EVALUATING OHIO’S INJURED WORKERS FOR VOCATIONAL REHABILITATION UTILIZING THE MENNINGER RETURN TO WORK SCALE

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By

John H. Tooson, M.S.

The Ohio State University
2003

Dissertation Committee:

Professor Bruce S. Growick, Ph.D., Adviser
Professor Michael A. Klein, Ph.D.
Professor Michael Scott, Ph.D.

Approved by

Adviser

College of Education
ABSTRACT

Predicting the return to work for individuals who have become disabled has been an area under investigation for vocational rehabilitation for several years. For the workers’ compensation programs, the infusion of vocational rehabilitation programs add a different and significant problem for industrially injured workers. The vocational rehabilitation programs under these agencies were created to work with a specialized group of individuals who have a greater opportunity to return to work because of their unique work experience. Workers’ compensation industrial vocational rehabilitation face the same issues as does the state-federal vocational rehabilitation system, and that is how to determine allocation of funding for appropriate vocational rehabilitation services to increase successful outcomes. In conjunction with the issue of allocation is the predictability of a successful outcome. The Menninger Return to Work Scale (MRTWS) was created from a sample of long-term disability clients. Utilizing specific variables, a determination as to the likelihood of an individual returning to work or not returning to work, can be developed. In this study, an evaluation of the scale’s practical application to the Ohio Workers’ Compensation system was examined. The variables of age, disability, marital status, area of residence, gender, type of employer, length of time in rehabilitation program, attorney representation, wage replacement, were studied to determine their impact on the return to work.
The Chi-square test and the t-Test were used to determine if differences exist between the return to work group and the non-return to work group. The return to work group and the non-return to work group were found to be not significantly different for each variable in the study. The scale created for Ohio Bureau of Worker’s Compensation clients will provide some justification for the decisions made with regard to entering a client into a vocational rehabilitation program and in determining the level of support that will be necessary to bring the case to a positive resolution. Other uses for the scale are explored and recommendations are made for other possible studies to enhance the use of the Menninger Return to Work Scale.
Dedicated to my mother and brother
ACKNOWLEDGMENTS

I wish to begin by giving thanks to my Advisor, Dr. Bruce Growick, who has spent a tremendous amount of time and patience with me during my research and throughout my classes in rehabilitation. I would also like to thank my committee members, Drs. Michael Kline and Michael Scott for serving on my committee and for the unforgettable educational training that they have both provided to me over the years of my program.

This dissertation would have been very difficult had it not been for the advice and direction of Dr. Hester from Hester Evaluation Systems in Topeka, Kansas, who was one of the original members of a team that created the Menninger Return to Work Scale. Special thanks to the Melissa Hatfield, who is the Librarian Administrator at the Bureau, and who worked tirelessly to obtain journal articles, books and the like so that my literature review would be complete. A warm thanks to Terri James, Executive Secretary, who took time from her family to provide technical and typing support. Thanks also to the Ohio Bureau of Workers’ Compensation and the Information Technology, Management Reporting and Research staff who assisted with the collection, transfer of the data warehouse information and research projects information. Also, I cannot begin to describe the support that my Director of the MCO Auditing Department has given me in this effort. Nancy Barber has been very supportive of my effort to complete this program.
I offer thanks to the Statistical Consulting Service at The Ohio State University for their assistance with the statistical analysis.

Finally, I would like to give a very special thanks to my family for their support, especially Lisa and Javon, who gave me the space, time, and encouragement to accomplish this goal. Regardless of what other situations that were present, Lisa and Javon have been the driving force behind my success on this journey.
VITA

February 14, 1951.............................. Born – Cypress, Alabama

1981................................................... M.S. Personnel Administration
Central Michigan University

1984................................................... M.S. Health Care Administration
Central Michigan University

2001................................................... M.A. Rehabilitation Counseling
The Ohio State University

1980 – Present .................................. Rehabilitation Administration
The Ohio Bureau of Workers’ Compensation

FIELD OF STUDY

Major Field:   Education
               Rehabilitation Services
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dedication</td>
<td>iv</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>v</td>
</tr>
<tr>
<td>Vita</td>
<td>vii</td>
</tr>
<tr>
<td>List of Tables</td>
<td>xii</td>
</tr>
<tr>
<td>Chapters:</td>
<td></td>
</tr>
<tr>
<td>1. Introduction</td>
<td>1</td>
</tr>
<tr>
<td>1.1 Statement of problem</td>
<td>1</td>
</tr>
<tr>
<td>1.2 Purpose of study</td>
<td>5</td>
</tr>
<tr>
<td>1.3 Research questions</td>
<td>7</td>
</tr>
<tr>
<td>1.4 Definition of terms</td>
<td>8</td>
</tr>
<tr>
<td>2. Review of the literature</td>
<td>13</td>
</tr>
<tr>
<td>2.1 Ohio workers compensation: An historical perspective</td>
<td>13</td>
</tr>
<tr>
<td>2.2 Creation of managed care in Ohio workers’ compensation</td>
<td>20</td>
</tr>
<tr>
<td>2.3 Managed care under workers’ compensation</td>
<td>22</td>
</tr>
<tr>
<td>2.4 Impact of rehabilitation services in managed care</td>
<td>29</td>
</tr>
<tr>
<td>2.5 Ohio’s workers’ compensation rehabilitation system</td>
<td>32</td>
</tr>
<tr>
<td>2.6 Key issues of the vocational rehabilitation program under OBWC</td>
<td>37</td>
</tr>
<tr>
<td>2.6.1 Introduction</td>
<td>37</td>
</tr>
<tr>
<td>2.6.2 Key findings</td>
<td>37</td>
</tr>
<tr>
<td>2.7 A study of OBWC vocational rehabilitation program</td>
<td>39</td>
</tr>
<tr>
<td>2.8 Related literature</td>
<td>44</td>
</tr>
<tr>
<td>2.9 Summary of research</td>
<td>71</td>
</tr>
<tr>
<td>2.10 The Menninger return to work scale</td>
<td>72</td>
</tr>
<tr>
<td>2.10.1 Introduction</td>
<td>72</td>
</tr>
<tr>
<td>2.10.2 Development of the MRTWS</td>
<td>72</td>
</tr>
<tr>
<td>2.10.3 Population used to develop the MRTWS</td>
<td>76</td>
</tr>
</tbody>
</table>

viii
2.10.4 Data Analysis and scale construction of the MRTWS .......... 76
2.10.5 Uses of the MRTWS ................................................................. 84
2.10.6 Past research using the MRTWS ........................................... 86

3. Methodology .......................................................................................... 90
  3.1 Subjects ................................................................................................ 90
  3.2 Ethical considerations ........................................................................ 91
  3.3 Data sets ............................................................................................. 92
  3.4 Procedures .......................................................................................... 94
  3.5 Research designs .............................................................................. 96
  3.6 Hypotheses tested ............................................................................ 97
  3.7 Data analysis ..................................................................................... 99

4. Results and Discussions ............................................................................. 101
  4.1 Scale construction ........................................................................... 102
  4.2 Data Coding .................................................................................... 103
  4.3 Sample Description .......................................................................... 104
    4.2.1 a) Area of residence ................................................................. 105
    4.2.2 b) Gender .................................................................................. 106
    4.2.3 c) Age ...................................................................................... 107
    4.2.4 d) Marital status ........................................................................ 108
    4.2.5 e) Type of employer .................................................................. 108
    4.2.6 f) Medical diagnosis ................................................................ 109
    4.2.7 g) Attorney representation ........................................................ 110
    4.2.8 h) Amount of time in the rehabilitation program ..................... 110
    4.2.9 i) Wage replacement ................................................................ 112
  4.4 Scale Construction ........................................................................... 113
    4.4.1 a) Gender .................................................................................. 113
    4.4.2 b) Age ....................................................................................... 113
    4.4.3 c) Marital status ........................................................................ 115
    4.4.4 d) Medical diagnosis ................................................................ 115
    4.4.5 e) Area of residence .................................................................. 116
    4.4.6 f) Wage replacement ................................................................ 117
    4.4.7 g) Time in rehab ....................................................................... 119
    4.4.8 h) Type of employer .................................................................. 120
  4.5 Distribution of RTWS scores ............................................................. 122
    4.5.1 Group 1 (score<26) .................................................................. 125
    4.5.2 Group 2 (27-28) ....................................................................... 125
    4.5.3 Group 3 (29-31) ....................................................................... 125
    4.5.4 Group 4 (32-34) ....................................................................... 125
    4.5.5 Group 5 (46-49) ....................................................................... 126

ix
4.5.6 Group 6 (50-53) ................................................................. 126
4.5.7 Group 7 (54-57) ................................................................. 126
4.6 Testing of the hypotheses ................................................... 126

5. Conclusions, Recommendations and Implications .................. 128

5.1 Summary and Conclusions ................................................... 128
5.2 Recommendations ............................................................... 138
5.3 Implications ........................................................................ 140

APPENDIX A: Proportion of Men and Women Who Returned to Work After Becoming Disabled .................................................. 144

APPENDIX B: Proportion of Each Age Cohort Who Returned to Work After Becoming Disabled ................................................. 146

APPENDIX C: Proportion of Workers According to Marital Status Who Returned to Work ............................................................ 148

APPENDIX D: Relationship Between Merck Classifications and Return to Work ................................................................. 150

APPENDIX E: Relationship Between Education and Return to Work ................................................................. 152

APPENDIX F: Relationship Between Return to Work and Pre-Disability Occupation ............................................................ 154

APPENDIX G: Relationship of Previous Employment Type and Return to Work ................................................................. 156

APPENDIX H: Relationship Between Return to Work and Type of Residence Area ............................................................ 158

APPENDIX I: Relationship Between Return to Work and Type of Support Received in Addition to Individual LTD Benefits ............. 160

APPENDIX J: Relationship of the Wage Replacement Ratios to Return to Work ................................................................. 162

APPENDIX K: Conversion Table for Deriving Scale Scores From Percentages of Employees Who Return to Work ............................ 164
### LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>Claimants receiving vocational rehabilitation and return to work</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td>outcomes</td>
<td></td>
</tr>
<tr>
<td>4.2</td>
<td>Distribution of claimants by county of residence</td>
<td>106</td>
</tr>
<tr>
<td>4.3</td>
<td>Distribution of claimants by age group</td>
<td>107</td>
</tr>
<tr>
<td>4.4</td>
<td>Marital status of claimants accepted into vocational rehabilitation</td>
<td>108</td>
</tr>
<tr>
<td>4.5</td>
<td>Distribution of claimants and type of disability suffered on the job</td>
<td>110</td>
</tr>
<tr>
<td>4.6</td>
<td>The distribution of claimants time in their rehabilitation program</td>
<td>111</td>
</tr>
<tr>
<td></td>
<td>resulting in closure or return to work</td>
<td></td>
</tr>
<tr>
<td>4.7</td>
<td>The proportion of male and female who returned to work after</td>
<td>113</td>
</tr>
<tr>
<td></td>
<td>becoming disabled</td>
<td></td>
</tr>
<tr>
<td>4.8</td>
<td>Proportion of each age range for claimants who returned to work</td>
<td>114</td>
</tr>
<tr>
<td></td>
<td>after receiving a compensable injury</td>
<td></td>
</tr>
<tr>
<td>4.9</td>
<td>Proportion of claimants according to marital status who returned</td>
<td>115</td>
</tr>
<tr>
<td></td>
<td>to work</td>
<td></td>
</tr>
<tr>
<td>4.10</td>
<td>Proportion of claimants that returned to work and their Mereck</td>
<td>116</td>
</tr>
<tr>
<td></td>
<td>classification</td>
<td></td>
</tr>
<tr>
<td>4.11</td>
<td>Proportion of claimants that returned to work according to county</td>
<td>117</td>
</tr>
<tr>
<td></td>
<td>of residence</td>
<td></td>
</tr>
<tr>
<td>4.12</td>
<td>Relationship between claimants that returned to work and their</td>
<td>118</td>
</tr>
<tr>
<td></td>
<td>average weekly wage</td>
<td></td>
</tr>
</tbody>
</table>
4.13 Proportion of claimants that returned to work in relationship to the time spent in their rehabilitation program ..................................................... 119

4.14 The proportion of claimants that returned to work and the type of employer by product or services ............................................................... 121

4.15 Conversion table for deriving scale scores from the percentage of claimants who returned to work ................................................................. 122

4.16 Distribution of the MRTWS scores ........................................................................................................... 123
CHAPTER 1
INTRODUCTION

1.1 Statement of the Problem

The spiraling costs of Workers’ Compensation in the United States have been a concern of every employer who is required to carry this insurance. And even though it is mandatory in all states, there are equally some concerns about the cost for those who do not (non-complying employers). The incidence of on-the-job injuries and the seriousness of these injuries have caused crucial legislative involvement across the country. These legislative reforms have taken every possible direction as governors, appointed representatives and elected politicians attempt to uncover the formula to reducing employer’s premiums and the number/severity of work-related injuries.

The Ohio Workers’ Compensation System has undergone legislative reform in 1987 (SB 307), 1989 (HB 222), and 1993 (HB 107) to control the cost of insuring employees, reducing the rate of injuries and making the system run more efficiently by integrating some of the Bureau’s and Industrial Commission’s functions. Workers’ Compensation is derived from the Ohio Constitution and began in 1911, when the General Assembly passed the first Workers’ Compensation Act. In 1912 the voluntary act became mandatory.
Olsheski & Growick (1988) describes the reform in their article referring to the Ohio experience. They discuss what the Ohio system has done in developing a Rehabilitation Division within the state’s Industrial Commission and suggests that a more extensive evaluation maybe necessary to determine which system (State or State/Federal VR) is the most effective or efficient.

The bill that had the most significant impact and shifted the responsibility for vocational rehabilitation was House Bill 222, which was signed into law by Governor Celeste in November of 1989. This legislation primary function is to reorganize the Bureau and the Industrial Commission. House Bill 222 transferred the non-adjudicatory powers and duties of the Commission to the Bureau and to a newly created Workers’ Compensation Board. The Board’s responsibilities include the appointment of an Administrator to implement the board’s policies, to establish the overall administrative policy of the Bureau and oversee the day-to-day operation of the Bureau. The Administrator assumed duties of his predecessor as well as the non-adjudicatory functions of the Commission. The bill also established a Medical Section so that the Bureau could perform medical management cost containment functions and other duties designated by the Administrator.

The shift of the specific functions caused the vocational rehabilitation services and the safety and prevention services once performed under the Commission, to now become a part of the Bureau’s services. Before this shift, the emphasis for vocational rehabilitation was to increase referrals in order to increase employee participation, thereby resulting in an overall increase of successful return-to-work.
Several other state initiatives began in the early 1990’s when national health care reform seemed certain. In 1993, the governor and the legislature appointed a 16 member Ohio Health Care Board comprised of consumers, employers, providers, and insurers. The board spent two years analyzing Ohio’s health care financing and delivery systems. The first report which was released in 1994 indicated a clear preference for incremental reform toward a market-based system (Harcus, 1995). In the midst of reform a health care initiative resulting from the 1993 Ohio Health Care Board, was Workers’ Compensation Managed Care. There was considerable discussion and disagreement among labor, business and officials at the Bureau of Workers’ Compensation on how the system would fit in this process.

Amended Substitute House Bill 107 passed July 1993, requiring two managed care systems for Workers’ Compensation. There is the Health Partnership Program for State Fund Employers and the Qualified Health Plan System for Self-Insured employers who pay medical cost and compensation directly. With the implementation of the Health Partnership Program under this reform, there was a transfer of medical/vocational service responsibility to the Managed Care Organizations (MCO).

The provision of vocational rehabilitation services has been debated throughout the reforms and transitional period. The responsible representatives have been unsure when to make a referral to vocational rehabilitation and cannot determine if the injured worker will benefit significantly from these specialized services. The Industrial Rehabilitation Case Management Specialist assigned to the Customer Service Team (CST) at each of the 21 Bureau Service offices once initialized this process of referral.
Even though these rehabilitation case managers still have the ability to make referrals, the primary source of referral to rehabilitation is now the responsibility of the MCO. The MCO’s have misconstrued this process to mean early referral to rehabilitation, which prematurely adds medical costs or services to the cost of vocational rehabilitation thereby shifting the costs of the claim to the Surplus Fund. The Surplus Fund is an Administrative Fund that is accumulated from a percentage of the employer’s premiums and is used to pay for specific claims costs including vocational rehabilitation, non-complying employers and violation of specific safety rules (VSSR).

In the center of all the controversy surrounding vocational rehabilitation is the recommendation from a rehabilitation study, sponsored by Dr. Patricia Larkins-Hicks of the Outcomes Management Group, Ltd., to privatize vocational rehabilitation services. Beginning in 1996, there was a mixture of public vocational rehabilitation providers and private rehabilitation providers delivering rehabilitation services to injured workers who are referred for rehabilitation. The process moved a step further in 1997, when all of the vocational rehabilitation services were privatized. With this change, all of the rehabilitation referrals would go to the private rehabilitation providers who had elected to become enrolled as a certified rehabilitation provider under the new HPP program. Although cost was a concern, and rehabilitation costs do have an impact on employer premiums (one half the rate as direct medical costs), it is the uncertainty of outcomes that continue to plague those responsible for referral. It is the hope of every MCO that a referral to rehabilitation and the costs associated with delivering these services will result in a return-to-work. These successful return-to-work outcomes also
increase the likelihood of the MCO increasing their share of incentives, which are based on their ability to return the injured worker to work at the earliest time possible.

Those sources responsible for referrals (MCO’s and CST) have been asking for a better methodology to evaluate whether an injured worker should be referred to vocational rehabilitation. They are particularly concerned with the determination of which injured workers will be able to return to work with vocational rehabilitation services and which injured workers will not be able to return to work even with the assistance of vocational rehabilitation services. The Menniger Return to Work Scale (MRTWS) is a scale that will provide a score that varies from 30 to 74 (Hester, Decelles and Gaddis, 1986). In the study of disabled clients return to work potential, it is very helpful to know which client characteristics can be used in making the decision to provide vocational rehab services or not to provide vocational rehabilitation services.

1.2 Purpose of Study

In the Ohio Workers’ Compensation Health Partnership program, MCO’s struggle with controlling medical costs and the decision to refer injured workers to vocational rehabilitation services. In 1998, 238,000 employees filed workers’ compensation claims. The Bureau has implemented several programs designed to reduce costs related to the claims processing, but continue to expend significant amounts of time and money on vocational rehabilitation services.

The purpose of this study is to re-create the Menninger Return to Work Scale utilizing a sample of injured workers involved in rehabilitation services under the Ohio Bureau of Workers’ Compensation. A similar study done by Olsheski (1991), utilized a
sample of Social Security Disability Income recipients that were involved in a
demonstration research project funded by the Social Security Administration. In this
study, Olsheski validates the MRTWS using the sample of SSDI clients involved in
vocational rehabilitation services through a vocational rehabilitation system (State-
Federal), to evaluate the effectiveness of blending managed care based on outcome
measurements. If managed care is a cost saver, as identified in studies of workers’
compensation systems across the country, those differences can be determined as well as
the characteristics of such individuals who are impacted.

There have been a number of research projects comparing general health care
costs under MCO plans and traditional fee-for-service plans. Much of the research
conducted in the 1970’s and 1980’s is outdated, as both MCO’s and fee-for-service
plans have changed significantly. Early research found substantial savings from
adoption of managed care techniques and delivery systems. Research that is more recent
indicates that managed care savings are smaller but still significant.

It appears that MCO’s offer savings over fee-for-service plans. However, the
degree of savings depends on which plans are compared. While the Congressional
Budget Office (1995) review of data from a 1992 study, estimated savings with
independent practice association-model HMO’s (IPA’s) to be negligible.

Perhaps the best way of comparing costs is to simply compare the premiums
paid for different health care plans. Data comparing plans based on functional outcomes
are scarce. While not functional outcomes per se, the proportion of plan members who
have received appropriate preventive services, such as pap smears and immunizations,
are often used as indices of quality. The CBO review mentioned earlier also concludes that MCO’s tend to provide superior care with regard to prenatal, preventive, and cancer-screening services, but notes some evidence that HMO’s are less likely to diagnose or treat patients with depressive disorders. There is also some older evidence that cost sharing, when it exceeded the level of nominal co-payments, typical of HMO’s had a negative impact on the health of low-income individuals with poor health.

The need to determine vocational rehabilitation impact on workers’ compensation is important to the decision to integrate managed care. If managed care is able to significantly reduce workers’ compensation costs, the role of the vocational rehabilitation provider in the managed care system will need to be more clearly defined. In addition, the decision to refer for vocational rehabilitation services will have to improve in order to integrate with the array of services offered through the managed care concept. Those entities that are indecisive on the referral to vocational rehab and that have a strong vocational rehabilitation services component will be able to have at their hands, another piece of information to help in the decision-making process.

1.3 **Research Questions**

The following research questions will be addressed in this study:

1) Are injured workers participating in Ohio’s Bureau of Workers’ Compensation rehabilitation program more successful at returning to work because of gender?

2) Are injured workers participating in Ohio’s Bureau of Workers’ Compensation rehabilitation program more successful at returning to work because of age?
3) Are injured workers participating in Ohio’s Bureau of Workers’ Compensation rehabilitation program more successful at returning to work because of marital status?

4) Are injured workers participating in Ohio’s Bureau of Workers’ Compensation rehabilitation program more successful at returning to work because of area of residence?

5) Are injured workers participating in Ohio’s Bureau of Workers’ Compensation rehabilitation program more successful at returning to work because of their disability?

6) Are injured workers participating in Ohio’s Bureau of Workers’ Compensation rehabilitation program more successful at returning to work because of their wages.

7) Are injured workers participating in Ohio’s Bureau of Workers’ Compensation rehabilitation program more successful at returning to work because of the time in their rehabilitation plan?

1.4 Definition of Terms

Ohio Bureau of Workers’ Compensation (OBWC). OBWC is a state agency that provides workers’ compensation insurance for all employers in the state of Ohio. An employer means every person, firm, corporation, agent, manager, representative, or other person having control or custody of any employment. The workers’ compensation insurance covers State Funded employers – those that are covered by the OBWC state
agency with regard to compensation and medical and Self Insured employers – those employers that have elected to administer their own services to their employees through a third party administrator.

**Workers’ Compensation.** Funds used for the purpose of providing compensation to workmen and their dependants, for death, injuries or occupational disease, occasioned in the course of such workmen’s employment, laws may be passed establishing a state fund to be created by compulsory contribution by employers, and administered by the state, determining the terms and conditions upon which payment shall be made.

**Industrial Rehabilitation Case Management Specialist.** Also carries the working title of Disability Management Coordinator. As a member of the customer service team, the DMC manages the vocational rehabilitation process including the rehabilitation verification for eligibility and follows the rehabilitation process through closure. This position is an OBWC state employee position and the individual has experience and education in the field of industrial vocational rehabilitation/vocational rehabilitation services.

**Vocational Rehabilitation.** Counseling, direction and coordination of services by a qualified practitioner to an individual who has received an industrial injury or occupational disease. Services provided to an individual whose claim has been allowed under the workers’ compensation system and has been recognized as benefiting from
services that are provided in order to return the worker back to their vocation. Services consist of counseling, assessment/evaluation, therapy, job placement/job development, and transitional work services.

Injured worker. An employee who has received an injury arising out of their employment and who files a claim for those injuries. Once the claim is allowed, this individual will begin to receive medical services and compensation.

VERSION III. This is the mainframe system which all of the OBWC information on all of the claims is stored. Every OBWC employee has access to this system. The claims specialists enter information daily and pay compensation through this system. All other employees can review the information contained in these claim files. All transactions are done electronically and the system can also be accessed by external parties including the injured worker, employer and attorney representative.

Rehabilitation Division. The state agency that was created in 1979 from the passage of H.B. 138 to provide vocational rehabilitation services to industrially injured workers. This agency merged with OBWC with the passage of H.B. 222, which was passed into law in 1989.

Industrial Commission of Ohio. This is a State agency that provides claim adjudication. The injured workers appeal these claims from some action in the claim. The appeals are heard before the Industrial Commission.
Health Partnership Program. This program was passed into law in 1993 and directed the Bureau to implement a program which would certify one or more external vendors, which shall be known as “managed care organizations,” to provide medical management and cost containment services in the program. The program’s designed allowed for a health partnership program for state funded employers and a qualified health plan system for the self-insured employers.

Fee-for-service. This is a method of payment for services rendered in the vocational rehabilitation process. This includes the establishment of specific fees, paid to the vendor, for the specific services provided to the individuals.

Medical Only Claim. A claim that is allowed but has not exceeded seven days off work. An individual with this claim can receive medical care paid by OBWC.

Lost Time Claim. A claim in that is allowed and the injured worker has missed eight days or more from work. An individual with this type of claim will receive medical coverage and compensation. The compensation is calculated based on the number of weeks worked for the past 52 weeks and the amount earned for that period.

Allowed Claim. The status of a claim after it is filed by the injured worker. Once the claim is recognized and certified by all parties to the claim, the injury for which the claim was filed becomes the allowed condition in the claim.

Temporary Total Compensation. Compensation paid to the injured worker while they are recovering from their injuries. These payments are made for a temporary
period of time for a total (whole body) incapacitation. The compensation is based on the average weekly wage for the past 52 weeks. It is paid at 72% of this average wage for the first 12 weeks then it decreases to 66 2/3% from that point forward.

**Living Maintenance.** This is compensation paid to an injured worker who has been accepted into and participates in a vocational rehabilitation program. Living maintenance is paid at the Temporary Total rate but not less than 50% of the average weekly wage for the year in which the injury occurred.

**Average Weekly Wage.** The wage is calculated by the Bureau to determine the amount of Temporary Total compensation to be paid for the injury year. Each year the AWW is re-calculated. It is the average wage received by all workers across all industries. As workers wages increase, the AWW will increase.
CHAPTER 2
REVIEW OF THE LITERATURE

2.1 Ohio Workers’ Compensation: A Historical Perspective

Workers Compensation Law (1995), Ohio Constitution, Article II, Section 35, explains the purpose of Workers’ Compensation, in that it is for the purpose of providing compensation to workmen and their dependents, for death, injuries or occupational disease, occasioned in the course of such workmen’s employment, laws may be passed establishing a state fund to be created by compulsory contribution thereto by employers, and administered by the state, determining the terms and conditions upon which payment shall be made there from. Further, such compensation shall be in lieu of all other rights to compensation, or damages, for such death, injuries, or occupational disease, and any employer who pays the premium or compensation provided by law, passed in accordance herewith, shall not be liable to respond in damages at common law or by statute for such death, injuries or occupational disease. The Ohio Constitution also allow laws to be passed establishing a board which may be empowered to classify all occupations, according to their degree of hazard, to fix rates of contribution to such fund according to such classification, and to collect, administer and distribute such fund,
and to determine all rights of claimants thereto. Such board shall set aside as a separate
fund such proportion of the contributions paid by employers as in its judgment may be
necessary, not to exceed one per centum thereof in any year, and so as to equalize,
insofar as possible, the burden thereof, to be expended by such board in such manner as
may be provided by law for the investigation and prevention of individual accidents and
diseases. Such board shall have full power and authority to hear and determine whether
or not an injury, disease or death resulted because of the failure of the employer to
comply with any specific requirements for the protection of the lives, health or safety of
employees, enacted by the general assembly or in the form of an order and adopted by
such board, and its decision shall be final; and for the purpose of such investigations and
inquiries it may appoint referees.

When it is found at hearing that an injury, disease or death resulted because of
such failure by the employer, such amount as shall be found to be just, not greater than
fifty nor less than fifteen per centum of the maximum award established by law, shall be
added by the board, to the amount of the compensation that may be awarded on account
of such injury, disease, or death and paid in like manner as other awards; and, if such
compensation is paid from the state fund, the premium of such employer shall be
increased in such amount, covering such period of time as may be fixed, as will recoup
the state fund in the amount of such additional award, not withstanding any and all other
provisions in this constitution.

The first Ohio Workers’ Compensation Act, passed by the General Assembly in
1911, was a “voluntary” act. This “voluntary” act did not require all employers to
participate. In 1912 the Ohio Constitution was amended to provide for the mandatory workers’ compensation system that we currently follow today. Article II, section 35 of the Ohio Constitution is the constitutional amendment, which authorizes the mandatory workers’ compensation system.

Because Ohio’s Workers’ Compensation act is a “mandatory” law, employers are required by law to provide workers’ compensation to all their employees. Because the Act is mandatory, injured workers must proceed through the workers’ compensation system to receive compensation for their work-related injuries.

The Workers’ Compensation Act eliminates any idea of fault; it does not matter who is to blame if the employee is injured in the course of and arising out of the employment. The Workers’ Compensation Act abolished employer defenses such as “assumption of risk,” “contributory negligence” and the “fellow servant” rule. Employers have used these defenses before the Workers’ Compensation Act was adopted to prevent injured workers from recovery for their injuries in court.

Some of the earlier major changes in Ohio Workers’ Compensation date back to the early 1970 time period. In 1977, the agencies adopted rules, which became a part of the Ohio Administrative Code, effective in January 1978. Effective July 27, 1979, the Commission began to supply rehabilitation services directly, as Am. Sub. S.B. 103 provided for the establishment of a comprehensive rehabilitation program. Prior to 1982, all previous legislation had been the result of labor and management compromise. There were five Supreme Court opinions stimulating the business community’s challenge to the entire workers’ compensation system, serving the harmonious
relationship that had seemed to prevail between labor and management. With the first ruling announced on March 3, 1982, the court removed the employers’ immunity from suit for intentional torts. Shortly thereafter on March 9, 1982, the court defined “temporary total disability” as a disability which prevents a worker from returning to their former position of employment. Business spokespersons immediately complained that these decisions placed them at a competitive disadvantage with other states.

Three additional cases laid the groundwork for the onset of what some lamented as a “Workers’ Compensation crisis.” On August 31, 1983, the Ohio Supreme Court announced the “special hazard test,” and held compensable an injury occurring off the work premises during the claimant’s return to work. On December 31, 1984, the court provided a judicial definition of “intentional tort,” and held compensable injuries, which developed gradually during an extended course of employment, thereby reversing prior decisions.

With these setbacks, the Ohio Manufacturers’ Association made reform of the system its number one priority and along with other organizations, urged legislative reform to alleviate the crisis. Individual members of the Ohio Supreme Court escalated the crisis by criticizing their brethren in their opinions and even in the press.

In September of 1985, responding to statewide publicity and public pressure, the General Assembly appointed a Joint Committee, known as the Skeen Committee after its Chairman Representative Clifford Skeen (D) of Akron. This committee was originally composed of 16 members but was reduced by eight in an effort to achieve a consensus, as the Skeen Committee was unable to reach agreement by its deadline of
January 1986. Representative Skeen and Senator Finan (R) thereafter independently introduced in their respective chambers House Bill 73 and Senate Bill 307.

Senate Bill 307 passed on 2/7/86 and House Bill 73 passed on 2/7/87. Because it passed first, Senate Bill 307 became the vehicle for compromise, and when neither Bill passed the other branch of legislature, a conference committee was formed in order to settle the differences. When the conference committee recessed without reaching a compromise, Representative Skeen and Finan drafted a bill in the next couple of months. On May 8, 1986, the conference approved the bill. Amended Senate Bill 307 passed the House on May 14, 1986, and passed the Senate the next day. Governor Celeste signed the bill on May 23, 1986, and Amended Substitute Bill 307 became effective August 22, 1986.

Highlights of this bill were:

1. Overhauled the law governing payment of workers’ compensation claims and adjudication of intentional tort claims.
2. Redefined compensable injuries and occupational diseases.
3. Modified the Ramirez decision.
4. Eliminated temporary partial benefits.
5. Created a new type of compensation called “wage loss.”

Amended Substitute Bill 307 presaged future legislation by creating a ten-member Select Committee to report to the legislature on streamlining the Industrial Commission and the Bureau of Workers Compensation. On 11/5/87, the Committee submitted its recommendations to the Governor. The committee recommended that the
Bureau be restructured into a quasi-public agency, headed by a board of trustees and a chief executive officer, and further delineated the functions and jurisdiction of the administrative agencies, with the Commission serving solely as an adjudicative body. These particular recommendations languished but generated additional studies. Author Young and Company performed one study at the request of the Bureau and Commission. The Young report recommended the implementation of the following changes:

1. Strengthen the Board of Directors and Executive Director, to manage and direct the administrative functions of the State Fund;
2. Limit the role of the Commission to resolving contested claims;
3. Improve data processing by both agencies.

Meanwhile the House formed its own committee under the leadership of Representative Jack Cera to investigate the problems facing the Workers’ Compensation system. The Cera Report released 1/4/89, recommended changes in Premium Rates, Medical costs, Temporary Total Disability, and Attorney Representation.

While 1988 saw numerous studies and extensive rhetoric, there was no bill passed that year. However, 1989 produced a restructuring bill. On March 25, 1989, the House passed a bill, House Bill 222, and referred it to the Senate Commerce and Labor Committee. On June 27, 1989, the Senate Commerce and Labor Committee introduced Substitute House Bill 222, which retained all the legislation passed by the Ohio House
but also contained benefit changes. The Senate passed the bill on June 28, 1989, and
the House on June 29, 1989, and after the Governor signed the bill it became effective

The legislation was primarily intended to reorganize the Bureau and the
Industrial Commission. House Bill 222 transferred the non-adjudicatory powers and
duties of the Commission to the Bureau and to a newly created Workers’ Compensation
Board. The board consisted of twelve members. The board was to establish the overall
administrative policy of the Bureau, appoint an Administrator to implement the board’s
policies, and oversee the day-to-day operation of the Bureau. The Administrator
assumed duties of his predecessor as well as the non-adjudicatory functions of the
Commission. The bill also established a Medical Section so that the Bureau could
perform cost containment and medical management functions and other duties
designated by the Administrator.

In addition, the bill adopted new rules regarding health care providers as well as
mandated payments of usual, customary and reasonable charges. In regards to
claimants’ benefits, the bill established new procedures for the determination of
percentages of permanent partial disability and required the claimant who initially
received temporary total disability benefits for 90 consecutive days to undergo periodic
examinations by the Bureau’s Medical Section. Finally, the bill implemented an orderly
transfer of power from the Commission to the Bureau and created an oversight
Commission to implement the recommendation of the legislature.
Several of the State’s initiatives began in the early 1990’s when national health care reform seemed certain. In 1993, the governor and legislature appointed a 16-member Ohio Health Care Board. Comprising consumers, employers, providers, and insurers. The board spent two years analyzing Ohio’s health care financing and delivery systems. A first report in 1994 indicated a clear preference for incremental reform toward a market-based system (Harcus, 1995).

In the midst of reform for health care resulting from the 1993 Ohio Health Care Board, was Workers’ Compensation Managed Care. There was a disagreement among Labor, Business and officials at the Bureau of Workers’ Compensation on how the Workers Compensation System would fit in this process. The “Buckeye Plan” was the latest offering from the Ohio Bureau of Workers’ Compensation for providing medical management and cost containment services for workers under the State Fund.

2.2 **Creation of Managed Care in Ohio Workers’ Compensation**

Amendment Substitute House Bill 107 passed July 1993, requiring two managed care systems for Workers’ Compensation: the Health Partnership Program for State Fund and the Qualified Health Plan System for employers who pay medical costs directly.

Under previous legislation, the Bureau could develop and implement medical management and cost containment strategies, such as Usual and Customary Rate (UCR), fee schedules, pharmacy pricing formulas and utilization review (UR) programs. House Bill 107 requires the Bureau to direct injured workers to a network of providers
and to charge an out-of-pocket co-payment if injured workers chose providers outside of the network, in effect, limiting freedom of choice of a doctor in this type of a system.

The objective of the “Buckeye Plan” was to ensure that cost-effective, quality health care is provided to injured workers, facilitating an early return to work or a return to a functional lifestyle. Managed care would be integrated with other Bureau initiatives, under this plan, to control costs and provide timely, quality services for medical treatment and benefit payments.

The “Buckeye Plan” required the Bureau to contract with managed care vendors in three of its claims regions to provide medical management and cost containment services for the treatment of work-related injuries and illnesses. The Bureau would develop managed care services in the two remaining regions of the state. In addition, the Bureau would retain responsibility for receiving and processing medical bills.

Once in place, the “Buckeye Plan” would allow for the coordinated delivery of health care through established provider networks, creating a system that delivers quality, cost-effective health care within the framework of the state’s workers’ compensation law. Benefits of this approach include:

1. Satisfying the legislative mandate of House Bill 107 by contracting with one or more vendors to establish a managed care system,

2. Tapping the expertise of established managed care vendors, and

3. Integrating managed care services with other Bureau initiatives.

The “Buckeye Plan” was debated by Labor Unions, business groups and BWC officials as they deliberated over how the system should be ran. Through this process,
they were able to carve out what is now known as the Health Partnership Program (HPP). This program allows the injured worker to use health-care providers in or out of the network, as long as the provider is certified by BWC. The Bureau will even pay for an injured worker’s initial visit to a physician who is not on the panel of providers. The HPP program resembles managed care by creating an any-willing provider program for workers’ compensation because the doctor will be paid regardless if they join the network or not.

The parallel system, the Qualified Health Plan (QHP), was developed under which eligible employers can contract directly with a managed care organization for medical management and cost-containment services. Still, participating employers will have to let the dissatisfied worker transfer to a Health Partnership network.

Other reform measures have allowed smaller employers to take on discounted group rating for workers’ compensation (companies with one to 150 employees) which have reduced their combined workers’ compensation premiums from $40 million to $12 million with an average projected savings of 10 percent the same year compared with non-participants. Other measures include fraud control measures, fee schedules, claims management, accidental prevention and other procedures insurance companies typically use to control costs.

2.3 Managed Care Under Workers’ Compensation

Managed care is a method of controlling costs while monitoring the quality and volume of medical services. At a more specific level however, the term means different things to different groups. Legislators tag broad legal reform, such as limiting the
choice of provider, as managed care. Employers use the term to refer to anything from using one cost-control method, such as a fee schedule, to sophisticated arrangements with managed care organizations. There are two types of managed care organizations (MCO); passive and active. A passive MCO merely negotiates a set of fees with a list of participating physicians while an active MCO fills the gap between the physician network and the employer.

The selection of the most efficient MCO can lower costs beyond the savings from the negotiated lower fees. The MCO network with high-quality providers will lead to a quicker recovery and lower indemnity costs. With the correct choice of the MCO, the result can translate into about a 25% combined savings in medical and indemnity costs. It has also been suggested that an efficiently ran MCO will focus beyond medical savings. In fact, it is important to keep in mind that people rarely pay full price for medical services.

There is some controversy surrounding managed care organizations. Workers are skeptical of managed care organizations because they give the employer greater control, especially in the choice of physician. The treating physician has much more control over how soon an individual returns to work, and in many states, the physicians’ opinion is given special importance in determining the extent of disability. There is also some concern over the quality of care provided by these networks. Employees fear that employers will choose the cheapest available physicians. When this happens, employees may not recover as quickly and may become dissatisfied with the treatment which consequently leads to more litigation and higher costs. To eliminate this problem, we
must allow employees or their representatives to participate in choosing the appropriate network of providers. The managed care organizations are not a panacea. If the MCO is urged to provide quality care at a reasonable price, the managed care organizations can play an important part in improving the workers’ compensation system.

The use of managed care in workers’ compensation systems has created a process whereby reducing work-related injuries or ensuring that when an injury does occur, the employee can find medical care and return to work quickly and safely. The true success of managed care has been through innovative reimbursement policies such as capitations or placing providers on salary arrangements.

While managed care for employees provides a model, there are significant differences that need to be understood. One difference is in the terminology. Misunderstandings occur easily between those professionals familiar with employee benefits and those with workers’ compensation. A common difficulty is the use of the term “claim.” In employee benefits-managed care, a claim is a bill for services. Under workers’ compensation managed care, a claim is a history of all the payments and activities related to a particular injury (Daiker, 1995). Other differences in terminology include:

1. Wage Replacement - Employee benefits do not commonly provide wage replacement, except for short term or long-term disability, but workers’ compensation is greatly concerned with the rising expense of wage replacement.
2. Employee Responsibility - Workers’ Compensation provides first dollar coverage, meaning that all medical expenses are paid by the workers’
compensation insurance. Employee benefits often have co-payments or deductibles paid by the employee or family.

3. Benefit Level - Workers’ Compensation is a mandated insurance with benefits decided by regulations. Employee benefits are optional with coverage decided by the purchasing power of the employer.

Financing of managed care in workers’ compensation also differs from financing employee benefits. HMO’s often pay providers under capitation arrangements where the providers receive an employee per month payment regardless of the number of visits or services they render. In this manner the provider shares in the monetary risk for medical management of the managed care member. If the provider manages the services well, the member will be healthy and satisfied and the provider will make a profit. When the services are not managed well, it will affect both the finances of the provider and the health of the member.

Workers’ Compensation has been slow to move to capitation due to the lack of data to build underwriting models. Various companies are exploring capitation and other risk models, particularly with self-insured employers who have traditionally maintained detailed data on workers’ compensation expenses.

The debate of cost containment for workers’ compensation is encompassed firmly in legislative halls. Based on the assumption that managed care will reduce costs and, therefore, satisfy constituents, certain costs will be managed while others will not be affected. When faced with the decision for purchasing managed care services, one must understand the cost drivers. A study funded by the Workers’ Compensation
Research Institute (Victor, 1922) looked at the cost drivers in six states. The study identified two categories: natural cost growth and additional cost growth. Natural cost growth is the effect of general economic conditions such as employment growth, wage growth, and general inflation. These factors have an impact on workers’ compensation as other goods and services. Additionally, there are other front-end expenses. Claims paid are often more than expected because of such factors as expanding the scope of compensability, reducing safety requirements, or increasing use of workers’ compensation. These costs occur before the claim is filed for workers’ compensation. Additional cost growth is the back end expense, which occur once the claims are considered compensable. These expenses are increased use of settlements, increased duration of disability, larger wage losses, increased attorney involvement, and increased determination of permanent partial disability.

It is also believed that literacy in the workplace affects workers’ compensation cost. A workers’ inability to read and write results in several billion dollars spent on workers’ compensation costs in the form of damage to industrial equipment, direct costs of on site accidents due to the inability of workers to read safety warnings, chemical content designations, and instructions for the operation of complex machines.

Managed Care under Workers’ Compensation also helps to reduce costs in medical pricing and utilization of services. Some vendors attempt to impact on duration of disability. The purchaser needs to understand where the costs arise and match the cost containment strategies to those causes.
How one evaluates a managed care vendor is a question for the employer or insurance carrier. Vendors are analyzed on two aspects: ability to bear financial risk and scope of service. Risk means that the managed care vendor is assuming responsibility for the payment of medical services such that if care is not managed appropriately, the vendor may not have collected enough revenue to cover expenses.

The real success of a workers’ compensation managed care program occurs when every sphere of influence can be addressed in some way. Many innovative employers and a growing number of service firms have successfully implemented the outline below in part or in total. It is reasonable to expect that the application of these elements will reduce losses by a minimum of 10 to 25 percent, and in certain environments, up to 50 percent. In addition, a word of caution may be appropriate. Since the implementation of workers’ compensation managed care program requires change, remember that change can be perceived as a threat in any environment. As such, the adaptation of any managed care initiative requires the careful preparation of staff. Accepting their input is important and the roles have to be carefully defined. One should understand from the beginning that even with outstanding preparation, there would be a certain degree of friction. This is a normal part of any change process. The outline is as follows:

1. Fast Response to Injuries. The program introduces a system of medical response, which assures initial evaluation, and treatment of all injuries on the day of injury. A preliminary medical report is available to the employee, employer and insurer within 24 hours.
2. Rapid Referral to Clinical Expertise. The program assures that appropriate specialists for the treatment of their injuries can readily see injured employees. The Medical Access study identified typical waiting times of up to six weeks for specialist care.

3. Attention to the Employee. Case Managers who assist employees at the time of the injury through the return-to-work process will help them understand the therapeutic process and the medical system, and identify alternatives early on if recovery is not progressing as expected. A common refrain among injured employees is the belief that no one seems to take an interest in their welfare.

4. Early Return-to-Work. Appropriate alternative or modified duty situations address the real concerns of both labor and management. It is essential that everyone involved in the rehabilitation process understand the work-site culture, including personnel practices and collective bargaining agreements.

5. Access to Specialized Services. Work-related injuries can range from simple back strains to major catastrophes. It is essential that all parties respond with appropriate specialists to address unusual or sensitive problems with training, preventive and treatment.

6. Quality Assurance. An effective quality assurance program monitors the quality of medical care and utilizes an array of HMO-proven tools to upgrade treatment patterns and provide continuing medical education. The best programs regularly survey injured workers and medical providers to evaluate the effect of the effort.
7. Cost Reduction Plan. The use of targeted cost savings establishes an objective for all parties. The cost reduction plan should carefully delineate where cost savings are expected, and have a Management Information System that provides monthly performance appraisals.

8. Cooperation with Claims Administration. The success of any managed care initiative requires well thought-out linkages by all parties with claims staff in the areas of work-site training, medical data reporting, case management responsibilities, and medical bill review.

2.4 Impact of Rehabilitation Services in Managed Care

Rehabilitation case management within workers’ compensation is defined as an administrative service that direct clients through a series of phased involvement with the health and rehabilitation service delivery system with a goal of returning the injured worker to employment. Case management, as a means of delivering services to injured workers, has proven to save money, reduce litigation, and return people to work. Effective case managers tend to possess a combination of experience and education in medical and vocational matters (Davis, 1992).

Managed competition in industrial rehabilitation, like other forms of cost containment, simply involves setting the rules for structured competition wherein providers are selected based upon established criteria. Guidelines for the timely and effective delivery of services are agreed upon and continued referrals are based upon overall performance. Providers are evaluated upon their adherence to the rules for
delivering services and their overall performance in maintaining quality of care at the lowest possible cost. Continued participation in the network is determined on an annual basis (Growick & Finch, 1994).

Managing rehabilitative care is a comprehensive approach for accommodating the injured employee back to the workplace as soon as they are medically fit to function without harm to themselves or others. A good rehabilitation program is also designed to maintain the health of employees and the integrity of corporate short-term disability, long-term disability, and workers’ compensation programs. This can be an effective method of returning employees to health and work while contributing to cost containment and maintaining the confidentiality of health information (Dyck, 1996). The development, introduction, and implementation of a solid rehabilitation component can lead to the following significant implications:

1. Institutes an effective administrative process for managing absences due to illness or injury.
2. Facilitates the rehabilitation of employees to an optimal level of health and capability through modified work and work hardening programs, thereby expediting early return to work.
3. Conveys the message that employees are valued.
4. Promotes the image of a caring and responsible employer, contributing to employee and community morale.
5. Responds to the corporate vision of providing employees with a safe and healthy workplace.
6. Demonstrates compliance with legislation and regulations related to workers compensation and accommodation for disabled workers.

As the scope of utilization management expands into industrial rehabilitation, network-based managed care will become a critical mediator of change in this field. There are two major risks for health care providers in this process. First, clinicians that cannot demonstrate cost-effective practice patterns may be excluded from provider networks and thereby from major sources of referrals. Secondly, by not providing information to guide the managed care revolution, clinicians relinquish control over what becomes incorporated into standards of care (Niemeyer, Foto, Holmes-Enix, 1994).

The question becomes how can clinicians partner with insurance companies and employers to expedite the injured workers back to work? To assist in this partnership the following steps can be taken:

1. A shift in focus must occur so that a greater level of importance is attributed to the outcome versus the process.
2. The development of an internal system of utilization management that is compatible with other systems.
3. To develop a protocol for internal case management that parallels and supports the case management provided by the carrier.

New ways of thinking and doing are required in times of change. The shifts in financing of health care have forced new paradigms in the way we deliver rehabilitation services, finance the delivery of rehabilitation services and staff and train personnel.
Some rehabilitation referrals will come directly from primary care physicians. The rehabilitation providers will need to alter their service mix to meet changing clinical referral patterns. They must develop clinical paths ensuring treatment and review according to protocol-producing effective outcomes. There needs to be a response with quality management programs that demonstrate and produce improvements in quality and service (Beckley, 1996).

2.5 Ohio’s Workers’ Compensation Rehabilitation System

Berkowitz (1990) defines Vocational Rehabilitation (VR) as “the array of services designed to facilitate and ease the return to work.” The types of services used in Vocational Rehabilitation programs include: vocational training, general skills upgrading, refresher courses, employment counseling (including training in job search skills and identification of employment opportunities), participation in an on-the-job training program, help in looking for employment, and assistance for an employer in adapting the workplace to accommodate the needs of the worker. Some employers in the State of Ohio have developed “wage continuation” programs that allow the injured worker to continue to receive their wages while on disability and engaged in a rehabilitation program rather than receiving lower workers’ compensation benefits.

Davidson (1994) cites two ways in which vocational rehabilitation (VR) programs influence Workers’ Compensation. First, VR programs attempt to reduce the cost of the claim by helping injured employees return to productive work as quickly as possible. Returning injured workers to work quickly through VR programs also reduces workers’ compensation costs through the increased stability of post injury employment.
and the potential for higher post injury wages relative to when a VR program is not used. Secondly VR programs cost money. Managers hope that a VR program’s benefit will exceed its cost through lower workers’ compensation claims and other financial, social and psychological costs associated with an injured employee.

The vocational rehabilitation process begins with a clinical assessment or initial interview. In plan development, the rehabilitation counselor acts as a liaison with the Employer, Physician, Insurance Company and Unions where the employees are represented by labor unions. A vocational evaluation, job analysis, or physical capacities evaluation may be performed to determine the level of functioning of the disabled individual. Services provided could include Work Hardening, Work Adjustment Counseling, Job Search, Job Seeking Skills Training, Employer Incentive, On-the-Job Training, Retraining, Job Coaching, Job Placement/Development and vocational follow-up.

In the Ohio system, the referrals are usually identified through the Claims Service Specialist on the Customer Service Team or the Rehabilitation Consultant on the team; however, a referral can come from any source including family, employer, labor union, physician, attorney representative, and the injured worker. The initial assessment includes a determination of eligibility and feasibility. Once it is determined that the injured worker meets the eligibility/feasibility requirements, an Individualized Vocational Rehabilitation Plan (IVRP) is developed in conjunction with the injured worker and physician. The plan includes the justification for the services, dates associated with each service, projected costs, service provider and barriers that could
prevent the completion of the rehabilitation plan. If the injured worker returns to work, a follow-up may be provided as a part of an amended rehabilitation plan. In the case of closure prior to completion of return-to-work, there may be a dispute in the case as to the reason for closure. This leads to an appeal process, whereby the injured worker is provided an opportunity to state why he/she feels the rehabilitation process should continue. Currently, this process is entitled the Administrative Dispute Resolution process and is provided by the Managed Care Organization at the first level with OBWC providing the second level. This decision can be appealed to the Ohio Industrial Commission at the third level.

Procedures for rehabilitation service delivery have varied over the last 10 years. Although the procedures are rooted in the Rehabilitation Rules or Chapter 4123-18 of the Administrative Code, the procedures have often been changed to reflect the intent of the law and its different changes. Pursuant to the Provisions of Amended Substitute H.B. 222, effective November 3, 1989, the Rehabilitation Division and its functions were transferred to the Bureau of Workers’ Compensation. Accordingly, with the exception of Rule 4121-18-10, the Ohio Industrial Commission rescinded all of its Rehabilitation Rules of Chapter 4121-18, effective concurrently with the adopting of replacement Bureau Rules, February 3, 1992, and March 16, 1992.

The change greatly impacted the Rehabilitation Division’s delivery of rehabilitation services. Procedurally, services were guided by the “Procedure Manual,” however an effort was made to standardize all operating procedures through the Claims Manual Resource Guide (CMRG). The CMRG describes the rehabilitation services
as services that are provided by the Customer Service Team to successfully resolve the claim through lessening the injured workers’ disability and returning the injured worker to work.

Early and continuing communication amongst team members helped the team to provide timely and cost effective rehabilitation. Staffing and other communications helped to identify barriers to return-to-work, which can be resolved through timely vocational rehabilitation intervention. The Customer Service Team’s Industrial Rehabilitation Case Management Specialist provided both early return-to-work services and vocational rehabilitation plan services. Intervention by the Industrial Rehabilitation Specialists shifted the focus from disability to return-to-work.

The Industrial Rehabilitation Specialist provides vocational rehabilitation case management services to decrease the cost of the claim by:

- preparing the employer and employee for a return-to-work,
- reducing the potential for future lost time,
- decreasing the impact of injury, and
- achieving early return-to-work.

At the completion of rehabilitation intervention, when all services had been provided, the rehabilitation case was prepared for closure. The rehabilitation closure codes have been scaled down and are as follows:

1. **PC11**: An injured worker has successfully completed rehabilitation services and returned to work at the same employer.
2. PC12: Injured worker successfully completed rehabilitation services, returned to work and a thirty-day monitor period at a different job/same employer.

3. PC13: Injured worker successfully completed rehabilitation services and a 30-day monitor period at the same job/different employer.

4. PC14: Injured worker successfully completed rehabilitation services and a 30-day monitor period at a different job/different employer.

5. PC15: Injured worker has successfully completed rehabilitation services and a 30-day monitor period. Injured worker is self-employed

6. PC16: Injured worker has completed rehabilitation services but is not currently working.

7. PC17: Injured worker is currently medically unstable and has requested case closure.

8. PC18: Injured worker completed a rehabilitation plan but is currently psychologically unstable and requires intervention beyond the scope of services offered by the Rehabilitation Division.

9. PC22: Injured worker no longer interested in rehabilitation services and requests that the rehabilitation case be closed.

10. PC24: Injured worker unsuccessful in obtaining employment and is unwilling to expand the geographical areas for job search at this time.
11. PC26: Injured worker unsuccessful in finding local employment and retraining is not a viable alternative.

12. PC55: Other

2.6 **Key Issues of the Vocational Rehabilitation Program under OBWC**

2.6.1 a) **Introduction:**

In March 1997, Summit I was conducted under the guidance of OBWC. This conference was designed to discuss the current Workers Compensation Vocational Rehabilitation system and determine how to make it more efficient. This vocational rehabilitation conference was sponsored by BWC and the participants included employers, private rehab case managers, rehab vendors and support staff. These participants were assigned to breakout groups to address the following areas:

1. Defining Effective Rehabilitation
2. Factors of Successful Rehabilitation
3. The Rise of Public & Private Rehabilitation Organizations
4. Rehabilitation Incentives and Disincentives
5. Medical versus Vocational Rehabilitation

2.6.2 b) **Key Findings:**

The information that follows is an analysis of the collected information from all groups:

1. Partners status
* There is a disparity of understanding across and between stakeholders and other jurisdictions regarding:
  - Definition of rehabilitation
  - Who should be involved in the rehabilitation process
  - Rehabilitation interventions
  - Expected outcomes
* Partnership between injured workers and employers are often antagonistic and result in both partners’ needs going unmet.
* There is much distrust among stakeholders. This creates a climate that makes it difficult to foster health partnership.

(2) Understanding Rehabilitation
* Vocational Rehabilitation technologies are not integrated into the entire disability process.
* There is no rehabilitation champion at BWC. The result is no strategic direction for this area and a perception among providers and many stakeholders that BWC does not support rehabilitation.

(3) System Efficiency
* BWC system inefficiencies delay injured workers’ access to rehabilitation services and force them to seek representation.
* Incentives are inconsistent with performance expectations.
* BWC regulates AND provides rehabilitation services. This placed BWC in conflict with the providers being regulated. Private providers perceive BWC rehabilitation providers to have an advantage. BWC rehabilitation providers perceive that they are held to a higher standard.

* An inconsistent standard of practice and limited experience in disability management among the MCO’s has resulted in additional administrative burden to providers and variation in timely referrals to rehabilitation.

* Lack of follow-up on recommendations from previous rehabilitation studies (i.e., Due Diligence, 1992) has created a climate of: “We have been through this before.”

2.7 A Study of OBWC Vocational Rehabilitation Program

In 1995 the Bureau of Workers’ Compensation issued a Request for Proposal (RFP) for a study of the OBWC Vocational Rehabilitation Program. There were seven bids that were accepted on this RFP. The contract was awarded to the Outcomes Management Group, Ltd. of Columbus, Ohio. The primary investigator was Patricia Larkins Hicks, Ph.D., and her company in Columbus coordinated the study with other personnel from other rehabilitation disciplines. Hicks (1998) outlined the scope of the study including the following:

1. Identify strategies for improving rehabilitation service delivery to Ohio’s injured workers that minimize the financial, medical, and emotional impact of a work-related injury.
2. Review current practices, workers’ compensation law and administrative rules as they relate to the rehabilitation of Ohio’s injured workers.


4. Conduct follow-up interviews with selected Summit participants.

5. Conduct a comprehensive review of industry best practices, including other states (or countries) and evaluate what impact emerging trends may have on the effectiveness of rehabilitation.

6. Develop recommendations for changes to current practices, policies, workers’ compensation law, and/or administrative rules.

To address these issues OMG developed a five-step process, which includes:

Step 1 - Developing stakeholder profiles

Step 2 - Evaluating Laws & Rules

Step 3 - Defining Best Practices

Step 4 - Designing a New Service Delivery Model

Step 5 - Providing Recommendations

The study indicated that in order to capitalize on the changing structure of rehabilitation services within the context of a managed care environment, the proactive realities of managed care were identified. These items serve as a framework for defining best practices:

* Utilization Review

* Employers more linked to process
* Provider Networks

* Front end (initial focus) Diagnosis & Treatment

* Case Management (nurse driven, telephonic)

* Implement protocols and practice guidelines

* Employer/Employee orientation

* Quality of Medical documentation increases

In addition, the model theory “Remain at Work (RAW)/Return-to-work (RTW)” was introduced as the model proposed to re-engineer Ohio Workers’ Compensation system. This model creates a continuum to guide BWC in the management of vocational rehabilitation service delivery at pre-injury, injury and post-injury. In order to maintain healthy, productive workers earning at their potential, it is necessary to integrate vocational rehabilitation services and tasks with the workers’ compensation system. These services should be provided along a continuum that is based upon the workers’ health status. This concept forms the foundation for The Remain at Work (RAW)/Return-to-work (RTW) Model, created as a prototype in Ohio for a “World Class” workers’ compensation system. The expected outcomes from implementing this new prevention/early intervention philosophy are significant:

* Maintain job retention

* Maintain worker earning capacity

* Reduce productivity loss

* Reduce time lost from work
* Improve return-to-work rate

* Reduce worker re-injury

* Increase worker satisfaction

Features of the new system were based upon the Guiding Framework. Using RAW/RTW Model, Ohio’s Workers’ Compensation System becomes outcome-driven, worker-focused, and oriented toward customer service. In addition, system efficiencies will improve as a result of:

Partnerships that are fully aligned,

* Partners who assume responsibilities and who are held accountable,

* Best work site and intervention practices that are clearly defined,

* Prevention & wellness integrated into the work environment,

* Rewarding performance that is consistent with outcomes.

The study made recommendation and a rationale for role change. It outlined the order of priority, the structure and system changes that need to occur in order to facilitate successful implementation of the RAW/RTW Model. The rationale includes:

1) A 47% return-to-work rate of workers referred to rehabilitation serves within three month post injury, resulting in a 71% cost savings.

2) A $76 cost for each month delay in referral for vocational rehabilitation.

Once referred, there was a $369 cost associated with each additional month delay in start of rehabilitation plan.
3) Employers and insurers save nearly $6 million per year while possibly increasing the earnings of workers with disabilities by $9 million per year when injured workers rehabilitation potential is evaluated within 6 months.

4) Vocational rehabilitation at an early stage, is more likely to secure timely return-to-work at pre-injury earning capacity.

5) At least 20% of disability beneficiaries would participate in rehabilitation and work-return programs if provided access to timely services.

6) Employers and labor organizations benefit from early intervention by preserving employability of experienced workers.

For BWC changes supporting RAW/RTW Model, the recommendations included:

Role Change #1: BWC’s present role as a provider of rehabilitation services creates a conflict with the New Model. To maximize the benefits previously described, BWC must change its dual role of provider and regulator to the monolithic role of regulator.

System Change #2: BWC should revamp existing information systems in order to integrate vocational rehabilitation data from CARE, VAX, and V3 systems into the Date Warehouse. Rehabilitation data are currently inaccurate, incomplete or non-existent.
Procedure Change #3: BWC should create system-wide data collection procedures; these procedures need to be in place to ensure uniform data collection, inputs and retrieval.

Process Change #4: BWC should monitor and evaluate partners’ best practices. This process is essential if partners are to be held accountable. Additionally, BWC should enhance its collection of rehabilitation empirical data and applied research.

Process Change #5: Establish a BWC evaluation plan that measures BWC performance against RAW/RTW Model. The evaluation plan should focus on both processes and outcomes.

With the cost of workers’ compensation soaring and the incidence of job-related injuries on the rise, employers are looking for ways to manage their disabilities. Managers have turned to a variety of approaches in addressing workers’ compensation costs issues. Vocational Rehabilitation is but one approach to managing workers’ compensation claims and getting injured workers back to work earlier.

2.8 Related Literature

Other research on vocational rehabilitation outcomes under workers’ compensation include studies that show injured workers returning to work at a much faster pace when they are involved in vocational rehabilitation. A comparison of earned wages after a completion of their vocational rehabilitation program as compared to wages at the time of injury show the wages to be equal in general.
Worrall (1978) used multiple regression analysis to estimate VR costs and benefits. The research yielded values on cost/benefit ratio for various subgroups. The researcher drew a representative sample of data from all closed cases in the United States. The author assumed clients who reported zero earnings, regardless of whether they participated in a rehabilitation project, would eventually earn the same positive wages as other persons their age, race and sex. The author came to the conclusion, “it was more efficient to rehabilitate higher productivity groups such as young, educated and married but argued for expansion of services for all groups based on equity considerations”.

Nowak (1983) conducted VR research on a small sample. The author used a control group for comparison purposes and evaluated a program’s cost-effectiveness. The research provided estimates of the conditional probability for the successful and unsuccessful rehabilitation of VR program participants. The author concluded “it was more cost-effective to rehabilitate women than men since women made poorer adjustments without program services.”

Cho (1984) examined a sample of 678 cases from the Minnesota Division of Vocational Rehabilitation for the 1981 fiscal year. The author performed multiple regression analysis to estimate the costs and benefits of a VR program. The research provided marginal benefit/marginal cost rations instead of benefit/cost ratios. The author concluded that rehabilitation of male workers and workers with hearing impairments and those with orthopedic deformities or functional impairments were more efficient than rehabilitating other workers.
Gardner (1986) examined 3,735 VR cases in New York that were closed between 1981 and 1983. The author explored four key outcomes of VR programs, including program completion, program length, return-to-work and recovery of pre-injury earnings. The research offered three primary findings. First, private rehabilitation programs have highest completion rates, shortest programs, highest rate of return-to-work and earnings recovery than public programs. Second, individuals receiving services earlier in the period following an injury have highest rates of return-to-work. Third, early intervention also results in higher rates of program completion and to commence earlier following an injury than public programs. The median time from injury to program commencement was eight months for private programs and 13 months for public programs.

Gardner (1988) conducted another study on VR programs in the Florida Workers’ Compensation system. The research used a sample of 1,173 workers’ compensation cases for which VR was closed between March and May of 1985. The study yielded the following:

1. Florida system’s VR services focus primarily on job placement and job modification instead of education and job training.
2. Only 60% of participants complete rehabilitation programs.
3. Among those completed programs, 79% return-to-work, of which 40% return to their pre-injury employer.
4. Among those that return-to-work, less than half earn at least as much as they earned before injury.
(5) The Florida system spent $53 million on rehabilitation for the period covered in the study, of which half paid for rehabilitation services and half paid for indemnity benefits attributable to rehabilitation programs.

(6) The average rehabilitation program cost $5,000.

Gardner published a second report on the Florida system in which he looked at the appropriateness and effectiveness of VR services directly due to lack of measurement on a control group who did not use a VR program. The researcher found that VR costs in Florida accounted for about 8% of all workers’ compensation benefit payments. By comparison the study pointed to California, where VR costs were 13% of all workers’ compensation payments. Gardner found little support for the notion that mandatory VR would lead to more referrals of claimants who are not cooperative or who are not medically ready for rehabilitation. He also discovered that the dispute resolution process explained the difference in completion rates between Florida and New York in nearly half of the cases where VR programs were not completed.

Zaidmand and Clifton (1988) published a study on the Minnesota workers’ compensation system. The study addressed: the costs of rehabilitation, the incidence of individuals returning to work following VR, individuals’ work experience in the 18 to 24 months following program completion, and the role of early intervention. The author used data from 8,403 lost-time claims, 3,061 cases with rehabilitation plans closed between January and June 1987, and 361 telephone interviews of workers whose rehabilitation plans were closed between January and June of 1986. The purpose of the Minnesota vocational rehabilitation model is to return the injured worker to a job at
earnings close to pre-injury earnings. The researcher found that 695 of workers using rehabilitation services returned to work and of those who did not return-to-work, a third settled their cases and the other third eventually returned to work.

Giles and Sgro (1989) examined 6,049 cases closed by the rehabilitation provider between August 1987 and December 1988. The researcher was conducted for, and published by, the Victorian Accident Rehabilitation Council. The study had four stages. In stage one the researchers used a multinomial logit regression model to estimate probabilities of successful rehabilitation (return-to-work). The independent variables used included age, gender, occupational group, type of injury, workplace location, dependents, time between injury and acceptance into rehabilitation, and time between case acceptance and case closure. The study also controlled for rehabilitation provider mix. The study identified three types of providers; publicly funded centers, privately operated providers, offering services and medical help (medical providers), and privately operated providers offering services other than medical assistance (brokers). The researchers found certain variables were significant in predicting return-to-work probabilities. These variables included gender, age, provider type, and length of time between case acceptance and case closure, number of dependents, workplace location, all occupations except farming/fishing/transport, compensation payments and rehabilitation payments. The research reported the following results regarding return-to-work probabilities:

(1) Males had a higher probability of returning to work than females.
(2) The probability of returning to work was generally higher for clients of brokers and publicly funded centers than for clients of medical providers.

(3) Older workers had a lower probability of returning to work than younger workers return.

(4) Non-metropolitan workers showed a greater probability of returning to work than metropolitan workers.

(5) The highest probabilities of returning to work were found among clients age 30 or less, whose work place was in a non-metropolitan location and for whom time between injury and referral was less than 12 weeks and time in rehabilitation was less than 26 weeks.

In the area of cost/benefit ratios with VR programs, the following results were reported:

(1) The benefit/cost ratio for males was higher than for females.

(2) The benefit/cost ratio for non-metropolitan workers was higher than for metropolitan workers.

(3) The benefit/cost ratio for brokers was higher than for medical providers and publicly funded centers.

(4) The benefit/cost ratio decreased as injured workers increased time spent in rehabilitation.

(5) The benefit/cost ratio for workers under age 30 was higher than for workers older than age 30.
Laborers and process workers had lower benefit/cost ratios than other occupational groups, other factors notwithstanding.

The research found similar results when additional future costs were included (e.g., future compensation benefits for individuals not returning to work).

Berkowitz (1990) conducted worker’s compensation and VR research at the international level. The research noted various factors that influence the effectiveness of VR programs. The author described two VR models in existence today. The first model called the insurance model, can be characterized as the conscious use of the mechanisms of rehabilitation to affect the cost of the beneficiary program. Also, part and parcel of this belief is the notion that such activities can and do rebound to the benefit of the injured worker. There is implicit in these formulations the idea of a harmony of interest between the insurer and the worker. The creed is that rehabilitation is good business and that is good for the worker.

Although it may benefit the financing of the benefits program if the worker returns to the old job, their [sic] is the viewpoint that the injured worker has been aggrieved by the injury and the employee should have the primary say as [to] when return-to-work is appropriate.

The explicit assumption behind the insurance viewpoint is that the worker came from the job and the narrow objective is return to the former job, or one which is consistent with the worker’s residual functioning capacities.
The author’s second VR model – the traditional model – can be described as one where clients seek admission and are evaluated for suitability. The rehabilitation officer may not even be aware of the client’s work injury program status and may care little about the details of the benefit program. The rehabilitation officer’s only interest in the work injury program may be as a source of funds to tap for rehabilitation expenses.

The author’s research also provided a detailed discussion of the components that comprise a successful VR program; at least as far as return-to-work measures are concerned. Specifically, the research identified the following factors:

1. Type, duration and quality of VR programs.
3. Timing of VR interventions relative to injury date.
4. Selection process of VR participants.
5. Voluntary versus mandatory VR programs.
7. Incentives and disincentives for participating in a VR program.

Berkowitz also discussed the need for measuring the efficiency of VR programs. Measurement involves examining input, process and outcomes data. The research postulated the need for accumulation of standard data on each VR case that would be linked to workers’ compensation data.

VR was not used as a part of a work-injury program in this research. The study recorded a successful closure when a worker was placed in a job, including homemaking, if the worker remained on the job at least one month. The authors found that more severely disabled individuals had a greater likelihood of experiencing a successful closure than less severely disabled individuals. This is because more severely disabled individuals had a greater probability of receiving substantive VR interventions. Similarly, women had a greater likelihood of a successful closure than men, controlling for severity of the disability.

Allingham and Hyatt (1993) measured the impact of VR on the probability of post-injury return-to-work. They based their research on a database of 6,613 permanently injured workers. In this sample, 3,478 participated in a VR program, while 3,135 did not. In the full sample, nearly 64% (4,206) returned to work. Of those that did participate in a VR program, approximately 91% (2,839) returned to work. Among those that did not participate in a VR program, 39% (1,367) returned to work. The researchers hypothesized that VR reduces the disabling consequences of work injuries, thereby increasing the probability that those who receive VR will return-to-work following a permanently disabling injury.

The authors’ methodology used a binary-coded dependent variable with a value of one if the worker returned to work following a permanently disabling injury and a zero if the individual did not return-to-work. The regression equation had two key independent variables; a dummy variable indicating if the worker participated in a VR program following injury and a variable measuring the worker’s permanent disability.
rating had a value between zero and 100%. The rating was assigned by a workers’ compensation board doctor, following a time when the worker reached maximum medical improvement (i.e., the point beyond which the medical condition of the worker was not likely to substantially improve).

The researchers arranged other independent variables into seven categories including demographics, education and location, nature of injury, body part, time of accident, employer-experience rating and time of injury occupation. The demographic variables included: age at time of injury (assumed to have a negative correlation with return-to-work), a dummy variable for marital status, a dummy variable for sex, a marital-status-gender-interaction term (indicating the respondent was married male), a dummy variable indicating whether the worker spoke English (assumed to have a negative correlation with return-to-work if the worker was a union member). They found that participating in a VR program was associated with a significantly lower probability of return-to-work among the full sample (6,613 individuals). The author suggested that this finding meant participation in a VR program, as a result of various possible barriers, was a signal that the individual was chronically unable to return-to-work after the injury occurred.

The researcher also found that the probability of return-to-work given a one-percentage point change in the permanent disability rating was −1.4% for those who did not participate in a VR program when evaluated at the mean of the dependent variable. Among those who did participate in the VR program, the probability of return-to-work given a one-percentage point increase in the permanent disability fell, in absolute terms,
to \(-0.09\%\). The researcher concluded that VR had the intended effect; lessening the negative impact of residual disabilities on the return-to-work of injured workers. Other findings include:

1. Age had a nonlinear relationship with return-to-work.
2. Male workers had a higher likelihood of returning to work than females.
3. Married male workers had a higher likelihood of returning to work than non-married female workers return.
4. Non-English speaking workers had a lower probability of returning to work than English-speaking workers return.
5. Workers who belonged to a union at the time of injury had a significantly higher likelihood of returning to work than non-union workers return.
6. Workers in the full sample who had VR and had a high school education had a better likelihood of returning to work than workers without a high school diploma.

Morgan and Langer (1995) studied the return-to-work successes in the Florida’s Workers’ Compensation system. The study looks at return-to-work patterns for injured workers during 1989 to 1990. The return-to-work success was measured by workers who had earned wages in a quarter. The researchers also looked at the percentage of workers who returned to their original employers. The results were that almost 90\% of the injured workers who returned to work during the first quarter, returned to the same employer, while only about 27\% of the injured workers returning in the fourth quarter returned to the same employer.
The researchers also identified 16 different patterns of return-to-work, based on the distribution of earnings following injury. About 10% had no earnings in the four quarters following injury, 90% had earning in any one of the four quarters following injury, and about 56% had earning in all four quarters following the injury.

The researchers also compared post-injury wages with pre-injury wages. They counted the number of injured workers whose post-injury wages were equal or greater than 80% of their pre-injury wages and found that this represented about 60% of the injured workers.

Finally, the researchers compared the level of pre and post-injury wages and found that, on average, injured workers earned about 10% less following the injury than they earned before.

Gardner and Butler (1992) provide a worker specific analysis on successful return-to-work of injured workers under workers’ compensation. They offer seven behavioral responses that are relevant to return-to-work outcomes:

1. Cumulative trauma claims are different than other claims.
2. Early communication is important.
3. It is not a “disability”; it is temporary work intolerance.
4. Return-to-work failures are frequently management failures.
5. The first episode of workers compensation is the most important.
6. Return-to-work is affected by other employee benefits. They found for example that workers compensation costs were actually higher for
employees in health-maintenance organizations (HMO’s) than they were for employees opting for fee-for-service medical care.

(7) Initial return-to-work is not necessarily a good measure.

Another researcher, Bellante (1972) noted that Conley did not find differences in cost and benefit ratios because he did not control for cross-classification, in his study in 1969 where he demonstrated the cost effectiveness of rehabilitation services. In looking for differences between subclasses of claimants, he found a 5 to 1 benefit and cost ratio for the year 1967. Bellante, as part of his doctoral dissertation then did a partial replication on Conley’s study, except using methodology to control for cross-referencing in different groups. He concurred in an overall observation that the cost-benefit ratio for rehabilitation is high; however, breaking the study participants down into different factors (such as sex, age, education, and type of disability) changed the view of the benefits. Using 1969 closed cases in Florida, Bellante concluded that not all groups benefit equally from rehabilitation services and that those groups who do benefit the most and who enjoy the highest cost and benefit ratios are those who are younger and whose earnings are higher.

In another study, Better (1979) investigated beneficiaries of the SSDI system that were involved in vocational rehabilitation services. This analysis compared those who successfully completed VR services with those who were not successful. It was indicated in the finding that only 10 variables could account for only 38% of the variance in claim closures. These variables included: physical as opposed to mental
disability, the beneficiaries perception of good health, being female, having more extensive pre-disability work history, and absence of transportation problems.

Beck (1989) found a different set of variables related to the outcome of vocational rehabilitation for injured workers in the state of Wisconsin. Using a multivariate analysis, results indicated that unsuccessful outcome was associated with the following interactive variables: external focus on control, lengthy healing period and high unemployment rate in the local labor market.

In a study of clients served by private rehabilitation companies, Chow, Bose and Geist (1989) investigated employment outcomes. In order to discriminate among groups of clients there were a total of 35 variables used. Using discriminate analysis they were able to identify nine significant variables combined in two significant functions. The first function accounted for 30.3% of the variance in outcome of services. For the unemployed group, their characteristics included highest utilization of attorneys, highest number of months supported by unemployment compensation prior to rehabilitation referral, lowest degree related to transferable skills, and lowest post-injury physical capacities. For the group that returned to work with the original employer, their characteristics included the lowest utilization of attorneys, shortest unemployment period, most months employed, lowest level of pre-injury vocational skills, least physically demanding pre-injury jobs, highest level of physical capacity, highest frequency of medical case management, and lowest costs for vocational rehabilitation services. The third group in this study was those returned to work but with a different employer. The characteristics of this group include the least number of months
employed with the previous employer, highest level of pre-injury skill level, highest rating in the transferable skill analysis, highest physical demand, least involvement of medical case management, and highest costs for vocational rehabilitation services. The conclusion by the researchers in this study was that pre-injury physical demands of the job combined with the physical capacities accounted for the majority of differences among outcome groups.

There have been a number of studies involving the evaluation of client characteristics in predicting outcomes. Vocational specialists/counselors who can market themselves to the providers of rehabilitation (employers, third party payers and managed care organizations) will need to be more effective in their outcomes related to return-to-work. Some vocational case managers receive bonuses on their return-to-work as they prove to be a vital link in reducing premiums that the employers are obligated to pay under workers’ compensation. King (1998) looked at the accuracy with which a work program can predict length of program stay and the return-to-work outcome. There were 12 Wisconsin work programs that participated in the study. Five were within a hospital setting; the other seven were freestanding rehabilitation centers. The Work and Industrial Rehabilitation Evaluation (WIRE) software program was used to collect outcome data. This tool collects information in 18 different categories. Each program collected data on each client discharged from the program. Predictions of length of treatment and outcomes were made upon client admission and initial assessment. The findings in this study related to demographic data on clients treated in the work program and congruent with trends noted in previous studies. Work programs are seeing an
almost equal percentage of males and females. The majority of these individuals fall in
the age range of 25-45 years old. According to this study, the service industry is the
most frequent occupational category among return-to-work clients. Referral sources to
work programs continue primarily to be physicians. Workers’ compensation is the
primary payment source. Clients diagnosed with low back disorders are the most
frequently treated population in Wisconsin work programs. The author of this study,
however, acknowledges that the instrument in this study lacks sensitivity in
measurement, specificity and comprehensiveness in identifying all of the numerous
variables thought to contribute to the prediction of outcomes. The WIRE program was
primarily intended to serve as a program evaluation tool. To define any distinct
relationships between the variables identified in this study, particularly length of time in
the programs and client outcome would only be conjecture.

Hunter, Shaha, Flint and Tracy (1998) looked at predicting the return-to-work of
railroad workers who were treated for low back injuries at free-standing orthopedic
rehabilitation centers between January 1987 and December 1989. The objectives of this
study were twofold: 1) to study outcomes of the rehabilitation program in terms of the
patient’s improvement in function and rate of return-to-work and, 2) to study factors
that predict long-term retention at work, both at the railroad and elsewhere. The data
from clients was collected before and after treatment, as well as from employment
records. Data were divided into the following categories: physical/medical, self-
reported, and employment financial data.
The findings indicated that tests of function for lifting and range of motion before and after rehabilitation and the subjective scales were compared for the total study group. Statistically significant improvements were made in all areas. The return-to-work groups (railroad work, work elsewhere, and not working) were then compared for the rate of improvement during rehabilitation on the three lifting, one carry, and two range of motion measures, to determine whether improvements in physical measures were associated with return-to-work. Age adjustments were made when comparing physical measures before and after rehabilitation with the exception of total flexion; those rates of improvements were not statistically different among the groups. In other words, the average patient improved at the same rate, regardless of the return-to-work outcome. The two subjective measures were also compared among the three return-to-work groups. In both the pain and disability measures, the railroad work group and the not working group improved at the same rate. The working elsewhere group showed statistically less improvement.

In a study by Harris (1996), Florida’s Workers’ Compensation system was evaluated to measure return-to-work rates. Florida Division of Workers’ Compensation in conjunction with the Division of Unemployment Compensation, Disability Income Systems, Inc., and Florida State University undertook this study that merges data from multiple sources in order to define, quantify, and analyze return-to-work trends from 1989-1993. The study also examines factors that may increase or decrease the
likelihood of a worker returning to gainful employment. Through its innovative approach, the study was able to avoid the following limitations that are often encountered in studies of return-to-work:

* Employment and wage history are not contained in workers’ compensation databases, yet are essential to determining whether a worker has returned to work.

* Databases often lack information on several factors that may influence returns to work, preventing the specification of accurate statistical models.

* There is no commonly accepted definition of return-to-work. Definitions used by other studies are often driven by limitation in the data, leading to questionable results.

The study found that approximately 62% of all workers in Florida earn 80% or more of their pre-injury wages within one year of the date of injury. This figure remained consistent from 1990 to 1994, varying from a low of 61% in 1990 to a high of 63.9% in 1992; the post-reform year of 1994 showed a 62% return-to-work rate. Through an examination of other measures of return-to-work, it appears that of the remaining 40% not earning 80% of prior wages; a larger percentage is not working at all. Return-to-work rates at 80% of prior wages are broken out by category of disability. Workers suffering severe injuries are less likely to return-to-work in that first year. The study also categorized return-to-work patterns by pre-injury employment patterns.
Workers who experience sporadic employment prior to the injury are not likely to work consistently following an injury. It is therefore unrealistic to expect 100% success for return-to-work rates, regardless of the structure of the system.

Rathburn & Seeman (1994) of Fortis Benefits Insurance Company joined forces with the Menninger Return-to-work Center to learn more about the characteristics and factors that play a critical part in whether people with disabilities return-to-work. The purpose of their study that was initiated in 1992 was to determine the following:

1) Direct limited rehabilitation resources more effectively;
2) Manage disability claims more efficiently; and
3) Make a contribution to the important field of disability management research.

Fortis sought to establish a method to identify disabled employees who would best be served by rehabilitation assistance, so that resources could be directed more quickly to these individuals. At the same time, the company sought to identify more quickly those disabled individuals who are unlikely to benefit from rehabilitation assistance. At the other end of the spectrum are those individuals who, for whatever reason, are very likely to return-to-work without rehabilitation assistance.

The predictive tool that was to be created would assist Fortis’s claims managers in the classification of claimants into groups in accordance with the statistical likelihood of return-to-work.

A sample of 2,747 claimants were selected and categorized into two groups: claimants who returned to work and those claimants who continued to receive long-term
disability at the time of the study. Using the Menninger studies as a model, discrete categories were identified for initial review. These categories were gender, marital status, and other demographic data. Also, the study examined arbitrary groups of continuous data including age/wage. It was determined through this process that seven variables were significantly related to the likelihood of return-to-work. They were age, gender, marital status, cause of disability, whether the disability was work-related, wage, and type of disability.

Additional testing turned out some weakness in the scale; however, through further examination two additional variables were added to the initial seven: the size of the company or organization where the individual works (number of employees covered by the plan) and whether or not the employee had representation. With the two additional variables and further statistical testing, the scale was approved and implementation beginning in April 1994.

Rathburn & Seeman concluded that the early identification of prime rehabilitation candidates is more than an efficient business practice but it is an obligation of insurers that have a vested interest in the employees and in the policyholder companies that have relied on the company for support during a traumatic time in the lives of individuals. The development of the Fortis RTW Scale represents a first step in the obligation that companies and insurers have to support the drive of individuals to realize their highest potential, not only on the job, but also as family providers and community leaders. Research conducted to develop the Fortis RTW Scale provides valuable data regarding the characteristics of individuals who are most
likely to respond to rehabilitation efforts. Additional research is needed to examine the motivation of these individuals and how motivation might impact return to work.

In a study involving Alabama’s work related injuries, Magrega, (1993) collected the data on a population of 51,944 injured workers to determine the relationship of 13 predictor variables to a single criterion variable, the number of days taken in returning to work after an industrial injury. The study used the pool of subjects, which consisted of those whose case information was stored in the computer of the Department of Industrial Relations, Workman’s Compensation Division, and State of Alabama. This database included all persons in the State that had incurred some type of industrial injury (1985-1989) on the job. This injury caused them to miss at least one day of work.

The analysis involved reducing some of the variables to a manageable number of categories so that these variables could be used in the study. Zero-order correlations were calculated between each of the predictors and the criterion variable. While a number of these were statistically significant at the .05 level, none approached the definition of a small effect size used in this study, (i.e., a Pearson product-moment correlation of .1). In other words, none of the variables accounted for even one percent of the variance in the criterion variable.

Two regression methods were employed in this study. First a forced entry of all predictor variables was made in order to observe the maximum multiple R, which could be obtained using the combines effects of all predictors. The next step was to repeat the analysis using stepwise regression in order to develop a more parsimonious prediction model.
This researcher concluded that it was not possible to develop a formula based on demographic characteristics or the injury characteristics in the data base that would predict meaningfully the number of days a worker would take to return-to-work after an injury suffered on the job. If however, such a formula were to be developed, it would probably include factors in addition to those available in this particular database.

In another study related to characteristics, Hall (1992) took a sample from California’s Workers’ Compensation vocational rehabilitation program to determine which client characteristics were related to return-to-work outcomes and total VR case costs for injured workers.

As benchmarks for the VR benefits in California’s Workers’ Compensation Program, the following outcomes are measured:

a) Employment status at conclusion of VR services,
b) Post-rehabilitation earnings, and
c) Total case costs.

The variables chosen for this study were selected from an extensive literature review in addition to suggestions from VR and Workers’ Compensation experts. The 12 clients characteristics that were utilized as predictors include age, marital status, gender, type of industrial injury, type of occupation, pre-injury earnings, and language, English speaking skills, English reading skills and residence at referral. The three criteria outcome variables used in this study are Employment at conclusion of VR services, Post-Rehabilitation Wages and total VR case costs.
A sample of 1,673 clients were selected from California’s workers’ compensation VR program who had received complete or partial vocational rehabilitation services between January 1, 1990 though March 31, 1994. Only closed cases were used in the study and data was collected from eighteen proprietary rehabilitation firms providing services throughout California.

In addition to descriptive analyses of the client characteristics related to the program outcome criterion, multivariate procedures utilizing logistic regression and multiple regression analyses were employed to determine the relationship between client characteristics and VR outcomes and case costs. Multiple regression analyses were used to determine the relationship of total, as well as individual, contribution of the 12 client characteristics to these criteria variables: a) post-rehabilitation earnings and b) total case costs. Logistic regression procedures determined the total and individual contributions of the 12-predictor variables at case closure. Logistic regression models were also constructed to determine the contribution of the client characteristics to total case costs at two levels of total cost, above or below $12,500.

Hall concluded that the study suggest that enhanced prediction of return-to-work using client characteristics can be reliably accomplished, but will likely require data at the commencement of services beyond what is normally available to the rehabilitation professional. The hypothesis that the client characteristics education and pre-injury earnings predict post-rehabilitation earnings is supported; however, this finding should be considered in the context that other variables likely exist that could add further predictive ability to the model.
Johnson, Chan and Questad (1987) used statistical prediction in predicting case expenditures of workers' compensation clients who sustained a permanent disability due to back injury. Their research involves the application of statistical predictions rather than clinical predictions in psycho-diagnosis to predict which claimants will have a difficult and expensive course of rehabilitation after a back injury and might profit from intensive rehabilitation interventions. In their study of a sample of workers’ compensation clients from the files of Sentry Insurance Company, all clients had been determined to have some degree of permanent disability with an average rating of 2.7%.

The researchers had initially looked at 37 variables, but a visual inspection of descriptive statistics revealed little variance across cases. This resulted in retaining the following predictors used for the multiple regression: number of different employers in the past five years, number of previous back injuries, presence of collateral income, educational level, age, presence of lifting restrictions, pre-injury salary, presence of an attorney, previous workers’ compensation experience, percentage of permanent disability, length of time on the job, and weekly disability compensation. A stepwise regression analysis using a forward-backward elimination strategy was performed to derive a cost prediction formula from the twelve predictor variables. Four were found to be predictive of case expenditures. They were percentage of disability, presence of an attorney, number of previous back pain claims, and lifting restrictions.

In another study predicting return-to-work of clients suffering traumatic brain injuries (TBI), Drake, Gray, Yoder & Llewellyn (2000), used a stepwise discriminate function analysis to examine the role of injury severity variables, cognitive performance,
and ratings of symptoms of TBI in predicting work status following MTBI. In this study of military personnel from the Naval Medical Center at San Diego, all subjects had to meet the following criteria: 1) active duty military status, 2) a documented TBI classified by accepted criteria as a mild TBI, 3) injury within six months of enrollment in the study, and 4) no history of significant TBI, psychiatric history, alcohol or substance abuse, neurological or metabolic disorders known to affect cognitive functioning.

A number of standardized measures of functioning were completed at the baseline evaluation. The Frontal Lobe Personality Survey (FloPS) is a self-report measure of behavioral and motivational changes associated with frontal dysfunction. A higher score is associated with more difficulties with three areas of functioning: disinhibition, apathy, and executive impairment. The total symptom score was used in the DFA. Also employed was the Neurobehavioral Rating Scale (NBRS) which is a clinician-rated assessment of a variety of symptoms associated with head injury, including items about mood, cognitive performance, and behavior. The total symptom score was included in the analysis.

Work status was predicted using a stepwise DFA with SPSS 9.0. A cross validation analysis was completed on the sample, using jackknife procedure to reduce the bias.

The researchers concluded there were no differences between the two, full duty (FD) and limited duty (LD) groups in education or estimated pre-morbid verbal IQ scores. There were however, some differences in age and rank with the LD group.
significantly younger and lower ranking, compared with the FD group. Age and rank were highly correlated because older subjects tend to have longer time in services and tend to be of higher rank.

In another study of Social Security beneficiaries, Kamkar & Tenney (1991) examined the relationship between beneficiaries’ success in return-to-work and length of job retention with several demographic and socio-economic variables. A project funded by the Social Security Administration in Arizona and Nevada provided a total of 664 subjects for the study. The Project Integrating Disability and Employment (PRIDE) project assisted Social Security Disability Insurance (SSDI) beneficiaries to return to work. PRIDE had two fundamental goals. The first was to return the SSDI beneficiary to substantial gainful activity (SGA) by providing counseling, job transition skills training, job development, job placement and follow-up services to SSDI beneficiaries in Arizona and Nevada. The second goal was to derive a research model based on qualitative and quantitative variables that were demonstrated to be significant in returning SSDI beneficiaries to SGA. Data was gathered for four years that PRIDE was in existence and the data was analyzed at the end.

Analyses were divided in two parts: the clients’ return-to-work, and the length of job retention. On return-to-work, the Chi Square method was used to study the relationship between the variables of interest and the clients’ success in returning to work.

On job retention, the study investigated the relationship between lengths of job retention and the variables of interest. Using stepwise regression, all 267 clients hired at
the time of the study, were included in the analysis. The qualitative variables such as disability type, sex, race, etc., were analyzed using indicator or dummy variables. The dependent variable was the number of days on the job.

Chi-square analyses revealed that the length of unemployment, trial work period, and educational level were significant factors affecting return-to-work, with length of unemployment being the most significant. Clients who had been unemployed for one year or less were the most successful in returning to work. The beneficiaries’ trial work period was also a significant factor as was educational level. Multiple regression analyses revealed no significant correlation between the number of days beneficiaries stayed on the job and the quantitative variables of age, education years, pre-disability income, benefit level, length of time unemployed, length of time receiving benefit, and trial-work period.

In another predictive study, Peterson (1996) selected 2,468 subjects from the State-Federal Vocational Rehab agency in Nevada that were closed in federal fiscal year 1994. The study was intended to determine the impact of various services related variables as well as demographic variables on participation in rehabilitation and on outcomes that are achieved once the individuals have chosen to participate. This study, although a part of a larger study, focuses on examining the relationship of demographics and services received as predictors of competitive employment outcomes. Factors selected for the study in relation to competitive employment were demographic and services factors including (a) race and ethnicity; (b) gender with two categories;
(c) earnings at the time of application for VR services; (d) level of education attainment (highest grade completed), and (e) type of disability with 13 partially grouped categories.

Stepwise multiple regression was used to test the hypotheses. The case of those individuals who were closed in competitive employment were selected and analyzed for the amount and rank of contribution to the criterion from each of the significant demographic and service factors or independent variable.

The single factor most predictive of closure in competitive employment was amount of case service expenditures or the amount of funding for the purchase of services. The second most predictive was the provision of on-the-job training, and third, fourth, and fifth most predictive factors were provision of various other types of training.

2.9 Summary of Research

Studies and research have gravitated toward an understanding of Workers’ Compensation vocational rehabilitation and how this service can impact the return-to-work and the employers’ premium costs. States have evaluated the effectiveness of their workers’ compensation system and have basically concluded that the savings associated with vocational rehabilitation is a necessary goal/objective of this business. In retrospect, it would be a tremendous tool to be able to make predictions about clients in their effort to return-to-work. The evidence in these studies has shown significant findings that support the ability to make accurate predictions. It would appear that many of these programs have already implemented some variation of a prediction model in
order to increase the predictability of a successful rehabilitation and costs-saving measure. The Menninger Return-to-work Scale is but one type of prediction tool. With new legislative efforts being introduced to reform workers’ compensation in the past few years, more changes seem imminent. Each state workers’ compensation system will need to further evaluate their program to determine the need for reform or changes in the overall system that will best fit their working population.

2.10 The Menninger Return-to-work Scale

2.10.1 Introduction:

Hester, and Decelles (1987) explored how rehabilitation professionals make their decisions to refer for rehabilitation services. These rehabilitation professionals were asked to rate the return-to-work potential of 35 individuals from the sample, eighteen of who actually returned to work while the remaining 17 never returned to work. In this study the author indicates that part of the reason for under utilization of vocational rehabilitation services may be due to an inability in the potential referrer to properly identify those persons who need and will benefit from vocational rehabilitation services. He noted that the more accurate the decision-maker, the more information is used. The Menninger RTW Scale relies primarily on eight of ten characteristics. The good predictors used six and the poor predictors used only five characteristics.

2.10.2 Development of the MRTWS:

The Menninger Return-to-work Scale was developed through a continuing cooperation of a major insurance carrier in which detailed information was obtained on
600 Long Term Disability (LTD) claimants. The information and data was analyzed to determine which items distinguished the two groups, those who did not return-to-work and those who did return-to-work. The items are as follows:

1) Primary Disability – grouped according to the MERCK Manual classification system and coded as follows:

   03 Cardiovascular – includes myocardial infarctions, arteriosclrotic heart disease, coronary artery disorder, hypertension, and angina pectoris.
   04 Pulmonary – includes lung cancer, lung obstructions, bronchitis, emphysema, and asthma.
   05 Gastrointestinal – includes intestinal cancer, stomach ulcers, and gastritis
   10 Musculoskeletal – includes fractures, strains, arthritis, sprains, torn muscles, and back pain.
   11 Neurological – includes herniated nucleus pulpos, CVA, disk disorder, brain concussion, fractured vertebrae, radiculopathy, ruptured intervertebral disk, and multiple sclerosis.

2) Age at the time of claim and grouped as follows:

   16 - 34
   35 - 44
   45 - 54
   55 – 64
3) Gender

4) Education - years of education are grouped as follows:
   - Less than or equal to 8 years
   - 9-11 years of education
   - 12 years of education
   - 13-15 years of education
   - 16 years of education
   - More than 17 years of education

5) Marital Status – categorized by the following:
   - Married
   - Single
   - Other

6) Former Occupation – the subjects occupation was coded as follows:
   A) Managerial and Professional – includes executives, administrative, and
      managerial workers, as well as professional, (e.g., attorneys, doctors,
      teachers, etc).
   B) Technical, Sales and Administrative – includes technicians, sales
      persons, administrative support, and personnel such as secretarial and
      clerical workers.
   C) Service Occupation – includes domestics, protective service workers,
      barbers and other personal service.
D) Precision, Production, Craft and Repair – includes mechanics and repair.

persons and construction trade workers.

E) Operators, Fabricators, and Laborers – includes machine operators, assemblers, transportation workers, laborers, and equipment cleaners.

F) Farming, Forestry, and Fishing.

7) Area of Residence – defined as population density in the subjects county of Residence. Residential classification includes:

Rural – counties with 75 or fewer persons per square mile.

Metropolitan – counties with 1500 people or more per square mile.

Urban – counties with 76 to 1,499 people per square mile

8) Type of Employer includes:

A) Small Employer – less than 100 employees

B) Major Employer – 100 or more employees

C) Self Employment

D) Public Employer

9) Type of Disability Support Received included:

1) None

2) Retirement

3) Social Security Disability Insurance

4) Workers’ Compensation

5) Long Term Disability Insurance
6) Other

7) Multiple Support (i.e., more than one source of support).

10) Amount of Wage Replacement – this ratio expresses the relationship of disability support payments to the pre-disability earnings:

   1) 0.25
   2) 0.50
   3) 0.75
   4) 1.0 if more than 1.0 claimant receiving more than the former wages.
   5) 1.25
   6) 1.50

2.10.3 Population used to develop the MRTWS:

The population used in the development of this scale is the 600 individuals selected from a major insurance carrier. These LTD cases were considered long term and serious (claimant is disabled from returning to work for five months or more). It was indicated that this population closely resembles the general working population. The vast majority was blue collar, clerical, or service jobs. The sample includes more men than women. The average age of the sample is 50.4 years, which is not significantly different than the average age of the total disabled work population.

2.10.4 Data Analysis and Scale Construction of the MRTWS:

In developing the scale for the MRTWS, Hester, et al., (1986) utilized the univariate comparisons (Chi square and t-tests) of the return-to-work and the non-return-to-work sub-samples with respect to each of the variables. Variables that were
significantly different between outcome sub samples were then used in the scale. Each variable was then transformed to a set of scale scores from 0 to 10, where each unit corresponds to a 10% probability of return-to-work for the variable in isolation from other variables.

Factor analysis of the intercorrelations among scale scores was used for the significant variables of the 375 claimants for which completed information was available. This apparently provided some assistance in understanding the relationship among significant variables. Pearson’s correlation coefficient was also used as a measure of intercorrelation. The values for the diagnosis were derived from an interactive estimation of the communalities and utilized an oblique rotation solution to the factors.

The first step in the scale development is to identify those items that are significantly related to the outcomes of the characteristic, which is to be predicted. As mentioned earlier, the ten items selected, significantly identified those who returned to work and those that were practical to use in the scale.

In Appendix A, it shows that women having individual LTD policies are more likely to return-to-work than men. Only 47% of the men who became disabled, returned to work, as compared to 60% of the women. Those that returned to work were significantly younger (5.4 years) than those who did not return-to-work. Appendix B shows the percentage who returned to work from each age cohort. The first two cohorts, 16 to 24 and 25 to 34, were combined because of the small number of subjects in those groups. Single workers with a disability, were more likely to return-to-work than the
other groups as shown in Appendix C. Those that were widowed, divorced, or
separated were the least likely to return-to-work, which is quite significant.

This disability sample also differs slightly from the previous published data for
the 1986 study by Hester and Decelles (1986), but is similar in age and outcome. The
major differences are that in this sample more people than expected with cardiovascular
disabilities returned to work and fewer expected with neurological disorders returned to
work. The relationship between the MERCK disability categories and the proportions
who returned to work are shown in Appendix D. Those who returned to work had
significantly more education (2.4) yeas than those who did not return-to-work. The
distribution for each educational level is shown in Appendix E. Appendix F shows the
variation in return-to-work among individuals in the six different groups. More
managers/professionals and fewer individuals in the service occupations returned to
work than expected. As shown in Appendix G, the sample is equally divided among the
four major groups of employers including, self-employment, small company, and major
corporation.

Significantly more individuals who were employed by public agencies returned
to work than those who were either employed by self, company, or corporation. The
sparsely populated counties (less than 76 people per square mile) were most likely to
employ people in small companies or self-employment. Individuals who are self-
employed or who work for small companies are less likely to return-to-work after
incurring a disability. Appendix H provides the exact proportions of persons returning to
work according to the density of population in their county of residence. In the sample
provided by the insurance company, all subjects were receiving some level of LTD benefits. The reference to type of support therefore, is related to additional support beyond the benefits received by the insurance company. According to Appendix I, there are considerable differences in the likelihood of return-to-work based on the type of disability support received. Persons not receiving any additional payments other than their individual LTD benefits are very likely to return-to-work as opposed to receiving benefits from another source, such as with SSDI, where return-to-work is less likely.

With all of the subjects holding a LTD policy, each of the individuals in this sample has wage replacement, with the average being $320.17 per week. The sample as a whole had a wage replacement ratio of 0.69. This means that the average person was receiving support payments equal to 69% of the pre-disability earnings. Appendix J presents return-to-work probabilities as a function of the level of wage replacement.

The next step in the process is to weight the items and the categories within each item. The method selected by Hester and his associates was to use a score derived from the percentage of people with that characteristic who returned to work. Appendix C indicates that 63% of employees who are single return-to-work. These percentages are then converted to scale scores according to the conversion table presented in Appendix K. The resulting percentages for all ten items, and corrected for missing data, are shown in Appendix L. Therefore, a worker who is single is given a score of “6” on the marital status item. The percentages presented in appendix A through J were used to obtain scale scores for eight of the ten items. Some additional adjustments had to be made for
educational level and wage replacement. These two items presented more complete data on those who returned to work rather than those that did not return-to-work.

From the population, the researchers produced a sample of 50% of those who returned to work and 50% of those who did not return-to-work. In the case of the educational level, there was data from 60% of those who returned to work and 40% from those who did not return-to-work. To correct this discrepancy, the number in each classification of an item was divided by the percentage (in decimal form) of the number who either returned to work or did not return-to-work, depending on which is appropriate. As an example, 24 subjects who returned to work had less than an eighth grade education. Thirty-two of those who did not return-to-work were at the same educational level. The 24 were divided by .595 (the proportion of the data in return-to-work), which yielded a 40. The 32 that did not return-to-work were divided .405, which yielded a 79. The total of 40 and 79 (119) was then divided into 40 to produce the percentage, which was then converted into the scale score. The assumption for this methodology is that the collection of the data was unbiased and therefore, representative of the total sample population. Appendix L shows the adjusted percentages for educational level, as compared with the Appendix E, there is a reduction in all levels as far as return-to-work is concerned.

The same procedure was used to correct for the fact that 82% of the wage replacement data were available for the sample which did not return-to-work. For this item only one classification, a wage replacement of 1.01 to 1.50, changed from that
which would have been derived on the basis of the data provided in Appendix J. Appendix M shows the percentages of disabled employees’ outcomes based on the wage replacement ratios when corrected for the missing data.

In Appendix L, which shows all scale scores, the values for a person’s rating on the items are added together to provide a single score, which is the RTW score. The lowest possible score would be a man who is 55 years or older, widowed, divorced or separated and has a neurological disorder. This person lives in a rural county, but has not gone to high school. This person also works in a service trade either for himself or for a small employer. In addition to his individual LTD benefits, he also receives SSDI benefits, which provide more than 150% of his working income. The person receiving the highest possible score is a woman under 35 years of age who is single and has a gastrointestinal disorder. She lives in a metropolitan area and has completed her master’s degree. She has a professional/managerial position with a public agency. In addition to her LTD policy she is receiving either workers’ compensation payments, if compensable, or another LTD policy. The post-disability are not more than 25% of her previous earnings.

A very important note regarding the scale is that it goes from the probability of return-to-work for each item however; one cannot go directly from the total scale score back to the return-to-work probability. In other words, just because the scale score in the first example is 30 does not mean that there is a 30% chance that the individual will return-to-work. In fact, it is only 3% or less chance, but conversely, the women with the highest possible score will almost certainly return-to-work.
The average scale score for those that returned to work was 56.8 and for those that did not return-to-work were 44.4. The difference is highly significant. These scores were derived from the 375 individuals in the sample that completed data were available. Sixty-one percent of these people were in the return-to-work group and 39% were in the group that did not return-to-work. In order to generate the predicted return-to-work percentages for the scale scores, the same adjustment strategy as applied to the educational level had to be used. The results of these adjustments are found in Appendix N. This data shows that the Menninger RTW Scale not only separates those who returned to work from those who did not return-to-work from a statistically significant basis, but also a practical basis. It appears that 89% of those who score 50 or more points return-to-work however, only 18% of those who score less that 50 ever return-to-work.

Some of the items in the scale are interrelated and in order to show the interrelationships, Appendix N was created to show the correlation matrix. Factor analysis of the intercorrelation matrix was done to better identify the grouping of items. In this analysis, there were four factors identified. We will refer to these items as groups and they are listed in Appendix O. Group I is labeled “Educational Level” with the highest loading on this factor being occupational level. It is usually the person’s educational level, which determines the type of occupation obtained rather than occupational level determining the educational level. In addition, there are more
administrative, professional and technical jobs within the public sector and major employers and this can account for the difference (0.52 correlations) between occupational level and the type of employer.

The second grouping, Group II, has been labeled as “Support.” The amount of wage replacement receiving and the sources of that support are most related to this factor. The fact that the type of disability is in this group means that the person with neurological disabilities are more likely to be receiving SSDI or have multiple sources of support in addition to their LTD policy. A person falling within these groups also tend to receive more financial support relative to their previous earnings.

The third group, Group III has been termed “Home Life,” which is composed of marital status and areas of residence. The relatedness of marital status and area of residence is due to the tendency for a greater proportion of the working age populations living in metropolitan areas are single, than those that live in rural areas.

The fourth group, Group IV is labeled “Age” and shows that age is relatively independent of all other items with the exception of wage replacement. With wage replacement negatively loaded on this factor, it means that older workers tend to have less of their earnings replaced. There are two primary reasons for this. First, individual LTD policies that were purchased 20 or more years ago have generally smaller dollar benefits than the ones that were recently purchased. Secondly, earnings tend to rise with seniority, which will raise the amount which needs to be replaced. Appendix Q offers a data collection tool which individually processes the demographic information into categories for analyzing.
2.10.5 Uses of the MRTWS:

Hester and Decelles (1987) cited at least four potential uses of the Menninger RTW Scale by insurance companies or self-insured employers:

1) The first use is in the selection of those individuals who will be provided rehabilitation services. The most efficient use of rehabilitation resources dictates that they not be used for those who will return-to-work without assistance. Also, it is not efficient to pay for rehabilitation for individuals who are not able or motivated to return-to-work.

2) The second way of utilizing the scale is to determine which individuals are not going to be in a position to return-to-work because of the factors derived from the scale.

3) Another method for using the scale is to improve Program Evaluation. There may be a situation where only the successful closures have been reported. This is a common problem for project officers in government grants, especially those dealing with job placement. Under these types of situations, the scale can be used in evaluating the relative difficulty of the placement.

4) The Menninger also offers to rehabilitation counselors the possibility of identifying persons with rehabilitation potential who might otherwise be overlooked.

The researchers involved in this scale development used the MRTWS scale scores to classify subjects into the various treatment groups, which can potentially be
used by rehabilitation counselors to ascertain the degree to which a client can be successful in the process. Workers who become disabled would fall into the treatment groups based upon the scales, which are listed as follows:

A) Group I (score < 39). Do not provide rehabilitation services unless requested by the client, and then only after careful evaluation. Nine percent of the clients fall into this group.

B) Group II (score 40 – 44). Look at the person’s strengths as identified by the scale. If it appears that the client may be willing and able to benefit from rehabilitation services, proceed with caution. Watch the client’s progress carefully and be prepared to stop rehabilitation if it appears that the person is resisting. Twenty-one percent of the clients fall into this group.

C) Group III (score 45 – 49). People in this group should be considered rehabilitation candidates until proven otherwise. Seventeen percent of the clients fall into this group.

D) Group IV (score 50 – 54). Clients in this category who are not returning to their previous occupation definitely should be provided with rehabilitation services. Nineteen percent of the clients fall into this group.

E) Group V (score 55 – 59). Since the vast majority of the individuals in this group return-to-work without assistance, rehabilitation services probably will not be needed. However, look at the individuals
weaknesses as identified by the scale. If any items except wage replacement are very low, or the disability is very severe, the need for rehabilitation services should be evaluated. Seventeen percent of the clients fall into this group.

F) Group VI (score 60 – 64). Vocational rehabilitation services will not normally be needed: however, if medical rehabilitation is recommended, it should be provided since the person will almost assuredly return-to-work. Ten percent of the clients are in this group.

G) Group VII (score >65). Clients in this group will be returning to work. Their progress should be monitored and assistance provided if requested. Seven percent of the clients are in this group.

2.10.6 Past Research using the MRTWS:

The MRTWS has been used in several research studies involving making predictions for the return-to-work of clients who are recipients of private insurance, workers compensation and social security. Hester, et al, (1986) studied a group of Long-Term Disability clients for a major private insurance company.

Olsheski (1991) studied a group of social security recipients who were involved in a project entitled “Disability Management of Social Security Beneficiaries: A Physical Medicine and Vocational Rehabilitation Work Return Demonstration Project.” The 114 subjects who volunteered were divided into three outcome groups: 1) Placed group, 2) Active group and 3) Unsuccessful group. This validation study involved a group of SSDI clients who were participating in a 24-month project providing a
comprehensive multidisciplinary disability management approach to assist them in returning to work. Intensive case management was the primary service, which was provided by a vocational rehabilitation specialist who utilized the team approach and various community organizations for services. In this study the score ranged from a low of 37 to a high of 59.

In another study, Hester and Decelles (1989) used the Menniger Return-to-work Scale on 200 subjects from the Alberta Workers’ Compensation Board to determine the feasibility of using the MRTWS. The data indicated that 104 of these claimants had returned to work and that 96 did not return-to-work. The range of scores for Alberta Workers’ Compensation claimants was from a low of 44 to a high of 60. The average score for those who returned to work was 54.2 (SD=2.97, while it was 52.5 (SD=3.17) for those who did not return-to-work. A major problem encountered in this study of Alberta Workers’ Compensation claimants is that the range is much narrower (40-60) than those in the study of LTD claimants in which the MRTWS was developed. This type of restriction of range normally results in a reduction in the instrument’s usefulness in predicting return-to-works. Although this was a limitation of this study, there was found to be a significant difference in the average MRTWS scale score between those who returned to work and for those that did not return-to-work. While this difference is significant at 1.7 with .001 level of confidence, it is insufficiently large to determine which claimants scoring 51 and 56 on the scale will return-to-work. In the study, more than three-fourths (77%) of those who received a score of 57 - 60 returned to work and only one-third (32%) of those who received a score of 50 or less returned to work.
Rathburn and Seeman (1994) utilized the Menninger to create a scale for their disability clients receiving benefits through disability claims management with Fortis Benefits Organization. The purpose of the study was threefold:

1) Direct limited rehabilitation resources more effectively;
2) Manage disability claims more efficiently; and
3) Make a contribution to the important field of disability management research.

Only claims covered directly by the Fortis Benefits were included and claims managed as a third-party administrator for self-insured employers were not included in the study. The final sample of 2,747 claimants consisted of two groups: claimants who returned to work and those whose cases remained active and who continued to receive long-term disability benefits at the time of the study. After the initial review of claims it was determined that seven variables were significantly related to the likelihood of returning to work: age, gender, marital status, cause of disability (illness or accident), whether the disability was work related, wage, and type of disability.

The researchers at Fortis concluded that the scale had proven to be effective. The scale was implemented in April 1994. They indicated that the Fortis RTW Scale represents the first step in the obligation that companies and insurers have to support the drive of individuals to realize their highest potential, not only on the job, but also as family providers and community members. It is also the first step because it serves only as a guide to efficient management of disability cases. The skill, insight, and resources of rehabilitation counselors, rehabilitation vendors, human resources executives at
policyholder companies, and health-care providers must still be implemented to follow through on the promise of prompt response in a disability situation.
CHAPTER 3

METHODOLOGY

This chapter will describe the procedures that were used to complete the study under investigation. Descriptions are provided with regard to subjects, data sets, research design, hypotheses tested and analysis of the data. Comparisons will also be made with regard to the two data sets.

3.1 Subjects

The subjects for this study were randomly selected from a population of claims that were referred to and accepted for vocational rehabilitation services by the Ohio Bureau of Workers’ Compensation (OBWC). These claims went from Medical Only to an “allowed” status or Lost Time Claim, during the year of January 1, 1995 and December 31, 1995. These subjects received vocational rehabilitation services from different areas in the State of Ohio through either the public or private sector. The subjects have met the eligibility criteria as established in Ohio Revised Code 4123-18. The year selected for the study is prior to the implementation of the Health Partnership Program that began in 1997. Passage of the legislation to create the HPP program occurred in 1996. The HPP program shifted the responsibility of medical and vocational services to the Managed Care Organizations (MCO).
A 5% random sample was taken from the “accepted into rehabilitation” group (6,800) of injured workers who returned to work (4,280), and for individuals who did not return-to-work (2,520) while they participated in their vocational rehabilitation program. Cases without all of the characteristics under review were deleted from the sample. For the return-to-work group there were 192 subjects and for the non-return-to-work there were 110 subjects.

The Disability Rehabilitation Coordinator enters information from the rehabilitation process into Version III, which is a database on OBWC computer system. From the Version III system, the information is stored in OBWC Data Warehouse. The private and public vocational rehabilitation counselors provide services based on evaluation of the subjects’ physical/mental condition at the time of the referral. Certain elements from the claims process and the vocational rehabilitation process are mandatory, and other elements are entered on a voluntarily basis by Field Operation staff.

3.2 Ethical Considerations

One of the primary concerns was the assurance that individual subjects would be protected and that confidentiality would not be compromised. All of the data used in the study came from closed cases in OBWC’s Data Warehouse and no subjects received any direct contact. There were no names, social security numbers, or any other elements used in this study that would directly identify any of the subjects.
3.3 Data Sets

The Ohio Bureau of Workers’ Compensation, Information Technology Department (IT) provided information on all cases that had received Living Maintenance (LM) during the 1995-1996 calendar years. The LM designation would indicate participation in a vocational rehabilitation program in accordance with Ohio Revised Code 4123-18. Characteristics for this sample which were analyzed include:

**Area of Residence.** According to Hester et al., (1986) people who are self-employed or employed with a small company are less likely to return-to-work. And when public transportation is not readily available in the rural areas, it makes it that much more difficult for the person with a disability to return-to-work. The Area of Residence is determined by the population per square mile. The Metropolitan area is an area with 1,500 people per square mile. The Rural Area is an area with 75 or fewer people per square mile. The Urban Area is an area with 76 to 1,499 people per square mile.

**Gender.** The type of jobs offered and accepted through vocational rehabilitation, are directly influenced by gender. Gender can also be a factor in the type of support provided on the job. Males are primarily employed in areas such as manufacturing, warehousing, and construction, where the likelihood of an injury is more likely.

**Age.** The age of the person will have an impact on how quickly the claimants will return-to-work and the success of the vocational rehabilitation program. An older person receiving an injury may not return-to-work as quickly as a younger person. The Menninger study utilized age as one of the predictor variables of return-to-work.
**Marital Status.** The status of the marriage at the time of the injury is also an important variable under consideration. The claimant may be married, single or other (which will include divorced, separated or widowed).

**Type of Employer.** The Menninger study defined the type of employer by the size or number of employees employed by the company. This data is not available in the OBWC system. In this study, we investigated the employer by reviewing their purpose in products produced or services rendered. Some commonalities among companies were manufacturing/fabricating, health care, public (State, City, County), and stores (wholesale/retail).

**Medical Diagnosis.** There are two major diagnostic groups for this sample of claimants. In the industrial setting, claimants are more likely to receive a musculoskeletal disorder or a neurological disorder. Injuries affecting bones or muscles and joints are the musculoskeletal disorders and they comprise a large percentage of the subjects in this study while neurological disorders cover the remaining claims. Neurological disorders are injuries to the cerebral hemisphere. The Menninger study initially included the primary disability and secondary disability however, only the primary disability was used as one of the final variables.

**Attorney Representation.** Attorneys are hired by the claimants when they feel that the system becomes too difficult to navigate. The attorney can represent the claimant on several different fronts. Not only can they assist with allowance of the claim, they can also help with compensation payments that are discontinued and that eventually end up before a Hearing Officer of the Industrial Commission of Ohio.
**Amount of time in the Rehabilitation Program.** This is a measurement of the amount of time the claimant is involved in their rehabilitation program from referral to closure. Each vocational rehabilitation program is designed specifically for the claimant and can last from a few weeks to a few years. In the case of noncompliance, a claimant can reach closure status unexpectedly. In the case of an uncooperative claimant, there are procedures available to terminate the rehabilitation case. Growick and Finch (1994) described this time associated with the rehabilitation process as “case velocity.” Although this variable cannot be categorized as a predictor, because it is not determined until after rehabilitation services have been rendered, it will assist the vocational rehabilitation case manager in determining how long the rehabilitation process is expected to last. Allocation of funds can then be determined accordingly.

**Wage Replacement.** Hester et al., (1986) utilized the wage replacement in the Menninger study for a group of Long Term Disability clients. This group had various payments while they were on disability depending on the value of their policy. In workers’ compensation, the wages are based on the average weekly wages for the year the claimant was injured. Calculations are made on the wages preceding the date of injury. The claimant will receive a percentage of these wage during the period of disability, comparable to the wages earned while working.

### 3.4 Procedures

Interest in this study was initiated through Dr. Hester and the Menninger Foundation. Permission was obtained through the Tina Kielmeyer, Chief of the Medical Management Cost Containment Division of the OBWC, and supported by the
Information Technology Division and Management Reporting Department. Dr. Hester provided guidance into the design of the study and in particular, suggested which variables should be considered for the creation of a Menninger Return-to-work Scale (MRTWS) for OBWC claimants. The Information Technology department was contacted and a query was developed that would generate a list of claims from the mainframe that had Living Maintenance (LM) attached for the year 1995 and 1996. The information collected was formatted into seven different files because of the volume of information. The different files were: (1) RTW Wage (2) Y/N Interested Parties, (3) LM Rehabilitation, (4) Injuries, (5) Demographics, (6) Payments, (7) Procedures. The Management Reporting Department was able to download this information from the OBWC’s H-Drive to a CD Rom. The CD Rom was used to enter the data into the Statistical Package for Social Sciences (SPSS) program where the data was split into two groups; those claims that returned to work during the payment of LM and those claims that did not return-to-work while receiving LM. In accordance with ORC 4123-18 LM is paid to an injured worker while participating in an active vocational rehabilitation program.

The variables needed to conduct this study are not mandatory fields in the Bureau’s database so the V3 system provided additional data. The Disability Rehabilitation Coordinator (DMC) at the Field Service Office level maintains the Version 3 information. The DMC at OBWC tracks the claims progress from referral to rehabilitation plan to case is closure by the Private Rehabilitation Counselor who is assigned to the case. In order to have sufficient information to create the scale,
secretarial support from the department provided additional information on the variables by accessing the Version 3 files and notes. The variables that were collected in the initial data warehouse query, along with the additional data collected from V3, resulted in the following variables that were common throughout all of the claims:

1) Age at the time of injury  
2) Sex  
3) Gender  
4) Marital Status  
5) County of Residence  
6) Employer type by product or service  
7) Average Weekly Wage  
8) Primary Disability  
9) Secondary Disability  
10) Attorney Representation  
11) Time from acceptance to return-to-work  
12) Time from acceptance to closure of the rehab case  
13) Date of Injury

3.5 Research Design

The purpose of this study was to create a Return-to-work Scale that would predict outcomes for Ohio Bureau of Workers’ Compensation industrially injured workers participating in vocational rehabilitation services. The study analyzed secondary data that was obtained from the Bureau’s database. This data was enhanced
through the V3 system on existing claims used for the creation of the scale. The study also examined each of the variables and provided some comparisons of the return-to-work and the non-return-to-work.

This research design of this particular study is Causal Comparative or expo facto (after the fact). Gay (1996) describes ex post facto as research in which the researcher attempts to determine the cause, or reason, for existing differences in the behavior or status of groups of individuals. In other words, it is observed that the groups are different on some variable and the researcher attempts to identify the major factor that has led to this difference. The research is ex post facto since both the effect and the alleged cause have already occurred and are being studied by the researcher in retrospect.

Findings of the study do not propose a definitive predictor of the success of an individual involved in vocational rehabilitation but rather provides some perspective of what variables should be considered or evaluated to determine the likelihood of return-to-work. These variables were also compared to other predictor variables found in the literature so that further explanation of an individual’s success in vocational rehabilitation can be enhanced.

3.6 Hypotheses Tested

From the research questions, the following hypotheses were developed and then tested in the analysis:
$H_1$ Based on gender, there is no significant difference between claimants who returned to work and those who did not return-to-work while participating in Ohio’s Bureau of Workers’ Compensation rehabilitation program.

$H_2$ Based on age, there is no significant difference between claimants who returned to work and those who did not return-to-work while participating in Ohio’s Bureau of Workers’ Compensation rehabilitation program.

$H_3$ Based on marital status, there is no significant difference between claimants who returned to work and those who did not return-to-work while participating in Ohio’s Bureau of Workers’ Compensation rehabilitation program.

$H_4$ Based on area of residence, there is no significant difference between claimants who returned to work and those who did not return-to-work while participating in Ohio’s Bureau of Workers’ Compensation rehabilitation program.

$H_5$ Based on disability, there is no significant difference between claimants who returned to work and those who did not return-to-work while participating in Ohio’s Bureau of Workers’ Compensation rehabilitation program.
H6 Based on wages, there is no significant difference between claimants who returned to work and those who did not return-to-work while participating in Ohio’s Bureau of Workers’ Compensation rehabilitation program.

H7 Based on time in rehabilitation, there is no significant difference between claimants who returned to work and those who did not return-to-work while participating in Ohio’s Bureau of Workers’ Compensation rehabilitation program.

3.7 Data Analysis

The data from the analysis will be reported in three sections. The first section will describe the characteristics in terms of the variables under this study. Included are the tables that describe the percentages of individuals for each of the variable in the study, which compare the return-to-work, and non-return-to-work. The second section will describe the process for the creating the return-to-work scale through the methodology used in the Menninger study. The third section will compare the return-to-work with the non-return-to-work. The procedures utilized for this section include the use of the chi-square test and the t-Test.

In order to create the Return-to-work Scale for OBWC, the return-to-work subjects were compared with the non-return-to-work subjects. A percentage of the total for each group was determined and each variable was transformed to a set of scale scores from 0 to 10, where each unit corresponds to a 10% probability of return-to-work
for the variable in isolation from all other variables. The sum of the scale scores for the variables is the individual’s score on the Return-to-work Scale. The SPSS program was used to analyze the data and variable relationship.

The first step in the process for creating a return-to-work scale was to identify the items most significantly related to outcome or the characteristic that is to be predicted, which in this case is the return-to-work. The next step is to weight the items and the categories within each item. This will produce a score derived from the percentage of claimants for each variable who returned to work.

In the current study, the return-to-work or non-return-to-work is the dependent variable or criterion. Each of the additional variables (age, gender, marital status, primary disability, wages, amount of time in rehab) are used to predict the outcome of the claimant involved in a vocational rehabilitation program.

The findings and the analysis of the study are discussed in subsequent chapters. The information for the discussion draws from the literature review and from the data analysis.
CHAPTER 4
RESULTS AND DISCUSSION

The purpose of this study was to determine if a RTW Scale could be created for predicting the return-to-work of Ohio Bureau of Workers’ Compensation (OBWC) claimants who have participated in a vocational rehabilitation program. The data was generated from the Data Warehouse, which is the mainframe for OBWC, which contains all information related to workers’ compensation claims and claims management. The Field Operations Rehabilitation Case Manager enters the data into the Version 3 system. Data was provided for claimants with a date of injury (DOI) from the year 1995, and who participated in a vocational rehab program. The population was divided into those claimants who returned to work, with a designation of YLMRTW (Yes Living Maintenance Return-to-work) and NLMRTW (No Living Maintenance Return-to-work). Living Maintenance is only paid when a claimant is actively participating in a vocational rehabilitation program. A random sample was taken from each group. The sample included 110 claimants who returned to work, and 92 claimants who did not return-to-work.

Analyses of the data consisted of univariate analyses of the return-to-work group and the non-return-to-work groups. Chi Square test was used to test the relationship between the two groups to determine if any differences existed.
Initially the scale construction was completed to determine the individual predictors that would be used in a RTW Scale. The variables or predictors selected have been identified in several studies in the literature including the Menninger Return-to-work study which researched claimants who were recipients of Long Term Disability clients.

4.1 Scale Construction

In this section, a discussion of the nine variables will occur and the reason for eliminating two variables from the creation of the scale. The first variable eliminated from the scale was the Attorney Representation. There was no significant difference from having an attorney representing the claimant on the case than not having an attorney for representation. There were 63% of the claimants who return-to-work with attorney representation, and 65% of the claimants who did not return-to-work but had no attorney representation. The use of an attorney can assist the claimant in understanding the complicated workers’ compensation process and help the claimant through any litigation. Attorney representation is also selected because of the process involved in claim allowance.

The Secondary Disability was also eliminated as a part of the return-to-work scale. Although 76% of the claimants had a secondary injury allowed in the claim, it is also not uncommon to have several other conditions allowed in one claim. A majority of the additional conditions allowed in the workers’ compensation claims are related to, or an exacerbation of, a pre-existing injury or occupational disease. This further validates the need for attorney representation, in which the claimant goes through the litigation
process to have the additional conditions allowed in the claim. If the new condition is not allowed, the system has an appeal procedure through the Industrial Commission hearing process for parties (employer, claimant) to the claim. If it is a new injury unrelated to the first injury, a new claim is filed by the claimant or attorney representative.

4.2 Data Coding

Similar to the original Menninger scale, some of the data needed to be group and coded for analysis. The Merck Manual (1982) was used for this purpose. For the purpose of this study, there were only two categories utilized from this manual for the cases under this study:

10 Musculoskeletal – includes Fractures, Strains, Arthritis, Sprains, Torn Muscles and back pain.

11 Neurological – includes Herniated Nucleus Pulposus, Cerebrovascular Accident (Stroke), Disk Disorder, Brain Concussion, Fractured Vertebrae, Radiculopathy, Ruptured Intervertebral, and Multiple Sclerosis.

The county of residence was coded based on the number of persons per square mile. Based on this number, the county was classified as Metropolitan, Rural, and Urban. The counties with 75 or fewer people per square mile were classified as rural. Those counties with 76 to 1,499 people per square mile were classified as Urban and those larger than 1,500 were classified as Metropolitan.

Wage Replacement is comparable to the Temporary Total benefits paid to the injured worker while in the vocational rehabilitation program. The wages are calculated
at 72% for the first twelve weeks, after which the wages are paid at 66 2/3 of the Average Weekly Wage (AWW) for each claim. This is the same amount of wages received in a vocational rehabilitation program unless the wages were below the AWW for the year in which the injury occurred. Wage replacement for the claims in this study will normally fall between 50% and 75%.

4.3 Sample Description

The characteristics of the BWC population will be compared to all Ohio workers who were referred to the vocational rehabilitation where possible. These claimants entered into the rehabilitation program because of the allowed claim and having been determined as eligible for rehabilitation services. The State of Ohio has a significant concentration of injured workers in the large metropolitan areas, such as Cleveland, Columbus, Toledo and Cincinnati. This is due in part to heavy concentration of manufacturing companies which hire a number of skilled to unskilled workers in these industries.

The subjects were composed of two groups (Table 4.1). These groups consisted of: 1) Return-to-work – 192 Claimants who returned to work as a result of vocational rehabilitation; 2) Non return-to-work – 110 claimants who did not return-to-work while in their vocational rehabilitation program.
Table 4.1: Claimants Receiving Vocational Rehabilitation and Return-to-work Outcomes

4.2.1 a) Area of Residence

The population per square mile will determine the population for these counties. In the metropolitan area, the population will be greater than 1,500 per square mile. The rural counties are those counties with population of 75 or less per square mile. The counties with a population between 76 and 1,499 are coded as urban. Table 4.2 shows the distribution of claimants and the county where they resided. Area of residence is one of the items used in the Menninger RTW Scale.

Table 4.2: Distribution of Claimants by County of Residence

<table>
<thead>
<tr>
<th>County</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cuyahoga</td>
<td>26</td>
<td>8.6</td>
<td>26</td>
<td>8.6</td>
</tr>
<tr>
<td>Franklin</td>
<td>31</td>
<td>10.3</td>
<td>57</td>
<td>8.9</td>
</tr>
</tbody>
</table>

Table 4.2: Distribution of Claimants by County of Residence

Continued
Table 4.2: Distribution of Claimants by County of Residence

<table>
<thead>
<tr>
<th>County</th>
<th>Claimants</th>
<th>% Employment</th>
<th>% Costs</th>
<th>%% Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hamilton</td>
<td>21</td>
<td>7.0</td>
<td>78</td>
<td>25.9</td>
</tr>
<tr>
<td>Lorain</td>
<td>10</td>
<td>3.3</td>
<td>88</td>
<td>29.2</td>
</tr>
<tr>
<td>Lucas</td>
<td>13</td>
<td>4.3</td>
<td>101</td>
<td>33.5</td>
</tr>
<tr>
<td>Mahoning</td>
<td>20</td>
<td>6.6</td>
<td>121</td>
<td>40.1</td>
</tr>
<tr>
<td>Montgomery</td>
<td>16</td>
<td>5.3</td>
<td>137</td>
<td>45.4</td>
</tr>
<tr>
<td>Unknown</td>
<td>16</td>
<td>5.3</td>
<td>153</td>
<td>50.7</td>
</tr>
<tr>
<td>Scioto</td>
<td>8</td>
<td>2.6</td>
<td>161</td>
<td>53.3</td>
</tr>
<tr>
<td>Logan</td>
<td>6</td>
<td>2.0</td>
<td>167</td>
<td>55.3</td>
</tr>
<tr>
<td>Columbiana</td>
<td>8</td>
<td>2.6</td>
<td>175</td>
<td>57.9</td>
</tr>
<tr>
<td>Clark</td>
<td>7</td>
<td>2.3</td>
<td>182</td>
<td>60.1</td>
</tr>
<tr>
<td>Trumbull</td>
<td>7</td>
<td>2.3</td>
<td>189</td>
<td>62.4</td>
</tr>
<tr>
<td>Others</td>
<td>139</td>
<td>37.5</td>
<td>302</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 4.2: Distribution of Claimants by County of Residence

4.2.2 b) Gender

In this sample, there were 131 (37.4%) females and 189 (62.6%) males. This data is reasonably consistent with the population of claimants referred and accepted into the vocational rehabilitation system where are 34% were females and 66% were males.

For the claimants who returned to work, 38% were female and 62% were males. In the non-return-to-work group, 34% were female and 66% male. Gender is one of the characteristics selected for the Menninger RTW Scale.
4.2.3 c) Age

The mean age for the sample in this study was 37 (SD = 9.26) at the time of injury as reported on the First Report of Injury. The range in age is from 19 years of age to 73 years of age. Table 4.3 shows the claimants and the distribution by age category. It would appear that the majority of the claimants were 27 to 49 at the time of injury with fewer workers in their fifties and sixties receiving industrial injuries. The data do not provide sufficient evidence to conclude that a difference exist between the two groups.

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>19 – 29</td>
<td>60</td>
<td>19.9</td>
<td>19.9</td>
</tr>
<tr>
<td>30 – 39</td>
<td>125</td>
<td>41.2</td>
<td>61.1</td>
</tr>
<tr>
<td>40 – 49</td>
<td>89</td>
<td>29.5</td>
<td>90.6</td>
</tr>
<tr>
<td>50 – 79</td>
<td>28</td>
<td>9.4</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 4.3: Distribution of Claimants by Age Group
4.2.4  d) Marital Status

The marital status is summarized in Table 4.4. The majority of claimants were married at the time they received vocational rehabilitation services (56%). The group of single individuals comprised the next largest percentage at 25.8%, followed by the “other” category that included, separated, divorced and widowed. For both the return-to-work group and the non-return-to-work group, the largest percentage was for married claimants followed by single and then “other” category.

<table>
<thead>
<tr>
<th>Marital Status</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single</td>
<td>78</td>
<td>25.8</td>
<td>25.8</td>
</tr>
<tr>
<td>Married</td>
<td>169</td>
<td>56.0</td>
<td>81.0</td>
</tr>
<tr>
<td>Other</td>
<td>53</td>
<td>18.2</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 4.4: Marital Status of Claimants Accepted into Vocational Rehabilitation

4.2.5  e) Type of Employer

The claimants in this group worked for employers that were primarily in the manufacturing/fabricating industry. The size of the employer or the size of the workforce was not available because the number of employees is not a mandatory claims processing element. Employers from the sample that employed the largest group
of claimants (20%) were in the manufacturing of goods including rubber, plastics, pretzels, etc. The next group (11%) is composed of Public Agencies including State, County and City. The next group was Construction (9%), followed by Stores (wholesale/retail) (6%), and Transportation including Transit Authorities and Drivers.

4.2.6 f) Medical Diagnosis

There are two major diagnostic groups for this sample of claimants. The majority of the claimants suffered from musculoskeletal injuries (82%). The remainder of the claimants suffered a neurological disability (18%). In the return-to-work group, 83% of the claimants received musculoskeletal disabilities while 17% received Neurological disabilities. In the non return-to-work group, 86% received a musculoskeletal disability while 14% received a Neurological disability. According to the Hester, et al. (1986), the Merck Manual was used to determine disability groups with regard to those who returned to work and those that did not return-to-work. The Merck Manual indicates that musculoskeletal disorders can be classified anatomically, some primarily affecting muscles or bones, others the joints. Joint disorders are further classified into periarticular tissue disorders. Neurological impairments are disorders of the cerebral hemispheres. Table 4.5 shows the distribution of claimants and the type of injury they suffered on the job.
Table 4.5: Distribution of Claimants and the Type of Disability Suffered on the Job

<table>
<thead>
<tr>
<th>Merck Category</th>
<th>Returned to Work</th>
<th>Non Return to Work</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 Musculoskeletal</td>
<td>83%</td>
<td>86%</td>
<td>100%</td>
</tr>
<tr>
<td>11 Neurological</td>
<td>17%</td>
<td>14%</td>
<td>100%</td>
</tr>
</tbody>
</table>

4.2.7 g) Attorney Representation

The claimant decision for representation by an attorney in 68.2% of the cases reported in this study. The remaining claimants (31.8%) decided against attorney representation. The OBWC system has not been easy for the injured worker to maneuver therefore, the decision by the injured worker to seek attorney representation. The attorneys are selected for various reasons, from obtaining the claimants compensation to being represented in hearings before the Industrial Commission of Ohio.

4.2.8 h) Amount of Time in the Rehabilitation Program

The amount of time spent in a rehabilitation program was of interest in this study, as well as the amount of time from the date of acceptance to date of closure. The two dates discussed in this section are not necessarily the same date. If the claimant’s rehabilitation program services are not going to result in a return-to-work, the case would more than likely be closed. Closure would also occur without the support from
the employer and physician of record. Table 4.6 provides a summary of the time in a rehabilitation program as compared to the time from acceptance to return-to-work. In addition, there are also other reasons for case closure including the non-cooperation of the claimant or for medical reasons unrelated to the allowed conditions in the claim. Since the Ohio system is a voluntary system, the claimant may decide they no longer wish to participate in the rehabilitation program. If they choose this option, their rehabilitation case is closed. As mentioned earlier, the time in rehabilitation is not a predictor of return-to-work or non-return-to-work because it is determined at the time the case is closed.

<table>
<thead>
<tr>
<th>Range of Time (month)</th>
<th>Acceptance to Closure</th>
<th>Acceptance to Return-to-work</th>
<th>Accumulative Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RTW</td>
<td>No RTW</td>
<td></td>
</tr>
<tr>
<td>&lt; 3</td>
<td>98</td>
<td>67</td>
<td>116</td>
</tr>
<tr>
<td>3 – 6</td>
<td>58</td>
<td>29</td>
<td>48</td>
</tr>
<tr>
<td>6 – 9</td>
<td>22</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>9 – 12</td>
<td>10</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>12 – 15</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>15 – 18</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>18 – 21</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 4.6: The Distribution of Claimants Time in Their Rehabilitation Program Resulting in Closure or Return-to-work
Continued
Table 4.6: The Distribution of Claimants Time in Their Rehabilitation Program Resulting in Closure or Return-to-work

<table>
<thead>
<tr>
<th></th>
<th>21</th>
<th>0</th>
<th>1</th>
<th>1</th>
<th>100%</th>
</tr>
</thead>
</table>

4.2.9  i) Wage Replacement

At the time of injury, the claimants’ wages are calculated and the Temporary Total Compensation benefits is paid while the injured worker is on disability. The Average Weekly Wage changes each year based on the calculation of all wages reported by all employers in Ohio. When an employee agrees to participate in vocational rehabilitation services, the compensation payment will change to Living Maintenance with a minimum payment to those individuals who are accepted into the program. The minimum payment of Living Maintenance is calculated as not less than one half of the Average Weekly Wage for the year of injury. The group returning to work received higher wages (M = $1754.40, SD = $1707.34) than the non-return-to-work group (M = $419.29, SD = 276.45). This difference is not significant, t(300) = .8195, p < .05, two tailed. The data do not provide sufficient evidence to conclude that a difference exists between the two groups.
4.4 **Scale Construction**

In this section, the return-to-work scale is constructed from the percentages of each of the tables representing each variable. Chi-square test and t-Test will determine if differences exist between the return-to-work group and the non-return-to-work group.

4.4.1 a) **Gender**

As shown in Table 4.7, females whose claims are allowed and who participate in a vocational rehabilitation programs are more likely to return-to-work than men. The groups are not significantly different on the variable gender, \(X^2 (1, n = 302) = .609, p < .05\). Only 61% of the men as compared to 65% of the female returned to work.

<table>
<thead>
<tr>
<th>Sex</th>
<th>Returned To Work</th>
<th>Did Not Return to Work</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>60% (117)</td>
<td>40% (72)</td>
<td>100%</td>
</tr>
<tr>
<td>Female</td>
<td>66% (75)</td>
<td>34% (38)</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 4.7: The Proportion of Male and Female Who Returned To Work After Becoming Disabled

4.4.2 b) **Age**

Table 4.8 illustrates the percentage of claimants by age group and their rate of return-to-work. If the claimant is older than 50 or they are younger than 29, there is a
good chance that the individual will return-to-work early in the process. A claimant who falls in the age range of nineteen to twenty-nine, return-to-work more often than one whose age is between thirty and forty-nine. A disabling condition for an older worker can create difficult problems in the work place; however, the older worker who is close to retirement is more than likely looking forward to leaving the work environment in good health. The age category (50-59) that display the higher percentage of return-to-work, have a vested interest in continuing to work even though they have suffered a work-related injury. The group returning to work is younger (M = 37, SD = 9.255) than the non-return-to-work group (M = 39, SD = 9.205). This difference is not significant, t(300) = -1.7859, p < .05, two tailed. The data do not provide sufficient evidence to conclude that a difference exist between the two groups.

<table>
<thead>
<tr>
<th>Age Category</th>
<th>Returned To Work</th>
<th>Did Not Return To Work</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 29</td>
<td>94% (55)</td>
<td>6% (4)</td>
<td>100%</td>
</tr>
<tr>
<td>30 - 39</td>
<td>85% (108)</td>
<td>15% (19)</td>
<td>100%</td>
</tr>
<tr>
<td>40 – 49</td>
<td>86% (76)</td>
<td>14% (12)</td>
<td>100%</td>
</tr>
<tr>
<td>&gt; 50</td>
<td>82% (24)</td>
<td>18% (4)</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 4.8: Proportion of Each Age Range for Claimants Who Returned To Work After Receiving a Compensable Injury
4.4.3 c) Marital Status

As shown in Table 4.9, a higher percentage of workers return-to-work if they were married or separated. Sixty-six percent for the married claimants, and sixty-seven percent of the separated claimants returned to work at a higher rate than for those claimants who had been single, divorced or widowed. The return-to-work groups are not significantly different on the variable, marital status, $X^2 (2, n = 302) = 3.50, p > .05$.

<table>
<thead>
<tr>
<th>Marital Status</th>
<th>Returned To Work</th>
<th>Did Not Return To Work</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single</td>
<td>58% (46)</td>
<td>42% (34)</td>
<td>100%</td>
</tr>
<tr>
<td>Married</td>
<td>66% (112)</td>
<td>34% (57)</td>
<td>100%</td>
</tr>
<tr>
<td>Other</td>
<td>66% (35)</td>
<td>34% (18)</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 4.9: Proportion of Claimants According to Marital Status Who Returned to Work

4.4.4 d) Medical Diagnosis

Industrial settings and in particular with Workers’ Compensation claims, a vast majority of the claims filed are related to the Musculoskeletal group, which include the Fractures, Strains/Sprains, Torn Muscles and Back Pain. The disabilities utilized with the Menninger RTW Scale dealt with long-term disability clients with Musculoskeletal,
Neurological. The primary categories for the Workers’ Compensation disability types are the Musculoskeletal and Neurological groups. Table 4.10 shows the relationship between the Merck Manual classifications and the proportion of claimants that returned to work. The return-to-work groups are not significantly different on the variable medical diagnosis, $X^2 (1, n = 302) = .371, p < .05$.

<table>
<thead>
<tr>
<th>Disability Group</th>
<th>Returned To Work</th>
<th>Did Not Return To Work</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 Musculoskeletal</td>
<td>65% (164)</td>
<td>35% (90)</td>
<td>100%</td>
</tr>
<tr>
<td>11 Neurological</td>
<td>52% (25)</td>
<td>48% (23)</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 4.10: Proportion of Claimants that Returned to Work and Their Merck Classification

4.4.5 e) Area of Residence

The employment support from the larger companies and the ability to be flexible in offering return-to-work job opportunities will be a big factor in the return-to-work for those claimants living in Urban or Metropolitan areas. There are many factors that add to the claimants return-to-work initiatives, such as; Rehabilitation Centers, availability of health care including Physical Therapist/ Occupational Therapist, and an array of
different employment options (e.g., Transitional Work services) when the claimant is medically stable to return to some type of employment. Table 4.11 shows the proportion of claimants returning to work in relationship to density of population in their county of residence. The return-to-work groups are not significantly different on the variable area of residence, \( \chi^2 (2, n = 302) = .264, p < .05 \).

<table>
<thead>
<tr>
<th>Density of Population</th>
<th>Returned To Work</th>
<th>Did Not Return To Work</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>60% (6)</td>
<td>40% (4)</td>
<td>100%</td>
</tr>
<tr>
<td>Urban</td>
<td>62% (109)</td>
<td>38% (65)</td>
<td>100%</td>
</tr>
<tr>
<td>Metropolitan</td>
<td>66% (77)</td>
<td>34% (41)</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 4.11: Proportion of Claimants that Returned to Work According to County of Residence

4.4.6 f) Wage Replacement

The wage replacement for the workers’ compensation claimants is always going to be at 66 2/3 of their normal wages in accordance with Ohio Revised Code. For the first 12 weeks, the claimant gets 72% of their Average Weekly Wage (AWW), then it drops to 66 2/3 of the AWW after the initial 12 weeks. The amount of benefits received
while on compensation varies, because it is based on one’s salary for the past year. The group returning to work received higher wages (M = $1754.40, SD = $1707.34) than the non-return-to-work group (M = $419.29, SD = 276.45). This difference is not significant, t(300) = .8195, p < .05, two tailed. The data do not provide sufficient evidence to conclude that a difference exists between the two groups.

Table 4.12 shows the proportion of claimants that returned to work given the salary range of their Average Weekly Wage. Nearly 50% of all of the claimants receiving wages between $200.00 and $800.00 returned to work.

<table>
<thead>
<tr>
<th>Wage Range</th>
<th>Returned To Work</th>
<th>Did Not Return To Work</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 199</td>
<td>62% (35)</td>
<td>38% (21)</td>
<td>100%</td>
</tr>
<tr>
<td>200-399</td>
<td>64% (70)</td>
<td>36% (40)</td>
<td>100%</td>
</tr>
<tr>
<td>400-599</td>
<td>63% (45)</td>
<td>37% (27)</td>
<td>100%</td>
</tr>
<tr>
<td>600-799</td>
<td>71% (32)</td>
<td>29% (13)</td>
<td>100%</td>
</tr>
<tr>
<td>&gt; 800</td>
<td>50% (10)</td>
<td>50% (9)</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 4.12: Relationship Between Claimants That Retuned to Work And Their Average Weekly Wage
4.4.7 g) Time in Rehabilitation

The number of days in a vocational rehab program can provide some guidance to the case manager regarding claimants’ success. When the Rehabilitation Counselor can appropriately plan, with the projected length of the rehab plan services in mind, it will assist in the time management of the caseload. The majority of the claimants returned to work when their rehabilitation plan lasted between 3 and 12 months. The longer the claimant continued in their vocational rehab program, the less likely the claimant returned to work. The return-to-work group had less time in rehab (M = 111, SD = 162) than the non-return-to-work group (M = 140, SD = 217). This difference was not significant, $t(300) = -1.3064$, $< .05$, two tailed. The data do not provide sufficient evidence to conclude that a difference exist between the two groups. Table 4.13 shows the proportion of claimants that returned to work in relationship to the time spent in their vocational rehab program.

<table>
<thead>
<tr>
<th>Range of Time In Rehab (days)</th>
<th>Returned To Work</th>
<th>Did Not Return To Work</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 90</td>
<td>60% (98)</td>
<td>40% (67)</td>
<td>100%</td>
</tr>
<tr>
<td>91 – 180</td>
<td>66% (56)</td>
<td>34% (27)</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 4.13: Proportion of Claimants that Returned to Work in Relationship To the Time Spent In their Rehabilitation Program
Table 4.13: Proportion of Claimants that Returned to Work in Relationship To the Time Spent In their Rehabilitation Program

<table>
<thead>
<tr>
<th>Time spent</th>
<th>Returned to Work</th>
<th>Not Returned to Work</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>181 – 270</td>
<td>64% (22)</td>
<td>36% (13)</td>
<td>100%</td>
</tr>
<tr>
<td>&gt; 270</td>
<td>83% (16)</td>
<td>17% (3)</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 4.13: Proportion of Claimants that Returned to Work in Relationship To the Time Spent In their Rehabilitation Program

4.4.8 h) Type of Employer

The type of employer used for this study, differed slightly from the original Menninger study. In the Menninger study the researchers were able to collect information on the clients’ occupation. The data also provided information on the size and type of employer the client worked; small company, major corporation, public employer or self-employment. In this study, the only information available for the employer was the Risk information wherein the data described the products or service for these particular employers.

Table 4.14 shows the distribution of claimants who returned to work and the type of employer returned to as defined by product or service. The table shows that more claimants working for a public entity returned to work (78%) than any other type of employer. The return-to-work groups are not significantly different on the variable type of employer, $X^2 (5, n = 3020 = 9.423, p < .05)$. 

120
<table>
<thead>
<tr>
<th>Type of Employer</th>
<th>Returned To Work</th>
<th>Did not Return To Work</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mfg Fab</td>
<td>53% (39)</td>
<td>47% (34)</td>
<td>100%</td>
</tr>
<tr>
<td>Service Industry</td>
<td>58% (46)</td>
<td>42% (31)</td>
<td>100%</td>
</tr>
<tr>
<td>Health Care</td>
<td>55% (11)</td>
<td>45% (9)</td>
<td>100%</td>
</tr>
<tr>
<td>Food Service</td>
<td>68% (20)</td>
<td>32% (9)</td>
<td>100%</td>
</tr>
<tr>
<td>Bldg Construction</td>
<td>73% (43)</td>
<td>27% (16)</td>
<td>100%</td>
</tr>
<tr>
<td>Public Service</td>
<td>78% (33)</td>
<td>22% (11)</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 4.14: The proportion of Claimants that Returned to Work and the Type of Employer by Product or Service

In the use of the conversion table, the percentages are ranged in 10 point increments and the score for each percentage range are provided. This table is used to convert the percentage of claimants for each category into a scale score on each corresponding variable. Table 4:15 provide the conversions for percentage of claimants who returned to work.
<table>
<thead>
<tr>
<th>Percentage Range</th>
<th>Scale Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>85%-94%</td>
<td>9</td>
</tr>
<tr>
<td>75%-84%</td>
<td>8</td>
</tr>
<tr>
<td>65%-74%</td>
<td>7</td>
</tr>
<tr>
<td>55%-64%</td>
<td>6</td>
</tr>
<tr>
<td>45%-54%</td>
<td>5</td>
</tr>
<tr>
<td>35%-44%</td>
<td>4</td>
</tr>
<tr>
<td>25%-34%</td>
<td>3</td>
</tr>
<tr>
<td>15%-24%</td>
<td>2</td>
</tr>
<tr>
<td>5%-14%</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 4.15: Conversion Table For Deriving Scale Scores From the Percentages of Claimants Who Returned to Work

### 4.5 Distribution of RTWS Scores

The distribution of the MRTWS scores for the entire sample is presented in Table 4.16. The mean score is 43 (SD = 11.93), with a minimum score of 22 and a maximum score of 57. For the return-to-work group, the mean is 52 and for the non-return-to-work group, the mean is 28.
<table>
<thead>
<tr>
<th>Score</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Frequency</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>2</td>
<td>.7</td>
<td>2</td>
<td>.7</td>
</tr>
<tr>
<td>23</td>
<td>3</td>
<td>1.0</td>
<td>5</td>
<td>1.7</td>
</tr>
<tr>
<td>24</td>
<td>3</td>
<td>1.0</td>
<td>8</td>
<td>2.6</td>
</tr>
<tr>
<td>25</td>
<td>6</td>
<td>2.0</td>
<td>14</td>
<td>4.6</td>
</tr>
<tr>
<td>26</td>
<td>6</td>
<td>2.0</td>
<td>20</td>
<td>6.6</td>
</tr>
<tr>
<td>27</td>
<td>22</td>
<td>7.3</td>
<td>42</td>
<td>13.9</td>
</tr>
<tr>
<td>28</td>
<td>13</td>
<td>4.3</td>
<td>55</td>
<td>18.2</td>
</tr>
<tr>
<td>29</td>
<td>24</td>
<td>7.9</td>
<td>79</td>
<td>26.2</td>
</tr>
<tr>
<td>30</td>
<td>13</td>
<td>4.3</td>
<td>92</td>
<td>30.5</td>
</tr>
<tr>
<td>31</td>
<td>13</td>
<td>4.3</td>
<td>105</td>
<td>34.8</td>
</tr>
<tr>
<td>32</td>
<td>2</td>
<td>.7</td>
<td>107</td>
<td>35.4</td>
</tr>
<tr>
<td>33</td>
<td>3</td>
<td>1.0</td>
<td>110</td>
<td>36.4</td>
</tr>
<tr>
<td>34</td>
<td>2</td>
<td>.7</td>
<td>112</td>
<td>37.1</td>
</tr>
<tr>
<td>46</td>
<td>2</td>
<td>.7</td>
<td>114</td>
<td>37.7</td>
</tr>
<tr>
<td>47</td>
<td>6</td>
<td>2.0</td>
<td>120</td>
<td>39.7</td>
</tr>
<tr>
<td>48</td>
<td>9</td>
<td>3.0</td>
<td>129</td>
<td>42.7</td>
</tr>
<tr>
<td>49</td>
<td>7</td>
<td>2.3</td>
<td>136</td>
<td>45.0</td>
</tr>
<tr>
<td>50</td>
<td>11</td>
<td>3.6</td>
<td>147</td>
<td>48.7</td>
</tr>
<tr>
<td>51</td>
<td>20</td>
<td>6.6</td>
<td>167</td>
<td>55.3</td>
</tr>
<tr>
<td>52</td>
<td>29</td>
<td>9.6</td>
<td>196</td>
<td>64.9</td>
</tr>
<tr>
<td>53</td>
<td>41</td>
<td>13.6</td>
<td>237</td>
<td>78.5</td>
</tr>
<tr>
<td>54</td>
<td>30</td>
<td>9.9</td>
<td>267</td>
<td>88.4</td>
</tr>
<tr>
<td>55</td>
<td>17</td>
<td>5.6</td>
<td>284</td>
<td>94.0</td>
</tr>
<tr>
<td>56</td>
<td>16</td>
<td>5.3</td>
<td>300</td>
<td>99.3</td>
</tr>
<tr>
<td>57</td>
<td>2</td>
<td>.7</td>
<td>302</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 4.16: Distribution of the MRTWS Scores
According to the scale there are two practically normal distributions; a distribution for the claimants who returned to work and another distribution for those claimants who did not return-to-work. The total scale scores range from 22 to 57 for a total range of 35 for this scale. In comparison, the Menninger had a range from 30 as the low score to 74 for the high score. The range for the Menninger is 44.

Practical application of this scale could determine whether the claims process should include a referral to rehabilitation and whether services are offered. According to the scale, a claimant receiving the lowest possible score of 22 would be a female who is 40 - 49 years of age and divorced, widowed or separated. The claimant lives in a Metropolitan area and has a musculoskeletal disability while receiving wages for that disability in the range from $200 to $399. The claimant spent less than 90 days in the vocational rehabilitation program and worked for a company that provided construction services. A claimant receiving the highest score of 57 would typically be a female who is over 50 years of age. The claimant is married and has salary in the range from $600 to $799. The claimant resides in a Metropolitan area and has a musculoskeletal disability. The claimant also spent between three and six months in their vocational rehabilitation program and worked for a public entity.

Using the scale for workers’ compensation clients will help to improve the decision-making process before services are offered. It will also allow expenditures to be made on those claimants who are more deserving and will result in the most positive outcome, which is to return-to-work. Workers who become disabled in workers’
compensation could be classified into treatment groups based on the scale scores. A simple approach is provided as a means to guiding the rehabilitation professional through a decision-making process.

4.5.1 Group 1 (score <26)

Do not provide rehabilitation vocational rehabilitation services unless specifically by the claimant and supported by the physician of record. Careful evaluative measures are warranted in this situation. Six percent fall into this category.

4.5.2 Group 2 (27-28)

Review the claimants’ strengths and weaknesses. If it appears that the claimant can benefit and has a willingness to participate, then services may be warranted. Extreme caution should be used with this claimant and progress monitored. Twelve percent fall into this category.

4.5.3 Group 3 (29-31)

These claimants should be considered good candidates for vocational rehabilitation services until they have shown that they are not willing to participate. This category consists of seventeen percent.

4.5.4 Group 4 (32-34)

This group definitely has a need for vocational rehabilitation services to assist in obtaining employment, with more than likely a different employer. Two percent fall into this group.
4.5.5 Group 5 (46-49)

The claimants in this group return to work mostly on their own, so they will probably not be in need of vocational rehabilitation service to return-to-work. Ten percent fall into this category.

4.5.6 Group 6 (50-53)

For this group vocational rehabilitation will not normally be needed, however there may be some medical services that need to be provided. Thirty three percent of the claimants are in this category.

4.5.7 Group 7 (54-57)

Monitoring the return-to-work of this group is all that will be needed, with possibly some follow-up services. Twenty one percent of the claimants fall into this group.

4.6 Testing of the Hypotheses

The seven research questions assisted in the development of seven hypotheses based on the creation of a return-to-work scale for OBWC and whether the groups were significantly different from each other on the basis of a specific variable. Hypotheses 1 through 7 were tested using the chi square test statistic. Glass and Hopkins (1984) indicates that this test statistic is “used to determine whether the observed proportions differ significantly from a priori or theoretically expected proportion” (p. 282), and the goodness-of-fit-chi square as the appropriate statistic when theoretically expected proportions are used.
Hypotheses 1 through 7 examined the relationship between those claimants who returned to work and those who did not return-to-work. Individuals were accepted into a vocational rehabilitation and they entered into a rehabilitation plan provided through OBWC, based on their particular disability status at the time of referral. The tests failed to reject the null hypothesis for each variable. There was no significant difference in the return-to-work group and the non-return-to-work group for each variable in this study.

The Return-to-work Scale was re-created for a sample of Ohio Workers’ Compensation claimants who participated in the vocational rehabilitation program. The scale used available data and variables from the OBWC database which collects demographic data through the Field Service Office, Customer Service Team. The scale provides a score for each claimant, which in turn is used to assist in the implementation of vocational rehabilitation services. Each range of score should be used with caution and where appropriate each range will describe how to proceed with the claimant. The scale can also be used in the event there funding becomes a problem for claimants who desire vocational rehabilitation services.
CHAPTER 5

CONCLUSIONS, RECOMMENDATIONS, AND IMPLICATIONS

5.1 Summary and Conclusions

Variables from injured workers claims are analyzed to determine what impact these variables would have on an injured workers’ return-to-work or non-return-to-work. The variables came from the OBWC Data Warehouse. A query was created to capture as much information from the Data Warehouse as possible. The variables of gender, age, marital status, disability status, area of residence, wages, amount of time in rehab, type of employer by industry were selected based on information available in the Version III notes and other types of queries.

In the sample of injured workers, the males and the females obtained similar percentages for the return-to-work as compared to the non-return-to-work. The information available for the population of injured workers referred to and accepted into vocational rehabilitation was similar to the sample. In the population the males were 66% and the females were at 34%. In the sample of return-to-work, the males were 62% and the females were at 38%. In the sample of non-return-to-work, the females are
34% and the males were at 66%. These closely related percentages indicate no difference in the two comparison groups on the variable of gender on return-to-work. The mean age between the return-to-work group and the non-return-to-work group did show a slight difference. The mean age for the return-to-work group was 37 versus 39 for the non-return-to-work group. There were fewer injuries after the age of 49, and a reasonable explanation for the decrease in the injury rate could be that these individuals have learned safety techniques that prevent the incidence of injury. Tate (1992), King (1998), and Peterson (1996), determined that the variable of age was a factor in the return-to-work. In the study, “Predicting Outcomes in Return-to-Work Programs,” King (1998) used the WIRE (Work and Industrial Rehabilitation Evaluation) software program to collect outcomes. The study identified nine factors as having a significant influence on RTW outcomes. For the variable age, increasing age correlated with an increased likelihood of an unsuccessful RTW. Tate (1992) looked at factors influencing injured employees return-to-work, and it was determined that age was one of the factors which may predict successful return-to-work. The study found that individuals who returned to work were significantly younger, more likely to be unmarried, have more education, and occupy professional or managerial positions. Peterson (1996) focused on the relationship of demographic variables and services received as predictors of competitive employment outcomes. The study found that service factors, such as amount of case services and amount of funding for the purchase of services, were much more predictive of competitive employment closure than demographic factors. Age was not a consideration in this study. The Menninger return-
to-work scale utilizes the factor of age as a much more predictive factor which
influences the return-to-work. This study is much similar to the King study, but
different in one aspect, increasing age did correlate with the increased likelihood of an
unsuccessful return-to-work except for the age category of 50-59. After an injured
worker has been on the job until this age, despite the work related injury, it is suspected
that the injured worker has determined that retirement is close at hand and the work
related injury is not going to jeopardize the years of service and the ultimate goal of
retirement.

In the sample, the majority of individuals were married at the time of participation
in their vocational rehabilitation program. The percentage of married was 56% as
compared with 25% for single. Since the number of individuals was somewhat small in
the category of divorced, widowed or separated, these individuals were combined to
create the category of other. Beck (1989), determined that marital status was an
important factor in return-to-work. In this study, injured worker outcomes were
analyzed in terms of their relationship with each other to ascertain the best model of
interactive variables that would explain outcome. Graly, Yi, Gibson and Laborde
(1994) determined that a marital status of married or cohabitating correlated with
successful return-to-work. This pilot study investigated whether a simple statistical
analysis of selected intake data in the charts of work-hardening clients could
differentiate those clients who returned to work from those who did not. In both of
these studies and the current study, the marital status of the individual show a strong
relationship to return-to-work and was selected as a demographic characteristic in the scale since it has been shown to be associated with rehabilitation outcomes.

The medical conditions reviewed for this study found that the sample acquired disabilities related to the neurological group, which consisted of 45% while 62% of the injured workers acquired disability related to the musculoskeletal group. Musculoskeletal disabilities are injuries to the bones and joints, which are common in the industrial setting due to hazardous working conditions. Neurological disabilities are disorders of the cerebral hemispheres that include herniated nucleus pulposus, disk disorder, brain concussion, fractured vertebrae, radiculopathy, ruptured intervertebral disk and multiple sclerosis. Musculoskeletal disabling conditions far exceeded all other types of disabilities because it is easy to categorically define the source of pain and suffering as the back. King (1998) looking at the factors influencing the return-to-work determined that clients diagnosed with low back disorders are the most frequently treated population in a Wisconsin work programs.

Attorney representation was split between those that chose attorney representation and those that did not select attorney representation for the return-to-work group and the non-return-to-work group. For those that selected an attorney, 63% (130) returned to work and 37% (76) were non-return-to-work. For those that did not select an attorney, 65% (62) returned to work and 35% (34) did not return-to-work. Difficulty in understanding OBWC system is normally the reason for the attorney representation. The OBWC system over the last several years have begun to introduce into the system, customer service initiatives that promote the relationship between the
injured worker and the customer services team (OBWC employees). The result is an information explosion geared to providing the injured workers with enough claims information and access, to file an application and follow through with the processing of their claim without the use of an attorney. The Bureau can do more with the educational process for injured workers and the customer service training for internal claims representatives. The injured worker is still left with questions regarding the claims process and the claims representatives often force the injured worker into a position to seek out additional expert representation in addition to what is being provided. Once the legal representation is acquired, there is much more litigation through the Industrial Commission hearing process because many of the physicians, MCO’s or Bureau actions are challenged. Chow, Bose and Geist (1989) noted that attorneys tend to view rehabilitation counselors as not having the welfare of the client at heart, under the belief that insurance companies refer individuals to vocational rehabilitation counselors to promote cost efficiency. The authors of this study, “Employment Outcomes of Private Rehabilitation Clients,” view rehabilitation counselors as extensions of the insurance company, thereby continuing an already existing adversarial relationship between the worker and the insurance company. This final variable, which was entered into the equation, differentiated among outcome groups.

Case velocity as described in Bolton, Belinni and Brookings (2000), Dunn (2001) and Growick (1994), is defined as a measure of how fast a case is brought to closure. There are two points to consider: (1) the amount of time from injury to closure and (2) the amount of time from acceptance to closure. The current study measured the
number of days the injured worker spent in their vocational rehabilitation program through closure or the return-to-work/non-return-to-work. For the group that spent less than 90 days in their rehabilitation program, 60% (98) returned to work and 40% (65) were non-return-to-work. The next group of injured workers spent between 91 and 180 days in their rehabilitation program. Of this group, 66% (56) returned to work and 34% (29) were non-return-to-work. The third category of injured workers spent between 181 and 270 days in their rehabilitation program which resulted in 64% (23) that returned to work and 36% (13) non-return-to-work for this group. The last group spent more than 271 days in their individualized vocational rehabilitation program with 77% (14) that returned to work and 23% (4) that were non-return-to-work.

Bolton et al. (2000) found that the time in rehabilitation had virtually no effect on predicting competitive employment but was the second largest service variable in predicting salary for most disability groups. It was determined in the current study that the number of days in a vocational rehabilitation program was instrumental in predicting whether an injured worker would return-to-work. The current data suggest that over 50% of the injured workers that returned to work did so within the first 90 days. The measure of time in a rehabilitation program or case velocity was an important factor in this study. The referral to vocational rehabilitation in the OBWC system does not always result in a vocational rehabilitation program being initiated. But once the injured worker is identified as a candidate for rehabilitation, every effort should be made to implement a program of service that will expedite the return-to-work. Once in a
rehabilitation plan, the vocational rehabilitation counselor’s role will change to that of a facilitator to guide the injured worker through the recovery process to and eventual return-to-work.

One of the primary objectives for this study was to determine if a scale could be created for Ohio workers’ compensation claimants that could predict the return-to-work for someone who has participated in a vocational rehabilitation program. The variables were determined from a list of variables found in OBWC’s Data Warehouse. The data warehouse has a number of demographics that are not mandated, therefore making it difficult to obtain the same characteristics as the original Menninger study. For each variable, a comparison was made to determine if there was a significant difference for those claimants that returned to work and those that did not returned to work. Secondly, the study was compared with the score of the Menninger RTWS, to determine if differences exist between the LTD clients used in the original study with the workers’ compensation claimants used in this study. The use of the Menninger in situations where it can be used as a predictability tool is more evident in the area of workers’ compensation, especially in a Managed Care setting, where the MCO’s are provided incentives for meeting their goals. And consequently, the employers see the benefit of making timely decisions regarding vocational rehabilitation while their premiums, which pay for coverage, will not reflect the rising cost for medical/vocational services.

One significant study utilizing the Menninger RTWS in this regard was conducted by Rathburn and Seeman (1994). They used the RTWS to learn more about the characteristics and factors that play a critical role in whether people with disabilities
return-to-work. Fortis Insurance Company used the scale as a first step in the obligation that companies and insurers have to support the desire of individuals to realize their highest potential, not only on the job, but also as family providers and community members.

According to a study presented by Cooper & Washington (1999) of the Research Projects Unit of OBWC, before the Health Partnership Program most of the OBWC return-to-work’s (RTW’s) occurred within the first 7-94 days post date of injury (DOI). After implementation of the HPP program most RTW’s occurred within the first 95-184 days post DOI. The results of this study are inconclusive, but additional studies are recommended.

One study might look at the Determination of Disability Model (DoDM) and how it might affect the timing of RTW’s under HPP. The DoDM was developed to measure the performance of an MCO with respect to its return-to-work timing. Return-to-work, for purposes of the DoDM, means that the injured worker returns to work or was released by the medical provider to return-to-work (whichever is earlier) during the time period being measured and remains at work for at least ninety (90) days. A second study would compare medical costs, pre and post DoDM, relative to return-to-work timeframes. The OBWC study “Program Impact On Return-to-work Outcomes Relative To Key Injured Worker Characteristic,” demonstrated that gender, age, and marital status generally have little impact on return-to-work. Particular emphasis was placed on RTW’s occurring within one year of the date of injury. The results of this study found
that under HPP a higher percentage of injured workers returned to work within one year of the date of injury than had returned to work during this same timeframe prior to HPP.

The scale created for OBWC suggests that low scores represent individuals that are at risk of having a positive outcome as a result of vocational intervention. A high score represents an individual that show signs of return-to-work and less need for oversight. Some rehabilitation candidates within the system have proven to be powerful candidates for successful vocational rehabilitation. Usually individuals falling into Group 3 and 4 would be this type of candidate, but there exists a need for watching them closely and all available resources pooled for their support.

More research is needed in the area of vocational rehabilitation and how the return-to-work versus the non-return-to-work impacts premium dollars paid by employers. From employers’ perspectives, the bottom line is financially motivated and how their profit is affected. The Menninger is but one tool that can be used to gauge whether it is beneficial to initiate rehabilitation services with the injured worker for their return-to-work. This need for additional research is further demonstrated by the financial, social and psychological costs of workplace disabilities. Such research can examine the cost-effectiveness of these rehabilitation programs from the points of view of employers and socio-economic factors. Future research should examine the post injury wages as compared to the pre-injury wages, taking into consideration how the average weekly wage and minimum living maintenance wage affects outcomes. Another consideration for future research would be to examine long-term stability on
the variable return-to-work, to determine if the vocational rehabilitation services had an impact on the RTW, or was there some other factor, such as a financial incentive.

Studies and articles reviewed for this research suggest that the vocational rehabilitation counselor, although guided by a return-to-work scale, can ultimately influence the most misguided injured worker into accomplishing an almost impossible goal of return-to-work. The rehabilitation counselor is critical in the process by referring for specialized services, educating all parties to the claim of the disability/rehabilitation process, and coordinating the essential services that are going to result in the most productive outcome. In this study we looked at individuals who returned to work versus those who did not return-to-work, and the variables that might predict these outcomes. These variables are age, the type of disability, employer/industry type, and wages, place of residence, marital status and length of time in the rehab program. Other elements to consider are the support from family members, relationship with managers/co-workers on the job, drug use/chemical dependency, etc.

There is an undeniable trend toward incorporation of the managed care model into the state workers’ compensation systems around the country. There is a lot at stake with the change of practices and transfer of responsibility from workers’ compensation to the managed care corporations. The providers within the system will need to become much more proactive as this transition continues, and should not relinquish control over the clinical decisions and the quality of care. This forged partnership will evolve into a system that is conducive to medically managing the most disabled claimant from the MCO perspective to ensuring the quality of care for the best cost, from the Workers’
Compensation system perspective. These and other issues must be continually addressed if costs are to be effectively managed and the disabling consequences of injuries mitigated for workers in the workplace.

5.2 Recommendations

Although the sample used for this study was adequate, further analysis of the claimants within the Ohio Workers’ Compensation is warranted. A comparison of the various other workers’ compensation systems across the nation could enhance the return-to-work scale even further. Under the Ohio system, the current collection site for the data rests with the Field Service Offices/Disability Management Coordinator (DMC). There are mandatory elements that are collected, but it is paramount that additional information becomes mandatory so that other studies could be performed. Not just for the development of a prediction model, but also to begin to evaluate the total system of vocational rehabilitation and what impact these variables have on the claimants return-to-work or non-return-to-work.

There is some value in utilizing this type of a scale in workers’ compensation settings as mentioned earlier. Under the current Managed Care system, the DMC at Workers’ Compensation can utilize the scale in evaluating and assessing the decision of the Managed Care Organization to make a referral to a qualified vocational rehabilitation provider. In the Ohio Managed Care program, the MCO empowers the vocational rehabilitation provider to make decision regarding the feasibility of the claimant for participation or the rejection of the referral based on medical and other issues in the claim. With the RTW Scale, the rehabilitation professional within
workers’ compensation can determine the likelihood of returning to work, and depending on that score, the case manager at OBWC can deny access to the funding for vocational rehabilitation. With this added tool, the OBWC-DMC will save the time and the resources for a candidate that has more of a need for these rehabilitation services.

The RTWS could be used as an evaluation assessment to determine if the selected vocational rehabilitation vendor made a sound decision in the acceptance of a referred candidate for services. These decisions could then be compiled into a decision matrix to apply with each decision regarding acceptance into a rehabilitation program. Such a decision matrix might indicate that if the injured worker is over 50, male, single and live in Montgomery County, proceed with vocational rehabilitation services. This method of utilizing a decision matrix and adopting a more formal approach, might improve the decision-making process. Under the Ohio system, the MCO makes a determination of eligibility with a verification of that eligibility by the OBWC disability management coordinator. The assigned vocational rehabilitation provider will assess the injured worker for feasibility at the time of the initial interview. This assessment usually results in acceptance into a vocational rehabilitation plan because the payment for case management begins when the rehabilitation provider starts the coordination of services. The feasibility determination is often overlooked.

An evaluation of the rehabilitation provider ability to accurately predict injured workers continuation of services through completion and/or return-to-work would be a good quality assurance method to evaluate vendors. The result of this type of evaluation
and assessment is similar in many ways to measuring performance of the vocational rehabilitation outcomes for the MCO and their selected vocational rehabilitation provider.

5.3 Implications

In the Ohio workers’ compensation system under the Health Partnership Program, the decision regarding rehabilitation for an injured worker has become convoluted. With the authorization now in the hands of the MCO, a selected vocational rehabilitation provider stands to benefit financially if the relationship with the MCO is positive. Currently the MCO has the authority to provide the necessary vocational rehabilitation services in order to return the injured work back to the work place without authorization from OBWC. Although there are guidelines, these guidelines are constantly being challenged and subsequently changed or modified. The contractual arrangements between the MCO and rehabilitation provider is normally based on profit and is outside the purview of OBWC. At one time there was a balance of private and public vocational rehabilitation, but it has since been changed to only private providers with the MCO assuming responsibility for direction and outcome.

Currently the OBWC provides oversight by auditing of cases involved in the rehabilitation process, which is an after-the-fact approach. Having this oversight of rehabilitation expertise within OBWC provides an opportunity to ensure that when an injured worker is accepted into vocational rehabilitation, the services are within the
guidelines and are cost effective. This study holds important implications for the provision of vocational rehabilitation, specifically as it relates to the eligibility and feasibility guidelines.

One major implication is with regard to proper assessment prior to vocational rehabilitation services. A proper assessment and evaluation of the individual, including all of the characteristics and variables that are available at the time, will enhance the decision-making process. In situations where the cost of each claim is evaluated and could eventually result in an increase of premiums paid for those claims, policyholders should take notice. A second implication, particularly as it pertains to the extent of involvement by the rehabilitation provider, is the case oversight. Based on where the injured worker falls on the return-to-work scale, this will determine the amount of oversight that will be needed. In the category – Group 7, where all is needed for the return-to-work of a claimant who has gone through vocational rehabilitation, there should be very little oversight. Consequently, if the claimant falls in the category – Group 1, where vocational rehabilitation is questionable and even then physician support is needed, a high level of oversight is going to be needed.

This study provides some direction on the treatment of individuals to maximize the goal of return-to-work. There are always individuals who exceed any expectations through attitude, desire and perseverance. Although these are not variables of the study, these are the hidden factors that the trained vocational rehabilitation counselor must determine before embarking on a return-to-work venture that may or may not occur.
The employers in the state of Ohio will see the impact on workers’ compensation premiums with each decision that is made regarding acceptance into vocational rehabilitation. Early referral/intervention has been the key for the MCO to meet certain requirements under their contract provisions with OBWC. Having effective tools to help with the decision making process, is an important part of evaluating disabled workers for service.

From an incentive/disincentive perspective, most decisions related to return-to-work are usually based on some type of cost/benefit analysis. As an example, disabled individuals who believe that success is measured by a return-to-work or new work situation would more than likely return-to-work than those who doubt their ability to perform as expected. Therefore, we cannot totally rely on external contingencies such as the policies and guidelines for predicting whether someone will eventually return-to-work.

Tate (1992) described three factors that influence injured workers’ return-to-work. They are systems factors which include the disability benefit system, employer and labor policies and rehabilitation programs; subject factors, including workers’ personal characteristics; and modulating factors which mediate the effect of both systems and subject factors. This study also suggest that rehabilitation professionals, and rehabilitation counselors in particular, can play an effective role in the recovery process by guiding or influencing these factors in ways that will facilitate the return-to-work process. Many individuals who are at risk of not returning to work have complicating limitations such as age, less education and more complex physical and
psychological characteristics. They may also have a lack of family support, and financial resources. In these cases, it is critical to educate workers about their conditions as an important step in expediting recovery. This education should focus on the positive aspects of a workers’ remaining functional capacity or abilities, and on the prevention of further pain and injury.
APPENDIX A

Proportion of Men and Women Who Returned to Work
After Becoming Disabled
<table>
<thead>
<tr>
<th>Sex</th>
<th>Returned to Work</th>
<th>Did Not Return</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>47%</td>
<td>53%</td>
<td>100%</td>
</tr>
<tr>
<td>Female</td>
<td>60%</td>
<td>40%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table A.1: Proportion of Men and Women Who Returned to Work After Becoming Disabled
APPENDIX B

Proportion of Each Age Cohort Who Returned to Work
After Becoming Disabled
<table>
<thead>
<tr>
<th>Age Cohort</th>
<th>Returned to Work</th>
<th>Did Not Return-to-work</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-34</td>
<td>76%</td>
<td>24%</td>
<td>100%</td>
</tr>
<tr>
<td>35-44</td>
<td>74%</td>
<td>26%</td>
<td>100%</td>
</tr>
<tr>
<td>45-54</td>
<td>52%</td>
<td>48%</td>
<td>100%</td>
</tr>
<tr>
<td>55-64</td>
<td>36%</td>
<td>64%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table B.1: Proportion of Each Age Cohort Who Returned to Work After Becoming Disabled
APPENDIX C

Proportion of Workers According to Marital Status
Who Returned to Work
<table>
<thead>
<tr>
<th>Marital Status</th>
<th>Returned to Work</th>
<th>Did Not Return</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single</td>
<td>63%</td>
<td>37%</td>
<td>100%</td>
</tr>
<tr>
<td>Married</td>
<td>48%</td>
<td>52%</td>
<td>100%</td>
</tr>
<tr>
<td>Other</td>
<td>28%</td>
<td>72%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table C.1: Proportion of Workers According to Marital Status Who Returned To Work
APPENDIX D

Relationship Between Merck Classifications and Return-to-work
<table>
<thead>
<tr>
<th>Disability Group</th>
<th>Returned to Work</th>
<th>Did Not Return</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>03 Cardiovascular</td>
<td>54%</td>
<td>46%</td>
<td>100%</td>
</tr>
<tr>
<td>04 Pulmonary</td>
<td>32%</td>
<td>68%</td>
<td>100%</td>
</tr>
<tr>
<td>05 Gastrointestinal</td>
<td>92%</td>
<td>8%</td>
<td>100%</td>
</tr>
<tr>
<td>10 Musculoskeletal</td>
<td>71%</td>
<td>29%</td>
<td>100%</td>
</tr>
<tr>
<td>11 Neurological</td>
<td>23%</td>
<td>77%</td>
<td>100%</td>
</tr>
<tr>
<td>Other Physical</td>
<td>66%</td>
<td>34%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table D.1: Relationship Between Merck Classification and Return-to-work
APPENDIX E

Relationship Between Education and Return-to-work
<table>
<thead>
<tr>
<th>Years of Education</th>
<th>Returned to Work</th>
<th>Did not Return</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 8</td>
<td>48%</td>
<td>57%</td>
<td>100%</td>
</tr>
<tr>
<td>9-11</td>
<td>50%</td>
<td>50%</td>
<td>100%</td>
</tr>
<tr>
<td>12</td>
<td>53%</td>
<td>47%</td>
<td>100%</td>
</tr>
<tr>
<td>13-15</td>
<td>70%</td>
<td>30%</td>
<td>100%</td>
</tr>
<tr>
<td>16</td>
<td>68%</td>
<td>32%</td>
<td>100%</td>
</tr>
<tr>
<td>&gt; 17</td>
<td>83%</td>
<td>17%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table E.1: Relationship Between Education and Return-to-work
APPENDIX F

Relationship Between Return-to-work and Pre-Disability Occupation
<table>
<thead>
<tr>
<th>Occupation Group</th>
<th>Returned to Work</th>
<th>Did Not Return</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Managerial/Professional</td>
<td>68%</td>
<td>32%</td>
<td>100%</td>
</tr>
<tr>
<td>B Technical</td>
<td>53%</td>
<td>47%</td>
<td>100%</td>
</tr>
<tr>
<td>C Service</td>
<td>29%</td>
<td>71%</td>
<td>100%</td>
</tr>
<tr>
<td>D Craft</td>
<td>41%</td>
<td>59%</td>
<td>100%</td>
</tr>
<tr>
<td>E Assembly</td>
<td>44%</td>
<td>56%</td>
<td>100%</td>
</tr>
<tr>
<td>F Farming</td>
<td>45%</td>
<td>55%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table F.1: Relationship Between Return-to-work and Pre-Disability Occupation
APPENDIX G

Relationship of Previous Employment Type and Return to Work
<table>
<thead>
<tr>
<th>Employer Type</th>
<th>Returned to Work</th>
<th>Did not Return</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Employment</td>
<td>42%</td>
<td>56%</td>
<td>100%</td>
</tr>
<tr>
<td>Small Company</td>
<td>42%</td>
<td>58%</td>
<td>100%</td>
</tr>
<tr>
<td>Major Corporation</td>
<td>47%</td>
<td>53%</td>
<td>100%</td>
</tr>
<tr>
<td>Public</td>
<td>69%</td>
<td>31%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table G.1: Relationship of Previous Employment Type and Return-to-work
APPENDIX H

Relationship Between Return-to-work and Type of Residence Area
<table>
<thead>
<tr>
<th>Type of Area</th>
<th>Returned to Work</th>
<th>Did not Return</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>37%</td>
<td>63%</td>
<td>100%</td>
</tr>
<tr>
<td>Urban</td>
<td>51%</td>
<td>49%</td>
<td>100%</td>
</tr>
<tr>
<td>Metropolitan</td>
<td>60%</td>
<td>40%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table H.1: Relationship Between Return-to-work and Type of Residence Area
APPENDIX I

Relationship Between Return-to-work and Type of Support Received in Addition to Individual LTD Benefits
<table>
<thead>
<tr>
<th>Type of Support</th>
<th>Returned to Work</th>
<th>Did not Return</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>82%</td>
<td>18%</td>
<td>100%</td>
</tr>
<tr>
<td>Workers’ Compensation</td>
<td>90%</td>
<td>10%</td>
<td>100%</td>
</tr>
<tr>
<td>SSDI</td>
<td>7%</td>
<td>93%</td>
<td>100%</td>
</tr>
<tr>
<td>LTD</td>
<td>85%</td>
<td>15%</td>
<td>100%</td>
</tr>
<tr>
<td>Other</td>
<td>84%</td>
<td>16%</td>
<td>100%</td>
</tr>
<tr>
<td>Multiple</td>
<td>18%</td>
<td>82%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table I.1: Relationship Between Return-to-work and the Type of Support Received in Addition to Individual LTD Benefit
APPENDIX J

Relationship of the Wage Replacement Ratios to Return-to-work
Table J.1: Relationship of the Wage Replacement Ratios to Return-to-work

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Return-to-work</th>
<th>Did not Return</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 0.25</td>
<td>84%</td>
<td>16%</td>
<td>100%</td>
</tr>
<tr>
<td>0.26-0.50</td>
<td>70%</td>
<td>30%</td>
<td>100%</td>
</tr>
<tr>
<td>0.51-0.75</td>
<td>52%</td>
<td>48%</td>
<td>100%</td>
</tr>
<tr>
<td>0.76-1.00</td>
<td>38%</td>
<td>62%</td>
<td>100%</td>
</tr>
<tr>
<td>1.01-1.50</td>
<td>26%</td>
<td>74%</td>
<td>100%</td>
</tr>
<tr>
<td>&gt; 1.51</td>
<td>6%</td>
<td>94%</td>
<td>100%</td>
</tr>
</tbody>
</table>
APPENDIX K

Conversion Table for Deriving Scale Scores From Percentages of Employees Who Return-to-work
<table>
<thead>
<tr>
<th>Percentage Range</th>
<th>Scale Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>85%-94%</td>
<td>9</td>
</tr>
<tr>
<td>75%-84%</td>
<td>8</td>
</tr>
<tr>
<td>65%-74%</td>
<td>7</td>
</tr>
<tr>
<td>55%-64%</td>
<td>6</td>
</tr>
<tr>
<td>45%-54%</td>
<td>5</td>
</tr>
<tr>
<td>35%-44%</td>
<td>4</td>
</tr>
<tr>
<td>25%-34%</td>
<td>3</td>
</tr>
<tr>
<td>15%-24%</td>
<td>2</td>
</tr>
<tr>
<td>5%-14%</td>
<td>1</td>
</tr>
</tbody>
</table>

Table K.1: Conversion Table for deriving Scale Scores From the Percentages of Employees Who Return-to-work
APPENDIX L

Percentage of Disabled Employees’ Outcomes Based on Education When Corrected for Missing Data
<table>
<thead>
<tr>
<th>Years of</th>
<th>Returned to Work</th>
<th>Did not Return</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 8</td>
<td>34%</td>
<td>56%</td>
<td>100%</td>
</tr>
<tr>
<td>9 – 11</td>
<td>41%</td>
<td>59%</td>
<td>100%</td>
</tr>
<tr>
<td>12</td>
<td>43%</td>
<td>57%</td>
<td>100%</td>
</tr>
<tr>
<td>13 – 15</td>
<td>61%</td>
<td>39%</td>
<td>100%</td>
</tr>
<tr>
<td>16</td>
<td>59%</td>
<td>41%</td>
<td>100%</td>
</tr>
<tr>
<td>&gt; 17</td>
<td>77%</td>
<td>23%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table L.1: Percentages of Disabled Employees’ Outcomes Based on Education When Corrected for Missing Data
APPENDIX M

Percentage of Disabled Employees’ Outcomes Based on Wage Replacement Ratios When Corrected for Missing Data
Table M.1: Percentage of Disabled Employees’ Outcomes Based on Wage Replacement Ratios When Corrected for Missing Data

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Returned to Work</th>
<th>Did not Return</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; .25</td>
<td>83%</td>
<td>17%</td>
<td>100%</td>
</tr>
<tr>
<td>0.26-0.50</td>
<td>67%</td>
<td>33%</td>
<td>100%</td>
</tr>
<tr>
<td>0.51-0.75</td>
<td>49%</td>
<td>51%</td>
<td>100%</td>
</tr>
<tr>
<td>0.76-1.00</td>
<td>35%</td>
<td>65%</td>
<td>100%</td>
</tr>
<tr>
<td>1.01-1.50</td>
<td>23%</td>
<td>77%</td>
<td>100%</td>
</tr>
<tr>
<td>&gt; 1.51</td>
<td>5%</td>
<td>95%</td>
<td>100%</td>
</tr>
</tbody>
</table>
APPENDIX N

Scores for the Menninger RTW Scale
<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disability</td>
<td>11</td>
<td>04</td>
<td>03</td>
<td>10</td>
<td>05</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>55-</td>
<td>45-</td>
<td>35-</td>
<td>16-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>64</td>
<td>54</td>
<td>44</td>
<td>34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>M</td>
<td>F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>&lt;8</td>
<td>9-</td>
<td>13-</td>
<td>&gt;17</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marital Status</td>
<td>0</td>
<td>M</td>
<td>S</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupation</td>
<td>C</td>
<td>D,E</td>
<td>B,F</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residence</td>
<td>.75</td>
<td>other</td>
<td>&gt;1500</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employer</td>
<td>S,O</td>
<td>M</td>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support</td>
<td>SSDI</td>
<td>Multi</td>
<td>None</td>
<td>WC</td>
<td>Other</td>
<td>LTD</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wage Replace</td>
<td>&gt;1.51</td>
<td>1.01-</td>
<td>.76-</td>
<td>.51-</td>
<td>.26-</td>
<td>&lt;.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.50</td>
<td>1.00</td>
<td>.75</td>
<td>.50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table N.1: Scores for the Menninger RTW Scale Rating
APPENDIX O

Intercorrelation Matrix of the Scale Items
<table>
<thead>
<tr>
<th>Scale Items</th>
<th>D</th>
<th>A</th>
<th>Sx</th>
<th>Ed</th>
<th>MS</th>
<th>O</th>
<th>R</th>
<th>Em</th>
<th>Sp</th>
<th>WR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disability</td>
<td>-</td>
<td>.12</td>
<td>.14</td>
<td>.13</td>
<td>.00</td>
<td>.08</td>
<td>.09</td>
<td>.13</td>
<td>.29</td>
<td>.24</td>
</tr>
<tr>
<td>Age</td>
<td>.12</td>
<td>-</td>
<td>.14</td>
<td>.17</td>
<td>.05</td>
<td>.07</td>
<td>.07</td>
<td>.14</td>
<td>.21</td>
<td>.01</td>
</tr>
<tr>
<td>Sex</td>
<td>.14</td>
<td>.14</td>
<td>-</td>
<td>.30</td>
<td>.08</td>
<td>.41</td>
<td>.19</td>
<td>.33</td>
<td>.17</td>
<td>.13</td>
</tr>
<tr>
<td>Education</td>
<td>.13</td>
<td>.17</td>
<td>.30</td>
<td>-</td>
<td>.05</td>
<td>.73</td>
<td>.26</td>
<td>.49</td>
<td>.23</td>
<td>.27</td>
</tr>
<tr>
<td>Marital Status</td>
<td>.00</td>
<td>.05</td>
<td>.08</td>
<td>.05</td>
<td>-</td>
<td>.13</td>
<td>.17</td>
<td>.09</td>
<td>.08</td>
<td>.06</td>
</tr>
<tr>
<td>Occupation</td>
<td>.08</td>
<td>.07</td>
<td>.41</td>
<td>.73</td>
<td>.13</td>
<td>-</td>
<td>.21</td>
<td>.52</td>
<td>.15</td>
<td>.25</td>
</tr>
<tr>
<td>Residence</td>
<td>.09</td>
<td>.07</td>
<td>.19</td>
<td>.26</td>
<td>.17</td>
<td>.21</td>
<td>-</td>
<td>.16</td>
<td>.11</td>
<td>.07</td>
</tr>
<tr>
<td>Employer</td>
<td>.13</td>
<td>.14</td>
<td>.33</td>
<td>.49</td>
<td>.09</td>
<td>.52</td>
<td>.16</td>
<td>-</td>
<td>.21</td>
<td>.03</td>
</tr>
<tr>
<td>Support</td>
<td>.29</td>
<td>.21</td>
<td>.17</td>
<td>.23</td>
<td>.08</td>
<td>.15</td>
<td>.11</td>
<td>.21</td>
<td>-</td>
<td>.46</td>
</tr>
<tr>
<td>Wage Replace</td>
<td>.24</td>
<td>.01</td>
<td>.13</td>
<td>.27</td>
<td>.06</td>
<td>.25</td>
<td>.07</td>
<td>.03</td>
<td>.46</td>
<td>-</td>
</tr>
</tbody>
</table>

Table O.1: Intercorrelation Matrix of the Scale Items
APPENDIX P

Cluster Grouping for Factor Loading
<table>
<thead>
<tr>
<th>Items</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupational Level</td>
<td>0.891</td>
</tr>
<tr>
<td>Educational Level</td>
<td>0.841</td>
</tr>
<tr>
<td>Type of Employer</td>
<td>0.759</td>
</tr>
<tr>
<td>Sex</td>
<td>0.556</td>
</tr>
</tbody>
</table>

Table P.1: Items in Group I – Educational Level

<table>
<thead>
<tr>
<th>Items</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wage Replacement</td>
<td>0.809</td>
</tr>
<tr>
<td>Type of Support</td>
<td>0.779</td>
</tr>
<tr>
<td>Type of Disability</td>
<td>0.618</td>
</tr>
</tbody>
</table>

Table P.2: Items in Group II – Support
<table>
<thead>
<tr>
<th>Item</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marital Status</td>
<td>0.887</td>
</tr>
<tr>
<td>Residential Area</td>
<td>0.609</td>
</tr>
</tbody>
</table>

Table P.3: Items in Group III – Home Life

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.871</td>
</tr>
<tr>
<td>Wage Replacement</td>
<td>-0.370</td>
</tr>
</tbody>
</table>

Table P.4: Items in Group IV – Age
<table>
<thead>
<tr>
<th>Group</th>
<th>Group I</th>
<th>Group II</th>
<th>Group III</th>
<th>Group IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>I – Education</td>
<td>1.000</td>
<td>0.231</td>
<td>0.236</td>
<td>0.109</td>
</tr>
<tr>
<td>II – Support</td>
<td>0.231</td>
<td>1.000</td>
<td>0.091</td>
<td>0.099</td>
</tr>
<tr>
<td>III - Home Life</td>
<td>0.236</td>
<td>0.091</td>
<td>1.000</td>
<td>0.041</td>
</tr>
<tr>
<td>IV - Age</td>
<td>0.109</td>
<td>0.099</td>
<td>0.041</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Table P.5: Intercorrelations Among the Groups of Items
APPENDIX Q

Vocational Rehabilitation Data Collection Report Form
Claim Number ____________  Name __________________________________

Last    First    MI

Address ____________________________________    County __________________

Number    Street    City

Education ____________  Marital Status __________  Gender:  M _____  F ______

Primary Allowed Conditions ______________________________________________

Secondary Allowed Conditions ______________________________________________

Other Allowed Conditions _____________  Unrelated Conditions _______________

Occupation ____________________________  Years on the Job _________________

Employer _____________________________  Location of Employer _____________

Vocational Rehab Services Provided : Y__________    N___________  Date ________

Length of time in Vocational Rehab ___________ Services Provided_______________

Date of Injury __________________________  Return-to-work Date _______________

Employer at Return-to-work _______________________________________________

Position at time of Return-to-work __________________________________________

Wages at the time of Injury _______________     Wages from Compensation ______

Any Additional Income?  Y _______  N _________  From what source ?____________

Attorney Representation:  Y _____  N ______ Union Representation: Y _____  N ____

Employer Type   (What does this company produce?) ___________________________

Additional Comments  _____________________________________________________

Data Collected by________________________________________________________

______________________________________________________________________

Table Q.1:  Data Collection
REFERENCES


