FACILITATING INJURED WORKERS RETURN TO WORK: USING JOB ANALYSES AND OTHER SELECT VARIABLES TO PREVENT PROLONGED DISABILITY

By

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The objective of this study was to determine if the time an injured worker received temporary disability could be reduced by having the treating physician review a job analysis. Job analyses are customized job descriptions that include the precise physical and mental demands of a specific job. Following the job analysis comparison, age, attorney involvement, direct personal contact with a counselor and body part were examined to determine if those variables could predict disability time as well. A total of 101 injured workers in the construction, logging, oil and gas, structural moving and water well drilling industries were included in the study. All subjects suffered a compensable work injury and had missed at least one week of work. Fifty of the workers had a job analysis performed on their particular job and presented to their respective treating physicians. Fifty-one workers had no job analysis performed and the mean time of disability, in weeks, was compared. Workers over age 49 who had a job analysis presented to their treating physician received significantly fewer weeks of disability than those without a job analysis. A job analysis did not have a significant influence with workers under age 50 however; several limitations of this study may help explain the lack of significance. Other variables were then explored to determine their correlation with time on disability. An injured worker represented by an attorney remained on disability significantly longer than a
worker not represented by an attorney. Workers under age 50 who had direct personal contact with a rehabilitation counselor received significantly fewer weeks of disability than those without direct personal contact with a counselor. Injuries to the upper extremity (e.g. shoulder, elbow, wrist, hand or fingers) led to significantly less time on disability when compared to injuries to other body parts.
Introduction

For all living organisms, experiencing an injury is unfortunately a common experience. Living organisms are fragile and susceptible to illness, injury and inevitably death. Most injuries are not severe or then fully heal with no long term residual limitations, pain or other effects. However, some injuries lead to chronic pain, impairment and/or disability.

The distinction between injuries that heal and those that lead to a disability may be accountable to more than a factor of physical healing alone, there may also be a psychological component. Of the research in this area, one article written nearly 40 years ago provided impetus to this particular project. While examining a population of people with a work related injury, McGill (1968) noted that if an injured person remained out of work more than six months, he or she was much less likely to ever return to work. Others have found similar results (Crawford, 2004, May 18; Hashemi, Webster, Clancy, & Volinn, 1997).

In 1973 the US Congress passed The Rehabilitation Act and the modern vocational rehabilitation era was born (Rubin & Roessler, 1995). Although rehabilitation services had been provided for disabled soldiers since the 1918 Soldier’s Rehabilitation Act, the 1973 law provided substantial funding for programs to help people with disabilities return to work. In 1974 the Commission on Rehabilitation Counselor Certification (CRCC) was established to regulate and set standards for rehabilitation counselors. In their efforts to help people with disabilities return to work, rehabilitation counselors attempt to match the person with a disability to a job for which he or she possesses the experience, skills and education and can meet the physical and mental requirements of the job. One of the many tools rehabilitation counselors employ is a job analysis. Rehabilitation counselors can perform workplace assessments, or job analyses, to
document the mental and physical requirements of the job to determine if their client possesses the residual functional capacity to perform the job. Job analyses commonly follow a format developed by the Department of Labor, utilizing definitions, descriptors and categories that guide the rehabilitation counselor’s report and help ensure that both the counselor and treating specialist(s) utilize the same nomenclature. The report is commonly reviewed by the physician, employer, risk manager, insurance representative or other specialists. In the case of workers’ compensation patients (specifically those that have been restricted from returning to work by their doctor), this report is typically designed specifically for the doctor’s review. The physician, using specialized knowledge of the environmental limitations associated with the diagnosis as well as the severity of the diagnosis and resulting impairments, decides if the physical requirements of the job are within the physical capacities of the injured patient.

Although there are numerous reasons why a physician may withhold a partially injured worker from returning to work, one of the hypotheses guiding this project is that many physicians treating partially disabled workers 1) do not take the time to sufficiently learn about the physical requirements of their patient’s job, 2) are misled, either deliberately or not deliberately, by the worker’s description of the workplace environment; or 3) err on the side of caution and keep the worker, who is capable of safely returning to work, from returning to work. If temporary disability continues for a prolonged period, the chances that the worker will ever return to work diminish substantially.

**Statement of the Problem**

As of June 2007, 6.9 million Americans under age 65 were recognized by the US Federal Government Social Security Administration disability program as being totally disabled and were receiving income and healthcare benefits from SSA (United States Social Security Administration, n.d.). Sudden household accidents, motor vehicle accidents, workplace injuries,
cerebral vascular accidents and diseases commonly result in injury, impairment and disability. In all of 2004, nearly 800,000 Americans were awarded disability benefits by Social Security. According to SSA, musculoskeletal conditions are the most common body systems to be associated with total disability. Musculoskeletal injuries were also associated with the longest periods of disability for workers’ compensation patients (United States Department of Labor Bureau of Labor Statistics, n.d.).

The SSA awards disability benefits to Americans only if they cannot engage in any substantial gainful work because of a medically determinable physical or mental impairment (Social Security Administration Office of Hearings and Appeals, 1990, February). An applicant is denied disability if there is any work, anywhere that exists in the country in substantial numbers that the applicant could engage in, usually including entry level jobs, even if the job does not exist in the local economy or there is not an opening (United States Social Security Administration, n.d.). Since one requirement for the receipt of disability benefits is not earning income, individuals are unlikely to have been earning any wages for the months and years before and during the application and appeals process.

When the federal Social Security system recognizes an individual as being disabled, he or she is usually declared by an adjudicator or administrative law judge as having a total disability that prevents him or her from working in any capacity. The Administration does not have a category to cover partially disabled workers. The philosophy is that partially disabled workers can work in some capacity, that is, their disability is not total.

According to the Rehabilitation Research and Training Center on Disability Demographics and Statistics Disability Status Report (2005), over 22% of working age Americans with a disability were working full time all year in 2005. This is compared to the 56% of working age...
Americans without a disability that worked full time all year in 2005. If part time workers are examined, the figures are 38% and 78% respectively. The average annual household income of persons with a disability is $26,000 less than their non-disabled counterparts and the difference in the poverty rate is 15.3%. Nearly 25% of all Americans with a disability live in poverty.

The percentage of working age Americans reporting a disability increased from 12% in 2003 to 12.6% in 2005. However, only 15.4% of these individuals were receiving Social Security Disability. Among the 16.9 million people age 21 to 64 who described themselves as having a severe disability, 56% were not receiving disability payments (Steinntztz, 2006, May). Of this population, 35.5% were not employed in any capacity for the preceding 12 months. This represents nearly 3.37 million Americans with a disability that are unemployed but not recognized by the federal government as disabled or did not qualify for disability benefits.

The Social Security Disability Insurance (SSDI) application and appeals process takes months and occasionally years to complete. Approximately 70% of applicants are denied after their first application and 90% are denied during the appeals process (Disabilitysecrets.com, n.d.). These applicants that are denied represent the numerous Americans who have become convinced at one time after the onset of their injury or illness that they were unable to work, but according to the SSA, were capable of working.

**Rationale of the Study**

After a worker is injured, it is important to receive timely medical care and return to work as quickly as possible. In 1968, McGill reported that after six months of being on workers’ compensation disability, a worker has only a 50% chance of ever returning to gainful employment and after one year of being out of work, the possibility of ever returning to work is 25%. Other research shows that injured workers out of work for more than six months have only a 25% chance of ever returning to gainful employment (Crawford, 2004, May 18). Hashemi,
Webster, Clancy, and Volinn (1997) studied the costs and time out of work for 106,961 injured workers with low back pain and detected a pattern. Of the injured workers who were on disability at the end of \( n \) weeks, only 50% would be off disability at the end of \( 6n \) weeks. However, their study only included active workers’ compensation claims. There was no follow up to determine what happened to the injured workers after their disability ceased or why it ceased. There was no exploration to determine if the injured workers returned to work, their indemnity benefits expired or if they were approved for SSDI or Supplemental Security Income (SSI). Considering that only a small percentage of this population will ever qualify for disability income, the first few months after an injury represent a critical time to introduce return to work options for people with partial or non-catastrophic disabilities.

There may be several explanations for this phenomenon. Although clinical guidelines underscore continuing physical activities during most kinds of back pain, many patients with back pain may suffer from kinesiophobia. They are fearful that physical activity will worsen their pain or injury, causing more disability than warranted by their pain and injury alone (Linton, Vlaeyen, & Ostelo, 2002). The inactivity causes debilitation or weakening of the body and makes them more susceptible to pain. Another theory may be that because most physicians are trained only in physical medicine and many focus only on physical dysfunction to the tissues in the back, they convince their patients that recovery can only be achieved by medical provisions to the spine despite findings that much of back pain is biopsychosocial and reflects no physiological damage to the spine (Mahmud et al., 2000; Loisel et al. 2005). Another possible explanation is that patients reflect the fears of their doctors. When physicians hold misconceptions about the etiology of their patients' pain and activity level, so will their patient (Linton, Vlaeyen, & Ostelo, 2002). Other explanations involve the secondary gain from
prolonged and disabling pain (Rainville, Sobel, Hartigan, & Wright, 1997) or the adversarial nature of workers’ compensation leading to the worsening of pain perception because of psychosocial stressors. Patients and doctors may also only be reflecting the culture expressed in the media (Buchbinder, Jolley, & Wyatt, 2001).

According to the United States Department of Labor Bureau of Labor Statistics, in 2005 there were 4.2 million reported non-fatal work-related injuries and illnesses in private companies and nearly 30% of those injuries caused the injured worker to take time away from work. Although the median number of days missed was seven, 25% of the injured workers who missed work missed over 31 days (United Status Department of Labor Bureau of Labor Statistics, 2006). Thirty percent of lost time injuries were musculoskeletal in nature and nearly seventy percent of all musculoskeletal injuries were in the service producing industries, the fastest growing industry.

The cost of workers’ compensation is also an important issue. Twenty years ago indemnity payments, or payments made to the injured worker to replace lost wages, represented the majority of workers’ compensation costs (Insurance Information Institute, n.d.). Although by 2003 medical costs were slightly more than half of total workers’ compensation costs, indemnity payments still represented 45% of total costs. This reversal may be due more to the rising costs of medical treatment for work injuries and not falling indemnity costs. From 2001 to 2005 the average rate of increase in workers’ compensation medical care costs was 10%, compared with an annual average rise of 4.4% of the medical care Consumer Price Index (CPI). Workers’ compensation patients also use more medical care, when compared to non-workers’ compensation patients. According to the National Council on Compensation Insurers (NCCI), the increase in medical costs of workers’ compensation patients is more than double that of non-
workers’ compensation patients is because workers’ compensation patients receive care longer, more often and use a greater mix of services. Attorney involvement, an issue rare in personal insurance, boosts claims costs between 12% and 15%.

Definitions and Operational Terms

Impairment and Disability

Impairment and disability are two terms that frequently coexist but have distinct definitions. Impairment refers to the loss or abnormality in the psychological, physiological or anatomical structure or function (World Health Organization, n.d.). Impairments are the disturbances of the bodily systems, organs or other structures and are the specific and obvious consequences of an injury. They are the prolonged clinical conditions that either temporarily or permanently disrupt physical, mental or affective functioning (Livneh, 1987). When there is an interaction between features of the person’s impairment and those of the society in which he or she lives, disability is the result (World Health Organization, n.d.). It is a restriction of the activities expected of the average non-disabled person because of the impairment. Workers’ compensation boards commonly consider a disability as an incapacity to earn, in the same or any other employment, the wages which the employee was receiving at the time of the injury because of the injury (Florida Workers’ Compensation Institute, 2000). Impairments usually, but not always, lead to a disability.

Temporary versus Permanent

Most insurance programs distinguish temporary disabilities from permanent disabilities as well as partial from total disabilities (Florida Workers’ Compensation Law, 2000). Temporary disabilities arise from impairments and injuries that are expected to heal, leaving no permanent functional loss. They are fluid and can change as the patient undergoes medical or behavioral treatments designed to eliminate the illness, thus leaving no impairment. Permanent disabilities
are what remain and are irreversible. They result from impairments associated with injuries or illness that are not expected to heal. They usually require the injured individual to make life changes to adapt to the disability.

**Partial versus Total**

Partial disabilities commonly allow the injured worker to continue working, although with limitations to some activities. For example, a below knee amputation is only a partial disability to a telemarketer. Total disabilities however, prevent the injured from any and all types of vocations in which they might be reasonably expected to work. Because of the impairment, or a combination of impairments, the person is incapable of working at even the most sedentary position. As a counter-example, a below knee amputation for an illiterate fruit picker is usually a totally disabling condition.

**Temporary, Permanent, Partial and Total**

There are also intersections between partial, total, permanent and temporary statuses. A temporary status signifies the patient is in the process of healing, undergoing medical treatments or expected to improve from their diagnosis and impairment. A temporary disability should therefore change, hopefully improve. A temporarily and totally disabled patient is completely incapable of working, but expected to improve. For example, during hospitalization, a patient is typically not permitted by his or her physician to leave to go to the office and is therefore unable to work in any capacity. He or she is totally disabled. Once discharged, the patient may be allowed to return to work and therefore, during his or her hospitalization, was temporarily but totally disabled. As most injuries do not require hospitalization or even lost time from work, most injures incur no lost time (United States Department of Labor Bureau of Labor Statistics, n.d.). Partial disability status also considers the injured worker’s job and the physical and mental requirements. Knee surgery and a requirement to remain on crutches is likely only a partial
disability to a school teacher. Reasonable accommodations may allow the teacher to continue working. If the patient is expected to recover from the surgery, the disability is only temporary and partial. However, the same surgery and impairment for a fruit picker is likely temporary but totally disabling.

The difference between a totally disabled worker and a partially disabled worker can be better understood by considering the philosophy behind the SSA listing of impairments. When the Social Security Disability program determines if an applicant is disabled, one of the first steps is to determine if the applicant has a medical injury or illness so severe that the impairment alone, regardless of the applicant’s education, age or work history, would prevent the individual from engaging in any work that exists in substantial numbers in the economy. For example, an applicant who, through documented medical evidence, has eyesight equal to or worse than 20/200 in the best eye would meet listing 2.02 in the SSA listing of impairments (U.S. Social Security Administration, 2005). Anyone with an impairment this severe would be considered totally disabled. An individual with eyesight of 20/100, although very poor, would not be assumed to have a disability. The philosophy is that not all occupations require good eyesight. The worker could not work many jobs, but he or she may still retain the capacity to work some jobs. For example, the worker could no longer work as a jewel inspector, but may be able to work as a fruit picker.

Job Analysis

According to the United States Department of Labor Employment and Training Administration (1991) a job analysis is a systematic study of a specific job in terms of the worker’s relationship to data, people and things, the methodologies and techniques employed, the machines, tools, equipment and work aids used, the materials, products, subject matter or services which result and the worker attributes that contribute to successful job performance.
They also include worker traits such as the physical demands of the job, working conditions, general educational development level, specific vocational preparation, aptitudes, interests and temperaments (Weed & Field, 1994). Physical demands should include the exertional and non-exertional requirements. Lifting, pushing, pulling, reaching, handling, stooping, climbing and many other factors incorporate the physical components. Job analyses usually include aptitudes such as verbal, numerical and spatial requirements or temperaments such as directing others, dealing with others or making judgments and decisions.

Job analyses come in many forms, such as written reports, video analyses, pictorial analysis and others. Job analyses can be performed using electronic data (Sanchez, 2000) and the purpose of the analyses can vary. As a physician’s concern is primarily with protecting against exceeding the physical limitations imposed by the injury, job analyses performed for a physician’s review usually have a specific emphasis on the physical demands of the job. They can be used to identify the essential functions of a job and also the reasonable accommodations that would allow the individual with an impairment or disability to continue working.

**Indemnity**

If an injured worker is withheld from work by his or her treating doctor because of a work injury related impairment and subsequently loses income, he or she is usually entitled to wage replacement payments by the workers’ compensation insurance company. The company typically pays a portion of the worker’s average weekly wage until the worker is cleared to return to work by the doctor. The industry and state laws refer to these payments to the injured worker to replace lost wages as indemnity (Florida Workers’ Compensation Law, 2000). As will be discussed in greater detail in chapter three, the outcome variable will be more related to the length of time an injured worker received indemnity payment than the time spent out of work.
The Research Questions

The following questions were addressed during the study:

1. If a doctor reviews a job analysis of a position available by the employer, is the injured worker cleared by the doctor to return to work sooner than had the doctor never seen a job analysis?

2. If the injured worker has hired an attorney, is he or she more likely to remain on disability longer?

3. Is age a significant factor for time on disability?

4. Does the body part that is injured significantly influence time on disability?

5. Does the involvement of a rehabilitation counselor, working directly with the doctor, employer and patient, have an influence on this timeline?

6. Is there a combination of variables that prolong or shorten disability time?
Rising Costs

The cost of workers’ compensation injuries, and the subsequent premiums paid by employers, are analyzed regularly by various private and non-profit organizations. Most state Workers’ Compensation divisions maintain their own statistics as well concerning costs. Below are reviews of selected articles.

Hashemi, Webster, Clancy, and Volinn (1997) found that 70% of claims cost $1000 or less and, on the opposite end of the spectrum, 10% of injuries were responsible for 86% of the costs. In 1991, Frymoyer and Cats-Baril (as cited in Hashemi, Webster, Clancy, & Volinn, 1997) estimated the total economic impact of low back injuries alone was between 75 and 100 billion dollars per year.

Hashemi, Webster, and Clancy (1998) reviewed low back claims for a large insurance company that insured approximately 10% of the private US workers’ compensation market from 1988 to 1996 and tried to detect any trends in length of disability and cost. They found that on average, 74% of low back injury claims incurred less than one week of disability. Of these claims, 23.4% were zero cost, 74% were medical only (no lost time) and 2.6% incurred less than one week of disability. Over the period study, the authors noted that the frequency of these claims increased from 65% in 1988 to 75% in 1996. Claims that lasted over four months decreased from 12.7% in 1988 to 8% in 1996. Although only between 4% and 9% of claims involved more than one year of disability (depending on the year), these few claims accounted for between 65% and 85% (depending on the year) of the total costs of all low back claims. However, these claims decreased 56% over the period studied.
The authors speculated that the decrease is likely due to a combination of factors. State workers’ compensation laws have become stricter regarding length of disability, employers may be more likely to offer modified duty, managed care reduces the fees paid to medical providers and the number of high risk occupations has decreased. They also reference a study by the National Council on Compensation Insurance that shows the strength of economy may be the single biggest predictor on the number and costs of claims. As the economy expands, so does the frequency and cost of claims. However, as the economy slumps, so do the amount of claims and costs.

In 2004 over six million injured workers were receiving social security disability with each individual receiving an average of $894 per month (United States Social Security Administration, 2006, February). An additional 5.7 million people with disabilities received supplemental security income (SSI) from the federal government. There were 377,030 disabled workers living in Florida. In December 2004 alone the federal government paid six billion dollars to disabled workers.

**Pain of Unemployment**

The value and importance of work is difficult to overstate. Employment provides value and satisfaction to workers such as achievement, comfort, status, altruism, safety and autonomy (Dawis & Lofquist, 1984). Achievement typically includes ability utilization. Economic independence, security and activity provide comfort. Recognition for good or hard work, for having authority and social rank provides status. Altruism includes demonstrating and being identified with moral values and social service. Safety includes practicing company policies, supervision-human relations and supervision-technical relations. Autonomy can be satisfied by the creativity and responsibility associated with work and financial independence. Missing work
would deny these satisfactions and missing an inordinate amount of work may lead to emotional changes that may require psychotherapy.

Frese and Mohr (1987) found that even for the non-disabled population, being unemployed contributes to mental health problems. They studied 51 blue collar workers over the age of 45 and found that prolonged unemployment leads to depression, reduced hope and financial problems. However, they found that none of these factors led to unemployment. Once the worker found employment, there was a reduction in depression and financial problems. They speculated that financial problems and disappointed hope played a role in the development of depression.

Montgomery, Cook, Bartley, and Wadsworth (1999) attempted to ascertain if the link between depression and unemployment was more due to an association between those more vulnerable to mental illness would more easily become unemployed than a cause and effect link. They made adjustments for any subject with a pre-existing tendency for depression, behavior maladjustment, social class and region of residence. In this longitudinal study of 3241 British men, their data concluded that unemployment was a risk factor for depression severe enough to warrant treatment even in men with no pre-existing tendencies.

Unemployment not only contributes to depression and financial problems, but perhaps marital difficulty as well. In a longitudinal study of 815 recently unemployed job seekers, Vinokur, Price, and Caplan (1996) studied the link between unemployment, economic hardship, depression and marital or relationship satisfaction. They found that the financial strain of unemployment had a significant effect on the depressive symptoms of both partners, which also led to both partners withdrawing social support from one another. The reduced support and
increased undermining behaviors had adverse effects on both the satisfaction with the relationship and on depressive symptoms.

Rodriguez, Lasch, and Mead (1997) tried to separate the affects of financial strain from the affects of unemployment when comparing depression rates of employed to unemployed workers. The authors analyzed data collected from the National Survey of Families and Households of 1987 to 1988 and found that if the unemployed worker received unemployment compensation, their depression rates was similar to an employed worker. However, the depression risk for unemployed workers collecting welfare was identical to unemployed workers receiving no financial support. Their findings remained significant even after controlling for household income.

However, Joelson, and Wahlquist (1987) studied shipyard workers over a two year period and noted that even if the workers received unemployment compensation, they still displayed depressive reactions during their unemployment. There was also a growing attitude to be among the job losers. After termination, older workers displayed more of a sick-role behavior than younger workers. Older single men became more isolated, consumed more alcohol and showed more signs of depression.

Payne, Warr, and Hartley (1984) studied the affects of 6 to 11 months of unemployment on workers and attempted to ascertain if social class insulated white collar workers from the psychological affects. Although the blue collar workers reported more financial problems, both groups displayed similar amounts of psychological problems. The authors concluded that medium term unemployment appeared to have a homogenizing effect of poor psychological health regardless of income.
Frese (1987) found that the depressive symptoms of older blue collar German unemployed workers improved if they transitioned directly into retirement. Their depression rate became commensurate with employed workers. Frese also found that depression in unemployed workers was linked to financial problems and disappointed hope.

D'Arcy and Siddique (1985) studied the ill effects of unemployment on physical health. They analyzed data from the Canada Health Survey of 14,313 Canadians and found that the unemployed showed significantly higher levels of distress, greater short term and long term disability, reported a large number of health problems and had sought and used proportionately more health care than the employed. Unemployed workers also had higher rates of heart trouble, high blood pressure, bone and joint problems, hypertension and pain in the heart and chest. Blue collar workers were more vulnerable to the ill physical effects while white collar workers suffered more psychological distress. Low income unemployed who were also the principle earner were the most psychologically distressed.

Asvall (1987) reported that unemployment contributes to the worsening of individual health and well being and that it is the most underprivileged who are the most vulnerable to unemployment. He noted that unemployment produces stress, reinforces feelings of helplessness and removes opportunities for individual growth and development. Economic, financial and psychological development suffers the most.

**Disability and Depression**

Even if receiving disability benefits, the disabled population is vulnerable to mental and physical health issues. Americans with a disability are not only impaired by the physical conditions that they report, but many are suffering mental health problems as a byproduct of their disability. Von Korff, et al. (2005) surveyed 5692 Americans and found that 19% reported
suffering spinal pain that lasted over a year. Of these, 35% had a co-mobid mental disorder. People with chronic spinal pain were significantly more likely to consider themselves disabled.

Turner, Lloyd, and Taylor (2006) also studied the link between disability and depression and found that 37% of surveyed individuals that met the criteria for a disability also met the criteria for having a psychiatric or substance abuse disorder, compared to only 22% of the non-disabled subjects. Additionally, they also found that Hispanics with a disability were more likely to suffer a psychiatric problem than African-Americans or Caucasians. The presence of activity restrictions was also found to be linked to the presence or recurrence of a psychiatric disorder.

Wilk, West, Rae, and Regier (2006) found significantly higher rates of disability and functional impairment in individuals with an DSM IV Axis I disorder as well as alcohol abuse or other substance abuse disorder than those with an Axis I disorder alone. They also found that the rates of work disability for those with a psychiatric disorder and a substance use disorder were significantly higher than those without a comorbid substance use disorder.

A 2007 study in Louisiana surveyed patients visiting an Emergency Room for 30 days and found that of the patients who presented with a psychiatric emergency, 32.4% were receiving Social Security Insurance and over half of that population (51.3%) admitted to abusing drugs (Saran & Patterson, 2007). Additionally, they found that of those admitting to abusing drugs, 68.4% admitted to spending their SSI income on drugs. As the monthly SSI rate at the time was $585.00, this would likely place the patient in further financial peril than those not using drugs.

The costs of depression alone in the United States rose from $43.7 billion in 1990 to $83.1 billion in 2000 (Greenberg et al., 2003). This includes direct healthcare costs, mortality costs for depression related suicide and absenteeism because of depression. Beyond the healthcare and absenteeism costs of depressed workers, there is an extra, hidden cost to employers with workers
with depression. Even while actively engaged in work, Stewart, Ricci, Chee, Hahn, and Morganstein (2003) found that the lost productivity of workers with depression cost employers an extra $44 billion per year. They also found that depression is one of the most costly health related lost labor time condition because it is highly prevalent and comorbid with other conditions.

Lerner et al. (2004) studied 246 workers with depression in various occupations and 143 non-depressed workers and found that certain positions suffer more loss of productivity when the workers have depression. Workers in positions that required more communication, a high degree of contact with the public and high amounts of judgment missed more work when depressed. Nurses, social workers, benefits coordinators, attorneys, engineers, marketing managers, financial analysts, teachers, customer service managers and salespeople were examples of such positions.

Lustig and Vanden Boom (1997) compared 20 employed people with an Axis I diagnoses to 19 unemployed people with similar diagnoses within a community support program called the Program for Assertive Community Treatment (PACT). All participants completed a 45-minute quality of life interview designed to measure their subjective ratings of their own quality of life. After controlling for other variables, they found small differences in satisfaction with safety and daily activities, moderate differences in satisfaction with family, financial situation, and health and social relations and major differences in global quality of life satisfactions between the unemployed and employed groups.

Kessler, Greenberg, Mickelson, Meneades, and Wang (2001) studied lost time from work for all chronic medical conditions and found that 22.4% of workers age 25 to 54 missed at least one day of work per month because of a chronic medical condition. For those with work
impairments, the monthly average was 6.7 work loss or work cutback days in the previous month.

**Physician’s Role**

When a physician agrees to treat a patient covered by workers’ compensation insurance, a primary concern is the timeline regarding when the worker can safely resume their work duties (Young, Wasiak, Roessler, McPherson, Anema, & van Poppel, 2005; Loisel et al., 2005). Allowing the individual worker to return to work is in the interest of the worker, employer, health care provider, insurance company and society in general. Physicians are usually the only individuals involved in the injured worker’s care that officially determines the worker’s impairment.

A physician in training will spend between seven and eight years learning the medical aspects of diseases and injuries (University of Florida College of Medicine, n.d.). Physician training does not typically include vocational aspects. Consequently, a physician providing medical treatment to an injured worker likely does not understand the physical workplace environment of their patient and/or, given the workload and expectations of physicians, do not take the time to learn.

Rather than making a vocational decision, ideally the physician is supposed to, in most occasions, simply indicate in writing what physical activities the patient should avoid so as not to worsen their condition or place others at risk (Florida Division of Workers’ Compensation, 2006). Commonly referred to as work restrictions or work status, these limitations are based on medical factors only. The vocational consequence becomes the employer’s responsibility. That is, it puts the responsibly in the employer’s hands, freeing the physician from the responsibility of having to fully understand the workplace demands. The employer becomes responsible for determining if the worker can safely resume their duties. If the employee’s usual position does
not require those activities limited by the doctor, or, in the case that the employee’s normal position does require the activities limited by the physician, if alternative duties can be arranged, the worker can continue working (Florida Workers’ Compensation Law, 2000).

Unfortunately, some physicians may take it upon themselves to make the medical and vocational decision. In the event that the doctor fears returning the patient to work until they have completely recovered, he or she may simply keep the worker totally off work. If the doctor is willing to consider the workplace demands before making a medical/vocational decision, they usually must rely solely on their patient for information. That is, the physician must solicit vocational information from their patient. This interaction can be time consuming, but more importantly it requires the employee to articulate a clear and honest description of their work environment. For many vocations, this description is simple. However, there are two potential hazards to relying on patient information to make a medical/vocational determination.

First, the injured worker may not sufficiently communicate the complete details of their job. It may be due to a lack of vocabulary, pressure to quickly summarize their duties or an uncertainty of the exact forces present at the job site. The patient may provide an answer as honest as possible, but leads the doctor to an incorrect decision. Also, a poor or inarticulate description may cause the physician to become confused or frustrated and, to save time, simply keep the person out of work until the next appointment, which may not occur for months.

The second potential hazard to relying on patient information is that it places the physician in a position of susceptibility to deliberate manipulation by the patient. Considering in fiscal year 2005 in Florida alone, workers’ compensation fraud cost employers nearly nine million dollars (Florida Department of Financial Services Division of Insurance Fraud and Division of Workers’ Compensation, 2007), manipulation by injured workers is a significant concern for
employers, their employees and the customers, which inevitably pay higher prices for goods and services. Workers’ compensation insurance costs represent nearly two percent of a company’s payroll (Insurance Information Institute, n.d.).

Derebery, Giang, Saracino, and Fogarty (2002) found that approaching and educating physicians led to less lost time and less functional limitations. They also suggested a more positive attitude by the physician led to a better psychosocial impact on the injured worker. That is, their patients would be less likely to perceive their back pain as serious or disabling.

Hussey, Hoddinott, Wilson, Dowell, and Barbour (2003) found that physicians can deliberately misuse their responsibilities to determine the functional status of their patients. Some doctors either refused to assign limitations or were overly cautious. Their research found that doctors believe determining this status conflicts with the doctor-patient relationship.

Mahmud et al. (2000) surveyed 98 low back pain patients that met their criteria and found many doctors were not following guidelines for low back pain. They pointed out that spinal imaging is not recommended for the first month of low back pain however, 42% of patients were referred by their doctors for x-rays in the first month. Their caution is that positive findings, even if clinically unrelated or of poor correlation to symptoms, may be interpreted by patients as indicative of a more specific and severe condition than actually exists, leading to repeated requests for medical intervention and a delay in functional restoration program. This may lead patients to expect a “cure” or complete recovery. Guidelines recommend that opioids are generally not indicated with low back pain patients and if prescribed should be done so for only a short duration. In their study, they found that 38% of doctors prescribed at least two courses of narcotic pain medicine. The researchers found a significant relationship between opioid use beyond seven days and prolonged disability. Patients who had multiple doctors involved in their
care, had more than five physician visits or received a referral to a specialist remained on long
term disability significantly longer.

Bishop and Wing (2003) found similar results of doctors in British Columbia. They
observed 139 family physicians’ treatment of workers’ compensation patients with
uncomplicated back pain. Clinical guidelines for the diagnosis and treatment of uncomplicated
back pain was distributed to the physicians in advance. They noted the guidelines were
developed by the US National Institutes of Health Agency on Health Care Policy and Research,
the Industrial Medicine Council of California and the Quebec Task Force on Spinal Disorders
and recommended only a short course of narcotic medicine, limited diagnostic studies in the first
weeks of an injury, quick resumption of physical activities, including work, and to encourage
patient education and exercise. They found that while most adhered to guidelines concerning
history, examination procedures and diagnostic testing, treatment guidelines were typically
ignored. A significant number of physicians recommended bed rest, passive physical therapies
or an early referral to a specialist and only 22% of the physicians followed the guidelines
regarding allowing the individual to return to work.

McGurik, King, Govind, Lowry, and Bogduk (2001) asked physicians in 13 clinics in
Australia to follow evidence based guidelines for treatment of low back pain. The guidelines
emphasized patient education and reassurance, empowering the patient to resume or restore
normal activities of daily living though simple exercises and graded activity. The doctors
included pain medicine and manual therapy only as necessary. Only treatment of non-workers’
compensation patients were monitored for compliance and care was administered only to acute
back pain patients for a maximum of three months. The control group was four general practice
units, or geographical regions, in Australia. The researches found that while the treatment
groups’ physicians examined the patients longer and more frequently, the control group used more physical therapy (as opposed to home rehabilitation), bed rest, hot packs, medical imaging and opioids. The treatment group had significantly greater reductions in pain, fewer patients requiring continuing care after 12 months and higher ratings of their treatment. Remarkably, the cost per patient in the treatment group was nearly half that of the control group; primarily because of over prescribing imaging and physical therapies.

All patients in the control group had returned to work after three months and all but two in the treatment group returned to work. Although more patients in the treatment group missed work (144 versus 29 patients), the median duration of lost time for the treatment group was three days compared to five for the control group.

Linton, Vlaeyen, and Ostelo (2002) surveyed the beliefs of doctors and physical therapists to determine if the providers possessed certain fear-avoidance beliefs. They found that 31% of primary care doctors treating non-specific back pain believe pain relief is necessary for a return to work and 17% worry if a patient reports pain during an exercise. Forty three percent of doctors reported that they did not provide clear information about activities. The authors point out that these beliefs are contrary to recent recommendations for the treatment of back pain. More than 25% believe sick leave is a good treatment despite most clinical guidelines’ recommendation that sick leave is not a treatment. Encouraging patients to continue activities, even if there is some pain, is underscored by guidelines for treating non-specific back pain. Fortunately, most doctors believed that psychological factors might influence back pain.

Despite the prevalence of clinical guidelines for low back pain as well as the evidence for the influence psychosocial factors have on pain and disability, some doctors may inadvertently contribute to prolonged disability. Benbadis, Herrera, and Orazi (2002) studied 97 patients
referred to a neurology clinic and found that although nearly two thirds of the patients had a non-neurologic condition, a condition with no treatable underlying cause, the doctor still believed the bio-medical path alone was the best course of action. The doctors, despite the best clinical guidelines, recommended the patients be treated symptomatically with medications, rest, and physical therapy. Interestingly, they made the same treatment recommendations for two-thirds of the patients with a neurological finding. They suggested referral to chronic pain management, physiatry, rheumatology or a comprehensive pain management program. The authors made no mention of any non-medical causes of pain or the relevance of why no objective clinical abnormalities were found in most of the patients. Although the study followed only one neurologist, the researchers concluded that treatment of most back pain is best handled by family physicians and not neurologists.

In a more subjective analysis, Di Iorio, Henley, and Doughty (2000) mailed surveys to general practitioners in Illinois and, of the 87 returns, noted that the doctors’ treatments differed significantly from the clinical guidelines recommended by the US Agency for Healthcare Research and Quality. Similar to the previous studies, the physicians overutilized medications and imaging and underutilized patient education. The doctors also did not recognize red flags representing serious underlying abnormality (i.e.: fracture, infection, tumor, etc.) 50% of the time.

Elders, van der Beek, and Burdorf (2000) reviewed 12 articles concerning medical interventions for low back pain after the first 30 days, or commonly referred to as the sub acute phase, and found support for low back clinical guidelines after the acute phase. The most successful studies were of interventions introduced only after 60 days post-injury or during the sub-acute phase of back pain. They used a common temporal definition of back pain: acute
lasting less than 30 days, sub-acute lasting more than 30 days but less than two weeks and
chronic back pain as pain lasting over 12 weeks. In seven of the eight studies that included
exercises, training in working methods, lifting techniques, education and functional conditioning,
return to work was significantly better in the treatment group. The interventions were referred to
commonly by the respective articles as “back school” and reduced lost time from work between
22-42%. The researches concluded that these types of active interventions were most helpful
during the sub-acute phase of back treatment. Interestingly patients that received case
management were excluded.

Loisel et al. (2005) also pointed out numerous reasons why physicians do not always
follow best practice guidelines. Many doctors may lack the knowledge based on the time
required or accessibility of the information. Others may not agree with the guidelines due to
differences in evidence interpretation, their beliefs that recommendations are not applicable to
their patients or are not cost beneficial. Doctors also face the inertia of their established practice
patters that are difficult to change.

**Risk Factors for Prolonged Disability**

Althoff and Andress (1996) reviewed a collaborative project of the Gallup Organization,
Fortis Benefits Insurance Company and the Menninger Clinic that studied differences in people
who returned to work quickly after an injury from those that did not. Quick returners
demonstrated resiliency (ie: refused to feel victimized by their condition), conscientious (ie: read
books or articles about their condition), willpower (ie: positive attitude) and proactiveness (ie:
focused on the future). Younger workers were more likely to quickly return to work as were
women and those who have never been married. Individuals were more likely to return to work
after an accident than an illness. They also found that 60% of those with a disability that did not
occur at work eventually returned to work, compared to 46% of those whose disability originated from a workplace accident.

Atlas, et al. (2006) conducted a 10 year study of 394 patients in Maine with a lumbar herniation and resulting sciatica and compared the difference among patients covered by workers’ compensation (39%) versus those not receiving workers’ compensation (79%). They found that 81% of the non-workers’ compensation injured were employed the previous month compared to 32% of the workers’ compensation injured. The workers’ compensation group was also more likely to have an attorney (38% vs 3%), less likely to be treated surgically (41% vs 63%) and, although their physical examination findings were similar, were less likely to have a moderate or severe finding on advanced imaging (62% vs. 82%). They also reported longer duration of symptoms and were more likely to report back pain, as compared to leg pain. Also, back specific and generic functional status were worse among the workers’ compensation group. At the five and ten year follow up, the workers’ compensation patients were also more likely to be receiving Social Security Disability (13% vs 3%). They were also less likely to report their pain had improved (53% vs 72%), were less satisfied with their current state of symptoms (44% vs 73%) and were less satisfied with their initial treatment decision (69% vs 88%). Although the workers’ compensation group was more likely to be on Social Security Disability at the five and ten year follow-up, the two groups’ work statuses was similar. They were also more likely to report poor quality of life. After controlling for the variables, younger age, physician expectation for surgical benefit and better SF-36 physical function were significant independent predictors of workers’ compensation patients returning to work.

Barsky and Borris (1999) reviewed functional somatic syndromes, syndromes that are characterized more by symptoms, suffering and disability than by consistently demonstrable
tissue abnormality, and discussed the psychological components when one assumes a “sick role”. As the patients are convinced that their condition’s etiology is physical and not psychological as well as their simultaneous distrust of medical personnel, the article suggests clinicians use six steps to treat the condition. In order, they recommended doctors: rule out the presence of a diagnosable medical disease, search for psychiatric disorders, build a collaborative alliance with the patient, make restoration of function the goal of treatment, provide limited reassurance and finally prescribe cognitive behavioral therapy for those who do not respond to the first five steps.

Okurowski, Pransky, Webster, Shaw, and Verma (2003) identified four risk factors that were associated with prolonged disability for workers’ compensation patients. They started out with 23 factors that they identified during their literature review (age, appropriateness of treatment, assessment period, attorney involvement, average weekly wage, co-morbidity, compliance with treatment, current medications, education level, functional capacity level, gender, intensity or duration of treatment, job demand level, language barriers, marital status, modified duty available, months on job, presentation of symptoms, prior injuries or prolonged work absences, return-to work motivators, severity of work related injury, timeliness of referral and workplace issues) that they believed could predict prolonged disability. After interviewing 986 injured workers early in their treatment, they found that older age, language barriers, early referral to case manager and neutral or negative attorney attitude towards return to work were associated with prolonged disability. The authors speculated that the early referral to a case manager finding resulted from the referring agency quickly referring severe or complicated injuries. The authors also were surprised that the other factors were not predictors of prolonged disability as they discussed that most had empirical support.
Katz et al. (2005) found that workers’ compensation patients, especially those with an attorney, were more likely to be out of work six and twelve months after undergoing carpal tunnel surgery. However, they found that self-efficacy was a better predictor of work absence at six and twelve months after surgery than symptom improvement. Interestingly, endoscopic release and nerve conduction velocities were not significantly associated with work absence at six and twelve months. The authors suggested types of educational programs to improve self-efficacy.

Carmona, Faucett, Blanc, and Yelin (1998) also compared workers’ compensation versus non-workers’ compensation patients that underwent carpal tunnel syndrome surgery and found that, after controlling for other variables, workers’ compensation patients were 35-85% less likely to return to work earlier than those patients not injured at work. The presence of workers’ compensation was as well as a predictor of delayed returns to work as the presences of bending and twisting of the hand prior to injury. They found the median time away from work was five weeks and 39% were out of work more than five weeks. These factors were a better predictor than clinical factors (co-morbiditiy, previous CTS). This last finding was exceptionally interesting considering 82% of patients reported symptoms after surgery.

Nathan, Meadows, and Keniston (1993) compared the median time off work for workers’ compensation and non-workers compensation patients that underwent carpal tunnel surgery. They found the median time off work for worker’s compensation patients was 21 days compared to 10 days for private/Medicare/welfare patients. The authors speculated the type of coverage was the primary prediction factor.

Rainville, Sobel, Hartigan, and Wright (1997) also compared the duration of symptoms as well as disability from work of low back pain patients on workers’ compensation to low back
pain patients not on workers’ compensation. In the final analysis, 47 workers’ compensation patients and 38 non-workers’ compensation patients were included. The study also incorporated patients who were between three and six months post surgery (discectomy versus fusion). In their study the workers’ compensation group reported higher pain levels and other subjective symptoms, were more depressed and reported more disability. Although both groups scored similarly in physical function post-treatment, the compensation group had less reduction in disability scores. This led the authors to speculate that compensation patients were less receptive to interpreting improved physical capacities as enabling improved daily functioning. They conclude that disability may be strongly reinforced by involvement in the compensation system itself.

However, Hadler, Carey, and Garrett (1995) found less of a discrepancy of prolonged disability between workers’ compensation and non-workers’ compensation patients although, they found other important differences. They interviewed via telephone 505 workers’ compensation patients with acute back pain at 2, 4, 8, 12 and 24 weeks post initial treatment and compared their findings to the 861 non-workers’ compensation patients with similar symptoms in a similar time frame in North Carolina. They found that the workers’ compensation group was more likely to categorize their job as physically demanding and had been out of work longer in the month before the baseline interview. They also found that while after the baseline interview both groups recovered similarly regarding physical functioning or ability to return to work, the non-workers’ compensation group reported a sense of wellness similar to their pre-injury state long before the workers’ compensation group.

In a Meta analysis of 129 studies, Harris, Mulford, Solomon, van Gelder and Young (2005) found that regardless of type of medical intervention, type of compensation, country of
origin, date of publication or methodological aspects, there was a strong association between compensation status and poor outcome after surgery. Although the studies were not unanimous, 123 of the studies showed a positive association between workers’ compensation status and poor outcome. Five studies showed a negative association but none of the studies reached statistical significance. The authors speculated that the effect of workers’ compensation on outcome may be related to the injury and the compensation process as well as secondary and tertiary gain.

Kwan, Ferrari, and Friel (2001) compare primary, secondary and tertiary gain for people with illnesses or disabilities and their caregivers. They argue that the influence of tertiary gain is very influential and not researched enough as compared to secondary gain. They discuss primary gain, a concept very similar to the processes behind conversion disorder, as a minor influence. Secondary gain, which is accomplished by assuming the “sick role”, gives the person with a disability special rights and privileges, such as being relieved of work, social obligations or other civic duties, in the society. These rewards are always present in one’s environment. Both primary and secondary gains are rewards for the individual with the disability however, tertiary gains are rewards for a third party, usually the caregiver. The personal caregiver (ie: spouse or family member) receives special status in the community as caring for the ill, an elevation in the personal relationship with the sick individual, who is now a dependant, and sometimes financial benefits. There are also professional caregivers and each can receive tertiary gains as well. A medical provider, personal injury lawyer, religious worker, counselor or friend may also receive increased social status for caring for the ill, fulfill a desire to punish “big corporations” for perceived wrongdoings or receive financial rewards. The authors contrast secondary and tertiary gains with secondary and tertiary losses. While some personal caregivers seek the gains without sacrificing the losses, for the most part, personal caregivers receive losses
disproportionately. Professional caregivers usually receive tertiary gains with no or minor losses. A personal caregiver seeking tertiary gain may combine with a disabled individual seeking secondary gain and form a symbiotic relationship that reinforces and enables each other’s behavior. This creates a significant set of rewards and punishments that inhibit the patient’s motivation to recover from the illness. The injured or sick individual may also experience guilt if they recover and thus steal the caregiver’s tertiary gain, especially if the gain is an unconscious personal psychological fulfillment to care for someone ill.

Another variable is job satisfaction. Rugulies and Krause (2005) studied 1221 San Francisco public transit operators for over seven years and found that the lower the job satisfaction, the higher the incidence of neck pain. They also found a connection to low back pain but the impact was smaller. Job satisfaction variables were “job strain” (a mismatch of high psychological demands and low decision latitude) and “iso-strain” (job strain plus exposure to low social support at work).

Shaw, Linton, and Ptansky (2001) explored prevention strategies that would reduce the likelihood that acute low back pain will develop into a chronic and disabling condition. They attempted to develop a rubric that would identify the specific risk factors of an injured worker that would lead to prolonged disability and match the worker with a proven strategy to address and hopefully neutralize those factors. They reviewed nine studies of risk factors and nine articles of interventions. Risk factors included fear avoidance, pain catastrophizing, poor expectations for resuming activity, poor employer response, no modified duty, mood symptoms, work stress and fear and worries. There were three intervention categories: personal interventions, technical and ergonomic and organizational and administrative. They found that the majority of the empirically supported interventions focused on psychological and
psychosocial areas, such as cognitive behavioral therapies, scheduled activity exposure, provider reassurance, early employer/worker discussions and relaxation training. This would suggest a major role of psychological factors in lost time, prolonged disability and the disability mindset.

Lehane and Stubbs (2001) studied slip and trip accidents and found supervisors and the injured worker attributed blame of the accident differently. Supervisors were more likely to blame internal factors of the injured worker (i.e.: laziness, carelessness). The authors suggest this mindset by managers made investigating accidents, identifying workplace factors and taking corrective actions more difficult. The attitudinal dissonance also led to employee dissatisfaction. Loisel, et al. (2005) also pointed out that even when supervisors were supportive, most do not have the required skills for proactive and supportive communication. They pointed out that this communication results in reduced disability duration.

Although once assumed socioeconomic status was a predictor of workplace lost time injuries, Gillen, et al. (2007) found that education and income was less of a predictor than the occupation’s physical demand level and the work related psychosocial factors. They studied hospital workers and arranged occupations in to six categories; administrator and professional, nursing, other clinical (mental health, nursing related and rehabilitation), clerical, technical, and support. They found that the other clinical, technical, and clerical positions were at a significantly higher risk for prolonged disability. Psychosocial factors were measured by a number of measures, but the effort-reward imbalance model (ERI) was the only that was significantly associated with lost time injury. The greater the divergence of high effort (ie: time pressure) and low rewards (compensation, respect, advancement prospects and job security) the longer the employee spent off work.
Sullivan, Feuerstein, Gatchel, Linton, and Pransky (2005) reviewed the literature and identified two types of risk factors for prolonged disability following a work injury. Type one risk factors were individual factors such as initial levels of reported pain, perceived functional disability, pain related fears, beliefs about the severity of their health condition, pain catastrophizing, poor problem solving abilities, low expectancies about the probability of returning to work, lack of confidence in the ability to perform work related activities and depressive symptoms. Type two factors were environmental or otherwise outside of the worker. Job stress, coworker support, lack of social support at work, work dissatisfaction, employer attitudes towards work disability, lack of coworker support for modified duty, lack of modified work and lack of autonomy in the workplace were all found, in different studies, to be significant type two predictors of prolonged disability. The authors also reviewed research of interventions designed to address and improve the individual psychological risk factors for prolonged disability and specifically recommend cognitive behavioral approaches are implemented. They also reviewed interventions with empirical support targeting type two environmental risk factors.

Pincus, Burton, Vogel, and Field (2002) reviewed 25 studies concerning predicting prolonged disability and concluded that six studies met important validity criteria. The consensus was that distress, depressive mood and to a lesser extent somatization were predictors of prolonged disability. Their study, unlike Sullivan et al. (2005), did not detect as a strong role for catastrophizing.

Loisel, et al. (2005) also performed a literature review on a similar topic. They found that because patients adhere to the biomedical model diffused in the media and have expectations that the doctor find a physical abnormality, doctors are more likely to agree to request repeated testing, inappropriately restrict activity and prescribe more passive medical interventions.
Doctors that do not follow best practice guidelines are more likely to keep their patient in a state of disability and less likely to consider any biopsychosocial options.

Because secondary gain and symptom exaggeration is an important issue for treatment patients on workers’ compensation, Fishbain, Cutler, Rosomoff, and Rosomoff (1999) reviewed the literature on chronic pain symptom exaggeration and argued that most research that found cases of symptom exaggeration, malingering or submaximal effort was flawed. The authors argued that most measurements of exaggeration, including clinical exams, isometric testing, questionnaires (ie: MMPI), facial expression testing, hand grip strength testing or sensory testing, were unreliable. They did find that isokinetic strength testing appeared to have potential for discriminating maximal and submaximal effort. However, the authors invested heavily in criticism of or arguing that flaws were present in any article they reviewed that concluded some chronic pain patients exaggerated their symptoms. For many of the articles that they did not criticize as being poorly designed or concluded, they accused the authors of not considering conversion disorders or, in one case, just rationalized “those who lie or dissimulate may not necessarily mangle” (Discussion: Does dissimulation occur in the chronic pain setting, ¶ 2).

Interestingly, the authors discussed the Simmonds, Barlow, and Kreth study (as cited in Fishbain, Cutler, Rosomoff, and Rosomoff, 1999) that found that 35% of physical therapists thought that 75% of their pain patients involved in litigation were insincere regarding the severity of their symptoms. The authors also discussed a Miller study (as cited in Fishbain, Cutler, Rosomoff, and Rosomoff, 1999) that found only two of fifty patients, whom doctors initially suspected of having “accident neurosis”, remained disabled after they received a settlement from the insurance company.
Interventions to Prevent Prolonged Disability

Although some state governments’ answer to rising healthcare costs is decreasing the payment to physicians (Tuckey 2005), Smith (2006) reviews a study of the Eastern Washington Center of Occupational Health and Education that showed significant success in reducing claims costs by using a four step method that actually increased the reimbursement of the physician. The most significant step was to ensure that if the employee’s injury was severe enough to prevent them from returning to full duty, the COHE physicians contact the employer regarding the limitations and determine if modified duty is available. This conversation should occur with the patient in the room so there is no confusion about what is said. The physicians also provided a written activity description form. In the one year study of 7126 injured workers, the researchers found the process decreased workers’ compensation costs $3.1 million.

But because of time and confidentiality concerns, physicians may be hesitant to discuss return to work options with employers (Merill, Pransky, Hathaway, & Scott, 1990). One option for the hesitant physician may be for them to become more active in learning about the work demands from the patient alone. However, Dasinger, Krause, Thompson, Brand, and Rudolph (2001) found that even if the doctors proactively discussed return to work options with the injured worker, but not communicate with employers, the patients were no less likely to return to work sooner.

Partee (2005) pointed out the workers’ compensation paradox. Although work related injuries have decreased 45% in the last 15 years, total costs have increased. He suggests a closer working relationship between doctors and the employers.

Atcheson et al. (2001) found that when the general practitioners were paid more (between 35% and 69%), total claims costs were 63% lower. Medical costs were decreased 45%, indemnity costs were 85% less and claims were closed nearly six months faster. However, the
treatment group GPs received consultation from an orthopaedic surgeon and a rheumatologist. Although the researchers pointed out this difference, more weight was given to the financial reward of the GPs the impact the consultants.

Educating the injured person in the absence of other interventions has been studied as well. Hazard, Reid, Haugh, and McFarlane (2000) studied 489 injured workers with low back pain in Vermont. They mailed psychosocial educational pamphlets to 244 of the sample and studied amount of lost time, time until first return to work, pain severity and health care utilization at three and six months post injury. Although the subjects who received the pamphlets regarded the information as useful, there was unfortunately no statistically significant difference on any of the dependent variables. This finding was also consistent with Shaw, Linton and Ptransky (2001). They found that physiological knowledge of back injury and understanding of pain mechanisms had no affect on the duration of time off work. In both cases, the treating doctor played no role in the discussion.

Franche, Baril, Shaw, Nicholas, and Loisel (2005) reviewed 4124 peer reviewed studies of return to work interventions and found strong evidence that work accommodation offers and early contact between the employer and treating physician reduced the duration of disability in workers’ compensation patients. They found moderate evidence that ergonomic work site visits and the presence of a return to work coordinator also reduced lost time. There was weaker evidence that quality of life was affected.

Loisel et al. (2005) reviewed the literature and found evidence for best practice guidelines for all parties. Doctors who provide reassurance to patients to alleviate their fears of reinjury or catastrophe have patients that spend less time on disability. Although they point out that doctors need more training in this area, in 1986 Deyo and Diehl (as cited in Loisel et al., 2005) reported
that patients’ satisfaction was more closely related to their perception that they received an adequate explanation from their doctor of their pain.

Frank et al. (1998) also reviewed studies and found similar findings. The researches studied research on disability prevention in the literature for the preceding 4 years and found that offering modified duty to the worker within the first four weeks of a back injury reduced lost time by 50%. From 4 to 12 weeks of intensive case management, an exercise program and ergonomic work adjustments reduced lost time between 35 and 50%. Sympathetic communication and a non-adversarial handling of the claims were also noted to have a positive effect.

However, having the employer offer modified work is not always possible. van Duijn, Miedema, Elders, and Burdorff (2004) surveyed 44 company human resource managers and 13 of their occupational health physicians and found significant barriers to offering modified duty. The physicians responded that the employee’s negative attitude towards modified work (54%), insufficient knowledge of the modified duty (77%) or their own concerns the worker would become reinjured (46%) were barriers towards returning to injured worker to modified or light duty. The human resource managers had similar beliefs. The worker’s negative attitude towards modified work (52%) or their own inflexibility to change the worker tasks (45%), lack of support of coworkers (40%), concerns of reinjury (21%) and inconvenience of modifying the duties (27%) were all considered as barriers to performing modified duty. However, van Duijn did not discuss how often the human resource manager and their occupational health physicians communicate.

Rossler and Summer (1997) surveyed employer attitudes regarding offering accommodations to workers with injuries. Each questionnaire had eleven separate
accommodations and the employer would check the items they thought were reasonable. The majority of employers agreed physical modification to the facility, assistive equipment, flextime, job sharing, temporary reassignments during sick leave and special parking were reasonable accommodations. However, work at home, afternoon rest, transportation to work and personal attendants were viewed as unreasonable. Although 62% of employers would be willing to pay between $500 and $5000 dollars for accommodations, they cited cost as the major reason for their selections. However, the researchers had only a 21% response rate after mailing out 400 questionnaires. This response may rate may call in to question their findings, especially since 91% of the employers reported that they had worked with a person with a disability, 78% of the businesses reported that they had hired someone with a disability in the past three years and 69% of the employers had addressed an employee’s request for a review of his or her needs for a reasonable accommodation.

Krause, Dasinger, and Neuhauser (1998) reviewed the history and effectiveness of modified work for injured workers and found that despite some employers’ uneasiness with offering temporary light duty, it is cost effective for the employer. The noted that modified return to work programs help temporarily and permanently disabled workers return to work sooner. Injured workers who are offered modified duties return to work nearly twice as often as those who are not. Modified return to work programs also cut the number of lost work days in half.

Loisel et al. (2001) studied the success of participatory ergonomics in implementing return to work in modified duty programs for employers with injured workers on disability in Quebec. Thirty seven workers with uncomplicated back pain on disability more than four weeks met with an ergonomist and the employer to develop an agreed upon job analysis of the usual position.
The ergonomist then recommended modifications to the duties to eliminate any activities that were perceived to pose risk to worsen the injured workers back pain. Employers rejected 40% of the recommended changes due more to interrupting company work methods than cost. Unfortunately the authors did not comment on the return to work rate.

Schultz, Crook, Berkowitz, Milner, and Meloche (2005) attempted to predict long term disability of injured workers during the first four to six weeks after a low back injury. They mailed numerous surveys to injured workers and noted that the Expectations of Recovery Scale, SF-36 Vitality, SF-36 Mental Health and Waddell Symptoms scales had good predictive value for which workers would return to work. The surveys were of less value for prediction of prolonged disability. The researchers reported that all of their predictors were cognitive-behavioral. “Variables related to mental health and Waddell symptoms replaced pain-behavior and physical examination variables…The contribution of mental health variables is consistent with studies demonstrating that psychological distress is predictive of disability” (p. 373-374).

Sullivan et al. (2005) attempted to reduce psychological risk factors by offering a 10 week workshop for injured workers who were out of work for an average of seven months. The 215 workers that agreed to participate in the British Columbia based program were selected if 1) they were off work for more than four weeks, 2) pain symptoms were determined to be a primary limiting factor to return to work (ie: persistent pain with no objective physical findings) and 3) there was evidence of one or more risk factors. The workshop addressed mental health factors such as catastrophizing, fear of movement/reinjury, depression and perceived disability and found that 63.7% of participants returned to work within four weeks of completing the program. They also found that a reduction in pain catastrophizing was a significant predictor of who returned to work. Elevated pre-treatment scores on fear of movement and reinjury and pain
severity scales were associated with a lower probability of return to work. The authors conclude that pain reduction will not necessarily achieve quicker return to work and rehabilitation interventions should include psychological risk factors. However, one criticism may be that all participants were simultaneously provided physical therapy and there was no control group.

However, this weakness was addressed by another study that same year. Linton, Boersma, Jansson, Svärd, and Botvalde (2005) also studied the effects of including a cognitive-behavioral intervention in the medical treatment of Swedes with low back pain that missed work. A total of 185 patients were followed for over a year. Although the treatment lasted only three months, the researchers found significant differences in health-care utilization and work absenteeism. The weekly two hour cognitive behavioral group sessions lasted six weeks. The control group had more than a five times greater chance for developing long term disability. Interestingly, there was no difference between the cognitive-behavioral group and cognitive-behavioral and physical therapy group with regards to developing long term disability leave.

Linton and Andersson (2000) performed a randomized study that included a treatment group that received six sessions of cognitive-behavioral treatments and two control groups that received information packages only. The Swedish study included 231 volunteers with spine pain and the researches found that the treatment group was nine times less likely to have their spinal pain develop into prolonged disability. The treatment group utilized less physician as well as physical therapy visits post pre-test while the control groups used more of both. The difference was found to be statistically significant. While all three groups improved on the variables of pain, fear avoidance and cognitions, the treatment group showed a significant decrease in perceived risk.
Von Korff et. al (1998) provided a four session educational program, led by para-professionals in back pain, for patients with low back pain. Their study also included a control group and they found that participants in the treatment group reported significantly less worry about back pain and expressed more confidence in self care. The difference was sustained at 12 months. However, Loisel et al. (2005) reported that insurers may be reluctant to cover to support psychologically based interventions as it may imply an extension of liability for any new diagnoses. Also, because patients traditionally adhere to the biomedical model diffused in the media, understanding and having faith in the biopsychosocial model is difficult.

Joiner and Sawyer (1992) discussed specific cognitive counseling strategies for working with individuals coping with an injury. They focused on changing dysfunctional beliefs by identifying thoughts that lead to absolutistic thinking, awfulizing, and overgeneralizing. Another strategy was to emphasize developing behaviors related to more functional thoughts. Clients learn their interpersonal behaviors are either passive, assertive, or aggressive. The authors speculated that the strategies, aimed at helping people with injuries adjust to permanent limitations, are more successful in the later stages of coping.

O’Brien (1997) discussed the development of work adjustment services in the public and private sector and presented a case study of one individual’s transition from injury to return to work. He discussed that work adjustment could be used to help the injured worker avoid development of a disability-dependant role and possibly prevent re-injury. The individual in his case study was participating in a comprehensive functional restoration, work hardening and pain management center. O’Brien noted the injured worker feared a permanent negative stigma because he had been on workers’ compensation and used complaining about himself and his supervisors for his own protection. The worker received not only the physical reconditioning but
counseling to deal with his insecurities, fears, and anxiety. Vocational Rehabilitation staff performed job analyses on different positions and the injured worker eventually returned to work as a box taper.

Buchbinder, Jolley, and Wyatt (2001) used a multimedia campaign to encourage Australians with back pain to stay active and exercise, not to rest for prolonged periods and to remain at work. The goal was to reduce fear-avoidance beliefs. They used a three month campaign of television commercials, featuring medical experts, Australian sports stars and television personalities as well as radio and print advertisements, outdoor billboards, posters, seminars, workplace visits and publicity articles. The treatment group was the state of Victoria and the control was the state of New South Wales. Surveys were completed by 4730 individuals and 2556 general practitioners and they found statistically significant improvements regarding back pain beliefs and decreases in fear-avoidance beliefs about physical activity among back pain sufferers in the treatment group. They also found in the treatment group the general practitioners beliefs about back pain management was significantly higher than the control group.

Mitchell, Alliger, and Morfopoulos (1997) showed that reasonable accommodations do not have to be expensive for the employer. Items such a phone amplifiers or different computer software and task adjustments such as allowing switching marginal tasks with other workers, short breaks or flexible work hours can allow the worker to perform the essential functions of the job at a minimal cost.
CHAPTER 3
METHODS

In the summer of 2003, a major workers’ compensation insurance company that insures primarily workers in the construction, logging, oil and gas, structural moving and water well drilling industries in 37 states issued a memorandum to the rehabilitation counseling companies that routinely provide services to their injured workers. The providers were instructed to complete a job analysis for any worker that was removed off work by his or her doctor longer than four weeks and present the analysis to the doctor to comment on the worker’s anticipated return to work. This was a policy shift enacted by the carrier and issued to their respective rehabilitation providers in an attempt to reduce the time injured workers received disability. The theory behind the change was that by having a physician review job analysis, it would ensure he or she consider the injured worker’s work environment, with objective information, and ability to return to work. Additionally, the information would help the carrier better estimate future costs and set reserve funds, monies set aside from the company’s main treasury to spend specifically on the care of the specific injured worker, once they knew how much longer the worker would receive indemnity payments.

Hypotheses

Of the literature reviewed concerning factors that facilitate an injured worker’s prompt release by a doctor to return to work, none measured the effect of presenting a job description to the treating physician. The primary theory behind this project was that a job analysis presented to a treating physician would decrease the amount of time an injured worker received indemnity benefits. This was the alternative hypothesis. Therefore, the null hypothesis is that the job analysis would have no influence on how long an injured worker received indemnity benefits:
Null Hypothesis One: A job analysis presented to the doctor treating an injured worker, who is not working and receiving indemnity benefits, will have no effect on the amount of time the injured worker receives indemnity benefits.

Alternative Hypothesis One: A job analysis presented to the doctor treating an injured worker, who is not working and receiving indemnity benefits, will shorten the amount of time an injured worker receives indemnity benefits.

Another hypothesis is that there are variables other than the seriousness of the injury that contribute to time on disability. This project will select four other variables and explore their relationship on the dependent variable: attorney involvement, direct personal contact with a counselor, age and the body part injured. Although there are likely other variables related to an injured worker’s time on disability, only these were included because of the relatively small sample size. Therefore, the second alternative hypothesis is that these four variables have a significant relationship on the dependent variable. The null hypothesis is that these variables have no relationship to the time an injured worker receives disability payments:

Null Hypothesis Two: The number of weeks an injured worker receives disability payments is unrelated to his or her age, body part injured, involvement with a rehabilitation counselor and/or involvement with an attorney.

Alternative Hypothesis Two: The number of weeks an injured worker receives disability payments is influence by his or her age, body part injured, involvement with a rehabilitation counselor and/or involvement with an attorney.

**Independent Variables**

The primary predictor variable is whether a job analysis was presented to the treating physician during the course of the injured worker’s care. This is independent variable one. There will be only two levels, present or not present.

Independent variable two, attorney involvement, was included as this factor has been found to be a significantly related to longer periods of disability payments (Okurowski et al., 2003). Kwan, Ferrari, and Friel’s (2001) discussion of tertiary gain would also suggest that this third party may prolong the disability period. As an attorney representing an injured worker receives a
financial reward when his or her client settles with the carrier, and the greater the settlement value usually the greater the payout for the attorney, it is in the attorney’s financial interest that the worker’s anticipated future medical care be extensive and their earning capacity diminished. For this project, if the injured worker hired an attorney at any time during their time on disability, an attorney was considered present. Otherwise, the injured worker was considered not represented.

Age, independent variable three, has also been found to be a significant factor in time out of work following a work injury (United States Department of Labor, Bureau of Labor Statistics, 2006b; Okurowski, et al., 2003). That is, older workers required more time to return to work following an injury. For this project, age was categorized to mirror the SSA age ranges. For purposes of evaluating people applying for Social Security Disability, persons age 18 to 49 are categorized as younger individuals and are considered more capable of adapting to new work situations. Workers in the subsequent age categories are considered less able they are to adapt to different or new work settings. Therefore, for the present study age was arranged into two categories, based on the worker’s age at the date of accident. Workers between age 18 and 49 were categorized as “younger workers” and workers age 50 and older were considered “older workers”.

Independent variable four, body area injured, was included based on the United States Department of Labor Bureau of Labor Statistics’ (2006b) findings. Although the median time off of work for all lost time injuries in 2005 was seven days, different body areas led to different median times off of work. For example, according to their data, a shoulder injury caused the average worker to spend a median of 17 days away from work, but a foot injury caused the average worker to spend a median of 6 days away from work. For this study, body area was
categorized to reflect the Bureau of Labor Statistics’ categorization for part of body affected. Although the Bureau has seven different body part areas (head, neck, trunk, upper extremities, lower extremities, body systems and multiple parts), for purposes of this project, primarily because of a relatively small sample size, head, body systems and multiple parts were consolidated into an “other” category. The rationale is based on their 2005 statistics that the trunk, upper extremity and lower extremity areas make up the majority of injuries. These parts are involved in 43%, 29% and 28% of cases respectively. Head, body systems and multiple parts are involved in only 9%, 2% and 12% of cases respectively. Therefore, there are four levels to the body part variable: trunk, upper extremity, lower extremity and other.

Independent variable five, counselor direct personal contact, was included due partially to Franche et al.’s (2005) meta analysis findings concerning the positive impact of both a return to work coordinator and direct contact between the employer and the physician on limiting the disability time of an injured worker. Smith (2006) also concluded that direct contact between the employer and physician significantly reduced disability time. This variable had only two levels: either the counselor was allowed direct personal contact with the injured worker throughout their entire time on disability or was not.

The five independent variables along with how they will be categorized are:

1. Was a job analysis presented to doctor?
   1) Yes
   2) No

2. Did an attorney represent the injured worker at any time during the disability phase?
   1) Yes
   2) No
3. What was the injured worker’s age at the date of injury?
   1) 18-49
   2) ≥ 50

4. What body area was injured?
   1) Trunk: including back and spine
   2) Upper extremity: including hand, shoulder, wrist and finger
   3) Lower extremity: including knee, ankle and foot
   4) Other

5. Did a rehabilitation counselor have direct personal contact with the physician and injured worker throughout the disability phase of the injury?
   1) Yes
   2) No

Dependent Variable

The dependent variable was the total time, in weeks, the worker received disability payments from the insurance carrier. This is not the same as the time until the patient returned to work. There are two reasons for this distinction. The first is that not all injured workers return to work when released by the doctor. Some choose to switch employers during their treatment and spend time job-hunting after they are released to return to work. Some have secondary health problems, not related to their work injury, that prevent them from returning. Still others may disagree with their doctor’s release and not return to work although cleared medically. The second reason is that because indemnity payments cease when the worker is medically cleared to return to work, insurance carriers have a particular interest in this data. In addition, as nearly half of all workers’ compensation costs are for indemnity payments, and all finances originate from employers and are regulated by the respective states, these parties monitor and are
interested in these figures as well. Any worker that was eventually accepted as totally disabled by the carrier was excluded.

Participants

Three rehabilitation counseling companies that specialize in helping the injured workers of the insurance carrier in question return to work were solicited to provide retrospective information on the independent and dependent variables. Each company was offered financial reimbursement to compensate for the time required to obtain their data. Participants were limited to injured workers who received workers’ compensation-covered treatment of a work related injury who were out of work for at least one week and were insured by the above-cited company that issued the job analysis memorandum. Participants injured before the 2003 memorandum who did not have a job analysis issued were the control group. Participants injured after the 2003 memorandum that had a job analysis presented to his or her physician, and received disability for at least one week, were the treatment group.

Data Collection

Questionnaires were issued to the respective companies covering the independent and dependent variables. An example of the questionnaire is in the Appendix. One questionnaire was supposed to be completed for each injured worker. However, two companies submitted their data electronically in a computer spreadsheet.

As the confidentiality of the injured workers was of utmost importance, no identifiable information of specific clientele was solicited, provided by the companies, used in the project or reported. Only a number or initial identified each subject. The returned items had no additional information other than the listed variables.
Data Analysis

The design employed four statistical analyses. For each analysis, the computer program SPSS 16.0 calculated the data entered. Chapter four presents the specific findings.

First, there was a chi-square analysis of the treatment and control groups to determine if either age, direct personal contact, attorney involvement and/or body part injured was significantly different between the two. The rationale was that the results could be tainted if the groups were not homogeneous along variables suspected to influence disability time.

Second, a $t$-test was performed ($\alpha = 0.05$) comparing the job analysis group to the non-job analysis group. This test would answer if the presence of a job analysis had a significant influence on the dependent variable. This test addressed the primary research question.

Third, a backwards elimination multiple regression analysis of the four other predictor variables was employed. The regression measured how much each remaining variable could predict the variability of the dependent variable. All variables were nominal but only the age, attorney involvement and direct contact predictor variables were dichotomous. Because the body part variable had four levels (trunk, upper extremity, lower extremity and other), four separate dummy variables had to be constructed to utilize multiple regression. Each dummy variable represented a non-body part and was paired with its corresponding body part to make a dichotomous variable. For example, trunk injuries were compared to all non-trunk injuries (upper extremity, lower extremity and other), upper extremity injuries were compared to non-upper extremity injuries (trunk, lower extremity and other) and so on. The multicollinearity between the predictor variables was investigated to ensure multiple variables were not measuring the same concept. The likelihood of multicollinearity, especially between the attorney and direct contact predictor variables, called for a backwards multiple regression.
The job analysis and non-job analysis groups were then analyzed separately using multiple regressions. Again, the four predictor variables were analyzed in each group. The rationale was that the separate regressions would better detect interactions between the job analysis and the other variables. Any variables found to be significant in one group but not the other would signify a significant interaction between that variable and the job analysis.

Finally, multiple $t$-tests of the five independent variables as well as combinations of independent variables was performed. The intent of these tests was to investigate if a combination of variables, variables that individually were not significant, could have a significant influence on the dependent variable. Because one of the intentions of this project was to discover concrete factors and strategies that may contribute to or avoid prolonged disability, this step would provide tangible steps that could be either applied in a clinical setting or investigated further.
CHAPTER 4
RESULTS

Descriptive Statistics

Independent Variables

In the gathered data, 101 injured workers met the criteria to be included in the study. Fifty-one injured workers met the criteria of the job analysis group and fifty met the criteria for the non-job analysis (control) group. There were nearly twice as many subjects age 18 to 49 (n = 71) compared to the 50 and over (n = 30) group. Of the study subjects, 41 were represented by an attorney while 60 were not. Eighty-six of the injured workers were allowed direct personal contact with a counselor and 15 were not. Lower extremity injuries were the most common (n = 31) followed by trunk injuries (n = 30), upper extremity (n = 29) and other (n = 11). Of the three rehabilitation counseling companies that participated, the contributions were 58, 34 and 8 subjects respectively. Of the 101 injured workers, 93 were counseled by a rehabilitation counselor who was also a mental health counselor licensed in Florida. However, the job analyses of only one company met the inclusion criteria.

In the job analysis group, the mean time a physician reviewed a job analysis was 16.71 weeks after the worker was placed on disability. This variable is not the same as the time in weeks between injury and when the treating physician reviewed the job analysis (M = 28.51, mdn = 19.00). The average worker in the study continued working for 12 weeks after his or her injury. Considering the time gap between the median and mean is nearly 10 weeks, there were likely a few injured workers (outliers) who worked a significantly long time before being placed on disability.

The job analysis and non-job analysis groups were then compared to determine if any of the independent variables (age, attorney involvement, body part injured and direct contact)
significantly correlated to one another. Because the independent variables were nominal, a chi-square analysis was used. Table 1 shows the overall number of cases (n) of each variable and their percentages distributed overall, in the job analysis group and in the non-job analysis group. A chi-square test noted that the non-job analysis group (“No JA”) was significantly younger compared to the job analysis (“JA”) group, \(\chi^2 (1, N = 101) = 4.17, p = .04\). That is, there is a significantly higher percent of younger workers in the non-job analysis group. As previous research (Atlas et al., 2006; Okurowski et al., 2003) and the BLS (United States Department of Labor, Bureau of Labor Statistics, 2006b) report that younger workers return to work sooner, this may act as a confounding variable.

Because the presence of a counselor working directly with the injured worker has been shown to decrease time on disability (Linton, Boersma, Jansson, Svärd, & Botvalde, 2005; Linton and Andersson, 2000; Franche, et al., 2005; Smith, 2006), an analysis of the direct personal contact variable was performed to determine if the two groups were identical. The results are displayed in Table 1. “DC” (direct contact) and “No DC” (no direct contact) are the compared groups. A chi-square test revealed that attorney involvement was significantly different, \(\chi^2 (1, N = 101) = 11.343, p < .01\). Those who did not have direct contact with a counselor (n = 15) were significantly more likely to be represented by an attorney than those who did have direct contact with a rehabilitation counselor (n = 86).

Because attorney involvement has been shown to influence time on disability (Okurowski et al., 2003; Katz et al., 2005; Kwan, Ferrari, & Friel, 2001), the attorney group was compared to the non-attorney group to determine if there were other variables that coincided with attorney involvement. Table 1 also examines the differences between the group of injured workers represented by an attorney and those not represented. A chi-square test revealed a significant
difference in the direct contact factor, $\chi^2 (1, N = 101) = 11.343, p < .01$. Injured workers with an attorney ($n = 41$) were significantly more likely not have direct contact with a counselor than were those not represented by an attorney ($n = 60$). The “Att” column (attorney represented) illustrates that 29% of those represented by an attorney had no direct contact with a counselor, compared to only 5% of the “No Att” (no attorney) workers.

**Dependent Variables**

The dependent variable, mean time on disability, for the entire sample ($N = 101$) was 27.10 weeks (median = 19.00 weeks). Although this figure seems high compared to the national average, for transportation workers, industrial machinery mechanics and construction workers (median = 12, 11 and 10 weeks respectively), the BLS data (2005) includes work injuries that had no lost time. This study examines only lost time injuries. As 70% of injuries incur no lost time, the BLS median data would be considerably lower than the present sample.

The mean disability time for the job analysis group ($n = 51$) was 26.75 weeks (median = 20.00 weeks) while the mean time on disability for the control group was ($n = 50$) 27.46 weeks (median = 19.00 weeks). The standard deviation for the job analysis group (25.30) was considerably higher than the control group (21.66).

The mean and median scores of the entire sample ($N = 101$) were then compared to determine the distribution of scores. The mean score (27.10) was nearly eight weeks higher than the median score (19.00). A histogram revealed the dependent variable was positively skewed (to the right), 1.71. That is, there were a few subjects (outliers) who remained on disability for a substantial period of time, dragging the mean score up. The 33$^{rd}$ and 66$^{th}$ percentiles were 13.66 and 27.00 weeks respectively.

To determine if the spread of scores for the job analysis ($n = 51$) and non-job analysis ($n = 50$) groups were different, the same measurements were obtained for both groups separately. In
the job analysis group, the mean score (26.75) was only 6.75 weeks higher than the median (20.00). A histogram revealed the variable of time on disability was also positively skewed, but less than the group as a whole, 1.64. The 33rd and 66th percentiles were 14.32 and 27.32 weeks respectively.

For the non-job analysis group, the mean score (27.46) was more than 8 weeks higher than the median (19.00). A repeat histogram revealed the variable of time on disability was also positively skewed, 1.76. The 33rd and 66th percentiles were 11.00 and 26.32 weeks, respectively. As the first one-third percentile in the job analysis group was more than three weeks higher than in the non-job analysis group, this signifies that a greater number of subjects in the non-job analysis group were off disability quickly compared to the non-job analysis group. One third of the non-job analysis group was off disability after 11.00 weeks. However, at 11.00 weeks only 23% of those in the job analysis group were off disability. It took more than 14.00 weeks for one third of the job analysis group to be off disability. This would become extremely relevant as the median time for a job analysis presented was 16.7 weeks. At that point, 43% of the non-job analysis group was off disability.

**Initial t-test Comparing the Job Analysis to the Non-Job Analysis Group**

A t-test comparing those injured workers with a job analysis to those injured workers without a job analysis revealed no significant difference in time on disability.

**Backward Multiple Regression Analysis**

A backwards multiple regression analysis was conducted to determine if age, body area, attorney involvement or counselor direct personal contact had an influence on the length of time on disability. The likelihood of multicollinearity, especially between the attorney and direct contact predictor variables, called for a backwards multiple regression. The results are presented in Table 4-2. The proportion of variance (R²) in the criterion variable (time on disability) that
was accounted for by the predictor variables is provided in the foot of the table. Because $R^2$ has a tendency to overestimate the success of the model (Brace, Kemp, & Snelgar, 2000), an adjusted $R^2 (\Delta R^2)$, which takes into account the number of other predictor variables and the number of participants (sample size), is also available in the foot of the table. The regression coefficient ($B$) was included in the table, as well as the standard error of the regression coefficient (SE $B$). Beta ($\beta$) was not included in the table, as the study is primarily applied (American Psychological Association, 2001) and the unit of measurement of each variable is readily interpretable (Wilkinson and the Task Force on Statistical Inference, 1999; as cited in Hoyt, Leierer, & Millington, 2006).

The multiple regression analysis of the predictor variables across all subjects ($N = 101$) resulted in a significant model, $R^2 = .33$, $F(6,94) = 7.83$, $p < .01$. The regression revealed that attorney involvement ($p < .01$, $B = 23.92$, SE $B = 4.32$) could help predict time on disability. If an attorney was involved, the injured worker received disability payments 23.92 weeks longer than if an attorney was not involved. The adjusted $R^2 (.29)$ revealed the model accounts for 29% of the variance in time on disability, a modestly predictive model (Muijs, 2004). None of the collinearity statistics were below 0.68, suggesting little multicollinearity amongst the variables when predicting the dependent variable.

The regression was repeated for the job analysis group and the non-job analysis groups individually. In the job analysis group ($n = 51$), a significant model also emerged, $R^2 = .404$, $F(6,44) = 4.98$, $p < .01$. The variables of attorney involvement ($p < .01$, $B = 20.42$, SE $B = 5.74$) and direct contact with the injured worker ($p = .041$, $B = 20.15$, SE $B = 9.59$) were predictive of time on disability. If an attorney was involved, the injured worker received disability payments 20.42 weeks longer than if an attorney was not involved. If there was direct contact between the
counselor and injured worker, the average worker spent 20.15 fewer weeks receiving disability than a worker without direct contact. The adjusted $R^2 (.32)$ revealed the model accounts for 32% of the variance in time on disability, a moderately predictive model (Muijs, 2004). None of the collinearity statistics were below .67, suggesting little multicollinearity amongst the variables when predicting the dependent variable.

In the non-job analysis group ($n = 51$), a significant model again emerged, $R^2 = .36$, $F(6,43) = 3.84$, $p < .01$. Attorney involvement was again significant ($p < .01$, $B = 23.83$, SE $B = 7.09$). On average, an injured worker represented by an attorney remained on disability 23.83 weeks longer than if he or she was not represented by an attorney. The adjusted $R^2 (.28)$ revealed the model accounts for 28% of the variance in time on disability, a modestly predictive model (Muijs, 2004). None of the collinearity statistics were below .760, suggesting little multicollinearity amongst the variables. Interestingly, in the job analysis group, the average injured worker with an attorney received disability payments three fewer weeks than the average injured worker in the non-job analysis group with an attorney. However, a Satterthwaite t-test (assuming unequal variances) performed afterwards would reveal this difference was not significant.

A trend was also noticed with age in the non-job analysis group. In the non-job analysis group, the mean time on disability for younger workers was 22.30 weeks compared to 47.00 weeks for older workers. A Satterthwaite t-test showed that was also a trend that did not meet the criteria of significance.

**Comparison of Individual Independent Variables on the Dependent Variable**

The multiple independent variables were then compared individually to the dependent variable. Most sub-groups underwent individual t-tests. Any sub-group that had a sample size of less than five for either variable was excluded. Also, in most cases the “other” body part was
excluded as it would be difficult to make meaningful conclusions on a miscellaneous category. Table 4-3 lists the individual t-tests. In most cases the results of the t-test mirrored the multiple regression, but there were a few exceptions. In those cases that difference is discussed.

Satterthwaite t-tests (assuming unequal variances) revealed that attorney involvement significantly increased time on disability across all other variables. Workers with a trunk injury \((p < .01)\), an upper extremity injury \((p = .03)\), a lower extremity injury \((p < .01)\), who are younger \((p < .01)\), who are older \((p < .01)\), with direct contact with a counselor \((p < .01)\), without direct contact with a counselor \((p < .01)\), with a job analysis \((p < .01)\) or without a job analysis \((p < .01)\) all remained on disability significantly longer if represented by an attorney. No other variable was this powerful.

Direct contact with a counselor was significant in the job analysis group \((p = .02)\) but not in the non-job analysis group. This finding was consistent in the multiple regression, as well. Direct contact was also significant for younger workers \((p = .02)\) but not older workers.

Older workers with a job analysis received significantly less disability than older workers without a job analysis \((p = .03)\). There was a trend with younger workers but it was not significant \((p = .13)\). In no other group was job analysis significant.

Regarding body part, there were some differences detected. Including all variables, the mean disability time for an upper extremity injury was significantly less than the mean disability time for all non-upper extremity injuries \((p = .01)\), although significance was not achieved using multiple regression. There were trends with the job analysis and non-job analysis groups regarding an upper extremity injury, but neither was significant. A trend among younger workers with an upper extremity injury was not significant \((p = .053)\). In all three of the latter
cases, the trend was that the mean disability time of an upper extremity injury was less than the mean time for all non-upper extremity injuries.
<table>
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<th>Att</th>
<th>No Att</th>
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<tr>
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<td>35%</td>
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<tr>
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*p < .05, **p < .01.
Table 4-2. Multiple Regression Analysis

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*p < .05.,  **p < .01.,  $^aR^2 = .333$,  $^a\Delta R^2 = .291$,  $^bR^2 = .404$,  $^b\Delta R^2 = .323$,  $^cR^2 = .360$,  $^c\Delta R^2 = .285$.  

---
Table 4-3. Comparing the Sub-Groups on Time on Disability Individually

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*p < .05. **p < .01
Table 4-3. Continued.

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*p < .05, **p < .01, lr p = .053
Table 4-3. Continued.

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*p < .05, **p < .01
Table 4-3. Continued.

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</table>

*p < .05., **p < .01.
CHAPTER 5
DISCUSSION

Overview of Significant Findings

Job Analysis

Although this study did not conclude that presenting a job analysis in every case significantly decreased the time on disability, there was a significant difference with workers aged 50 and over. Older individuals in the job analysis group were removed from the disability role significantly sooner than were older workers in the control group. In this study, the mean disability time was 23 weeks for an older worker who had a job analysis presented to his or her treating physician, while the mean disability time for the non-job analysis older workers was 45 weeks. There was a trend with younger workers, but the difference was not significant. The presentation of a job analysis, in conjunction with direct personal contact, did have a significant relationship with disability time. That finding is discussed in the next section.

The exertional level of most positions studied, being either medium or heavy, likely contributed to the non-significance of the job analyses. The injured workers studied in this project were employed in the construction, logging and mineral extraction occupations only. The availability of deskwork, one-handed work or positions involving lifting only small amounts of weight may be less common in these industries than in other industries. Unless modified duties are available, the injured worker will not be capable of returning to work until he or she is fully recovered and capable of full duty. If a physician were cognizant of the importance of considering the patient’s ability to work at each appointment, a job analysis would only confirm the doctor’s suspicions that the workplace is fraught with heavy exertional forces. However, there may be other explanations for the non-significance and those are explored in the Limitations section.
The significance discrepancy between younger and older workers with a job analysis is difficult to explain. Although nationally older workers remain off work longer than younger workers do, age alone in this study was not significant. One suggestion may be that older employees in these occupations work in the less physically demanding positions. An older worker’s experience and seniority may allow him or her the option of operating or driving machinery, in many cases the higher skilled positions, and stay away from manual labor. If younger workers rely more on their youth and physical strength to secure employment, they may end up working heavier exertional positions compared to the older workers. An older worker’s seniority may also allow more accommodations. In either case, the treating doctor may be surprised to learn accommodations are available for the worker or the specific position is less physically exertional than he or she assumed. The job analysis would therefore clarify a misconception the doctor may have had regarding the line of work and the doctor would feel comfortable allowing the worker to resume their duties.

**Direct Contact**

Having direct personal contact with a counselor alone did not significantly reduce disability time when all variables were analyzed together. However, among younger workers, direct personal contact was significant. That is, injured workers under age 50 who had direct personal contact with a counselor spent significantly less time on disability than younger workers who had no direct personal contact with a counselor. The mean disability times were 22 and 38 weeks respectively.

Direct contact with a counselor in conjunction with a job analysis also significantly reduced disability time when compared to those with a job analysis and no direct contact with a counselor. The mean disability time was 22 weeks for an injured worker who had direct contact with a counselor and his or her treating physician reviewed a job analysis, while the mean
disability time for an injured worker who had a job analysis but no direct personal contact with a counselor was 38 weeks.

Direct contact did not significantly reduce disability time in the non-job analysis group. One possible explanation may be that in the job analysis group, there was a guarantee that the counselor discussed return to work strategies with the worker and/or doctor. In the non-job analysis group, that conversation could not be verified. This explanation is postulated on one of the hypotheses of this project. Just by discussing returning to work with both the treating physician and injured worker, a counselor can reduce the injured worker’s time on disability.

**Attorney Involvement**

The most significant variable was attorney involvement. Analyzing all variables together, those represented by an attorney received disability significantly longer than those not represented (43 versus 16 weeks). Removing the influence of the other variables, an attorney’s involvement increased mean disability time 23 weeks across all variables. For those with a job analysis, the difference was 20 weeks.

Attorney involvement significantly increased disability time across every individual meaningful sub-group comparison as well. Injured workers with a trunk injury (45 versus 18 weeks), an upper extremity injury (35 versus 14 weeks), a lower extremity injury (44 versus 17 weeks), those who are younger (40 versus 16 weeks), those who are older (47 versus 18 weeks), those with direct personal contact with a counselor (41 versus 16 weeks), those with a job analysis (41 versus 15 weeks) or those without a job analysis (46 versus 17 weeks) all remained on disability significantly longer if represented by an attorney. Any variables that were not analyzed were only excluded because the sample size was too small.

These findings do not elucidate any cause and effect relationship. Because the injured workers self-selected to which attorney group they belonged and were not randomly assigned, it
is difficult to ascertain which factor more influenced the disability time. Those more inclined to seek an attorney may be more interested in remaining on disability or in receiving higher financial rewards. It may also be likely that an attorney, who has a considerable financial tertiary gain from more complicated injuries or those who require more time off of work, will either coach a client on remaining out of work, spark conflict among the parties, or work to drive up both medical and indemnity costs in order to collect the largest settlement possible. An attorney, however, may argue that employers and carriers who do not provide proper care and prompt disability benefits are the imputes for litigation and conflict. Withholding proper care, an attorney could claim, employers actually prolong disability.

Body Part Injured

In this project, those with an upper extremity injury received disability for a significantly shorter duration when compared to those with non-upper extremity injuries. This difference is somewhat counter-intuitive. A construction worker or logger would presumably require good and strong use of both upper extremities to perform his or her job. To understand how a worker with poor use of one hand can resume working significantly sooner than a worker with an injury to another body part requires more investigation. Perhaps because much of the construction, mineral extraction or logging industries is becoming more automated, with large machines assisting with most of the work, a worker with one hand may still be capable of working some controls. A lumbar injury, on the other hand, is more prone to prevent prolonged sitting. A knee injury is more prone to prevent climbing in and out of equipment or prolonged standing and walking.

Age

Although in nearly every analysis of each independent variable (e.g. body part injured or those with an attorney) the mean disability time for workers over age 49 was higher than for
workers under age 50, in no circumstance did age alone have a significant relationship with time on disability. However, as mentioned earlier, age was a significant factor in combination with other variables. Injured workers over age 49 with a job analysis were off disability significantly sooner than that same age group without a job analysis. Injured workers under age 50 with direct personal contact with a counselor were off disability significantly sooner when compared to workers under age 50 without direct personal contact.

**Limitations**

**Job Analysis**

Analysis of the data revealed a few possible limitations. First, the mean time at which a job analysis was presented to the doctor was considerably longer than anticipated. On average, physicians reviewed a job analysis 16 weeks after the worker was removed from work. As a result, anyone who returned to work before the job analysis was presented to the doctor was excluded from the treatment group. No subjects were excluded from the control group, provided they received disability for at least one week. By 16 weeks, 43% of the control group was already off disability. This dilemma would obviously skew the numbers of low time disability patients in favor of the control group.

Performing a job analysis and meeting with a physician to present a job analysis is often a time consuming process. The counselor must contact the employer, arrange a meeting at the worksite, perform the analysis, generate a report and then, usually the most time draining factor, meet with the doctor to review the analysis. It is also not uncommon for an injured worker to be referred to a rehabilitation counselor only after his or her disability payments have begun. By the time the counselor receives the pertinent records from the carrier, weeks of disability payments may have elapsed.
Another explanation, which may be related to the primary limitation, was that the control group was significantly younger than the treatment group. Both prior research and this study found that older workers required more time to resume work following an injury than younger workers. If younger injured workers were taken off the disability role quickly in this study, then that may explain why there were so few younger workers in the treatment group. That is, many of the younger workers had returned to work before the job analysis could be presented to the doctor. It may also explain why the job analysis was not found to be significant with younger workers, as there were significantly fewer in the treatment group.

Comparison of Individual Independent Variables

Unfortunately in some of the sub-group comparisons, the sample size was small. For example, in the sub-group analysis comparing workers over age 49 with direct personal contact with a counselor to those over 49 without, only three subjects met the criteria for the second group. With only three subjects, out of 101, that were over age 49 with no direct contact with a counselor, it is difficult to compare their time on disability to other variables.

Suggestions for Further Research

Although likely difficult to arrange, an excellent study would be to present a job analysis to the treating doctor very quickly after disability begins. Prior research suggests that the longer an injured worker is on disability, the less likely he or she is to return to work. Even with the limitations of this study, a job analysis significantly reduced disability time on some variables.

Another suggestion, also difficult, would be to randomly assign injured workers to the job analysis and control group. This would problematic especially in the control group. Understandably, many insurance carriers would likely not permit an intervention, especially an inexpensive intervention that may return an injured worker to work significantly sooner, to be withheld deliberately from their patient’s case. Also, the injured worker or physician may seek
vocational information informally and, as a result, obtain a quasi-job analysis although he or she was assigned to the control group. Such a study would have to be agreed upon with a carrier(s) in advance of the study and to last for a prolonged time. A large number of vocational rehabilitation counselors would have to be involved, to ensure prompt job analysis, and a large numbers of physicians would need to agree, in advance, to address job analyses with short notice. Of course, this last caveat would taint the project because the pool of physicians who agree to participate in a study involving returning to work would already be cognizant of addressing returning to work with injured workers.

Another suggestion would be to analyze direct personal contact controlling better for attorney involvement. Most subjects who did not have direct personal contact with a counselor were represented by an attorney. Considering the relationship attorney involvement had with time on disability, a study with relatively equal numbers of attorney represented injured workers in the direct personal contact group and non-direct personal contact may better elucidate a counselor’s influence.

A repeat study with a larger sample size would contribute to the quality of the data. In this study, many other possible contributory variables could not be included, as the available sample size was limited. Variables like the seriousness of the injury (although difficult to quantify), whether modified duty was available, the specific injured part (e.g. elbow), the physician’s specialty, the job satisfaction level of the worker and the exact occupation of the injured worker may all have accounted for a large proportion of the variability of disability time. The carrier in this particular project that required implementation of a job analysis on disability cases made few referrals to rehabilitation counseling companies in the region. The company was
a nationwide carrier and its response to requests for further data was that obtaining information on the variables in their own records would be extremely time consuming.

**Implications for Practice and Policy**

The philosophy behind this project was to determine what variables prolong an ordinarily temporary disability and what interventions can be used to hasten cessation of disability. The intent is not to prevent someone with a totally disabling injury from receiving benefits, but to prevent a partial disability from evolving into a permanent and total disability. If non-medical factors influence what injuries lead to prolonged periods of disability, contribute to mental health problems and convince someone with a partial disability that he or she is completely unemployable, then interventions to address those non-medical factors should be explored.

Legislators, insurance companies and rehabilitation counselors should further explore what factors contribute to and what factors can prevent prolonged disability. In this study, a job analysis was a tool that provided the rehabilitation counselor a different perspective to mediate disability. His or her direct counseling effort was another tool. Research suggests numerous variables can influence disability time. This study did not have a sufficient sample size to include every variable or sufficient resource to include more subjects. If future research could identify the variables that prolong temporary disability and the tools to neutralize those variables, a protocol could be developed for all providers, employers and carriers to follow. Practice guidelines would instruct the parties to introduce particular interventions to match the particular variables in an injured worker’s case (e.g. type and seriousness of injury, age of the worker, occupation of the worker). More injured workers could avoid the penalties of prolonged disability and unemployment. Society would benefit from a greater and healthier work force, fewer people collecting government supported disability and a larger tax paying population.
APPENDIX
QUESTIONNAIRE

Injured Worker Number____________________________________________________

1. Age at time of injury
   1) 18-49
   2) ≥50

2. Body area injured
   1) Trunk: spine, back, hip, cervical
   2) Upper extremity: shoulder, hand, elbow, finger, arm
   3) Lower extremity: knee, foot, ankle, leg
   4) Other

3. Place a check if rehabilitation counselor was allowed constant direct personal contact
with the physician and injured worker ________

4. Place a check if a job analysis was presented to doctor ________

5. Place a check if an attorney represented the injured worker at any time during the
   disability phase ________

6. Total time received indemnity payments from carrier (please specify if weeks or months)_
__________________________________________________________________________

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LIST OF REFERENCES


Florida Department of Financial Services Division of Insurance Fraud and Division of Workers’ Compensation (2007). *Joint report to the President of the Florida Senate and the Speaker of the Florida House of Representatives*. Tallahassee, FL.


