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Artificial Intelligence in Workers' Compensation:

An Overview of Promises and Challenges

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Executive Summary

Since the release of OpenAI's ChatGPT in the Fall of 2022, there has been a keen interest in understanding what the increased use of artificial intelligence (AI) means for the economy in general and the workers' compensation insurance industry in particular. While new AI tools can revolutionize workers' compensation processes' efficiency (by streamlining reporting, management, and processing of claims), they raise concerns about the potential adverse effects on workers recovering from work-related injuries (due to hallucinations, biases, or lack of human involvement). This study is the first step toward a better understanding of these different impacts on the workers' compensation system.

To help navigate the potential impacts of AI tools on the workers' compensation system, we examine (1) how workers' compensation stakeholders define AI, (2) the value of different AI tools in their organizations, (3) the challenges they encounter navigating AI adoption, and (4) best practices and regulations that can mitigate these challenges. For this study, we conducted semi-structured, open-ended interviews with a convenience sample of 34 workers' compensation stakeholders, including employers, insurers, medical and other service providers, worker advocates, and regulators. We also reviewed relevant literature, regulations, and other materials describing the latest developments and applications of AI tools. We provide examples of the value that AI tools may bring and mention possible uses in workers' compensation. We also discuss the challenges that arise and the potential strategies to mitigate those challenges. Finally, we discuss the relevant regulatory environment.

Interviewees most often pointed to generative AI and machine learning as the leading forms of AI being used in workers' compensation. The interviews revealed that not all challenges in workers' compensation require AI solutions, but when applied thoughtfully to appropriate processes, AI can lead to faster claim resolutions, more consistent decision-making, and improved outcomes for injured workers (for instance, by identifying those needing extra care early on). Stakeholders mentioned several examples where AI tools can substantially increase the efficiency of claims processes through

- fast and consistent processing of structured and unstructured data,
- automation of routine tasks to speed up workers' compensation workflows and approval of medical care, and
- better prediction of claim outcomes and improved identification of additional or early interventions.

The overarching theme we identified is that various AI applications can reduce administrative burdens on adjusters, attorneys, and providers, enabling them to focus more on managing severe claims that require empathy and expertise.

However, success depends on robust implementation: ensuring models are accurate and fair, keeping humans at the wheel for judgment calls, and continuously monitoring how the models perform. Success also hinges on a supportive infrastructure from two perspectives: technical (requiring modernized data systems) and organizational (requiring adequate training and change management). New AI tools may not bring value unless stakeholders use the information AI provides to change their processes. Furthermore, success requires clear, timely, and open communication between many stakeholders (workers, employers, carriers, third-party administrators, medical providers, and workers' compensation agencies) about how the AI tools are and are not used. Most importantly, many of the stakeholders we interviewed emphasized that injured workers and their well-being must remain the central focus when deciding whether or how to implement and develop AI

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models. AI should be a tool to enhance workers' experience by speeding up approvals, preventing accidents, personalizing care, and improving transparency. By outlining current and emerging uses of AI in workers' compensation, and by identifying risks and potential guardrails, this study's goals are to (i) provide a common language for all industry stakeholders; and (ii) inform policy discussions promoting responsible use of AI, aimed at improving the experience and recovery of injured workers.

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Chapter 1: Introduction

The release of OpenAI's ChatGPT in November 2022 ushered in a new wave of interest in various applications of artificial intelligence (AI)[1] in everyday lives, both at home and in the workplace. By 2024, more than one-third of working-age adults in the United States reported using generative AI at work or at home, with a smaller share using it daily (Bick et al., 2024). Bick et al. (2024) reported that ChatGPT was the most commonly mentioned generative AI product used, followed by Google's Gemini and products embedded within existing software (such as Microsoft Copilot).[2] While broader estimates vary, AI adoption has grown rapidly across industries. In the insurance sector, 77 percent of companies reported being in some stage of AI adoption in 2024, up from 61 percent in the previous year (Risk & Insurance Editorial Team, 2024). Use is also growing among claims adjusters and attorneys—32 percent and 30 percent reported using AI in their work, respectively (Jackson, 2025; Braff, 2025). Despite the relatively fast adoption rates, globally, attitudes toward AI remain mixed according to a 2024 Ipsos survey. Respondents expressed equal parts excitement and concern about AI technologies (Carmichael, 2024). These developments raise concerns about what rapid AI adoption means for the workers' compensation system.

Many of the promises, threats, and challenges of using AI for workers' compensation processes were aptly summarized in a 2024 April Fool's Day opinion post revealing the fictitious introduction of the "AIdjusters," AI-assisted adjusters (Paduda, 2024). While perhaps a work of fiction at that time, it reflected the concerns of some on AI adoption in the industry. Recent advances in generative AI's capabilities, one of the fast-growing AI fields, raise many inquiries about the potential impact of various AI tools on the workers' compensation system overall and on different stakeholder groups, including workers, medical providers, service providers, employers, insurers, and policymakers. A simple online search reveals many new entrants as well as well-established players in the workers' compensation ecosystem who tout how generative AI tools can change the workers' compensation industry by streamlining claims processing, improving the accuracy of decision-making, and expediting claim resolution, hence reducing administrative burdens and improving overall system efficiency. Business incubators and accelerator programs support countless startups in the insurtech space proposing generative AI solutions for many tasks in the insurance industry, ranging from document understanding to call center applications.[3]

This study explores AI use in the workers' compensation system. We provide examples of uses of AI tools in workers' compensation and the value that these tools may bring. We also discuss the challenges that arise and the practices that are currently used to mitigate those challenges. Finally, we discuss the relevant regulatory environment. We aim to provide a resource that provides an overview of AI to the diverse community of workers' compensation stakeholders and helps them navigate AI's impact on the system.

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[1] When discussing AI, we refer to both generative AI and analytic AI, unless otherwise specified. See the glossary for more information about the terminology we use.

[2] Less than 5 percent of those using AI tools reported using Claude, Github Copilot, Midjourney, Scribe, Synthesia, or other products (Bick et al., 2024).

[3] See, for example, https://www.ycombinator.com/companies/industry/insurance or https://www.insurtechinsights.com/15-insurtechs-harnessing-ai-to-transform-the-insurance-landscape/ or https://www.ai-startups.org/top/insurance/ or https://builtin.com/articles/insurtech-companies.

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For this study, we collected information through semi-structured, open-ended interviews with a convenience sample of workers' compensation stakeholders, including employers, insurers, worker advocates, medical providers, service providers, and regulators. We conducted semi-structured interviews with 34 people in leadership roles representing 20 different organizations.[4] We also held numerous informal discussions with various stakeholders, which elaborated on observations from the interviews and provided additional insights.

We also reviewed relevant literature, regulations, and other materials describing AI tools' latest developments and applications. By bringing together discussions from diverse stakeholders, the report provides information that all system participants can use to better understand the value and challenges of using AI in the workers' compensation system.

We guided the discussion with the workers' compensation stakeholders along the following questions:[5]

- How do you define AI and its role in the economy and the workers' compensation system?
- Where do you see the value of AI tools for your job, your organization, and the workers' compensation system?
- What are the potential challenges and risks that you experience or foresee with a broader adoption of AI tools, and how can these risks be mitigated?

The rest of this study summarizes our discussions with the stakeholders along those dimensions.

Semi-structured interviews provided in-depth insights into both the promises and challenges of AI that would be difficult to uncover through other methods. The strength of qualitative analysis lies in its ability to surface a detailed understanding of participants' opinions and experiences, enabling the exploration of themes and patterns in emerging areas such as generative AI. In our interviews, we observed both convergence and divergence in perspectives, as many participants shared similar views on key themes while others provided insights that reflected the unique characteristics of their organizations. However, qualitative approaches come with certain limitations. They do not yield a quantitative picture of AI adoption, and there was a noticeable variation in participants' willingness to discuss specific use cases. While many interviewees were willing to discuss their actual use cases, some provided hypothetical or aspirational examples. Organizations vary widely in their adoption of generative AI tools. Some organizations are just beginning to explore potential use cases, while others have been using generative AI tools in their workflows. Put differently, a use case that is aspirational for one organization may be under development or already in use for another. As a result, we frame all of the examples that we mention as aspirational. After all, our goal is not to quantify adoption rates or describe business practices but rather highlight how workers' compensation stakeholders perceive the value and challenges of generative AI in the workers' compensation system. Despite this variability, our findings offer a nuanced foundation that future studies can build upon, particularly by exploring specific applications in greater depth.

While this study provides an overview of the potential uses of generative AI in the workers' compensation system, we do not claim to provide a comprehensive picture of all possible uses, given the rapid changes in the AI field. New generative AI models with expanded capabilities are released regularly by different competitors.

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[4] Of the people we interviewed, 10 represented insurers and third-party administrators, 10 represented state workers' compensation agencies, 9 represented service providers, 3 were worker advocates, and 2 represented large employers.

[5] Each interview followed a semi-structured format covering the outlined open-ended questions. While the structure was consistent covering the core themes including definition of AI, value, challenges, and best practices, specific follow-up questions were prompted based on participants' responses to ensure a clear understanding of their perspectives.

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These new models may lead to new use cases for workers' compensation in the future. The industry appears to be in the early stages of generative AI adoption, which aligns with the initial phases of the Gartner Hype cycle between "innovation trigger" and "peak of inflated expectations"; therefore, forecasting how the AI-related changes will play out is beyond the scope of this study. One interviewee aptly illustrated this with a baseball analogy: "We are currently in the first inning of AI adoption." At the same time, many interviewees shared optimism about the future and the need to understand these new developments. In the words of one of the study participants, "the models on the market today are the worst models one will ever experience." The models will only get better, faster, and more precise. Therefore, workers' compensation stakeholders may find it important to understand how to use generative AI tools and to develop the processes needed to deal with the coming changes. Given the fast pace of changes, the value of this study stems from providing a shared understanding of where stakeholders see the value and challenges in using AI tools today.

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Chapter 2:

Definition of Artificial Intelligence and Selected Uses Outside of Workers' Compensation

When asked "what is your definition of artificial intelligence?", the ChatGPT o1 model responded as follows:

> *"Artificial intelligence (AI) generally refers to machines and computer systems that can perform tasks commonly associated with human intelligence. These tasks typically involve learning from experience, recognizing patterns, understanding and generating language, solving problems, and making decisions. AI systems do not just follow a set of static, predefined instructions; rather, they continually adapt by processing data and refining their own internal models or decision-making strategies. The goal of AI research and applications is to enable computer-based systems to carry out complex tasks effectively—often more efficiently or at a greater scale than humans alone could achieve." (OpenAI, 2025).*

Evolving Definition of Artificial Intelligence

In response to our question on defining AI, interviewees mentioned a range of concepts that fit within the broader scope of AI. Some concepts reflect various AI applications, such as generative AI, machine learning, deep learning, natural language processing, and cognitive computing. Other concepts (including business intelligence, data science, and predictive analytics) are broader fields that may incorporate AI tools. Most people we interviewed emphasized computer programs' ability to do things that typically require human intelligence. At the same time, the discussants recognized that what some people call AI may not be AI in their definition. Finally, several interviewees mentioned the need to think through possible implications of "artificial general intelligence," which aims to replicate human-level cognitive abilities.

AI tools before ChatGPT

The uses of AI tools have changed substantially over time, and computers have assisted humans in many tasks for a long time already. Historically, mentions of AI started in the 1950s with the question of whether there is a way to use intelligent machines in intelligent ways. The uses evolved into machine learning and deep learning, fueled by neural networks, an approach for representing how our brains work. Industries widely use these tools for predictive analytics, natural language processing (NLP), image and video recognition, data analytics, robotics, and automation. Common examples of applications include fraud detection, recommendation systems (e.g., in retail and entertainment), decision support in finance and logistics, and optimizing complex processes like supply chain management. In health care, AI assists in diagnosing diseases through medical imaging and supports drug discovery. AI also plays a significant role in speech recognition, cybersecurity, and early development of autonomous vehicles. Most of these tools were designed with a specific objective, and some of our interviewees referred to them as analytic AI.[1]

[1] The stakeholders we interviewed used the term *analytic AI* when referring to the rule-based models that have been traditionally used in workers' compensation for predictive tasks prior to generative AI. That is the term we adopted in our report to refer to narrow-purpose, rule-based AI tools.

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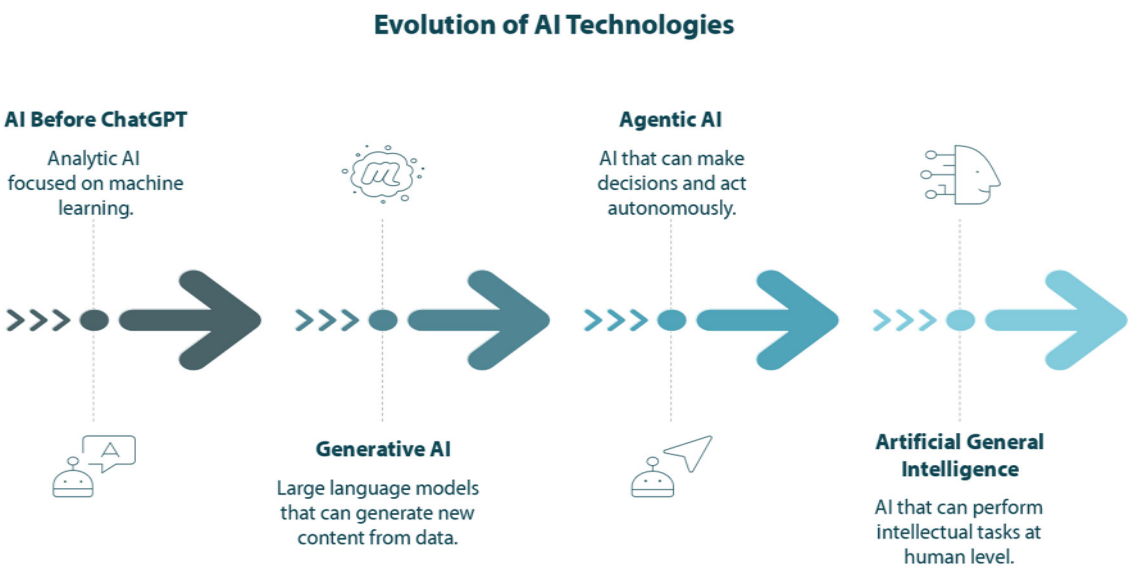

GENERATIVE AI ERA

Generative AI entered everyday lives in November 2022 when OpenAI released a generative artificial intelligence chatbot called ChatGPT that people could easily use on their cell phones or personal computers. As the name suggests, generative AI tools not only read images and text but create new content on demand. They can engage in human-like conversations and perform various tasks, such as answering questions, composing text, and generating code. In addition to OpenAI's ChatGPT, other generative AI tools include Google's Gemini, Anthropic's Claude (which generates text), and Dall-E (which creates images). These tools are often called large language models (LLMs), a subset of deep learning, and they offer increasingly capable ways of processing information. Most interviewees, when talking about AI, referred to generative AI (LLMs), with some highlighting the shift from machine learning algorithms to LLMs.

The advent of the generative AI era also expanded the scope of data that AI tools can conveniently and rapidly process. The analysis is no longer limited to well-organized data, neatly stacked in rows and columns. New tools can examine unstructured text, images, audio, and video. These inputs can be considered data for the latest generation of models. This ability to examine both structured and unstructured data opens up immense opportunities in the workers' compensation system to summarize claim notes, monitor workplace practices, and facilitate claim payments. For example, adjusters can use information from phone transcripts and unstructured text notes to help manage the claim; medical providers can sift through existing information about patients to better manage a work injury; underwriters can use information from videos and images to improve the assessment of injury risks.

Another significant change is that modern LLMs and other types of generative AI are increasingly general-purpose, unlike narrowly focused earlier AI applications. The latest models can do many different tasks and can process vast amounts of different types of data. They can perform various cognitive functions, including creative tasks and simple forms of reasoning (Korinek, 2024a). One of the visible changes is that anyone with access to the internet can ask questions and get responses from intelligent general-purpose chatbots. This is a departure from earlier models that were limited in their vocabulary, were primarily focused on narrow predictive exercises, often relied on "if-then" statements, and were unable to navigate more complex

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questioning.

The annual AI index report by Stanford's Institute for Human-Centered AI reviews the progress of AI tools on many dimensions and reviews available evidence. The report suggests that, as of 2024, AI has surpassed human performance on some tasks but trails behind on more complex tasks (Maslej et al., 2024). Some suggest that more recent AI models are already "smarter than most humans in most areas… although they may not be smarter than an expert human" (Cowen, 2025a). For the workers' compensation industry, these examples suggest that some AI tools may be capable of replacing a variety of tasks that are done by adjusters but are not ready to replace adjusters altogether.

Yet these new methods are still just prediction machines, enhanced by improvements in computational power and large amounts of data (Agrawal et al., 2024). As a result, the predictions are grounded in the quality and quantity of the training data and the users' judgments about best uses. For many stakeholders we interviewed, this lack of creativity is an advantage for workers' compensation use cases, as models reproduce patterns found in the training data rather than generating untested solutions.

Still, some observers expressed reluctance to characterize generative AI as artificial intelligence. In their own words, "AI is oversold and mischaracterized; it has the capacity of a sophisticated search engine." However, they also recognize the potential for these tools to change the economy in the future. This view is consistent with the ideas of Demis Hassabis, a co-founder of Google DeepMind, who thinks that observers overhype the impact of AI applications in the short term but underestimate their potential impact on the economy in the long term (The Economist, 2025).

AGENTIC AI

The next frontier mentioned in our interviews is the area of agentic AI. These tools are a departure from generative AI models (like ChatGPT) that execute tasks based on a specific prompt (such as creating content based on data patterns or creating claim summaries from structured and unstructured data). Agentic AI systems not only process information about their environment but can reason about complex situations, make decisions, and act to achieve pre-set goals without continuous human oversight (Lanteri and Esposito, 2025; Rosenbush, 2024). For instance, upon receiving a new claim, agentic AI systems can autonomously extract key information to identify the level of complexity, resolve minor cases, and assign more complex cases to human adjusters.

POST-GENERATIVE AI: ARTIFICIAL GENERAL INTELLIGENCE

Many observers view generative AI as a precursor to artificial general intelligence (AGI), which many companies are actively pursuing. While generative AI already demonstrates advanced language processing and content creation capabilities, AGI represents a more ambitious goal: a system that can learn and perform intellectual tasks at a level comparable to human beings. AGI would excel in specialized tasks, like current AI models, and demonstrate general intelligence that can adapt to new problems and environments without human intervention. Achieving AGI could revolutionize industries, but its potential market and job impact is the subject of considerable debate.

Currently, opinions vary widely on whether and when AGI will be realized. Some observers believe that the newly released o3 version of ChatGPT may have reached the level of AGI (Cowen, 2025c and 2025d). Other observers suggest it could take 5 to 20 years for AGI to emerge, while some are skeptical it will ever be achieved (Korinek, 2024a and 2024b; Chowdhury and Popper, 2024; The Economist, 2025). While the timeline for AGI remains uncertain, its development, if successful, would undoubtedly have far-reaching implications. AGI

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could learn, reason, and perform tasks across various domains—from complex scientific research to creative endeavors—at the same level as human intelligence. This prospect is exciting and daunting, as the introduction of AGI could disrupt labor markets, reconfigure economies, and challenge the ethical and legal frameworks that govern AI today. These changes may have tremendous implications for the workers' compensation system, affecting both the nature of injuries as well as how the industry responds to injuries.

RATES OF AI USE

AI TOOLS ARE ALREADY PREVALENT IN EVERYDAY LIVES, SOMETIMES WITHOUT USERS REALIZING IT

Analytic AI tools (such as machine learning) are already deeply embedded in many aspects of our daily life, often operating behind the scenes. Voice assistants (Siri and Alexa) rely on analytic AI to understand and respond to voice commands, making everyday tasks like setting reminders, sending messages, or checking the weather more convenient. Analytic AI algorithms also power personalized recommendations on platforms like Netflix, Amazon, and Spotify, suggesting movies, products, or music based on users' past behaviors and preferences. E-commerce websites use AI to create personalized shopping experiences, offering targeted product suggestions to increase engagement. Google Maps uses analytic AI to predict traffic conditions and provide real-time estimated arrival times, enhancing the efficiency of travel and navigation. Many of these AI applications are often unnoticed by users. Estimates by the Pew Research Center (2023b) show that only 30 percent of U.S. adults surveyed in December 2022 correctly recognized all six examples of AI in everyday life.[2]

In addition to the machine learning examples mentioned above, generative AI use is becoming common in daily routines. According to one survey, in August 2024, 33 percent of working-age adults reported using generative AI tools at home, with 6 percent using these tools daily (Bick et al., 2024). At home, generative AI tools can streamline a variety of tasks involving text, images, or other unstructured data. Experts provide common examples of using generative AI tools for everyday tasks (see Bick et al., 2024; Brookings, 2024; Cohen, 2024; Samuel, 2024). These tools can help with the following:

- Drafting written communications
- Generating ideas for creative projects, such as generating bedtime stories for kids
- Personal assistance with lists, schedules, and shopping
- Interpreting and summarizing documents
- Providing entertainment recommendations
- Creating images and modifying photos
- Creating travel itineraries
- Helping with recipes and cooking
- Creating podcasts
- Tutoring and educational assistance

When asked about the usefulness of generative AI tools, about a third of respondents reported that ChatGPT has been extremely or very useful, and another 39 percent reported that it has been somewhat useful

[2] The survey asked about the following common uses of AI: wearable fitness trackers that analyze exercise and sleeping patterns; a chatbot that immediately answers customer questions; product recommendations based on previous purchases; a security camera that sends an alert when there is an unrecognized person at the door; an email service categorizing email as spam.

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(Vogels, 2023). Respondents also reported that AI chatbots help speed up their work without compromising on the quality of work (Lin and Parker, 2025).

BUSINESSES INCREASINGLY USE GENERATIVE AI TOOLS

The insurance sector has emerged as a relatively eager adopter of AI compared with many industries. Insurance is an information-intensive business ripe for analytics and automation. Recent surveys indicate a surge in AI initiatives among insurers: By 2024, about 77 percent of insurance companies reported being in some stage of AI adoption (up from 61 percent in 2023) (Risk & Insurance Editorial Team, 2024). Many insurers are piloting AI tools to support underwriting, claims processing, and customer service (Risk & Insurance Editorial Team, 2024). Some insurance lines use AI tools to set pricing based on risk. For example, auto insurance deductibles may vary based on the observed driver behavior. AI-driven automation is also utilized in customer service, finance, and other industries to handle routine processes, reducing human intervention in tasks like data entry, invoice processing, and payroll.

Our interviewees mentioned a wide range of AI use cases that extend beyond the workers' compensation context to include regular business practices across industries. These discussions line up well with the findings from various business surveys. Most commonly, companies use generative AI for marketing and sales (content support for marketing strategy, personalized marketing, and lead identification); product and/or service development (design support, literature review, and accelerated simulation/testing); and information technology (IT) services (IT help desk chatbot/assistant, data management, and program development) (McKinsey & Company, 2024b). Customer service is another prominent example, particularly through the use of chatbots. Estimates suggest that generative AI offers the potential to significantly increase productivity while automating a substantial share of activities in customer care interactions and repetitive work activities (McKinsey & Company, 2023b). Others suggest the value of AI in automating business processes such as handing invoices, dealing with customer service, discussing human resources matters, and automatically generating reports (Mims, 2024c).

Beyond insurance, many companies have started efforts to integrate the use of generative AI tools into their workflows. Estimates by consulting companies show that in 2024, 65 percent of organizations had adopted generative AI in at least one business function, nearly double the 33 percent of organizations in 2023 (McKinsey & Company, 2024b). Companies are focusing their generative AI adoption on areas and functions where it provides the most value. Initial use cases, such as assisting with administrative tasks, were often chosen not just based on their value but also for being relatively low risk.

In August 2024, 28 percent of working-age adults reported using generative AI at work, and 11 percent reported using it every day (Bick et al., 2024). Estimates from other surveys suggest smaller rates of AI use at work. Estimates from the Pew Research Center in 2025 show that about 16 percent of workers in the United States use AI to do some of their work, while 63 percent do not use AI much or at all in their jobs (Lin and Parker, 2025).

Employers increasingly encounter generative AI through productivity tools such as Microsoft's Copilot, Adobe's Acrobat AI assistant, and Zoom's AI assistant. These tools support a variety of work tasks and streamline business processes. Notable examples include the following (see Bick et al., 2024; Brookings, 2024):

- Assisting with written communications
- Performing administrative tasks (taking notes, summarizing information from meetings/calls, and creating action plans)
- Translating documents

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- Searching for facts or information
- Coding software
- Generating/developing new ideas
- Assisting with billing
- Supporting customers/coworkers

The use of generative AI tools is not uniform across occupations. Bick et al. (2024) estimate that the use of generative AI was the highest among computer/mathematical and management occupations, at about 49 percent. The use was also high for business/finance and education occupations (42 and 38 percent, respectively). In a convenience sample of 1,013 claims adjustors, 32 percent reported using AI tools in their work in 2024–2025 (Jackson, 2025). Studies also found high use of generative AI among attorneys. The American Bar Association estimates show that 30 percent of lawyers who responded to its survey were using generative AI, with higher use among large firms and lower use among solo practitioners, 46 versus 18 percent (Braff, 2025).

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Chapter 3:

Promises of AI in Workers' Compensation: Lessons from Selected Use Cases

In this chapter, we zoom in on the promising use cases that workers' compensation stakeholders mentioned during our interviews as offering the most value. While some of these use cases reflect ongoing implementation efforts and others represent potential applications, all reflect areas where AI tools can bring value from the perspective of different stakeholders. We group these use cases into specific examples of how AI can help optimize claims processing, improve delivery of medical care, and streamline regulatory compliance.

A main theme from our interviews is that various applications of AI tools have existed in workers' compensation for a while. Machine learning algorithms (one of the subsets of AI) processed structured data for predictive analytics even before the new age of generative AI. These systems analyzed historical data to predict future outcomes, including claim costs, risks, and patient recovery. Applications of machine learning tools mentioned in the industry press include tools for adjusting care plans for workers with injuries, setting reserves, improving insurance underwriting, identifying claims that are at risk for litigation and slow recovery, identifying potential fraud, improving predictive modeling, selecting appropriate providers, determining paths to return to work, and analyzing many sources of data to improve workers' compensation process analytics (see discussions in Borba, 2012; DuChene, 2019; Francis, 2008; Gardner, 2017; and Powell, 2024). The promise of the models was simple—improving the claims management process would reduce friction costs and might improve outcomes. Machine learning tools were also used to examine early predictors of longer-term opioid prescribing, the likelihood of extended opioid use, or dependence (Hastings et al., 2019; Karhade et al., 2019a and 2019b; Savych and Thumula, 2020).

Generative AI opens up many new possibilities for workers' compensation, offering significant potential in this data-driven field. In addition to the everyday business uses discussed in Chapter 2, workers' compensation stakeholders (employers, insurers, third-party administrators, attorneys, medical providers, and other service providers) generally recognize AI's promise in handling vast data and repetitive processes. Generative AI excels at processing unstructured data, such as text data in claims management systems, allowing for more effective claims data management (McKinsey & Company, 2024a). For instance, generative AI can assist in analyzing medical bills, clinical data, deposition notes, and adjuster notes, integrating various sources of information to provide comprehensive support for adjusters (Powell, 2024). As a result, generative AI may lead to increased efficiency in managing claims.

AI's Value in Optimizing Claims Processes

In our interviews, stakeholders mentioned several current as well as possible applications of AI aimed at optimizing claims processes. Some of the examples have overlapping features that provide value across a wide spectrum of tasks.

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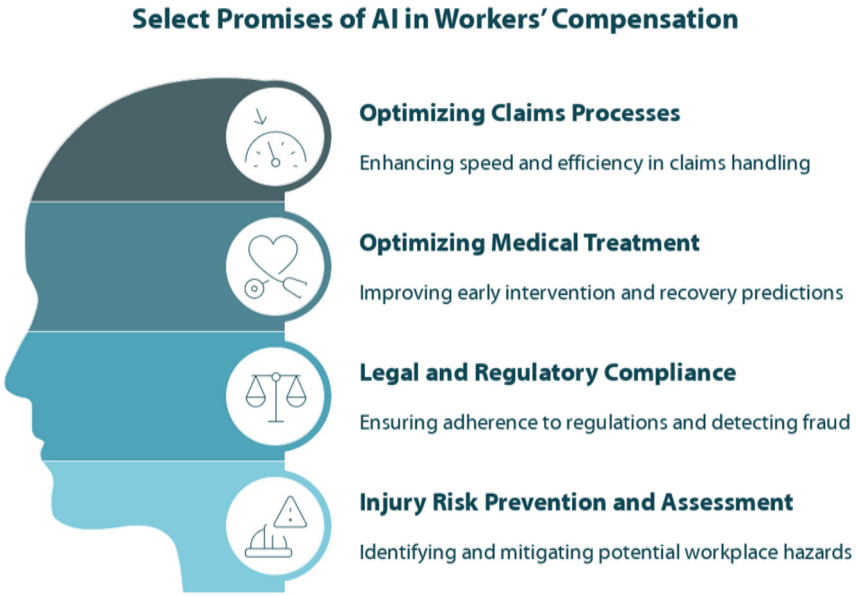

INCREASING THE SPEED OF CLAIMS DATA PROCESSING

One frequently mentioned example of the value that generative AI brings to workers' compensation systems is that it allows for expedited processing of structured and unstructured data, which in turn streamlines administrative and routine processes in workers' compensation.

Many stakeholders emphasized the value of restructuring the traditionally paper-driven processes in workers' compensation. Claims often still involve mountains of paper forms that historically moved via fax or mail. In the words of one interviewee, for organizations that still rely on manual workflows, "AI is a game changer for repetitive business processes where you need to apply the same rules consistently." Modern intelligent document processing uses optical character recognition (OCR) and natural language processing (NLP) to digitize and understand forms, bills, and medical records. Another interviewee noted that "handling paper should not exist; AI should do it," reflecting a widespread push to automate legacy paper-based workflows. Automating the intake of medical reports, invoices, and authorization requests dramatically reduces manual data entry, speeds up claim approval, and enables faster information flows through the claims system.

The most common example of efficiency gains mentioned by all system stakeholders is AI-assisted document and call summarization. Workers' compensation claims generate mountains of documents (injury reports, legal forms, medical records, doctor notes, adjuster notes) often in unstructured formats, as well as phone calls and other communications. As mentioned by some respondents, adjusters sometimes face claim files that can easily exceed 100,000 words (equivalent to a 350-page book). They can use generative AI tools to ingest, organize, and summarize large volumes of claims data, helping humans make sense of complex cases faster. For example, large language models can comb through hundreds of pages of medical records in minutes, produce a concise chronology of a claimant's diagnosis and treatment history, and create key "signals" about claim status. This approach reduces the time that adjusters, medical professionals, attorneys, and employers spend reading the files and allows them to focus on higher-value analyses. As a result, claims can be opened and processed faster. It also enhances consistency, since, as suggested by some respondents, an AI system will not overlook a document in a large file.

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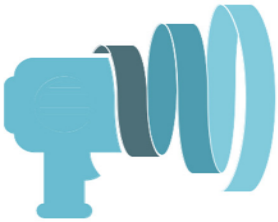
Several quotes in the figure below from our discussions illustrate these examples.

Respondents on AI's Value in Claims Processing Time



Enhances Speed and Accuracy

"We see AI as a useful tool for using computing power to be able to do something that may not be feasible if a human was to do it. It is not practical for humans to evaluate all 1,000 pages of unstructured documents. AI can do it; it does not get tired and does not take breaks."

Focus on Value-Add Tasks

"The main value of the AI tools is that they help adjusters to do the more challenging parts of their jobs. They reduce the time spent on mundane tasks like extracting routine details or sorting through documents, and thus they free up time for tasks that require critical thinking and experience managing claims."

Improves Efficiency

"AI increases efficiency for employers who must review the claim or settlement. There is still a need to validate the information because of hallucinations."

AUTOMATING REPETITIVE TASKS

A common theme from stakeholder interviews is the near-term promise of AI to automate many processes in the workers' compensation system. The examples shared underscore two main components: increased operational efficiencies and the potential to improve outcomes of workers with injuries. One example of process automation is the faster processing of low-complexity claims. These simple cases (minor injuries with quick recovery) still require manual data entry and approval steps. AI tools that automate initial claims processing can help. When an injury is first reported, AI tools can immediately gather key information (via digital forms or even conversational AI with the reporting party), verify coverage, classify the claim by automatically reading claim details and medical records to determine complexity and urgency, and initiate appropriate actions. For example, AI triage might recognize a "medical-only" claim (no lost work days) with a common injury, automatically schedule an appointment with an in-network clinic, generate the initial compensation calculation, and even draft a notification letter to the employee. This approach resolves simple cases quickly and routes complicated cases to adjusters that focus on more complex cases. Estimates from a survey of workers' compensation industry experts conducted by Deloitte suggest that 70 to 80 percent of workers' compensation claims could be highly automated using AI (Deloitte, 2020).

Automation frees adjusters for more complex tasks. Many people we interviewed suggested that by delegating paperwork, data entry, and simple decisions to algorithms, adjusters can focus on solving more complicated problems on a claim or dealing with more complex claims. AI handles the grunt work consistently and quickly, while humans focus on strategic activities like resolving disputes, engaging with injured workers, and managing severe claims that require empathy and expertise. In practice, companies use AI to pre-read and highlight important aspects of new claims so that when an adjuster opens a file, they see an AI-generated briefing (key injury details, prior similar claims, potential red flags) instead of combing through all information from scratch. The promise is that blending AI efficiency with human judgment may lead to time savings and better outcomes. As one stakeholder said "AI tools free our staff up to focus on value-add work and identify outliers faster, allowing us to redirect the human touch at the right time on the right claims."

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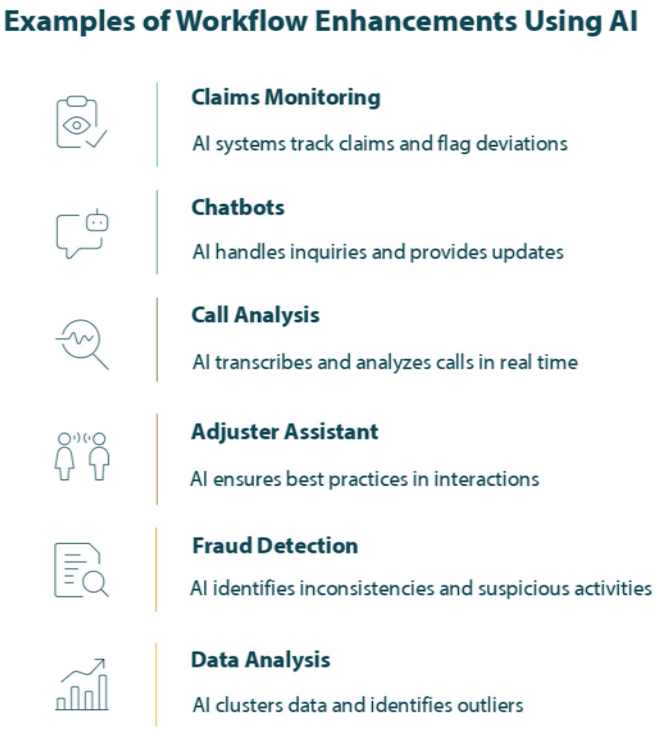
OPTIMIZING THE WORKFLOW

AI tools can also be used as a system to optimize claims handling throughout the life of a claim. AI systems can monitor ongoing claims and perform tasks like checking submitted medical bills against the treatment plan (flagging any deviations or potential overtreatment), tracking compliance with reporting deadlines, and prompting adjusters when an action is due. They can also maintain a "to-do" list for adjusters prioritized by urgency and importance, generated through machine learning from past claim outcomes. Suppose a particular claim shows a combination of risk factors that usually leads to prolonged disability. In that case, the system might prompt the adjuster to consider swift involvement of a nurse case manager. AI becomes a claims copilot, continuously analyzing data and suggesting potential actions.



Many respondents also mentioned how AI-powered workflow automation may improve communication, increase transparency, and speed up claims processing. Chatbots and virtual assistants can handle common inquiries from injured workers or employers, provide status updates on claims, and even assist in scheduling appointments, all without waiting for a human agent. In call centers, generative AI systems transcribe and analyze calls in real time, allowing adjusters to quickly flag important details or sentiments from conversations and improve communications. Generative AI tools can monitor communications between adjusters and claimants and can ensure that employees follow best practices in their interactions.[1]

[1] See the discussion in Gelman (2023b).

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Insurers can also incorporate various AI tools into the claim workflow to detect suspicious activities. In a simple example, AI tools can read the description of an injury and occupation to flag any inconsistencies. This application frees adjustors from reviewing all claims to reviewing only a subset of claims the program flagged as inconsistent. Computer vision AI can analyze medical images or photographs for signs of manipulation. AI can even scrutinize billing codes and provider behavior to spot problems (like a clinic consistently billing for an unusually high number of visits or a pharmacy dispensing unusual or dangerous drug combinations). Likewise, various machine learning tools might cluster claims data and identify outliers (perhaps a particular provider who always certifies maximum disability duration or always prescribes the same expensive compound cream). The potential promise is that these nuanced patterns might not escape AI tools examining thousands of claims (Alliant Specialty, n.d.; CLARA Analytics, n.d.; Healthesystems, 2024; Alchemy, 2024; Vorecol, 2024; Wisedocs, 2025; Leighton and Gordon, 2023).

IMPROVING PREDICTIVE TOOLS WITH THE GOAL OF ACHIEVING BETTER OUTCOMES FOR WORKERS

While predictive analytics have been part of the workers' compensation system for many years, generative AI offers opportunities to expand the nature of measures beyond structured data that insurers and employers can use to inform their decisions. The following quotes from our interviews illustrate this point:

- "AI is great: It summarizes data and bills. But the best value comes from using data to identify patterns of responses and summarizing reports to figure out possible behavior changes."
- "AI can also identify the signals about how the claim is going, and we can use the signals to avoid greater severity."

Consider an example of early risk detection models aimed at identifying complex or costly outlier claims, using available data on injury and claimant history. Generative AI tools can improve predictive power by incorporating far more data, including unstructured text and audio/video from case files. The model can use injury severity, treatment patterns, and even subtle cues from medical reports. The promise is that generative AI tools can convert adjuster notes and doctor narratives into features for analysis, capturing nuances (like patients' mentions of depression or lack of family support) that earlier models missed. This rich input helps algorithms better predict delayed recovery or other complications and highlight cases needing earlier intervention. For instance, more complex cases that require earlier intervention can be identified early on rather than after adverse outcomes unfold.

Another example is AI models predicting the risk of litigation. By examining attributes of a claim (time to first treatment, time to first payment, and contentious communications), generative AI tools may expand the list of measures that are predictive of attorney involvement. A prior WCRI study explored many contextual factors that predict workers' likelihood of seeking an attorney to help with the claim. Victor and Savych (2010) showed that workers were more likely to have an attorney if they had limited or adversarial communications about their claim, thought the claim was delayed or denied, or were concerned about their future benefits. AI algorithms can detect patterns that signal a claim is veering toward litigation and provide information about the specific factors associated with attorney involvement, creating opportunities to address concerns early on.

Some interviewees also suggested that AI tools can optimize the claim settlement process by helping predict when a claim might be ready for settlement and what the fair settlement amount should be. This application allows claims managers to decide when to pursue a settlement or what offer to make, ensuring consistency while still allowing for their professional judgment. By analyzing past settlements for similar cases (considering injury, jurisdiction, age, wages, and other relevant measures), AI can suggest a reasonable settlement range for

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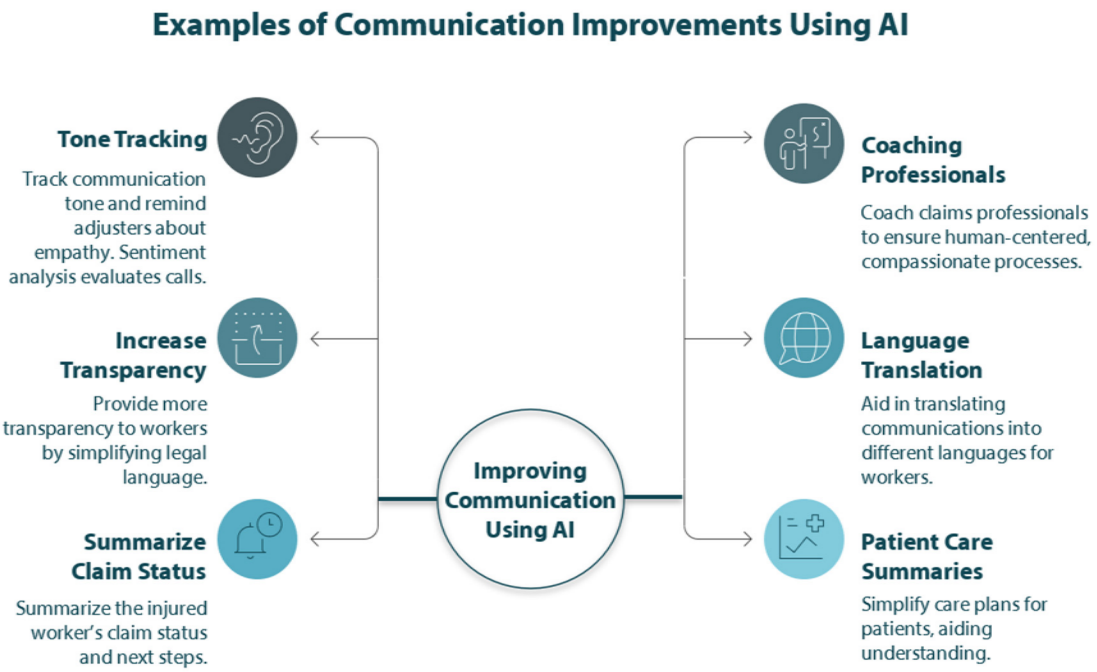
the adjuster or employer to consider as part of their overall analysis, thus speeding up negotiations. It can also identify when a claim might be ready for settlement (once treatment has plateaued and specific time markers have passed) and nudge the adjuster to pursue it. This use can help close claims earlier, reducing the open claim inventory and associated reserves.

Finally, AI-driven trend analysis can provide strategic decision support beyond individual claims. Insurers and large employers can use AI to examine years of claims data to spot emerging trends. AI can examine data faster and more comprehensively than manual analysis, revealing insights that inform underwriting or claim strategies. For instance, models can identify an uptick in certain injury types or geographic pockets of opioid prescriptions. This approach may help proactively adjust policies (like safety programs or pharmacy controls).

Improving Communications

Generative AI can help improve communications between employers/insurers and workers. One concern about the adoption of AI tools that we heard from worker advocates and regulators is that computer programs lack empathy. At the same time, business reviews suggest that users may perceive AI output to have empathetic qualities, as the users feel that their questions or concerns were heard and understood (Treglown, 2025). Employers and insurers can capitalize on this perception by using generative AI tools to monitor the tone of communications between adjustors and workers. For example, insurers can adopt generative AI to track the tone of communications and remind adjusters about the human on the other side of the letter or email. A similar tool can process phone communications. AI-powered sentiment analysis tools can help evaluate phone calls between injured workers and the care coordinators who assist them. The AI listens to call recordings and gauges the customer's emotional state and the adjuster's empathy by analyzing vocal tone and keywords (One Call, 2023). It can flag the use of supportive language and provide real-time feedback, coaching claims professionals on how to ensure that the process remains human-centered and compassionate.



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Another example of the possible value of generative AI tools stems from their ability to provide more transparency to workers. Several respondents suggested that they have used generative AI tools to simplify legal language for communications. Examples include rewriting a dense legal letter into plainer language for an injured worker or rewriting their website page to be more accessible to the general public. Interviewees also mentioned using AI tools to aid in translating communications into different languages. Another respondent suggested creating a tool summarizing the injured worker's claim status and next steps. This application could help bring a greater understanding to the worker of the next steps on the claim and what may be required from them and their employer. Generative AI tools may automatically generate routine updates and allow workers to interact with a chatbot to ask questions, improving the transparency of claims processes.

IMPROVING MEDICAL TREATMENT

Managing medical care is at the heart of the workers' compensation system. AI is beginning to assist in this domain with applications that range from guiding treatment plans and examining vast clinical data to managing care and improving patient outcomes. Key applications include predicting recovery trajectories, standardizing treatment according to guidelines, optimizing utilization review, and enhancing case management. In a survey of system stakeholders conducted by Risk & Insurance, 60 percent of respondents listed claims process automation as playing an essential role in their medical management programs in the near future (DuChene, 2025).

IDENTIFYING NECESSARY MEDICAL INTERVENTIONS EARLIER

The people we interviewed suggested several ways in which AI tools may improve the provision of medical care to ensure injured workers receive appropriate and timely treatment that improves their return to work. One such area is the automated approval of routine care that aligns with existing treatment guidelines. In workers' compensation, evidence-based treatment guidelines[2] define recommended care for common injuries. For instance, an AI might automatically check a proposed treatment plan against the guidelines and alert if something is off (e.g., a request for an MRI that is not typically indicated this early). Suppose a requested procedure or medication aligns with established guidelines and the claim's parameters. In that case, an AI engine can auto-authorize it within seconds, sparing both the adjuster and the patient days of waiting for approval, and reserving human review for more complex or questionable cases.[3] Some systems are being designed such that "for easier cases, AI can make decisions about appropriate care; for more complex cases, a human needs to be involved," with the AI even capable of distinguishing which is which. This tiered utilization review (UR) could maintain compliance with state rules (which often require physician oversight) while facilitating faster approval of necessary treatments.[4] This approach may help UR nurses and physicians make consistent, unbiased decisions on what is medically appropriate and may help speed up care delivery. Some stakeholders we interviewed frame this as "getting to yes faster." Conversely, the AI can flag requests that fall outside of guidelines for human review, improving consistency in utilization review. It can also assist providers by uncovering different paradigms for treatment they might not have considered. However, as noted in

[2] Examples of treatment guidelines include Official Disability Guidelines (ODG) by MCG Health, American College of Occupational and Environmental Medicine (ACOEM) guidelines, or state-specific guidelines.

[3] See the discussion in Hunt et al. (2016) on approaches to examine the relationship between adherence to evidence-based medical guidelines and claim outcomes (duration of disability and medical costs).

[4] States often require that any treatment denial decisions be done by physicians.

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interviews, doctors still want control and may be cautious about AI suggestions. Furthermore, an AI that cross-references treatment recommendations with the latest medical evidence can act as a safety net to catch outlier treatments to ensure that injured workers are neither undertreated nor overtreated.

Related to this is automating the utilization review and authorization process. Some providers are frustrated with the preauthorization process in workers' compensation. They may experience lots of paperwork, different rules for each payor and jurisdiction, and long waits to getting treatment approved. Generative AI can help by auto-filling and submitting preauthorization requests with all required details, reducing back-and-forth. Generative AI tools can identify early on what additional information is needed about the treatment. One medical provider that we interviewed noted that AI tools could "submit the pre-auth so that all the i's are dotted and t's are crossed," increasing the chances of immediate approval. By checking that forms include the correct International Classification of Diseases (ICD-10) codes, documentation, and justifications, an AI assistant can streamline approvals for surgery, imaging, physical therapy, and other care. This application speeds up care for the injured worker (ultimately improving outcomes) and helps providers get paid faster. On the flip side, several payors outside of the workers' compensation system have faced backlash for overreliance on AI tools in medical necessity decisions, leading to lawsuits about reliance on an AI tool that allegedly led to unjustified mass denials (Bendix, 2023; McGee, 2025; Napolitano, 2023). For many stakeholders that we interviewed, these examples reaffirm their beliefs that AI medical decision systems must be used carefully, with human clinical oversight, to avoid bias or inappropriate denials.

Perhaps the most impactful applications of AI in workers' compensation are those that blend clinical insights with claims data to improve injured workers' medical outcomes. Several interviewees stressed that AI in workers' compensation should not be about denying care but used for early identification of cases that need more resources or different interventions. As noted earlier, generative AI text analysis of doctors' notes can uncover research-driven predictors of prolonged disability. Those predictors may include certain combinations of diagnoses, opioid usage patterns, or biopsychosocial factors impeding recovery (e.g., poor recovery expectations, fear-avoidance beliefs, and lack of family support). If the model finds a high risk, it alerts the medical team to act by suggesting that maybe the worker would benefit from a tailored intervention such as a return-to-work (RTW) plan, a specialist referral, a mental health consultation, or more proactive care. However, in this example AI is not replacing medical expertise; instead, it is a tool to enhance clinical decision support.

AI tools can also help injured employees return to work safely and timely. For example, generative AI tools could analyze a worker's job requirements and medical recovery data to suggest modified duties or necessary accommodations. Wearable devices (e.g., fitness trackers and "smart" orthotics) and health apps can provide additional data to monitor functional progress. A real-time analysis may help detect if a worker's activity levels are not improving as expected after surgery, thus prompting clinician outreach. Analyzing recovery trajectories could predict the optimal timing for a functional capacity evaluation or an independent medical exam (IME).

PREDICTING RECOVERY TRAJECTORY

Beyond approvals, AI tools may provide value in recommending personalized information on treatment trajectory and expected recovery. This application may be helpful to employers who value predictability about when workers return to work after an injury. By examining factors like injury type, severity, patient demographics, job demands, and even psychosocial information, AI can estimate how long a worker might be off work and their recovery path. In addition, generative AI tools can monitor an injured worker's progress (from medical notes and recovery milestones) and alert the medical provider or employer if progress deviates from the expected timeline. This approach could prompt a check-in or a referral to a specialist sooner.

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The ultimate aim of these applications is to improve patient outcomes. By standardizing care to what works best and identifying when more (or different) care is needed, AI can help injured employees recover more fully and faster. Interviewees stressed that their use of AI is "not denying resources, but rather adding resources" to cases that need extra attention.

REDUCING THE BURDEN ON MEDICAL PROVIDERS

Generative AI may also enhance care coordination. Some medical providers today spend much of their time on administrative tracking that includes compiling monthly progress reports and sifting through visit notes. Generative AI tools can auto-generate care summaries and status updates from medical records. For example, a generative AI tool could read each physical therapy note and doctor's report and then draft a concise update on the patient's condition and adherence to the care plan. One interviewee said they "automate the creation of the monthly summaries about how care is going based on the notes provided, so the nurse simply reviews and edits rather than writing from scratch." This approach ensures attention to detail while freeing clinicians from clerical work. In the future, AI can integrate data from wearables and health apps into the case management picture. For instance, an injured worker might use a wearable device or smartphone app during rehab that tracks motion or pain levels; AI can aggregate those data to inform medical providers if the patient is progressing or struggling, enabling more timely adjustments to care.

LEGAL AND REGULATORY COMPLIANCE

The workers' compensation system is not just about medical care and claims—it is also a complex legal and regulatory environment. AI tools may provide value by simplifying compliance with the myriad rules and helping manage legal processes in workers' compensation, which vary by state. From ensuring forms are completed correctly to aiding legal research and documentation, generative AI can be a valuable tool for both insurers and regulators, as well as attorneys involved in workers' compensation cases.[5]

One immediate application is in documentation and form handling. Each state's workers' compensation system has required forms, notices, and deadlines. Missing a deadline or omitting required information can lead to penalties or legal setbacks. Generative AI can help by automatically populating forms with the data already in the system and checking filings for compliance. For instance, if a law requires that a worker be sent a notice of rights within a certain number of days after an injury, an AI tool can track the injury date and trigger a drafted notice for review, ensuring nothing falls through the cracks. It can also review documents for completeness and compliance with rules. For example, it can flag if an essential field (like date of injury or claim number) is missing or if a form is outdated. In a 2023 survey, when asked about what AI technology or analytics solutions would be most helpful in managing claims, 35 percent of frontline claims professionals selected "automation of administrative tasks such as form filing or regulatory requirements." This example was the most common response in that survey (Algire, 2023).[6]

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[5] Also see discussion in Gelman (2023c).

[6] Other most helpful AI or analytics solutions mentioned in the survey included the following: automation of claims tasks such as indemnity payments or bill pay (17 percent); prescriptive analysis to help determine what interventions or activities will achieve the best claim outcome (17 percent); analytics with alerts that proactively predict or identify when medical treatment is expected to or exceeds evidence-based medical treatment guidelines or benchmarks (14 percent); analytics with alerts that proactively predict or identify when the length of disability is expected to or exceeds benchmarks (7 percent).

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People we spoke with provided several examples of how AI may help with legal and regulatory compliance. In one example, a multistate employer suggested that AI tools may help ensure that any procedures and payments reflect the regulations of a state or jurisdiction. In another example, a stakeholder reported that queries about regulation in a given state produced accurate summaries about rules and regulations in that state. AI may also help with claim audits, ensuring that workers receive all prescribed benefits according to state regulations, and that all decisions fit within mandated time frames. Stakeholders also indicated the possibility of using AI to audit medical bills to check compliance with state fee schedules and treatment guidelines. While traditional software did this task in the past, newer tools can improve the accuracy of the process by learning from past billing disputes.

Interviewees also mentioned the use of generative AI for legal reasoning and research. Generative AI can sift through legal precedents, statutes, and prior decisions to help claims adjusters or attorneys understand similar cases. For example, if a particular type of injury and circumstance raises a compensability question, an AI could quickly pull up relevant case law or prior rulings from that state's workers' compensation commission. Although AI applications can inform legal strategies and ensure decisions are rooted in precedent, some earlier AI tools produced hallucinations resulting in negative consequences. Newer models are being developed to mitigate these concerns. Interviewees mentioned that some legal departments are experimenting with AI assistants to draft motions or settlement agreements by providing key points and letting the AI generate a first draft, which the human then edits. This application speeds up legal paperwork, although it may also mean a legal "arms race" when both sides use AI to strengthen their positions.

AI tools can also support regulators and compliance officers. State workers' compensation boards and commissions handle vast amounts of data (accident reports, settlements, benefits payments, etc.). AI analytics can help regulators spot macro trends or compliance issues. For instance, a state agency might use AI to analyze all claims data and find if any insurer is systematically underpaying certain benefits or if certain medical providers are driving unusually high costs. In the same way, insurers can use AI to ensure they comply with each state's rules. For example, tools can calculate the correct benefit rate per state law or verify that medical bill payments adhere to state fee schedules. Keeping track of frequent changes in state codes and rules is challenging (states often update treatment guidelines, maximum wage calculations, and other measures). AI can update those tools with the latest regulations and cross-check internal processes against them. One interviewee pointed out that because state rules often change, "maintaining such a system the old way is costly." AI can mitigate this by centralizing knowledge and quickly propagating rule changes into automated decision algorithms.

Risk Assessment and Injury Prevention

Perhaps the most forward-looking application of AI in workers' compensation is in preventing workplace injuries and improving safety, which effectively reduces the need for claims in the first place. The marketplace offers many AI-driven tools that help employers identify existing risks and prevent injuries on the job. These applications include video review apps that can take a video of a workplace and identify potential hazards for severe injuries. The applications also include predictive analytics tools that examine injury risk. AI tools can identify risk factors and recommend preventive measures by analyzing data on workplace conditions and worker behavior, creating a safer work environment that benefits employees and reduces claims for employers and insurers.

The applications also include wearable safety technology that alerts workers about additional hazards in physically demanding workplaces like warehouses, manufacturing plants, and construction sites (Clough, 2022;

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Sharp, 2024). Specific examples include the following:

- Smart vests, belts, or sensors attached to workers can track motions, posture, fatigue levels, and environmental conditions. AI algorithms interpret this streaming data to recognize patterns that precede injuries.
- Proximity sensors and anti-collision systems in the workplace can keep track of workers and moving equipment (like forklifts). If a worker gets too close to a forklift in operation, the wearable can send a haptic alert to the worker and a signal to the forklift driver's dashboard.
- Smart sensors can detect environmental hazards (like air quality, heat, and noise levels), and AI can correlate these with the risk of injury or illness. For example, AI might predict heat stress risk by analyzing temperature, humidity, and worker exertion levels and recommend extra breaks or hydration when needed.[7]

Employers can use AI insights to target safety investments. If AI analytics identify a small subset of tasks or a particular piece of equipment related to most injuries, the employer can focus training or redesign efforts there. Over time, this data-driven approach fosters a more proactive safety culture. Some advanced systems even gamify safety by giving workers feedback and "scores" on safe behavior tracked by AI, which can increase engagement in injury prevention programs.

The implications of AI in injury prevention extend to insurance as well. Economic theory suggests that insurers may eventually offer premium discounts to employers who deploy certified AI safety systems, similar to how telematics in auto insurance can lower rates for safe driving.

Another prevention area where AI can contribute mentioned by stakeholders is worker fitness and return-to-work readiness. After an injury, a primary concern is ensuring the worker is fully recovered and fit for duty to avoid reinjury. AI-driven assessments (potentially using wearables or functional tests) can more objectively evaluate whether a worker can safely perform specific tasks. One interviewee discussed building a tool to make fit-for-duty decisions more objective, possibly by using wearables to compare a worker's functional capacity to job requirements, thereby "eliminating bias" and increasing consistency in these determinations.

AI Uses in Health Care

The people we interviewed mentioned that the health care system is far ahead of the workers' compensation system in terms of using AI tools. Various AI tools are already widely integrated into health care, supporting multiple areas (Fischer, 2024). Examples of machine learning algorithms in health care include identifying DNA mutations in tumors, predicting the likelihood of heart attacks, offering more accurate skin cancer diagnoses, detecting breast cancer risks, recommending medications, and assessing death risk among hospital patients (Mesko, 2023; Pearl, 2018; Pesheva, 2019; Warraich et al., 2024). During the pandemic, studies used machine learning tools to examine CT (computed tomography) scans and X rays, provide personalized risk assessments, help monitor patients' vital signs to inform care escalation decisions, and predict the likelihood that patients experienced severe disease (Mann et al., 2022). These tools also improve health care delivery accuracy, personalization, and fairness (Osoba and Welser, 2017a). Research has demonstrated that machine learning models can significantly enhance physicians' ability to solve prediction-related challenges (Obermeyer and

[7] For more information about the impact of excessive heat on the frequency of work-related injuries, see Negrusa et al. (2024) and Thumula and Fomenko (2024).

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Mullainathan, 2018). Machine learning also holds promises for the development of new drugs and for accelerating advances in biology and gene editing (Zakaria et al., 2023). The advent of generative AI has introduced even more opportunities to enhance the system's efficiency and hopefully improve patient outcomes.

In clinical settings, generative AI is valuable for summarizing medical records, streamlining administrative tasks, and assisting with clinical decision-making. It also plays a role in personalizing patient care by analyzing the individual's data to recommend tailored treatments and interventions (Reisman, 2024; Choy et al., 2024). There is value in the cooperative work of AI and human doctors (Mesko, 2023). Additionally, generative AI offers innovative solutions to combat the growing issue of loneliness, particularly among vulnerable populations like older adults, by providing companionship through AI-driven interactions (De Freitas, 2024). As mentioned by Patel et al. (2024), the focus in health care applications should be on developing use cases so that clinicians and patients understand the effectiveness and efficacy of use. There are many possible ways to incorporate AI into clinical practice, including improving interactions with patients (ambient voice dictation, language translation, scheduling, and electronic health record inbox tools), risk stratification (patient risk assessment tools), diagnostics (analysis of data), procedures (surgical assistance), determining patient preferences (conversational chatbots), and prescribing medications (drug interaction assessment).

One important consideration is a significant gap in trust in generative AI for health care applications. A Pew Research Center survey conducted in December 2022 shows that 60 percent of Americans would be uncomfortable with providers relying on AI when diagnosing diseases and recommending treatment (Pew Research Center, 2023a). In the same survey, most respondents were unconvinced that AI would improve patient outcomes. A January 2024 Ipsos survey of U.S. consumers reported that only 38 percent of consumers somewhat or generally trust generative AI for health care topics, and the majority (61 percent) reported that they do not trust or barely trust it (Choy et al., 2024). At the same time, some patients prefer responses to health-related questions that are provided by an AI chatbot; they rate these responses as higher quality than the responses provided by physicians (Ayers et al., 2023).

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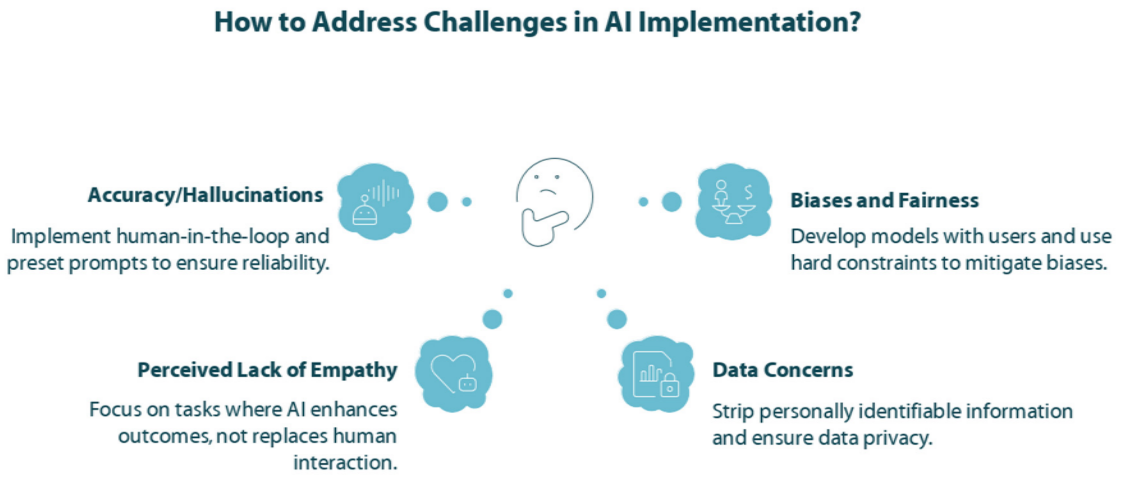
Chapter 4:
Challenges of AI Adoption

While AI tools promise to improve the workers' compensation system, they may also introduce significant challenges and risks. These range from technical issues (accuracy, bias) to ethical concerns (fairness, transparency) to practical obstacles (legacy systems integration, user adoption, costs of implementation) to concerns about the impact on the workforce and economy. More than half of McKinsey & Company (2024b) survey respondents listed inaccuracies, intellectual property infringements, and cybersecurity as risks from using generative AI. Other concerns listed in that survey included personal/individual privacy (43 percent), regulatory compliance (42 percent), explainability (40 percent), equity and fairness (30 percent), workforce labor displacement (27 percent), organizational reputation (24 percent), and national security (13 percent). Surveys conducted by the Pew Research Center show that Americans express increasing concerns over the growing role of AI. In 2023, 52 percent of respondents said that the increased use of AI in daily life makes them feel more concerned than excited, an increase from 37–38 percent in 2021 and 2022 (Faverio and Tyson, 2023). Industry experts emphasize that an uncritical or hasty implementation of AI could backfire. For example, automating decisions without safeguards might harm injured workers or trigger legal liabilities. In this chapter, we examine the key challenges in adopting AI for workers' compensation and strategies to mitigate these risks that have emerged from expert interviews, existing literature, and early use cases.



Accuracy

One of the better-known major concerns with generative AI is its tendency to make errors. Nearly everyone we interviewed mentioned this as an essential concern when using AI tools. Many surveys of AI users revealed similar concerns. While 62 percent of responders to an Ipsos survey conducted in early 2023 reported that AI can save time and resources, 56 percent also responded that generative AI can produce bias or inaccuracies (Larini, 2023). These errors, often called "hallucinations," occur when the AI generates incorrect or nonsensical

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information.[1] For instance, generative AI has even failed simple tasks like accurately counting the number of words in an abstract (Brookings, 2024). In litigation settings, judges sanctioned attorneys who submitted information to the court with citations of cases that did not exist (Merken, 2025; Weiss, 2025; Mulvaney, 2023; Weiser, 2023). Some courts require certification to determine whether litigants have used generative AI to produce documents (Gelman, 2023a). It is not hard to understand that hallucinations can have severe consequences in real life. If a generative AI program makes a wrong prediction in the medical diagnosis, the results may be dire for the patient who follows the advice (Agrawal et al., 2024). In a McKinsey & Company (2024b) survey, 23 percent of respondents reported that generative AI inaccuracies negatively affected their organizations.

A key issue is that AI often makes these errors with high confidence. As a result, some experts suggest that users should trust generative AI only for tasks where it is easy to verify the results (Hamilton, 2024). Others argue that these hallucinations are not necessarily flaws in the system but rather a byproduct of the AI's creative capabilities. However, even if they are part of the system's design, users should carefully manage hallucinations to avoid unintended consequences. Research suggests that understanding the limitations of AI can help users employ it more effectively and productively (Brookings, 2024). Another concern is that the AI's answer may differ based on who asked the question or even the specific wording. It is hard to trust tools for scientific research that give different answers depending on the model parameters (Bibbins-Domingo and Hswen, 2024).

The literature offers many guidelines on how to reduce the impact of hallucinations. See, for example, Jones (2025), Fritz (2025), and Ziegler (2025). Some of the suggestions include training users on the prompts that minimize errors, limiting the creative side of the programs,[2] directing programs to reliable sources, providing constraints that align with known rules, and continuously testing the output. In our discussions, many system stakeholders emphasized that the hallucinations inherent in the system are one of the main reasons they underline the need for humans to be involved in making any decisions.[3] Physicians are ultimately responsible for determining the nature of care for injured workers. Similarly, attorneys are the ones who sign documents to ensure that all the information they provide is correct, and human adjusters are the ones making any denial of care decisions.

Biases and Fairness

Another concern is that AI systems may exhibit bias; they may systematically make decisions disadvantaging certain groups or making unfair recommendations (Gelman, 2019; Osoba et al., 2019). Since AI models learn from historical data, any biases present in the historical data will be reflected in the trained model (e.g., under-treating specific injuries or skeptical attitudes toward claimants of particular demographics). If not carefully managed, AI systems could inadvertently reinforce unfair biases in historical data or processes, leading to inequitable outcomes for specific workers or other parties. Beyond that, AI can introduce new biases or reinforce existing inequalities due to data limitations or the systems' development. These concerns are especially pressing in fields such as criminal justice and health care, where the consequences of biased decisions

[1] This occurs because LLMs generate each word in a sequence probabilistically, which creates potential for inaccurate statements.

[2] This is also known as setting the temperature to zero.

[3] To address these concerns, some recent models display their reasoning along with their output to help the user understand how the output is derived. The models may also cross-check the output.

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can be profound (Grunfeld, 2017; Peet et al., 2022; Mann et al., 2023; Osoba and Welser, 2017a). For instance, an AI algorithm used to predict recidivism in the criminal justice system could unfairly target certain racial groups, exacerbating systemic discrimination (Osoba and Welser, 2017a).

In workers' compensation, examples of biases may arise in claims processing, claims approvals, or medical care approval. For example, bias might mean certain groups' claims are denied or flagged at higher rates not because of legitimate factors but due to skewed patterns the AI learned. If historical claims data reflect, say, socioeconomic biases (perhaps claims from specific regions or certain demographic groups faced more skepticism or had worse outcomes due to non-AI reasons), a machine learning model could pick up on those correlations and start unjustly downgrading or red-flagging new claims from those groups. Outside of workers' compensation, there are heightened concerns that AI tools may improperly deny care. In particular, lawsuits against multiple health care insurers allege that their AI tools denied medically necessary care, often without an appropriate doctor review, with some plaintiffs claiming over a 90 percent error rate in denials that were overturned on appeal (Heath, 2023; Napolitano, 2023; McGee, 2025; Reed, 2023; Schreiber, 2025).

Interviewees cautioned that generative AI models have biases, and relying on them for decisions that affect benefits or care is risky. "AI is not a magic bullet; complex problems require complex solutions," one expert said, warning against blind faith in generative AI outputs. If generative AI is used in claim decisions, it "cannot be in a role where bias can play an important role, meaning that final decisions need human judgment." This requires a system where adjusters are aware of potential biases and empowered to act rather than rubber-stamp AI.

Generative AI developers are trying to neutralize biases in training data and instructions, and companies are implementing testing to mitigate bias. For instance, to identify biases, organizations may incorporate routine audits of the model performance on marginalized populations. Nonetheless, it may not be entirely possible to audit a complex neural network's bias. Thus, transparency and human oversight are crucial. Many interviewees mentioned the need for transparency in how decisions are made when generative AI tools assist in those decisions—the reasoning behind the decisions needs to be documented and explained with objectively observed factors. Ensuring AI does not inadvertently discriminate (for example, against older workers or those with particular medical histories) is both an ethical mandate and likely to be required by regulations. Many organizations are instituting bias checks. In particular, they run the model on various subpopulations to see if error rates or outcomes differ significantly. The American Medical Association (AMA) has explicitly advocated for this in health-related AI, calling for proactively identifying and mitigating bias in algorithms to ensure equitable outcomes (AMA, 2024). Developers may adjust the model for disparities or add constraints to correct them. In short, bias is a known risk, and the compensation industry must approach generative AI output with a "fairness first" mindset by using diverse training data, validating models for bias, and keeping humans in the loop for final judgment.

Also, limiting the role of AI in final decisions for sensitive matters can be crucial. For example, a company might use AI to prioritize claims for review but not to finalize a denial without human sign-off. Many interviewees said that their corporate governance forbids AI from making final decisions that affect benefits without human involvement. Such policies ensure that a biased algorithm does not directly harm a worker; a human in the loop can catch and correct any unfair recommendation (albeit this relies on the human's awareness and impartiality). Several interviewees referred to this approach as keeping humans at the wheel, and recognizing the technology's role as a "copilot" (in a reference to Microsoft's AI tool). Furthermore, respondents stressed the need to monitor employee's use of AI tools to avoid overreliance on them or cede too much of their expertise to machines.

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Perceived Lack of Empathy

One of the concerns about using AI tools expressed by regulators and worker advocates is that decisions made by computers and programs do not account for the human side of an injury. Each worker brings their nature and experiences to claims processes, making it difficult for data systems and AI tools to capture them. Data or formulas cannot capture humanity and the fact that each client has their own story. In several discussions, interviewees mentioned that we must be cognizant that computers do not have empathy. This reinforces the need to think of the best ways to implement AI tools alongside humans, instead of replacing human workers in the workers' compensation system. Human adjusters, adjudicators, attorneys, and medical providers bring vast experiences, empathy, and humility that may be needed to better serve workers recovering from their injuries.[4]

Data Concerns

Stakeholders we interviewed mentioned several groups of data-related concerns. Those include concerns about data privacy and security, access to sufficient data to train AI models, and data ownership and governance. We discuss these concerns below.

Data privacy and confidentiality risks

AI in the insurance industry relies heavily on large datasets to train and improve the accuracy of predictive models. These datasets often contain sensitive personal information, including medical records, financial histories, employment data, and claim details. While large datasets are essential for building sophisticated AI models that can improve efficiency, enhance decision-making, and predict risks more accurately, they also raise significant security concerns and create new dangers for industries like insurance (Powell, 2024). Introducing AI, especially cloud-based or third-party AI services, raises data privacy and security concerns. Companies worry: Where does that data go if we feed claims data into a generative AI (like ChatGPT)? Could it be leaked or used to train external models? Some stakeholders we interviewed mentioned the infamous incident where employees pasted confidential code into ChatGPT, which led Samsung to ban such use (Ray, 2023).

Many stakeholders we interviewed recognized the need for IT infrastructure that protects sensitive information about individuals. They expressed concerns about cyber risk, data breaches, leaks, and unauthorized access. If these datasets fall into the wrong hands, such as cybercriminals or foreign adversaries, it could lead to identity theft, fraud, or other forms of exploitation. Furthermore, the growing interconnectivity of systems within the insurance industry means that a breach in one part of the system could have a ripple effect, compromising multiple datasets and systems simultaneously. These concerns also apply to cloud-based systems. If an adjuster were to feed claim notes into a public generative AI tool to get a summary, that could violate privacy policies because the data is now on external servers. For this reason, some companies have had to restrict employee use of tools like ChatGPT.

To address these concerns, many respondents mentioned using walled-off AI systems in which the queries or the data do not leave a secure environment to reduce the likelihood of data leakage outside the organization. Some of the companies impose similar requirements when dealing with vendors. Many interviewees mentioned

[4] In general practice and clinical care, literature indicates the importance of empathy to the perceived quality of care (Derksen et al., 2012; Moudatsou et al., 2020; James, 2024).

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ensuring that only authorized systems and personnel can see personal information. They mentioned strict contractual agreements with any AI vendors about data handling and data security, including no unauthorized reuse, and proper deletion. Some are taking concrete steps to de-identify data before sending it to AI services. For example, one data science leader described how they "strip out PII [personally identifiable information] information" from claim notes and documents before using them to train or run through models.

DATA REPRESENTATIVENESS FOR AI MODELS

Another related concern is whether a given player in the market has enough data to train AI models. Those developing the models are concerned about whether their data is sufficient to identify rare events and reflect different market subsets. For example, some carriers may have biased data because they cover only some regions, demographics, or industries. In such cases, an AI model trained on large datasets that unintentionally reinforces biases in the data may lead to errors in decisions, especially if the predictions are applied to different markets than those represented in the data or to infrequent claims. For example, higher rates of legal representation in one industry or employer type does not imply similar rates if the mix of employers changes.

DATA OWNERSHIP

Stakeholders also raised questions about the ownership of data. Employers are often concerned about giving vendors access to data if the vendors use these data to train AI models for other companies. One employer expressed concern about providing access to data if the data can identify a possible range of settlements since other parties may use this information in future negotiations. A related question is, Who is going to monetize the use of the data? Employers may not be willing to share data if they do not reap the benefits later on. Similar concerns may apply to other stakeholders as the workers' compensation industry relies on sharing information between employers, injured workers, medical providers, vendors, carriers, and brokers. As mentioned earlier, respondents noted that successful AI implementation relies on open communication among stakeholders about how AI tools are used and not used and the implications of their use.

LEGACY SYSTEMS AND DATA INTEGRATION

One practical challenge in adopting AI in workers' compensation is the state of existing IT systems and data silos. Many players in the workers' compensation industry use legacy claims systems and outdated software or even still rely on paper and manual processes for key functions. These legacy systems can be inflexible, closed-off, and not designed to feed data to AI tools. Even the best AI algorithms will struggle to deliver value without overcoming integration issues and improving data quality, although companies may bridge the gap between older and newer claim systems using optical character recognition and natural language processing. Several respondents mentioned that newer entrants to the market are perhaps better equipped to adopt AI tools since they may have more modern data systems and are more agile in implementing AI solutions. At the same time, they still may not have the data necessary for viable AI solutions since, with the limited data, they may have very low confidence in their models.

While AI offers many promises to increase efficiency in managing claims, the business press discussion realizes the need to rethink how claims systems are viewed (Powell, 2024). The shift requires moving away from viewing data systems as simple bill-paying machines and adopting a more thoughtful approach to data, focusing on holistic claims management. This approach enables faster processing of complex claims while offering real-time analysis.

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Change Management

Beyond technical issues, one of the biggest hurdles for AI in workers' compensation is people and culture. The insurance industry, particularly workers' compensation, is known to be conservative and cautious when adopting new technology. Employees may resist AI due to fear of job loss or distrust of automated decisions. Ensuring successful AI implementation requires careful change management (a structured approach to implement changes with minimal disruption, maximizing adoption and minimizing resistance): preparing the organization, training staff, fostering an openness to new ways of working, and understanding where AI tools may bring benefits. It is vital to caution that 80 percent of AI projects fail (Kahn, 2022). Discussion in Cappelli et al. (2024) suggests that while generative AI tools can reshape the workplace, their impact depends largely on how organizations integrate them. The authors emphasize that while LLMs represent a revolutionary advance in AI and can handle numerous language-based tasks, their practical adoption in organizations still presents significant challenges. LLMs can handle functions like summarizing information and drafting content, which could enhance productivity, but they still require substantial human oversight for quality control. The main challenges include ensuring data quality, managing inconsistencies in AI-generated outputs, and effectively training employees to work with these tools. While LLMs offer potential cost and efficiency benefits, their adoption introduces new roles and tasks, making AI a complement to human capabilities rather than a straightforward replacement. Employers should view AI as a way to complement existing roles rather than eliminate them (Cappelli et al., 2024). Another concern is whether organizations consistently and reliably execute on the information provided by the new AI tools. Success depends on the organization having a culture that is willing to change processes to improve claimant outcomes. This concern is analogous to concerns expressed about predictive modeling tools that promised improved outcomes for workers but sometimes failed on this promise because organizations did not act on the information provided by the tools.

Organizations that successfully implemented generative AI tools shared several common features. First, they all started by thinking carefully about what tasks can benefit from AI adoption. Sometimes, it means starting with more routine tasks that everyone is happy to offload. Some tasks may not require AI solutions or may still be performed better by humans. Second, they created teams that combined data scientists with experts who would use those generative AI tools in the future. For example, designing an AI tool that summarizes claim information for adjustors requires input from adjustors and an understanding of how they are going to use this information. Similarly, a generative AI tool that nurse case managers use requires their feedback during the design process. One best practice shared was to "develop the program with claim teams and test with claim teams." Involving the end users in the design and pilot phases helps ensure the AI tool fits their needs and helps them feel ownership. It is a lot easier to adopt something you helped create and refine. Third, these organizations spend substantial time testing the tools to ensure that they do what they need to do and that the results they produce are better and faster than what the adjustors would have produced. One approach is determining what is missing when humans perform the task unassisted. Do AI tools find new insights that would have been missed otherwise? Finally, most organizations emphasized that the role of AI is to augment, not replace, workers—a message echoed by many interviewees. For instance, one respondent said their approach is to "make AI do the boring work and let humans do work that matters." Most organizations also ensure that AI does not make a decision alone without human intervention.

Training and skill development are crucial change management elements. Introducing generative AI means changing workflows that have been the same for years. Employees need to learn how to interpret generative AI outputs, how to incorporate them into their decisions, and when to rely on or override the AI output. Without proper training, even a well-designed AI tool can go unused. For example, adjusters might ignore a dashboard

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of risk scores if they are not comfortable with it. In a survey of a convenience sample of adjusters, 65 percent reported receiving little to no AI training, and 58 percent reported being "not confident at all" or "not very confident" in their ability to use AI tools effectively (Jackson, 2025).

Another concern raised about a wider adoption of AI tools is preserving the collective experience of workers' compensation professionals. In our interviews, experienced claims adjusters and underwriters mentioned that they can easily spot if output from AI models does not reflect their system knowledge. However, they are concerned that the new generation of claims professionals may not develop the same experience and depth of training, especially if the new hires must outsource many tasks to AI tools. The concern is that the new hires will be unable to develop the critical thinking skills required to examine challenging workers' compensation issues. These issues mirror concerns in the literature that increased reliance on AI tools may hinder the development of critical thinking abilities (Gerlich, 2025).

Costs of Implementation

Another key concern when implementing AI systems is the high cost of adoption. Developing AI tools in general, and LLMs in particular, requires significant financial investment, making it costly for organizations to build their systems from scratch. Even straightforward applications require substantial efforts (Patel, 2025). Furthermore, successful development and adoption requires costly training of the system to develop expertise so the system is able to provide valuable information or detect a useful pattern. While AI models can be adopted across different users to spread these costs, the widespread adoption of AI tools will ultimately depend on whether the value they provide justifies the implementation expenses (Lamarre et al., 2024). The initial excitement surrounding generative AI has cooled as organizations realize the extensive changes required to harness its benefits fully (Lamarre et al., 2024). Opinion pieces often mention that there is very limited evidence that generative AI changes productivity while generating substantial costs, and it is not yet clear whether these investments will pay off (Funk and Smith, 2024). The exceptions include the evidence of improving coding in programming tasks (Peng et al., 2023).

High costs of implementing AI tools may limit the scope of tasks that employers can automate, potentially reducing the economic impact of AI (Fleming et al., 2024). Not all tasks may be ready for automation, especially in fields like workers' compensation, where AI adoption often requires a complete rethinking of data systems. While significant opportunities exist in claims management and underwriting, organizations need the right tools and robust data infrastructure to fully capitalize on AI's potential. Organizations require high-quality, clean, and usable data. As one of the interviewees mentioned, "AI is only as good as the data" holds especially true. As discussed by Cappelli et al. (2024), using poor-quality data can lead to incorrect or biased outputs. As experts point out, value increasingly comes from how well companies can combine and integrate their data and technologies. For example, integrating generative AI with analytic AI can create unique capabilities, such as predictive models that use behavior data and then feed insights from those models into generative AI systems to produce personalized content.

A related problem is that the development of AI tools so far has focused on niche solutions that address a narrow issue. While these limited solutions may be helpful, they may not comprehensively solve workers' compensation-specific problems in a cohesive package. This may reflect the complexity of the workers' compensation system, which may lead vendors to choose other lines of insurance to focus their attention on first. Furthermore, it will create a need for the future integration of different models and solutions.

Opinions on the future of AI vary widely among experts. Some believe that AI will drive tremendous

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societal changes, while others, including certain AI pioneers, argue that the power of AI is exaggerated (Mickle, 2024; Ziegler, 2024; Mims, 2024a). Recent technological releases treat generative AI as a feature of the existing products rather than a new product (Mims, 2024c). Others emphasize the value of the transformer models underlying generative AI, suggesting that the applications of these underlying models can change the world by speeding up scientific discoveries or serving as a basis for a universal AI that can power any robot (Mims, 2024b).

Despite substantial investments in AI-related technologies, some observers question whether these investments will ultimately pay off, raising concerns about the potential return on these costly implementations (Mickle, 2024). Ultimately, the success of AI systems will depend on balancing the high implementation costs with the potential for transformative benefits. As discussed by Cappelli et al. (2024), the benefits of generative AI tools are offset by other costs, such as the need for human oversight, managing data quality, and verifying AI outputs.

Use cases show that successful automation scaling in a hospital setting requires substantial effort to determine the processes that are right for automation, assemble the right knowledge to integrate technology to automate the tasks, and understand the complexity of the tasks and the value of automation (Armstrong and Berkowitz, 2024).

Other Challenges Mentioned by Workers' Compensation Stakeholders

Next, we outline several additional challenges mentioned by stakeholders. While these challenges are not directly related to daily workers' compensation workflow, they were important for some of the respondents we interviewed.

Impact on Employment and Jobs

The latest AI programs have raised alarm among many people that their jobs could be eliminated and replaced with AI tools. Many people we interviewed expressed concerns about the impact of AI on employment. The concerns were primarily about the societal implications of many jobs potentially disappearing due to automation, while others expect a change in job roles rather than the elimination of them. Public opinion research shows a heightened level of concern about potential job losses. A global survey conducted by Ipsos in 2024 reported that 36 percent of respondents expected AI to replace their jobs in the coming years, with those with a higher level of education reported being the most concerned (Carmichael, 2024). A survey by the American Psychological Association (APA) revealed that 41 percent of workers are concerned that AI will take their jobs, with younger workers expressing higher levels of concern. Among workers aged 26–43, 44 percent reported using AI tools at least once a month, and 50 percent worry that new technologies will eventually render some or all of their job duties obsolete (APA, 2024).

Similarly, an Ipsos survey found that 46 percent of younger workers fear their jobs could be replaced by AI within the next five years (Larini, 2023). Moreover, fewer than one-third of those surveyed said they are "excited" about using AI in future workplaces. Only 6 percent of workers said workplace AI use will lead to more job opportunities in the long run (Lin and Parker, 2025). For example, when asked whether workers are more worried than hopeful about the future of AI use in the workplace, respondents expressed that they are far more "worried" (52 percent of respondents) than "hopeful" or "excited" (36 percent and 29 percent, respectively), according to Lin and Parker (2025).

At the same time, the estimates of job losses due to AI implementation vary widely due to substantial

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uncertainty about what the share of tasks that can be automated is (Walker, 2024; Osoba and Wesler, 2017b; Sytsma and Sousa, 2023). Estimates by Goldman Sachs suggest that AI could replace a quarter of work tasks in the United States and Europe, and replace the equivalent of 300 million full-time jobs worldwide (Vallance, 2023). The estimates of the World Economic Forum (2023) suggest that AI could automate up to 26 million jobs by 2027. Estimates by McKinsey forecast that generative AI could automate tasks accounting for up to 30 percent of hours worked in the United States by 2030, potentially displacing millions of workers (McKinsey & Company, 2023a). A survey by the Pew Research Center shows that 19 percent of workers were in jobs most exposed to AI, defined as jobs in which the majority of activities can be replaced or assisted by AI (Kochhar, 2023). Other estimates suggest that AI and automation will lead to job losses of about 1 to 2 percent of total employment, although many more jobs will be transformed rather than eliminated (McCormack, 2024; Shaping the Future of Work, 2023).

The potential impact of AI varies across different industries and occupations. Kinder et al. (2024) identified several professions that are particularly exposed to AI and may experience significant changes due to its expansion. Moreover, as Korinek (2024a) points out, the broader adoption of advanced AI, such as artificial general intelligence and robotics, could fundamentally alter the value of human labor. In a future where AI can perform any cognitive or physical task that humans can, the unique role of labor in the economy may diminish, raising deep concerns about the future of work.

Ultimately, we do not know what future firms will look like. Some suggest the need for humans to be involved since they must direct the process, although the jobs will differ (Cowen, 2025a and 2025b). Others suggest that AI will likely replace doctors, teachers, and professionals within the decade (Huddleston, 2025). Another common perspective is that LLMs may change job roles rather than eliminate them. Many of the people we interviewed mirrored the sentiment that success in a job will require understanding how to use new AI tools to improve productivity. A common refrain is that your job will be replaced by someone who knows how to use AI (Cowen, 2025a and 2025b). Given the risk of potential errors, it may be challenging to introduce LLMs for more complex strategic tasks. Similarly, LLMs may produce conflicting answers to the same prompt, leading to the need for human decision-makers to intervene. As a result, the impact on employment will depend mainly on how organizations choose to integrate LLM capabilities alongside human workers (Cappelli et al. 2024).

IMPACT ON DEMAND FOR ELECTRICITY

Several people we interviewed also expressed concerns about the demands for electricity related to AI. AI models require a substantial amount of energy to train and to run. Overall, the global power demand by data centers could double from 2022 to 2027 (Pilz et al., 2025), likely adding stress to the electric grid (Hiller, 2024). Furthermore, ChatGPT uses substantially more energy per query than a Google search. Some estimates suggest that ChatGPT requires 10 to 60 times more energy and contributes more to carbon emissions (RW Digital, 2024; Kanoppi, 2025; Kerr, 2024; You, 2025; Zewe, 2025). It requires substantial investments in the electrical grid and expansion of power use, possibly limiting the amount of power available to other customers.

FUELING MISINFORMATION AND FRAUD

The rise in generative AI raises concerns about the increased potential for scams and fraud in the financial services sector. Scammers can use generative AI tools to create fake identification documents to help open fraudulent new accounts or take over customers' existing accounts (Bousquette, 2024; Vanderford, 2025). In the insurance industry, this may mean rethinking how information is collected after accidents, as accident

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images can be manipulated using generative AI tools (Zurich, 2024). While the stakeholders we spoke to had not observed specific instances of such AI use in the workers' compensation system, they were hyperaware of its potential.

Beyond direct implications for the workers' compensation system, some stakeholders we interviewed also expressed larger societal concerns about the role that new technologies may play in spreading misinformation. The concern is that the widespread use of AI systems makes it easy to spread misinformation and manipulate public opinion, which in turn poses significant geopolitical risks (Mims, 2023; Beauchamp-Mustafaga et al., 2024; Marcellino et al., 2023). A survey by Ipsos reported that AI is expected to make disinformation worse, with 37 percent on average reporting that AI will make disinformation on the internet worse (Carmichael, 2024). The ability of AI to create convincing falsehoods could exacerbate what researchers have called "truth decay," a phenomenon characterized by the diminishing role of facts and analysis in public discourse (Kavanagh and Rich, 2018). This erosion of trust in institutions is a critical concern for national security, as it weakens public confidence in the information provided by governments and other authorities (Beauchamp-Mustafaga et al., 2024).

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CHAPTER 5:
REGULATORY ENVIRONMENT

The potential for rapid adoption of AI tools across the workers' compensation industry raises questions about how the regulatory system may respond to these changes. While AI systems can potentially improve outcomes for workers and insurers, unchecked AI may introduce many issues that we have discussed above (including biased decision-making, lack of transparency in claims evaluations, and reduced data privacy for workers). In this section, we summarize key observations about efforts that states and companies undertake to ensure that workers' compensation AI solutions remain effective and equitable.

STATE-LEVEL REGULATIONS AND NAIC INITIATIVES

We are not aware of any AI laws specific to workers' compensation. However, states have expanded oversight of AI in the general insurance domain. Many states follow the guidance of the National Association of Insurance Commissioners (NAIC), a standard-setting body for state insurance regulators. In 2020, the NAIC adopted a set of principles on artificial intelligence to guide insurers and regulators (NAIC, 2020). These high-level principles emphasize fairness, accountability, compliance, transparency, and safety in AI applications. In short, insurers using AI should ensure it is fair and ethical (e.g., no unfair discrimination), that they remain accountable for outcomes, that all insurance laws are complied with, that AI-driven decisions can be explained to stakeholders, and that systems are secure and robust (NAIC, 2020). While not a law, these principles signal regulators' expectations, and many insurers have internalized them when developing AI governance.

Building on those principles, in late 2023, the NAIC approved a model bulletin on AI use by insurance companies (NAIC, 2023). The bulletin, which state insurance departments can issue to insurers, outlines several key principles for insurers using AI systems, including governance, compliance, and consumer protection:

- Insurers should properly oversee AI applications, including board and senior management involvement in an AI governance program.
- Any decision impacting consumers made or supported by AI must comply with all applicable insurance laws and regulations, such as anti-discrimination and unfair claims practices laws.
- Insurers should address AI systems' potential inaccuracies, biases, and data vulnerabilities. Companies should validate their AI to ensure it does not result in unfair bias or faulty outcomes.
- Firms should document AI model development and monitoring so they can explain AI-driven decisions to regulators or consumers if needed.
- The bulletin suggests insurers implement policies on data quality, bias testing, cybersecurity measures, and vendor management when using AI.

As of March 3, 2025, 25 states had adopted the model bulletin, and 4 other states had issued insurance-specific regulations (NAIC, 2025).

Apart from NAIC efforts, some states are either considering or already implementing various regulations to limit the use of AI by insurance companies, focusing on consumer protection, fairness, and accountability. Some examples include the following:

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- Florida's Senate Bill 794 (2025) mandates that decisions involving AI-generated claim denials be reviewed by a qualified human professional to ensure accountability and reduce the risks of bias or errors.
- Colorado Senate Bill 24-205 (in effect on and after February 1, 2026) requires that an artificial intelligence system developer use reasonable care to protect consumers from any known or reasonably foreseeable risks of algorithmic discrimination.
- New York State Insurance Circular Letter No. 7 (2024) requires insurers to perform regular bias audits, submit transparency reports, and notify consumers when AI influences underwriting or claims decisions. Washington and Texas have introduced similar measures focusing on audits and accountability.

Virginia provides an example of a comprehensive AI policy approach. In January 2024, Virginia's Governor issued Executive Order 30, establishing a broad AI policy for state government (Office of the Governor of Virginia, 2024). While not specific to insurance, it implemented standards and guidelines to ensure safe, ethical AI use across all state agencies (Virginia IT Agency, 2023 and 2024). The standards include rules for safeguarding citizen data, conducting AI pilot programs in a controlled way, and training state employees on AI tech. Virginia's policy emphasizes "guardrails" to protect the public while encouraging agencies to experiment with AI to improve services.

Other Regulatory Structures

Many interviewees mentioned that their companies have voluntarily followed guidance from NAIC and adopted internal AI governance policies to ensure that any AI use complies with privacy laws, ethical guidelines, and regulatory expectations. They formed internal committees, often including legal, compliance, data science, and business leaders, to vet AI projects or hire third-party auditors to review their algorithms for bias and robustness. In our discussion, respondents often mentioned the steps they take to adhere to the principles of transparent and customer-centric AI.

In the medical arena, the AMA has taken a leading stance on AI in health care decisions. In November 2023, the AMA released new principles for augmented intelligence in health care (AMA, 2023 and 2024). These principles call for ethics, equity, and transparency in AI tools clinicians and health systems use. The AMA's principles emphasize several points: appropriate oversight (both government and non-government) to manage risks; transparency so that patients and physicians can trust it; and processes to mitigate bias and protect privacy (AMA, 2023 and 2024). While the AMA principles are not law, they may influence state medical boards and relevant medical committees for workers' compensation. While the principles welcome AI use to assist care, these uses should meet the same ethical standards as any medical intervention. AMA also advocates that regulators (like the Food and Drug Administration [FDA] for medical AI devices) ensure rigorous evaluation of AI algorithms. While these guidelines are broad, they may be relevant to workers' compensation systems when using AI for medical reviews or treatment recommendations. In workers' compensation, this means AI might recommend or facilitate care, but medical providers are responsible for the decisions. The American Bar Association (ABA) has similarly started examining AI in legal systems, particularly regarding legal ethics (for example, lawyers using AI must ensure confidentiality and accuracy). Combined, the medical and legal professional guidelines set an expectation that human professional responsibility remains paramount in the decisions that affect AI medical care or legal rights.

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LEGAL SYSTEM

Several stakeholders suggested closely watching litigation trends as AI use expands, anticipating increased disputes directly involving AI-driven decisions. The perception is that the liability system has yet to catch up with the rapid advancements in AI technologies, creating a legal and regulatory gap that poses significant challenges for businesses, individuals, and policymakers (Treyger et al., 2023). Accountability becomes increasingly important as AI continues to be integrated into critical industries like health care, insurance, and autonomous vehicles. Traditional liability frameworks are not well-suited to address the unique challenges posed by AI, especially when determining fault in cases where an AI system makes a critical error or causes harm.

For example, in the case of autonomous vehicles, if an AI-driven car is involved in an accident, it is unclear whether liability falls on the manufacturer, the software developer, or even the car owner. Similarly, in health care, if an AI system misdiagnoses a patient or provides flawed treatment recommendations, the question arises: Who should be held responsible—the AI system itself, the medical provider relying on it, or the developer of the AI model? These questions become even more complex as AI systems become increasingly autonomous and capable of making decisions without human input.

Court decisions are likely to shape the boundaries of AI use. Several lawsuits have alleged the use of AI in insurance or care denials (see, for example, allegations against Cigna, UnitedHealthcare, and State Farm: Bendix, 2023; McGee, 2025; Napolitano, 2023; Huskey v. State Farm Fire & Casualty Company, 2023). Attorneys are actively monitoring how AI might introduce "bad faith" exposure. For instance, if an insurer blindly follows an AI denial recommendation without proper investigation, that could be argued as acting without a reasonable basis. These legal gray areas will evolve in the next 5–10 years.

One of the significant hurdles in adapting a liability system for AI is the "black box" nature of many advanced AI models, especially those using deep learning. These systems are often not easily interpretable, making it difficult to trace the root cause of an error or malfunction. If a system fails, the lack of transparency in how the AI made its decisions complicates assigning blame. Additionally, the continuous learning and evolution of AI systems mean that the behavior of the AI can change over time, further complicating liability issues.

There are also broader societal concerns about fairness and equity in the current liability frameworks about AI. If AI systems disproportionately affect certain groups, such as marginalized communities, and lead to biased outcomes, the liability system must ensure that those harmed have a pathway to justice. Current regulations may not be adequately prepared to handle these nuanced ethical and social issues that arise with AI.

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Chapter 6: Concluding Remarks

This report discusses many promises and challenges of using AI in workers' compensation based on semi-structured interviews with major stakeholder groups (including employers, insurers, regulators, service providers, medical providers, and worker advocates) and reviews of published materials. The overwhelming perception from workers' compensation practitioners is that AI tools are here to stay and will change processes in the system. Many vendors are moving from creating niche solutions for narrow problems to developing end-to-end solutions that cover all life cycles of the claim, dramatically changing how workers' compensation claims are processed, from initial intake to final resolution. Many processes that once took days of back-and-forth can happen in near-real-time with AI, if integrated into a cohesive workflow. Furthermore, many challenges of implementing AI tools can be feasibly addressed. To conclude this report, we offer several observations for those considering whether and how to introduce or expand the use of AI in their organization.

An important takeaway from this discussion is that workers' compensation is in the early stages of adopting generative AI and that organizations differ widely in their level of AI adoption (as was the case with earlier technologies). More-entrepreneurial organizations are willing to investigate possible efficiency gains from new technologies and prove or disprove their value. Some organizations have already piloted and released AI tools, while others are taking a more cautious approach that minimizes potential risks, opting to learn the value of these tools from the experiences of early adopters. The examples provided in this report are still just a promise for many organizations. As a result, no one solution applies to all players in the market. For some organizations, just digitizing information is a challenge. There are differences across firms' capacity to implement tools requiring modern data systems. Thus, the challenges that different firms face are likely to differ.

A unifying thread from our discussions is the need to think carefully about the problems that organizations would like AI to solve and the need to weigh the potential strengths and limits of AI. The assessment may vary across different groups of stakeholders and companies. As a result, it is vital to manage expectations about the use of AI and avoid overhyping its potential. Many problems may not even require an AI solution. The objective is to identify the pain points of the workers' compensation process and to figure out how they can be resolved (with or without limiting options to AI tools). Finding an AI solution may also depend on access to appropriate data. Some market participants may not have enough data, especially when considering rare cases or state-specific context. In addition, it is important to keep in mind the tasks where AI may hold relative advantages. For instance, AI may excel at handling large volumes of data, finding patterns, and performing repetitive tasks quickly. However, AI is not a magic wand for everything. Complex, novel cases or highly personal interactions may defy automation. Adopting AI tools requires a lot of expert knowledge, input, and testing to be valid.

A recurring theme of our discussions with workers' compensation stakeholders was the need to balance innovation and caution. AI tools can potentially revolutionize the efficiency of workers' compensation processes, although they also require maintaining human oversight, empathy, and accountability. Users need to navigate these dualities with care. On the one hand, the benefits of AI in workers' compensation are substantial. We have heard that AI can speed up claims processing, flag critical issues that humans might miss, and even prevent injuries outright. As a result, injured workers may get faster care, experience shorter claim durations, and return to work sooner. Employers and insurers can see lower costs, reduced fraud losses, and more predictable claim outcomes. Doctors gain decision support that can enhance treatment effectiveness. In

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short, when done right, AI can make the system work better for everyone. For example, quicker claim approvals mean an injured employee receives necessary care faster, which improves their satisfaction and recovery prospects. The company benefits, too, by resolving the claim efficiently. Such positive outcomes are the beacon that draws organizations to AI.

Yet, the challenges and risks remind us to proceed wisely. A poorly implemented AI could deny legitimate benefits for an injured worker, causing hardship and legal battles. Overreliance on algorithms could make the process feel cold and impersonal, damaging the crucial trust in the workers' compensation system. Data breaches could erode confidence and harm workers whose personal information is exposed. Biases, if unaddressed, could mean some employees consistently get the short end of the stick. Workforce fears around AI can lead to morale issues or even a talent exodus if not managed (e.g., experienced adjusters leaving because they feel their expertise is undervalued in an AI-centric model).

For many organizations we interviewed, balancing possible benefits and challenges of AI implementation means taking a measured, human-centered approach to AI. Some organizations balance AI tradeoffs by using AI to make fast preliminary decisions but always layering in a manual review step before finalizing any decision. This approach reflects the vision of AI being used as a collaborative tool, treating AI as a partner to human professionals, helping "move people away from mundane work into more challenging tasks."

One framework for considering AI's benefits is whether it improves worker outcomes. A balanced use of AI prioritizes workers. For instance, it may improve human connections by freeing time for adjusters to make an extra phone call or for nurse case managers to spend more time understanding workers' concerns.

Another point is that the technology is still developing. We do not know what different tools will look like in five years, how these changes may affect jobs, and which tasks may be automated. We do not know how many of the possible benefits outlined in this study will be realized in the future and how many just reflect hype. What this discussion suggests, however, is that there is a need for a focused examination of how AI models are performing and the main challenges for implementation so that appropriate lessons can be shared across stakeholders. Thoughtful consideration of technological advances is essential for the continuing success of the workers' compensation system to ensure that workers get necessary care and return to work after their injuries in an effective, efficient, and equitable way. Furthermore, organizations in health insurance and financial services will probably be ahead of the workers' compensation system in adopting AI tools, which allows workers' compensation players to learn from the use cases in these industries.

Finally, this study offers the first insights into the promises and challenges that AI presents to the workers' compensation system. Future analyses may benefit from a quantitative examination of the use of AI technology, highlighting how it varies across different stakeholders and tasks. These studies may offer a more in-depth examination of the specific use cases relevant to the industry. These may require examining each stakeholder group separately, as they often have different objectives for these new tools, specific criteria for determining the value of the tools, and potential safeguards that need to be in place. In addition, a comprehensive examination of what workers' compensation stakeholders can learn from other industries is warranted.

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Glossary

agentic artificial intelligence: A type of artificial intelligence that empowers AI systems to act autonomously and independently, making decisions and taking actions without constant human oversight. These systems are designed to pursue complex goals and adapt to changing environments, often leveraging large language models and other AI technologies.

analytic artificial intelligence: Also known as rule-based AI, analytic AI uses predefined rules and algorithms to solve specific problems. Unlike generative AI, it relies on pre-programmed algorithms and rules to perform specific tasks.

artificial general intelligence (AGI): A system that can learn and perform intellectual tasks at a level comparable to human beings. Unlike AI that is good at specific tasks, AGI would be flexible and adaptable, like a human with the ability to learn and adapt to new situations.

artificial intelligence: Computer programs that search for patterns in large volumes of data, learn from those patterns, and use what they learned to examine new information.

benefit payments: Payments to workers with injuries for time lost from work (indemnity benefits) as well as payments for the medical treatment of the workers.

case management: A method used in some managed care arrangements and in some states to ensure that appropriate and necessary medical and rehabilitation services are provided to the patient in a cost-effective manner. A case management program usually assigns a case manager to coordinate all services required by a particular patient. The case manager generally acts as both the ombudsman for the patient and the agent of the payor.

change management: A structured process for transitioning individuals, teams, and organizations from their current state to a desired future state, aiming to achieve business goals while minimizing disruption. It focuses on both the technical aspects of implementing change and the people side of the transition, ensuring everyone is supported, prepared, and capable of adapting to the new ways of operating.

compensability: The issue of whether an injury qualifies as a basis for a claim to benefits under the applicable workers' compensation statute.

deep learning: A type of machine learning that uses artificial neural networks to learn from data. Artificial neural networks are inspired by the human brain, and they can be used to solve a wide variety of problems, including image recognition, natural language processing, and speech recognition.

generative artificial intelligence: An example of artificial intelligence popularized since 2022 that learns from large datasets to create new content or data, such as text, images, or music. Examples of generative AI include OpenAI's ChatGPT, Google's Gemini, Anthropic's Claude (which generates text), and Dall-E (which creates images).

independent medical evaluation: A physical examination by a medical doctor generally chosen by the worker and/or insurer for the purpose of providing a medical-legal report to help resolve a dispute.

International Classification of Diseases (ICD) codes: A system of coding used to identify diagnoses, symptoms, and reasons for treatment.

large language models: A specific type of generative AI that focuses on language, enabling such tasks as text generation, summarization, and translation.

machine learning: The use and development of computer systems that are able to learn and adapt without

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following explicit instructions, by using algorithms and statistical models to analyze and draw inferences from patterns in data. It is a way for computers to identify patterns, make predictions, and make decisions just like humans, but by learning from vast amounts of information, without being explicitly programmed for every task.

natural language processing (NLP): A branch of artificial intelligence that enables computers to understand, interpret, and generate human language. It is a multidisciplinary field encompassing computer science, linguistics, and artificial intelligence. NLP allows computers to interact with humans using natural language, like spoken words or written text.

neural network: A machine learning model inspired by the human brain, consisting of interconnected nodes called neurons that process information and make predictions. It is a type of deep learning that learns from data to recognize patterns, classify data, and even make forecasts.

optical character recognition: A technology that converts images of typed, handwritten, or printed text into machine-encoded text. It allows computers to read and process text from scanned documents, photographs, and other images.

payor: The entity responsible for administering and making payments on a workers' compensation claim. Payors may be insurers, third-party administrators, or self-insured, self-administered employers.

physicians: Surgeons, general practitioners, radiologists, family practice physicians, psychiatrists, and other recognized medical doctors such as doctors of osteopathic medicine.

treatment guidelines: Specifications for ranges and/or levels of service and the methods of treatment (protocols) that should be considered accepted medical practice for certain diagnoses or patient conditions.

unstructured data: Information that does not have a predefined format or structure. It is often characterized by its lack of a consistent data model or schema, making it difficult to process with traditional relational database systems. Examples include text documents, images, audio files, and videos.

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