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Assessing the Impact of Substance Abuse on Occupational Injuries using Workers Compensation Claims in Ohio

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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Walden University
2025

Abstract

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MPH, University of Toledo, 2012

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Doctoral Study Submitted in Partial Fulfillment

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Abstract

Occupational injuries remain prevalent across various industries, resulting in significant financial burdens for both organizations and employees through increased workers' compensation claims. One potential contributing factor is substance use in the workplace, which has been linked to decreased productivity, impaired judgment, and workplace conflict. Despite these risks, the relationship between substance use and occupational injuries remains underexplored. As such, grounded in constructivism and interpretivism, this study investigated the extent to which substance use influences injury outcomes and whether its role is underestimated in workplace incident reporting by analyzing worker's compensation claims in Ohio. A mixed-methods approach was employed, combining a systematic qualitative review with quantitative analysis of 673 workers' compensation claims spanning 26 years (1994 to 2019) in Ohio. Data were analyzed using comparative statistics and thematic analysis to identify patterns and themes related to substance abuse and workplace injuries. Results of the comparative analysis indicated that medical-only claim costs were significantly higher among claims involving substance use, while indemnity and total cost were lower in the sample than in the overall population. These findings suggest that substance use is associated with an increased prevalence of workplace injuries, while its impact may also be underreported or underestimated. Additionally, 86% of reviewed claims involved male workers, with 50% occurring among men aged 16–35 years. These results highlight the need for targeted interventions for high-risk groups, including younger male workers, and support the use of randomized substance testing and technological strategies to improve workplace safety.

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Dedication

I thank God for His mercies and the blessings of strength, courage, and intellect to complete my doctoral journey. The journey towards completing this tasking doctoral journey was by many answered prayers and persevering strength that He gave me at measures beyond my imagination. Thank you, Lord, for being my ever-present Help in times of need. I owe my wife, Adejoke Agboola, a debt of thanks for her unwavering love and support. Your encouragement and enthusiasm towards my success inspire me to pursue and attain greater heights in my life. Your moral support was beyond precious as it fueled my strengths toward completing my doctoral study. I love you. To my children, Anjola, Toluwanimi, and Temiloluwa, thank you for enduring with me through this journey. I love you.

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Section 1: Foundation of the Study and Literature Review

Introduction

According to the International Labor Organization (ILO), there are over 340 million cases of occupational injuries worldwide each year, with 2.3 million of them resulting in death (Tamene, 2023). Within the United States alone, as of 2023, there were over 2.5 million occupational accidents (U.S. Bureau of Labor Statistics, 2023). Occupational injuries not only put significant physical and emotional strain on the individual but also have significant economic repercussions for the organization involved. Businesses must consider medical expenses, compensation, and missed work hours when an employee gets injured (Krisha et al., 2023). While considering these factors, potential legal difficulties, lost productivity, low staff morale, and negative publicity should be dealt with simultaneously (Krisha et al., 2023).

The U.S. Bureau of Labor Statistics notes that some of the most common reasons for workplace injuries include overexertion and bodily reactions, contact with objects and equipment, falls, slips and trips, and exposure to harmful substances or environments such as exposure to electricity, radiation, and temperature extremes (U.S. Bureau of Labor Statistics, 2023). However, despite seeing a year-over-year increase in unintentional overdoses at work (U.S. Bureau of Labor Statistics, 2023), substance abuse is not considered a major predictor of workplace injuries. The research thus far on substance abuse in the workplace primarily focuses on how workplace injuries create and increase substance abuse problems (Larson et al., 2007), with little focus on the idea that substance abuse problems can increase workplace injuries, operating cyclically. As such,

there is a need to understand further how substance abuse impacts occupational injuries. With this understanding, more resources can be placed on substance abuse programs such as employee assistance programs (EAP), which aim to reduce employee substance abuse and decrease workplace injuries. This decrease could protect the health and well-being of more workers and reduce life-threatening injuries that impact on the broader economy and community.

To achieve this goal, this study focused specifically on the association between substance abuse and workplace injuries in the state of Ohio. Ohio is a unique and vital location to study the relationship between substance abuse and workplace injuries as it has consistently one of the highest prevalence of substance abuse across the United States (Centers for Disease Control and Prevention [CDC], 2025), creating a relevant context to study this relationship. A recent report from the BLS indicated that workers aged 25-54 years (known for psychoactive drug usage) accounted for 57% of Ohio's workplace injuries in 2022, which was the same as the national share and that out of 153 work-related fatal injuries reported in Ohio, 84% worked for wages and salaries while the rest were self-employed (U.S. Bureau of Labor Statistics, 2024). The study contributes to a more comprehensive understanding of workplace injuries in the context of substance abuse and inform targeted interventions and policymaking.

Problem Statement

Approximately 35 million people suffer from drug use disorders, which is a harmful pattern of drug use or drug dependency. Approximately 270 million people (or approximately 5.5% of the global population aged 15-64 years) are projected to have

used psychoactive drugs in the preceding year (Lucero-Prisno et al., 2023; McLoughlin, 2024). Substance use and abuse in the workplace negatively impact on a person's career and academic goals (Dykstra et al., 2023). Specifically, it results in lower productivity, absenteeism, and job loss (Vadivel et al., 2023). Certain substances can also result in hallucinations or impaired motor functioning, leading to higher instances of workplace injuries (Oliveira & Magalhães, 2020).

Thus far, research on substance abuse in the workplace primarily focuses on how workplace injuries create and increase substance abuse problems. For example, Applebaum et al. (2019) found that following an occupational injury, there was a substantial increase in drug overdoses and drug-related suicide. In another study, Asfaw and Boden (2020) reported that the hazard of opioid-related morbidity for injured workers was 1.79 times that of non-injured workers. However, despite seeing a year-to-year increase in cases of unintentional overdoses at work, which accounted for 525 of the work fatalities in 2022 (U.S. Bureau of Labor Statistics, 2023), substance abuse is not considered a major predictor of workplace injuries.

As such, considering the statistics on occupational injuries and substance abuse, there is a need to study the interlink between the two variables, especially investigating substance abuse's impact on workplace injuries. This is an important avenue of research as the statistics concerning these variables extensively affect the economy and overall well-being. For example, according to the National Council on Compensation Insurance (2022), worker's compensation claims related to workplace injuries can cost an organization up to $40,000 directly and up to $80,000 indirectly per case to resolve.

Because of the lack of research that investigates the impact of substance abuse on occupational injuries, the direction and strength of this relationship must be explored.

There is also the need to look at the relationship between substance abuse and occupational injuries in a relevant context. According to the Ohio Department of Health, unintentional drug poisoning is a leading cause of injury-related deaths in Ohio. In 2022, there were 108,000 cases of overdose deaths in the United States, with 5,144 of those occurring in Ohio (CDC, 2025). The CDC's report on drug overdose deaths in 2022 indicates that Ohio had the tenth highest overdose rate in the nation, with 45.6 cases per 100,000 people, compared to the national rate of 32.6 cases per 100,000 (CDC, 2025).

Additionally, McKnight et al. (2023) indicated that the Ohio state profile revealed that 7.87% of Ohio residents said they had used illegal drugs in the previous month; in comparison, the national average is 8.82%, which highlights how big an issue it is in this state. The study enhanced our understanding of workplace injuries through the lens of substance abuse and provides information on targeted interventions such as substance abuse awareness and prevention programs and the integration of more robust support services within workplace alcohol and other drug (AOD) policies, as indicated by the gaps in existing research.

Purpose

Occupational injuries remain one of the most prevalent issues in organizations today. They are expensive for the company and exert physical, mental, and financial pressure on employees (Miskulin et al., 2018). Thus, there is a need to determine what impacts occupational injuries so that organizations can invest in the necessary tools to

counteract and reduce them. One potential predictor of occupational injuries is substance abuse in the workplace. Substance abuse can harm workplace environments, including increased absenteeism, reduced productivity, and negatively impacting the organization's reputation (Oliveira & Magalhães, 2020). However, despite these known consequences, the relationship between substance abuse and occupational injuries remains unclear, indicating a gap in the literature. To address this gap and develop effective workplace policies and programs, it is crucial to investigate and understand the influence of substance abuse on occupational injuries. Hence, the purpose of this doctoral study was to explore the relationship between substance abuse and workplace injuries to determine if substance abuse is a leading cause of workplace injuries experienced rather than simply an outcome of workplace injury. This study specifically sought to determine this relationship in the state of Ohio, which is known for its high rates of substance abuse and overdose related death (McKnight et al., 2023).

Research Questions and Hypotheses

The research questions and hypotheses of the study are:

Research Question 1 (RQ 1): Is there an impact from substance use on the outcome of workplace injuries in Ohio?

Null Hypothesis ($H_0$1): Substance abuse among workers does not increase the prevalence of workplace injuries in Ohio.

Alternative Hypothesis (H_a1): Substance abuse among workers significantly increases the prevalence of workplace injuries in Ohio.

Research Question 2 (RQ 2): Is substance abuse underreported and underestimated concerning the impact it has on workplace injuries?

Null Hypothesis ($H_0$2): The impact of substance abuse on workplace injuries is neither underreported nor underestimated in Ohio.

Alternative Hypothesis (H_a2): The impact of substance abuse on workplace injuries is underreported and underestimated in Ohio.

Theoretical Framework

Theory of Planned Behavior

The theory of planned behavior (TPB) provides a broader view of behavior, particularly those with less conscious control over others (Ajzen, 2015). The three critical components determining a person's intention to engage in an action are at the heart of the TPB: attitude toward the activity, subjective norms, and perceived behavioral control (Ajzen, 2015). Subsequently, how someone feels about an action is mirrored in their overall evaluation of it, whether positive or negative (Ajzen, 2015). It includes assumptions regarding the likelihood of the behavior's outcomes and when these effects are assessed (Ito, 2023). Individuals are inclined to have a positive attitude toward a behavior if they value and believe a particular action will produce positive results. Contrarily, subjective norms concern how much social pressure a person feels when engaging in an action (Ito, 2023). It is influenced by other people's judgments of how important behavior is. For example, someone's purpose in acting in a certain way may be substantially influenced if they believe that important people in their life believe they should or should not do something.

According to Ajzen (2015), perceived behavioral control refers to an individual's assessment of how easy or difficult it is to perform a particular behavior. This perception is influenced by beliefs about factors that may facilitate or impede behavior. When individuals believe they possess the necessary skills, resources, and circumstances, they are more likely to intend to engage in the behavior. In this way, the TPB helps researchers to understand employees' attitudes toward substance use and abuse, the subjective norms around it within the workplace that may be encouraging this attitude, and their perception of how easy or difficult it is to use drugs within the workplace. All these can lead to potentially higher instances of workplace injuries.

Social Cognitive Theory

Albert Bandura's social cognitive theory (SCT), created in the 1970s, is used to explore the complexities of how people act and the many external factors that affect it (Bandura, 1992). Bandura (1992) realized how important modeling or observational learning was for human growth and suggested that people are not only passive objects of outside influences. Instead, individuals actively acquire information, and cognitive processes such as anticipation and self-reflection play a crucial role in deciding whether activities are continued. A person's inclinations, views, and beliefs can significantly affect how they behave because of these cognitive processes.

Furthermore, Bandura's SCT emphasizes the value of confidence in oneself, inquiry, and the constantly changing relationship between individuals and their environment (Bandura & Evans, 2006). Its principles can lead to more efficient training, higher degrees of enthusiasm, and an enjoyable work environment when applied in the

workplace (Schunk & Usher, 2012). It explains the constant interaction between an individual's behavior, internal components like intellect, emotions, and physical functions, and external factors like the environment (Bandura, 2014). Circumstances and behavior can influence personality, just as personality can impact and shape environment and behavior. Additionally, the environment can affect behavior and personality (Bandura, 1999). Each element of the dynamic feedback loop functions as both a signal and a result simultaneously. Thus, this theory bolsters the TPB and provides a foundation for understanding how employees can shape the work environment through their behaviors and actions. For example, if employees perceive substance use at work as harmless, this belief can create an environment that reinforces such behavior and further increases the risk of workplace injuries. It also highlights how important modeling is to employees. It provides the basis for understanding how effective workplace drug programs can be at preventing and reducing the risk of workplace injuries.

Nature of the Study

Quantitative analysis and a systematic review via a meta-synthesis of current qualitative data and published articles were used to address the research questions in this study. Specifically, using workers' compensation claims in Ohio, which typically outlines the reasons behind occupational injuries, were the primary data source. The research design included gathering different individual experiences as they relate to substance use and occupational injuries. The aim was to understand the research focus via results from descriptive and comparative analysis of claims data and synthesize results from other related studies.

Meta-synthesis goes beyond summarizing research results from multiple studies. It entails reinterpreting and combining data from these studies to provide fresh themes, insights, or theoretical discoveries (Borenstein et al., 2021). Hence, the study is positioned to offer fresh viewpoints on the research topic rather than just serving as a review. This study also contributes to the existing body of data by combining the results of multiple qualitative studies and utilizing quantitative data collected to maximize the returns on earlier research expenditures.

Literature Search Strategy

The literature review was conducted using multiple databases to identify published research related to the problem, the study's purpose, and the study's framework. The databases included Cochrane, Psych Info, Medline, Google Scholar, and the Ohio Bureau of Workers' Compensation claims database. The search terms that were used included *occupational injuries, compensation claims, substance use, substance abuse, drug abuse, compensation injuries claims, injuries in Ohio, drugs and workplace injuries, occupational injuries*, and *drug addiction.* Additionally, the study also made use of Boolean operators such as "Worker" OR "Employee" and "Substance abuse" OR "Drug abuse." The search was initially limited to works published within the last 5 years but was expanded to ensure that seminal works related to the topic were included.

Literature Review Related to Key Variables and/or Concepts

Background: Occupational Injuries and Substance Abuse

As stated by Pidd et al. (2019), findings concerning the nature and extent of drug-related workplace accidents and injuries remain unclear. Over the past few decades, there

have been several reviews of research concerning alcohol and other drug-related workplace accidents and injuries (Frone, 2004; Ramchand et al., 2009; Stallones & Kraus, 1993). The earliest reviews concluded that there was insufficient proof to establish a causal relationship between alcohol use and workplace injuries (Stallones & Kraus, 1993).

Additionally, Frone (2004) reviewed studies that examined both alcohol and other drugs and found little credible data on the extent and nature of drug-related workplace accidents and injuries. In another study, researchers found that there was a small proportion of occupational injury that was caused by substance use (Ramchand et al., 2009). However, the authors admitted that the results potentially did not adequately account for confounding variables.

In alignment with this, research has also found that workplace injuries can cause employee substance abuse (Le et al., 2020). This is important to note as it indicates that substance abuse can occur in a cyclical pattern in its relationship with workplace injuries. For example, upon involvement in an accident at work and being injured, an employee may be prescribed opioids such as fentanyl for pain management, which can result in addiction and may also eventually lead to further workplace injury. This complex and dynamic relationship may explain why few research studies have parsed out the impact of substance use on workplace injuries. Hence, there is a potential for unmeasured variables, circumstances, or contexts to account for the weak associations between substance use and occupational injury, signaling a gap in the literature and the need for further research.

Substance Abuse in the Workplace

Substance use and its subsequent abuse in the workplace is a prevalent issue within society today. According to the 2020 National Survey on Drug Use and Health, two-thirds of all adults with an alcohol or illicit drug use disorder have jobs. In 2022, the same survey also found that among people aged 12 years or older, 59.8% or 168.7 million people used an illicit drug in the past month, with marijuana being the most used illegal substance (Smith Ramey et al., 2023; Sukmaninggrum et al., 2023). Other than marijuana, the consumption of psychoactive substances such as ethanol, opioids, cannabis derivatives, benzodiazepines, methamphetamine, amphetamine, and cocaine is also becoming increasingly common in the workplace, especially within industries such as mining and construction (Oliveria et al., 2020). Despite its widespread use, numerous detrimental effects of substance misuse touch every element of a person's life, including that of their employer (Sher et al., 2023).

Physically, substance abuse can result in chronic conditions such as liver cirrhosis, respiratory issues, and cardiovascular illnesses (Jimenez Ruiz et al., 2023). Certain drugs, such as opioids, can also cause sweating, confusion, agitation, drowsiness, and delayed motor decoding (Oliveria et al., 2020). These physical consequences can manifest in the workplace as employees with poorer reflexes, motor skills, and judgment increase the risk of injuries in jobs requiring operating machinery or a vehicle (Duarte et al., 2021). In addition to a diminished capacity to focus, substance use frequently results in decreased productivity, lower work quality, and more errors. Affected employees often

miss work or are late, which is common, disrupting the workflow and putting further stress on their coworkers (Bush & Lipari, 2016; Millar et al., 2023).

This impact on productivity and overall employee functioning also affects the organization. Specifically, where an employee's substance usage results in incident or harm, these problems may increase healthcare expenses for businesses that provide medical coverage (National Council on Compensation Insurance, 2022). Additionally, a work atmosphere marred by substance abuse can also make it difficult to maintain business relationships, leading to disagreements, mistrust, and a drop in team spirit (Soria, 2020). Thus, though substance abuse is not currently considered a significant predictor of occupational injuries, there needs to be more research done to determine the exact nature of the relationship and their impact on one another.

Workplace Strategies for Limiting Substance Use

Three main programs can be implemented within the workplace to reduce or limit substance use and/or abuse: policy, assistance and education programs, and workplace testing. Workplace substance policies typically outline the organization's position on alcohol and other drug use, inclusive of "legitimate" drugs such as those prescribed for pain (i.e., opioids), and how they anticipate dealing with an employee if there is an infraction (Pidd et al., 2019). An effective policy also includes outlined procedures for approaching and dealing with the affected employee, including providing information about treatment and counseling services and any disciplinary action that may be taken (Pidd et al., 2019). However, one of workplace policies' main challenges and limitations

is that research has not found its outlined procedures or punishment effective at reducing substance use (Hoopsick & Samad, 2023).

Assistance and educational programs are also popular mechanisms in organizations. In addition to simply informing employees about policies, good education programs also contribute to the health and well-being of employees by providing information about alcohol and other drug-related harm in the workplace (Bouzikos et al., 2022). The Employee Assistance Program (EAP) is implemented in most Fortune 500 companies and provides employees access to counseling and treatment services (Bouzikos et al., 2022). Though costly for the company, it is less punitive to employee morale than simply dismissing an employee. Both methods are effective. For example, using cross-sectional data from the 2019 National Survey on Drug Use and Health, it was found that workers who received education on substance abuse and had used an employee assistance program at their workplace were less likely to report current use of cannabis and illicit substances (Hoopsick, 2023). However, despite its effectiveness, research has also found that if employee assistance programs and education programs do not have a well-defined research agenda that sets parameters for how it will occur, then it can be costly and detrimental to both individuals and their employers (Bouzikos et al., 2022; Merrick et al., 2007). Thus, this is a significant limitation and challenge that organizations must account for when implementing such programs.

Finally, workplace testing is one of the most widely used forms of preventative substance abuse programs. Testing aims to improve workplace safety and productivity by deterring employee use (Hazle et al., 2022). According to research, good workplace drug

testing occurs across two-step processes (Pidd et al., 2019). The first step involves an initial on-site screening, using a point of collecting test device. These on-site test devices are usually less accurate and reliable than laboratory analyses. Thus, a second step involves a laboratory analysis to confirm the accuracy of any initial on-site screen that detects the presence of drugs (Pidd et al., 2019). However, although workplace drug testing can be a strong deterrent, it is one of the most controversial workplace programs with significant limitations and challenges for the organization to consider. First, the research on the actual effectiveness of workplace testing in reducing substance abuse is inconclusive. On the one hand, a recent examination of drug testing in the U.S. construction industry found that companies with drug testing programs reported a slightly lower but not significant injury rates compared to non-testing companies (Schofield et al., 2013).

On the other hand, a broader industry study found that employee drug testing was associated with a significant reduction in minor injuries that did not result in lost work time (Waehrer et al., 2016). Thus, testing may not be as accurate or advantageous as expected in an organizational setting. However, further understanding of how substance abuse impacts occupational injuries and why may result in more effective training.

Substance Abuse and Occupational Injuries in Ohio

It is crucial to dissect and understand substance use's genuine influence on occupational injuries, particularly in a state like Ohio. As previously noted, Ohio presents a distinctive population for examining this matter for several reasons. First, the state's substantial industrial activity creates an environment conducive to workplace injuries and

substance abuse (U.S. Department of Labor, 2022). For example, in 2022, an Ohio manufacturer fined $1.2 million in penalties after the seventh worker in five years suffered severe injuries when caught in a machine the employer failed to lock out (U.S. Department of Labor, 2022).

The state also grapples with elevated levels of substance abuse, particularly within its private sector, where manufacturing jobs account for approximately 14% of employment and contribute to about 11% of workplace injuries (U.S. Department of Labor, 2022). Furthermore, while Ohio enforces a law known as the Drug-Free Workplace and Reasonable Suspicion Protocol (Ohio Secretary of State, n.d.), which mandates that workplaces maintain a substance-free environment, private employers are not obligated to implement any form of drug-free workplace policy.

However, despite the abundance of evidence indicating Ohio as a prime location to study substance use and occupational injuries, there are minimal studies that examine this state. Thus, this study not only sheds light on how substance use and abuse influence occupational injuries, but also highlights how these dynamics manifest within a state like Ohio, particularly given its ongoing struggles with these issues. Hence, to effectively prevent and reduce workplace injuries in the United States and Ohio, thoroughly understanding their causes (i.e., substance use) is essential.

Theoretical Framework for the Study

TPB

The TPB emphasizes the importance of attitudes, perceived social standards, and perceived behavioral control in explaining the complicated nature of work-related injuries

and substance misuse in the workplace. The opinions of employees are important to consider while thinking about occupational injuries. For instance, employees may be more likely to act unsafely if they perceive that ignoring safety procedures will allow them to save time despite posing a significant danger. Alternatively, when individuals are informed about the hazards and risks linked to neglecting safety precautions, they are more likely to prioritize safety. Additionally, a workplace's social environment, particularly the accepted conventions, has a significant impact. If a prevalent culture minimizes the value of safety, employees may disregard safety regulations. This is especially true if peers or superiors often disregard safety regulations, creating the impression that this conduct is permissible or even expected.

The workers' belief in their capacity to participate in safe activities, known in TPB as perceived behavioral control, is a key component. Workers may turn to dangerous shortcuts if they lack the resources or training to perform their jobs safely. Ensuring they receive the appropriate instruction and access to the necessary safety gear can significantly impact and reduce adverse outcomes. As it concerns substance usage, employees' attitudes also matter. Employees may be more likely to use drugs if they think that occasionally abusing them will not harm their performance at work or that consuming drugs helps them cope with stress related to their jobs. Specifically, employees may consider substance abuse or alcohol use to be standard behavior if peers have a casual or permissive attitude toward it or if there is no explicit prohibition on it in the workplace (Thørrisen et al., 2022). Thus, the TPB can offer context into how and why substance abuse occurs in the workplace and how this can feed into workplace injuries.

SCT

SCT excels in exploring deeply the behavioral and cognitive factors at play to comprehend the impact of substance addiction on workplace injuries (Schunk & Usher, 2012). Workers frequently pick up behaviors and habits by observing their coworkers. New employees or those who are vulnerable may adopt unsafe habits if the business culture or subculture appears to condone or encourages using drugs or alcohol as a coping mechanism. As claims are evaluated, it could become apparent that specific teams or departments have clusters of substance-related injuries, which reflects this observational learning (Yosef et al., 2023).

Furthermore, self-efficacy, or confidence in one's ability to handle problems, is crucial to the SCT (Yosef et al., 2023). Employees may feel more confident about using substances and believe they can still perform their jobs effectively even when impaired. Such assurance may derive from prior experiences where using substances did not instantly have detrimental effects (Lempert & Normand, 1994). Over time, this erroneous sense of security could push individuals into riskier actions that end in accidents. Examining the narratives of workers' compensation claims may reveal these underlying assumptions, particularly if workers mention using drugs or alcohol as a coping method or support. Thus, the assessment's incorporation of SCT concepts makes a more comprehensive understanding possible. It provides explanations for why specific patterns of substance addiction and associated injuries arise and demonstrates how interconnected individual choices, peer pressure, and institutional regulations are in determining the outcomes that are seen.

Definitions

Substance Abuse: The use of illegal, prescription, or over-the-counter drugs or alcohol for purposes other than those for which they are meant to be used (Rowe & Liddle, 2003).

Workplace Injuries: An occupational injury describes any injury that occurs to an individual because of their specific occupational environment, tasks, or requirements (Reilly et al., 1995)

Workplace Drug Strategies/Programs: Policies and activities designed to provide a safe workplace, discourage alcohol, and drug abuse, and encourage treatment and recovery (Phan et al., 2012).

Assumptions

Some assumptions were made regarding the meta-synthesis on worker's compensation claims in Ohio. First, it was assumed that the impact of external factors, such as economic conditions and industry-specific risks, on worker compensation claims are considered in the interpretation of the analysis. Second, it was assumed that the changes that naturally occur in worker compensation laws and policies over time are accounted for, recognizing that these changes can impact the nature and frequency of claims. Finally, it was also assumed that the qualitative aspects of the claims, such as worker narratives and descriptions of the incidents, are rich enough to allow for in-depth thematic analysis and synthesis.

Scope and Delimitations

The data in this study were restricted to workers' compensation claims from state-insured organizations in Ohio. The use of workers' compensation claims was selected due to potential barriers to accessing participants who may have been wary of talking about or mentioning the fact that they engaged in substance abuse in the workplace. Thus, the sensitivity of the issue required an objective measure or account of what occurred to determine the relationship between substance abuse and occupational injuries.

Additionally, based on how the worker compensation claims were gathered and from which organizations, there could be a bias based on the industry. For example, if most workers' compensation claims were in construction versus another industry. Finally, as the worker compensation claims are based in Ohio, it may be hard for the results to be generalized to the entire population. However, future research may focus on extending the pool of worker compensation claims to understand the relationship further.

Significance

The current study is significant because it aims to understand the impact of substance abuse on occupational injuries. Specifically, this study offers important insights that could affect the creation of more successful safety-at-work policies and initiatives by utilizing claims for workers' compensation data from Ohio. The results of this study can play a significant role in determining the course of future research as well as educating stakeholders—such as legislators, employers, and medical professionals—about the most effective ways to reduce the dangers related to substance addiction in the workplace.

Summary and Conclusions

As substance abuse continues to increase in the United States, it is important to understand the impact this can have on the prevalence of workplace injuries. The physical and economically destructive nature of occupational injuries justifies a deeper exploration into this specific aspect of workplace safety. The study not only contributes to a more comprehensive understanding of workplace injuries in the context of substance abuse but also provides information on targeted interventions. Such interventions could range from enhanced substance abuse awareness and prevention programs to the integration of more robust support services within the workplace and alcohol and other drug (AOD) policies. In summary, this study is critical to expanding our knowledge of how substance addiction affects work-related injuries. Thus, this doctoral study seeks to determine the impact of substance abuse on workplace injuries to provide actionable ways to contribute to and improve workplace substance abuse programs. The following section will introduce the methodology and methods for this study, collect relevant data, and address the research questions.

Section 2: Research Design and Data Collection

As discussed in Section 1, the purpose of this study was to determine the impact of substance abuse on workplace injuries using worker compensation claims in Ohio. While there is previous research on workplace injury and how it can result in substance abuse, there is little research that investigates the impact that substance abuse can have on workplace injuries. Furthermore, little research has focused on specific states where this is a pressing issue, such as Ohio. Understanding these gaps is essential for directing future research projects. Specifically, this approach may be helpful for decision-makers since they frequently need thorough information to guide their strategies. This chapter covers the dissertation's approach concerning the mixed methods design, study population, eligibility requirements, sample size, data collection, data analysis, and ethical considerations.

Research Design and Rationale

To address the research questions associated with this study, as highlighted previously, a systematic review and meta-syntheses of workers' compensation claims was utilized to determine substance abuse's impact on workplace injuries. As such, the research philosophy this study adopted was constructivism/interpretivism. The assumption that knowledge and reality are not static or invariantly valid justified its adoption (Johnston & Dowling, 2023). Instead, knowledge and reality are developed and revised through people's experiences, communications, and perceptions (Vivek et al., 2023). Adopting a constructivist/interpretivist stance aligns with the researcher's intention to acknowledge and weave together these various realities. By gathering

different individual experiences as it relates to substance use and occupational injuries, this study aimed to comprehend the research focus via results from comparative analysis of claims data and synthesizing results from other related studies. This served as more justification for the use of systematic review/meta-synthesis. To support the foregoing, the research attempted to delve deeply into the intricacies of people's subjective experiences, beliefs, and interpretations (exploring subjective human experiences is necessary, given the ubiquity of the research emphasis). Therefore, this research approach was exceptionally well suited to the constructivist/interpretivist paradigm since it not only permits but also highlights the researcher's participation in comprehending, co-constructing, and re-contextualizing content.

Methodology

Population

The population exposure outcome (PEO) strategy was adopted in identifying the study population (Heaslip et al., 2017; Moola et al., 2015; Vickery et al., 2020). This strategy was utilized to investigate a prognosis or likelihood of a certain condition because of exposure (Colorado State University [CSU] Libraries, n.d.). This is particularly important when studying substance use and its impact on occupational injuries. Subsequently, the study population is workers in Ohio who were exposed to occupational injuries, substance abuse, or a compensation claim resultant from either substance abuse or occupational injuries. These workers comprise several sectors, such as production and manufacturing firms, construction, agriculture, education, and healthcare companies.

Eligibility Criteria, Search Strategy and Data Collection

Inclusion criteria outline the features that a study must consider for inclusion in the review, sometimes referred to as eligibility criteria. Contrarily, exclusion criteria refer to the traits that exclude studies from inclusion (Patino & Ferreira, 2018). Table 1 presents the inclusion and exclusion criteria based on the PEO strategy. Apart from the outlined inclusion and exclusion criteria, this study only reviewed research inquiries published in English from 2010 to date. The rationale for this was to adequately review the studies considering the limited timeframe assigned to the thesis. Thus, studies published in other languages and not within the stipulated timeframe were not reviewed.

Table 1

Inclusion and Exclusion Criteria

Strategy	Inclusion	Exclusion
Population	Workers in Ohio	Non-workers and workers not from Ohio
Exposure	Occupational injuries, substance abuse and compensation claim, qualitative approach	Not related to occupational injuries, substance abuse and claims, quantitative approach
Outcome	Negative or positive attitude towards claim	Not related to compensation claims

Deeks et al. (2023) stipulated that acquiring all pertinent papers for the review issue is crucial using a methodical search methodology. Similarly, Aveyard (2023) also claimed that a successful systematic review depends on a solid literature search strategy, which is the cornerstone of effective information retrieval. To achieve this, the current study utilized the PEO strategy via the use of keyword search (Table 2).

Table 2

Search Key Words

POPULATION	EXPOSURES	OUTCOMES
	INDEX TERMS (MAIN TERMS)	
Worker in Ohio	Occupational injuries Compensation claims Substance abuse	Impact of substance abuse on occupational injuries and claims
	FREE TEXT TERMS (SYNONYMS)	
Employees in US (Ohio inclusive)	Drug abuse Compensation injuries claims	Influence of workplace alcohol and other drug use on workers' compensation

Furthermore, the Critical Appraisal Skills Program (CASP) checklist was used to screen the published articles via electronic search engines such as Cochrane, Psych Info, Medline, and Google Scholar. The goal of the screening was to ensure the reviews met the inclusion and exclusion criteria as well as the study's research objective/questions. Secondary data, both qualitative and quantitative, were used in the present study.

Data Analysis and Synthesis Plan

This study utilized the Statistical Package for Social Sciences (SPSS, version 29.0) for data analysis. The process involves recoding the quantitative secondary data presented in Microsoft Excel which provided relevant information on the focus study and screening the data to meet the inclusion criteria. The process began with an examination of the data. Afterward, recurring themes and patterns were identified, and preliminary codes were given (representing each variable with a numeric value). The codes in the SPSS variable view may be changed, mixed, or separated to better convey the spirit of the data with continuous engagement and in-depth exploration. The numeric values

assigned to each variable were then categorized together based on similarities and differences in the injured worker's experience of the impact of substance abuse on occupational injuries using workers' compensation claims in Ohio. The adaptability of the inductive coding approach has key benefits (Kriewaldt et al., 2023). It does not force the researcher to adopt a particular hypothesis right away. This openness may result in a more accurate representation and comprehension of the opinions and experiences of participants.

Descriptive and comparative statistical analyses were utilized to summarize the data and assess differences the cost of claims between the sample and the population within the study period. Specifically, a one-sample *t* test was performed to evaluate whether the mean costs in the sample differed significantly from the population means across three cost categories: medical, indemnity (lost-time), and grand total.

To efficiently communicate a vast amount of information on workers' compensation claims in Ohio, straightforward descriptive statistics were used to summarize demographic and other information, including data collection year, gender, educational level, and claimants' compensation status from occupational injuries. Using this analytical method enables a thorough description of the data and provides insights into the claimants' perceptions and experiences regarding the effect of substance abuse on occupational injuries. This can produce a profound understanding of the phenomenon being studied. It can also make it easier to compare similarities and distinctions across different variables that have been generated. Massive volumes of quantitative data can be

managed by organizing them into categories, making it easier to understand without losing the essential elements of participant tales.

Ethical Considerations and Procedures

Ethical approval was sought from the university's institutional review board (IRB), and it was granted (Approval number 09-25-25-0531998). Anonymity of sensitive data was ensured while adhering to copyright laws and avoiding plagiarism. Furthermore, the study adhered to the principles of beneficence and non-maleficence. It ensures that labor stakeholders benefit from the study findings while maintaining the integrity of data and analysis, with no harm or endangerment to any party.

Summary

Section 2 detailed the research methodology that was used for this study. Systematically reviewing and synthesizing worker compensation claims in Ohio allowed me to address the research questions outlined in Section 1. After using the inclusion and exclusion criteria, meta-synthesis occurred and was also utilized as a statistical analysis strategy for both RQs. As outlined, ethical procedures were implemented to address potential data security issues. The results of the study are presented in Section 3.

Section 3: Presentation of the Results and Findings

Data Analysis

Descriptive and Comparative Analysis

These sections portray a thematic analysis of the studies reviewed and the injured workers' descriptive statistics: frequencies, percentages, means and standard deviations of the variables related to workers' compensation claims from occupational injuries due to substance abuse in Ohio.

The study analysis protocol involves comparative and descriptive analysis. The comparative analysis was changed from comparing two sets of sample data, one with substance and the other without, because a considerable number of claims involving drug use were denied. In the claims identified as accepted, the statute of limitation was determined to have expired for more than 60% of them. Consequently, the possibility of comparing two sets of samples was severely limited. Alternatively, the study comparatively assessed the difference in the average cost associated with claims related to substance abuse and the average cost associated with claims in the population. Hence, the study utilized descriptive, comparative, and thematic analysis to address the research questions.

Descriptive Analysis of Data Collection

The purpose of this study was to address the two research questions stated earlier. The first question examined whether substance use impacts the outcomes of workplace injuries in Ohio. The second explored whether the impact of substance use on workplace injury outcomes is underreported or underestimated. To investigate these questions, the

study utilized workers' compensation data obtained through a partnership with the Ohio Bureau of Workers' Compensation. The secondary dataset facilitated descriptive, comparative, and thematic analyses to comprehensively examine the research objectives.

The descriptive analysis of the workers' compensation claims data showed that the data collected and analyzed for this study spanned over 26 years, from 1994-2019. This was the amount of data available suitable for this study. The highest percentage (14.0%) was collected in 1998, while the least (1.0%) was collected in 1994 and 1995. The year's mean value and standard deviation were recorded (9.09 and 5.14), and the remainder of the descriptive statistics are presented in Table 3.

Table 3

Descriptive Analysis of Data Collection Year

Year	Frequency	Percentage
1994	01	0.1
1995	01	0.1
1997	77	11.4
1998	94	14.0
1999	48	7.1
2000	44	6.5
2001	53	7.9
2002	61	9.1
2003	14	2.1
2004	23	3.4
2005	48	7.1
2006	38	5.6
2007	34	5.1
2008	19	2.8
2009	18	2.7
2010	22	3.3
2011	17	2.5
2012	26	3.9
2013	11	1.6
2014	07	1.0
2015	11	1.6
2016	04	0.6
2019	02	0.3
Total	673	100.0

Descriptive Analysis of Demographic Characteristics of Claims Data

Results of the descriptive analysis of the demographic characteristics of gender, marital status, age, and education level are provided in Table 4. The descriptive analysis revealed that most of the injured workers were male (86%), single (43.7%), between the ages of 36-45 years (29.4%) and did not specify their education level (69.1%) or race.

Table 4

Demographic Characteristics

Variable	Frequency	Percentage (%)
Gender		
Male	579	86
Female	89	13
Unknown	05	0.7
Marital Status		
Single	294	43.7
Married	226	33.6
Divorced	74	11
Separated	30	4.5
Unknown	45	6.7
Widowed	04	0.6
Age		
Unknown	02	0.3
16- 25 years	161	23.9
26- 35 years	186	27.6
36- 45 years	198	29.4
46- 55 years	110	16.3
56- 65 years	16	2.4
Education Level		
Not Specified	46	69.1
High School or GED	145	21.5
4 or more years of College	2	0.3

Descriptive Analysis of Studies Reviewed

Analyzing the studies on occupational injuries, substance abuse, and workers' compensation reveals a nuanced understanding of these interconnected issues. Yang et al. (2021) delved into the injury patterns among young workers in Oregon, utilizing a comprehensive dataset of both disabling and non-disabling workers' compensation claims for workers aged 24 years and under, spanning from 2013 to 2018. They discovered that young workers, especially those who identified as men and were between the ages of 19-24 years, were at a higher risk of injuries, particularly from impacts and musculoskeletal disorders. This finding highlights the necessity for industry-specific safety interventions for young workers. Conversely, Ghimire et al. (2020) examined how state medical marijuana laws might influence workers' compensation claims. By examining data from the Current Population Survey and employing a differences-in-differences approach, they observed a decline in workers' compensation claims post the implementation of medical marijuana laws, hinting at the role of medical marijuana in better managing symptoms and thereby reducing the need for workers' compensation.

Oh (2023) investigated the prevalence and efficacy of workplace alcohol and other drug policies and support services in the United States. Analyzing data from the National Survey on Drug Use and Health from 2015-2019, Oh found that while a sizable proportion of the workforce had access to written AOD policies, only half benefited from substance use support services, with a marked deficiency in such services among disadvantaged groups. This underscores the gap in comprehensive workplace support for substance abuse. Mustard and Yanar (2023) investigated the economic dimension,

assessing the financial return on occupational health and safety investments in Ontario, Canada. Their analysis, which included a range of sectors, revealed a generally positive return on investment in workplace safety, though this varied across sectors. This study underlines the economic viability and benefits of investing in occupational safety measures.

Lastly, Lowe et al. (2023) reviewed the impact of manufacturing automation in reducing workplace injuries in small businesses. Through examining case studies involving advanced manufacturing automation acquired via a health/safety intervention grant program, they found that such technological interventions, including industrial robots and computer numerical control (CNC) machining, significantly reduced musculoskeletal risks and boosted productivity. These studies offer diverse perspectives on managing occupational health and safety, highlighting the need for targeted safety interventions, the impact of policy changes, and the potential of technological advancements in enhancing workplace safety and reducing the incidence of occupational injuries and substance abuse.

Analysis of Workers' Compensation Claims Due to Substance Abuse

This section provides information on the assessment of workers compensation claims on occupational injuries resulting from substance abuse in the state of Ohio.

Claimants Compensation Status from Occupational Injuries

The claimant's compensation status from occupational injuries was analyzed using descriptive analysis as shown in Table 5. The analysis revealed that the highest percentage of the claimant's compensation status was acceptance (57.5%), and 40.3% of

the claims being denied. The claimants' current status from occupational injuries was also analyzed (Table 5) and it was revealed that most of the analyzed claims were denied at 40.3%.

Table 5

Claimant Compensation Status from Occupational Injuries

Variables	Frequency	Percentage
Claimant Compensation Status		
Accepted	387	57.5
Denied	271	40.3
Expired Occurrence	14	2.1
Pending	01	0.1
Sts Rsn Claims		
Settled/Both	120	17.8
Statute of Limitation Expired	248	36.8
Denied	271	40.3
Inactive Claim	8	1.2
Duplicate	4	0.6
Dismissed	13	1.9
Accepted	6	0.9
Hearing	1	0.1
Reactivation Approved	1	0.1
Reactivation Requested	1	0.1

The Claim Types from Occupational Injuries

The claim type from occupational injuries was analyzed using descriptive analysis as shown in Table 6. The analysis showed that most of the claim types were lost time claims at 52.6% while medical only claims recorded 47.4%.

Table 6

The Claim Types from Occupational Injuries

Variables	Frequency	Percentage
Medical Only	319	47.4
Lost Time	354	52.6

Impact of Occupational Injuries on Workers' Compensation in Ohio

To further buttress the descriptive statistics on claims and occupational injuries, this theme centers on how occupational injuries influence workers' compensation, encompassing various issues related to claim handling, policy creation, and preventive measures. The complex nature of industrial injuries and their wide-ranging effects highlight their critical role in determining workers' compensation structure (Lowe et al., 2023; Mustard & Yanar, 2023; Yang et al., 2021).

Occupational injuries heightened susceptibility to both disabling and non-disabling injuries among young male workers. This demographic-oriented insight (based on Yang et al., 2021) is critical for comprehending the trends and patterns in workers' compensation claims, as it highlights the correlation between the frequency and severity of injuries and the ensuing claims in distinct groups in the workforce. Expanding on this theme, Lowe et al. (2023) investigated the role of technological advancements in mitigating occupational injuries. Their study focused on the integration of manufacturing automation and demonstrated how such technological interventions can effectively reduce the prevalence of musculoskeletal disorders, which remain among the most common workplace injuries. The consequent decline in these injuries can significantly lower the number of workers' compensation claims, alleviating the financial pressure on these systems. This insight is instrumental in emphasizing the value of preventive measures and the adoption of advanced technologies in curtailing the economic impact of occupational injuries. From an economic standpoint, the study by Mustard and Yanar

(2023) also offers a valuable perspective by examining the financial ramifications of occupational injuries on employers and the workers' compensation system. Their analysis, centered on the return on investment in occupational health and safety in Ontario, Canada, elucidates the economic advantages of investing in safety and preventive initiatives. This economic lens is crucial in grasping the broader implications of occupational injuries on workers' compensation, highlighting the tangible benefits of proactive safety measures.

Beyond their immediate impact on affected individuals, occupational injuries influence employers, insurance providers, and the healthcare system. An uptick in injury rates invariably leads to increased workers compensation claims, escalating the costs associated with medical care, rehabilitation, and compensation for lost wages. This escalation poses a significant financial challenge, impacting the sustainability and efficiency of workers' compensation systems. In summation, the influence of occupational injuries on workers compensation is extensive and complex, encompassing demographic-specific risks, the effectiveness of preventive strategies, and economic implications. A comprehensive understanding of these facets is vital for formulating practical approaches to minimize workplace injuries and efficiently manage the ensuing financial burden on workers' compensation systems. Such strategies are imperative for safeguarding the workforce's well-being and ensuring the robustness of workers' compensation frameworks.

Claimants of Occupational Injuries: Alcohol and Drugs

The claimants of alcohol-related occupational injuries were analyzed using descriptive analysis, as shown in Table 7. The analysis showed that all the claimants answered yes to the question of engaging in alcohol use (100%). As it concerns drugs, most of the claimants also reported drug use (99.8%), with very few non-drug claimants (0.3%).

Table 7

Claimant of Occupational Injuries: Alcohol and Drugs (Individual)

Variables	Frequency
Alcohol	673
Drugs	671

Impact of Substance Abuse to Workers' Compensation in Ohio

This theme entailed codes that indicated how the prevalence of substance abuse in the workplace intricately intertwines with the dynamics of workers' compensation claims, presenting a challenging landscape for employers and policymakers alike. This complex interplay is rooted in the inherent risks that substance abuse poses to workplace safety, often escalating the frequency and severity of occupational injuries, thereby influencing the trajectory of workers' compensation claims.

Substance abuse, which includes abusing prescription pharmaceuticals, alcohol, and unlawful and lawful misuse of substances, negatively impacts an employee's well-being, both physically and emotionally. The likelihood of mishaps and injuries at work is significantly increased by this disability (Sorge et al., 2020). Such incidents, resulting from impaired judgment or coordination, not only jeopardize the safety of the affected

individuals but also have broader implications for the organization. The resultant occupational injuries contribute to an upsurge in workers' compensation claims, encompassing a range of costs from medical expenses to lost wages and rehabilitation costs. This escalation in claims presents a financial and administrative strain on workers' compensation systems, underscoring the critical need for effective workplace policies and interventions.

The impact of substance abuse on workers' compensation is further nuanced by the findings of recent studies. For instance, the study by Ghimire et al. (2020) sheds light on an intriguing aspect of this relationship. Their examination of the effects of state medical marijuana laws on workers' compensation claims unveils an unexpected dynamic. With the legalization in Ohio in 2016, the subsequent availability of medical marijuana for managing symptoms related to workplace injuries suggests a potential decrease in workers' compensation claims. This indicates that effective symptom management strategies could be pivotal in reducing the need for such claims, offering a window into alternative approaches for handling workplace injuries.

Additionally, the study conducted by Oh (2023) reveals critical insights into the role of workplace policies in managing substance abuse. The prevalence of alcohol and other drug policies in the workplace is counterbalanced by a notable deficiency in support services, particularly for disadvantaged groups. This gap in support services potentially exacerbates the risks associated with substance abuse, contributing to a rise in occupational injuries and, consequently, workers' compensation claims. It emphasizes the importance of not only having robust alcohol and other drug policies but also ensuring

the availability of comprehensive support mechanisms for employees grappling with substance abuse issues.

The demographic-specific vulnerabilities to workplace injuries, as highlighted by codes obtained from the study by Yang et al. (2021), add another layer of complexity to this issue. The codes revealed that gaps in developmental stages, such as younger workers who are in early adulthood, were disproportionately affected by substance misuse, which led to an increased likelihood of occupational injuries or on-the-job accidents and corresponding worker's compensation claims among these populations. The rising tide of occupational injuries linked to substance abuse requires a proactive stance in developing and implementing robust workplace policies coupled with adequate support services. Addressing the nuances of this relationship is crucial in mitigating the associated risks and financial burdens, fostering a safer and more productive workplace environment.

Occupational Injuries and Substance Abuse Impact on Workers' Compensation in Ohio

This theme illustrates that the interrelationship between occupational injuries, substance abuse, and their consequent impact on workers' compensation is a multifaceted and intricate issue. Studies by Yang et al. (2021) and Oh (2023) shed light on various dimensions of this complex nexus. Yang et al.'s research points out a higher incidence of workplace injuries among specific demographics, notably young and male workers. This pattern suggests an increased vulnerability within these groups not only to occupational injuries but also potentially to other implications of substance abuse in the workplace.

The intersection of these factors invariably leads to a rise in workers' compensation claims, particularly within these demographic groups.

Oh's (2023) report further emphasizes the critical role of workplace policies and support services in addressing substance abuse. The research highlights a notable gap in support services for managing substance abuse, especially among marginalized groups. This deficiency can amplify the risks associated with substance abuse, leading to an increase in occupational injuries. Such a trend compromises employee health and safety and imposes additional financial and administrative burdens on workers' compensation systems. Adding to this complexity, Ghimire et al. (2020) investigated the impact of medical marijuana laws on workers' compensation claims, introducing a nuanced aspect to this interplay. Their findings suggest that effective symptom management, potentially through medical marijuana, may lead to a decrease in workers' compensation claims. However, this observation underscores a broader challenge in workplace safety related to the multifaceted issue of substance abuse, including the misuse of prescription medications, alcohol, and illicit substances.

Thus, it is evident how substance abuse, workplace injuries, and their impact on workers' compensation are related. Workplace substance abuse has the potential to increase the frequency of occupational injuries, which in turn can raise the volume of workers' compensation claims. Conversely, strong regulations and all-encompassing support services coupled with an organized approach to managing workplace substance usage can significantly reduce these dangers. This interplay underlines the necessity for holistic strategies that simultaneously address occupational injuries and substance abuse.

Comparative Analysis Overview

To avoid bias, only claims in which the medical, indemnity or lost-time costs were non-zero were included in the one-sample t-tests. Out of 673 total cases, 418 had non-zero medical costs, while 212 had non-zero indemnity or lost-time costs. Excluding zero-value cases yields a more accurate estimate of the actual monetary impact. The grand-total category, representing combined medical and indemnity costs, included 418 cases. Table 8 presents the population mean values used as test values in subsequent analyses.

Table 8

Average Costs for the Population, 1994–2019

Category	Mean Cost ($)
Medical only	2,149
Lost time	97,928
Grand total (medical + indemnity)	54,521

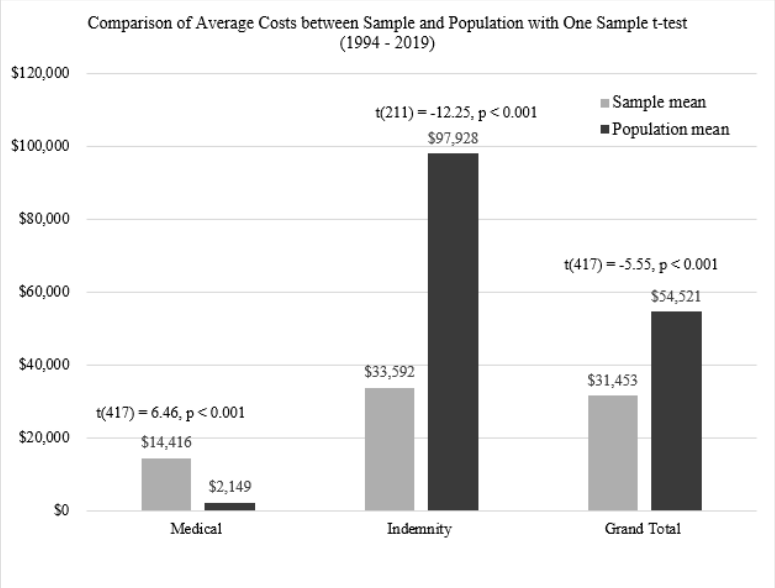
Note. Population averages derived from statewide data between 1994 and 2019.

Medical Cost Analysis

Figure 1 summarizes the one-sample t-test comparing sample and population mean medical costs. The sample mean of $14,416.45 was higher than the population mean of $2,149, a mean difference of $12,267.45, $t(417) = 6.46$, $p < .001$. The 95% confidence interval (CI) for the mean difference ranged from $6,015.02 to $18,519.87, indicating that the true mean difference is likely to fall within this range.

Figure 1

Comparison of Average Costs Between Sample and Population With One-Sample T Test



Indemnity (Lost-Time) Cost Analysis

The average indemnity (lost-time) cost for the sample was $33,591.80, significantly lower than the population mean of $97,928, yielding a mean difference of –$64,336.20, t (211) = –12.25, p < .001. The 95% CI (–$74,688.58, –$53,983.82) confirms that this difference is statistically significant.

Grand-Total Cost Analysis

As shown in Figure 1, the combined average of medical and indemnity costs for the sample ($31,453.44) was significantly lower than the population mean ($54,521), a mean difference of –$23,067.56, t (417) = –5.55, p < .001, 95% CI [–$31,234.62, –$14,900.51].

Interpretation

Across all categories, statistically significant differences were observed between the sample and the population means. The medical-only costs were higher in the sample, supporting the hypothesis that substance use increases the cost of workplace injury claims. Conversely, indemnity and total costs were lower in the sample, likely due to a higher proportion of denied claims where substance use was detected. This underscores a systemic limitation in workers' compensation data reporting and suggests that the true economic impact of substance-related workplace injuries may be underestimated and underreported.

Collectively, the findings support the research hypothesis that substance abuse has a significant impact on outcomes of workplace injuries. It also supports that argument that the observable cost differences between the sample and the population are not due to random variation but reflect structural and procedural disparities in how substance-related claims are managed. The higher medical cost among accepted cases suggests increased healthcare utilization, whereas the lower indemnity and total costs indicate systemic exclusion of disallowed claims. Taken together, these results point to the likelihood that the actual cost of workplace injuries involving substance use is underestimated in population-level analyses. Future studies using more comprehensive or linked datasets could help clarify these patterns and better inform prevention and policy interventions.

Challenges: Substance Abuse, Occupational Injuries and Workers' Compensation

The complex relationship between drug use, workplace accidents, and workers' compensation creates numerous obstacles for the various stakeholders involved. These

difficulties are intricate and far-reaching, encompassing physical and mental well-being concerns, economic ramifications, legal framework considerations, and specific susceptibilities among different population groups. The following are the identified challenges:

Increased Risk of Workplace Injuries Due to Substance Abuse

Substance abuse impairs cognitive and physical abilities, leading to a higher incidence of workplace accidents and injuries. According to Yang et al. (2021), this problem is made more apparent by the possibility of substance addiction among groups such as young male workers. Substance misuse impairment can lead to various workplace mishaps, from little injuries to severe accidents, significantly raising the risk of injury to coworkers and employees. Addressing this challenge requires comprehensive substance abuse policies and preventive strategies in the workplace.

Financial Burden on Workers' Compensation Systems

As observed in the studies by Ghimire et al. (2020) and Mustard and Yanar (2023), the rise in occupational injuries linked to substance abuse can lead to increased workers' compensation claims, imposing a financial strain on these systems. Higher claim rates result in increased costs for medical treatment, rehabilitation, and compensation for lost wages. Managing this financial burden demands effective workplace safety programs and policies that mitigate the risks associated with substance abuse.

Inadequate Workplace Policies and Support Services

The lack of comprehensive workplace policies and support services for substance abuse, particularly among disadvantaged groups, as highlighted by Oh (2023), exacerbates the risks of occupational injuries. Developing and implementing robust AOD policies, along with providing adequate support services, are crucial for preventing substance abuse-related injuries and managing the consequent workers' compensation claims.

Technological and Preventive Measures

Integrating technological advancements and preventive measures to reduce occupational injuries, as discussed by Lowe et al. (2023), remains a challenge in many industries. Adopting advanced technologies like manufacturing automation can significantly lower the risk of musculoskeletal disorders and other injuries. However, the challenge lies in the widespread implementation and acceptance of such technologies across various sectors.

Demographic-Specific Vulnerabilities

Certain demographic groups, such as young workers, are more susceptible to both occupational injuries and the impacts of substance abuse, as identified by Yang et al. (2021). Considering this difficulty, specific interventions and regulations are required to address these groups' unique requirements and susceptibility, guaranteeing that workplace safety precautions apply to and efficient for all workers. This further commensurate descriptive statistics in the table.

Summary

The issues surrounding substance abuse, workplace injury, and injury compensation are deeply interconnected and require a comprehensive, multifaceted approach to address them effectively. Such an approach includes establishing safer work environments through robust organizational policies, expanding access to substance-abuse support services, implementing technological and preventive safety measures, managing the associated financial burdens, and accounting for demographic-specific risk factors. Addressing these challenges in an integrated manner can contribute to a safer and more productive workforce, as well as a more sustainable workers' compensation system. The following section presents the discussion of findings, summary, and conclusion.

Section 4: Application to Professional Practice and Implications for Social Change

Discussion of Findings

This study was intended and structured to provide an understanding of the impact of substance use on occupational injuries by examining the worker's compensation claims in the state of Ohio. This section presents a deeper discussion of the theoretical and practical implications of the findings in relation to existing research. The discussion of study findings, limitations, recommendations, positive social change, suggestions for future studies, and contributions to knowledge are also presented in detail in the following sections.

When comparing the insights from the quantitative data analysis with those from the thematic analysis of the reviewed studies, a comprehensive picture emerges, revealing how the two sets of findings intersect and complement each other. The quantitative analysis presents a diverse array of data points, spanning several years and covering various demographic aspects like gender, marital status, age, and educational levels, alongside specific details about workers' compensation claims. These data statistically explain the issues, offering concrete figures and trends. For instance, most male claimants might reflect a higher incidence or reporting of occupational injuries and substance abuse in this demographic. The variations in marital status, focusing on single and married individuals, suggest different risk exposures or impacts in these groups. Age distribution data, particularly highlighting the 36-45 years and 26-35 years age brackets, point towards these groups as potentially more vulnerable. The educational level data, with many claimants not specifying their level, indicates a gap in understanding the link

between education and occupational risks. The details on workers' compensation claims, such as the high rate of accepted claims and the reasons behind claim statuses, provide insights into the operational aspects of these claims.

In contrast, the thematic analysis from the literature review delved into the conceptual side, exploring the interrelations between occupational injuries, substance abuse, and workers' compensation. It brings to light issues like demographic-specific vulnerabilities, particularly among young male workers, aligning with the quantitative finding of a predominantly male respondent pool. The importance of workplace policies and support services in managing substance abuse and occupational injuries, though not directly captured in the quantitative data, is inferred from the patterns of workers' compensation claims. As highlighted in some studies, the role of technological and preventive measures in reducing occupational injuries complements the quantitative focus on claim types and outcomes. Furthermore, the financial aspects of workers' compensation, discussed in several studies, provide context for the quantitative data on claim acceptance and denial rates.

Blending these findings reveals a nuanced view of the issues. With its empirical focus, quantitative data offers a foundational understanding of the trends and demographics involved. The thematic analysis, on the other hand, adds layers of depth, interpreting the reasons behind these trends and offering broader implications. For example, the demographic trends seen in the quantitative data find a conceptual echo in the thematic discussions on vulnerabilities and policy implications. Similarly, the administrative and legal facets of workers' compensation claims, as seen in the

quantitative data, gain added meaning when viewed through the lens of the economic and policy discussions in the thematic analysis. Fusing quantitative data and thematic insights provides a more detailed understanding of the complex dynamics between occupational injuries, substance abuse, and workers' compensation. While the quantitative data present empirical facts, the thematic analysis weaves these facts into a broader narrative, highlighting underlying causes, implications, and potential solutions.

Theoretical Implication of Findings

The study's discoveries regarding workplace accidents, drug use, and worker's compensation raise interesting questions about how they might inform our understanding of two widely used psychological theories: the TPB and SCT. By examining these findings through the lens of these frameworks, gain deeper insights can be provided into their broader psychological and social implications.

Implications for the TPB

Attitude Toward Behavior

TPB posits that an individual's attitude toward a behavior significantly influences their decision to engage in that behavior. The study's findings, particularly regarding substance abuse in the workplace, can be viewed through this lens. Workers' attitudes toward substance use and its perceived benefits or detriments likely influence their engagement in such behaviors, affecting occupational injury rates.

Subjective Norms

The study highlights the role of demographic factors and workplace culture, which align with the TPB's concept of subjective norms. The overrepresentation of

specific demographics in substance abuse and injury reports may reflect societal and cultural norms within these groups or workplaces, influencing individuals' perceptions of acceptable behavior.

Perceived Behavioral Control

TPB's component of perceived behavioral control can be linked to the study's insights on workplace policies and support systems. Workers' beliefs in their ability to control or avoid engaging in risky behaviors, like substance abuse, are influenced by the availability and effectiveness of workplace support and safety programs.

Implications for SCT

Observational Learning

SCT emphasizes learning through observing others. The study's findings on the demographic prevalence of occupational injuries and substance abuse suggest that observational learning might play a role in these behaviors. Workers might model their behavior based on what they observe in their peers, especially in environments where certain behaviors are more common.

Self-Efficacy

The study's emphasis on educational programs and technological interventions to reduce workplace injuries can be linked to SCT's concept of self-efficacy. By providing workers with the knowledge and tools to prevent injuries and substance abuse, these interventions can enhance their belief in their ability to control and manage risks.

Reciprocal Determinism

SCT's principle of reciprocal determinism, where personal factors, behavior, and the environment continuously interact, is reflected in the study's findings. The interaction between individual workers' behaviors (like substance abuse), environmental factors (such as workplace policies and culture), and personal factors (including demographics) can be seen as contributing to the patterns of occupational injuries and workers' compensation claims.

The study's findings provide valuable insights when viewed through the frameworks of TPB and SCT. These theoretical implications offer a deeper understanding of the psychological and social dynamics underlying occupational injuries and substance abuse, highlighting the importance of attitudes, norms, behavioral control, observational learning, self-efficacy, and reciprocal determinism in these contexts. Such insights can be crucial for developing more effective interventions, policies, and programs to address these workplace issues.

Practical Implication of Findings

The research on workers' compensation, drug usage, and occupational injuries produces essential findings with real-world applications in various organizational and policymaking settings. These realizations are vital in boosting worker well-being, increasing workplace safety, and simplifying workers' compensation administration. Businesses are advised to bolster their workplace safety regulations by developing thorough regulations to manage drug misuse and harm hazards and ensure that these regulations are consistently enforced and updated regularly. Measures that directly

address the problems caused by substance addiction in the workplace should receive special attention.

Employee education and training emerged as a critical area of concern, particularly for populations more vulnerable to drug usage and work-related accidents. Regular, focused training sessions can significantly increase public knowledge of the dangers of substance addiction and the need to follow safety procedures. For example, the Substance Abuse and Mental Health Services Administration (SAMHSA, n.d.) suggests that organizations should invest in education and training programs to support their drug-free workplace program. The necessity of support networks for workers struggling with drug usage is also emphasized. Specifically, an efficient prophylactic and intervention strategy is to implement or improve employee assistance programs that offer support, rehabilitation services, and counseling to individuals who are abusing drugs. The inconsistent and variable data gathered over the years highlights the need for methodical and reliable data collection. Employers can identify high-risk regions and customize their solutions using this data to build specific risk management plans.

Adopting technological methods to reduce occupational injuries has implications as well. Purchasing ergonomic equipment and automation are examples of contemporary safety technology that can assist in lowering the possibility of human error and preventing typical workplace injuries. For example, Lieberman and Tamulonis, a law firm specializing in occupational injuries, found that personal protective equipment and purchasing equipment designed with safety in mind can significantly reduce occupational injuries (Lieberman & Tamulonis, 2019). The study's conclusions also impact on legal

compliance and policy advocacy. Maintaining compliance with current rules and regulations is essential, and organizations have the chance to actively engage in the process of creating policies that are based on the most recent findings in the field. It is advised to conduct economic evaluations to determine the financial returns on investments made in programs to combat substance misuse and occupational safety. By assisting companies in understanding the long-term financial benefits of these expenditures, these assessments can help them obtain the funding and support they require.

Finally, the significance of involving stakeholders and the community is emphasized. Collaborating with local communities, industry associations, and healthcare professionals can result in more thorough and efficient strategies for addressing drug misuse and work-related injuries. These partnerships can lead to the sharing of resources, improved comprehension, and more effective solutions. To sum up, putting these findings into practice can result in safer workplaces, better assistance for workers' health, and more effective management of workers' compensation claims, eventually contributing to a more effective and healthier workforce.

Limitations of the Study

While comprehensive, the study on occupational injuries, substance abuse, and workers' compensation is subject to several limitations that should be acknowledged for a balanced understanding of its findings.

1. Data Collection Variability: The study spans a lengthy period, and the variability in data collection over the years could impact the consistency and

comparability of the findings. Changes in reporting standards, data collection methods, and societal awareness over time might have influenced the data quality and trends observed.

2. Demographic Representation: The overrepresentation of specific demographics, notably male respondents, and underrepresentation or lack of specification in others, such as educational backgrounds, could limit the generalizability of the findings across different population groups.
3. Scope of Data: The study primarily relies on secondary data, which may not fully capture the primary data aspects of occupational injuries and substance abuse, such as firsthand individual experiences, workplace culture, and psychological impacts.
4. Geographical Limitations: The study is focused on Ohio, United States, which may limit its applicability to other regions with different legal, cultural, and socio-economic contexts that can significantly impact occupational injury and substance abuse patterns.
5. Economic Analysis Constraints: The economic analysis, while insightful, may not encompass all the indirect costs and broader economic impacts associated with occupational injuries and substance abuse, such as long-term productivity loss and societal costs.

Recognizing these limitations is crucial for accurately interpreting the study's findings and guiding future research. Further investigations should address these

limitations by diversifying data sources, expanding demographic representation, incorporating primary data analyses, and broadening the geographical scope of the study.

Recommendations

Based on the comprehensive findings from the analysis of occupational injuries, substance abuse, and workers' compensation, detailed recommendations can be formulated to address the identified challenges effectively.

1. Targeted Risk Management for Vulnerable Demographics: Develop and implement specialized programs focusing on the most affected demographic groups, mainly young male workers. These programs should aim to educate and raise awareness about the risks of occupational injuries and substance abuse.
2. Enhanced Data Collection and Monitoring: Improve data collection methods to ensure consistency and comprehensiveness over time. Regular monitoring is crucial for identifying trends and developing strategies.
3. Robust Workplace Policies and Support Systems: Establish comprehensive policies addressing substance abuse and occupational injuries. Effective support systems, including counseling and rehabilitation services, should accompany these policies, especially for disadvantaged groups.
4. Integration of Technological Advancements: Invest in and adopt technological solutions like manufacturing automation to reduce the risk of occupational injuries. Ensure these technologies are accessible across various industries and sectors.

5. Economic Incentives for Workplace Safety Investments: Encourage employers to invest in occupational health and safety through economic incentives. Highlight the long-term financial benefits of such investments, such as reduced workers' compensation claims and improved productivity.
6. Regular Training, Substance Testing, and Education Programs: Conduct regular training and education programs for employees and management on the risks of substance abuse and occupational injuries. Likewise, unannounced, and routine testing for substance misuse is also essential in preventing occupational injuries, among others. These programs should also cover the proper use of safety equipment and technologies.
7. Collaborative Efforts with Healthcare Providers: Work with medical professionals to create all-inclusive wellness and health programs that include counseling for substance misuse, mental health assistance, and injury-preventing techniques.
8. Policy Advocacy and Legal Framework Enhancement: Advocate for stronger legal frameworks and policies at the state and federal levels to better regulate workplace safety and workers' compensation related to occupational injuries and substance abuse.
9. Community Outreach and Engagement: Reach out to local governments and community organizations to expand the reach of safety at work initiatives. Community involvement can be significant in providing resources for employees and their families and raising comprehension.

10. Continuous Review and Improvement of Strategies: Regularly review and update the strategies and programs implemented to ensure they remain practical and relevant. Incorporate feedback from employees and other stakeholders to improve workplace safety measures continuously.

In addition to the listed recommendations, it is also strongly recommended that organizations invest in randomized substance use testing. The results indicated that specific populations are at a higher risk of substance use in the workplace, such as young males, which means that organizations may have to take a stronger policy stance to reduce the risk of substance use and subsequent workplace injuries. Drug testing programs implemented by organizations can either be used as a pre-employment screening, which involves collecting urinary samples from job applications before employment commences, or post-employment surveillance, which involves requiring urine samples from existing employees on a random, comprehensive, or suspicion basis (French et al., 2004). This is why implementing random drug testing for existing employees is highly recommended.

However, it is important to qualify that this recommendation carries inherent risks for organizations. Prior research indicates that many employees perceive randomized substance-use testing as invasive and undignified, which may, in turn, diminish an organization's ability to attract and retain top talent. Furthermore, employees who are actively using illicit substances may resort to extreme measures to evade detection, potentially placing both themselves and the organization at heightened risk (Kidd, 2016). Nevertheless, the benefits can outweigh the risks if testing is implemented correctly.

Research has demonstrated that well-implemented substance-testing programs can enhance workplace productivity and lead to significant cost savings for organizations by reducing the number of filed workers' compensation and liability claims (Kidd, 2016). For example, Miller et al. (2007) examined whether implementing a substance abuse prevention program in conjunction with federally mandated random drug and alcohol testing would reduce occupational injuries among truck drivers. The study found that the combined use of a peer-based prevention program and random substance-use testing led to a one-third reduction in injury rates and produced approximately $48 million in employer savings within one year (Miller et al., 2007). Another study that analyzed 15,000 US households, reported that drug testing programs effectively reduced the use of drugs in the workplace (French et al., 2004). Thus, it is advantageous and important for organizations to implement drug-testing initiatives in ways that preserve employee satisfaction and minimize negative perceptions.

The use of hair sample analysis is recommended as a substance-use testing strategy that preserves employee dignity. Hair analysis or using an employee's hair follicle to test for drugs and other substances, has become a popular and preferred method over urine testing as it is less invasive and can also reduce false negatives (Tsanaclis et al., 2012). Hair analysis is more accurate than urine testing as it reveals what substances the employee consumed over the past 6 days versus 48 hours, as is the case with urine (Tsanaclis et al., 2012). Thus, implementing randomized substance use testing may be advantageous for organizations. In conclusion, collaboratively, employers, legislators, healthcare providers, and community organizations may tackle the issues mentioned in

the report. By approaching these problems comprehensively, we can reduce the frequency of drug use and workplace accidents, provide safer working environments, and strengthen our capacity to effectively manage workers' compensation claims.

Positive Social Change

The process of securing claims data for this project involved working with data analytics experts of the Ohio Bureau of Workers' Compensation. The process provided the opportunity to explore how claims with drug-related incidents are reviewed and processed. An important but not surprising discovery was that the data fields that employers or injured workers were required to complete were constructed for business purposes and not for occupational health surveillance. The data fields have remained the same for more than three decades. During that time, BWC's interest in and efforts to prevent occupational injuries significantly increased. Hence, the data review process underscored the need to reassess the types of data collected to strengthen the occupational health surveillance potential of information captured during the claims process. Such enhancements would occur at the reporting stage, as medical records cannot be used for occupational health surveillance purposes. Currently, data fields such as causation, injury mechanism, educational level, and race are designated as voluntary in the claims reporting system. This gap created an opportunity for an enterprise-level evaluation of the data captured through the claims reporting process from an occupational health and injury prevention perspective.

Further reviews have been conducted to enhance the surveillance capacities of the data captured through the claims reporting system. This is especially important

considering the volume of reported claims and the potential intelligence such data provides. One of the proposed steps is to mandate completion of data fields pertaining to the cause and mechanism of injury. Additional optional fields, such as employee tenure and the worker activity preceding the injury, would also be included.

The data review process also revealed that drug-induced cases, most of which were denied, did not include a process to identify cases where injured workers were exposed to the drugs because of a prior occupational injury incident. A sizable number of workers are exposed to drug dependence in the process of managing pains from work-related injuries. It would be beneficial to develop a system to identify and carefully process cases where the drug related to a new work incident is related to a prior work incident the injured worker had. Such cases would be processed differently from other recreational drug-related incidents. Hence, the decision was to examine further the process of reviewing drug-related claims cases to identify cases where the drug in question is related to a prior workplace injury. Such cases would be identified and reviewed separately from other drug-related work injuries.

This is a crucial step towards providing help to injured workers with drug dependence related to prior work incidents or as part of managing a prior work injury. This will help create a system for helping such workers if they get injured again, even if the injury is related to drugs abuse. It would help to ensure that such workers also receive additional care for drug dependence or addiction in addition to care for occupational injuries leading to the workers' compensation claim. These are the positive social

changes associated with this project. The recommendations also have potential to yield more social changes if they are adequately explored and effectively implemented.

Suggestions for Future Studies

To tackle the constraints identified in this study on occupational injuries, substance abuse, and worker's compensation claims, future research should explore several key areas to enhance understanding and improve the management of these complex issues:

1. Enhanced and Standardized Data Collection Techniques: Future investigations should focus on creating more uniform and dependable information assortment strategies over time to enhance the quality and consistency of the information gathered. This could involve developing uniform reporting standards and methodologies that can be applied consistently across different periods to ensure more reliable and comparable data.
2. Broader Demographic Inclusion and Analysis: Research should include various characteristics, with underrepresented groups receiving special emphasis. To enhance the applicability of findings, research ought to gather and evaluate information from various demographic categories, including age brackets, gender identities, educational attainment levels, and additional relevant demographics.
3. Incorporating Primary Studies: Concurrently, incorporating primary data sources like questionnaires, interviews, and small group discussions can provide valuable insights and bolster the overall reliability of the study's

conclusions. This approach would capture firsthand individual experiences, provide insights into workplace culture, and explore the psychological impacts of occupational injuries and substance abuse.

4. Expansion of Geographical Scope: Conducting studies in diverse geographical locations beyond Ohio, including different states and countries, would help understand how legal, cultural, and socio-economic contexts influence occupational injuries and substance abuse patterns in various regions.
5. Comprehensive Economic Impact Analysis: Future research should aim to conduct a more comprehensive economic analysis that includes direct and indirect costs associated with occupational injuries and substance abuse. This should encompass long-term productivity losses, societal costs, and the broader economic impacts on communities and healthcare systems.
6. Longitudinal Studies: Implementing longitudinal studies would provide insights into the long-term effects and trends of occupational injuries and substance abuse, offering a more dynamic understanding of these issues over time.
7. Policy and Intervention Effectiveness Studies: It would be beneficial to research how different policies and treatments affect the rates of substance addiction and occupational injuries. This can entail assessing the results of initiatives for workplace safety, plans for preventing drug misuse, and workers' compensation laws.

Subsequently, by addressing these suggestions, future studies can build upon the current research, overcome its limitations, and contribute significantly to the knowledge and management of occupational injuries, substance abuse, and workers' compensation.

Contribution to Knowledge

This research on workers' compensation, drug abuse, and occupational injuries significantly advances the field's body of knowledge as well as its practical applications. The study offers insightful information that can guide future investigations, legislative decisions, and workplace procedures by exploring the complex interrelationships among these components.

From an academic standpoint, the study advances knowledge of the trends and cycles in substance abuse and occupational injuries over a long time. Finding long-term trends and modifications to reporting standards requires a historical perspective, provided by thoroughly examining data covering more than 20 years. This advances knowledge of how long-term societal, cultural, and legislative changes can impact workplace health and safety procedures. The study also emphasizes how crucial demographic variables are to comprehending drug misuse and work-related injuries. It highlights the need for more inclusive and varied research by concentrating on the overrepresentation of some demographics, including men in the workforce, and the underrepresentation or absence of specification in others. This may result in interventions that are more focused and successful in meeting the requirements of various workforce groups.

The study's conclusions also have important practical implications for workplace procedures and policies. Employers and legislators can create more successful strategies

for handling workers' compensation claims by using insights about the trends in these claims. This entails enhancing the procedures for submitting and handling claims and creating more extensive support networks for employees impacted by accidents and substance abuse. Emphasizing preventive and technical developments provides workable strategies to improve workplace safety. Through demonstrating how technology might lower workplace injuries, the study encourages companies to invest in innovative strategies to protect employees, particularly in high-risk occupations. This is especially important for professions where there is a high danger of damage.

Additionally, the study offers a comprehensive grasp of the cost ramifications of substance addiction and occupational injuries from an economic perspective. Understanding the financial and psychological implications of pursuing occupational safety and health programs is essential for firms and policymakers. The study's conclusions, which emphasize the projects' long-term financial advantages, can be used to promote increased funding and support for similar projects. In conclusion, the study significantly advances our understanding of safety and health at work from an intellectual perspective as well as from a practical one. Its thorough data analysis, emphasis on demographic variables, and consequences for workplace rules and procedures lay the groundwork for further study and offer suggestions for improving workplace safety and efficiently managing workers' compensation claims.

Summary of Findings

The quantitative data, spanning over two decades, provides a detailed statistical view. The highest data collection occurred in the late 1990s, indicating either an

increased incidence of occupational injuries and substance abuse during this period or an improvement in data collection methods. A notable majority of the claimants were male, suggesting either a higher prevalence or a higher reporting of occupational injuries and substance abuse in this demographic group. The data on marital status and age further refines this picture, showing a predominance of single and younger individuals, hinting at their potential vulnerability to workplace injuries and substance abuse. The educational background of the injured workers, with many not specifying their level, points to a need for more detailed data collection for better analysis. Additionally, the workers' compensation claims data reveals a high percentage of accepted claims. It provides insights into the reasons behind claim outcomes, illustrating these claims' complex administrative and legal dynamics.

The thematic analysis also enriches this statistical narrative by exploring the issues' conceptual underpinnings and broader implications. The studies reviewed highlight the vulnerabilities of specific demographics, particularly young male workers, to occupational injuries and substance abuse. This is in line with the quantitative data showing a male-dominated respondent pool. The crucial role of workplace policies and support services in managing substance abuse, although not directly captured in the quantitative data, becomes evident when considering the patterns of workers' compensation claims. Technological and preventive measures, as discussed in the literature, complement the statistical focus on claim types and outcomes, suggesting avenues for reducing occupational injuries. Moreover, as explored in the studies, the

financial implications of these injuries provide context to the quantitative data on claim acceptance and denial rates.

In summary, combining quantitative data and thematic research presents a nuanced understanding of the relationship between occupational injuries, substance abuse, and workers' compensation. The quantitative analysis offers a solid base of empirical data, while the thematic analysis provides depth and context, revealing the complexities and underlying factors influencing these issues. This comprehensive view underscores the need for targeted interventions, robust workplace policies, and a deeper exploration of demographic-specific risks to effectively address the challenges posed by occupational injuries and substance abuse in the context of workers' compensation.

The study research questions and hypotheses were answered using results from the statistical analysis. In the first research question, the alternate hypothesis, which states that substance abuse among workers significantly increases the prevalence of workplace injuries in Ohio, was accepted based on results that indicated a statistically significant higher average medical cost in the sample over the population. For the second, the second research question's alternate hypothesis, which states that the impact of substance abuse on workplace injuries is underreported and underestimated in Ohio, was accepted.

Conclusion

The extensive investigation into the interplay between occupational injuries, substance abuse, and workers' compensation, informed by quantitative data and thematic research, culminates into several key conclusions. Firstly, the demographic trends revealed through the data, particularly the predominance of male claimants and the

notable presence of younger, single individuals, emphasize the need for targeted risk management strategies. These strategies should consider the specific vulnerabilities of these demographic groups, addressing factors that contribute to higher incidences of occupational injuries and substance abuse.

Secondly, the fluctuating patterns in data collection over the years indicate changes in reporting practices or variations in the prevalence of occupational injuries and substance abuse. This highlights the importance of continuous and consistent data collection for understanding trends and developing effective policies. The analysis also underscores the critical role of workplace policies and support systems in managing substance abuse and preventing occupational injuries. The lack of comprehensive support services, particularly for disadvantaged groups, points to a gap that needs addressing to ensure a safer work environment and more efficient handling of workers' compensation claims.

Technological advancements and preventive measures, as suggested by the thematic analysis, emerge as promising solutions to reduce the prevalence of workplace injuries. Integrating technologies like manufacturing automation enhances safety and potentially reduces the financial burden on workers' compensation systems. Furthermore, as revealed in the thematic analysis, the financial implications of occupational injuries suggest that investing in workplace safety is a health and safety measure and an economically sound decision. The positive return on investment in occupational health and safety highlights the economic benefits of such expenditure.

In conclusion, this analysis advocates a multifaceted approach to tackle the challenges posed by occupational injuries and substance abuse in the workplace. This approach should combine robust policymaking, continuous data monitoring, targeted risk management strategies, technological advancements, and strong support systems. Such a comprehensive approach is essential for ensuring the safety and well-being of workers, reducing the incidence of occupational injuries and substance abuse, and efficiently managing the dynamics of workers' compensation.

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Appendix: SPSS Output

Table 1

One-Sample Statistics—Medical Cost (1994–2019)

	N	Mean	SD	Std. Error Mean
medical	418	14416.4474	65031.84442	3180.81148

Table 2

One-Sample Test—Medical Cost

	Test Value = 2149					
	T	df	Sig. (2-tailed)	Mean Difference	95% CI of the Difference	
					Lower	Upper
medical	3.857	417	.000	12267.44737	6015.0244	18519.8704

Table 3

One-Sample Statistics—Indemnity/Time Loss Cost (1994–2019)

	N	Mean	SD	Std. Error Mean
VAR00002	212	33591.7972	76464.80654	5251.62447

Table 4

One-Sample Test—Indemnity/Time Loss

	Test Value = 97928					
	T	df	Sig. (2-tailed)	Mean Difference	95% CI of the Difference	
					Lower	Upper
VAR00002	-12.251	211	.000	-64336.20283	-74688.5760	-53983.8297

Table 5

One-Sample Test—Grand Total Cost

	N	Mean	SD	Std. Error Mean
grandtotal	418	31453.4354	84946.04033	4154.84664

Table 6

One-Sample Test—Grand Total Cost

	Test Value = 54521					
	t	df	Sig. (2-tailed)	Mean Difference	95% CI of the Difference	
					Lower	Upper
grandtotal	-5.552	417	.000	-23067.56459	-31234.6185	-14900.5107