77
Government administration	45.1%	165
Health, medical, social services	45.4%	67
Leisure and hospitality	47.1%	27
Protective services (public)	48.5%	94
Transportation, warehousing, utilities	50.5%	66
Postal service	55.3%	76
Construction	57.6%	92
Professional and business services	61.6%	35
Information	65.4%	31
Financial services	16.1%	23
Total – All union members	***37.9%***	***1,634***
Total – Public sector	***37.6%***	***823***
Total – Private sector	***38.2%***	***811***

Notes: Survey weights applied. Total number of survey respondents is 1,634.
Source: 2025 Union member survey.

that information-related workers reported above-average rates of electronic monitoring, but so too did workers in manufacturing, health care, hospitality, transportation, and retail trade—which are not necessarily the union members who report having contracts that cover automated monitoring and management technologies.

How AMS provisions vary by union contract bargaining practices

I also examine how the incidence of contract provisions on AMS tools varies by the characteristics of union bargaining. One expectation is that more recent contracts are more likely to include AMS provisions. Yet I found the opposite relationship: Older contracts—those bargained in 2021 or earlier—tend to be much more likely to incorporate AMS provisions than newer contracts. In fact, 51 percent of members with contracts negotiated in 2021 or earlier reported at least one AMS provision, compared to 23 percent of members with contracts negotiated in 2022, 31 percent of members with contracts negotiated in 2023, and 36 percent of contracts negotiated in 2024 or 2025. (See Table A3 in the appendix for more details.)

Notably, however, there was variation across different types of contract provisions. Some of the provisions, such as the right to an explanation of how data are used, are more common in older contracts. Other provisions, such as limiting data collection, do not seem to vary much by year. Still other provisions, such as the right to correct or dispute data, show a "U" pattern—they were more common in very recent and much older contracts.

The fact that members' reporting of different provisions varies so much over the year of most recent contract negotiation suggests that the survey findings do not simply reflect the time it takes for members to learn about a contract. That is, it is not necessarily the case that members are more aware of older contracts because they have had more time to learn about contract provisions.

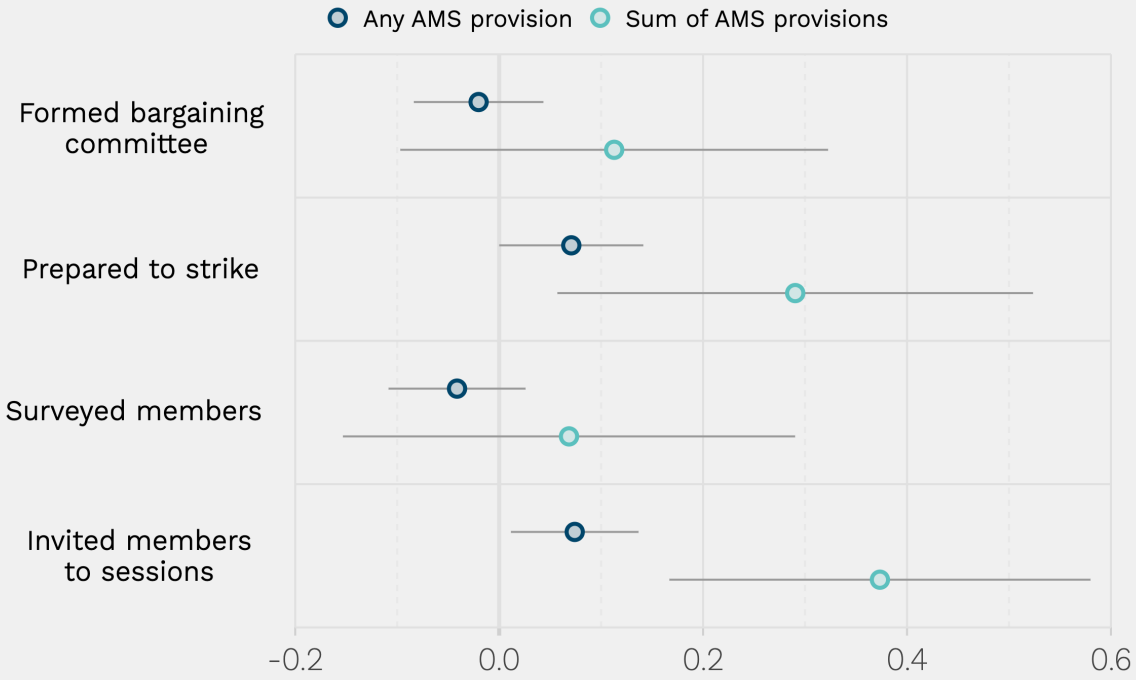
Beyond the timing of contract negotiations, I also consider union bargaining strategies and their relationship to the inclusion of AMS provisions, including whether unions formed bargaining committees

with members, prepared to go on strike, surveyed their members, or invited members to bargaining sessions. Figure 1 shows the correlation between these strategies and whether members reported any AMS provisions and the sum of those provisions.[27] (See Figure 1.)

Figure 1

Certain contract negotiation strategies are correlated with having automated management and surveillance provisions included

Contract bargaining strategies and inclusion of AMS provisions in collective bargaining agreements, by strategy



Source: 2025 Union member survey

Note: Survey weights applied. OLS regression results with either any inclusion of automated management and surveillance provisions (blue) or the sum of all provisions (turquoise) as outcomes and as predictors binary indicators for each of the bargaining strategies. 95% confidence intervals shown. Number of respondents is 985, a subset of the total respondents remembering their last contract negotiation.

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Examining the results, we can see that unions that prepared to go on strike during bargaining sessions and also invited their members to join bargaining sessions were more likely to include provisions related to automated management and surveillance and to include more such provisions in their collective bargaining agreements. In both cases, unions were about 7 percentage points more likely to include any provisions related to AMS tools. This represents about an 18 percent increase in the average rate of AMS provisions.

We cannot say that the use of these two strategies caused unions to be able to obtain AMS provisions in their contracts. But both correlations persist when I control for sector of employment, union affiliation, and members' demographic characteristics, including gender, education, race, age, and region. (With these additional control variables, the use of member bargaining committees also becomes predictive of AMS provisions.)

These findings suggest that the differences are not solely due to the type of sector in which members work or to the priorities of individual unions. As a result, these correlations provide suggestive evidence that bargaining over technology-related provisions may be more common in more contentious contract disputes. They also provide suggestive evidence that more democratic bargaining processes that involve members in the bargaining process—such as through bargaining committees or members joining bargaining sessions—may help surface and facilitate the inclusion of provisions related to automated management and surveillance and make it more likely workers will be aware of these provisions.

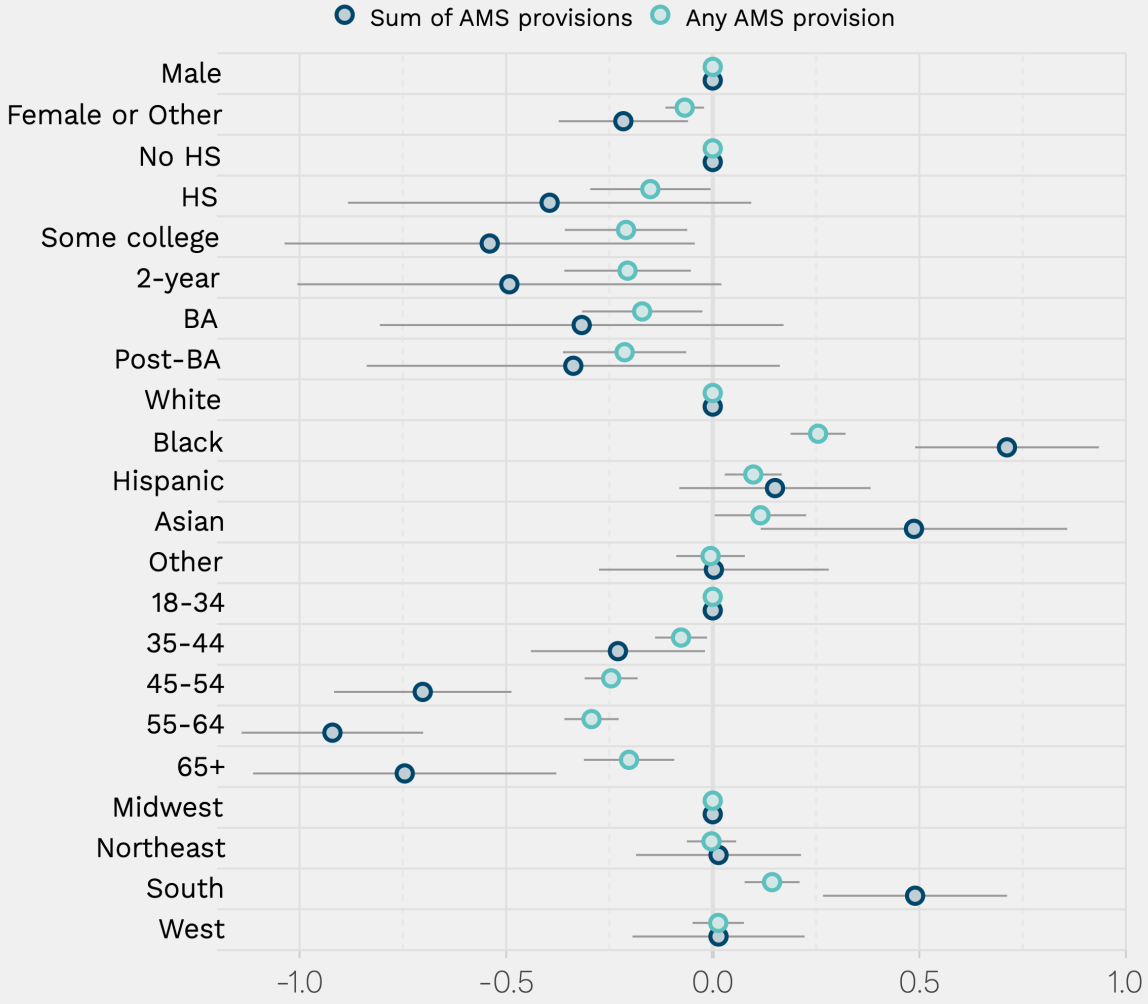
Union worker characteristics and AMS provisions

I also examine the characteristics of union members most likely to report being covered by contracts with AMS provisions.[28] I focus on differences by gender, race, age, formal education, and region. In Figure 2, I show the correlation between member characteristics and whether members reported any AMS provisions and the sum of those provisions. (See Figure 2.)

Figure 2

Certain groups of unionized workers are more likely to have a contract with automated management and surveillance provisions

Worker characteristics and inclusion of AMS provisions in collective bargaining agreements, by characteristic



Source: 2025 Union member survey.
Note: Survey weights applied. OLS regression results with either any inclusion of automated management and surveillance provisions (blue) or the sum of all provisions (turquoise) as outcomes and as predictors binary indicators for each of the worker demographic characteristics (excluded categories shown on chart as well). Dummies for members' sector of employment included in the regression model but are not shown in the figure. 95% confidence intervals shown. Number of respondents is 985, a subset of the total respondents remembering their last contract negotiation.

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The results in Figure 2 indicate that younger workers (relative to older workers), workers of color (especially Black and Hispanic workers, relative to White workers), men (relative to women or other genders), workers with less formal education (relative to workers with more formal education), and Southern workers (relative to workers in the Midwest) are all more likely to report having contract provisions regulating AMS tools and to have more provisions about these tools.

These findings are notable because past research suggests that workers of color are disproportionately likely to report exposure to automated management and surveillance tools. Indeed, according to past worker surveys, 65 percent of White workers report at least some form of electronic monitoring at work, compared to 82 percent of Black workers and 73 percent of Hispanic workers.[29] The evidence in Figure 2 suggests that union representation may be helping to close such disparities.

Next, I move from union members' perceptions of their contracts' coverage of AMS tools to a broader sense of how well they understand the use of electronic and automated tracking tools in their workplaces. Figure 3 indicates that most union members feel they have a good understanding of their employers' use of AMS tools. (See Figure 3.)

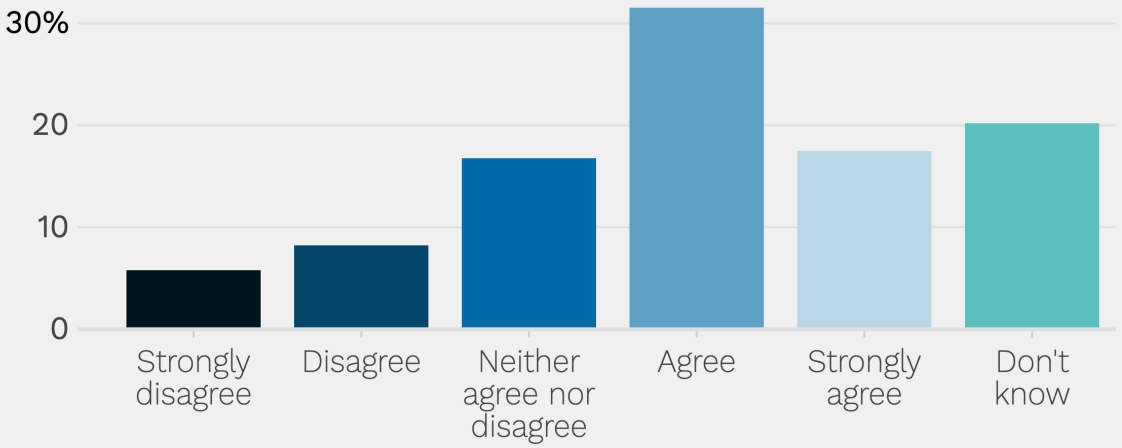
As we can see in Figure 3, nearly half (49 percent) of union members strongly agreed or agreed with the idea that they know how AMS tools are used in their workplaces. By comparison, just 14 percent of union members disagreed or strongly disagreed. Notably, however, about a fifth of union members did not feel they had enough information to weigh in on the item, suggesting that many union members—despite potentially having more visibility into their workplace through their union and collective bargaining agreement—still lack the understanding they would need to answer this question.

Next, we look at union members' broader sense of control and influence over technology at their jobs. Slightly more unionized workers agree than disagree with the idea that they have control or input into how AMS tools are used at their workplaces. (See Figure 4.)

Figure 3

Most unionized workers know how automated management and surveillance is utilized in their workplaces

Union member understanding of AMS tools in their workplaces, by level of agreement with the statement "I understand how electronic and automated tracking tools affect my job"



Source: 2025 Union member survey
Note: Survey weights applied. Total number of respondents is 1,634.

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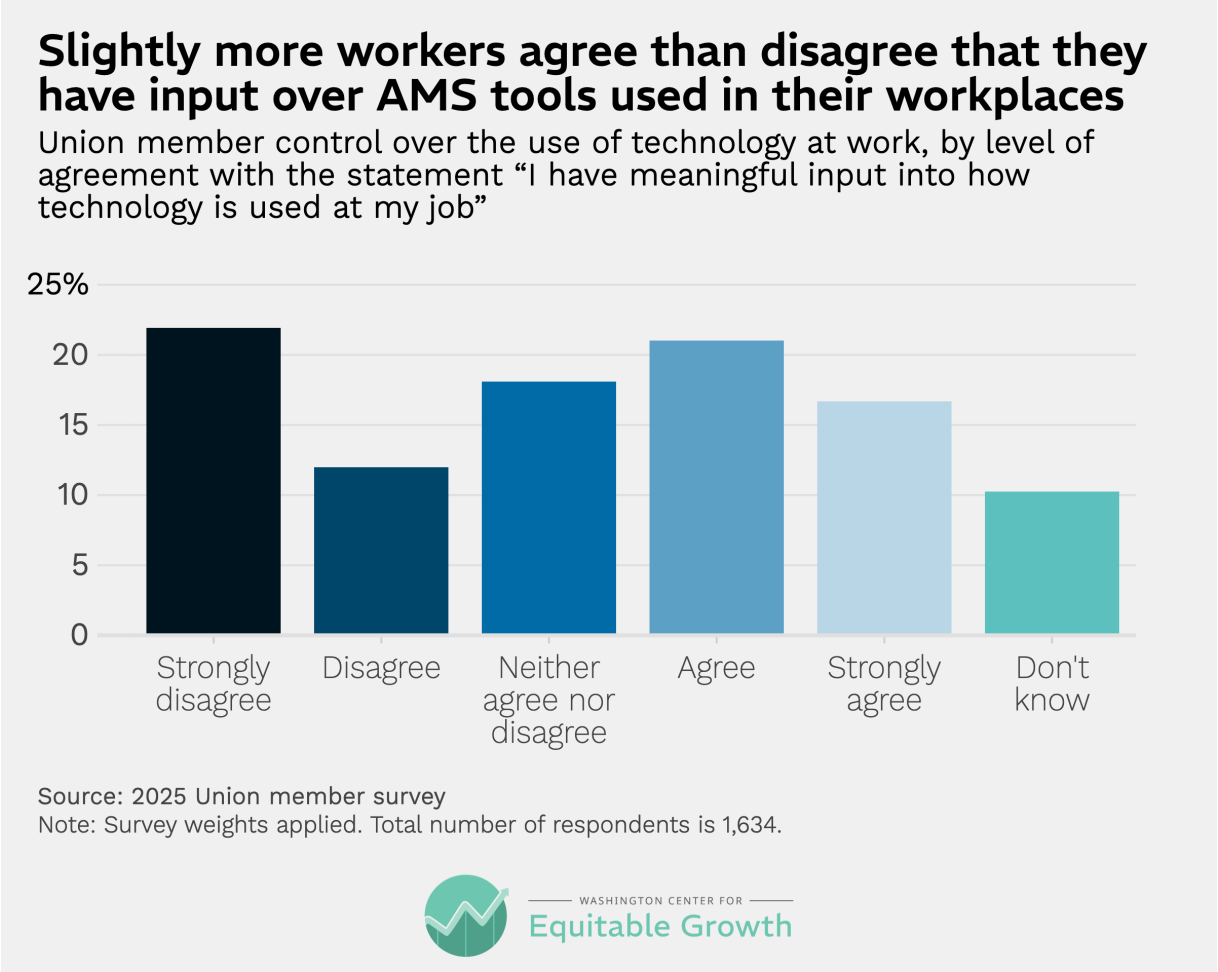
Two patterns stand out in Figure 4. First, more union members feel they have the necessary information to weigh in on this question than the previous question: Just 10 percent of respondents said they did not know how they felt about this question, half as many as in the previous question on AMS tool understanding.

Second, we see more workers disagreeing with this item and fewer workers agreeing than with the previous item. The modal response from union members was "strongly disagree" that they had influence over technology at work. Thirty-four percent of union members disagreed or strongly disagreed that they had input at work on the use of technology. A roughly similar share (38 percent) agreed or strongly

Figure 4



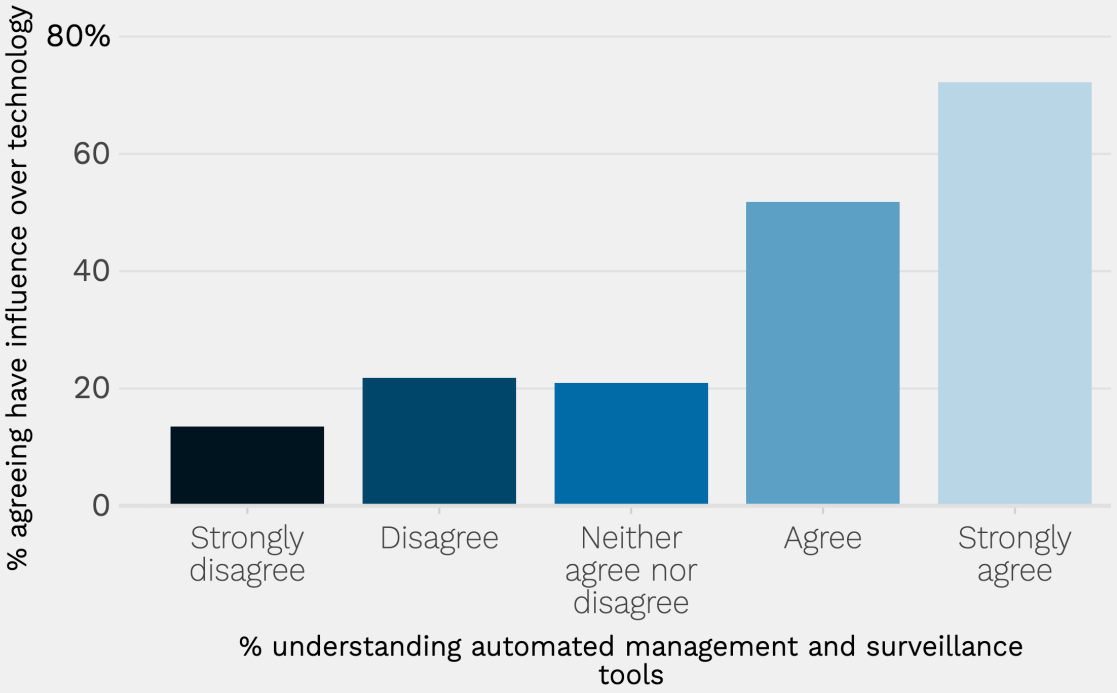
agreed, and about 18 percent put themselves in the middle of the distribution. Figure 4 thus tells us that there is extensive variation across union members in the degree of input they have in the use of technology at their jobs.

I dub the mismatch between union members reporting an understanding of how AMS tools are used in their workplaces and the input they report having over technology the "knowledge-input gap." In Figure 5, I show the percent of union members reporting that they agree or strongly agree they have input over technology in their workplace, arrayed by union members' understanding of AMS tools. (See Figure 5.)

Figure 5

Union members who know more about automated management and surveillance in their workplace also report more input over how it is used

Percent of workers who report having input over AMS tools in their workplaces, by workers' level of understanding about AMS usage in their workplace



Source: 2025 Union member survey
Note: Survey weights applied. Number of respondents is 1,253, a subset of the total respondents excluding those who responded "don't know."

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Figure 5 indicates that, in general, union members reporting greater understanding of automated management and surveillance tools also report having greater input over the use of technology in their workplaces. Only 14 percent of workers who strongly disagreed that they understood how AMS tools were used in their workplaces agreed that they had input over technology at work. That rose to 21 percent

for workers who neither agreed nor disagreed that they understood how AMS tools were used at their work, 52 percent for workers who agreed, and 72 percent for workers who strongly agreed.

Yet Figure 5 also indicates that even among workers who reported agreeing or strongly agreeing that they understood how automated management and surveillance tools were used in their workplace, a significant portion of workers still did not feel they had influence over those tools. In all, about a quarter of union members fell into this knowledge-input gap, reporting that they agreed or strongly agreed that they had knowledge about AMS tools but disagreeing that they had influence over the use of technology in the workplace.

Does the inclusion of AMS provisions in union contracts shape workers' understanding of those tools, as well as their input over how those tools are used? To answer this question, I used the items in Figures 3 and 4 as outcomes in a series of OLS regressions, excluding respondents who said "don't know." I find a consistently positive relationship across the different regression specifications: When workers report having collective bargaining provisions that cover AMS tools, they are more likely to report an understanding of those tools and to say they have input into how technology is used at their jobs. While not causal, it suggests that union members whose collective bargaining agreements cover new technologies, such as AMS tools, are consistently more likely to understand those tools and have a sense of input over them. (See Table A4 in the appendix for more details.)

Next, I examine whether more comprehensive contracts—those that include more AMS provisions—are more strongly correlated with workers' understanding and input. The results are very similar and suggest that more comprehensive contracts are more likely to help workers gain a better understanding of the technologies and to feel as though they have more input. (See Table A5 in the appendix for more details.)

I then look at whether having contract provisions about automated surveillance and management is correlated with workers having any opinion about the two survey items—that is, whether they indicated "don't know" to either item. I find that having contract provisions is strongly positively related with workers having an opinion. When

workers lacked these contract provisions, they were less likely to report any opinion at all, suggesting that these provisions help workers gain the information they need to gauge how they should think about these technologies. (See Table A6 in the appendix.)

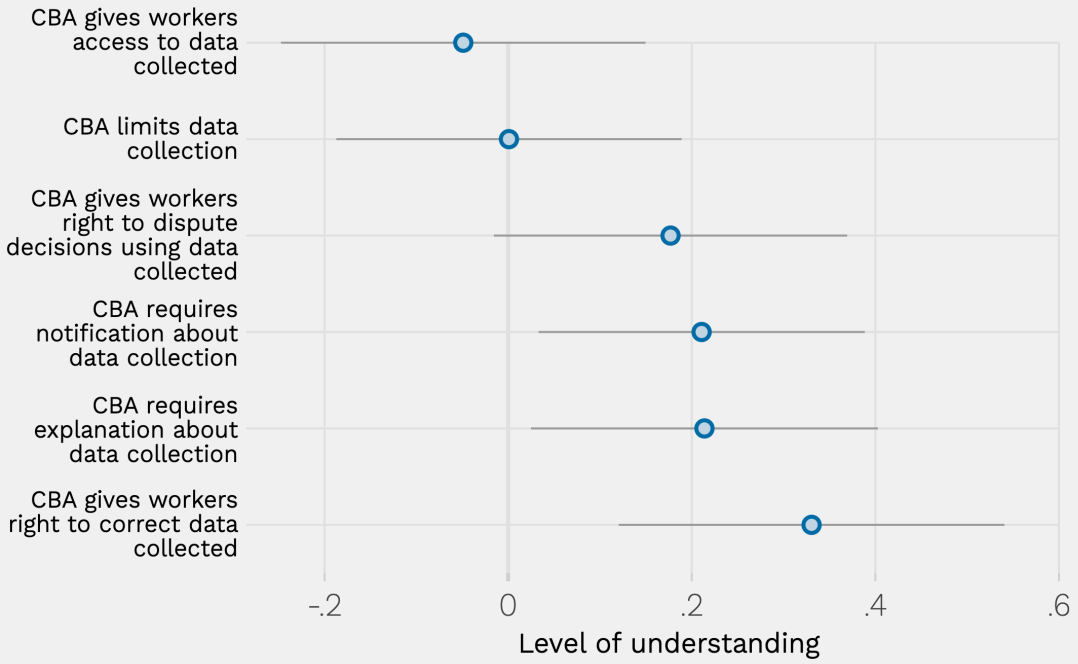
In my final analysis, I consider the specific collective bargaining agreement provisions that workers reported that were most strongly related to workers' sense of understanding how AMS tools are used in the workplace. Figure 6 below indicates that contract provisions related to giving workers the right to correct collected data, explanation and notification about data collection, and the right to dispute decisions using collected data are most strongly correlated with workers' sense that they understand how AMS tools are used in their workplace. Contract provisions limiting data collection or giving workers access to data collection do not appear to be related to workers' understanding of AMS tools. (See Figure 6.)

Figure 7 below repeats the same exercise as Figure 6 but uses the measure of worker influence over technology in the workplace as an outcome. In this analysis, notification about data collection, the right to correct data, access to data, and explanation about data collection are all related to a greater sense of influence over the use of technology. By contrast, limits on data collection and the right to dispute do not appear to be related to workers' sense of influence over technology. (See Figure 7.)

Figure 6

Certain AMS contract provisions give workers a better understanding of how technology is used in their workplaces

Contract provisions most strongly related to worker understanding of automated management and surveillance in the workplace



Source: 2025 Union member survey

Note: Sample weights applied. Coefficients from an OLS regression where the outcome is a 1-5 response on understanding automated management and surveillance tools. Regression results also include controls for worker demographics, sector of employment, and union affiliation. 95% confidence intervals shown. Number of respondents is 1,286, a subset of the total respondents.

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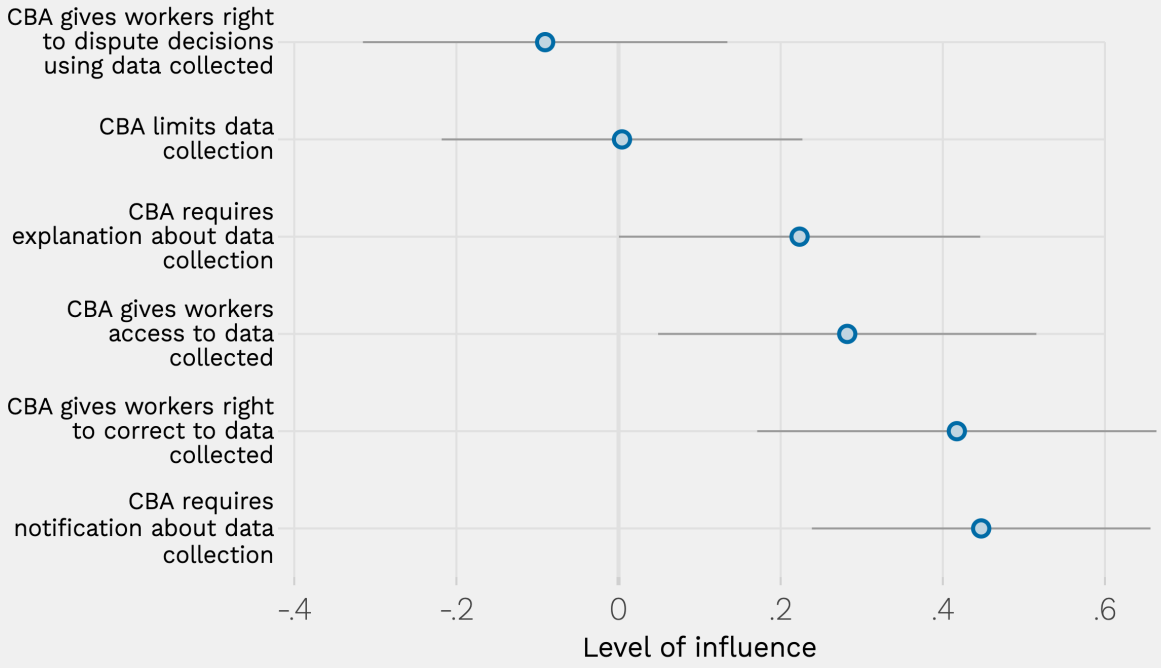
Figure 7

Certain AMS contract provisions give workers a sense of influence over how technology is used in their workplaces

Contract provisions most strongly related to worker influence over automated management and surveillance technology in the workplace



Source: 2025 Union member survey

Note: Survey weights applied. Coefficients from an OLS regression where the outcome is a 1-5 response on sense of influence over technology in the workplace. Regression results also include controls for worker demographics, sector of employment, and union affiliation. 95% confidence intervals shown. Number of respondents is 1,456, a subset of the total respondents.

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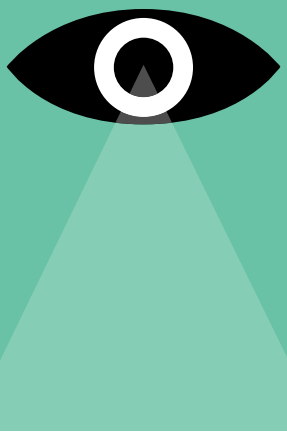

Implications for unions, researchers, and policymakers

Unions have long bargained over the use of technology at work so that workers could have more visibility into the application of technology on their jobs and control over how those tools are used. The results from my survey provide a detailed picture—one that was previously unavailable—of the extent to which labor unions are using the collective bargaining process to negotiate with employers over input and control of automated management and surveillance technologies in the workplace.

There are several important implications for union leaders, researchers, and policymakers. The most important is that while many unions are bargaining over contract provisions that can protect workers against potentially intrusive and harmful AMS technologies, the majority of union members do not believe they are covered by such provisions. Only 38 percent of union members reported at least one contract provision related to AMS tools. This indicates a substantial gap that union leaders should consider addressing by bargaining for more provisions in their contracts related to automated management and surveillance, making sure that their members are aware of such provisions and feel equipped to take advantage of them, and, ultimately, organizing more workers.

Relatedly, a future research agenda might focus on how to improve workers' understanding of their contracts, as well as how workers' perceptions of contracts and technology compare to reports from union leaders and employers. This could help address some of the knowledge-input gap that this survey unveiled. More research should also study the outcomes for workers and unions that adopt AMS provisions in their contracts.

Union leaders who have not yet bargained over AMS provisions successfully also should learn from their counterparts in health care, professional services, transportation, and protective services, which are more actively negotiating over these technologies. Policymakers

have a role to play here, too, by helping to build resources for unions to use when bargaining over technology. They can provide funding for unions to work with employers to explore the impacts of these technologies on their workers, which could provide the basis for contract negotiations, and step in to directly regulate in sectors and occupations with low levels of union density where workers cannot count on collective bargaining.

One especially notable gap comparing the results in this study with previous results on worker reports of AMS tools is how little correlation exists between the sectors in which workers report more intensive exposure to AMS tools and the sectors in which union members report more contract provisions related to AMS tools. Table 3 below shows data from my 2024 survey on worker-reported prevalence of AMS tools by industry alongside union member reports of contract provisions related to AMS tools from the current study. (See Table 3.)

As Table 3 shows, the sectors where a greater overall proportion of workers reported exposure to AMS tools (such as transportation, warehousing, and utilities, or retail trade) are not the same sectors where more union members reported collective bargaining coverage of AMS tools. Indeed, while we only have data for nine industries, there is, if anything, a negative relationship between the sectors in which workers most frequently reported exposure to AMS tools and union contracts with AMS provisions.

Table 3 thus highlights that there are many sectors of the U.S. economy where workers are exposed to AMS tools without union protections. This speaks to the need for a dual approach that relies both on union collective bargaining and public policies that can protect workers in the absence of unions in many parts of the economy.[30]

Even with these large gaps in the reach of union contracts, it is important to underscore that the AMS contract provisions reported by union members do appear to be working for many of those workers. While the design of my survey does not permit me to speak to the causal effects of union contracts, my results indicate that union members who report AMS provisions in their contracts are substantially more likely to say that they understand how technology is used in their workplaces and that they have a say over that technology.

Table 3

There is no relationship between worker reports of automated management and surveillance and union contract inclusion of AMS provisions

Survey results of worker-reported AMS provisions in their union contract and worker reports of AMS tools being used in the workplace, by sector

Sector	Union member reports of contract provisions on AMS tools	Worker reports of AMS tools in the workplace
Construction	58%	59%
Leisure and hospitality	47%	64%
Education (not public)	16%	69%
Professional and business services	62%	70%
Finance, insurance, real estate	77%	72%
Health, medical, social services	45%	72%
Manufacturing	44%	74%
Retail trade	24%	75%
Transportation, warehousing, utilities	51%	83%

Notes: Union member reports of contract provisions on AMS tools from the 2025 union member survey indicates the proportion of union members in each sector reporting at least one contract provision related to AMS tools. Worker reports of AMS tools from my 2024 survey indicates the proportion of workers by sector reporting at least one electronic tracking tool being used at their job at least some of the time (considering location, device, camera, or productivity tracking). Table sorted by worker reports of AMS tools.

Source: 2025 Union member survey.

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What is more, collective bargaining appears to be addressing the racial inequalities in exposure to automated management and surveillance. Past research has found that workers of color are disproportionately more likely to report being exposed to more intrusive forms of automated management and surveillance.[31] Within the labor movement, however, workers of color tend to report having contract provisions related to these tools. This suggests an important way in which the collective bargaining process is addressing inequality in the workplace.

Because technology and artificial intelligence are continuously evolving, it is important to remember that the contract provisions studied here may not adequately cover the future needs of workers as the use of AMS tools in the workplace changes. As such, further research should consider studying how unions are approaching new technologies in their contracts. Future research also should consider how managers and employers perceive the design and deployment of AMS tools and other technologies and how managers and employers approach the process of union bargaining over such tools.

Ultimately, these results suggest that collective bargaining can be effective at increasing workers' knowledge and control over AMS tools in the workplace, but there is much more work to be done by union leaders, researchers, and policymakers to ensure that more workers benefit from visibility into and control over such tools. Since the vast majority of workers do not currently have access to a union, policymakers must consider how to expand protections to these workers while unions attempt to expand their reach through new organizing.

About the author

Alexander Hertel-Fernandez is the Herbert H. Lehman Professor of Government at Columbia University and a visiting fellow at the Washington Center for Equitable Growth. His teaching and research focuses on the intersection between politics and markets in the United States, the politics of policy design, and labor policy. He is co-director of Columbia's Labor Lab, which uses social science tools in partnership with labor organizations to build worker power. He previously served in the Biden-Harris administration at the U.S. Department of Labor and the White House Office of Management and Budget. Hertel-Fernandez received his B.A. in political science from Northwestern University and his A.M. and Ph.D. in government and social policy from Harvard University.

Appendix: Additional survey results in tables

Table A1

Number of Contract Provisions Related to Automated Management and Surveillance Reported by Union Members

Number of Contract Provisions	% Union Members
0 or don't know	62.1%
1	10.8%
2	9.1%
3	8.4%
4	5.3%
5	1.3%
6	3.1%

Notes: 2025 Union member survey, survey weights applied. n=1,634.

Table A2

Any Contract Provision Related to Automated Management and Surveillance by Union

Union	% Union Members Reporting At Least One Provision	Survey Respondents
AFSCME	17.4%	125
NEA	17.9%	157
AFT	20.6%	98
UFCW	21.8%	56
AFGE	24.1%	47
CWA	34.8%	56
IBT	39.2%	72
UAW	46.3%	43
SEIU	54.5%	194

Notes: 2025 Union member survey, survey weights applied. n=1,634.

Table A3

Contract Provisions Related to Automated Management and Surveillance by Year of Contract Negotiation

Year	Any Provision?	Notification?	Explanation?	Limit Collection?	Access to Data?	Right to Correct?	Right to Dispute?	Survey Responses
'24-5	36.0%	21.4%	18.3%	15.2%	13.8%	14.0%	19.6%	401
'23	30.8%	19.5%	12.6%	14.3%	11.2%	8.5%	13.1%	253
'22	22.7%	12.4%	10.8%	11.6%	9.8%	7.5%	10.9%	173
'21 or earlier	51.5%	30.1%	25.1%	17.3%	17.3%	16.8%	21.2%	158
Total	34.7%	20.6%	16.6%	14.6%	13.0%	11.9%	16.6%	985

Notes: 2025 Union member survey, survey weights applied. Total n=985 (subsetted to union members remembering last contract negotiation).

Table A4

Contract Provisions Related to Automated Management and Surveillance by Year of Contract Negotiation

	Agree: Understand Automated Management and Surveillance Tools (1-5)	Agree: Understand Automated Management and Surveillance Tools (1-5)	Agree: Meaningful Input into How Technology is Used (1-5)	Agree: Meaningful Input into How Technology is Used (1-5)
Presence of Collective Bargaining Agreement Provision on Automated Management and Surveillance?	0.76*** (0.06)	0.55*** (0.07)	1.03*** (0.07)	0.75*** (0.07)
Worker Demographics	N	Y	N	Y
Sector of Employment	N	Y	N	Y
Union Affiliation	N	Y	N	Y
N	1,456	1,286	1,466	1,456

Notes: 2025 Union member survey, survey weights applied. OLS regression results, standard errors shown below coefficient estimates.
*** p < 0.01, ** p <0.05, * p < 0.10.

Table A5

Count of Contract Provisions on Automated Management and Surveillance Predicts Worker Understanding and Input into Workplace Technologies

	Agree: Understand Automated Management and Surveillance Tools (1-5)	Agree: Understand Automated Management and Surveillance Tools (1-5)	Agree: Meaningful Input into How Technology is Used (1-5)	Agree: Meaningful Input into How Technology is Used (1-5)
Count of Collective Bargaining Agreement Provision on Automated Management and Surveillance (0-6)	0.21*** (0.02)	0.15*** (0.02)	0.31*** (0.02)	0.21*** (0.02)
Worker Demographics	N	Y	N	Y
Sector of Employment	N	Y	N	Y
Union Affiliation	N	Y	N	Y
N	1,456	1,286	1,466	1,456

Notes: 2025 Union member survey, survey weights applied. OLS regression results, standard errors shown below the coefficient estimates. *** p < 0.01, ** p <0.05, * p < 0.10.

Table A6

Count of Contract Provisions on Automated Management and Surveillance Predict Workers Having Opinion on Workplace Technologies

	Has Opinion: Understand Automated Management and Surveillance Tools (0/1)	Has Opinion: Understand Automated Management and Surveillance Tools (0/1)	Has Opinion: Meaningful Input into How Technology is Used (0/1)	Has Opinion: Meaningful Input into How Technology is Used (0/1)
Count of Collective Bargaining Agreement Provision on Automated Management and Surveillance (0-6)	0.21*** (0.02)	0.15*** (0.02)	0.31*** (0.02)	0.21*** (0.02)
Worker Demographics	N	Y	N	Y
Sector of Employment	N	Y	N	Y
Union Affiliation	N	Y	N	Y
N	1,456	1,286	1,466	1,456

Notes: 2025 Union member survey, survey weights applied. OLS regression results, standard errors shown below the coefficient estimates. *** p < 0.01, ** p <0.05, * p < 0.10.

Endnotes

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25 The respondents in each group were matched to sampling frames on gender, age, race, and education. The sampling frames were constructed by stratified sampling from subsets of the 2022 Current Population Survey sample with internet usage supplement, with selection within strata by weighted sampling with replacements (using the person weights on the public use file). After matching, the current union members in the sample of employed U.S. adults were combined with the matched union sample. The matched cases in each group were then weighted to their respective sampling frame using propensity scores. In both groups, the matched cases and the frame were combined, and a logistic regression was estimated for inclusion in the frame. Both propensity score functions included age, gender, race/ethnicity, years of education, region, and employment status (full time or part time). The propensity scores were grouped into deciles of the estimated propensity score in the frame and post-stratified according to these deciles. The weights for both groups were then post-stratified on a four-way stratification of gender, age (three categories), race (four categories), and education (four categories).

26 Hertel-Fernandez, "Estimating the prevalence of automated management and surveillance technologies at work and their impact on workers' well-being."

27 I code respondents who said that they did not know whether they had AMS contract provisions as zero in this analysis. My results are similar excluding these respondents.

28 I code respondents who said that they did not know whether they had AMS contract provisions as zero in this analysis. My results are similar excluding these respondents.

29 Hertel-Fernandez, "Estimating the prevalence of automated management and surveillance technologies at work and their impact on workers' well-being."

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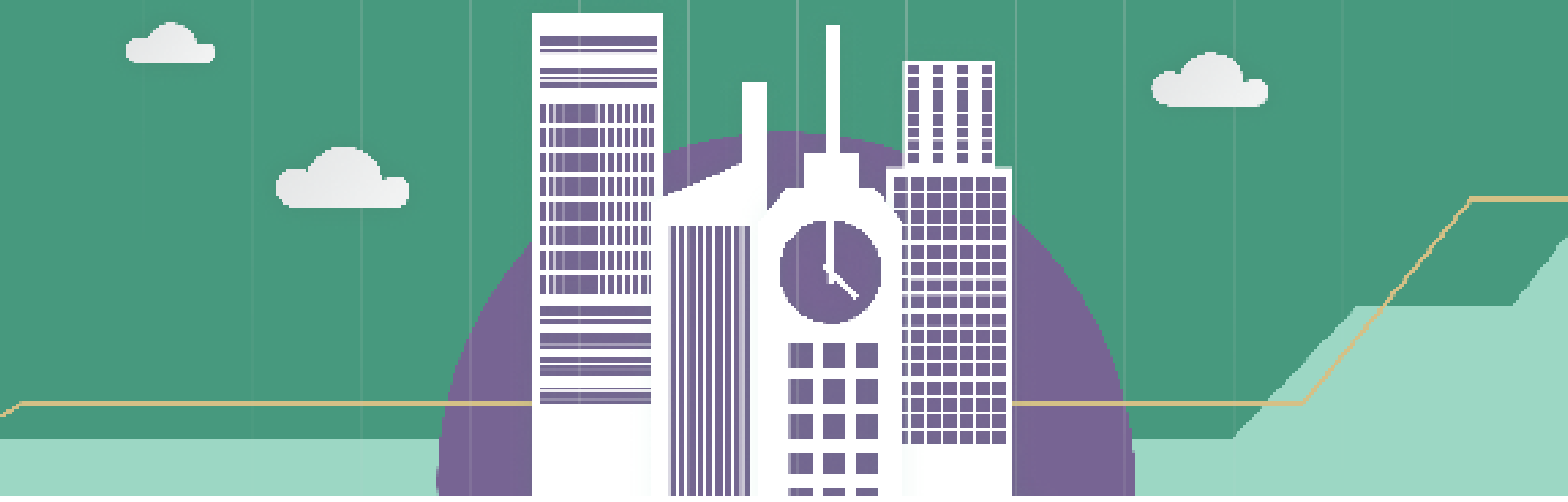

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