PUBLIC RISK

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MEET
ADAM MAXWELL
PRIMA'S NEW PRESIDENT

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2024 WEBINAR SERIES

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Register for PRIMA's JUNE WEBINAR

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Fraud in Risk Management

JUNE 26 | 12:00 PM – 1:00 PM ET

SPEAKER:

Marilyn Rivers, CPCU, ARM, AIC, Principal, Rivers Risk Consulting, LLC

Risk mitigation involves trust in governance — trust from your risk partners that an issue is universally reviewed in fairness with integrity and will be managed with those same qualities. What happens when an issue is shrouded in misinformation or subterfuge? What happens when you rely on information provided that is not what it appears to be? This session focuses on managing the integrity of risk and its governance and learning how to let go of what you can't control.

ATTENDEE TAKEAWAYS:

1. Understand the ethics of risk mitigation in governance

2. Learn communication strategies to overcome obstacles while identifying risk

3. Learn to constructively accept the negative consequences of proactive risk mitigation

4. Understand the chain of command's responsibility in managing the totality of risk and its integrity

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PUBLIC RISK

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![PI24 PRIMA INSTITUTE 2024 logo]

BIG IDEAS.
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PRIMA Institute 2024 (PI24) is an innovative educational symposium comprised of fundamental risk management curriculum, outstanding faculty, and excellent networking opportunities.

PI24 is aimed at new and seasoned risk management professionals who want to learn more about emerging trends and best practices.

REGISTRATION OPENS IN JUNE

An Unexpected–and Unforgettable–Journey

I'm going to begin my last article with something that may be more appropriately revealed in an icebreaker–the question being something like "name your guilty pleasure reality show."

> **There are so many wonderful people in the PRIMA community who help with the heavy lifting and move our industry forward. Whether it's for PRIMA Institute, ERM, webinars, speaking, local chapter involvement, or of course the sponsors and exhibitors, you are all sincerely appreciated.**

Admittedly, I watch more than one, but Bachelor Nation is something I understand after watching every season—except for the very first one. I remember driving to my first career job listening to a recap of the show in 2002. This was season one, and the recap was on the radio, before podcasts and Reels. I remember I was driving past the old K-Mart when I heard this and thought "What? That's an absolutely ridiculous concept. Why would anyone watch that?"

I suppose I wouldn't have been wrong to hang on to my initial thoughts. I'm going to tell you that the "journeys" they refer to in almost every single episode have become a bit of a household joke in my abode. So, it's with a bit of tongue-in-cheek that I begin to describe my wonderful *journey* with PRIMA now.

My presidential term began in June 2023, and it certainly came with plenty of surprises. It's been a year of unusual obstacles that this board has taken on beautifully. Notably, the annual conference venue and dates shook up the regular conference planning. This year's annual conference was not originally slated for Nashville. We're in Nashville because of COVID and all the conference snafus that resulted. Prior to 2020 and the pandemic, we didn't really have to worry about reading cancellation clauses in contract reviews for reasons like a "pandemic." Now we do.

The Gaylord was gracious enough to forgo the cancellation clause if we rescheduled in Nashville in 2024. This was wonderful news! At the time, we were presented with mid-June dates which spanned over both Father's Day and the now nationally recognized Juneteenth holiday. Our board decided to change the dates to June 6-9, which bring us together this year during the Nashville-based Country Music Festival. It may not seem like it, but it was a really tough decision for our board to make, and one that resulted in PRIMA staff completely shifting course. But we did it, and I'm still crossing my fingers that it will go well for everyone.

I am truly humbled by the dedication and support of such a capable group of people who are passionate about their work and helped move PRIMA forward in the past year. Thank you, Scott Kramer, Adam Maxwell, Steve LaPock III, Dana Henderson, Jennifer Hood, Sean Barham, Chester Darden, and Joe Costamagna. There is something truly magical about this experience, and I regard it as one of the best of my life. When it was said and done, the "journey" with these people was fantastic.

In addition to their more traditional roles, the staff at PRIMA also have worked very hard to change course after the decision to shift the annual conference was made. They're the people behind the curtain that make the show run smoothly. When you see them at this year's conference, please thank Jennifer, Monique, Shaunda, Taquan, and Paul. They're truly amazing and continue to impress me with the magic they work.

There are so many wonderful people in the PRIMA community who help with the heavy lifting and move our industry forward. Whether it's for PRIMA Institute, ERM, webinars, speaking, local chapter involvement, or of course the sponsors and exhibitors, you are all sincerely appreciated. I look forward to seeing you in Nashville. Finally, to everyone who's made this journey so memorable, thank you from the bottom of my heart. It's one I'll never forget.

Sincerely,

Laurie Olson

Laurie Olson, EMPA
PRIMA President 2023–2024

NEWS Briefs

PUBLIC SECTOR WORKFORCE RETURNS TO PRE-PANDEMIC LEVELS, BUT GAPS PERSIST

Zina Hutton | Governing | April 5, 2024

After shedding nearly 1 million jobs, staffing levels are now higher than at the start of 2020. But severe shortages remain in several fields such as nursing, public safety, and education.

Total employment in the public sector has finally returned to pre-pandemic levels. Last year saw 581,000 additional hires at the state and local levels, which was more than double the amount in 2022, according to the American Federation of State, County and Municipal Employees (AFSCME). By the end of 2023, there were 22,000 more public sector jobs than in February 2020, just before the pandemic took its toll.

Nevertheless, there are several job categories within the public sector that remain difficult to fill. Health, public safety, and education are three major areas still seeing shortages. Florida is seeing a shortage of firefighters statewide, with the candidate pool shrinking significantly. Minneapolis has just invested $1 million into recruiting new police officers and 911 operators, with Chief Brian O'Hara noting that the department has had to "rely more and more on mandatory overtime." Meanwhile, schools around the country are reporting more vacancies.

Read more:

www.governing.com/workforce/public-sector-workforce-returns-to-pre-pandemic-levels-but-gaps-persist

> " Health, public safety, and education are three major areas still seeing shortages. Florida is seeing a shortage of firefighters statewide, with the candidate pool shrinking significantly. "
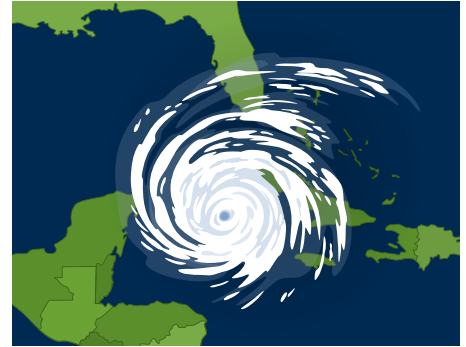
EXPERTS PREDICT AN EXTREMELY ACTIVE HURRICANE SEASON THIS YEAR

Max Chesnes and Michaela Mulligan | Tampa Bay Times | April 4, 2024

For nearly three decades, researchers have been releasing early hurricane forecasts. Not once in an April outlook, the first one of the year, have they predicted more than nine hurricanes would occur in a single season.

In 2024, they are expecting 11.

Researchers at Colorado State University, which has a renowned tropical weather and forecast team, said a mix of ingredients will lead to an "extremely active" hurricane season. The main culprits behind the unusually busy outlook: A record warm Atlantic and a likely La Niña.

The team behind the forecast is predicting 23 named storms, of which 11 will become hurricanes and five will reach major hurricane strength with sustained winds of 111 miles per hour or higher.

Read more:

www.tampabay.com/hurricane/2024/04/03/forecasters-predict-extremely-active-2024-hurricane-season-heres-why/

SAN JOSE IS USING AI TO DETECT HOMELESS CAMPS. WILL IT WORK?

**Ethan Varian | Bay Area News Group | April 8, 2024**

Across the country, cities have begun experimenting with artificial intelligence to map potholes, reduce traffic and fight wildfires. In San Jose, Calif., officials are now harnessing the rapidly evolving technology with another goal in mind: detecting homeless encampments.

The open-ended pilot program, thought to be the first of its kind nationwide, may soon also seek to identify tent encampments and could one day expand to a permanent fleet of vehicles that crisscross the city.

While homeless advocates fear the effort could lead to more encampment sweeps and impounded lived-in RVs, city officials say they are optimistic it will help connect homeless people with needed services and shelter or housing. The program is not designed to collect identifying footage of license plates or people's faces, officials stressed.

Read more:
www.gazettextra.com/news/nation_world/ this-bay-area-city-is-using-ai-to-detect- homeless-camps-will-others-follow-suit/ article_02f56e5b-4e94-5e87-8558- e4281aadab86.html
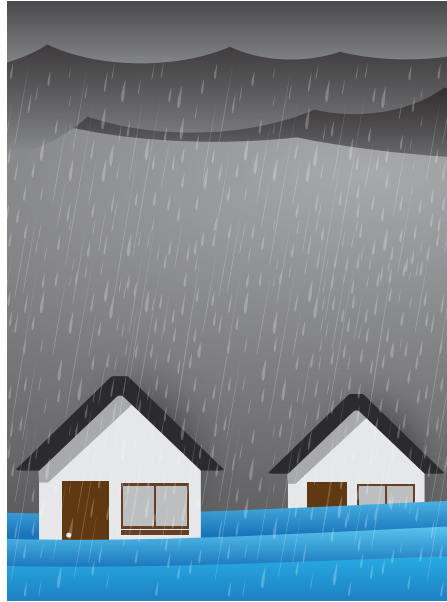
THE RACIAL DYNAMICS INVOLVED IN FLOOD RISK AREN'T WHAT YOU'D EXPECT

Jared Brey | Governing | March 19, 2024

Not all communities face the same amount of danger from flood exposure, but their respective risks vary in some surprising ways. Although Native American and Hispanic communities face greater-than-average risks, Black and Asian households actually are at lower risk of flooding than white households nationwide, according to a new study.

Much research has explored the disparate impacts of environmental and climate risks, showing that Black people and other minority groups are disproportionately exposed to, for example, hotter temperatures and air pollution. But there was a gap in the research when it came to understanding how flood risks intersect with race at a national level.

In addition to sea-level rise, climate change is contributing to stronger storms and more flash flooding. Official flood maps have not kept pace with the increasing incidence of those events. As a result, one expert says, "We're underestimating our danger by a big amount."

Read more:
www.governing.com/resilience/the-racial- dynamics-involved-in-flood-risk-arent-what- youd-expect

ATLANTA SCHOOL ZONE SPEED CAMERAS GENERATE $1.6M IN FIRST MONTHS

Reed Williams | The Atlanta Journal-Constitution | February 8, 2024

A program using cameras to ticket speeders in 10 city of Atlanta school zones has raked in nearly $1.6 million since the program began issuing tickets in September.

About 41,700 speeding citations were issued in the school zones during the three-month period beginning Sept. 18, the first day speeding tickets were issued after an initial warning period, according to documents obtained and reviewed by *The Atlanta Journal-Constitution.*

The program started Aug. 18 with a 30-day period of warnings before it began generating tickets of $75 for first offenses and $125 after that. Verra Mobility, an Arizona-based company, has installed and operates the cameras. When the company's technology clocks a driver as speeding, the cameras capture images of the car and its license plate.

Under a 2018 state law that allowed schools to deploy automated speed-detection cameras in school zones, a driver can be cited for speeding only on a school day and only within one hour before or after either the start of the day's classes, or the last bell of the school day. The city school zones have flashing lights warning people that the speed limit is 25 mph during those hours.

Read more:
www.ajc.com/news/atlanta-news/ speed-cameras-in-city-of-atlanta-school- zones-generate-nearly-16-million-in- first-few-months-of-safety-program/ LTGQE6XC6BDEZCINJT2EDJS6ZI/

MEET ADAM MAXWELL

PRIMA'S NEW PRESIDENT EDUCATES ON AND OFF THE JOB.

BY MARK TONER

WHEN ADAM MAXWELL FIRST JOINED THE CITY OF WESTERVILLE, Ohio, more than two decades ago, his previous local government experience had been as a "generalist," he says. But a proposal to develop the community's first BMX and skate parks soon offered him a crash course on risk management.

"I was new to the field. All I could see was bloody elbows and knees, and worse," says Maxwell. "But I spent a lot of time working with our Parks and Recreation department, and in the end, we opened both parks. It turned out well for the community, and a lot of our peers have followed suit."

Now the city's director of administrative services, Maxwell is responsible for Westerville's HR, labor relations, procurement, and buildings and grounds.

"Once I work with another director or the city manager and we tackle a problem together, it opens their eyes that risk management is about more than avoiding risk—it's about being a good partner and working together to come to decisions that benefit everyone," he says.

WHAT IS YOUR FAVORITE PART OF THIS INDUSTRY?

It's communicating and sharing the value of risk management to others in the organization. I think risk management is somewhat cloudy for people in general, but it should be part of every decision that is made for the organization, along with all the financial and human resources elements.

WHAT ARE THE BIGGEST CHALLENGES FACING PUBLIC RISK MANAGEMENT?

There's a challenge across the nation in finding people in the younger generations who think risk could be a career for them. An important job for current risk managers is to open their minds and hearts to mentoring others in a career involving risk management. That's where PRIMA has done a nice job with NextGen initiative, and there's a great opportunity to expand further.

HOW LONG HAVE YOU BEEN A PRIMA MEMBER? HOW HAS IT HELPED YOU WITH YOUR CAREER?

I had previously served twice as president of Ohio PRIMA (OPRIMA) after a period when it had largely been defunct. A peer from another community in Central Ohio had started to resurrect it, and I helped grow it back from the ground up. During this time, I found out about PRIMA as a national organization.

I attended my first PRIMA conference in 2017. I found a lot of value in it, met a lot of great

> **There are so many resources available through PRIMA's website, library, email discussion threads, webinars, and a lot of great programming. PRIMA also does an excellent job with educational offerings like the National Conference and PRIMA Institute. The networking that comes with these events is invaluable–you can't help but meet people and learn from them and share best practices with one another.**

people, and set up a network I didn't have at a national level.

WHAT ARE THE MOST IMPORTANT BENEFITS OF BEING A PRIMA MEMBER?

There are so many resources available through PRIMA's website, library, email discussion threads, webinars, and a lot of great programming. PRIMA also does an excellent job with educational offerings like the National Conference and PRIMA Institute. The networking that comes with these events is invaluable—you can't help but meet people and learn from them and share best practices with one another.

WHAT INTERESTED YOU IN BECOMING PRIMA'S PRESIDENT?

I found a lot of value in the effort to rebuild OPRIMA, so I thought why not throw my hat in the ring for the national board? My first effort wasn't successful, but I was encouraged by others to try again. I established some very strong personal relationships on the board and saw some of my peers take that leap towards the presidency. That and a desire to take on a leadership role inspired me to do the same.

WHAT WOULD YOU CHANGE ABOUT PRIMA?

I believe that PRIMA is a valuable organization. However, there's an opportunity to improve the

connection between the state and local chapters and the national organization. I think there are a lot of members in the state and local chapters who don't recognize that PRIMA exists, and conversely members of PRIMA who don't realize they have a state or local chapter. We've started to make progress, but I think we could improve these relationships.

WHAT ADVICE WOULD YOU OFFER TO THOSE WHO ARE NEW TO THE INDUSTRY?

I'd say that it is a very welcoming and collegial profession, and some of the more seasoned veterans in risk management want to share their experience. So I'd encourage younger risk managers to be open to having those conversations. They're not going to be left in the dark—they're definitely going to hear from the veterans who want to share their knowledge.

Earlier in my career, I was a little more passive and not as open to reaching out to folks as I could have been. So I would have given that advice to myself as well.

WHERE DO YOU HOPE TO SEE YOURSELF IN FIVE YEARS?

I would like to continue to expand my responsibilities in local government. Even at the highest executive levels, there's still certainly a lot of risk management involved in finding solutions that benefit all.

FROM HOSPITAL
TO HOME

A successful hospital discharge is pivotal to workers' comp outcomes and cost containment.

BY NICOLE USHER

TWO OF THE MOST PERSISTENT PROBLEMS plaguing workers' compensation payers have been the severity and frequency of claims. The National Council on Compensation Insurance (NCCI) found that almost half of workers' compensation claims result in medical expenses of $10,000 to $500,000, with higher-cost claims occurring more often and accounting for a larger share of spend.

NCCI also found that medical lost-time claim severity grew more than twice as fast as medical price inflation over the last 20 years. With higher-cost claims occurring more often and accounting for a larger share of spend, it's highly likely these claims will involve a hospital stay and require multiple specialty services.

When an injury involves a hospital stay, workers' compensation payers need to tap the expertise of specialized experts to manage specific aspects of the discharge process and combat the rising cost of severe claims. Seamless coordination and communication ensure injured employees have the essential products and services for the next stage in their recovery.

Discharge planning is an integral part of care in the transition from a hospital to a facility or home. Between the injured employee, their family, adjuster, case manager, employer, and provider, multiple stakeholders are involved in even the simplest hospital discharge. Most discharges also require specialty services, which can include durable medical equipment (DME), home health, transportation,
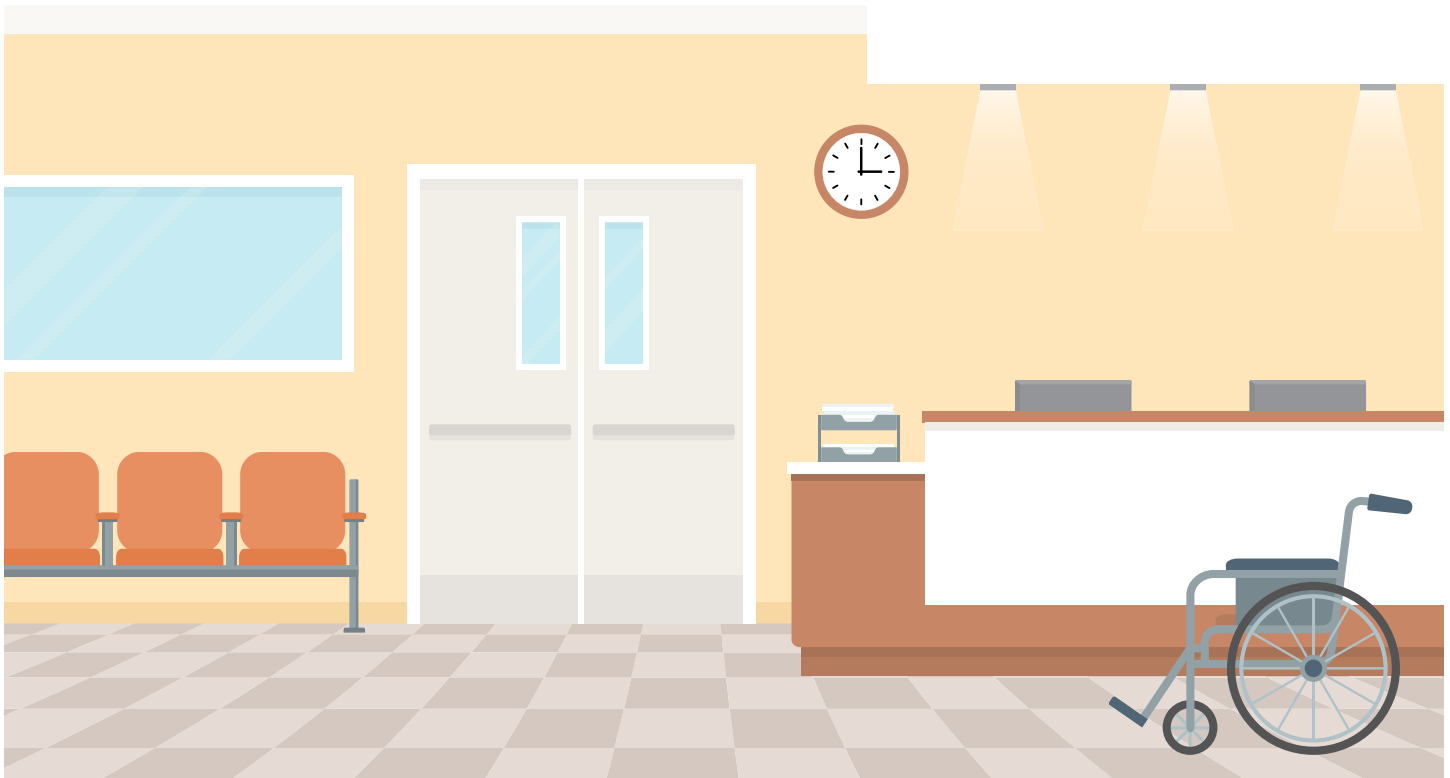
translation, and diagnostic services. Efficient coordination of these services is critical to reduce time spent in the hospital and streamline treatment. Without the appropriate care and support, numerous factors can be costly and complicate an injured employee's recovery. Given this, a well-planned hospital discharge is vital in preventing readmission, further health decline, and increased costs.

UNDERSTANDING DISCHARGE COORDINATION

Comprehensive discharge planning can prevent future readmissions and make the move from the hospital to home or other facility as safe and easy as possible. While the doctor may authorize a patient's release from the hospital, a social worker, nurse, discharge coordinator, case manager, and care coordinator may also be involved in the discharge process. Ideally, for complicated medical conditions, discharge planning should be structured using a team approach.

Post-admission discharge can include prescription drug coordination, DME and supplies, transportation, and home modification, to name just a few components. Home health care may also be an element of a discharge plan, including speech therapy, IV therapy,

general and skilled nursing care, physical and occupational therapy, and companions and homemakers. Additionally, solutions may include transitional housing, such as assisted living or Americans with Disabilities Act (ADA) residential home health care.

Without a plan in place to support a successful transition, the injured employee's safety could be compromised and potentially result in a readmission or delay in recovery and return to work. Additionally, the injured employee may become frustrated with the situation if needed supplies and services are not provided in a timely manner. Case managers and adjusters can also become burdened with scattered details, resulting in time delays and additional expenses that could include costly additional days in the hospital. However, if a proactive, well-planned hospital discharge plan is in place, a transition home should not overwhelm the injured employee or create additional workloads for the adjuster or case manager.

ENGAGING CASE MANAGERS IN DISCHARGE CARE

For a hospital discharge coordinator, the success of an injured employee's discharge planning largely relies on coordination with a case manager to help evaluate the injured

employee's discharge needs and collaborate on how best to transition them home or to a facility. When a case manager is engaged, they can deliver multiple benefits and build trust with the injured employee to ultimately support a timely recovery.

Case managers are responsible for developing, implementing, and reviewing healthcare plans, and collaborating with doctors and other medical professionals to coordinate care, including the transition of care from hospital to home and ensuring follow-up appointments are scheduled. They provide ongoing support and education to the injured employee and their family to engage them in their recovery and facilitate ongoing communication among all involved to ensure prompt delivery of health care services.

Case managers are trained to handle the complex dynamics of workers' compensation hospital discharge planning, which can include securing the initial discharge orders, maintaining frequent contact with the injured employee's treatment team, and working closely with a specialty network solution that can coordinate product and service referrals and identify any specific requirements for the patient once they leave the hospital. Having a

case manager working directly with a specialty care coordinator to facilitate needed products and services allows the case manager to focus their attention on the patient.

UTILIZING A SPECIALTY CARE COORDINATOR TO FACILITATE PRODUCTS AND SERVICES

Specialty care coordinators are responsible for facilitating all the products and services an injured employee needs to be successfully discharged from the hospital without charging additional service fees. They often work in a demanding environment, responding to complex issues and overseeing multiple assignments simultaneously. Their tasks include ordering DME, scheduling diagnostic imaging, physical medicine, home health, transportation, and translation, among other specialty offerings. They work closely with the hospital discharge planner or case manager at all stages of the discharge process to keep everyone informed with status updates and changes.

By using a single source for all discharge product and service coordination, the injured employee receives needed services in a timely manner and the burden of fulfillment is lifted off the case manager and the adjuster. For example, care coordinators may arrange home health providers for injured employees who require in-home care or changes to their daily lifestyles. They can assist with transportation services that can aid the injured employee in getting where he or she needs to go, such as to follow-up doctor's visits. These coordinators also facilitate DME providers in obtaining the right goods and services needed once an individual transitions home, such as crutches, hygiene aides, and other medical supplies. In addition, they can assist with pharmacy coordination to ensure all prescriptions are ready when the injured employee leaves the hospital.

If the injured employee requires a facility for further care, recovery, or rehabilitation, the specialty care coordinator can match the type of injury to the best facility. As a full-service specialty provider, coordinators have access to a national network of qualified facilities and the capability to reach out to non-network facilities

to identify the best match for the type of injury. In these instances, the care coordinator will also negotiate pricing and outline what's included in the negotiated rate.

The specialty care coordinator will also cross-check the discharge plan against evidence-based guidelines, collaborate with the case manager, and present services to the adjuster for approval before proceeding with coordination. A key value the specialty care coordinator offers is the ability to manage all the requirements proactively and within the appropriate timeframe, so the equipment, modifications or other services are in place when the injured employee arrives home or otherwise needs them.

WHAT TO LOOK FOR IN A DISCHARGE PLANNING PROGRAM

To ensure a smooth transition for the injured employee, you need a hospital discharge planning program that takes a team approach to coordinating all products and services before the patient leaves the hospital. Nearly three-quarters of discharge referrals come in the

same day, so having a program that is available 365/24/7 with national provider coverage for all products and services is essential in getting the process started, no matter what time of day or night. Additionally, look for a program that collaborates with case managers and adjusters, has the consistent ability to secure DME and home health services in a timely manner, and has highly skilled professionals who understand the complexities of workers' compensation cases, recovery, and return to work. Lastly, secure a solution that can coordinate complex and catastrophic cases with multiple parties, including the injured employee's family.

Nicole Usher is the senior director of operations for Apricus, an Enlyte company.

Without a plan in place to support a successful transition, the injured employee's safety could be compromised and potentially result in a readmission or delay in recovery and return to work.

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Predicting Your Next Big Workers' Compensation Claim—

WHILE YOU CAN STILL DO SOMETHING ABOUT IT

Integrating AI and machine learning into workers' compensation is a paradigm shift.

BY KENNY GRIFNO PH.D., ELIZABETH KEIFFER PH.D., SCOTT ROLOFF, BILL MCCALLUM, AND MARK BARTA

TOM'S KNEE BOUNCED UP AND DOWN as he sat waiting for the Director of Human Resources. He turned toward the door as Sally walked in, followed by Bob, the CFO. Tom swallowed—hard.

Sally half-smiled, half-grimaced. Bob didn't even try. "Tom, we need to make cuts in your workers' comp team," he said. "You have three out of control claims that busted through our stop-loss threshold. Even though the insurer will pay them from here on out, what we had to pay before reaching the stop-loss busted the budget. And that's before counting the overtime and temp expenses to cover for those injured employees."

Bob shook his head before continuing. "Plus, the carrier said that next year we're getting a big premium increase because of those three claims."

Sally shifted in her chair. "What kind of cuts are we talking about?"

Bob looked down at a piece of paper, and then up. "Two FTEs."

Tom wrapped his fists around the arms of his chair. "If I have to let two of my folks go, things will get even worse."

Sally took a deep breath. "What's done is done. As long as we don't have any more big claims, can't we make do?"

Bob shook his head. "Not unless there is a way to spot these claims early and head them off before they get out of control. Otherwise, I need to start baking a couple of big claims into each year's budget, and Tom, that money needs to come from somewhere else in your budget."

Sally turned to Tom. "Is there a way to identify these claims when the injury occurs so that we can intervene right away?"

Tom shook his head. "These three claims came out of the blue. When I got the first medical expense reports on them, they were already out of control. There was no way to spot them before that."

Bob stood. "Then you know what you need to do."

Tom was right. There was no way to spot those claims sooner—until now. First, let's lay the groundwork.

COSTS THAT MATTER

In workers' compensation, you track a lot of metrics.[1] One of the most important is the number of days to return an injured employee to work. Return to work and other metrics, however, are merely proxies for what matters most—the cost of a good outcome, and getting the injured employee back to work and keeping them there.

This "outcome" cost has two controllable components:

• Medical and pharmacy expenses; and

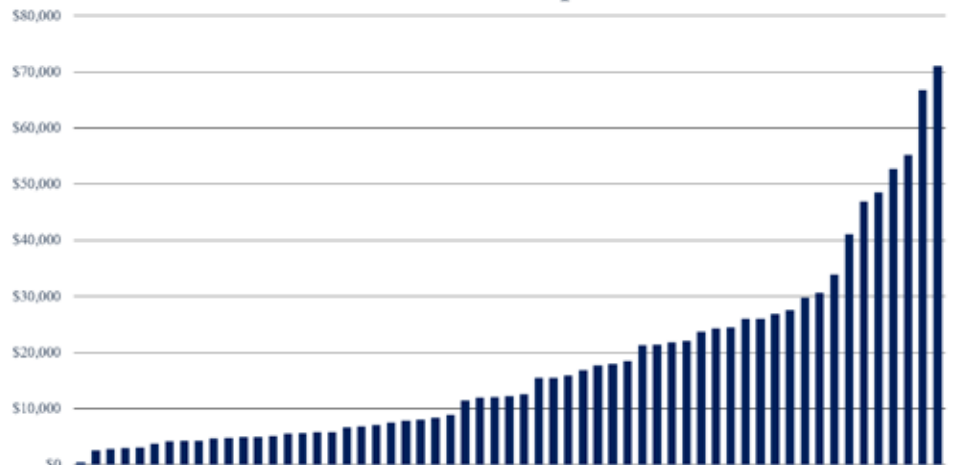• Lost-wage indemnity payments to the injured employee.

You may have other indemnity payments too, such as fixed payments when employees lose limbs. You cannot do anything about these, however, because they accrue at the moment of the injury. You need to focus on the costs that you can control.

These two components do not move in tandem. Some claims may have high medical and pharmacy expenses, but low lost-wage indemnity payments—and others the reverse. Minor injuries may have only medical and pharmacy expenses and no lost-wage indemnity. The first chart below shows the medical and pharmacy expenses on shoulder injuries that had both medical and pharmacy expenses and lost-wage indemnity payments.

The second chart adds the lost-wage indemnity payments on top of the medical and pharmacy expenses–giving you the complete picture.[2]
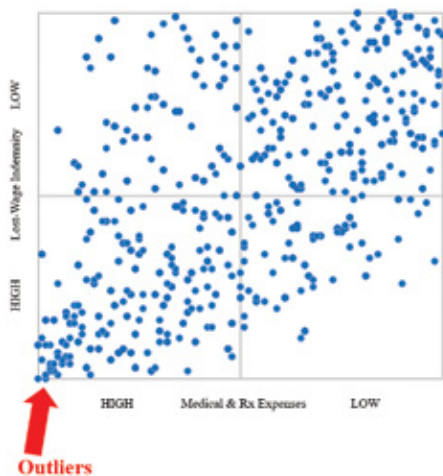

Medical & Rx Expenses

+ Lost-Wage Indemnity Payments
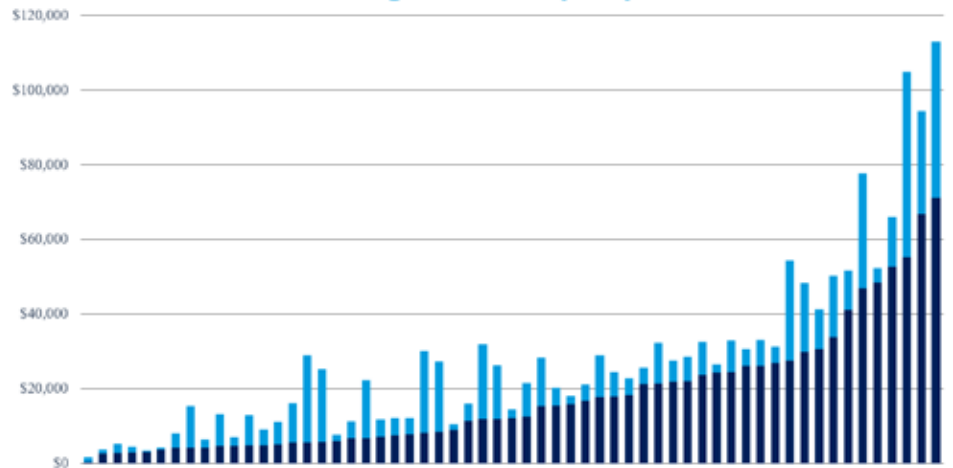
Here is another way of looking at it, this time with knee injuries. In the quadrant graph below, each claim is a bubble, as opposed to a bar in the graphs on the previous page. The claims have been placed along the horizontal axis according to their medical and pharmacy expenses—high on the left and low on the right. Likewise, the claims are located along the vertical axis according to their lost-wage indemnity payments—high on the bottom and low on the top. The out-of-control claims that you have to worry about—the outliers—are in the lower-left corner.

Total Medical & Rx Expense
Progression for Average Injury

Total Medical & Rx Expenses
for a Potential Outlier Injury

What are outliers? They are claims far outside the averages and norms, often defined as three or more standard deviations above the mean. Perhaps the patient has comorbidities that complicate their recovery? An obese employee suffering from depression with a broken leg will cost more, and take longer to get back to work, than an employee without those comorbidities. Maybe the leg was not merely broken, but shattered? Or maybe the doctor did a bad job?

HOW COSTS MOVE

The lost-wage indemnity payments move in a steady proportional fashion. Two months of indemnity payments are twice as much as one; four months are twice as much as two. That's not where you need to look.

The medical and pharmacy expenses follow a different pattern. They are front loaded–and those out-of-control outliers even more so. You need to intervene quickly to have any chance of controlling them.
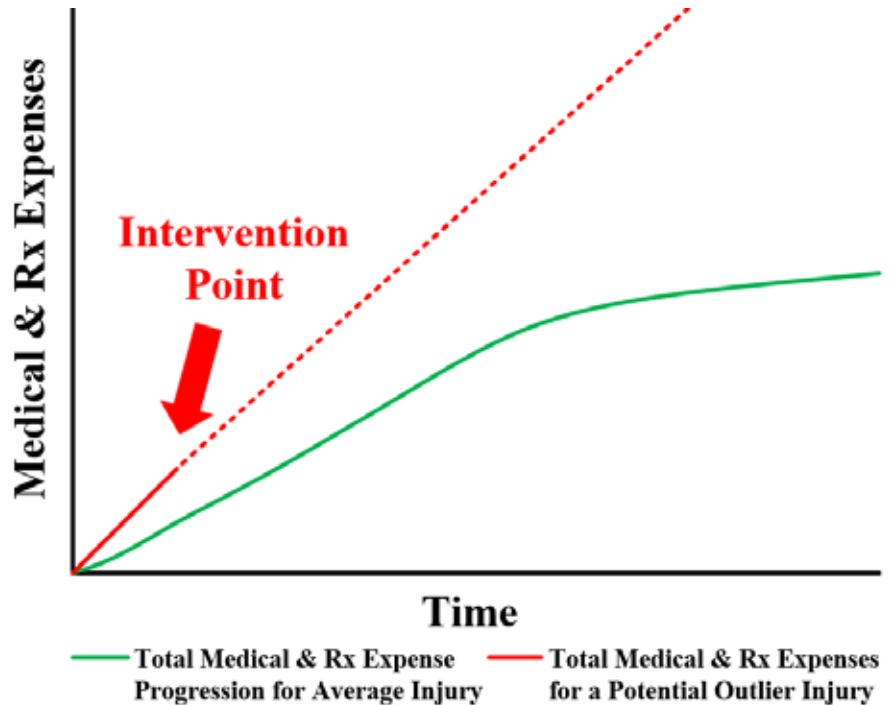
But Tom was right. There could be a two-month lag between when the procedure or examination generating a medical expense occurs and when the provider sends it to the third-party administrator (TPA) and it is processed. So you learn about those out-of-control claims from Months #1 & #2 in Months #3 & #4. You need to intervene in the first week or two to make a difference.

You need a real-time data source, and in your workers' compensation data you have one—the adjuster's notes.

ADJUSTER NOTES

The workers' compensation adjuster handles the claim. In many states, the adjuster can even direct the injured employee's care—tell the employee which doctor they have to see.

As soon as an injury occurs, the adjuster opens a file and documents what is going on with the case from that moment forward. Using your trove of past adjuster notes and their associated medical and pharmacy expenses, you can text mine the notes and use AI (artificial intelligence) and machine learning to correlate keywords and phrases in the early entries with surging medical and pharmacy costs a few days later. You can also do the same thing with return-to-work periods and lost-wage

indemnity payments, although as discussed above you have more time to act here because they progress proportionately, not drastically. You can then program the system into which the adjusters input their notes to flag any claim on which an adjuster uses the trigger words as soon as the adjuster types them.

What you do once you identify a potential outlier will vary with each claim. You may want to direct the employee to the best possible surgeon for that type of injury, even if that surgeon is out of state. You may want to enroll the employee in a one-on-one support program with a counselor specializing in helping employees recover from that type of injury.[3] Whatever you do, you will want to monitor the claim closely, adjusting your intervention strategy if the claim begins to wobble.

PREDICTING OUTCOMES

Integrating AI and machine learning into workers' compensation is a paradigm shift that will enable you to identify, predict, and mitigate costly injuries while you can still do something about them.[4] With this approach, your mindset shifts from reactive to proactive.

When predicting these high-cost claims, time is crucial. You must therefore prioritize the adjuster notes on a current injury over the ensuing
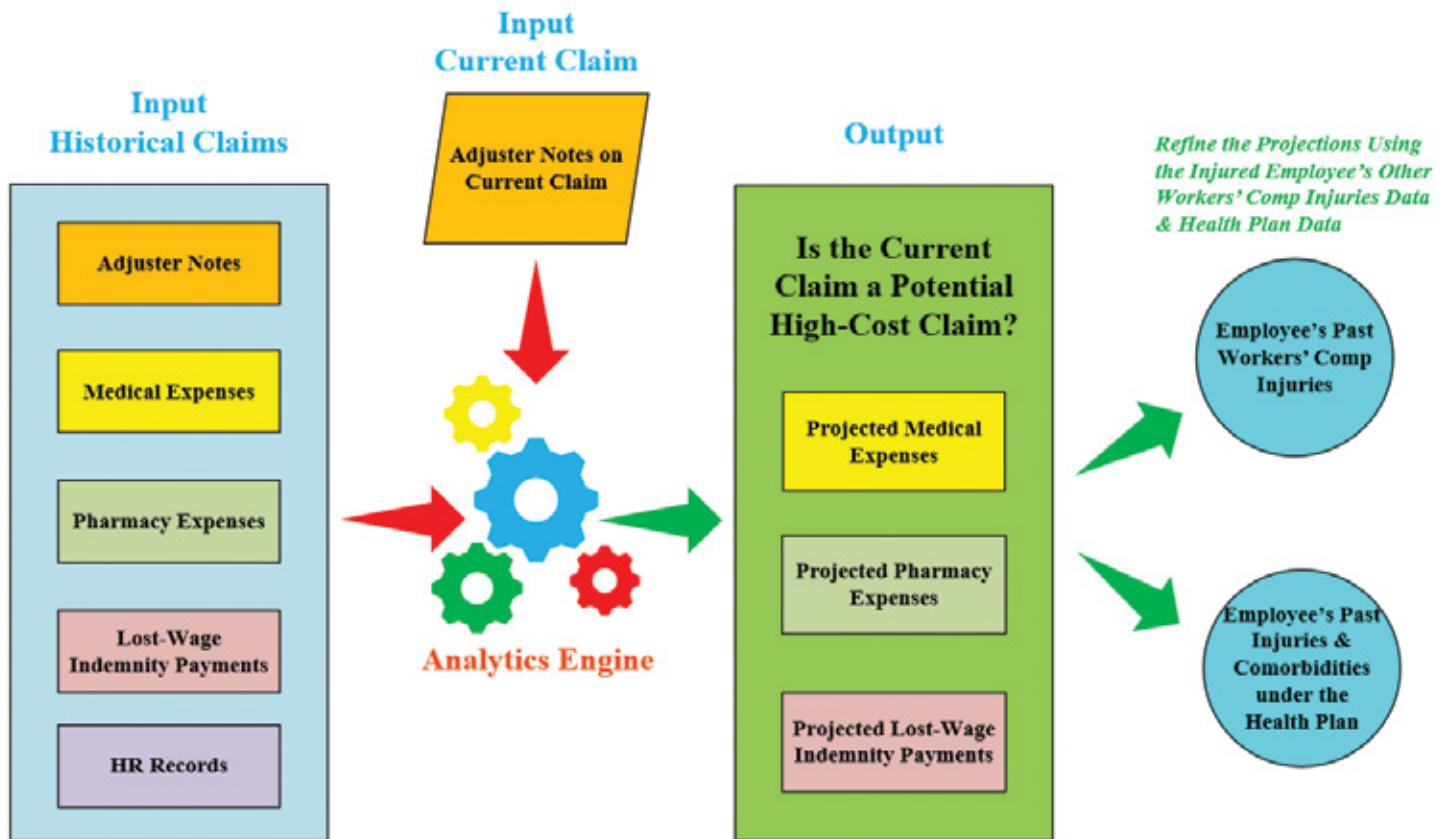
medical and pharmacy expenses because of the 30-to-60-day lag in reporting them.

Your analytics engine will input the past workers' compensation data to learn how to identify potentially high-cost claims based on the adjuster notes, and then as the adjuster types the notes on a current claim, the engine will flag that claim if it could become a problem. Using the past costs on similar claims, the engine will then project the costs on the current one if you do not intervene. Supplementing this data will be your Human Resources (HR) data on the injured employees (e.g., position, age, sex, hours of overtime worked prior to injury, etc.).

REFINING THE PREDICTION
The initial cost projection will be for a generic injury—for example, a lower back injury that the adjuster describes using the keywords "severe," "extreme," and "permanent." You can refine this projection with the information on the employee's past workers' compensation injuries. If this is the employee's second or third back injury, it will likely cost more than their first.

If you use an outside analytics shop to do the analysis, you can also enrich the projection with the injured employee's health plan data. This data source will contain information on prior injuries not in the workers' compensation data set, as well as comorbidities such as diabetes, obesity, and depression that could complicate the employee's recovery. An employee with a back injury who is also battling a comorbidity will cost more and take longer to get back to work than an employee without that complication. If you are doing the analysis yourself, however, the Health Insurance Portability and Accountability Act (HIPAA) will preclude you from using the health plan data. As a general proposition, HIPAA prohibits an employer from accessing its employees' health plan information, but does not prohibit a third party that the employer engages from doing so.[5]

DETAILS YOU CAN LIVE WITH
From this point forward, we will discuss specifics on how to identify a potential high-cost claim based on the initial entries in the adjuster

notes. We will do so on a high level—enough so that you can discuss what needs to be done with your data analytics experts, but not nearly enough to tell you how to do it.

DATA
Your data—the adjuster notes, medical and pharmacy expenses and lost-wage indemnity payments under the workers' compensation program, HR records, and maybe even health plan data—will probably not be "ready for prime time." Data acquisition, cleaning, and preprocessing are the foundation of any reliable analytics engine. Only after this stage can data exploration, text analysis, and predictive modeling complete the analytic lifecycle. And understand that this is not a rigid or linear process. New insights may lead to refinements along the way.

Your data will consist of both structured data—think rows and columns on a spreadsheet—and unstructured data like text. You can use the unstructured data from the adjuster notes in two ways. First, you can mine this data to gain insights into the words and

phrases linked to past outliers. Second, you can codify those insights as structured data in terms of those outliers' costs, both the medical and pharmacy expenses and the lost-wage indemnity payments, to use when predicting the current claim's costs.

NATURAL LANGUAGE PROCESSING

With the rise of AI, natural language processing (NLP) has transformed the way that we extract, interpret, and comprehend complex unstructured data from text documents. These advances have been particularly insightful in the field of healthcare analytics, where the extraction of nuanced information is critical for making informed decisions. Natural language processing uses sophisticated algorithms to understand context, extract entities, and discern sentiment embedded in a document. This goes far beyond mere keyword spotting to include syntactic and semantic[6] analysis, permitting an in-depth understanding of the text.

Machine learning models detect patterns and correlations in data that humans miss. NLP techniques, such as named entity recognition (NER), can identify and categorize specific body parts or medical conditions, while sentiment algorithms assess the overall tone and emotion of the communication, in our case providing insights into the adjuster's evaluation. Feature extraction wrings out the frequency of high-risk keywords (e.g., fracture, severe, permanent), sentiment analysis (positive, neutral, or negative), length (word or character count), presence of specific body parts or affected areas (e.g., knee, back, shoulder), and severity indicators (e.g., serious injury, minor incident).

BAG OF WORDS

To structure and decrease the size of large data sets, you can treat the adjuster notes and other text data like a "bag of words,"[7] focusing on the presence or frequency of individual words without considering their context. This approach is surprisingly effective when deciding which category or cluster a document falls into for later use. When using this technique, the first step is tokenization, which is breaking the text down into smaller pieces (called tokens) and identifying delimiters, which are the special characters or symbols in a data set that separate different fields (e.g., commas, semicolons, etc.). The next step is stemming, which reduces multiple variants of a word to its root. An example would be converting "claims," "claimed" and "claiming" to "claim." You can then use frequency filters to ignore common words that appear in nearly all documents.

Once you have a reduced the bag of words, you can parse, filter, and transform the text. Using latent semantic indexing (LSI), you can analyze the relationships of the words in the bag and map those terms to a small set of concepts, creating a clean and structured data set. This ultimately sets up the data to be clustered or categorized into meaningful groups that you can use to predict future outcomes.

BUILDING THE ANALYTICS ENGINE

You can build your analytics engine using a variety of tools, including Python, KNIME (Konstanz Information Miner), Alteryx, and SAS EM (SAS Institute's Enterprise Miner). Once designed, you train the engine on prior claims data to distinguish between high-cost and normal-cost claims; and then apply the engine to your current claims as they occur to predict which are likely to be high cost.

There are several techniques that you can employ to build the engine. Two particularly effective ensemble models for imbalanced data sets, where there are fewer high-cost claims compared to normal-cost ones, are:

- Random Forest—This model builds a series of decision trees from the data; and

- Gradient Boosting—This model constructs an ensemble of sequential models, with each successive model correcting the errors of the previous one.

After you have built the model, you will want to use hyperparameter tuning to tweak the engine's settings to improve its performance. If the data set on which you trained the model only has a few examples of certain groups of claims, you can explore resampling techniques such as oversampling or undersampling to address this class imbalance.

Finally, you test the results using various performance metrics derived from the "confusion matrix."[8]
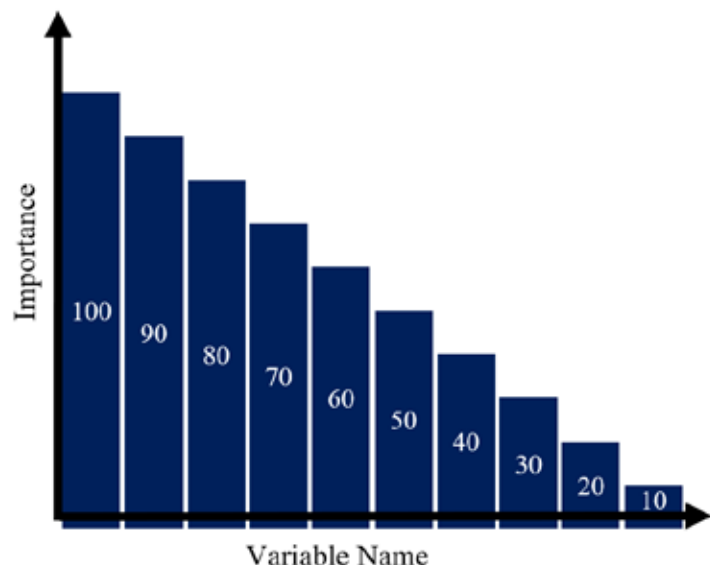
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These performance metrics include:

- Precision—Measures the accuracy of the positive predictions (i.e., of all the claims that the model identified as high-cost how many really would have been);

- Recall—Measures the completeness of the positive predictions (i.e., of all the potentially high-cost claims, how many did the model identify, and how many did it miss);

- F1-Score—Combines the above precision and recall measures into a single score; and

- AUC-ROC (Area Under the Receiver Operating Characteristic Curve)—Measures the tradeoff between the false positive rate (i.e., identifying claims as high-cost that aren't) versus the false negative rate (i.e., not identifying claims as high-cost that are).

CONCLUSION

Using AI and machine learning to mine your adjuster notes to identify workers' compensation claims likely to spiral out of control—in time for you to do something about them—is a game-changer. Sifting through the adjuster notes for past claims, AI spots words and combinations of words for claims that spun out of control not found in the notes for normal claims.

When an adjuster types those words and phrases into the notes for a current case, the program capturing the notes raises a red flag as soon as the adjuster types them. Algorithms then project the medical and pharmacy expenses and lost-wage indemnity payments on the current case based on the costs from those past cases—if you do not intervene.

Now you can allocate your resources more efficiently and effectively, concentrating on the employee injuries that could bust your budget, and making sure that they don't.

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Bill McCallum is the chief information officer of IntegerHealth and leads its workers' compensation practice. He also holds a patent on merging disparate data sets.

Mark Barta is the City of Fort Worth's assistant director of human resources and its director of risk management. He leads the city's workers' compensation program, as well as its city-run health plan clinics.

1 See Annarino, John, Deborah Kroninger, Bliss Dickerson, Freddie Johnson, Scott Roloff & Kenny Grifno, "Ohio Pilot Program Steps Up Workers' Compensation Effectiveness," *The Journal of Total Rewards,* 1st Quarter 2023, pp. 22-38.

2 Using these outcome analytics, the City of Fort Worth decreased its workers' compensation costs 23% by constructing a provider network of the best providers for each type of injury. Roloff, Scott, Bill McCallum, Mark Barta & Jody Moses, "How Fort Worth Drove Down Workers' Compensation Costs While Getting Injured Employees Better Care," *Public Risk*, March / April 2021, pp. 10-13. You can also use these outcome analytics on your employee health plan and wellness programs. Roloff, Scott, "How to Decrease Your Health Plan Costs," *The Self-Insurer*, September 2020, pp. 42-52; Roloff, Scott & Kenny Grifno, "How to Calculate the ROI on Your Wellness Program," *The Journal of Total Rewards*, 3rd Quarter 2022, pp. 22-32.

3 See Warren, Harvey, *The Optimized Patient 2.0: How to Prepare for, Survive, and Recover from Any Surgery and Major Injury* (2nd ed., 2021).

4 So what is the difference between artificial intelligence (AI) and machine learning? AI is a broad field focused on building computers and software to mirror and eventually surpass human cognitive functions, including understanding language and analyzing data. Machine learning (ML) is a subset of AI that uses algorithms to recognize patterns in data sets.

5 See Roloff, Scott, Kenny Grifno, Bill McCallum & Mark Barta, "Integrating Health Plan, Wellness Program, Workers' Compensation, and Human Resources Data," *The Journal of Total Rewards*, 2nd Quarter 2024.

6 Syntactic analysis concerns the grammatical structure of a sentence, while semantic analysis focuses on the sentence's meaning.

7 See Zhang, Yin, Rong Jin & Zhi-Hua Zhou, "Understanding Bag-of-Words Model: A Statistical Framework," *International Journal of Machine Learning & Cybernetics*, Volume 1, pp. 43-52 (2010); HaCohen-Kerner, Yaakov, Daniel Miller & Yair Yigal, "The Influence of Preprocessing on Text Classification Using a Bag-of-Words Representation," PLoS ONE 15(5): e0232525, https://doi.org/10.1371/journal.pone.0232525.

8 Delen, Dursun, Predictive Analytics: Data Mining, Machine Learning and Data Science for Practitioners, Pearson FT Press (2nd ed., 2020).

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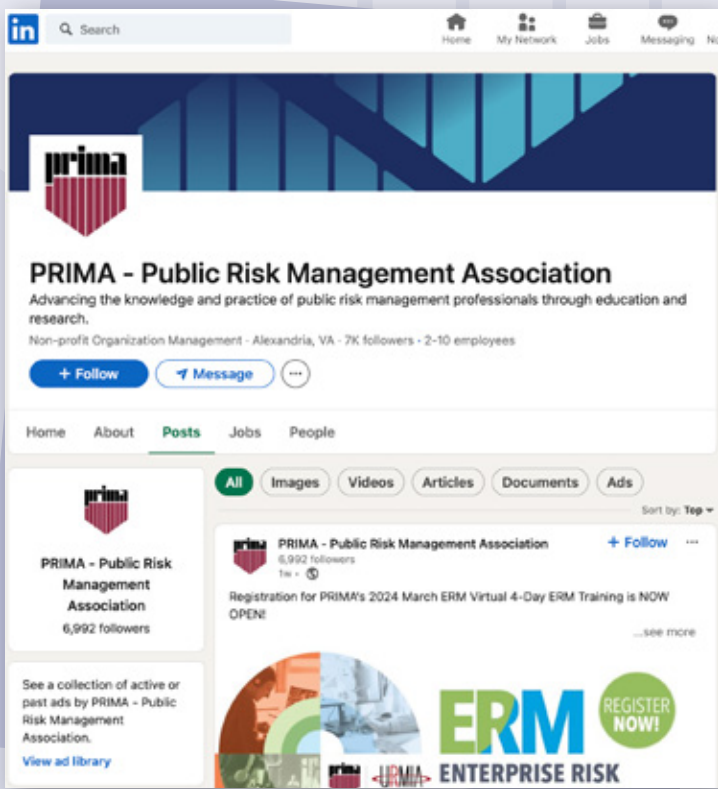
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