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INVESTIGATING THE DECISION TO SETTLE A WORKERS'
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ANDREW PAUL NAY

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THE OCCUPATIONALLY INJURED WORKER: INVESTIGATING THE DECISION TO SETTLE A WORKERS' COMPENSATION CLAIM

By

Andrew Paul Nay

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ABSTRACT

THE OCCUPATIONALLY INJURED WORKER:
INVESTIGATING THE DECISION TO SETTLE A WORKERS' COMPENSATION CLAIM

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Andrew Paul Nay

According to the Bureau of Labor Statistics (2007), a total of 4.2 million work-place injuries were reported within the United States in 2005, nearly half of which resulted in days away from work, job transfer, or restriction. In the majority of workers' compensation claims, wage-replacement benefits are paid voluntarily by the employer or insurance provider, and upon the individual's full recovery or return-to-work, benefits are stopped (Wolkinson and Block, 1996). And while the majority of workers who sustain an occupational injury or illness eventually return to their previous job, there are those non-routine cases where individuals are unable to return to their previous job, or may never return to work due to the nature of their disability and resulting functional limitations.

Previous studies have shown that a significant portion of workers who require recuperation away from work never return to the workplace (Hester, Decelles & Gaddis, 1986; National Institute of Handicapped Research [NIDR], n.d.; Tate, 1992; Blackwell et al., 2003) and tend to experience continued injury-related pain. Those workers unable to return to the workplace in a timely manner typically rely on statutory workers' compensation systems for medical and financial support while they recover from various illnesses or injuries and cope with existing pain.

The purpose of this study was to investigate and examine a variety of individual and contextual variables that may affect settlement outcome in workers' compensation systems using data maintained by the State of Michigan Workers' Compensation Agency (WCA). The focus of this study centers on more complex or non-routine workers' compensation claims in which the worker has or continues to report a significant impairment or disability and is unlikely to return to their pre-injury occupation. The social context and relationship model proposed by Dembe (2001) was utilized to conceptualize both individual and contextual factors associated between various individuals, groups, and social institutions that contribute to the overall experiences of the injured worker.

This study empirically examines a sample (N=3,111) of occupationally injured workers who filed a workers' compensation claim in the year 2007. This sample identifies both those who have chosen to settle their workers' compensation claim (N=1,354) and those who have not (N=1,843) as of January 2010. A variety of demographic, socioeconomic, and environmental variables were compared dependent upon settlement outcome to examine if significant differences exist between the two groups. A binary logistic regression identified pre-injury wage, time between date of injury and initial wage-loss payment, and female gender as negative predictors of settlement, whereas attorney involvement was positive predictor of settlement outcome.

Various implications regarding rehabilitation counseling education and research are also discussed.

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CHAPTER 1

Introduction

According to the Bureau of Labor Statistics (2007), a total of 4.2 million work-place injuries were reported within the United States in 2005, nearly half of which resulted in days away from work, job transfer, or restriction. In many cases, workers required recuperation away from work, transfer to another job, restricted physical duties at work, or a combination of these actions (BLS, 2007). Previous studies have shown that a significant portion of workers who require recuperation away from work never return to the workplace (Hester, Decelles & Gaddis, 1986; National Institute of Handicapped Research [NIDR], n.d.; Tate, 1992; Blackwell et al., 2003) and tend to experience continued injury-related pain. Those workers who do not return to the workplace typically rely on statutory workers' compensation systems for both economic and financial support while they recover from various injuries and cope with existing pain.

Workers' compensation laws were adopted in the early 1900's replacing the common-law tort system as the method for injured workers to maintain relative income levels when absent from work due to an occupational illness or injury regardless of cause. Although there is great disparity in benefit rates among the 50 States, on average injured workers while receiving treatment and attending to their injury only receive about two-thirds of their actual weekly wage. Some may argue that this was purposely embedded into the legislation to help limit monetary exposure for the employer, as well as provide an incentive for the employee's to return to work as quickly and as reasonably as possible. While the overall objective of workers' compensation benefits is to provide

free medical care and wage-replacement benefits to injured workers who cannot initially return to work (Biddle & Roberts, 2003), its purpose was not intended to provide workers with sustainable medical and wage-replacement benefits over the course of their lifetime.

While many states have statutory limitations on the amount of time an injured worker can receive medical and wage-replacement benefits, others states do not. Within these states, like Michigan, workers who remain out of the workplace following an occupational injury for a substantial amount of time typically find themselves advocating for continued economic and medical benefits, while insurers and employers seek claim resolution and closure. This adversarial environment creates an intriguing context for analysis into the various contextual factors that influence an injured workers' decision to ultimately settle his or her workers' compensation claim and forgo any future wage-replacement or medical benefits. In order to lay the foundation for understanding how an injured worker arrives at the decision to settle his or her claim at a particular point in time, it is necessary to gain an understanding of how disability is defined within statutory environments, as well as the settlement process. It also requires an understanding of how settlement is perceived by the community in which the claim is administered.

Statement of the Problem

The process in which an injured worker brings an initial claim of injury to his or her employer, and ultimately decides to settle his or her workers' compensation claim varies dramatically from case to case. While the decision to file a claim has been a subject of analysis (Lakdawalla, Reville, &Seabury, 2005; Biddle &Roberts, 2003; Rosenman et. al., 2000; Biddle, Roberts, Rosenman, & Welch, 1998), there is a distinct lack of foundational knowledge regarding the factors that may influence the decision to

settle a claim. The stigma associated with filing a workers' compensation claim has been a frequent subject of analysis given that many times workers struggle with the question of whether or not to file an initial claim of injury. Studies have shown that during any given time, up to 45% of employed workers could file a work injury or disability claim, but choose not to (Biddle, Roberts, Rosenman, & Welch, 1998).

As is common among most State-level jurisdictions, disability is an evolving concept that is ultimately defined by case law rather than by statutory definition. In workers' compensation systems, disability is defined either by the medical or economic implications that arise out of occupational illness or injury. Presently in Michigan, disability in workers' compensation is economically defined rather than by purely medical or functional capacity determinations. In many cases, even if a worker is unable to return to their employer following a workplace injury, they may still be capable of earning similar wages with a different employer and/or within a different occupation thus limiting their claim of disability.

Under the Michigan Workers' Disability Compensation Act of 1969, the employee shall receive and be paid compensation until they return or are offered work suitable to their qualifications and training. Ultimately, disability under Michigan Workers' Compensation Law means a limitation of an employee's wage earning capacity in work suitable to their qualifications and training (Workers Disability Compensation Act of 1969, 418.30). This is drastically different from biomedical models of disability where individuals are considered disabled if they have a deficit, deficiency, dysfunctional, abnormality, failing or medical condition that has been shown to impact their ability to perform previous occupational demands (Bickenbach, 1993).

In the majority of workers' compensation claims, wage-replacement benefits are paid voluntarily by the employer or insurance provider, and upon the individual's full recovery or return-to-work, benefits are stopped (Wolkinson and Block, 1996). And while the majority of workers who sustain an occupational injury or illness eventually return to their previous job, there are those non-routine cases where individuals are unable to return to their previous job, or may never return to work due to the nature of their disability and resulting functional limitations.

Given that most States do not allow for indefinite receipt of wage-loss and medical benefits, those who are unable to return to their original employer or usual occupation must ultimately decide how and when to resolve their claim. States such as Michigan, that do not place a statute of limitations on medical care or wage-replacement benefits associated with occupation injury or illness, provide an additional setting for inquiry as to why and when an individual may choose to settle their claim given that no statutory incentive to resolve or mitigate damages exist.

Independent upon the setting, at any time disputes may arise regarding an occupational injury claim. As a result, adversarial relationships may develop between employers, employees, and insurance carriers that may have an impact on communication between parties, the receipt of wage-loss benefits, and/or authorization and approval for medical treatment. These disputes typically bring the affected parties (employee and employer) and various stakeholders (attorneys, insurance representatives, mediators, and judges) together for settlement negotiations, but other times can result in a lengthy litigation process. Although most injured workers ultimately return to work, a significant portion of this population will become displaced or unemployed due to their occupational

injury or illness, and in turn will likely struggle with maintaining their economic security and health care coverage. Occupational disability also has an indirect impact upon the workers' family (children, spouse, etc.) as well as the community in which they reside. It is this particular population that is target of this analysis.

While statutory workers' compensation systems tend to focus on prompt medical treatment for injured workers with the initial focus on treating functional impairments following an occupational injury, less focus is given to assessing the many psychosocial factors associated with predicating behavior. Unfortunately, many of the current models of disability determination in workers' compensation fail to discriminate between "anatomical" and "functional" losses as it would specifically apply to the workplace setting (Schultz and Gatchel, 2005), do not pay particular attention to the contextual factors associated in determining disability, and are insufficient in accounting for various psychosocial factors that influence a workers decision to ultimately settle their workers' compensation claim.

Ultimately the question remains, is settlement an acceptable outcome for the multiple stakeholders involved in complex or non-routine occupational disability claims? When claims remain unresolved or open for extensive periods of time, many workers begin to experience social and financial difficulties due to only receiving partial wage-replacement benefits, limited medical care, and potential job-loss. Employers experience losses in productivity, expensive disability lost-time costs, and increases in risk insurance premiums. Many would argue that settlement is the desired outcome in states like Michigan where no statue of limitations on workers' compensation benefits exist. This

process encourages all parties to negotiate monetary demands, i.e. settlement, that would allow them to meet their goals and limit future liability, risk, and exposure.

Theoretical Framework

Dembe (2001) presents a useful model of the social context in which occupational injury and illness and can be conceptualized (Figure 1). This model illustrates the contextual factors associated with various individuals, groups, and social institutions that contribute to the overall experiences of the injured worker. More specifically, it describes how the relationships between the injured individual, family, work, and community impact society, and provides a useful tool in conceptualizing the many contextual factors that influence individual decision-making within the workers' compensation setting. While the intended use of this model is to examine a wide range of social consequences posed by occupational injury, its usefulness for this particular study is its comprehensive design. Although the relationships depicted within this theoretical framework are much more dynamic and complicated in practice than portrayed by this figure, this model provides a useful framework for examining relationships between the injured worker and various contextual characteristics that may influence one's decision to settle their workers' compensation claim.

According to Dembe's model, the injured worker's behavior is directly influenced by medical professionals, their workplace, work peers, their community, family and friends, health and social benefit systems, and disability policy and law (workers' compensation insurance). Additionally, workers are indirectly influenced by uncontrollable sociological, economic, and political conditions. The relationships between various contextual factors and consequences depicted in this figure are not

mutually exclusive (Dembe, 2001), in fact, they are tightly intertwined making it truly representative of the complexity of human and social interactions. It is these interactions that create substantial difficulties for future researchers to control for variability in predicting worker behavior. The dark lines within the model represent the casual connections between entities and depict the directionality between factors. For example, there is direct and influential interaction between the workplace and the injured worker; however, the worker may only experience the indirect effects of prevailing economic conditions moderated by his or her employer.

It is hypothesized that an injured workers behavior is significantly influenced through their interactions and experience within the workers compensation setting. More specifically, the decision an injured worker makes regarding the settlement of his or her claim is influenced not only by the nature of his or her injury, but is guided by various

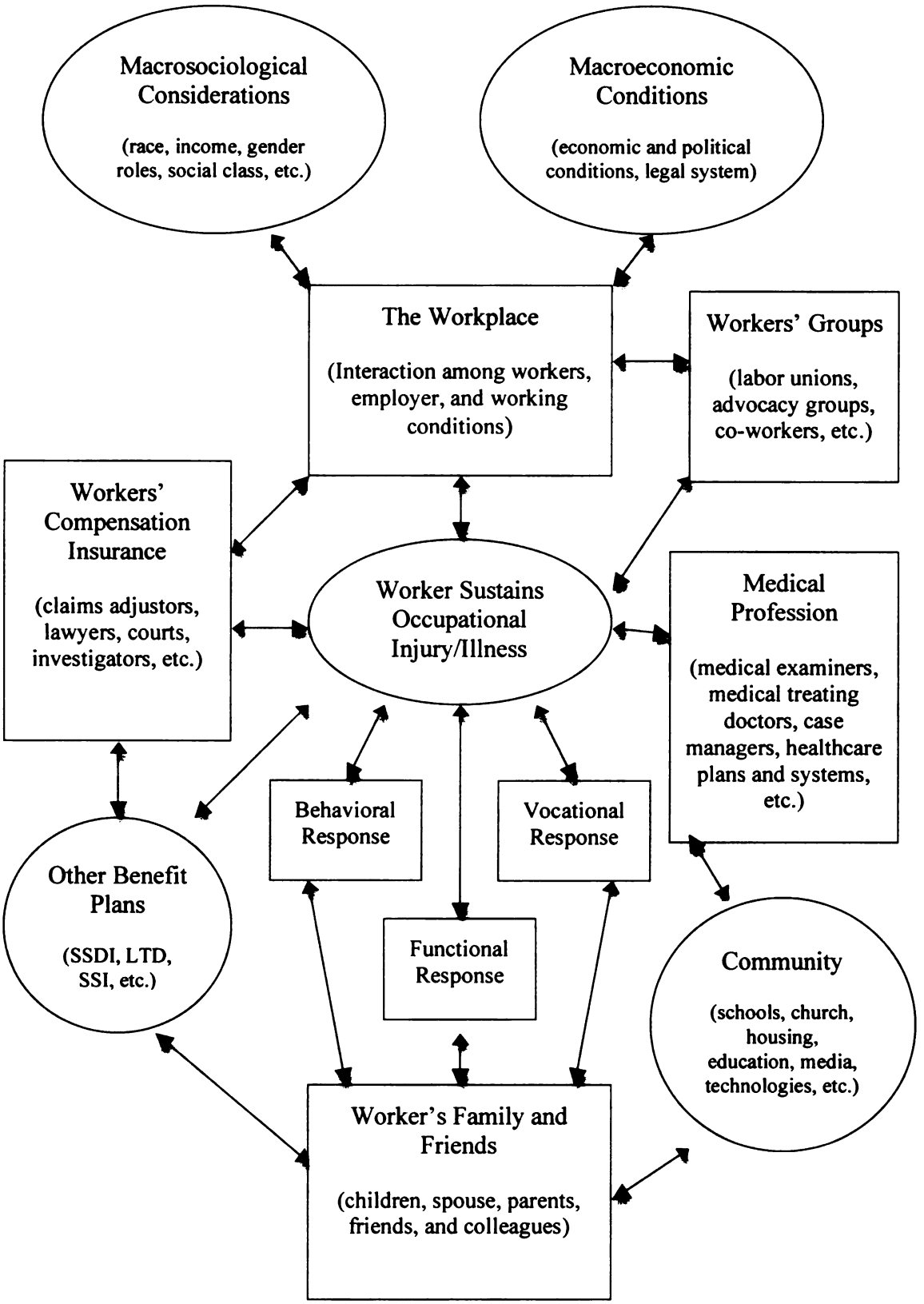

Figure 1. Social Context of Occupational Injury and Illness

sociological and sociopolitical conditions external to the workers' compensation system. Due to the overwhelming comprehensiveness of contextual factors associated with this model, this study will only focus on investigating a variety of environmental (contextual) variables associated with the interaction between the occupationally injured worker, health and medical implications, and the workers' compensation setting itself. Additional investigation into various individual (demographic) and socioeconomic factors will also be useful in helping to control for anticipated variability.

Purpose of the Study

The purpose of this study was to investigate what factors or characteristics influence an injured worker's decision to settle his or her workers' compensation claim.

Research Question

What impact do various individual and contextual variables have on the decision to settle a workers' compensation claim?

Definition of Terms

Administrative Law Judge: See Magistrate

Collective Bargaining Agreement: An agreement negotiated between a labor union and an employer setting forth all terms of employment for the employees who are members of that labor union.

Defense Attorney: Licensed legal professional specializing in defending workers' compensations claims on behalf of self-insured employers and insurance companies.

Disability: A limitation of an employee's wage earning capacity in work suitable to his or her qualifications and training resulting from a personal injury or work related disease.

Employed: Persons 16 years and over in the civilian noninstitutional population who, during the reference week, (a) did any work at all (at least 1 hour) as paid employees; worked in their own business, profession, or on their own farm, or worked 15 hours or more as unpaid workers in an enterprise operated by a member of the family; and (b) all those who were not working but who had jobs or businesses from which they were temporarily absent because of vacation, illness, bad weather, childcare problems, maternity or paternity leave, labor-management dispute, job training, or other family or personal reasons, whether or not they were paid for the time off or were seeking other jobs. Each employed person is counted only once, even if he or she holds more than one job. Excluded are persons whose only activity consisted of work around their own house (painting, repairing, or own home housework) or volunteer work for religious, charitable, and other organizations (BLS, 2009).

Indemnity: Recompense for loss, damage, or injuries; restitution or reimbursement.

Insurance Company: A proprietary organization that traditionally administers all aspects of workers' compensation claims for an employer for a fee.

Labor Force: See employed.

Magistrate: An individual employed by the Workers' Compensation Agency to make determinations regarding workers' compensation benefits, oversees redemption settlement hearings, writes legal opinions, and ensures compliance with legal and statutory requirements.

Nature of Injury: The nature of injury or illness identifies the principal physical characteristic(s) of the work-related injury or illness.

Occupational Injury or Illness: An injury or illness that occurred or is alleged having occurred at work while in the normal performance of associated work duties.

Occupationally Injured Worker: An individual who receives a personal injury arising out of and in the course of employment (Workers Disability Compensation Act of 1969, Section 418.30).

Plaintiff Attorney: Legally licensed professional who specializes in personal injury cases and in representing occupational injured workers in bringing forth workers' compensation claims.

Settlement: The legitimate termination of wage-loss benefits achieved through a process of reaching a voluntary agreement between the employee and the employer under contested or non-contested circumstances.

Redemption: Otherwise referred to as redemption settlement. See Settlement.

Rural-Urban Continuum Codes: Rural-urban continuum codes form a classification scheme that distinguishes metropolitan (metro) counties by the population size of their metro area, and nonmetropolitan (non-metro) counties by degree of urbanization and adjacency to a metro area or areas.

Self-Insured Employer: A plan in which the employer itself is responsible for paying all associated workers' compensation costs, including wage-loss benefits and associated health care costs for employees and family members. Self-insured employers may administer all workers' compensation payments, or utilize third-party administrators.

Specific Loss: Loss of a body part or appendage as a result of a work related illness or injury.

Third-party Administrators: An outside firm i.e., not affiliated with the employer, that maintains records of injured persons covered under a particular insurance plan, administers workers' compensation claims, issues notices and provides a variety of other administrative services in lieu of the self-insured employer.

Unemployed: Persons aged 16 years and older who had no employment during the reference week, were available for work, except for temporary illness, and had made specific efforts to find employment sometime during the 4-week period ending with the reference week. Persons who were waiting to be recalled to a job from which they had been laid off need not have been looking for work to be classified as unemployed (BLS, 2009).

Wage-loss: The estimation or calculation of earnings lost resulting from a workplace injury in United States Dollars.

Wage-Loss Payments: Typically, 80% of after-tax average weekly wage.

Wage Replacement Benefits: See Wage-Loss Payments

CHAPTER 2

Literature Review

Once an individual sustains an injury they become exposed to a multitude of new and sometimes troubling experiences that were never anticipated. Although no two workers experience an injury in the same way, it is vitally important that we better understand both the subjective individual factors associated with occupational disability, as well as the more objective empirical relationships when assessing the likelihood of settlement. Although there appears to be no previous research that specifically addresses the research question posed in this study, a review of related literature on occupational injury outcomes was undertaken to provide an increased understanding of workers' experiences within workers' compensation systems. This provides a useful foundation of knowledge relative to the purpose of this study and future inquiry into investigating the individual decision-making within this context.

This literature review will cover a variety salient issues regarding impairment and occupational disability that include conceptualizing occupational disability, expectation of recovery, psychological and psychosocial characteristics of disability, environmental influences of work disability, outcome studies of occupational disability, and the experiences and perceptions injured worker's have regarding the workers' compensation system.

Conceptualizing Occupational Disability

The impact that work-related or occupational disabilities have on society is important to acknowledge. According to the Social Security Administration (2003), a 20 year-old individual who is engaged in work has about a 30% chance of becoming

disabled before the age of retirement. It has also been argued that disability, in general, has reached such proportions within the United States that it could presently be classified as an epidemic (Schultz & Gatchel, 2005). Given this context, it appears useful to gain an understanding of the types of demographic and environmental variables that influence an individual's decision making following a disabling injury or illness.

The term disability has many connotations and interpretations, and as a result, it is very difficult to universally define. Marshaw and Reno (1996) document over 20 current definitions of disability that are utilized for purposes of public and private transfers, eligibility for medical and vocational services, or statistical analysis. This poses a substantial limitation when attempting to analyze a specific problem or social epidemic connotations, such as the impact that occupational injury has on society or an individual's behavior. When attempting to investigate an individual's behavior or decision-making process, one needs to utilize a framework of disability that is able to encompass the multiple aspects of individual interactions. Disability is context-specific and inherent to the individual (Melhorn et. al., 2001) as many perceive, and is at times conditional upon one's ability to meet social expectations or function within normalized environmental conditions (Brandt Jr. & Pope, 1997).

One of the most general, yet useful definitions of disability comes from Nagi (1969), in which disability is defined as individual difficulty in performing socially expected activities such as work. This conceptualization of disability recognizes the importance of the many interactions between the environment and the impairment, illness, or disability that cause or intensify disabilities (Nagi, 1969), such as workplace, family, and various insurance system characteristics. This definition closely supports

Dembe's (2001) comprehensive model of the social context in which occupational injury and illness can be conceptualized.

Expectation of Recovery

An injured worker's expectation of recovery not only appears to influence their decision to file a workers' compensation claim, but also may actually influence the time in which they choose to settle their claim. It is important to address the potential impact that both psychological and psychosocial characteristics have on injury reporting, as well as the duration of occupational injuries. For example, studies have shown that acute conditions related to the current job are no more likely to lead to injury claims than chronic conditions with long latency periods between exposure and development of disease (Biddle & Roberts, 2003).

One of the most widely assessed psychosocial characteristic or trait associated with expectation of recovery has been motivation. It should be noted that motivation is a very difficult concept to quantify or operationally define and requires further empirical validation (Schultz et al., 2004). It has been found, however, that motivation to return to work following an occupational injury has been shown to have close associations with expectation of recovery (Schultz, 2005). It therefore remains plausible that an individual's expectation to recover from an occupational injury and return to work would be influenced by their experiences within the medical care system and the workers' compensation setting.

It can be further argued that an injured worker's motivation to resume work following a low back injury can be influenced by expectation of recovery, coping skills, and perceived value of work relative to the associated costs and social impact of the

injury. Schultz et al. (2003) has shown that expectation of recovery was found to be predictive in relation to work status, duration of disability and claims cost. Cole et al. (2002) found recovery expectations to be predictors of total time receiving benefits. Further research has shown that "positive expectations of recovery were associated with reduction in pain grade and enhancement of functional status" and provided strong evidence of the importance of individual behavioral factors in the prediction of pain-related occupational disability (Schultz et al., 2003).

Psychological and Psychosocial Characteristics of Disability

Workers with occupational injuries experience numerous long-term consequences due to their injuries that include a physical, psychological, and psychosocial conditions. Research has shown that "perceptions of disability, particularly related to health change, were predictive of disability including return to work and duration of disability" (Schultz et al., 2004). According to Linton (2000) the evidence indicated that, "self-perceived poor health is related to chronic pain and disability". Several studies and systematic literature reviews confirm this conclusion (Carey et al., 2000; Crook et al., 1998; Crook et al., 2002; Gatchel et al., 1995; Tate et al., 1999). Schultz et al. (2004) also found that "perception of health change due to back pain was a more powerful and consistent predictor of outcomes than overall perception of disability."

The causes of chronic pain disability remain controversial and evidence points to psychological factors as more important than physical factors (Gallagher et al., 1989). Gallagher et al. (1989) explored the effects of compensation and litigation on outcome in chronic pain patients in order to investigate whether or not significant relationships were present in a sample of unemployed individuals with chronic low back pain. One purpose

of this study was to investigate prediction of outcome and change in compensation status over time, which would allow a researcher to identify if a significant relationship existed between wage-loss compensation and return to work. Gallagher (1989) found that compensation was not significantly associated with return to work, which opposes the moral hazard theory inferring that in-kind benefits or wage replacement compensation fosters malingering and dishonestly among workers to exaggerate the extent of their injuries, and provides an economic disincentive to return to work (Butler & Worrall, 1991).

Research has also shown that certain psychosocial factors also appear to be risk factors for work disability and have identified that workers have less favorable outcomes when they blamed work factors for their condition, rated their relations with co-workers as poor, reported on-the-job psychological distress, or had low expectations of recovery (Schultz & Gatchel, 2005).

It has been argued by many researchers that no single linear model can be applied to fully encompass one's lifetime adjustment to disability regardless of the context in which the disability occurs (Kendall & Buys, 1998). Contemporary research has also shown that there are dramatic differences in the direction and duration that one moves through the psychosocial adaptation process (Kendall & Terry, 1998). Based on the complex nature of the individual personality and the unique occupational characteristics associated with employment, it would be difficult to subscribe to a single linear model of psychosocial adjustment to work disability. Given the added variability of workers' compensation laws across states and varying degrees of stakeholder cooperation and

participation in the system, it would be increasingly difficult to support a linear interpretation or model of psychosocial adaptation within this setting.

According to Livneh (2001), no evidence has been found to support the existence of a linear model of psychosocial adjustment to back (spinal cord) injury. Whether addressing spinal cord injuries or chronic illness, advocates of psychosocial adjustment models believe that human adaptation to unexpected disability involves continuing processes of assimilation to the resulting changes in body functioning, self-concept, and person-environment interaction. While some psychosocial adjustment models subscribe to an unordered and individually unique adaptation process of learning to recover (Livneh 1997), occupational disabilities introduce additional variability that poses significant challenges for the injured worker that may not easily be assessed.

Reactions and Responses. Unlike for those individuals who sustain injuries outside of the workplace, those who are injured out of and in the course of employment will be involuntarily exposed to models of medical treatment that have been developed by policy makers within the workers' compensation system. Following an injury, the worker is immediately introduced to a variety of employer-guided rehabilitation efforts that may include, but are not limited to, independent medical examinations, nursing visits and managed care, vocational assessments or rehabilitation efforts, mediations, and possibly formal hearings regarding their claim. With limited understanding and relatively little decision-making authority, more severely injured workers will many times seek legal representation. This introduces additional stakeholders into the process increasing the likelihood that the workers' compensation setting will become more complex and

adversarial. It is possible that this adversarial setting introduces additional variability into the psychosocial adjustment phase of adaptation to disability.

Anxiety. Anxiety for injured workers is often associated with the unknown nature of how a particular injury or disability is going to impact work-life. Anxiety responses for persons who have sustained long lasting or chronic medical conditions following an occupational injury will face an undetermined level of uncertainty about their future. As Livneh (2001) describes, anxiety responses may be associated with abrupt or unexpected changes in lifestyle, anticipation of medical procedures, and recurrence of symptoms. An additional psychosocial variable that may impact subsequent levels of a workers' anxiety is that of expectation of recovery. This psychological factor was intensively explored by Schultz et al. (2004), where it was found to be directly associated with anxiety and predictive in identifying relation to work status and duration of disability.

As injured workers progress through the workers' compensation system, there is increasing emphasis placed on timely recovery and return to work. Some of the most difficult claims involve injured workers whose expectations of recovery have never been fulfilled. It has been shown that workers typically perceive work-related back problems as life-long problems (Tarasuk & Eakin, 1994); therefore, it is likely that as pain conditions associated with occupational disability progress, anxiety will directly contribute to the workers' perception of his or her disability (Schultz, 2004).

There is no predicting the amount of anxiety an injured worker will experience as a result of their disability. There is no guarantee that injured workers will ever achieve their post-injury expectations. While some workers are quickly able to adapt to their disability and move forward with their life, others find themselves making more difficult

transitions within the psychosocial adaptation process. This is evident in cases where two individuals (Worker A and Worker B) of similar age and body-type sustain similar injuries and undergo the same course of medical treatment. Where Worker A experiences a successful recovery and returns to work, Worker B never returns to work and experiences lifelong limitations in social functioning.

The adversarial nature of the workers' compensation setting can be stressful for the injured worker. Anticipating mediations and court appearances, visiting unfamiliar medical examiners and doctors, and the search for new employment may all contribute to added levels of stress and anxiety. And although the workers' compensation system was devised to protect and treat workers who had sustained workplace injuries, recent studies have shown many workers' experience additional anxiety and frustration (Strunin & Boden, 2004).

Ethnographic interviews were conducted with 402 randomly selected workers from Florida and Wisconsin, all of who were receiving workers' compensation benefits following an occupational lower-back injury (Strunin & Boden, 2004). Although the study showed that each of the workers reported different experiences within the workers' compensation system, many reported having little or no control over their case, had little understanding of the system, received pressure to return to work prematurely, and had demeaning relationships with some their claims representatives (Strunin & Boden, 2004). It has been suggested that the resulting stress related to the limitations imposed by a worker's occupational injury or disability, and their general lack of understanding about the workers' compensation system, could be directly related to levels of anxiety experience by injured workers (Strunin & Boden, 2004).

Depression. Some of the most extensive research regarding those who have sustained back injuries has been focused on depression (Livneh, 2004). Workers who have sustained an occupational injury have shown to experience a multitude of long-term consequences specifically related to their injuries (Pransky et al., 2000). Research further suggests that occupational injuries have a variety of effects on psychological well-being and behavior (Dembe, 2001). Contributing to these findings, self-reported feelings of depression were also found to be higher among individuals with work-related repetitive strain injuries (Keogh et al., 2000) than those who sustain injuries outside of the employment setting.

One explanation for this phenomenon may be linked to Erickson's stages of psychosocial development where the middle-aged adults are consistently challenging themselves to establish and guide the next generation through socially valued work. If, for instance, an injured worker is unable to work and demonstrate expressions of generativity (a concern for people besides oneself and family) to family, friends, and co-workers, depression may develop. Another explanation may be that the lack of control and decision-making reported by injured workers within the workers' compensation system fosters feelings of hopelessness and uncertainty.

Additional studies have shown that the development of depression following a work-related injury may delay physical recovery and the return of normal functioning (Sullivan et al., 2005, Lancourt & Kettlehut, 1992). Delays in medical treatment do not support the underpinnings of the workers' compensation system where the timeliness of services and return to work are highly stressed. Workers who are unable to return to work after sustaining an occupational injury undergo numerous psychological and

behavioral changes that may affect their domestic role, daily living activities, vocational function, and impact their household economic situation. This situation can be particularly problematic for individuals involved in litigation of their worker's compensation claims (Greenough et al., 1994), presumably because the adversarial approach to settling work injury disputes contributes to their overall level of distress and duration of time away from work. This more formal process of litigation may also create extensive delays in rehabilitation service delivery creating delays in treatment, work absence, and lost wages.

Workers' compensation claimants who experience more serious or complex injuries often become alienated from their workplace. Communication with the employer and co-workers is frequently severed during dispute resolution process leaving many workers with an overall of feeling alienation and dejection. Many employers are unable to accommodate the disabled worker's physical or medical restrictions. Such an occurrence is much more common for more severely disabled workers employed with small employers, but is also becoming more common within large firms who are downsizing, restructuring, or relocating. Various provisions contained in collective bargaining agreements may also preclude injured workers from returning to work under certain circumstances, and many times do not allow for individuals to return to work if under medical restriction.

When workers sustain more severe workplace injuries, studies have shown that they perceive their physical abilities to be more limited than before their disability and the odds of returning to work as low (Burns et al., 1995). Injured workers tend to develop negative thoughts about their post-injury self due to lack of encouragement and

may find it more difficult to accept or even understand their situation. These behavioral characteristics can often have a greater influence on the length of recovery than factors such as the severity of the injury (Currie & Wang, 2004).

Depression among occupationally injured workers appears to be more commonly associated with those individuals who are experiencing chronic low back pain as compared with other types of injury or illness (Currie & Wang, 2004). Ash and Goldstiein (1995) found that workers' compensation claimants who had sustained occupational back injuries were significantly less likely to return to work following vocational rehabilitation efforts than those with less severe depression. In another study, Hildebrandt et al. (1997) found that depression appeared to be associated with both acute and chronic pain, and had a negative influence on return to work. Depression may also be more common among those injured workers who are unable to return to their previous employer and are involved in adversarial workers' compensation claims that have a negative impact on their economic situation.

Environmental and Social Considerations

The social significance of acquiring a work disability has been a frequent topic of discussion and research in occupational and industrial medicine literature; however, the topic has received less attention in the rehabilitation counseling literature in recent years. What appeared to be absent from the literature reviewed is the many contextual factors of psychosocial adaptation to disability that may be present within adversarial rehabilitative settings. Disability and chronic pain not only affects an injured worker's prospective work status, but impacts their domestic and societal situation as well. Acquired occupational disabilities in physical or cognitive functioning influence the direction and

duration of the psychosocial adjustment process. Previous studies have shown that occupational injury and illness can substantially influence one's behavior and well-being (Dembe, 2001) throughout their entire lifetime.

Stone (1984) and Dembe (2001) have identified work disability as a complex and socially predicated event that results from an occupational injury or illness, that not only is determined by physical limitation, but by a variety of social considerations as well. Livneh's (2001) theory identifies these social considerations as contextual factors that are associated with the overall psychosocial adjustment to disability regardless of disability type. By applying these conceptual models and theories to the context of workers' compensation and occupational disability, it may be possible to identify specific job characteristics that can help us better understand the impact adversarial settings may have on the duration of work disability.

Socio-Demographic and Job Characteristics. Much less information is available regarding the influence that particular job duties or employment settings have on an injured worker's psychosocial adaptation to work disability. It is plausible that certain environmental and job characteristics will impact an individual's psychosocial adaptation to work disability and eventual return to work. Some of the most frequently referenced research articles regarding socio-demographic influences on work disability and duration of disability within workers' compensation systems are by Allen Cheadle and colleagues (1994). These researchers found that one consistent and significant predictor of duration of disability, defined as time away from work, has been the size of the employer. Employers of fifty (50) employees or less have much higher incidence rates of worker

absence due to disability (Cheadle et al., 1994) suggesting that larger employers have shorter durations of worker disability.

It was also found that injured workers from rural areas returned to work less often than those workers who had access to metropolitan labor markets (Cheadle et al., 1994). Longer durations of disability were much more common in areas with high unemployment rates (Volinn et al., 1988) suggesting that persons with work injuries or disabilities experience more difficulty in finding employment within competitive labor markets than those without functional limitations.

Significant and positive relationships have been shown to exist between older workers who sustain an occupational injury and time away from work. Cheadle et al. found that the effect on age is due both to the reduced ability of older workers to physically recover following any injury, and the reduced ability to find suitable employment once recovered (1994). Additionally, a cohort longitudinal study of non-specific occupational back injury samples was able to significantly indentify the number of years with employer' as a key indicator of longer durations of disability (Schultz et al., 2004). While some studies have been able to identify positive correlations between age and time away from work due to disability, it is difficult to identify empirical research that addresses how a worker's age affects their psychosocial adaptation and decision making relative to occupational disability.

Research into the marital status of injured workers who were receiving worker's compensation benefits have shown that incidences of longer periods of work disability are higher among those who are divorced than those who are married at the time of injury (Cheadle et al., 1994). This finding has also been supported in other studies that have

shown significant relationships between the duration of disability and martial status of the injured worker (Bolton, 1974; Volinn et al., 1991). These results may suggest that married workers who have sustained an occupational injury may have spousal support that aids in their psychosocial adjustment process, unlike divorced workers who must manage their work disability independently.

Outcome Studies of Occupational Disability

Only two previous studies could be identified that investigated settlement probability as a dependent variable and empirically examined a sample of workers' compensation claims originating in New York State. The researchers investigated the probability that the claimant and insurer (insurance company or self-insured employer) would negotiate a settlement between parties, rather than proceed to trial for a disposition (Thomason & Burton, 1993). Overall, it was identified that certain insurer adjustment activities (e.g., reductions, suspensions, and/or fluctuations in wage-loss benefits, approval or disapproval of medical procedures, monitoring, etc.) increased settlement probability. The results of the regression model in predicting settlement probability identified pre-injury weekly wage and time away from work as positively influencing the amount of settlement. Interestingly, age was found to be positively correlated with settlement amount implying that the older an individual is at the time of injury, the higher the negotiated settlement.

This same study also produced results that indicate that attorney involvement increases the amount of insurer adjustment activity and in turn increases the probability of settlement, although decreases overall settlement size (Thomason & Burton, 1993). Previous outcome research in workers' compensation has found that settlement

probability is negatively correlated to expected settlement award size (Thomason, 1989), implying that the more money demanded by the injured worker or attorney, the less likely they are to reach a voluntary settlement agreement.

Other studies have shown a lack of association with post-settlement outcomes and case resolution. Theoretically, case resolution should predict post-settlement outcomes, treatment and temporary disability costs should reflect severity of injury, and disability rating and settlement award should reflect residual disability (Chibnall et al., 2005). In the Chibnall et al. study, case resolution was found to be predictive of self-reported disability (2005). As previous studies support, case resolution appears to reflect levels of medical testing and treatment decisions (e.g., rehabilitation, surgery, etc.) rather than injury severity and residual disability (Chibnall et al., 2000).

Previous research exploring the relationship between litigation status and the symptoms of the injured worker has been inconsistent and limited by methodological difficulties. Prior to 1995, the relationship of workers' compensation and litigation to low back pain outcome was not established in the literature (Gallagher et al., 1995). Suter (2001) surveyed two hundred (200) chronic back pain participants at a pain center to further investigate the relationship between being involved in litigious settings and pain symptomology. Patients were divided into four groups, namely a non-litigating/non-working group, a non-litigating/working group, a litigating/non-working group and a litigating/working group. Overall, participants who were working scored lower on all the measures than did participants who were not working (Suter, 2001). On the other hand participants who were involved in litigation, scored higher on all the measures of disability than did participants who were not litigating (Suter, 2001). The researcher

concluded that the results imply that injured workers were more likely to litigate if they were experiencing higher levels of pain than normal, or were more likely to exaggerate their pain levels while involved in litigation to maximize monetary awards. As such, this study produced findings that supported both litigation and employment as significant factors influencing worker decision-making and recovery from injury.

It has also been shown that successful return to work by injured workers is seriously endangered by the complexity of factors and dynamics associated with existing disability systems (Tate, 1992). Those who were rejected by their employer following a workplace injury engendered hostility, and fostered emotional resistance to rehabilitation (Eaton, 1979). Additional studies have shown that locus of control or the level of control perceived by worker over a particular situation, has been shown to be related to return to work success (Beck, 1988), and injured workers who are receiving workers' compensation benefits show greater resistance to physical recovery than do those individuals with similar injuries not receiving workers' compensation (Brink, 1989).

Earlier findings suggest a number of factors that might influence successful return to work outcomes for workers injured on the job. Factors such as workers' compensation benefit systems, timelines of vocational rehabilitation systems, worker injury types, demographic characteristics, and attorney involvement (Hester et al., 1986; Gardner, 1991; Blackwell, 2003 in Ash & Goldstein, 1995; Gumerman, 1998) have all been shown to have varying impact on return to work success following occupational injury. It has also been shown that those injured workers who lost more work time than injured counterparts (co-workers) experienced significantly more economic problems due to their injury (Pransky et al., 2000).

Injured Worker Perceptions and Experiences of Workers' Compensation

Several studies, both qualitative and quantitative, have documented the experiences of injured workers receiving or attempting to receive benefits through the workers' compensation system (Dembe, 2001). One of the most extensive qualitative studies into the workers' interactions with the workers' compensation system was conducted by Strunin & Boden (2004) who found that while experiences can be positive, and benefits to injured workers can be provided in a timely manner by considerate and efficient processes, there was an overall consensus among workers that the workers' compensation system was experienced as "cumbersome, frustrating and demeaning."

Studies have shown that workers generally report negative experiences within the workers' compensation system, a system that has been perceived by many as uncaring, unfair, and adversarial (Reid et al., 1991; Imershen et al., 1994). Additional studies have shown that the stress that injured workers' experience related to their occupational injury or illness can be caused by emotional instability related to a lack of understanding of the workers' compensation system and their relationships with compensation claims representatives (Strunin & Boden, 2004).

Additional data indicates that injured workers may be reluctant to report occupational injuries and illnesses for a variety of reasons. Examples include, but were not limited to, fear of reprisal, belief that pain is an ordinary consequence of work activity or aging, lack of management support after prior reports, and a desire not to lose their job (Jefferson and McGrath, 1996; Silverstein et al., 1997; Pransky et al., 1999; Rosenman et al., 2000). Studies have shown that many workers voluntarily choose not

to file a workers' compensation claim at all based on fear of employer reprisal (Pransky, 2001).

Biddle & Roberts (2003) explored the determinants of the decision to file for workers' compensation using a sample of individuals identified by a physician as having a work-related illness. They utilized a Michigan governmental database of reports of known or suspected cases of occupational illness and matched them with workers' compensation claims data. They found that the percentage of reported occupational injuries for which workers also filed for workers' compensation benefits was between 9% and 45%. Similarly, a study conducted in Connecticut estimates that just 10.6% of workers with work related chronic upper extremity pain file a workers' compensation claim for their condition (Morse et al., 1998). Although workers' compensation insurance is purchased by employers to pay for all medical care related to work-related injuries and illnesses, many persons suffering work-related disorders utilize their own health insurance or other private or public assistance programs to pay for medical care and other expenses related to their injury, and is even more prevalent in cases where their initial claims are denied (Dawson, 1994; Texas Workers' Compensation Research Center, 1995; Morse et al., 1998; Keogh et al., 2000). It has also been found that sometimes injured workers incur substantial out-of-pocket expenses for treatment of job-related disorders (Morse et al., 1998; Galizzi et al., 1998), conditions which would otherwise be covered under workers' compensation insurance if reported.

Lastly, studies have also shown that injured workers experience significant economic hardship as a result of monetary caps on compensation benefits under workers' compensation legislation (Boden and Galizzi, 1999; Reville, 1999). These caps force

injured workers who remain out of work for substantial periods of time to deplete savings and borrow money, all of which can contribute to additional stress and anxiety related disorders (Texas Workers' Compensation Research Center, 1995; Morse et al., 1998; Keogh et al., 2000; Pransky et al., 2000). For example, a group of workers who were injured in Pennsylvania reported that they had to wait an average of 20 months after a workplace injury to get income replacement benefits because of delays in approving and processing their workers' compensation claims (Dawson, 1994).

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Method

Participants and Instrument

The population of interest in this study is the occupationally injured worker in Michigan. "Occupationally injured" is defined as an individual who receives a personal injury arising out of and in the course of employment (Workers Disability Compensation Act of 1969, 418.30). While it is the intention of this study to provide empirical explanations regarding those who have voluntarily resolved their workers' compensation claim, it requires an examination of a sample of workers whose claims have been legitimately terminated (e.g., settlement, returned to work with no wage-loss, recovered from disability, end of specific loss, deceased, lost claim etc.), as well as those who have not returned to work and continue to receive wage-loss benefits.

For purposes of this study, the qualifying term "settlement" refers to the legitimate termination of wage-loss benefits. This process of reaching a settlement agreement between the employee and the employer may occur under either contested or non-contested circumstances, and are typically negotiated between the employer and the employer, or their representatives (attorneys, insurance companies, third-party administrators, etc.). They may also be facilitated by mediation hearings within local jurisdictions nearest the injured worker's residence. If a claim is not concluded through a redemption settlement under non-contested circumstances, it is brought before a special magistrate or administrative law judge for determination.

Ultimately, the overall function of a settlement is to specify the terms and conditions of a final settlement agreement, including all aspects of an injured worker's

claim. This includes disputed wage-loss as a result of the injury and any present and/or future medial costs. The settlement contract addresses all elements of the existing or alleged claim, and once the settlement agreement is executed, the worker can no longer seek additional compensation from the employer. In cases where the employee and employer are involved in some dispute regarding the claim, it is likely that the employee-employer relationship will be terminated. In non-adversarial claims, the employment relationship is preserved in most cases. For purposes of this study, this includes all cases where the injured employee returns to work with no wage loss and has been medically cleared to return to work (i.e., recovered from injury or illness).

The State of Michigan requires that an employer shall report immediately report all injuries, including diseases, which arise out of and in the course of the employment, or on which a claim is made, and which result in disability extending beyond seven (7) consecutive days, not including the date of injury, death, or specific losses. This information is initially documented by an employer on a form titled: Employer's Basic Report of Injury and contains a variety of employee, employer, injury, medical, occupational, and wage data.

All injury data reported to the State of Michigan is maintained in a variety of administrative databases used for maintaining authority and guidance over each claim. These databases are primarily used to collect vast amounts of information regarding past and present workers' compensation claims for program evaluation and public policy development and include the identification of all workers who were determined eligible and successful in filing a workers' compensation claim regardless of wage-loss or medical benefit determination of liability. These data contain valuable and unique

information about the characteristics, activities, and results of each workers' compensation claim that can be effectively used for research purposes.

This study utilizes a retrospective design to investigate the decision-making process of injured workers in Michigan who reported a work-related injury resulting in a claim for workers' compensation benefits during the 2007 calendar year. As of January 2010, a total of 42,708 individuals had reported a work-related injury having occurred in the year 2007. This period encompasses the timeframe of claim inception (1/1/07 through 12/31/07) to the date of data extraction (1/1/10). This provides a useful window-in-time to examine a sample of individuals over a period of 2 to 3 years in which generalizations to the larger population can be explored. This also provides the means to collect a sample of non-routine or complex occupational disability claims where the worker has been absent for work for an extended period of time due to their occupational injury or illness.

In order to gather data for this study, an initial dataset was produced by identifying all individuals who reported a date of injury occurring in 2007 (N=42,708). Next, all claims filed in which the worker did not incur wage loss or lost time away from work during the claim period (e.g. medical-only, no-time-lost, etc.) were eliminated (N=17,365). Following the elimination of no-lost time and no wage-loss claims, a total of 25,343 claims remained. Since this study is most concerned with examining the characteristics and implications of individuals who required recuperation or recovery away from the workplace following an occupational injury or illness, only claims in which a settlement agreement had been executed (N=1311) and claims that were continuing to pay wage-loss benefits at the time the sample data was extracted (N= 1843)

were retained. The final dataset consisted of a total sample size of 3,111 participants who had either settled their claim or were continuing to receive wage-loss benefits as of 1/1/10.

To improve the homogeneity of the sample and control for anticipated variability, all sample members must have met the following criteria:

1) reported a compensable work-related injury that occurred in the calendar year of 2007,

2) filed a Form BWC-100 (Basic Report of Injury) with the State of Michigan for wage-loss benefits,

3) was absent from the workplace due to the reported injury for a minimum of 7 days, and

4) are continuing to receive wage-loss benefits, or have settled their workers' compensation claim

Variables

A variety of variables were selected for purposes of this analysis because they were considered relevant in terms of identifying salient differences and commonalities between claimants who decided to settle their workers' compensation claim, and those whose did not. This study will focus on investigating both categorical and continuous variables that include various individual and contextual characteristics (see Table 1). Additional covariates were also explored, such as amount of time elapsed between the date of injury and the last day worked, wage loss benefit, and average weekly wage.

The dichotomous outcome variable is the decision to settle a workers' compensation claim, classified by a unique closure code within the sample dataset, which

allows the researcher to identify those who have settled their claim, coded as "R". This allows for the creation of a dichotomous outcome variable (R=1, Other=0), which distinguishes between the groups of interest. Similarly, each claim is assigned a unique claims status code that allows the researcher to identify those claims that are continuing to pay wage-loss benefits (Coded as PAY), versus those who have resolved their claim (coded as PAID). Based on the rationale associated with the purpose of this study and sample dataset creation, these two mutually exclusive groups were combined together (N=3111) to create the final research sample of those who settled their claim and those who continue to receive wage-loss benefits 2 to 3 years post-injury.

Table 1: Predictor and Outcome Variables

Individual (Demographic) Characteristics
Age (Under or Over 55)
Gender
Marital Status
Number of Dependents
Body Part of Injury
Nature of Injury
Contextual (Socioeconomic and Environmental) Characteristics
Pre-Injury Average Weekly Wage (AWW)
Timeliness of Wage Loss Benefit (in days)
Geographic Area
Attorney Involvement
Outcome Variable
Settlement (Yes or No)

Definition of Variables

As explained in detail below, a variety of recoding procedures were carried out prior to final model development in order to group these data into categories that make sense in the context of this research.

Individual Characteristics.

Age. An independent, continuous variable identifying the amount of time elapsed in whole years between and individuals recorded date of birth and date the sample dataset was created (January 1, 2010). The age variable was also coded as an independent, dichotomous variable identifying workers under the age of 55 (coded as 0), and workers over the age of 55 (coded as 1). This allows the researcher to make comparisons between individuals of average working age and older workers at or above the age of 55.

Gender. An independent, dichotomous variable designating male versus female as recorded on the individual's Form BWC-100 (Basic Report of Injury). Gender was coded 1 for male, and 2 for female.

Marital Status. An independent, dichotomous variable differentiating between those who filled as married or single on the Form WC-701 (Notice of Compensation Payments) as of the date of the reported injury. Each Form WC-701 is completed by the party providing wage loss compensation (e.g., self-insured employer, insurance company, third party administrator, etc.) and identifies the worker's tax filing status among four (4) categories of single, single/head of household, married/filing joint, or married/filing separately. This allows the researcher to create a dichotomous variable of those who are single (coded as 0) and those who are married (coded as 1).

Number of Dependents. The original designation of number of dependents is a continuous variable ranging from zero (0) to twelve (12) within the sample dataset. An independent, dichotomous variable differentiating between those who reported zero (0) or one (1) dependents (coded as 0), and those who reported two (2) or more dependents (coded as 1) as identified on the form WC-701. This figure was identified as of the date of injury and cannot account for changes in the number of dependents that may have occurred (e.g., birth of child, divorce, death of spouse, etc.) subsequent this date. This categorical variable was created in order to investigate possible differences or considerations in the decision-making between injured workers with dependent children (claiming 2 or more dependents) and those without.

Body Part of Injury. An independent, categorical variable consisting of eight (8) categories based on the Occupational Injury and Illness Classification System (OIICS). The OIICS was developed by the Bureau of Labor Statistics (BLS) to provide a standardized coding system for characterizing work-related injuries and illnesses (Bureau of Labor Statistics, 2007). The part of body affected code structure is arranged in order from the top of the body (Division 0, Head) to the bottom of the body (Division 4, Lower Extremities). Division 5 classifies body systems. Division 8 classifies multiple body parts from two or more divisions. Division 9 classifies prosthetic devices and any human parts of the body which are not classified or listed under any of the other divisions (BLS, 2007).

Each part of body was classified according to OIICS thus allow for the creating of 7 dummy variables (1 = neck, including throat, 2 = trunk, 3 = upper extremities, 4 = lower extremities, 5 = body systems, 8 = multiple body parts, 9 = other body parts, and

9999 = nonclassifiable). The variable "head" was designated the constant, coded as 0. For purposes of this study, the categories "other body parts" and "nonclassifiable" were combined into one category due the limited number in each category (N=34). The part of body affected identifies the part of the body directly affected by the previously identified nature of injury or illness (OIICS, 2007).

Nature of Injury. An independent, categorical variable originally consisting of eight (8) categories based on the Occupational Injury and Illness Classification System (OIICS). The nature of injury or illness code structure is arranged so that traumatic injuries and disorders are listed first (category 0) while diseases are listed in categories 1 through 8 (1 = systemic diseases or disorders, 2 = infectious and parasitic diseases, 3 = neoplasms, tumors, and cancer, 4 = symptoms, signs, and ill-defined conditions, 5 = other conditions or disorders, and 8 = multiple diseases, conditions, or disorders). Category 8 classifies multiple physical characteristics whose individual codes are found in categories 1 through 5, and those coded 9999 are nonclassifiable (OIICS, 2007).

For purposes of this study the nature of injury variable was reduced and recoded into three (3) categories based on OIICS thus allowing for the creating of two (2) dummy variables (i.e., 1 = systems diseases or disorders and 2 = all other). The variable traumatic injuries and disorders was designated as the constant. This variable includes all traumatic injuries and disorders, effects of external agents, and poisoning is the result of a single incident, event, or exposure (OIICS, 2007). System diseases or disorders refer to toxic and non-toxic diseases or disorders affecting systems of the body that may affect the whole named body system, or more commonly, affect only a part of the named body systems at the time of diagnosis. Given the limited number of claims involving nature of

injuries involving categories 3 through 5, 8, and 9999, these various natures of injury were combined to account for the category "all other".

Contextual Characteristics

Pre-Injury Average Weekly Wage (AWW). A continuous, independent variable specifying the calculated total gross weekly wage (highest 39 of 52 weeks) that a worker receives in the normal performance of their work in rounded United States Dollars (USD). As defined by the Michigan Workers' Disability Compensation Act of 1969, AWW refers to the weekly wage earned by the employee at the time of the employee's injury in all employment, inclusive of overtime, premium pay, and cost of living adjustment, and exclusive of any fringe or other benefits which continue during the disability (§418.371).

If the employee worked less than 39 weeks in the employment in which the employee was injured, the AWW shall be based upon the total wages earned by the employee divided by the total number of weeks actually worked. If an employee sustains a compensable injury before completing his or her first work week, the average weekly wage shall be calculated by determining the number of hours of work per week contracted for by that employee multiplied by the employee's hourly rate, or the weekly salary contracted for by the employee. If the hourly earnings of the employee cannot be ascertained, or if the pay has not been designated for the work required, the wage, for the purpose of calculating compensation, shall be taken to be the usual wage for similar services if the services are rendered by paid employees (§ 418.371).

If there are special circumstances under which the AWW cannot justly be determined by applying the previous rules, an AWW may be computed by dividing the

aggregate earnings during the year before the injury by the number of days when work was performed and multiplying that daily wage by the number of working days customary in the employment, but not less than 5 days (§ 418.371). This amount is initially identified on the Form WC-100.

The AWW variable was used to create an independent, categorical variable determined by percentage of income (low, medium, and high). While there are numerous methods and taxonomies in defining earning levels in the United States, many define low-wage jobs as those that exist within the bottom third of national wage distribution. According to Boushey et al. (2007), approximately one-third of the U.S. population falls into the low-wage category. The Federal Bureau of Labor Statistics commonly ranks jobs and associated wages by quartiles. As such, very low wage earners account for the first quartile, and low wage earners account for the second quartile.

For purposes of this study, the sample wage distribution was divided into thirds to account for low wage earners (N=1,025) who earned less than $497 per week, and also encompasses all individuals who earned less than two-thirds the national median wage of $12.74/hr (SSA, 2008). All individuals that earned between $498 and $841 per week were placed into the middle-third category and represents middle income workers. The highest third, those workers earning over $841 per week, constituted the group of high wage earners. This process allows the researcher to make assumptions about a particular population and address the implications regarding the socio-economic status of an individual or family and their decision to settle a workers compensation claim.

Timeliness of Wage-Loss Benefit. This variable accounts for the time elapsed between the reported date of injury and the initial wage-loss payment. This was

originally an independent, continuous variable that accounted for the time elapsed (in days) between the reported date of injury and when the worker receives his or her initial wage-loss payment. For purposes of this study, it was recoded as a categorical variable to make distinctions among those who received prompt wage-loss benefits following their reported date of injury (within 30 days) and those who did not. This allows the researcher to address implications of prompt or delayed receipt of wage-loss benefits after exiting the occupational setting due to injury or illness, and can be effectively used to investigate the potential impact this timeframe may having on an individuals decision-making in workers' compensation settings.

Geographic Residence. An independent, dichotomous variable distinguishing the workers' legal residence and labor market area between rural and metropolitan. For purposes of this study, the geographic unit used to categorize this variable was the worker's county of residence. According to the Office of Management and Budget (OMB) and the Economic Research Service of the United States Department of Agriculture (USDA), metropolitan areas are defined to include central counties with one or more cities of at least 50,000 residents, or with an urbanized area of 50,000 or more and total area population of at least 100,000. This variable was coded at 1 within the dataset. The OMB and USDA define rural areas as open country and small settlements of less than 2,500 persons. This variable was assigned as the constant variable, and was coded at 0 within the dataset.

Attorney Involvement. An independent, dichotomous variable that designates a claim as either adversarial (e.g., litigated, disputed, or challenged by the employer), or non-adversarial (e.g., routine or non-disputed) in nature as of January 1, 2010. This

delineation between litigated and non-litigated claims provides and effective method of estimating attorney involvement in the process of settlement. For example, should a claim become contested or disputed, the likelihood of attorney involvement is high. Conversely, should a claim remain uncontested or non-disputed by the employer, attorney involvement in the decision making and claims processes is minimal or very low. To make observations regarding the adversarial nature of worker's compensation and settlement outcome, the researcher must be able to differentiate between litigated and non-litigated claims. While these data do not allow for the determination of when a particular claim has become disputed, the use of various claims status variables and dates of claim inception, wage-loss payment initiation, and variable coding procedures allows the researcher to accurately distinguish between litigated and non-litigated claims.

For example, all cases within the dataset were originally designated as CONT, NCONT, RES, or APP. The variable CONT implies the claim was either historically or is presently contested. The variable RES implies that a court order disposition regarding the claim was reached prior to January 1, 2010. The variable APP implies that the claim is in the appeals process and was historically litigated, therefore contested status is implied. As such, all of these claims were or had been contested claims as of January 1, 2010 and were coded as 1 within the sample set, while all other values were coded as 0 and were never contested claims.

Settlement. The dichotomous, dependent variable that identifies if a claim has settled (0 = No and 1 = Yes). For purposes of this study, settlement refers to the legitimate termination of wage-loss benefits.

Procedure

A retrospective research design was utilized for this study by selecting all of the 2007 claims of injury in the State of Michigan. Once all claims were selected and verified, all personal identifiers were removed from the research dataset as to protect the identity of each subject. This simple ex-post facto design provides convenient and ethical manner in which to thoroughly investigate the research question: What impact do various individual (age, gender, marital status, number of dependents, type of injury, and part(s) of body affected) and contextual variables (pre-injury average weekly wage, timeliness of wage-loss benefit, geographic residence, and attorney involvement) have on the decision to settle a workers' compensation claim?

The effectiveness of the ex-post facto design shall be reliant on the fact that both the predictor (independent) and outcome (dependent) variables are all clearly identified. Confounding variables were thoroughly sought out and investigated in an attempt to explain all possible relationships that are hypothesized. The most significant limitation of this design is that the researcher is unable to make cause-and-effect conclusions since the cause element has already occurred. Due to the large sample size, a casewise deletion technique was utilized to eliminate cases where one or more variables were missing, or where cases failed to match the specific sample criteria. Casewise deletion is preferred method of deletion when sample size is large in relation to the number of cases that have missing data (Allison, 2001). Various statistical methods were utilized to examine and draw hypothetical conclusions regarding this study as described in the following section.

Data Analysis

The Statistical Package for the Social Sciences (SPSS) version 15.0 was the statistical software package utilized for the data analysis (SPSS Inc., 2007). This study provides tables of descriptive statistics, such as frequency distributions of data, means, standard deviations, ranges, and variances of scores to provide the reader with important information regarding the sample set utilized in this study.

Since no study could be identified that has empirically examined the decision to settle a workers' compensation claim, a series of exploratory statistical procedures were carried out in order to identify any confounding or moderating effects between all variables of interest, as well as provide the reader with a variety of descriptive statistics, frequency distributions, and cross-tabulations of data.

The statistical method of choice for analyzing the relationships between the categorical variables containing more than two (2) groups of interest is chi-square analysis. This non-parametric test of statistical significance has been shown to be appropriate for evaluating dichotomous independent and dependent variables (Huck & Cormier, 1996), and will provide an effective method for examining whether or not relationships exist between the decision to settle a workers' compensation claim and an individual's pre-injury average wage, timeliness of wage-loss benefit, type of injury, and part(s) of body affected.

The chi-square test measures the dependence between two sets of frequency measures. It is used to analyze a contingency table consisting of ordinal variables, containing three (3) or more categories, in order to determine if the observed cell frequencies differ significantly from the expected frequencies and represents the sum of

the contributions from each of the individual cells. Every cell in a table contributes something to the overall chi-square statistic. If a given cell differs markedly from the expected frequency, then the contribution of that cell to the overall chi-square is large. If a cell is close to the expected frequency for that cell, then the contribution of that cell to the overall chi-square is low. A large chi-square statistic indicates that somewhere in the table, the observed frequencies differ markedly from the expected frequencies. This also implies that two variables are likely associated to each other (Greenwood & Nikulin, 1996).

The remaining nominal variables of interest (age group, gender, marital status, number of dependents, geographic residence, and attorney involvement) will be evaluated by calculating a Cramer's V statistic that allows the researcher to investigate the strength of dependency or correlation between two or more variables or sets of variables (Cohen and Cohen, 1983). Correlations have three fundamental dimensions: significance, direction, and magnitude. Cramer's V is a statistic measuring the strength of association or dependency between two (nominal) categorical variables in a contingency table and varies between 0 and 1. It is used as post-test after chi-square has determined significance. Although the chi-square statistic may indicate that there is a significant relationship between two variables, it does not allow the researcher to identify how significant or important this relationship could be. The closer the Cramer's V statistic is to 1, the stronger the association between the variables (Cramer, 1999).

A simple correlation or Pearson's Correlation analysis will also allow for all dichotomous variables to be investigated as to the strength and direction of any linear relationships, should any exist. This method of statistical analysis allows the researcher

to check multicolinearity, as well as directional characteristics of the data that could have an impact on prediction modeling. The Pearson correlation coefficient is a measure of the correlation between two nominal variables, giving a value between +1 and −1 inclusive. It is widely used to measure of the strength of linear dependence between two continuous variables. A value of 1 implies that a linear equation describes the relationship between two variables perfectly, with all data points lying on a line for which one variable increases as the other increases. A value of −1 implies that all data points lie on a line for which one variable decreases as the other increases. A value of 0 implies that there is no linear correlation between the variables (Rodgers & Nicewander, 1988; Fisher, 1915). This method was primarily used to investigate the relationships between the original continuous variables, such as AWW, number of dependents, and timeliness of wage-loss benefits, as well as various dichotomous variables on settlement outcome.

The primary statistical method of choice for this study is binary logistic regression. Logistic regression analysis has been recognized as an effective method of analysis when the equation to be estimated has a dichotomous response variable (Tabachnick & Fidell, 2001), such as settlement versus non-settlement of a workers' compensation claim. It allows investigators to examine relationships between a binary outcome variable and a group of predictor variables. Logistic regression also allows researchers to calculate odds ratios, defined as the ratio of the odds of an event for one group to the odds of the same event for another group (Ott & Longnecker, 2001). This process allows for the odds calculation between independent and dependent variables which provide useful information about how two people may differ on one variable, when they are the same on all other variables (Capella, 2002). The main advantage of

using this form of regression analysis, is that it allows the researcher to isolate the impact of each predictor variable while holding constant all others.

For example, an odds ratio can allow an investigator to compare the decision to settle a workers' compensation claim between males and females when controlling for all other variables. Odds ratios are typically the parameters of interest when using logistic regression due to ease of interpretation (Hosmer & Lemeshow, 1989; Capella, 2002) and once each variable has been descriptively explored, logistic regression will be used to investigate associations that may exist between the independent variables and the response variable, as well as potential interactions among the variables of interest presented as:

$$\text{Logit (Pi)} = \beta_O + \beta_1 X_{1,i} + \ldots + \beta_K X_{K,I} + E,$$

where (Pi) is the log odds of the dependent variable, and β_O is the constant where there are K independent (X) variables. The notation E represents that random deviation or random "error" which is assumed to have the mean of zero (Devore and Berk, 2007). Given the exploratory nature of the study, a level of significance of alpha (α) = .05 was implemented as the minimum rejection level for all statistical analyses and used as the guideline for assessing the overall fit of the model.

Lastly, a Hosmer-Lemeshow Test will be carried out to assess the overall fit of the data to the model and estimate the amount of unexplained variability.

CHAPTER 4

Results

The purpose of this study was to examine various individual and contextual variables as predictors for individuals involved in complex or non-routine workers' compensation claims within the State of Michigan. This unique sample represents individuals who have remained out of the workforce, and have had open workers' compensation claims for a substantial amount of time. The research question relative to the study asked if various individual and contextual variables predicted settlement outcome in more complex occupational disability claims.

Review of variables in the analysis.

Individual Variables - age, gender, marital status, number of dependents, type of injury, part of body affected. As previously stated, all variables within this category are categorical in nature. Age, gender, martial status and number of dependents are dichotomous variables, where as type of injury and part of body affected contained two or more groups. Age was grouped into two (2) categories identifying those under the age of 55, and those aged 55 and older. The number of dependents variable was divided into two (2) groups: less than 2, and 2 or more. The body part of injury variable was divided into eight (8) groups: head, neck (including throat), trunk, upper extremities, lower extremities, body systems, multiple body parts, and other or nonclassifiable. The nature of injury variable was divided into three (3) groups: traumatic injuries and disorders, systemic, dieses or disorders, and other conditions or disorders (see Table 1).

Contextual Variables – pre-injury average weekly wage, timeliness of wage-loss benefit, geographic residence, attorney involvement. The contextual variables in this

study are a combination of dichotomous and non dichotomous categorical variables. Pre-injury average weekly wage was divided into three (3) groups: those who had reported earnings at the time of injury of $0-$497, $498-$841, or $842 or more. The variable timeliness of wage-loss benefit refers to the time between the date of injury and the initial wage-loss payment in days, and is divided into three (3) groups: 0-30 days, 30-90 days, and 90 days or more. Geographic residence is a dichotomous variable differentiating between metropolitan and rural areas as classified by the OMB and USDA. The litigated or attorney involvement variable is dichotomous and indicates whether or not a claim was involved in litigation.

Outcome of variable. The settlement variable is a dichotomous variable differentiating between those who have settled their claim, and those who have not. This variable was the primary outcome characteristic utilized in the study.

Review of Methodology.

Various descriptive and logistic regression analyses were utilized as the statistical means to investigate and assess relationships between both individual and contextual characteristics and the dependent variable. Chi square analyses were conducted to test the association of each independent variable on settlement outcome, for model building considerations, and to identify the goodness-of-fit regarding the final model. Binary logistic regression was the primary method for predicting the decision to settle a workers compensation claim as depicted by:

$$\text{Logit}(P(\text{Settlement}=1)) = \alpha_o + \alpha_i (\text{Individual Characteristics})i + \alpha_j (\text{Contextual Characteristics})j + E,$$

Or more specifically:

Logit (P (Settlement=1)) = β_0 + β_1 Age + β_2 Gender + β_3 Marital Status + β_4 Number Of Dependents + β_5 Type Of Injury + β_6 Part Of Body + β_7 Pre-Injury Average Weekly Wage + β_8 Timeliness of Wage Loss Benefit + β_9 Geographic Residence + β_{10} Attorney Involvement + E

Given the exploratory nature of this analysis all predictor variables were included in the final regression model. It is common practice that only variables found to be statistically significant within the sample group are considered to predict outcome and remain in the final model (Cohen, Cohen, West, & Aiken, 2003); however, there are unique occasions when the outcome variable being studied is not well known and important covariates, as well as their associations with the outcome variable, are not well understood (Hosmer & Lemeshow, 2000). As such is the case, no final model was fitted or purported for purposes of this study and future research will serve this purpose more astutely.

A variety of statistical measures were assessed in order to address the likelihood of a particular variable predicting settlement. Additionally, the estimation of odds ratios and expected probabilities were calculated to investigate the presence of interactions and resulting implications. Odds ratios greater than 1 increased the likelihood a variable predicting settlement. In cases where odds ratios are less than 1, settlement was less likely to occur. A probability distribution was calculated in order to estimate the probability of the settlement occurring among each independent variable and will serve to ease the interpretation of results as predicted in the model. Finally, a statistical

assessment of how well the data fits the regression model and its statistical significance will be carried out.

Presentation of Results

Descriptive Characteristics of the Sample

As illustrated in Table 2, males comprised 64.9% of the sample (N= 2,008), where as Females accounted for the remaining 35.1% (N=1,086). Over 74% of the sample consisted of those under the age of 55 (N=2,300) and 35.7% were age 55 and older (N= 794). Ages within the sample ranged from 17 to 87, with total of 17 missing cases. The mean age of the sample was 47 with a standard deviation of 11.378. Approximately 45% of the sample participants were unmarried (N= 1,404). Regarding number of dependents, 74.1% of the sample reported having less than 2 dependents (N= 2,306), leaving approximately 25.9% claiming 2 or more dependents at the time of injury (N= 805).

The nature of injury variable originally contained 8 categories or divisions. Given the extreme limited number of individuals within the sample reporting infectious and parasitic disease (.1%), neoplasms and cancer (less than 1%), symptom signs and ill defined conditions (less than 1%), other conditions and disorders (less than 1%), or multiple diseases, conditions or disorders (0), all were classified into one category titled other or non-classifiable injury or illnesses (6.2%, N= 193).

Regarding the primary body part of injury, 39.4% reported injuries existing within the trunk region (N= 1,225), 19.1% with injuries affecting the upper extremities (N= 595), 19.4% reported injuries to the lower extremities (N= 602), and 16% reported injuries to multiple body parts (N= 496).

Table 2: Frequency and Percentage Distribution of Variables

Variable	N	Valid %
Individual Characteristics		
Age		
Under 55	2,300	74.3
55 and older	794	35.7
Gender		
Male	2,008	64.9
Female	1,086	35.1
Marital Status		
Single	1,404	45.2
Married	1,702	54.8
Number of Dependents		
Less than two	2,306	74.1
Two or more	805	25.9
Body Part of Injury		
Head	73	2.3
Neck, Including Throat	65	2.1
Trunk	1,225	39.4
Upper Extremities	595	19.1
Lower Extremities	602	19.4
Body Systems	18	.6
Multiple Body Parts	496	16.0
Other or Nonclassifiable	34	1.1
Nature of Injury		
Traumatic Injuries and Disorders	2,728	88.1
Systemic Diseases or Disorders	161	5.2
Other Conditions or Disorders	208	6.7
Contextual Characteristics		
Average Weekly Wage (AWW)		
$0 to $497	1,025	33.0
$498 to $841	1,026	33.0
$842 or more	1,055	34.0
Time Between Date of Injury and Initial Wage Loss Payment (days)		
Zero (0) to 30	2,267	73.9
30 to 90	357	11.5
90 or more	444	14.5
Geographic Residence		
Metropolitan	1,228	39.5
Rural	1,883	60.5
Litigated (Attorney Involvement)		
No	1,741	56.0
Yes	1,370	44.0
Settlement		
No	1,757	56.5
Yes	1,354	43.5

The remaining reports of body part injuries consisted of less than 6% of the total sample encompassed head (2.3%, N= 73), neck (2.1%, N= 65), body systems (.6%, N= 18), and other or non classifiable (1.1%, N= 34). Traumatic injuries and disorders were vastly the most reported feature of injury, consisting of 88.1% of the sample (N= 2728).

Interestingly, pre-injury average weekly wage was evenly distributed among each category (low, moderate, and high wage earner) at 33% or 34% respectively. The vast majority of individuals within the sample received their initial wage loss payment within 30 days of their reported date of injury (N= 2,267, 73.9%). Nearly two-thirds of the individuals within the sample resided within rural areas (N= 1,883, 60.5%), as compared to those residing within metropolitan areas (N= 1,228, 39.5%).

Lastly, 44% of the sampled population were involved in litigated claims (N= 1,370). The remaining 56% of workers' compensation claims did not involve any form of litigation (N= 1,741). Considering all claims contained within this sample (N= 3,111), 43.5% resulted in a settlement agreement between the employee and the employer. The remaining 56.5%, or 1,757 claims remained paying claims in which the worker continued to receive wage loss benefits as of January 1st, 2010.

Chi Square Tests of Association

Chi square tests of association were carried out to assess the level of significance for all categorical variables on settlement outcome. As previously stated, this process is used to analyze a contingency table consisting of categorical variables, in order to determine if the observed cell frequencies differ significantly from the expected frequencies and represents the sum of the contributions from each of the individual cells.

Furthermore, a Cramer's V statistic was used to assess the variables to determine the strength of any significant association.

As identified in Table 3, age (df = 1, N = 3,094) had a chi square of 4.283 and was found to be statistically significant, indicating that there was some level of association between age and settlement outcome. The Cramer's V statistic of .037 indicates the strength of this relationship. Gender (df = 1, N = 3,094) had a chi square of .178 and was found to have a relatively small relationship (Cramer's V = .008) on settlement outcome. The relationship between this variable and settlement as the outcome was not found to be statistically significant.

The variable marital status (df =1, N = 3,106) was statistically significant (p = .046) had a chi square of 3.971 indicating there is some measurable level of dependence between marital status and settlement. The strength of association found was similar to that of age (Cramer's V = .036) which was also found to statistically significant. The number of dependents variable (df = 1, N = 3,111) had a chi square of 2.905 which was not found to statistically significant and had no discernable relationship on settlement outcome. Similar findings were found regarding geographic residence (df = 1, N = 3,111), where there appears to be no significant relationship between those who reside in rural or metropolitan areas and settlement outcome (chi square = .608, Cramer's V = .014).

The most statistically significant independent variable was attorney involvement (df = 2, N = 3,111), that had a chi square statistic of 930.399 implying that a relationship does in fact exist between attorney involvement and settlement outcome. The strength of

Table 3: Correlation Table of Dichotomous Categorical Variables on Settlement Outcome

Variable	N	Chi square	Cramer's V	p value (2-tailed)
Age (Under/Over 55)	3094	4.283	.037	.038*
Gender	3094	.178	.008	.673
Marital Status	3106	3.971	.036	.046*
Number of Dependents	3111	2.905	.031	.088
Geographic Residence	3111	608	.014	.436
Attorney Involvement	3111	930.399	.547	.000**

*. Correlation is significant at the .05 level.
**. Correlation is significant at the .01 level.

this relationship was the strongest among all independent variables as indicated by a Cramer's V statistic of .547.

As shown in Table 4, the body part of injury variable (df =7, N= 3,108) had a chi square statistic of 25.615 which is significant at the $\alpha = .05$ indicating that at least one group within this variable had a significant difference between observed and expected outcomes relative to settlement outcome. The strength of this relationship was found to be quite small (Cramer's V = .091). This was also true for the pre-injury average weekly wage (df =2, N= 3,106) which had a chi square of 116.35 ($p < .001$) and timeliness of wage-loss benefit (df = 2, N= 3,068) with a chi square of 18.741 ($p < .001$), indicating that all of these independent variables were statistically significant, and at least one of the categories within each variable was significantly associated with settlement outcome.

The correlation between the timeliness of wage-loss benefit and date of injury and settlement outcome was .078, although there does appear to be some measurable influence or association between pre-injury average weekly wage and settlement outcome (Cramer's V = .194).

The nature of injury variable (df = 2, N = 3097) had a chi square of 3.897 and was found to be statistically significant ($p = .145$) indicating some that there is some level of association with the dependent variable, although the correlation between nature of injury and settlement outcome was .035 indicating relatively no relationship exists between the variables.

Table 4: Chi Square Test of Association Among Variables With 3 or More Categories on Settlement Outcome

Variable	N	No	Exp.	Yes	Exp.	Cramer's V	Chi-square
Body Part of Injury	3108					.091	25.615**
Head		43	41.2	30	31.8		
Neck, Including Throat		42	36.7	23	28.3		
Trunk		660	691.7	565	533		
Upper Extremities		367	336	228	259		
Lower Extremities		363	339.9	239	282.1		
Body Systems		7	10.2	11	7.8		
Multiple Body Parts		260	280.1	236	215.9		
Other or Nonclassifiable		13	19.2	21	14.8		
Nature of Injury	3097					.035	3.867
Traumatic Injuries and Disorders		1543	1546.8	1185	1181.2		
Systemic Diseases or Disorders		102	91.3	59	69.7		
Other Conditions or Disorders		111	117.9	97	90.1		
Average Weekly Wage (AWW)	3106					.194	116.35**
$0 to $497		477	578.5	548	446.5		
$498 to $841		545	579.1	481	446.9		
$842 or more		731	595.4	324	459.6		
Time Between Date of Injury and Initial Wage Loss Payment (days)	3068					.078	18.741**
Zero (0) to 30		1226	1270.2	1041	996.8		
30 to 90		204	200	153	157		
90 or more		289	248.8	155	195.2		

*. Asymp. significant at the .05 level.
**. Asymp. significant at the .01 level.

Logistic Regression Model

As shown in Table 5, a complete binary logistic regression model was developed including all individual and contextual influences on settlement outcome (N= 3,111). The final model is as follows:

Logit (P (Settlement=1)) = -.616 + .094 (Age) - .394 (Female) + .086 (Married) + .062 (Number Of Dependents > 2) - .076 (Nature of Injury - Systemic Illness) - .040 (Nature of Injury - Other) - .342 (Head) - .485 (Neck) + .103 (Trunk) - .032 (Lower Extremities) + .574 (Body Systems) + .198 (Multiple Body Parts) - .590 (Other) - .272 (AWW > $498, but < $842) - .890 (AWW > $842) + .032 (Timeliness of Wage-Loss Payment > 30 days, but < 90 days) - .369 (Timeliness of Wage-Loss Payment > 90 days) - .066 (Metropolitan) + 2.584 (Attorney Involvement = Yes) + E

A total of four (4) variables (gender, pre-injury average weekly wage, timeliness of wage loss benefit, and attorney involvement) were identified as significant at $\alpha = .05$.

Age was not predictive of settlement outcome and had a negligible effect on an individuals decision to settle his or her workers compensation claim ($\beta = .094$, $p = .391$). According to the model, injured workers under the age of 55 at the time of injury were 1.099 times likely to settle when compared to those over the age of 55, and each group had roughly a 1 in 3 chance in settling when controlling for all other variables in the model (prob. (under 55) = .372, prob. (55 and over) = .351).

Females, as compared to males, were 1.414 (1 / Exp (β)) times less likely to settle a workers' compensation claim when controlling for all other variables within the model

Table 5: Complete Model for Binary Logistic Regression Analysis: Individual and Contextual Influences on Settlement Outcome (N=3111)

Variable	β	SE	p-value	Odds Ratio	Conf. Interval L	U
Age (compared with age 55 and older)						
Under 55	.094	.110	.391	1.099	.886	1.363
Gender (compared with male)						
Female	-.346	.100	.001**	.707	.581	.861
Marital Status (compared with single)						
Married	.086	.098	.380	1.090	.900	1.320
Dependents (Compare with less than 2 dependents)						
Two (2) or more	.062	.112	.580	1.034	.854	1.326
Body Part of Injury (Compared with upper extremity)						
Head	-.342	.315	.277	.710	.383	1.316
Neck, Including Throat	-.485	.333	.144	.615	.321	1.181
Trunk	.103	.128	.424	1.108	.861	1.425
Lower Extremities	-.032	.149	.831	.969	.724	1.296
Body Systems	.574	.626	.360	1.775	.520	6.057
Multiple Body Parts	.198	.155	.201	1.220	.900	1.653
Other or Nonclassifiable	-.590	.724	.416	.555	.134	2.293
Nature of Injury (Compared with traumatic injuries)						
Systemic Diseases or Disorders	-.076	.218	.727	.927	.605	1.420
Other Diseases or Disorders	-.040	.190	.835	.961	.662	1.395
Average Weekly Wage (Compared with group $0 to $497)						
$498 to $841	-.272	.112	.015**	.762	.612	.948
$842 and above	-.890	.120	<.001**	.411	.324	.520
Time Between DOI and Initial Wage Loss Payment (Compared with 0 to 30 days)						
30 to 90 days	.032	.145	.826	1.032	.777	1.371
90 days or more	-.369	.136	.007**	.692	.530	.902
Geographic Residence (Compared with rural)						
Metropolitan Area	-.066	.093	.474	.936	.781	1.122
Litigated (Compared with no)						
Yes	2.584	.093	<.001**	13.255	11.056	15.892

Note: DOI = Date of Injury.
* $p < .05$. ** $p < .01$
L = Lower CI; U = Upper CI at 95%

(β = -.346, $p < .001$). As depicted in Table 6, the estimated probability of females to settle is .276 or roughly one chance in four (4) when controlling for all other variables.

An individual's martial status was not statistically significant in predicting settlement in the model ($p = .380$). When controlling for all other variables, the model indicates that individuals who are married do, however, have a slightly larger probability of settlement ($\beta = .086$), than those who are single at the time of injury. Similarly, there was no statistical significance detected in the model relative to the number of dependents an individual reported at the time of their reported injury ($\beta = .062$, $p = .580$). The coefficient is positive indicating that those persons with 2 or more dependents have a larger probability of settling their claim when controlling for all other variables. The calculated probability is .365 which is slightly greater than a 1 in 3 chance of settling when all remaining variables remain constant, whereas those persons with less than 2 dependent had a .351 probability of reaching a settlement agreement within the sample timeframe of three years post-injury.

The body part of injury variable, as compared with upper extremities, contained 7 distinct injury categories, none of which yielded significant influence within the model at or below $\alpha = .05$. When controlling for all variables in the model, those workers who reported sustaining body systems injuries and illnesses ($\beta = .062$, $p = .580$) were 1.775 times more likely to settle their claim as compared to those with upper extremity injuries. Individuals reporting head, neck, lower extremity, or nonclassifiable/other injuries and

Table 6: Binominal Probability Distribution Table of Predictor Variable on Settlement

Variable		β	P (x)
	Intercept	-0.616	0.35069173
Age	Under 55	0.094	0.37238469
Gender	Female	-0.346	0.27647794
Married Status	Married	0.086	0.37051689
Dependents	2 or more	0.062	0.36493688
Body Part of Injury	Head	-0.342	0.27727881
	Neck	-0.485	0.24955257
	Trunk	0.103	0.37449052
	Lower Extremities	-0.032	0.34344037
	Body Systems	0.574	0.48950154
	Multiple Body Parts	0.198	0.39699543
	Other	-0.590	0.23040957
Nature of Injury	Systemic Diseases	-0.076	0.33358831
	Other Diseases	-0.040	0.34163873
Pre-Injury Weekly Wage	$498-$841	-0.272	0.29152273
	$842 and above	-0.890	0.18153235
Time of Wage Loss Benefit	30-90 days	0.032	0.35801271
	90 days or more	-0.369	0.27190080
Geographic Residence	Metropolitan Area	-0.066	0.33581507
Attorney Involvement	Yes	2.584	0.87739613

illnesses had a lesser probability of settlement than those who experienced trunk, body systems, and multiple body systems injuries or illness when controlling for all remaining variables. Individuals who reported injuries that could not be classified or categorized were nearly 1.694 times less likely to settle a workers' compensation claim when controlling for all other variables within the model (β = -.590, p = .555).

Regarding the nature or type of injury variable, no significant relationship was identified relative to settlement outcome. Compared with traumatic injuries and illnesses, both systemic (β = -.076) and nonclassifiable injuries/illnesses (β = -.040) yielded a lesser probability estimate indicating that individuals who report these types of injuries have a lower probability of settlement than those who reported breaks, strains, or sprains (traumatic injuries). The probability among each of category of nature of injury on settlement falls between .333 and .351 indicating an individual has a 1 in 3 chance of settlement regardless of type of injury when all variables in the model remain constant.

Pre-injury average weekly wage was found to be significantly related to the probability of settlement in the model. Compared with individuals with earnings of less than $497 per week, those earning between $498 to $841 ($\beta$ = -.272, p = .015), as well as those earning above $842 per week ($\beta$ = -.890, p < .001), indicate negative associations on settlement outcome when controlling for all other variables in the model. This would indicate that those who earn higher pre-injury wages have a lower probability of settlement than low wage earners (less than $498/week). The estimated probability of settlement of those who earned greater than $842 per week was .182, indicating that high wage earners are 2.433 times less likely to settle than those who earn $497 or less per week (Odds Ratio = .411) when controlling for all other variables within the model.

Those who earn between $498 and $841 per week were 1.312 less likely to less likely to settle than those who earn $497 or less per week (Odds Ratio = .762) when controlling for all other variables within the model.

Individuals who did not receive initial wage loss payments after their reported date of injury until 90 days or more (β = -.369, p = .007) were less likely to settle when controlling for all other variables. This was statistically significant at the .05 level. As such, it appears that the longer the duration of time between the reported date of injury and initial payment of wage-loss payment, the lower the probability of settlement. The estimated probability of settlement regarding those who did not receive wage-loss benefit until after 90 days, or more following their reported date of injury is .272, or roughly 1 chance in 4 when controlling for all other variables. This is compared to the those who did receive wage-loss benefits within 90 days (or less) following their date of injury, where settlement is estimated to occur 35% of the time (prob. = .350 to 358) or roughly 1 out of 3 times when controlling for all other variables.

Geographic residence was not significantly related to probability of settlement in the regression model (β = -.066, p =.474). The negative coefficient implies that although small, there is possibly a negative association between those who reside in metropolitan areas and settlement outcome. This would indicate that those who reside in rural areas are more likely to settle.

The attorney involvement variable (β = 2.584, p < .001) was statistically significant in predicting settlement when controlling for all other variables. This variable accounted for the most substantial amount of variance within the regression model,

whereas the odds ratio predicts that individuals with attorney representation are 13.2 times more likely to settle than those without attorney representation.

The overall fit of the logistic regression model is not statistically significant and does not fit the data well (chi square = 7.62, p = .447). The R square value of .409 indicates that approximately 41% of the variability within the model has been accounted for in predicting settlement. Nearly 60% of the variability remains unexplained. The overall percentage of successfully predicted outcome values in the model was 78.8%.

CHAPTER 5

Discussion

It has been argued that if an individual is unable to return to his or her previous job as a result of an occupational injury or illness, settlement is the primary goal in any workers compensation system. It would then be valuable to identify what variables significantly influence an individual's decision-making within this complex system. The purpose of this study was to investigate what variables may have an impact on an individual's decision to settle their workers compensation claim where a permanent or persistent disability is perceived to exist. Four (4) of the predictor variables identified by this researcher have possible factors in influencing an occupationally injured workers decision to settle his or her claim, and were identified as significantly contributing to the logistic regression model. These predictor variables were gender, average weekly pre-injury wage, timeliness of wage-loss benefit (time elapsed between date of injury and initial wage loss payment), and attorney involvement. The model was successful predictor of settlement 78% of the time although could only account for approximately 41% of the variance in claims resulting in settlement. Given the amount of unexplained variance and lack of fit of the model to the data (chi square = 7.62, p = .447) caution should be used when interpreting these results.

Given the large number of participants involved in workers' compensation systems, and the numerous organizations impacted by workers compensation costs, it was surprising to find very few empirical studies that investigated why an injured worker would choose to settle his or her claim, once a routine return to work seemed unlikley. It appears that the most common dependent variable used in workers' compensation

outcome research is return to work. While this outcome variable is commonly utilized among medical and social science researchers, return to work lacks a consensus of definition. These studies do however, allow us to compare and interpret findings, as well as better understand the limitations of such research. Given the limited amount of empirical inquiry into settlement probability, the discussion of these results are somewhat limited and further research is warranted.

Significant Predictors of Settlement in the Model

The most positive and significant predictor of claims resulting in settlement was the attorney involvement variable. As previously discussed, this variable implies that the claim, at some point, was disputed resulting in attorney involvement and litigation. The calculated odds ratio indicates that individuals who are represented by attorneys are essentially thirteen (13) times more likely to settle their workers' compensation claim when accounting for all other variables in the model. In fact, of all non-litigated claims (N= 1,741) contained within the sample, 80.5% (N= 1,402) did not settle and continued to receive workers' compensation benefits, whereas 19.5% (N= 339) had settled their claim. Conversely, of the 1,370 litigated claims within the sample, 74.1% resulted in settlement (N= 1,015) and approximately 25% (N= 355) continued to receive workers' compensation benefits up to three (3) years later. These findings are consistent with Thomason & Burton's (1993) findings where those claims that had attorneys involvement were more likely to settle.

Given that this research sample involves more problematic workers' compensation claims, or claims in which individuals were absent from the workplace for a substantial amount of time, it is not surprising that attorneys specializing in these

matters would be involved. There are attorneys who represent injured workers and specialize in advising injured parties about their legal rights and entitlements, the process of disability determination, and seek to obtain maximum awards for their clients. These claims traditionally involve individuals who are unable to return to their previous work or usual occupation a result of a disability or functional limitation. There are also a substantial portion workers who have been absent from the workplace for a significant period of time due to a reported occupational injury or illness require additional medical care.

There are also attorneys who are retained by employers who specialize in defending claims of injury brought forth by employees. These attorneys specialize in various aspects of employment law, workplace injury and liability issues, and assist in the defense of workers' compensation matters. Their overall goal is to reduce risk and exposure for employers, limit the liability of new and existing claims, and consult with employers and insurance companies on settlement strategies. This requires navigating a complex legal system specializing in disability determination and compensation, and as attorneys become involved in managing or litigating disputed claims, injured workers appear more likely settle their claim. Therefore, under these more adversarial circumstances settlement becomes a viable option for all parties, although it contingent upon a variety of factors such as, successful negotiation between the employer and employee, and ultimately a magistrates approval. Consequently, there is a great deal of speculation about what occupationally injured worker will do after they settle their claim.

Another positive predictor variable was pre-injury average weekly wage which was utilized to compare between high wage earners and low wage earners on settlement

outcome. While previous studies have shown that the level of pre-injury compensation is not significantly associated with return to work outcomes (Gallahger, 1989), it appears to have a measurable impact on the decision to settle a workers' compensation claim, especially in cases where the worker has been absent from the employment setting for a substantial amount of time. It was not surprising to find that high wage earners, or those who earned in excess of $842 per week were much less likely to settle their workers compensation claim when compared to those who make less. In fact, individuals who earned less than $497 per week were more than two (2) times likely to settle their workers compensation claim as compared to higher wage earners when controlling for all other variables.

It can be hypothesized that individuals who have higher earnings have more monetary savings which can be accessed to meet financial obligations when not working. Higher wage earners may have more capital assets that can be liquidized or sold to generate needed income when unable to generate income through employment. This would imply that the more money one makes, the more likely they would be able to sustain financial obligations and hold out for the most favorable settlement. It is also supportive of previous research that identifies an inverse relationship between settlement probability and settlement expectations (Thomason, 1989), implying that high-wage earners are likely to seek higher settlements due to the larger amount of lost wages. Additionally, previous research models aimed at predicting settlement probability have identified both pre-injury weekly wage and time away from work due to injury as positively influencing the amount of settlement (Thomason & Burton, 1993).

Interestingly, these findings are somewhat contradictory to the theory that high wage earners would have a more difficult time sustaining their lifestyle and meeting financial obligations if not working, especially in disability insurance systems where wage-loss benefits are capped in accordance with workers' compensation laws. For example, as of June 30, 2007, the maximum weekly benefit that any one person could receive was $739.00 regardless of pre-injury earnings (§ 418.355). There is also the assumption that low-wage earners are more readily capable of making economic and lifestyle adjustments based on weekly wage-loss benefits given that the difference between their pre-injury income and wage-loss benefit is much less than that of high wage earners.

The timeliness of wage-loss benefit variable compared three (3) groups of workers who experienced varying durations of time between their reported date of injury and receipt of their first wage-loss payment. The findings indicate that the longer the duration between the date of injury and initial wage loss payment, the less likely an individual is to settle his or her workers compensation claim. The variable that represents the category of workers who did not receive workers compensation benefits until 90 days or more were only half as likely to settle their workers compensation claim than those who received wage-loss benefits within 3 months. In other words, these individuals have a 1 in 4 chance of settlement when controlling for all other variables.

One explanation for this finding is that individuals who do not receive prompt wage replacement benefits following a workplace injury may tend to become disgruntled, alienated, and may feel that their integrity has been called into question. Previous studies support this finding whereas injured worker's who are unable to return to return to work

in a timely fashion, may be forced to borrow money, deplete savings, and experience economic hardship (Morse et al., 1998; Keogh et al., 2000; Pransky et al., 2000). As such, these claims may tend to become more adversarial in nature resulting in longer claim duration. This long period until payment may also represent evidence of an employer or insurance companies unwillingness to acknowledge the legitimacy of a claim. In any event, the longer the duration of time between an individual's report of injury and the date of wage-loss payment, the more likely the claim is to be disputed.

The last significant predictor identified within the regression model was gender. When accounting for all other variables, females were less likely to settle their workers compensation claim than males, and had an estimated probability of 1 in 4 in resulting in settlement when controlling for all other variables. The distribution among females versus males within sample set was approximately 2:3, which is interesting given that this is less than the female to male representation in the labor force which typically rests between 43 and 46 percent or closer to 1:1 (BLS, 2009). As indicated by these findings it appears that women are not only less likely to have these troublesome claims, they also appear more reluctant to settle them when involved.

The most significant implication regarding gender is that female presence in this sample is not proportionate to their participation in the labor force. This may imply that females are less likely to report injuries that occur at work. This finding may also be influenced by the nature of work that females traditionally perform, which is likely to be more administrative, office-oriented, or customer serviced based, rather than heavy manual labor. There is also the consideration of risk behavior, whereas males have been traditionally more likely to take physical risks than females. Given that there are two (2)

times as many males filing workers' compensation claims than females, and no empirical studies could be identified that could be specifically investigated as to why females would be less likely to settle their workers compensation claim versus males, this variable alone in predicting settlement outcome warrants further investigation.

Non-Significant Variables in the Model

The remaining variables were not found to be consistently significant within the regression modeling. For example, there was no statistical difference between those persons under the age of 55 and those 55 years of age and older and their decision to settle their workers' compensation claim. While previous studies have shown positive relationships to exist between older workers' who sustain an work injury and time away from work (Cheadle, 1994), older workers do not appear any more likely to settle their claim than younger workers given the parameters of this study. Future studies may serve to address additional categorical variables amongst age (e.g., 15-25, 26-49, 50-62, and 63 and over) to account for various changes in economic and social statuses among workforce participants.

While previous studies have shown that single or divorced workers to have longer periods of occupational disability and time away from work (Bolton, 1974; Volinn et al., 1991; Cheadle et al., 1994), this study found that one's marital status had no impact on a person's decision on a workers compensation claim when controlling for all other variables, and the odds ratio was very close to one implying that those who were married had essentially the same likelihood of settling than those who were single.

Neither body part of injury or nature of injury yielded any significant difference between those who chose to settle their claim and those who did not when accounting for

all other variables. It is important to note, however, that the vast majority of injuries to body parts consisted of upper extremity, lower extremity and trunk injures, while the overwhelming majority of injuries (more than 80%) resulted from traumatic illnesses or injuries, sprains, strains and breaks as compared to all other injury types.

Lastly, although nearly two-thirds of sample participants resided within rural communities, there was no significant difference found between those who resided in metropolitan areas and those within rural communities and their decision to settle. While previous studies have shown that injured workers who resided in rural areas were less likely to return to work (Cheadle et al., 1994), this sample of workers, as a whole, were all less likely to return to work given the nature of their claim. These findings are influenced by how a particular researcher defines rural versus metropolitan; however, if one were to assume that workers from rural areas are less apt to return to work, they may be less likely to settle their claim. Further research into the potential impact that geographic location and economic conditions may have on individual decision making in workers' compensation is also warranted given our limited understanding.

Limitations of the Study

The primary limitation of this study is that the findings are heavily reliant upon retrospective data and the researcher is unable to make cause-and-effect conclusions since the "cause" element has already occurred.

The data used to construct the sample is also heavily reliant upon self-reported information. The validity of these data is also contingent upon the accuracy in which the self-reported data was entered and maintained. The research data and presentation of

findings, assumptions, and purported implications cannot account for claims that were mistakenly deleted or falsely classified.

It is also possible that a portion of these data may be missing key demographic or injury related variables and would eliminate population members and or variables from the analysis. This should be carefully considered with generalizing about these results among different years, whereas changes in legislative practices, public policies, labor market conditions, medical technology, and the nature of work may have taken place.

While the chi-square analysis is a useful statistical technique for evaluating categorical variables, it may not fully account or control for other relevant variables that are influencing the outcome (Glass & Hopkins, 1996). This limitation is somewhat mitigated by the large sample size, however, should be carefully considered when interpreting this research. Although the model was successful predictor of settlement 78% of the time it could only account for approximately 41% of the variance in claims resulting in settlement (chi square = 7.62, p = .447) implying that additional predictor variables on settlement outcome are explained. Examples of additional variables of interest that may have an impact on predicting settlement outcome not present in this study include participation in vocational rehabilitation, settlement amount, date of settlement versus date of injury, union membership, severity of injury or illness, worker occupation, industry classification, insurer actions (e.g., benefit rate changes, medical examinations, forensic evaluations, etc.), and legal proceedings variables, such as the occurrence of mediations or trials and their potential impact on injured worker decision making.

Given many of the previously stated considerations, the statistical confidence interval chosen for the study ($\alpha = .05$) may influence the probability of a Type I error, or in other words, allowing the researcher to incorrectly reject the null-hypothesis when comparing or analyzing individual variables. This does not appear to be a substantial concern, given that all of the significant predicator variables in the model were significant at the .01 level, however there were individual independent variables that were found to be significantly correlated with settlement outcome that remained in the model. While the degree of these correlations were small overall, there appears to be some confounding effects that could not be accounted for in this study. For example, the variable gender was not found to significantly associated with the settlement outcome (chi square = .178); however, it was found to be significant predictor in the regression model. This would imply that gender's effect within the model is being influenced by another variable in the model, or a characteristic influencing settlement outcome that exists within the unexplained variance.

Unfortunately, any study conducted within workers' compensation setting lends itself to generalizability concerns since each State jurisdiction has different rules and regulations regarding disability determination and benefit provisions. Additionally, this study focuses on more problematic or complex disability claims in workers' compensation, and as such would not be appropriate to make generalizations about these findings across the vast majority of claims that resolve under normal or normally anticipated circumstances. As such, it would not be appropriate to assume this sample would be representative of any or all other injured worker populations without additional

research into the administrative rules and procedures that govern a particular jurisdiction, and the specific circumstances and nature of a particular claim.

Given the purpose of the study, a variety of continuous variables were recoded in order to address theoretical questions regarding individual decision-making. As such, there was a change in the distribution of values within each of these variables. This change will affect the measures of association that are used in methods of statistical analysis among categorical variables. The recoding procedure, while useful to produce meaningful interpretations of variables specific to a particular industry, environment, or population, can produce unpredictable effects that need to be interpreted carefully when making assumptions about the significance of any particular variable. This too could potentially influence the occurrence of a Type I or Type II error as previously discussed above.

As stated in the results section, there were a variety of statistically significant correlations identified between three (3) predictor variables and settlement outcome, which could have affected the outcome model. These multicollinearity characteristics could have an impact on significant findings as identified within the logistic regression model. Two of the variables had very weak, negative correlations and do not appear to have much association with the outcome variable. Attorney involvement, however, had a moderately positive correlation on settlement outcome and warrants caution when interpreting this variable in the model.

A significant limitation regarding the timeliness of wage-loss benefit variable worth noting. These data do not allow the researcher to account for a workers' last day of work, and as a result, it is possible that an individual may have continued to work

subsequent their date of injury. For example, it is possible that a person may have chosen to continue to work and not report an injury until many days, weeks, or months subsequent the injury event. Therefore, some cases may not accurately represent the person being away from work between the reported date of injury and when wage-loss benefits initiate.

Implications for Rehabilitation Counselor Education

Severe workplace injuries traditionally result in a medical recovery periods that require either a short-term or long-term period away from work (Tate, 1992). It is this within this undetermined period of time in which the injured worker will begin to psychosocially adapt to their occupational injury, illness or disability. While most workers substantially recover from their injuries and return to work, others experience a number of long-term consequences (Pransky et al., 2001) that may influence their decision-making and overall ability to psychosocially function.

The availability of conceptual models such as Livneh's Model of Psychosocial Adaptation to Chronic Illness and Disability (2001) or Dembe's Model of the Social Context of Occupational Injury or Illness (2001) provide useful information regarding the contextual influences and reactionary responses of those who have sustained a work disability and are receiving workers' compensation benefits. More specifically, it is the application of these models that allows educators and students to better understand the complex nature of workers' compensation and participants. The extent at which injured workers are able to successfully adjust and adapt to their occupational disability appears to be influenced by their ability to manage varying levels of stress, anxiety, and depression as experienced within the workers' compensation setting, and may

additionally be affected by the size of employer, relative labor market conditions, marital status, and duration of unemployment.

Continuing research in the area of occupational injury and return to work and settlement outcomes can assist rehabilitation counseling educators prepare counselors for entry into private sector rehabilitation, a service setting that demands specialized skills in rehabilitation consulting, disability management, and vocational evaluation. This research provides introductory support that there are significant factors affecting an individual's decision to settle his or her workers compensation claim. These findings, in combination with previous rehabilitation outcome research, provide evidence that there are measurable characteristics that influence individual decision making. Licensed and certified professionals who provide medical and vocational rehabilitation services to injured workers in workers' compensation settings are often faced with challenging circumstances. There remains a need for competent and highly trained vocational rehabilitation counselors who specialize assisting occupational injured persons return to work. There is a similar need of improving upon the education of rehabilitation counselors who perform forensic evaluations in workers' compensation, and the associated methods used to assess an individual's rehabilitation potential, employability, and wage earning capacity.

For example, studies such as this can also be incorporated into curriculum design for graduate-level education in private sector rehabilitation, and may be used in part for class discussion, presentation, or case studies regarding vocational outcomes in complex disability claims. It can additionally provide rehabilitation educators with empirical findings that can be compared among similar studies. It may also serve to supplement a

continuing body of research that may be used toward developing evidence-based practices in rehabilitation counseling in workers' compensation settings.

Implications for Future Research

This particular study served to address particular variables associated with the decision making process of an injured worker. We presently have access to a variety of economic-based studies that have investigated cost containment and settlement outcome strategies; medical research focused on duration of disability and related occupational disability outcomes; and vocational rehabilitation research aimed at investigating employment outcomes of those with disabilities. Very few studies have served to address industry-specific or related occupational interests relative to predicting the costs associated with workers compensation claims or what influences decision making in workers' compensation systems. While there has been a variety of qualitative studies that have examined the experiences of injured workers involved in workers compensation, further inquiry into the experiences and decision making process of the injured worker is needed.

While all of these studies serve to address very important issues within existing workers' compensation systems, this researcher was only able to identify two studies that empirically investigated why a worker would choose to settle his or her claim. Given that workers' compensation is an inherently adversarial process, involving both collective and competing interests among employers and employees, this question continues to warrant further investigation. Replication of similar research methodologies and samples across different State jurisdictions and timeframes would be invaluable in determining significant predictors of settlement. Results of these studies would be beneficial for

insurance carriers and self-insured employers whose goal is to provide safe work environments, yet must control costs associated with lost productivity, insurance premiums, and indemnities that result from workplace accidents.

As previously stated, it has been argued that if an individual is unable to return to his or her previous job, settlement is the primary goal in any workers compensation system. It would then be valuable to identify what variables significantly influence an individual's decision-making within this complex system. While it is impossible to account for all of the variance associated with human behavior and the decision making process, future studies would serve to validate or challenge these findings. Additional research in this area could help to develop best practices within workers' compensation that would have profound impact on vocational rehabilitation, claims management, and help to ensure fair and just treatment for injured workers. Future research across those States that have similar workers' compensation systems would also offer additional findings that would be useful in policy development and program evaluation.

Qualitative studies investigating why individuals have chosen to settle a workers' compensation claim would also contribute in the evaluation of workers' compensation systems from a post-settlement perspective, and serve to investigate what injured workers do once they exit the workers' compensation system. Qualitative follow-up studies could also be used to update historical studies regarding individual's perceptions of the workers' compensation system and help to further understand what individual's do after they settle their claim.

Used in conjunction with replicated research, these data can serve to provide the foundation for meta-analytic studies that can address positive and negative trends among

workers' compensation systems and settlement outcomes. Applied in conjunction with vocational rehabilitation outcome studies, researchers can better understand both the incentives and disincentives associated with workers' compensation and return to work, and its interaction with the likelihood of successful job placement. For example, what impact does an individual's decision to return-to-work have on settlement outcome, or if an injured worker wishes to settle their claim, what impact does this decision have on vocational rehabilitation outcome?

This research can serve to provide valuable information regarding the perceived disincentives that many social insurance and no-fault systems may have on an individual's decision to settle their claim or return to work. Further research in this area can improve our understanding of competing interests and secondary gain issues in disability determination environments. Utilized in conjunction with new and existing medical research, these studies may be used investigate how certain types of injuries impact an individual's employability and wage earning capacity, duration of disability, and rehabilitation outcomes.

While this study begins another inquiry into what factors influence injured worker's to settle their workers' compensation claim, it is also important to improve our understanding of the relationship between settlement outcome and long-term outcomes of the injured worker. Even under voluntary, court-approved settlement agreements, injured workers may remain unsure and unoptimistic about their future. This warrants future research that can compare the initial perceptions, interests, and goals of the injured worker at the time of settlement and long-term outcomes, such as quality of life, physical and mental health, and work-status many years post-settlement.

Settlement outcome in workers' compensation remains an interesting topic of discussion among many professionals, policy makers, researchers, and educators. Overall, outcome studies regarding settlement serve to improve our understanding of the occupationally injured individual, including their experiences and perceptions of the workers compensation system as a whole. Hopefully, this study will help spark renewed interests in assessing present practices in workers' compensation, and contribute toward improving the quality of life of individuals suffering from occupational illness or injury. Most importantly, further research in this area can help provide information that is useful in administering various rehabilitation services to injured workers to help improve post-injury outcomes.

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