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COMPARING STATE VOCATIONAL REHABILITATION AGENCIES WITH HIGH
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DEFINING QUALITY EMPLOYMENT AND DESCRIBING EFFECTIVE SERVICE
PATTERNS

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PATTERNS

A dissertation submitted in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

By

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Chapter I

Introduction

Statement of the Problem

The United States labor force has traditionally maintained high levels of employment for working age adults. In fact, the unemployment rate for working-age Americans has fluctuated between a low of 4% and a high of 6% over the past ten years (Bureau of Labor Statistics, 2004). This high rate of employment has resulted in economic stability, self-sufficiency and positive sociocultural acceptance for the majority of American citizens. Unfortunately, research has demonstrated that the unemployment rate for Americans with disabilities is a staggering 60% (Cottone, 1987; Strauser, 1995). For individuals who are blind or severely visually impaired, the rate of unemployment has been reported even higher, from a conservative 70% (Kirchner & Peterson, 1982) to a high of 85% (Candela & Wolffe, 2001). This is even more alarming since Burkhauser and Stapleton (2004) reported that men and women with disabilities have continued to decline in both their rates of employment and earnings during the last decade, throughout general labor market recession, as well as during economic growth. These data point towards a disturbing picture where only an average of 25% of Americans who are legally blind achieve the social and economic benefits that most non-disabled adults currently enjoy (Cavanaugh, 1999).

Beyond the personal benefit of attaining high-quality, competitive employment, there is a real cost to society in terms of dollars and social awareness by not increasing the participation for legally blind people in the workforce. Kirchner (1999) examined the prevalence of visual impairment in the United States and noted a trend of increasing

numbers of legally blind individuals, particularly those who are older and those who are from an ethnic minority. Specifically, the increasing numbers of infants who are born premature or with low birth-weight often experience disability, including blindness. Additionally, medical advances result in better survival for adults who suffer traumatic injury such as gunshots and accidents, but often with the result of disability. Finally, the increasing numbers of minorities, particularly African Americans and Hispanic Americans -- two groups who have traditionally had higher rates of untreated or undiagnosed visual impairment (Kirchner & Schmeidler, 1999) -- contribute to an increased prevalence of legal blindness in the United States. Kirchner (1999) reports that the picture is not quite so bleak and that a better healthcare system, increases in medical technology and the ability to diagnose and treat visual impairment more effectively helps to mitigate this problem. All of this translates into increased government benefit payments and medical insurance, decreased integration and loss of revenue in the form of taxable income, resulting in a greater burden to society and lost opportunity for legally blind people.

Despite negative trends, the expanding range of employment opportunities for individuals who are legally blind is brighter than ever before. Research into the jobs currently being completed by members of the target population demonstrates a full spectrum of occupations. Wolffe and Spungin (2002) reported that individuals who are legally blind were employed in developed countries, including the United States, in a variety of jobs classified as professional, managerial, administrative, clerical, production, service-related, marketing, sales, computer science, teaching, and many other occupations. The three top-paying jobs held by legally blind individuals according to this

survey were lawyer, teacher/professor, and computer programmer.

Omvig (2002), in describing vocational rehabilitation for individuals who are blind, reported individuals holding jobs from food service and janitorial, to professionals in law, higher education, politics, medicine, and computer science. These cases are not mere exceptions to the rule, but are reflective of the potential of the average person who is blind (Omvig, 2002). Evidence of this exists in the nation's largest consumer organization for the blind, the National Federation of the Blind (NFB), which maintains special interest groups of legally blind individuals in a host of jobs. The range of occupations and activities currently represented within this consumer organization include Agriculture and Equestrian, Computer Science, Communities of Faith, Deaf-Blind, Diabetes Action Network, Educators, Entrepreneurs, Guide Dog Users, Human Services, Industrial Workers, Lawyers, Masonic Square Club, Merchants, Musicians; Office Professionals, Parents of Blind Children, Performing Arts, Piano Tuners, Public Employees, Rehabilitation Professionals, Science and Engineering, Senior Blind, Blind Students, Travel and Tourism, Writers, Educators of Blind Children, Health Care Professionals, Professional Journalists, and Orientation and Mobility (NFB Divisions, 2004, <http://www.nfb.org/nfbdivlst.htm>). These employed legally blind individuals provide evidence that the nature of the disability itself is not the primary impediment to employment.

Rationale of the Study

Young (1999) surveyed a group of individuals who were legally blind and reported that the most important factors associated with the ability to maintain a career were the individuals' positive attitudes about self-identity and disability; high

expectations for themselves and their potential; the ability to adapt to the demands of the non-disabled community; the learning of alternative techniques, e.g., Braille, cane, access technology, and the availability of positive mentors and role models. While attitude and tenacity may be partially explained through innate temperament, the skills enumerated by these respondents reflect a concerted effort to improve the employment prospects of this population.

For most individuals who are disabled, including those who are legally blind, it is the State-Federal Vocational Rehabilitation system that plays a central role for these individuals in finding, securing and maintaining employment. To address the diminished employment rates for Americans with disabilities, the Rehabilitation Act of 1973, as amended, was enacted to assist this population to obtain, maintain and advance in employment. The Rehabilitation Services Administration (RSA) is the Federal oversight body charged with the responsibility of administering grants to the states for the purpose of delivering Vocational Rehabilitation (VR) services to assist individuals with disabilities to obtain work. RSA currently provides funding and oversight to 82 Designated State Units (DSU) in the fifty states and territories. Of this number 24 states in 2000 maintained separate DSUs to serve the population of individuals who are blind or severely visually impaired. The remaining states serve the visually impaired population within one agency structure, either under the same plan, or under a separate department within the agency. Despite increased funding and oversight, the population of legally blind individuals in the United States has continued to lag behind others with disabilities and far behind the general public in terms of competitive employment.

Once an individual has applied for services within a designated state VR unit, that agency must determine whether the individual is eligible for VR services based on the impact of vision loss on an individual's ability to achieve employment¹. If the individual meets these criteria, the state agency may then provide a host of services aimed at assisting an individual with a disability to obtain, maintain or advance in employment. If, at the time of application, the consumer is determined ineligible, his or her case will be closed unsuccessfully (Status 08). If the consumer is determined eligible, he or she may receive VR services and may be closed in one of several statuses: Status 08 -- Closed not accepted/ineligible for VR; Status 26 -- Rehabilitated after Individualized Plan for Employment (IPE) is written (i.e., has achieved employment consistent with his/her unique strengths, resources, priorities, concerns, abilities, capabilities, interest, and informed choice for at least 90 days²); Status 28 -- Closed for other reasons after IPE is initiated; Status 30 -- Closed for other reasons before IPE is initiated; and Status 38 -- Closed from Pre-Service Listing (e.g., during determination of eligibility [(Rehabilitation Services Administration, 1995, 78)]). Within this reporting system, only those individuals closed in Status 26 have been determined to have achieved an employment goal, while Statuses 08, 28, 30 and 38 all indicate that the individual was not successfully rehabilitated. All of these data are collected by each designated state unit on an annual

¹ Prior to the 1992 amendments to the rehabilitation act, VR counselors had to document that an individual could benefit from VR services. The 1992 amendments established a presumption that an individual with a disability could benefit from such services, thus eliminating the need to determine an individual's employability.

² In 1997, RSA issued Policy Directive RSA-PD-97-04, which rescinded the term suitable employment, replacing it with the broader definition that employment be consistent with an individual's unique strengths, resources, priorities, concerns, abilities, capabilities, interest, and informed choice. Also, the 1997 amendments increased the minimum standard for determining that an individual had achieved employment from 60 days to 90 days.

basis and reported in the Federal rehabilitation data form RSA-911 to the Rehabilitation Services Administration.

Within the 26 closure status, RSA recognizes six categories of employment. These include (a) Competitive employment, (b) Extended or sheltered employment³, (c) State-managed Business Enterprise (BEP) employment, (d) Self-employment, (e) homemaker status, and (f) Unpaid family worker. By definition, individuals closed in homemaker and unpaid family worker statuses do not receive wages or economic benefits for their work. Extended or sheltered employment is designed for individuals who are either not ready for, or capable of, competitive employment. Consequently, individuals placed in sheltered employment are not guaranteed a minimum wage, benefits, or set hours. According to RSA guidelines, competitive, BEP and self-employment closures indicate that the individual receives some form of payment for goods or services provided. Consequently, VR professionals, consumers and RSA regard these 26 statuses as wage earning occupations.

The research into closure rates for individuals who are legally blind has been quite sparse in the literature. The evidence that does exist demonstrates a trend of stagnation, with relatively low rates of competitive, BEP or self-employment outcomes. Hill (1989) investigated the work status outcomes of legally blind consumers in 1982. Her report revealed that, of more than 18,000 visually impaired and legally blind clients served, just over 8,000 men and women (48.6%) were placed in competitive employment. This is

³ In the RSA regulations published January 2001 (34 CFR Part 361), sheltered or extended employment was eliminated as an employment category. Starting in April of 2001, state agencies could voluntarily eliminate this closure category, and beginning October 1, 2001, this directive was mandated for all agencies beginning fiscal year 2002. Note: the data used in this study cover fiscal years 1997 through 2001. Consequently, this regulation should have little impact on this study.

similar to the findings of Kirchner and Peterson (1982) who reported that visually impaired and legally blind clients were competitively employed at a rate of 57%, whereas other individuals with disabilities were competitively employed at a rate of 81% at the time their VR case was closed. Thirteen years later, Cavanaugh (1999) demonstrated that these low rates of employment for individuals who were legally blind have continued to remain stagnant, or deteriorate. Specifically, Cavanaugh reported that of more than 18,000 legally blind consumers closed in FY 1995, only 25.1% were employed in competitive, BEP, or self employment, while 43.5% were closed in extended, homemaker, or unpaid worker statuses. Additionally, another 31.4% of these cases were closed unsuccessfully (i.e., without an employment outcome). Combating this high employment rate necessitates identifying the factors related to obtaining competitive employment for this population, including the specific role the state-funded vocational rehabilitation program plays in achieving this objective.

Purpose of the Study

As demonstrated by the 25.1% of employed individuals who are legally blind, a sufficient range of existing employment options promote the expectation of greater rates of employment than currently exist (Cavanaugh, 1999). The range of factors which may explain or predict employment outcomes for people who are legally blind or visually impaired includes personal characteristics, societal and environmental barriers, the availability of jobs, and governmental services such as vocational rehabilitation.

Previous outcome research has investigated the VR system and predictive factors such as consumer personal/work history (Bolton, Bellini & Brookings, 2000; Capella, 2001; Cavanaugh & Pierce, 1998; Hill, 1989), the quality of the VR counselor (Bolton &

Neath, 1995; Cook & Bolton, 1992; Mullins & Roessler, 1997; Szymanski & Parker, 1989), and the overall State-Federal VR system (Cavanaugh, 1999; Rumrill & Roessler, 1999). Additionally, research into consumer satisfaction with VR services has demonstrated that the quality of the job obtained is a crucial component of overall satisfaction (Gilbride, Ressler & Stensrud, 1998). The current study considered the question of how these outcomes are most effectively achieved. Although all of these factors play a role in the delivery of comprehensive rehabilitation services, this study highlights the provision of VR services. While each state must comply with certain rules and regulations set forth by RSA, it is incumbent upon each state agency to write, administer and evaluate its own plan for vocational rehabilitation. For the purpose of this study, successful performance of this fundamental duty was measured by the percentage of legally blind consumers who achieved a competitive employment closure within each state.

One Independent variable was selected to compare employment outcomes of VR agencies, which was defined as Competitive Closure Rate (CCR). Three outcome criteria were then used to evaluate the quality of jobs obtained by legally blind consumers and included the consumer's hourly earnings, availability of medical insurance, and source of support. Competitive closure rate (CCR) has been used in several research studies as a measure of VR counselor effectiveness (Cook & Bolton, 1992; Szymanski & Parker, 1989) and has been demonstrated as a stable and reliable measure (Bolton & Neath, 1995). Competitive closure rate was defined for this study as all competitive, self-employed and BEP 26 closures divided by all unsuccessful and non-competitive 26 case closures.

The independent and dependent variables reported on the consumer level were aggregated at the agency level. Using aggregate data, all VR agencies in the United States were rank ordered from highest to lowest by the ratio of competitive employment case closures. The top and bottom ranked state VR agencies were combined to form two groups upon which the remainder of the study was conducted. Job quality comparisons were made between these groups on three indices of quality: (a) the ratio of VR consumer's earnings to the earnings of the state's general workforce, (b) the availability of medical insurance, and (c) the nature of the consumer's primary source of support. The study also examined the question of which specific VR services, if any, were related to higher levels of employment. The services were dollar cost per case, personal adjustment, college/vocational training, assistive technology, and job placement services.

When studying differences between high versus low ranked state VR agencies, several consumer demographic factors were evaluated for their influence on the attainment of competitive employment (e.g., the consumer's age at application, gender, and education level at the time of application). Additionally, this study considered the influence of environmental and geographic differences in employment (e.g., the population density of the state, poverty rate, and unemployment rates). While these do not serve as causal explanations, they provide clarity by controlling for potential nuisance factors in evaluating the role that vocational rehabilitation service provision plays in the ultimate employment of legally blind consumers.

Study Design

This was an Ex Post Facto, or retrospective study. This type of design has been used extensively in examining the case files of hospital patients, school-age children,

military personnel, and many other areas where specific personal and performance variables have been recorded. One benefit to such a design is that both the independent and dependent variables have already occurred and have been recorded in a standardized format. The retrospective study design is not used to establish causality, but to assist the researcher in identifying relationships between variables (Kirk, 1995, 9).

Hypotheses:

1. State Vocational Rehabilitation (VR) agencies can be rank ordered by blind consumer case closure rate in a meaningful way. This ranking is stable over time.
2. Top and bottom ranked state VR agencies will differ on the quality of jobs obtained by legally blind consumers.
3. Top and bottom ranked VR agencies will differ in the amount of services provided, i.e., cost of case services, adjustment training, college/university, business/vocational, assistive technology, and job placement services.
4. Competitive case closure rate is not related to select consumer demographics between top and bottom ranked state VR agencies, i.e. age, gender and level of education.
5. Competitive case closure rate is not related to state based geo-economic conditions between top and bottom ranked state VR agencies, i.e. population density, poverty and unemployment rate.

Scope of the Study. The scope of this study has focused on the State-Federal vocational rehabilitation system as it is administered by the designated state units in all fifty states. Specifically, this study ranked all fifty state VR agencies by competitive case closure rate. Beyond the obtainment of competitive case closures, the quality of jobs

attained was also examined using three indices of job quality (Gilbride et al., 1998). Finally, the top- and bottom-ranked state VR agencies were evaluated across 12 dependent variables, including six vocational rehabilitation services, three consumer demographics, and three geographic and economic factors. The hypotheses under consideration make this the first study to identify those VR agencies effectively serving consumers who are legally blind, as well as identifying those services associated with competitive employment outcomes.

Definitions

BEP or State-agency-managed business enterprises (BEP): This refers to vending stands and other small businesses operated by persons with severe disabilities under the management and supervision of a state agency. It includes home industry, farming, and other enterprises.

Competitive employment: This refers to work for wages, salary, commissions, tips, or piece-rates in an integrated setting but does not include work in extended employment.

Extended employment (Sheltered workshops): This refers to work for wages or salary in a setting conducted by a nonprofit organization for persons with disabilities unable to enter into or not ready for competitive employment. Such settings are variously referred to as rehabilitation, community, curative, sheltered, industrial, or occupational workshops.

Homemaker: This refers to men and women whose activity is keeping house for their families or for themselves, if they live alone.

Legal Blindness: a central visual acuity not exceeding 20/200 in the better eye with best correction, or a limit in the field of vision to such a degree that its widest diameter subtends an angle of no greater than 20 degrees (American Medical Association, 1934).

Individualized Plan for Employment (IPE): This refers to the plan for vocational rehabilitation services which is drawn between the VR counselor and client. This plan identifies the client's vocational goal, the services to be provided in achieving this goal, and the responsibilities of all parties involved.

Self-employment (except BEP): This refers to work for profit or fees in one's own business, farm, shop, or office. Superintendents, managers and other executives hired to manage a business or farm, officers of corporations, and persons working for sales commissions should not be classified under this code, but under Code 1 (competitive employment).

Status 08- Closed not accepted/ineligible for VR: This status is used to identify persons determined ineligible or who are otherwise not accepted for VR services, whether closed from the applicant status (Status 02) or extended evaluation (Status 06).

Status 26 - Rehabilitated: Cases closed as rehabilitated must, as a minimum, (a) have been declared eligible for services, (b) have received appropriate assessment and related services, (c) have had a program for VR services formulated, (d) have completed the program, (e) have been provided counseling, and (f) have been determined to have obtained employment which is consistent with an individual's unique strengths, resources, priorities, concerns, abilities, capabilities, interest and informed choice for a minimum of 90 days (See footnote 2).

Status 28 - Closed for other reasons after IPE initiated: Cases closed into this category must have met criteria (a), (b) and (c) above, and at least one of the services provided for by the IPE must have initiated; but, for some reason, one or more of criteria (d), (e), and (f) above were not met.

Status 30 - Closed for other reasons before IPE initiated: Cases placed into Status 30 are those which, although accepted for VR services, did not progress to the point that services were actually initiated under a rehabilitation program, and, consequently employment was not achieved.

Status 38 - Closed from Pre-Service Listing, or application phase: This status is used to identify individuals eligible for VR who will not advance to the Service Statuses (10 to 24) and whose names have been removed from the Pre-Service Listing (Status 04).

Unpaid family worker: This refers to persons who work without pay on a family farm or in a family business.

Chapter II

Literature Review

The 2000 U.S. Census reports that 281,421,906 people resided in the United States at the end of the twentieth century (U.S. Bureau of the Census, 2003, <http://www.census.gov>). Of that number, approximately 1.3 million people were legally blind, which represents only .46% or less than one half of one percent of the entire population (American Foundation for the Blind, 2001). Current estimates suggest that 74% of working-age individuals who are legally blind are unemployed (Kirchner & Schmeidler, 1997). This represents 962,000 individuals, just .34% or roughly one third of one percent of the population who cannot seem to secure employment. Statistically these numbers are insignificant, so one would wonder what the social, economic or political benefits of investing time and resources on the employment of this group would be to society. After all, Social Security and societal charity have largely made it possible for all Americans to have their basic needs of survival met, thereby eliminating the need to obtain employment.

In fact, less than one hundred years ago, individuals who were blind, or whose eye-sight was so poor that they could not easily engage in the activities of daily living and employment, were kept in institutions, schools for the blind, or in their family homes (Vaughn, 1993). With the exception of a few stereotypical crafts, such as massage and chair caning, individuals who were blind had no opportunities for employment to achieve self-sufficiency (Omvgig, 2002). More importantly, the expectation that individuals who were blind could not work, contribute, or engage in normal life has been an accepted “certainty” for centuries (Ferguson, 2001). The realization, or assumption, that these

individuals could participate in society in a full and productive manner is only as recent as the last half of the twentieth century. This is evidenced by the fact that, although the Civilian Vocational Rehabilitation Act was first passed in 1920 to assist disabled Americans to enter, or return to the workforce, the blind were not included within the Act until its revision in 1943 (Rubin & Roessler, 2001). Although legally blind individuals began receiving vocational rehabilitation services at this time, most were still not receiving employment opportunities until after the major revisions of the Rehabilitation Act of 1973 (Vaughn, 1993) and the awakening of a social and political conscience of blind individuals and groups (Omvig, 2002; Ferguson, 2001). Consequently, relatively recently the rights and responsibilities of individuals who are blind to fully participate in the economic and civic opportunities afforded by citizenship have come to be realized in a meaningful way.

Considering that social welfare and public charity do exist, the issue which must first be addressed is the reason the attainment of employment of such importance. In fact, many cultures in different parts of the world today may actually be offended by the proposition of expecting the blind to work because they continue to expect their blinded citizens to subsist off public and family charity (Vaughn, 1998). However, the virtue of working to provide subsistence for oneself and one's family is an ideal which runs deep in the values of Western culture. This attitude is part of the social framework of the United States, which embodies the work this work ethic. Multicultural differences aside, the expectation that an individual will work and be a contributing member to society is a principle accepted almost without exception in the United States--unless of course that individual has a disability. Therefore, employment is of central importance for all adults

of working age in this country. To answer the greater question as to why employment is a desirable, if not an essential, goal requires greater examination of the nature of work (Szymanski & Vancollins, 2003).

The Theory of Work and Career

Theories of employment and career development have permeated the research literature throughout much of the preceding century (Dawis, 2002; Super, Savickas, & Super, 2002). Employment serves a number of purposes for the average individual. At its most basic level, work has been defined as the exchange of labor for money (Osipow & Fitzgerald, 1996). It is the means by which most Americans are able to maintain a residence to call home, afford utilities and pay for food. In short, the money earned through some form of employment enables Americans to meet their basic needs of survival. Linked to individuality, work for hire is the backbone upon which the American economic structure functions. Consequently, in the twenty-first century, individuals in the United States are dependent upon a person-environment correspondence in that labor market for survival, and the economy is dependent upon the quality of the workforce (Dawis, 2002). Through employment, an individual's basic needs and the fulfillment of one's aspirations and expectations can be met (Dawis, 2002). Through productivity, efficiency, and inclusion by peers and coworkers, an individual may succeed at satisfying the requirements of the job to sustain one's needs (Dawis, 2002).

Beyond the obvious satisfaction of financial needs, several widely published scholars have articulated the importance of employment as a life-long developmental process of self-discovery and identity (Super, Savickas, & Super, 2002). That work or employment, which consumes the most time in the average person's daily life and

significantly impacts his/her social and leisure activities, is no surprise. In fact, the discussion of employment as expected in the course of one's life and the identification of a career path begins in early childhood. Everything from childhood games and group play to subjects in school curricula points towards the eventuality of employment expectations.

Super and his colleagues (2002) described this development of a vocational identity within the context of a life-career rainbow. In this view, employment is not merely a job held at one point but the constellation of interests, aspirations, goals and objectives that one experiences throughout one's life. Employment is not merely a diversion to pass the time but is inextricably linked to one's identity and self-esteem via the roles he or she will assume throughout life and the range of activities and life goals that he or she will be able to attain.

Super and his colleagues (2002) explained that while life-space describes a person's multiple roles at a given time, these roles evolve over the span of one's life. From as early as age four, children are beginning to understand their parents' roles, their own role within the family and community, and the knowledge that they will grow up to assume the position of worker, parent, spouse and/or citizen. This theory of career development describes how individuals transition through stages of growth, exploration, establishment, maintenance and disengagement in the selection of a career and the balancing of life roles. At any phase in this developmental sequence, disability may impact one's life. For adults experiencing adventitious disability, the negative consequences may be abrupt and dramatic; however, for children who grow up with disability, the negative consequences may be subtle and unnoticeable. One would think

these problems would largely be ameliorated despite the advances in technology; the availability of special education and vocational rehabilitation; social enlightenment regarding disability, and the implementation of laws such as the Rehabilitation Act; Individuals with Disabilities Education Act (IDEA), and the Americans with Disabilities Act (ADA). Even with all this progression, research into disability and employment continues to demonstrate that factors such as employer attitudes, the individual's own attitude, discrimination, physical barriers and stereotypes all continue to hamper efforts toward social and work integration (Szymanski & Vancollins, 2003; Szymanski, Hershenson, Enright, Ettinger, 1996).

Life-space may be defined as the overview of roles that an individual holds at any given point over one's life. This space will consist of core roles, such as father, husband, worker, as well as such peripheral roles as church member, neighbor, and so forth. When these roles are stressed, peripheral roles will give way to core roles; however, all of these life roles may be supportive and supplementary, or conflictive, overbearing and incompatible (Super et al., 2002). The degree to which an individual can clearly identify, fulfill and manage the roles determines one's life-space completion. An adult man or woman may simultaneously serve in the roles of worker, husband, father/mother, son/daughter, brother/sister, neighbor and church member, all within the realms of employment, home and leisure. How one interacts with family and society is to a large extent a person's career or the role that an individual holds. When one of these roles is significantly affected, such as through disability, for instance, the resulting role change has an impact on every other role within the person's life.

An example could be a woman who is the primary breadwinner, mother to her children, spouse and active civic member. When her life is affected by disability or chronic illness, she may no longer be able to work, which may completely shift the power balance within the home. Her ability to effectively parent may be impacted as well as her ability to maintain a healthy marriage. Isolation from civic and leisure activities may also occur. The results of disability, consequently, are felt far beyond financial competency and, in fact, may affect multiple life roles, one's self-esteem and identity, leading to feelings of hopelessness and powerlessness (Miller, 2000). For these reasons, social charity and welfare cannot mitigate the social and economic benefits afforded through high-quality, competitive employment.

Disability and Employment

An essential part of life for working-age individuals residing in the United States is the ability to secure, maintain and advance in high-quality, competitive employment. So too is this objective paramount for individuals with disabilities, including those who are legally blind. Based on the research and career theory, it is evident that the presence or absence of employment has a tremendous impact on all facets of a person's life. The expectation is reasonable that individuals who are legally blind would have the same expectations, desires and aspirations to be gainfully employed, and consequently should be afforded the same opportunity to obtain a career as the general populous. Wolffe and Spungin (2002) reported that individuals who are legally blind were employed in developed countries, including the United States, in jobs classified as professional, managerial, administrative, clerical, production, service-related, marketing, sales, computer science, teaching, and many other occupations.

These individuals represent the 25% of working-age adults who are employed, yet they provide evidence that the nature of the disability itself is not the primary impediment to employment (Cavanaugh, 1999). Young (1999) surveyed a group of individuals who were legally blind and were competitively employed. They reported that the most important factors associated with the ability to maintain a career were the individuals' positive attitude about self and disability; high expectations for themselves and their potential; the ability to adapt to the demands of the non-disabled community; the learning of alternative techniques, such as Braille, cane, access technology, and the availability of positive mentors and role models. While attitude and tenacity may be partially explained as temperaments, the skills enumerated by these respondents reflect a concerted effort to improve the employment prospects of this population. For most individuals who are disabled, including those who are legally blind, it is the State-Federal Vocational Rehabilitation system that plays a central role in finding, securing and maintaining employment for individuals with disabilities.

Rehabilitation Services Administration

The Rehabilitation Services Administration (RSA) is the federal oversight body which provides funding and policy to the states' vocational rehabilitation programs. Currently, RSA oversees 82 Designated State Units (DSU), which are responsible for providing vocational rehabilitation services to individuals with disabilities in the United States and its territories. The DSUs are responsible for the creation, implementation and evaluation of a state plan with the goal of assisting individuals with disabilities to obtain, maintain or advance in competitive employment (Rehabilitation Act of 1973, as Amended, 1998). This may occur through a variety of services, including counseling and

guidance, medical restoration, personal adjustment, education and training, assistive technology, and other individualized services. "RSA's major Title I formula grant program provides funds to state vocational rehabilitation (VR) agencies to provide employment-related services for individuals with disabilities, giving priority to individuals who are significantly disabled." (RSA, <http://www.ed.gov/about/offices/list/osers/rsa/index.html?src=mr>, P. 1).

Once a consumer applies for vocational rehabilitation services, he or she may be closed in a number of statuses. The consumer may be determined as ineligible for services (Status 08), may be eligible for services but does not initiate an employment plan (Statuses 30, 38), may develop a plan for employment but is unsuccessful (Status 28), or may develop a plan, receive VR services and achieve some form of employment (Status 26). Employment, as defined under the rehabilitation act, can be classified in one of six categories. An individual may achieve a vocational objective in competitive employment, under a state-managed business program, in self-employment, within a sheltered employment setting, as a homemaker, or as an unpaid family worker. Of these categories, the latter three have been considered non-competitive because they either occur within a segregated setting, and/or result in non-competitive wages (Rehabilitation Services Administration, 1995, 23).

Based on the articulated priority of RSA, it is incumbent upon the various state VR agencies to deliver services and guidance to assist individuals with disabilities in achieving their vocational goal; however, the definition of employment becomes a topic of contention. Despite the years of research and exposition on the subject, disagreement remains as to what exactly constitutes employment. Although the rehabilitation act

clearly states the priority to assist individuals who are disabled in achieving competitive and gainful employment, Moore (1999) reports that the VR system considers non-competitive employment (i.e. extended employment, homemaker and unpaid family worker) as an option which is consistent with an individual's unique interests, strengths, resources, priorities, concerns, abilities, capabilities, interests and informed choice.

To understand employment under the vocational rehabilitation system, the examination of the classifications in more detail is important. The six categories recognized by RSA include (a) Competitive employment (working for wages or salary in an integrated setting); (b) Self-employment (where the individual owns his/her own business); (c) Business Enterprise Program (BEP) (state-managed vending facilities that the consumer operates and maintains under the supervision of a VR agency); (d) Extended Employment (sheltered work in a segregated setting without the guarantee of competitive wages or benefits); (e) Homemaker (one who maintains a household for a spouse or oneself), and (f) Unpaid family worker (works in a family farm or business but receives no wages).

Based on these six categories of employment status, it is clear that disagreement exists regarding the nature of employment when it comes to individuals with disabilities. Several recent amendments to the Rehabilitation Act of 1973, particularly those in 1992 and 1998, emphasize the priority of employment in the competitive market. While this priority is in line with predominant theories of career development, some have interpreted this policy as a devaluing of the non-competitive work statuses (Revell, 2002). Personal and political biases aside, it would seem reasonable that any form of employment should be evaluated on the benefits afforded to the individual as a result of that occupation.

In particular, the statuses of extended employment, homemaker, and unpaid family worker have been considered non-competitive employment, and some have questioned why they are considered employment at all.

Extended or sheltered employment typically occurs as manufacturing or line production work under federal government contracts for small assembly or mass production under the Wagner-O'Day Act of 1938 (P.L. 75-739). For example, a worker may sit on a production line for eight hours a day putting together two components of a larger product or operating machinery to produce textiles and other goods. The work is not substantially different from a thousand other jobs, except for the fact that it is conducted under a sheltered or segregated setting where persons with disability represent at least 75% of the workforce. Because of the special circumstances of such programs, it is legal to pay the employees piece-rate, or sub-minimum wages. In some cases, an individual may work eight-hour days earning less than two dollars an hour, with no medical or retirement benefits for his/her entire working life. This type of sheltered work may be the only feasible option for some individuals with severe disabilities; however, the contention of its critics is whether or not the financial and fringe benefits paid for such work is consistent with an individual's unique interests, strengths, resources, priorities, concerns, abilities, capabilities, interests, and informed choice. It is important to note that in January 2001 RSA published regulation 34 CFR Part 361, eliminating sheltered work as an allowable employment category⁴. This does not mean that such

⁴ In the RSA regulations published January 2001 (34 CFR Part 361) sheltered, or extended employment was eliminated as an employment category. Starting in April of 2001, state agencies could voluntarily eliminate this closure category, and beginning October 1, 2001, this directive mandated compliance for all agencies beginning fiscal year 2002.

sheltered employment has been abolished but that VR counselors can no longer receive credit for having assisted the individual in achieving an employment outcome in a sheltered employment setting.

Throughout most of the history of this country, women in the United States often spent their working lives at home raising children, caring for a husband, cooking and cleaning, and attending PTA meetings. These activities were not considered work in the traditional sense but rather the duties of a faithful spouse. Fortunately, societal enlightenment and the woman's rights movement brought to the forefront the true value of household maintenance. While housework is still not typically considered employment, few would argue with the assertion that maintaining a household is indeed a full-time occupation. With the economic pressures of the twenty-first century and their ever-increasing reality for dual earner, many of the traditional household duties (child-care, cooking, and cleaning) have become available commodities for purchase. Yet, most would tend to agree that a spouse, woman or man, who remains at home to fulfill these duties for the family is filling an important need. For this reason, RSA uses the homemaker as a valid employment closure. Individuals in the field of rehabilitation become skeptical of the "homemaker" closure when it is used for individuals who are of working age, yet live alone (Omvig, 2002), or for those whose goal at the time of application was other than homemaker (Hayward & Schmidt-Davis, 2003). The unpaid family worker is by definition someone who works for a family business but receives no pay. In both the homemaker and unpaid worker, the financial benefits to the individual

that stem from these occupations seem minimal beyond the satisfaction of helping one's family⁵.

Vocational Rehabilitation Outcomes

Although RSA recognizes six categories of employment status, most research in the field of vocational rehabilitation has focused on competitive closures. RSA has established competitive employment as the mission of rehabilitation services, as has been articulated in the amendments to the Rehabilitation Act of 1973 in 1992 and 1998. The Commissioner of RSA reiterated this priority when describing the changing patterns in the VR system. Schroeder (2000) reported that consumers who were placed in competitive, integrated employment made rapid gains in earnings and access to insurance. Over a three-year period competitively employed consumers on average increased their wages from \$7.56 to \$13.24. Within this same timeframe, the availability of medical insurance through work for these consumers increased from 38% to 58%, which is close to the national average of 64.5% (Schroeder, 2000).

Despite the data supporting this priority, many VR consumers are not exiting the VR system having achieved the goal with which they entered the program. A longitudinal study of the VR system revealed that 11% of consumers amended their VR plan to change their original plan (Hayward & Schmidt-Davis, 2003). The results of the longitudinal study reported that only 3.9% of VR consumers chose the status of homemaker as their vocational goal. However, Szymanski and others (1990) report that 10.3% of individuals with disabilities were eventually closed as homemakers, and Hill (1989) reported that 40% of consumers who were blind had been closed either as

⁵ Note: the data used in this study cover fiscal years 1997 through 2001. Consequently, this regulation should have little impact on this study.

homemakers or unpaid workers. To further understand employment outcomes for individuals who are legally blind, it is necessary to examine the research on VR services and case closures.

Hill (1989) used RSA-911 data to study the employment outcomes of legally blind consumers of the VR system. The 911 Form records consumer demographic and disability characteristics, VR services provided, and the status in which the consumer was subsequently closed. Among the findings reported by Hill (1989), age at the time of closure and gender were most predictive of successful closure, but the severity of vision loss was also a contributing factor (clients with greater vision had higher rates of competitive employment). Clients who were totally blind, however, were more likely to be placed in sheltered work, whereas clients with low vision and women were more likely to be closed as homemakers. Finally, Hill (1989) reported that receiving college or vocational training as a VR service increased the probability of competitive employment, and that men were more likely to receive this service than women.

Although these findings are consistent with the unemployment statistics, they do not answer the question as to "why" these disparities exist. Walls and Fullmer (1997) used RSA data to compare the competitive employment outcomes of 13 disability groups. Of the groups studied, Walls and Fullmer noted that six groups clustered together in terms of the types of jobs obtained: visual impairment, hearing impairment, epilepsy, learning disabilities, substance abuse, and mental illness. The findings indicated that six groups of disabilities had moderate to high rank-order correlations on the types of occupations achieved, ranging between 0.63 to 0.79 with visual and hearing impairments clustering together. These data seem to suggest that despite the inequities in the numbers

of case closures, clients with visual impairments tend to hold similar types of jobs as other individuals with disabilities.

Consumer Characteristics and Outcomes

Previous research on the employment status of individuals with disabilities has identified a number of personal characteristics that are related to positive outcomes, including age, race, educational level, family income, previous work experience, gender and severity of disability. Bolton, Bellini and Brookings (2000) stated that the unique contribution of demographic and disability characteristics explained between 20% and 29% of the variance in both competitive closures and wages using a scale of social disadvantage which includes age, education level, marital status, financial assistance, family income, employment status, and primary and secondary disability. While their sample included five major groupings of disabilities, visual impairments were not represented. Similarly, Hill (1989) identified the personal characteristics of age, education, and marital status as predictive of employment outcomes for legally blind consumers, while Capella (2001) reported that the cost of case services, consumer age and educational level predicted 26% of the variance in competitive employment. These data are very important and should be taken into consideration when planning VR services: however, these factors are not under the control of the state agency, nor can most of them be altered through the provision of vocational rehabilitation services, with the exception of education and case service dollars. Additionally, it is important for research to begin to identify or explain the other 66% to 74% of variance in employment outcomes.

Personal characteristics and severity of disability have been cited in the literature numerous times as being related to employment outcomes (Szymanski & Parker, 1989; Bolton et al., 2000), for instance, clients with more severe disabilities who are older, less educated, and female will be more difficult to place than educated, Caucasian men with lesser impairment. Severity of disability has long been considered a primary factor related to an individual's ability to enter the workforce. Anthony (1994) studied the characteristics of VR clients with psychiatric disabilities and reported that previous research has been unable to draw a strong correlation between symptom etiology and employment outcomes. Additionally, Moore (2001) evaluated VR outcomes for individuals who were deaf, late deafened, and hard of hearing and found that those who were deaf (most severely disabled) had higher rates of competitive employment than those who were hard of hearing. On the other hand, Bolton, Bellini and Brookings (2000) reported that the client's functional ability (severity of disability) was indicative of a more difficult caseload. Szymanski and Parker (1989), in creating a measure of VR counselor effectiveness, included the severity of the client's disability as one determinant of case difficulty. This is consistent with the work of Cooper and Harper (1979) who reported that more severely disabled clients would consume more of the counselor's time, case service dollars, and would be more difficult to place. Clearly, severity of disability is related to the challenge in placing legally blind consumers; however, the range of occupations held by these consumers suggests that severity is not a causal determinant of employment potential.

Bolton, Bellini and Brookings (2000) reported that the second most robust predictor of both competitive employment and the level of earnings at closure is the

client's personal disability and demographic characteristics at the time of application. These factors included age, race, gender, educational level, presence of secondary disability, severity of disability, and age at time of onset of disability. Bolton and his colleagues (2000) reported that personal demographics accounted for about 5% of the variance in their entire model and that the combination of personal history, functional limitations, and services received explained approximately 33% of the variance in competitive employment and salaries at time of closure. The personal demographic characteristics of the client's age, gender, race, educational level, and marital status have frequently been reported in the literature as predictive of VR outcomes (Anthony, 1994; Blackwell, Leierer, Haupt & Kampitsis, 2003; Capella, 2002; Hill, 1989; Honey, 2000). In addition to these, the consumer's work history (Anthony, 1994), and the client's motivation, confidence and/or self-esteem have also been cited as predictive of employment outcomes (Hayward and Schmidt-Davis, 2003; Lent, Brown and Hackett, 1994; Hill, 1989; Markus and Nurius, 1986). However, using consumer characteristics within the evaluation of counselor or agency effectiveness seems problematic. The VR agency cannot change the client's demographic characteristics, nor can it select the clients to be served based on personal characteristics. If they are to be used in evaluation of VR outcomes, consumer characteristics must be controlled in the comparison prior to the provision of VR services. Only those characteristics which are amenable to change through the provision of VR services like education level, work experience, self-esteem/concept should be used in VR outcome analysis.

The State-Federal Vocational Rehabilitation System

Studies into VR counselor effectiveness, personal demographic, and work history are numerous in the research literature; however, little work has been done evaluating the effectiveness of each state agency under which VR counselors and case service resources are housed (Szymanski, Parker & Butler, 1990; Bolton & Cook, 1992; Bolton et al., 2000). In 1992, the Rehabilitation Services Administration approved the funding to conduct a longitudinal study of the VR system, services, and outcomes. Hayward and Schmidt-Davis (2003) conducted the study over a nine-year period following VR consumers during the application phase, service provision, and post employment. This study revealed that the majority of occupational goals of consumers were in three categories: (a) 35% in professional, managerial or technical; (b) 21% in the service occupations; and (c) 18% in clerical or sales occupations. Hayward and Schmidt-Davis reported that across all measures of economic outcome, consumers with competitive employment fared better.

The longitudinal study conducted by Hayward and Schmidt-Davis (2003) examined the VR system as a whole but also provided analyses for each group of disabilities. For example, of the more than 600,000 consumers served through the State-Federal rehabilitation system each year, approximately 6% are consumers with visual impairments. Though this group represents one of the smallest numbers of individuals with disabilities, it consumes approximately 15% of the federal funds provided by RSA. Hayward and Schmidt-Davis report that consumers who are legally blind receive on average the fewest number of different services (nine), whereas other categories of disability, such as mental illness, receive the greatest number of different services (16 on average). In order of the frequency of the service delivered, the most utilized by

consumers with visual impairments were vision assessment (82.6%); assistive technology (74.6%); medical evaluation (71.0%); independent living services (40.5%); transportation (30.7%); counseling (29.3%); orientation and mobility therapy (16.3%); vocational evaluation (14.3%); and medical services (10.5%) (Hayward & Schmidt-Davis, 2003, Table 4-8).

The Rehabilitation Services Administration recognized a need to evaluate the performance of its designated state units in a more empirical manner. On June 5, 2000, RSA published a set of standards and indicators to be used in the evaluation of state VR agencies (See 34 CFR 361.80 through 361). In brief, standard one states that, “A DSU must assist any eligible individual, including an individual with a significant disability, to obtain, maintain, or regain high-quality employment (Standards and Indicators, Section 106, XI). The second performance standard requires that a DSU ensure that individuals from traditionally underserved populations, for example, women and minorities, receive equal representation within each agency.

More specifically, these Standards and Indicators (S&I) are designed to evaluate the type and quality of jobs obtained by consumers. Standards 1.1 and 1.2 seek to demonstrate that a DSU is serving more consumers each subsequent year than in the previous reporting period. Many VR counselors and supervisors have focused on the first two S&I as the best measures of success since they are listed first. However, it is interesting to note that RSA considers S&I 1.3, 1.4 and 1.5 as the primary indicators of success. These indicators are (1.3) the percentage of consumers closed in competitive, self or BEP employment, with earnings at, or above the minimum wage; (1.4) the relative percentage of individuals closed in competitive, self or BEP employment who have a

significant disability; and (1.5) the average hourly earnings of these individuals as compared with a state's general workforce. In addition to these three, S&I 1.6 evaluates the percentage of consumers for whom earnings constitute their primary source of support at the time their case is closed. As has been described by RSA, these latter indices focus more on the nature and quality of employment, rather than just the numbers. It should be noted that RSA publishes the performance data on all state agencies on an annual basis; however, these reports include all individuals with visual impairments, as well as the population of individuals with other disabilities. Where the current study deviates from the published reports is that it evaluates the performance of the state agencies only on their performance in serving individuals who are legally blind.

The research literature is more than adequate on the subject of vocational rehabilitation counselor effectiveness and the impact counselors have on the employment outcomes of consumers. Every aspect from the race of the counselor and client (Bellini, 2003), the working alliance (relationship between the counselor/consumer) (Lustig, Strauser, Rice & Rucker, 2002), and the size and type of caseload (Cooper & Harper, 1979) have been investigated for their impact on consumer outcomes. In fact, Cottone (1987) stated that, where disability is held constant, it is the nature of the relationship between the counselor and client that determines his or her integration and success. Similarly, Mullins and Roessler (1997) conducted interviews with counselors who were noted as highly effective. Among the findings was the belief that an egalitarian relationship between the counselor and consumer was related to better outcomes.

The power differential between counselor/consumer and the impact of negative attitudes has affected the outcomes of consumers who are legally blind. "The gap

between assumptions that clients make about themselves and the expectations of counselors is important to many clients” (Vaughn, 1993, 85). In presenting the impact of counselor attitudes and expectations for consumer outcomes, Vaughn (1993) documented 14 interviews with legally blind consumers who reported negative interactions with their counselors. In each of these cases, the VR counselor demonstrated assumptions that legally blind consumers were inherently limited, and in some cases put up road blocks to their chosen profession. Omvig (2002) stated that it is impractical to expect VR counselors to be knowledgeable and experienced with all types of disabilities. For this reason, state agencies should employ and train counselors to specialize in specific disabilities, such as blindness, and to develop collaboration between counselors, consumers, agency personnel, and consumer organizations (Omvig, 2002).

As has been demonstrated in research and policy, the acquisition of high quality, competitive employment is related to VR counselor education and experience (Szymanski, Parker & Butler, 1990), consistent and positive exposure to individuals with disabilities who are successfully employed (Omvig, 2002), and the attitudes and expectations held by counselors for consumers (Vaughn, 1993).

Additionally, the competitive closure rates obtained from VR counselor case files can be used in program evaluation of the agency (Szymanski, et al., 1990). In addition to counselor effectiveness, the structure of each state agency has been evaluated in the context of consumer outcomes. Unlike other types of disabilities, many states maintain entirely separate VR agencies specifically designated to serve individuals who are legally blind. This has been controversial for decades and has been the focus of both policy debate and research. Advocates state that the unique nature of the disability requires

administrators, services, and counselors who are knowledgeable of not only the occupational concerns but also attitudinal barriers faced by this population. While many detractors are not in disagreement with this statement, they maintain that the same can be said for many other disabled groups and that the current system is inequitable and unfair (Cavanaugh, 1999).

A number of studies have been conducted over the past several decades to resolve this issue (Cavanaugh and Pierce, 1998; NAC, 1997; JWK Corporation, 1981; Kirchner and Peterson, 1982) (Cited in Cavanaugh, 1999). Unfortunately, all of these studies were unable to provide convincing arguments or empirical evidence to support the separate model. Both national consumer organizations of the blind and most agencies who work directly with this population advocate the separate service model. Although professional opinion and consumer input are certainly valid, the question still requires empirical support. Consequently, Cavanaugh (1999) sought to demonstrate in an empirical manner that state VR agencies whose only focus was legally blind consumers would have better employment outcomes than states where all individuals with disabilities are served within the same agency.

Cavanaugh and Pierce (1998) reported that separate or “blind” agency states served a higher percentage of legally blind consumers from traditionally under-served populations. Specifically, their study demonstrated that separate agencies served a higher percentage of women, minorities, and consumers who were older and had more severe vision loss. Consequently, Cavanaugh (1999) used demographic and disability data to create a covariate which she then used in assessing the effectiveness inherent in agency structure. Cavanaugh aggregated consumer data at the agency level and created two

groups (general/combined agencies versus separate/blind). Using a MANCOVA statistic on the independent variable of separate vs. blind agencies with demographics as a covariate, Cavanaugh (1999) demonstrated that consumers closed in separate agencies had higher average weekly earnings than consumers closed in general/combined states ($\text{Alpha} = .08$). Considering the relatively large Alpha level, these findings are insufficient to settle the debate. Additionally, Capella (2001) sought to examine the impact of agency structure on the employment outcomes of consumers who are legally blind. Using a regression model, Capella (2001) entered the variables of case service dollars, consumer's age, and education level as predictors. She entered the two levels of agency structure (general/combined and separate/blind) last in the regression model. Using this model, Capella (2001) was able to explain 26% of the variance in weekly earnings. Unfortunately, the type of agency did not contribute to this model, resulting in more disagreement as to the importance of the separate agency model.

The Current Study

The question that is of primary interest in the current study is what characteristics of a state agency are related to higher levels of competitive employment for consumers who are legally blind. Rather than continuing the debate as to the efficacy of the separate agency model, this study proposes to rank order the top and bottom agencies that serve this population, irrespective of their structure. By focusing the unit of analysis on the agency rather than an entire system, more specific questions can be addressed, such as geographic location, funding, structure, and services provided. Consequently, one outcome criteria, Competitive Closure Rate (CCR) was used to rank state VR agencies from highest to lowest. A second set of variables was used to evaluate the quality of jobs

obtained by individuals closed in top- versus bottom- ranked state VR agencies, which included (a) the ratio of consumer's hourly wage to the wages of the general workforce, (b) the availability of medical insurance, and (c) the consumer's primary source of support. Six vocational rehabilitation service variables were used to examine the differences in service provision in top- and bottom- ranked agencies, and included (a) cost of case services, (b) provision of adjustment training, (c) college/university education, (d) business/vocational training, (e) assistive technology, and (f) job placement services. Consumer demographics and geographic and economic conditions within each state were also examined for their relationship to high versus low competitive closure rate and included (a) the consumer's age at closure, (b) the consumer's gender, (c) the consumer's education level at application, (d) the state's population density, (e) the state's poverty rate, and (f) the state's unemployment rate.

Independent and Outcome Measures

After the major revision to the Rehabilitation Act in 1973 establishing a priority to serve people with the most significant disabilities, numerous strategies were created to measure VR counselor effectiveness by assigning weights, or otherwise differentially evaluating "difficult" cases from "easy" ones. Cooper and Harper (1979) stated that the 26 closure criterion has been used as a measure of VR effectiveness of all areas of the system from the overall State-Federal program to the individual VR counselor. The research literature contains arguments against the 26 closure as the sole evaluation measure, particularly since it fails to consider the individual case from pre-service to post-service factors of the consumer (Cooper & Harper, 1979, p.7)

Competitive Closure Rate. Szymanski and Parker (1989) conducted a comprehensive review of the rehabilitation literature and identified competitive employment (work for wages or salary at or above the federal minimum wage) and the severity of disability as two important factors affecting employment outcomes. Using this information, they created six indices to measure successful vocational rehabilitation, which they then used to evaluate case closure data. The six indices are derived from three variables: Competitive Closure Rate, Number of Non-Competitive Closures, and the net case service dollars encumbered for non-competitive case closures. These three variables were then considered across two levels of disability, severe versus non-severe. Competitive Closure Rate is the ratio of all consumers closed in the category of Status 26, competitive employment, to all other case closures, including non-competitive 26 closures, such as homemaker, extended employment and unpaid worker. The Number of Non-Competitive Closures is the sum of all cases closed in non-competitive employment and unsuccessful categories. Net case service encumbrance is the per-counselor, case service dollars encumbered for non-competitive and unsuccessful closures.

Using these indices, several other lines of research supported the effectiveness of these measures in evaluating case closures (Szymanski, Parker, & Butler, 1990; Cook & Bolton, 1992; Bolton & Neath, 1995). Specifically, Bolton and Neath (1995) reported that competitive closure rate was a robust and stable criterion over ten years of case closure data. However, one limitation with the original competitive closure variable is that the statuses of self and BEP employment were not included. Since RSA considers these categories as competitive closures for legally blind consumers, the current study has incorporated them into the index. Additionally, the range of visual impairments spans

across consumers who are totally blind to those for whom an impairment exists in only one eye (severe versus non-severe). The Social Security Administration and Rehabilitation Services Administration have considered legal blindness (acuity less than 20/200 after correction) as a significant disability. Consequently, the measure of competitive closure for this study consists of one variable (Competitive Closure Rate) on only one level (severe disability).

Quality Employment. The question as to quality of employment, and what differentiates between higher and lower quality jobs, has been studied numerous times before (Capella, 2003; Cooper & Harper, 1979; Gilbride, Ressler, & Stensrud, 1998; Rumrill & Roessler, 1999). Although no uniform definition or description of high-quality employment exists, a number of variables exist that are both cited in the literature and which make sense to the average person as being related to quality employment. This study evaluated jobs obtained by legally blind consumers based on three measures of job quality: (a) the ratio of hourly wage obtained by the legally blind consumer at the time of case closure to the general labor market in the same state, (b) the availability of medical insurance through one's job, and (c) the ability of the consumer to be self-supporting.

Job tenure is defined as the length of time an individual remains on a particular job, and, according to Dawis (2002), tenure is a direct measure of both the individual's satisfaction with the job, as well as how satisfactory his/her work is to the employer. While this is a fairly objective measure, it is limited in differentiating between desirable versus less desirable jobs. Certainly many individuals remain in jobs with which they are not satisfied for decades because it provides a means of meeting their basic subsistence needs. Similarly, many individuals transition from highly satisfying jobs in order to seek

personal or career challenges. In either case, job tenure alone does not adequately serve as an indicator of quality.

Income, or the amount of money received for one's labor, is perhaps the most widely used indicator of high quality employment (Capella, 2001; Cavanaugh, 1999; Walls & Fullmer, 1997). For individuals who spend at least part of their day working at some job, the range of salaries is vastly different. Consequently, the earning potential of a job is an important criterion for judging quality employment. For this reason, consumer earnings have been incorporated in the research literature into measures of quality (Cooper & Harper, 1979; Gilbride et al., 1998). In fact, the Rehabilitation Services Administration uses consumer income as its first primary indicator of success. RSA S&I 1.3 evaluates the consumer's hourly earning in comparison to the average wage earned by general workforce employees in the same state.

The general workforce data used by RSA come from the Bureau of Labor Statistic's (BLS) annual Occupational Employment Survey. The current study similarly employed this ratio as one indicator of the quality of jobs obtained by legally blind consumers. To obtain an average hourly wage across all occupations in a state, the BLS uses a method of weighting the median hourly wage of all occupations by the number of individuals performing that job. These data are then divided by the total number of workers in that state. Walls and Fullmer (1996) compared 13 categories of VR consumers with the U.S. workforce on entry-level salary. Their findings suggest that workers with disabilities were closed from the VR system with wages very similar to that found in the general labor market. Consequently, this index of quality has been used to identify those consumers who are achieving below, at, or above the average worker in their own state.

Medical insurance, vacation time, retirement, and stock options are commonly referred to as benefits within the context of work (Hagner, 2000). These are the dispensations provided through one's place of employment beyond salary which assist in making the individual self-supporting and satisfied with his or her job. Gilbride and his colleagues (1998) included benefits in the development of a consumer satisfaction survey. Their findings support the assertion that medical insurance is an important reflection of the quality of a job. Additionally, Hayward and Schmidt-Davis (2003) reported that only 38% of VR consumers exiting the system had medical insurance when they obtained their jobs, but this number increased to 59% after three years. This would further indicate that most employees seek medical insurance through their work as they progress and advance in their careers. Consequently, the availability of medical insurance through the consumer's work has been chosen for this study as another indicator of the quality of that employment.

Walls and Fullmer (1997) used the Dictionary of Occupational Titles (DOT) as a measure of an individual's transferable skills. The DOT contains a total of nine digits used to classify the type and level of over 10,000 jobs in the United States. Three of these digits relate to the categories of Data, People and Things. Each of the more than 10,000 jobs is classified in relation to data, people and things by the level of skill that is required to perform the job. For example, a fast food cashier would have data, people and things coded as 472, while a lawyer is coded as 107, where lower scores represent higher levels of transferable skill (Alphabetical Index Of Occupational Titles, 2003). Walls and Fullmer (1997) summed each of the three scores to derive a composite transferable skill score for the 13 disability groups examined. For the examples of fast food worker and

lawyer, their composite score would equal 13 and 8 respectively. Capella (2003) similarly used the values assigned within the DOT under Data, People and Things to derive a composite transferable skill score. Capella (2003) compared the average wages and transferable skill levels of consumers who were deaf with other groups of disabled individuals and the general labor force. Transferable skill level is an important factor in the evaluation of job quality and in the development of vocational rehabilitation service planning and provision.

Another measure of the earning level or quality of a job is the ability of workers in that job to become self-supporting. Gilbride and his colleagues (1998) considered consumer satisfaction with income and the job as one of the primary indicators of success. Dawis (2002) stated that one of the primary necessities of a job is the ability of the worker to meet his or her basic needs. Consequently, a job which pays a sufficient wage to serve as the consumer's primary source of support would logically be a better job than one which did not. While many previous studies have investigated the consumer's earnings at the time of closure and have compared those wages with other disabilities and the general labor force, most do not consider whether the wage meets the individual's basic needs. One of the more than one hundred variables contained in the RSA-911 database is a simple question which asks the consumer from which source does his/her primary source of support stem. The available choices include such categories as family/friends, public support, disability insurance, annuities, and the consumer's own income. Consequently, this variable has been used in the current study as a third measure of the quality of jobs obtained by consumers.

Dependent Variables

Vocational Rehabilitation Services. As has already been described, the State-Federal VR system makes available a large number of services to assist workers with disabilities achieve their vocational goals. As has also been reported by Hayward and Schmidt-Davis (2003), consumers who are visually impaired utilized the fewest number of VR services. Moreover, several lines of research and professional exposition have attempted to enumerate the types of VR services which are useful for individuals who are legally blind in becoming employed (Omvig, 2002; Vaughn, 1993). Consequently, this study examined to what extent states with high employment outcomes provide these services as compared to less successful states.

Case service dollars have long been reported in the research as relating to better outcomes (Capella, 2001; Moore & Cavanaugh, 2003; Szymanski, Parker & Butler, 1990), which make intuitive sense, especially to professionals who work with individuals who are legally blind. Due to the specialized nature of personal adjustment training and the small market for assistive technology, these services come with a large price tag, which is often outside the range of most legally blind consumers. The amount of money spent on each consumer is obtained directly from the RSA-911 data file. Unfortunately, the dollars are not broken down by the type and amount of services received.

Personal adjustment training is another service which has been associated with better employment outcomes for individuals who are legally blind (Omvig, 2002; Vaughn, 1993). Adjustment training typically includes orientation and mobility, Braille reading/writing, the learning of assistive technology, and adaptive skills for daily living. Each of these skills takes weeks or months to master, yet they are necessary to afford an individual who is legally blind the safety and skill to compete on terms of equality with

his/her sighted counterparts (Omvig, 2002, Vaughn, 1993). RSA records whether or not a consumer received adjustment training. By comparing this category with the amount of case dollars spent, an approximation may be made as to the duration or amount of adjustment services received.

Hill (1989) and Hayward and Schmidt-Davis (2003) reported that the attainment of college training was positively associated with employment outcomes for individuals who are legally blind. Omvig (2002) reported that high quality employment for this population was most commonly found in professional occupations, such as lawyer, teacher, or rehabilitation professional. To achieve these vocational goals requires that the individual have college and/or vocational training. Therefore, in evaluating the quality of jobs obtained by members of the target population, the categories of college/university and business/vocational training were evaluated.

With the increasing number of jobs in the information technology sector and the continual computerization of many jobs, the need to use computers is an increasingly crucial employment skill. Fortunately, for the first time in history, technology is beginning to make computers and computerized tools accessible to individuals who are blind. The good news is that current technology can make accessible most types of electronic machinery. The bad news is that pragmatic implementation, such as touch screens and graphical user interfacing, have further complicated access. Additionally, new electronic devices on the market often require a patch or separate device to make them accessible. All of this translates into a greater need for legally blind individuals to learn access technology, but it also means a greater price tag for the VR system.

Finally, Bolton and his colleagues (2000) reported that job placement service was the greatest single predictor of competitive employment for five groups of individuals with disabilities. Similarly, Hayward and Schmidt-Davis (2003) reported that job placement services resulted in greater positive outcomes. Unfortunately, Bolton and his colleagues did not include legally blind consumers in their study, and Hayward and Schmidt-Davis did not indicate whether this service was important to this group of consumers. Consequently, this service was also evaluated along with assistive technology, vocational and adjustment training, and case service dollars in order to explain greater attainment of high-quality, competitive employment.

Dependent Consumer/Geographic Variables. The current study is unique in that it proposes to evaluate the VR agencies of all fifty states in a side-by-side comparison on the outcome criterion variables. Other research, namely Cavanaugh (1999), combined 24 state agencies into one group and 26 into a second group to examine the effects of agency structure, separate/blind versus general/combined. In her study Cavanaugh sought to control for a number of consumer demographic and disability characteristics by using an ANCOVA model. No other studies which could be located in the rehabilitation literature compared all fifty states against one another. Consequently, this study necessitated the evaluation of a number of factors related to VR outcomes which have been cited in the research literature and that are reasonable due to the regional differences of the VR agencies under study. This has been done to provide clarity to the factors associated with competitive closure rate beyond the VR services provided.

Consumer Demographics. Personal characteristics and work history have long been used in rehabilitation research as predictors of employment outcomes (Bolton,

Bellini & Brookings, 2000). One would logically think that once all consumers in each state are aggregated together individual differences would cancel each other out, making all states approximately equivalent. The problem with this assumption is that the United States is quite geographically, socially, and economically diverse. Second, several practitioners in the VR field have accused various state agencies of focusing service delivery primarily on the least severely disabled and, in fact, providing service to individuals who could otherwise be employed without vocational rehabilitation. This is not to suggest that any consumers should be denied service but rather that some agencies have attempted much more rigorously than others to follow the mission of RSA by prioritizing services to the most significantly disabled consumers.

To evaluate personal demographic differences across state agencies, data from the RSA-911 form were used in this study. RSA collects data on consumers concerning personal characteristics, including their date of birth, gender, educational level, marital status, race, last year employed, current employment status (competitive—homemaker), type of disability, severity of disability, and secondary disabilities. For the current study, three of these factors were chosen as dependent variables in the evaluation of competitive closure rate based on previous research (Capella, 2002; Capella, 2001; Cavanaugh, 1999; Hill, 1989). These include age, gender, and education level.

Geo-Economic Variables. Additionally, it is recognized that geographic and economic differences within various regions of the country will affect both the types and availability of jobs that are chosen by individuals who are legally blind. To address these differences, data from the U.S. Census and the Bureau of Labor Statistics (BLS) were obtained. These data are not directly linked to the vocational rehabilitation system on

either the state or federal level. Rather, these data provide a description of the geographic and economic conditions specific to each of the 50 United States. These data have been used to help explain the independent contribution of these factors on competitive closure rate.

The Census data used in this study come from the 2000 report. Although the RSA data represent fiscal years 1997-2001, the Census information should be reflective of the conditions over this time period. The Census data include information for each state on the total population, population density, percentage of individuals with a high school and college education, poverty rate, median income, average age of citizenry and percentage by race. Although each of these is important in the description of each state, only two of them were used in this study as independent variables, population density and poverty rate. Population density is the number of people per square mile. Previous research has reported that placing consumers with disabilities in rural areas is more difficult and less successful (Jonstone, Price, Bounds, Schopp Schootman & Schumate, 2003) than without placement. While this study did not break down each state into rural and urban areas, it was hypothesized that more densely populated states would have more localized opportunities for employment. Although poverty is not a direct measure of the type or amount of jobs in a given area, it is an indication of what percentage of the population earns a sufficient wage to be considered self-supportive and, thus, above the poverty line.

Finally, the Bureau of Labor Statistics publishes data on the unemployment rate of each state for each year. Data have been obtained for years 1998 through 2002. These data show a trend of unemployment from 4.2 to 5.8 over these years, with the lowest being in 2000 at 4.0. These rates vary from year to year, and even more by state from a

high of more than 6.0 to a low of 2.5. For this reason, an examination was necessary of unemployment rates in the general populous when comparing the employment rates of VR consumers. Although no rehabilitation research over this time period using unemployment statistics has been located. The present study is similar to the work of Walls and Fullmer (1996) and Capella (2003) that used United States labor market conditions as a comparison to employment outcomes for the disabled.

Summary

This chapter has presented a review of the relevant research literature related to competitive employment of individuals who are legally blind. A number of factors have been repeatedly researched, while others have received little attention. What remains are two factors which require considerable research and analysis. First, multiple lines of research into the factors associated with competitive employment and increased earnings have explained between 26% and 33% of the variance in employment, leaving up to 74% of the variance unexplained. Second, despite research and policy shifts, it is clear that from at least the early 1980's until the most recent findings, the rate of employment for individuals who are legally blind has either remained stagnant or diminished (Cavanaugh, 1999; Hill, 1989; Kirchner and Peterson, 1982). Consequently, this and future research must seek to identify the unexplained variance between those who are and those who are not obtaining high-quality, competitive employment so that true gains can be achieved.

Chapter III

Methodology

The purpose of this study was to rank all State-Federal Vocational Rehabilitation (VR) agencies by competitive employment closure rates (CCR) for legally blind consumers and to compare high and low CCR agencies on select variables. To do this, case records of legally blind VR consumers closed in fiscal years 1997, 1999, and 2001 were examined. This was a retrospective study wherein Dependent variables under examination were not manipulated by the researcher but examined for their relationship to one another and to the dependent variables. While a retrospective study does not answer questions of causality, it identifies relationships that warrant further investigation (Kirk, 1995).

More specifically, Kirk (1995) characterized this type of study as a Case Control design, where multiple Dependent variables are considered in relation to one another and an independent variable. The primary analysis of this study was followed by descriptive evaluation of three indices of job quality, VR service provision, consumer demographics and geographic factors.

The independent variable used to rank state agencies was competitive closure rate. Competitive closure rate (CCR) was computed as the percentage of 26 competitive closures to all other case closures, including non-competitive employment closures. Three outcome indices of job quality were then used to examine the types of jobs obtained by legally blind consumers. The three indices included the ratio of the consumer's wages to general workforce employees in the same state, the availability of medical insurance, and the consumer's primary source of support at the time his/her case

was closed. Six vocational rehabilitation services were used as Dependent variables to examine the pattern of service provision between top and bottom ranked state agencies. The Dependent variables related to VR service provision were (a) the average dollar cost of case services per consumer, (b) the provision of personal adjustment training, (c) the provision of college/university education, (d) the provision of business/vocational training; (e) the provision of assistive technology, and (f) the provision of job placement services.

Additionally, six Dependent variables related to consumer demographics and geographic/economic differences were used in the evaluation of the top- and bottom-ranked state vocational rehabilitation agencies. Consumer demographics have been cited in the literature as influential in employment outcomes (Bolton, Bellini & Brookings, 2000) and consequently were included in this study. The three consumer-level variables which were included are (a) the consumer's age at the time his/her case was closed, (b) the percentage of women versus men served, and (c) the average educational level of legally blind consumers. Since geographic and economic conditions differ across the country, they may explain partially the differential outcomes observed. Three geographic/economic variables were used to determine whether meaningful differences existed between the top- and bottom-ranked state VR agencies. The three geographic/economic variables included (a) the population density of the state, measured in the number of people per square mile; (b) the state's poverty rate, reported as a percentage of people within a state below the federal poverty income rate, and (c) the unemployment rate, reported in percentages for the years under consideration.

Participants

The target population for this study was all legally blind consumers who have exited the state-federal VR system during the fiscal years (FY) 1997, 1999, and 2001. In the RSA reporting system, the target population is consumers who have a diagnosed disability of legal blindness, that is a central visual acuity not exceeding 20/200 in the better eye with best correction or a limit in the field of vision to such a degree that its widest diameter subtends an angle of no greater than 20 degrees (American Medical Association, 1934). This study did not include consumers who reported their secondary disability as blindness; however, due to the concomitant nature of many disabilities, consumers were not excluded who reported the presence of secondary disabilities.

This study was limited to those legally blind consumers who were served in one of the 50 Designated State Units (DSU) mandated to serve the legally blind population. Approximately 24 of the 82 DSUs are tasked to serve consumers with disabilities other than blindness since a separate agency exists for serving the legally blind population in the same state. These agencies do not serve this population and were not included in this study.

Procedures

Annual case closure data for all fifty states were obtained through the Rehabilitation Services Administration (RSA) within the Office of Special Education and Rehabilitative Services (OSERS) under the U.S. Department of Education. These data are the annual case closure information reported in the Federal data system RSA-911 for all consumers of Vocational Rehabilitation (VR) services in the United States each year.

Consumer-level data were aggregated at the state level and used as a measure of the state's overall effectiveness.

Independent Variable

Competitive Closure Rate. The independent variable competitive closure rate (CCR) was used to rank order state vocational rehabilitation agencies from highest to lowest in terms of the ratio of competitive employment closures to all other closures. Competitive employment was defined as individuals earning wages in the week before their case was closed, and who were classified with the work status of (a) competitive, (b) self-employed, or (c) State-Agency-Managed business enterprise (BEP). Competitive employment is defined as “work for wages, salary, commissions, tips, or piece-rates in an integrated setting, but does not include work in extended employment”; however, this definition similarly defines the categories of self-employment and BEP closures (Rehabilitation Services Administration, 1995, 24). Consequently, those individuals closed in the work status of (d) extended employment (sheltered workshop), (e) homemaker, or (f) unpaid family worker were considered non-competitively employed. To be considered non-competitive employment, the job must occur either in a segregated setting and/or without the guarantee of wages, commissions, tips, or salary. All others who were determined not to have an employment outcome at time of closure (Statuses 08, 28, 30 and 38) were included in the unemployment category. These statuses indicate that the individual, (a) applied for but was not accepted for VR services (Statuses 08, 38), (b) was accepted for services but closed before an individualized plan for employment was written (Status 30), or (c) received VR services but was unable to obtain an employment outcome (Status 28) (Rehabilitation Services Administration, 1995).

Szymanski and Parker (1989) calculated the competitive closure variable by averaging the number of consumers with a competitive work status divided by those with non-competitive and unemployed closure statuses. This measure does not take into consideration those with self-employment or those employed under a state-agency-managed business (BEP) or vending facility. While the BEP closure is not typically used for many individuals with disabilities, it is quite common and lucrative for consumers who are legally blind. Additionally, Moore and Cavanaugh (2003) have reported that the number of legally blind consumers obtaining self-employment as a VR closure have increased markedly over this time period. Consequently, the outcome variable Competitive Closure Rate for this study included the work statuses of self-employment and BEP closures within the category of competitive employment.

Dependent Outcome Variables

Job Quality. Although competitive closure rate has been used a number of times in previous research, it has also been noted that the quality of jobs obtained is an important factor in the evaluation of vocational rehabilitation outcomes. Previous research, namely Gilbride, Ressler and Stensrud (1998), reported on the importance of focusing on the quality of the job, rather than just considering case closures in Status 26. In conducting the research, they identified a number of components of employment indicative of higher quality jobs, that is (a) income and satisfaction with salary, (b) the job-related benefits provided, (c) the potential for training opportunities and career development, and (d) satisfaction with one's job and personal life.

Consistent with the research reported by Gilbride and his colleagues, three indices of job quality attained by legally blind consumers have been constructed to evaluate top-

and bottom-ranked state vocational rehabilitation agencies. The intent of this variable is to demonstrate the extent to which state agencies consider the quality of jobs obtained beyond the "26" closure. The importance of this priority was clearly articulated by the former Commissioner of RSA, Dr. Fredric K. Schroeder, who stated, "the rehabilitation system should not simply assist blind people in securing just any job, but instead, should assist blind people in securing the very best job possible" (Schroeder, 1997, p. 4).

The three indices of quality which have been used in this study included (a) the ratio of the consumer's hourly wage to the state's average hourly wage, (b) the consumer's primary source of support, and (c) the availability of medical insurance through the job. The ratio of consumer's earnings has been obtained by calculating the hourly wage earned at the time their case was closed, divided by the average hourly wage earned in the same state by the general workforce. The values for the hourly wages of the general workforce were obtained from the Bureau of Labor Statistic's Occupational Employment Survey for the years under study. The availability of medical insurance is reported within the RSA-911 reporting form as a categorical response indicating that the consumer either had, or did not have, medical insurance through employment at the time his/her case was closed. This variable was reported as the percentage of consumers within a state who either did, or did not report, having medical insurance through employment. Finally, the RSA-911 reporting form categorizes consumers into several statuses indicating whether the consumer's earnings are sufficient to constitute his or her primary source of support. Similar to the medical index, a percentage of consumers within each state was obtained from the categorical response of either (a) consumer's earnings constituting his/her primary source of support or (b) other sources constituting the

consumer's primary source of support at the time his/her case was closed. The overall percentage of consumers within each state for whom their earnings constituted their primary source of support served as the aggregated state data for this variable.

Dependent Variables

Vocational Rehabilitation Service Variables. This study used six Dependent variables to examine if the differential patterns in service provision might explain higher versus lower rates of competitive employment. The first service variable under consideration was the dollar cost of case services, which is reported in continuous form from \$0 to \$99,999 per consumer.

The cost of case services has been cited in the literature as predictive of employment outcomes (Moore & Cavanaugh, 2003; Capella, 2001; Cavanaugh, 1999; Szymanski, Parker & Butler, 1990; Hill, 1989) and was therefore considered meaningful for this study. Additionally, the specific variables of adjustment training (Hayward & Schmidt-Davis, 2003; Omvig, 2002), College/University, Business/Vocational training (Hill, 1989; Moore, 2001), and assistive technology (Hayward & Schmidt-Davis, 2003; Wolffe & Spungin, 2002; Crudden & McBroome, 1999) have been associated with higher employment outcomes. These latter five service variables are reported in categorical form (the consumer either did or did not receive the service). Within each state, the percentage of consumers receiving each service provided an index of the provision of agency service on an aggregate level, which was hypothesized to be associated with higher competitive case closure rates.

Consumer Demographics. Research has suggested that the consumer's personal characteristics (age, gender, educational level, race, marital status and work history) are

predictive of successful vocational rehabilitation) (Bolton et al., 2000). In other words, what the consumer brings to the VR process has a considerable impact on the eventual employment outcome. Consequently, several consumer demographic factors were used as Dependent variables in the evaluation of vocational rehabilitation outcomes across state agencies. The three consumer demographic variables that were used in this analysis were taken directly from the RSA-911 data, and included (a) the consumer's age at application, obtained by subtracting the consumer's date of birth from the date of case closure; (b) the consumer's reported gender, computed as a percentage of men versus women within a state; and (c) the consumer's education level at time of application, reported in years from 0-21.

Geographic and Economic Variables. Any study which proposes to examine employment outcomes on a nationwide scale over several years must contend with the fluctuations in overall employment rates, the availability of jobs, and the poverty/earnings within each state in order to make comparisons across state agencies. Consequently, three Dependent variables were chosen to evaluate geographic/economic differences across high- versus low-ranked state vocational rehabilitation agencies. Data from the Bureau of Labor Statistics (BLS) and the 2000 U.S. Census were obtained to provide information on the economic and geographic differences across the country. These data included (a) the state's population density, reported as the number of people per square mile, which was used as a proxy of rural versus urban; (b) the state's average annual poverty rate, reported as a percentage of the population within a state under the federal poverty income rate, and (c) the state's average annual unemployment rate, reported as a percentage of employed persons within the working-age population.

Validation of Variables

To insure the reliability and validity of the independent and Dependent measures used in this study, several procedures were conducted. Exploratory Data Analysis (EDA) was conducted on all data sets. EDA was used to examine the data for normalcy, to evaluate the homogeneity of variance, and to identify outliers and potential coding errors. In a number of cases, data had to be recoded or otherwise manipulated in order to conduct the analysis. Where either the data manipulation or raw data resulted in errant scores, these data were examined visually, and some were excluded from analysis. For example, one consumer was reported as earning \$999.00 per week but only worked 1 hour per week. While this is not impossible, it is improbable, and consequently, this case was eliminated from the main analysis.

Additionally, all dependent outcome variables, VR service, consumer demographic, and geo-economic variables were evaluated on fiscal year 1998 data, which is not to be used for this study. The resulting scores have then been inspected visually to determine if the variables are normally distributed, are within possible ranges, and are consistent with related variables (e.g., where the consumer's earnings constitute the primary source of support wages should be greater than zero).

Data Analysis

After the data were examined to determine the extent to which they met the assumptions of normality, the formal study was conducted. All individual consumer case records closed in fiscal years (FY) 1997, 1999, and 2001 were aggregated at the state level. The data for all fifty state vocational rehabilitation agencies were merged with the Bureau of Labor Statistics and U.S. Census data. Mean scores were generated for all

continuous data, while proportions were computed for all categorical data. In order to use parametric statistics on binomial data, such as the proportions of services provided, Kirk (1995) suggested using the inverse sine transformation on all such data. All statistical analysis was conducted on the transformed data. For ease of interpreting the data, however, raw proportions were used in making comparisons between individual state agencies.

Each state VR agency was given a single score representing its annual competitive case closure rate (CCR). Using this variable, all state VR agencies were rank ordered to describe the distribution of CCR across state agencies, and to test for differences between the top and bottom agencies. Where appropriate, the percentage or proportion of competitive case closures also was used to more thoroughly describe the data. One-way analysis of variance (ANOVA) tests were used on all data to compare the differences between the high- and low-CCR state agencies which formed the two groups. Multivariate analysis of variance tests were not used because this study sought to examine the unique relationship between each variable with CCR, without running the risk of accepting the multivariate null hypothesis.

Additionally, Cohen's Δ effect size statistics were presented for all mean comparisons in order to demonstrate the magnitude of differences between groups. The three outcome variables used to measure the quality of jobs obtained were evaluated between the top- and bottom-ranked agencies. The six Dependent service variables were similarly examined via the ANOVA and effect size tests, in order to identify which, if any, services were associated with differences in CCR. Analysis of variance tests were then used on the three consumer-level and three state geographic variables to identify if

differences existed. These six variables were chosen to demonstrate that high- versus low-CCR states did not differ on these factors and consequently were not explanatory of outcomes.

To examine the interrelationships of all 15 Dependent variables with CCR, Pearson Product Moment Correlations (with dichotomous variables dummy coded) were used to form matrices for all 50 state VR agencies. This was done to investigate the relationship between each grouping on all variables under consideration. To assess variable stability, the above analyses were conducted for fiscal years 1997, 1999, and 2001. By using a correlation table with all variables included, evaluation of more complex relationships was made possible.

Chapter IV

Results

This study compared state vocational rehabilitation agencies with high- versus low-competitive closure rates (CCR) for blind consumers to determine whether significant differences existed across state VR agencies in terms of CCR and to identify the quality of jobs obtained. Additionally, this study evaluated patterns in service provision which were hypothesized to explain differences in CCR, while assessing the extent of a number of economic/regional variability and consumer demographics contributed to differences in CCR. Specifically, all fifty state Vocational Rehabilitation (VR) agencies were ranked from highest to lowest by their ratio of competitive closures to all other closures. The top and bottom ranked agencies formed two groups (six states each). The quality of jobs obtained was assessed via three indices: average wage, medical insurance, and self-support. The six services hypothesized to explain differences in CCR were cost of case services, adjustment training, college education, business/vocational training, job placement services, and assistive technology. The three consumer characteristics were the consumer's age, education at application, and gender. Finally, the three geographic/economic variables were the population density, average poverty rate, and unemployment rate of each state.

One-way analysis of variance (ANOVA) was used to assess the statistical differences between high and low CCR states across all dependent variables. Also, Cohen's Δ effect size statistics were used to assess the magnitude of differences between groups. To better understand the interrelations between variables, a table of correlations between CCR and all dependent variables was compiled for all fifty state VR agencies

that serve the target population. Finally, the states in both the high- and low-CCR groups were evaluated visually in order to describe the pragmatic differences between groupings and across states within each grouping on the dependent variables.

Participants

For this study, all individuals who reported their primary disability as legal blindness, and who were served in one of the 50 designated state units for this population, were used in this analysis. This resulted in a total sample size of 18,127 during fiscal year (FY) 1997, 18,584 during 1999, and 18,671 during 2001. Cavanaugh (1999) reported that in fiscal year 1995 only 25.1% of legally blind consumers were closed in competitive employment. The current analysis revealed a trend of increasing percentages of competitive employment closures from 27.01%, to 29.58%, to a high of 32.03% for the three reporting periods, respectively. These findings, while not dramatic, are encouraging. Based on this positive trend, primary analysis was conducted on fiscal year 2001 since it was the highest year for CCR overall. Analyses were then replicated on FY 1997 and 1999. To prevent confusion of the analysis between the multiple years, data were presented only for FY 2001; however, all data were presented where significant deviations occurred from 2001.

The demographic characteristics of all participants in FY 2001 included 8,582 men (45.83%) and 10,145 women (55.17%). Participants reported their race as follows: White 69.71%, Black 18.84%, Native American or Alaskan .68%, Asian or Pacific Islander 1.45%, and Hispanic 9.32%. The average age of all legally blind vocational rehabilitation consumers closed in FY 2001 was 51.05 years ($SD=19.26$). Since the primary focus of the current study was individuals with a competitive employment

closure, it is appropriate to report the demographic make up of that subgroup of the population as well. Individuals who were competitively employed at the time their case was closed included 3,242 men (54.24%) and 2,740 women (45.80%). The racial make up of this group included White 70.66%, Black 18.34%, Native American or Alaskan .57%, Asian or Pacific Islander 1.54%, and Hispanic 8.89%. The average age of these individuals was 44.70 years ($SD=14.13$). Therefore, the typical legally blind individual achieving competitive employment during FY 2001 was a white man of approximately middle age.

Data Analysis

All consumer-level data were aggregated at the state level for use in this analysis. This resulted in mean scores for all continuous data and proportions for all binomial data, (e.g., the percentage of consumers who had the availability of medical insurance through work). One-way analysis of variance (ANOVA) was used to compare the means between the high CCR and low CCR groups. Because much of the data was binomial in nature, Kirk suggested using an angular or inverse sine transformation on the data “when the means and variances are proportional and the distribution has a binomial form” (Kirk, 1995, p. 106). Although several dependent variables were under consideration, a Multivariate statistic was not used because there was no justification to suggest that the dependent variables were correlated. Moreover, the small sample size made the use of MANOVA statistics impractical. Effect size statistics were used to evaluate the magnitude of difference between group means. Specifically, Cohen’s Δ was used based on the recommendation by Rosnow & Rosenthal that it is “descriptive of a population of scores” (Rosnow & Rosenthal, 2003, 223). Transformed scores were used in all ANOVA

statistics where the data were binomial; however, actual proportions were used in visual analysis and reporting for more straightforward interpretation.

The assumption that observations are independent is met for this study due to the fact that state agencies are independent of one another, and individuals may only be served by one state agency at a time. The Shapiro-Wilk statistic was used to test the null hypothesis that each variable was drawn from a normally distributed distribution (Hatcher & Stepanski, 1994). All variables were tenable with respect to a normal distribution by testing at $\alpha=.05$, with the exception of adjustment training for the high CCR group ($w=.64$, $p<.01$). This was a result of the adjustment training variable being negatively skewed (-2.22), and highly leptokurtic (4.98). Visual analysis revealed that this was due to one state which did not provide any adjustment training to its consumers, while all others provided such training to at least 11% of their consumers. Additionally, homogeneity of variance was tested for all variables using the Brown-Forsythe's test. All variables meet this assumption with α set at .05, with the exception of the transformed variable for gender ($F(1, 10)=10.85$, $p<.01$). Kirk reports that the F statistic is robust with respect to violations of homogeneity of variance if "(1) there is an equal number of observations in each of the treatment levels; (2) the populations are normal; and (3) the ratio of the largest variance to the smallest variance does not exceed 3" (Kirk, 1995, p. 100). For the transformed gender variable these assumptions are tenable.

Independent Variable

Competitive Closure Rate. Competitive Closure Rate (CCR) was the independent variable used to rank all state vocational rehabilitation agencies based on its use in previous rehabilitation research (Bolton & Neath, 1995; Cook & Bolton, 1992;

Szymanski & Parker 1990; Szymanski, Parker, & Butler, 1989). The CCR variable was calculated as the proportion of all competitive employment closures, divided by all non-competitive employment closures plus all unsuccessful cases. In other words, all competitive, Business Enterprise Program (BEP) and self-employment closures were divided by all homemaker, unpaid worker, and extended evaluation closures, plus all non-successful closures in Statuses 08, 28, 30, & 38. These statuses all indicate that the individual applied for services but was not accepted, accepted but never served, or served but were unable to achieve an employment closure.

Although Bolton & Neath (1995) reported that CCR was a valid and stable measure across time, their unit of analysis was the VR counselor, not the entire agency. Consequently, a number of procedures were performed to ensure that state rankings were stable. All fifty state VR agencies were first ranked by CCR during fiscal year 1997. Only states which ranked in the upper or lower quartile (i.e., top or bottom 13 states) were considered for the high or low grouping). To confirm the stability of this ranking, state agencies were again ordered by CCR for fiscal years 1999 and 2001. After evaluation of these rankings, the decision was made to retain only those states which were consistently ranked in the upper or lower quartile during all three reporting periods over the five year time frame. Twelve states (six high and six low) were stable in their ranking of competitive employment closures during all three fiscal years. Those states with consistently low CCR were California, Maine, Minnesota, Montana, New York, and Wisconsin. Those states with consistently high closure rates were Alabama, Kentucky, Iowa, South Carolina, South Dakota, and Utah. Table 1 presents the twelve state

agencies, their CCR values and percentages of competitive closures for the three fiscal years.

Table 1

*Top and Bottom State VR Agencies**By Competitive Closure Rate and Percent Employed*

Low	<u>FY 1997</u>		<u>FY 1999</u>		<u>FY 2001</u>	
States	CCR	%Employed	CCR	%Employed	CCR	%Employed
California	0.10	9.41	0.15	13.14	0.14	12.48
Maine	0.17	14.50	0.14	12.65	0.22	18.14
Minnesota	0.12	10.57	0.22	18.22	0.30	22.92
Montana	0.12	10.47	0.19	16.00	0.20	16.67
New York	0.15	13.14	0.18	15.16	0.17	14.78
Wisconsin	0.14	12.07	0.23	18.55	0.38	27.75
High States	CCR	%Employed	CCR	%Employed	CCR	%Employed
Alabama	1.12	52.84	1.21	54.70	1.36	57.63
Iowa	0.74	42.66	1.45	59.12	0.99	49.72
Kentucky	1.11	52.69	0.90	47.47	0.98	49.56
S. Carolina	0.97	49.21	0.98	49.54	0.99	49.77
S. Dakota	0.83	45.45	1.11	52.63	1.04	50.98
Utah	1.11	52.63	0.90	47.47	0.84	45.61

Note. FY means fiscal year. % Employed is the proportion of consumers closed in competitive employment to all case closures during that fiscal year.

The six state agencies with low CCR across three fiscal years comprised the low group, while the six high CCR state agencies comprised the high group. Hypothesis 1 stated that State Vocational Rehabilitation (VR) agencies can be rank ordered by blind consumer case closure rate in a meaningful way, and this ranking is stable over time. Because state agencies were ranked, no overlap occurred between agencies, leading to a rejection of the null hypothesis ($F(1, 10)=99.86, p<.01$). The magnitude of the difference between these groups, however, was substantial $\Delta=6.20$. A visual inspection of Table 1 shows a range from the lowest state CCR for FY 2001 in California at .14 to the high in the low group in Wisconsin at .38 ($M=.23, SD=.08$). For the high CCR group, the largest value in 2001 was Alabama at 1.36, whereas the lower CCR in the high group belonged to Utah at 0.84 ($M=1.03, SD=.17$) (see Table 1 for the percentages of individuals in each state achieving competitive employment). Of interest was the fact that only two state agencies, Minnesota and Wisconsin (both in the low CCR group), reported an increasing rate of competitive employment closures in all three reporting periods across the five year timeframe.

Dependent Outcome Variables

Ratio of Wages. The ratio of wages variable was developed by computing the average hourly wage for legally blind consumers within each state agency. This value was then divided by the average hourly wage for the general workforce within the state, based on data from the U.S. Bureau of Labor Statistics. This resulted in a score for each state VR agency that was a proportion of earnings of legally blind VR consumers to the general workforce. Consequently, these data may be thought of as the percentage of earnings on the dollar earned by legally blind consumers (e.g., .55 cents on the dollar for

that state). The ANOVA test between the low CCR and high CCR groups was non-significant ($F(1, 10)=1.53, p=.24$); however, the effect size between these groups was moderate to large $\Delta=.73$. As a practical matter, this represents a difference of about seven cents on the average between the low group ($M=.60, SD=.07$) and the high group ($M=.67, SD=.11$). The range of wage ratio in the low CCR group spans from Minnesota at .51 cents to California at .70 cents (See Table 2). Within the high CCR group wage ratio ranges from Alabama at .54 cents to South Dakota at .85 cents on the dollar. Consequently, there is considerable overlap based on wages, irrespective of competitive closure rate.

Medical Insurance. The medical insurance variable was defined as the proportion of individuals within each state VR agency who had the availability of medical insurance through their work at the time of closure. Due to the binomial nature of these data, the angular sign transformation was used as suggested by Kirk (1995). ANOVA was conducted between the high- and low-CCR groups, resulting in $F(1, 10)=1.26, p=.28$. Here again, the magnitude of the differences between groups was moderate $\Delta=.67$, with the lower CCR group having a higher percentage of individuals with insurance ($M=44.34, SD=14.94$), as compared to the high CCR group ($M=34.75, SD=14.59$). As a practical matter, the lack of statistical significance between groups is largely related to tremendous variability between states. Within the low CCR group, the raw percentage of medical insurance availability is as low as 21.05% in Montana and as high as 60.53% in California. Similarly, within the high CCR group, the availability of medical insurance ranges from 11.53% in South Dakota, to 51.85% in South Carolina. The variability across state closures is striking; however, this difference may not be related to service provision

but rather regional differences. Consequently, the availability of medical insurance is probably not a valid indicator of agency performance at closure.

Primary Source of Support. Another measure of the quality of jobs obtained was the ability of the individual to support himself or herself after vocational rehabilitation services were complete. Consequently, the measure of agency effectiveness was calculated as the proportion of individuals within each state for whom their earnings constituted their primary source of support. To account for married couples, it is possible for an individual's primary source of support to account for less than half of the individual's total support (Rehabilitation Services Administration, 1995, 22). Due to the proportional nature of these data, the angular sine transformation was again utilized in the evaluation of this variable, resulting in $F(1, 10)=2.98, p=.11$, with a mean difference magnitude of $\Delta=1.024$. These data support the notion that high CCR states will have greater proportion of individuals who are self-supportive ($M=77.22, SD=12.96$) than state agencies in the low CCR group ($M=63.12, SD=15.66$). A large degree of variability between state agencies within each grouping again helps to explain the non-significant F statistic. Within the low CCR group, the percentage of individuals who are self-supportive ranges from 83.26% in California, to 39.62% in Wisconsin; whereas, the variability in the high CCR group spans from 92.35% in Alabama to 61.79% in Iowa. The considerable magnitude of the differences between the groupings on this variable ($\Delta=1.02$) suggests that primary source of support may be an important indicator of the quality of jobs obtained.

Hypothesis 2 for this study stated that the quality of jobs obtained in high-CCR state agencies would differ from those in low-CCR states; however, the alternative

hypothesis was not tenable based on the ANOVA test. This can be explained in part to the low power in this study resulting from the small sample size ($N=12$). It is interesting to note, however, that the magnitude of differences based on Cohen's Δ was moderate to high for all three quality variables (see Table 2 for the percentages of competitive closures, medical insurance, individuals who are self-supporting, and the average wage ratio for the six high and six low CCR state agencies).

Table 2

*Percentage of Competitive Employment Closures and Job Quality Measures**For Top and Bottom State VR agencies*

Low CCR	%Employed	Wage Ratio	Medical	Self-Supp
California	12.48	\$0.70	53.06	83.27
Maine	18.14	\$0.54	32.43	62.16
Minnesota	22.92	\$0.51	44.83	51.72
Montana	16.67	\$0.59	21.05	73.68
New York	14.78	\$0.64	54.30	68.30
Wisconsin	27.75	\$0.64	60.38	39.62
M	18.88	\$0.60	44.34	63.12
SD	5.61	0.07	14.94	15.66
High CCR	%Employed	Wage Ratio	Medical	Self-Supp
Alabama	57.63	\$0.54	23.53	92.35
Iowa	49.72	\$0.74	41.57	61.80
Kentucky	49.56	\$0.57	41.59	90.27
S. Carolina	49.77	\$0.64	51.85	82.41
S. Dakota	50.98	\$0.85	11.54	65.38
Utah	45.61	\$0.68	38.46	71.15
M	50.54	\$.67	34.75	77.22
SD	3.92	\$0.11	14.59	12.96

Note. Wage Ratio is the consumer's hourly earnings divided by the wage of workers in the general workforce. Medical is the proportion of consumers for whom medical insurance was available through their employment. Self-support is the proportion of consumers whose earnings were sufficient to be considered their primary source of support.

Dependent Service Variables

Cost of Case Services. The cost of case service variable is the average amount of dollars spent by state agency per consumer closed in competitive employment during fiscal year 2001. The results of the analysis of variance test were $F(1, 10) = 1.31, p = .27$, with effect size of $\Delta = .71$. Although the F statistic is non-significant, the magnitude of effect is moderate, with the lower CCR group having a higher expenditure ($M = 10,009.28, SD = 5,491.79$) than the higher CCR group ($M = 7,239.93, SD = 2,227.16$). The interesting phenomena is not the higher average cost but the tremendous variability between state agencies with low competitive closures. Two states (Montana and California) spent over \$15,000 per consumer; whereas, Maine spent as little as \$5,500, and Wisconsin expended only \$1,600 per individual on average. This disparity contrasted with the state agencies with high CCR having considerably less variability in expenditure. These state agencies spent as little as \$4,900 (South Dakota) and as high as \$10,600 (Kentucky) but tended to range between \$6,000 and \$9,000 on average. In other words, the average cost of case services ranges within the low CCR group by \$13,688, where the high CCR group's range of expenditure is \$5,765 (see Table 3 for the average cost for each state, standard deviations, and range).

Adjustment Training. The second service hypothesized to contribute to rehabilitation outcomes was adjustment training. This variable represents the proportion of individuals within each state who received adjustment training as a part of their rehabilitation (i.e., learning to read Braille, orientation and mobility, and daily living skills). For this analysis, the transformed variable was used, resulting in $F(1, 10) = .70, p = .42 (\Delta = .48)$. The proportion of consumers receiving adjustment training for the low-

CCR group ($M=19.70$, $SD=11.51$) is higher than the high CCR group ($M=14.34$, $SD=7.54$), suggesting that this variable is not related to competitive employment. Although the magnitude of differences between the high and low CCR states is moderate, a glance at these states reveals tremendous variability in the provision of this service. For example, Maine provides adjustment training to just 2.7% of consumers, while Montana provides 31.57% of its consumers the same training. The remaining four states also are quite variable within this range for adjustment training. Similar to the cost of case variable, the high-CCR group is much more consistent with regard to the provision of adjustment training, with the exception of one agency (see Table 3). Five of the six high CCR states provide this training to between 10% and 20% of consumers, while one state (South Dakota) provided no such training during FY 2001. Replication of these data on fiscal years 1997 and 1999 reveal approximately 10% and 26% adjustment during the two years respectively. Maine, on the other hand, was consistent with respect to low provision of this service over the three reporting periods, with 5%, 9% and 2%, respectively.

College/University Education. State VR agencies often provide financial support to consumers who are disabled to assist with tuition and books for college. These expenditures constitute college training. For this study, the college variable is comprised of the proportion of individuals within each state who received some form of support from the agency to attend college. To conduct the analysis of variance, however, the angular sine transformation was used $F(1, 10)=.67$, $p=.43$, with an effect size of $\Delta=.47$. This moderate effect was a result of greater college support in the low CCR states ($M=7.76$, $SD=6.21$) than in the higher CCR group ($M=4.57$, $SD=4.04$). Additionally, the

provision of this service is quite variable both between and within the high- and low-CCR states, ranging from 0 to 18.42% of consumers receiving this service (see Table 3). This trend of less than 20% of individuals receiving support for college occurred in both groupings with considerable overlap, suggesting that college education is not a factor which distinguishes high versus low performing vocational rehabilitation agencies on employment outcomes for individuals who are legally blind.

Business/Vocational Training. Similar to the college variable, this measure comprised the proportion of individuals in the state who received business and/or vocational training. Such training may occur through a college, technical school, or through specific programs designed for individuals with disabilities. Using the transformed data, the ANOVA of $F(1, 10)=.91, p=.36$ was non-significant, yet the effect size remained moderate $\Delta=.60$. The same pattern of service provision has remained consistent, with the lower CCR group providing more services (e.g., business/vocational $M=43.79, SD=31.20$) than those states with the highest rates of competitive employment ($M=29.82, SD=11.53$). As was evident with the cost variable, the low CCR group tends to have a much greater range in providing business/vocational training between agencies than in the high CCR group.

Job Placement Services. Job placement was defined as the proportion of individuals who received services to assist in the search and procurement of employment. While some state agencies have job placement specialists on staff, others may contract with community firms, or provide no assistance at all. Since this variable was also binomial in nature, the transformed data were again used for the ANOVA test, $F(1, 10)=0, p=.96, \Delta=.04$. These data demonstrate virtually no difference between low- and

high-CCR states on the proportion of consumers receiving this service (Low group $M=35.12$, $SD=21.99$, High group $M=30.47$, $SD=11.71$). Considerable overlap exists between groups on the provision of placement services, with the exception of Maine, which did not provide any such training to its consumers during FY 2001 (see Table 3). Retrospective analysis of the agency in Maine over FY 1997, 1999, and 2001 revealed a disturbing trend of job placement service provision decreasing from 31%, to 9% to 0% across the three periods respectively.

Assistive Technology. Assistive technology consists of computers, organizers, and magnification programs which assist the individual who is legally blind to participate in college or work. Due to the high price tag of such devices, state VR agencies are often called upon to make such purchases. This variable is the proportion of individuals in each state who received assistive technology services. Analysis of variance was again conducted on the transformed data, resulting in $F(1, 10)=.12$, $p=.73$, with effect size $\Delta=.33$. Again, there was virtually no difference between low and high CCR states in the provision of assistive technology (Low CCR $M=46.29$, $SD=30.91$, High CCR $M=57.12$, $SD=23.41$). For the first time, however, the high CCR group provided slightly more of a service on average than the low CCR group (see Table 3 for the proportion of assistive technology provision for the six low and six high CCR states).

Table 3

*Proportion and Cost of Vocational Rehabilitation Services**For Consumers who are Legally Blind*

Low CCR States	Cost	Adjustment Training	College	Business/ Vocational	Job Place.	Assistive Tech.
California	15,140.60	27.76	10.20	21.63	62.45	38.78
Maine	5,530.19	2.70	.00	8.11	.00	32.43
Minnesota	12,529.69	27.59	5.17	94.83	51.72	62.07
Montana	15,383.05	31.58	5.26	52.63	36.84	100.00
New York	9,776.70	19.16	18.43	57.25	37.10	33.17
Wisconsin	1,695.36	9.43	7.55	28.30	22.64	11.32
<i>M</i>	10,009.28	19.70	7.76	43.79	35.12	46.29
<i>SD</i>	5,491.79	11.51	6.21	31.20	21.99	30.91
High CCR States	Cost	Adjustment Training	College	Business/ Vocational	Job Place	Assistive Tech.
Alabama	9,230.67	11.76	6.47	27.65	50.00	14.71
Iowa	6,739.90	17.98	2.25	37.08	15.73	79.78
Kentucky	10,668.40	18.58	4.42	49.56	22.12	46.90
S. Carolina	5,809.56	18.52	2.78	18.52	29.63	64.81
S. Dakota	4,903.15	.00	.00	23.08	30.77	65.38
Utah	6,087.90	19.23	11.54	23.08	34.62	71.15
<i>M</i>	7,239.93	14.34	4.57	29.82	30.47	57.12
<i>SD</i>	2,227.16	7.54	4.04	11.53	11.71	23.41

Note. Cost is the average amount spent per consumer in dollars. The five service variables of

Adjustment Training, College, Business/Vocational, Job Placement, and Assistive Technology are each represented as the proportion of individuals within a state who received assistance from the agency in paying for and obtaining that service.

Dependent Consumer/Geographic Variables

Consumer's Age. The age of consumers obtaining vocational rehabilitation services has been cited in the literature as predictive of employment outcomes (Bolton, Bellini, & Brookings, 2000; Capella, 2001; Hill, 1989). Consequently, this study sought to determine whether high-CCR state agencies had a significantly higher average age of consumers at closure than low-CCR agencies. The analysis of variance statistic between the high- and low-CCR states was non-significant ($F(1, 10)=.01, p=.92$) with an effect size of $\Delta=.03$. For this analysis, the lack of statistical or practical difference supported the null hypothesis that state VR agencies do not differ on the age of consumers served (see Table 4). Examination of the table reveals that the age of legally blind consumers closed in competitive employment is close to the national average for both the high- and low-CCR state agencies.

Gender. The gender of consumers receiving VR services has also been cited as an important factor in achieving employment outcomes (Capella, 2001; Hill, 1989). For this study, these data were reported as the proportion of males to females served by each state agency. Due to the binomial nature of these data, the inverse sine transformation was used to create a new variable for the ANOVA test. Gender was not found to be a significant factor differentiating high- and low-CCR states ($F(1, 10)=.63, p=.44$), with an effect size of $\Delta=.54$. The magnitude of difference between groups was moderate, which led to further analysis of the state agencies. The proportion of female consumers in the low-CCR group ($M=46.64, SD=3.73$) was larger than that for the high-CCR group ($M=43.99, SD=7.46$). In pragmatic terms, this meant that a slightly greater percentage of females were served in the low-CCR group than in the high group. The six low-CCR

states were much more consistent with respect to the percentage of women achieving competitive employment, ranging from 43.10% to 52.63% of the caseload. In the high-CCR state agencies, however, an interesting trend was revealed. Three of the six high-CCR state agencies (Alabama, South Dakota, and South Carolina) had considerably fewer females closed in competitive employment (37.64%, 34.61%, and 39.81% respectively). The other three high CCR agencies (Iowa, Kentucky, and Utah) had an almost equal split between men and women achieving competitive employment (50.56%, 51.32%, and 50.0% respectively) (see Table 4 for the proportion of women to men closed in competitive employment for the twelve high and low CCR agencies).

Consumer's Education. The level of a consumer's education at the time of application is reported in continuous form as the highest grade completed from zero to 21 years. This variable was chosen based on its citation in the literature as predictive of employment outcomes (Bolton et al., 2000; Capella 2001; Hill, 1989). For this study, the average educational level of consumers was hypothesized not to differ between low- versus high-CCR states. It should be noted, however, that this variable is the consumer's education at application and not at the time of closure since these data were not available.

The difference between low- and high-CCR states was found to be non-significant ($F(1, 10) = .95, p = .32$) with a magnitude of effects of $\Delta = .58$. Interestingly, this moderate magnitude of differences was a result of a slightly more educated population who applied for services in the low-CCR group ($M = 13.14, SD = .53$), where the high-CCR group had the lower education level at application ($M = 12.85, SD = .50$). Further examination reveals considerable overlap across both groupings in terms of the consumer's education at application (see Table 4). The extreme observation in the low-CCR group was California,

whose average applicant had 13.90 years of education, whereas the state with the lowest average educational level was found in the high-CCR group with Alabama at 12.29 years of education (see Table 4).

Population Density. It was hypothesized for this study that legally blind consumers would have higher rates of competitive employment in more densely populated states because there would be more employment options. Data for this variable was obtained from the 2000 U.S. Census and was measured as the number of people per square mile. These data are not related to the rehabilitation outcomes directly, but were chosen as a proxy of the conditions inherent to the state in which consumers were seeking employment. Although the analysis of variance was not significant ($F(1, 10)=1.19$, $p=.30$) the magnitude of differences was moderate to strong $\Delta=.70$. Analysis of these data demonstrated that the low-CCR group was more densely populated ($M=137.86$, $SD=148.31$), while the high-CCR grouping had fewer people per square mile ($M=68.66$, $SD=47.01$) (see Table 4). The extremely large standard deviation in the low-CCR group suggested extreme outliers on this variable. Visual analysis of the data showed tremendous variability in the population density of states with low rates of competitive employment (see Table 4).

Two states with low CCR were very densely populated, with New York and California having 401.90 and 217.20 people per square mile, respectively. This is in sharp contrast to Montana and Maine who had 6.20 and 41.30 people respectively. The high-CCR grouping had large variability as well, from a density of 133.20 in South Carolina to 9.90 people per square mile in the rural state of South Dakota. These data are difficult to interpret since many of the both successful and non-successful state agencies

are medium-sized, semi-rural in nature. This is with the exception of California and New York, two of the top three states with the largest population in the country. Although California and New York are the largest, they are not the most densely populated. The Census data show that five states have more people per square mile than New York, while eleven states are more densely populated than California. All of these more densely populated states fall in-between the top- and bottom-ranked state agencies. Consequently, the hypothesis that population density is related to employment outcomes was not tenable for this study.

Poverty Rate. The average poverty rate of states was chosen as another proxy measure of the economic conditions inherent to the state. This variable was not selected by its representation in the literature but based on the rationale that states with higher poverty rates would have fewer jobs and lower quality employment. These data were similarly obtained from the 2000 U.S. Census. Because poverty rate was reported as proportional data, the inverse sine transformation was used for the statistical testing. The ANOVA for this variable was $F(1, 10)=.41, p=.53$, with an effect size of $\Delta=.36$. This non-significant finding, coupled with the small magnitude of effects, seems to support the hypothesis that the poverty rate inherent to a given state is not related to the ability to find competitive employment. This finding is strengthened by the fact that higher poverty rates were found in the high-CCR states ($M=12.95, SD=3.06$) than in states with lower rates of competitive employment ($M=11.82, SD=3.06$); however, the average poverty rate for the top- and bottom-ranked state agencies remained quite variable within each grouping (see Table 4).

Unemployment Rate. The average unemployment rate was again evaluated for each state under consideration. The unemployment for the general workforce was obtained from the Bureau of Labor Statistics' Occupational Employment Survey. Similar to the poverty rate, the unemployment rate was used as a proxy of the economic conditions inherent to each state where legally blind consumers were seeking employment. Due to the proportional nature of unemployment rate, the transformed data were again used for the statistical analysis ($F(1, 10)=.46, p=.51$), with an effect size of $\Delta=.41$. With this variable, however, the lower CCR group had the higher average unemployment rate ($M=4.25, SD=1.13$), where the mean of the higher CCR group was smaller ($M=3.81, SD=.95$). Analysis of these data shows consistent variability within both groups, suggesting that unemployment rate may have only a moderate relationship to competitive employment of blind adults (see Table 4).

Table 4

*Select Consumer Demographics and State Geo-Economic Factors**In Top and Bottom CCR State Agencies*

Low States	Age	Gender	HGC	Density	Pov	Rate
California	43.41	46.94	13.91	217.20	14.20	5.20
Maine	45.86	43.24	12.59	41.30	10.90	4.10
Minnesota	44.12	43.10	13.40	61.80	7.90	2.80
Montana	41.84	52.63	13.16	6.20	14.60	5.20
New York	46.37	48.65	13.32	401.90	14.60	5.20
Wisconsin	40.79	45.28	12.50	98.80	8.70	3.00
<i>M</i>	43.73	46.64	13.14	137.86	11.81	4.25
<i>SD</i>	2.18	3.63	.53	148.31	3.06	1.13
High States	Age	Gender	HGC	Density	Pov	Rate
Alabama	44.03	37.64	12.29	87.60	16.10	4.80
Iowa	43.79	50.56	13.53	52.40	9.10	2.50
Kentucky	42.42	51.32	12.65	101.70	15.80	4.50
S. Carolina	42.61	39.81	12.81	133.20	14.10	4.50
S. Dakota	46.73	34.61	12.42	9.90	13.20	2.90
Utah	42.21	50.00	13.40	27.20	9.40	3.70
<i>M</i>	43.63	43.99	12.85	68.66	12.95	3.81
<i>SD</i>	1.69	7.46	.50	47.01	3.06	.94

Note. Age is the consumer's average age in years at the time his/her case was closed. Gender is the proportion of female consumers within the state who obtained competitive employment. HGC is the average consumer's highest grade completed at the time of application in number of years. Density is the population density, reported in the number of people per square mile for each state. Pov is the state's average poverty rate. Rate is the unemployment for each state during 2001.

Correlation Matrix. Beyond the comparison of high- versus low-ranked agencies, it was important to determine whether any of the variables selected for study were correlated either with CCR, or with each other. In order to gain a complete understanding of the relationship between these variables, data were used from all fifty state VR agencies that serve the target population. None of the quality variables were significantly correlated with CCR. Additionally, none of the three quality measures were significantly correlated with one another. (See Table 5 for the correlation matrix for CCR with the quality variables).

Competitive Closure Rate did not correlate with five of the six service variables. Adjustment training correlated with CCR; however, this correlation was negative, suggesting that the provision of adjustment training is negatively related to competitive employment (see Table 6).

Finally, the three consumer and three geographic variables were correlated with CCR. Only the consumer's age was correlated with CCR. This is consistent with the research by Capella (2001). Additionally, the consumers' education was negatively correlated with the state's poverty rate, and the consumer's gender was negatively correlated with the unemployment rate, suggesting that agencies with higher proportions of women are found in states with less poverty. Finally, the state's poverty rate and unemployment were correlated at the .0001 level, supporting the notion that a state's poverty rate and unemployment rate are related to one another; however, they are not related to the other variables considered in this study. These data similarly provide little clarity to the hypotheses under consideration (see Table 7 for these data).

Table 5

*Inter-Correlations of Job Quality Variables with CCR**For All Fifty State VR Agencies*

Variable	CCR	Wage Ratio	Medical	Self-Supp
CCR	-			
Wage Ratio	-0.03	-.		
Medical	-0.01	0.12	-.	
Self-Supp	0.05	0.05	-0.03	-.
<i>M</i>	0.62	0.61	43.15	74.65
<i>SD</i>	0.28	0.07	15.73	13.63

Note. Wage ratio is the ratio of consumer to general workforce wages. Medical and self-supp are each the proportion of consumers within the state who had the availability of medical insurance, and the means to support themselves.

Table 6

*Inter-Correlations of VR Service Variables with CCR**In All Fifty State VR agencies*

Variable	CCR	Cost	Adjustment	College	Bus/Voc	Job Pl	Assistive
CCR	-						
Cost	-0.17	-					
Adjustment	-0.32*	0.24	-				
College	-0.16	-0.01	-0.07	-			
Bus/Voc	-0.09	0.19	0.25	0.04	-		
Job Pl	0.01	0.11	0.11	0.20	0.13	-	
Assistive	0.13	-0.01	0.20	-0.02	0.13	0.11	-
<i>M</i>	0.62	\$ 8,118	16.55	11.01	35.22	30.21	52.91
<i>SD</i>	0.28	\$ 4,129	10.27	11.01	20.74	17.03	25.08

Note. Cost is the average cost of case services in dollars. Adjustment, college, bus/voc, job pl, and assistive are each the proportion of consumers within the state who received that service. One asterisk means the correlation was significant at the .05 level.

Table 7

*Inter-Correlations of Consumer Demographic and Geo-Economic Variables
with CCR in all Fifty State VR Agencies*

Variable	CCR	Age	Gender	HGC	Density	Pov	Rate
CCR	-						
Age	0.28*	-					
Gender	0.06	0.13	-				
HGC	-0.02	-0.04	0.18	-			
Density	-0.08	0.08	0.05	0.14	-		
Pov	0.04	-0.03	-0.22	-0.31*	-0.27	-	
Rate	-0.18	0.07	-0.29*	-0.11	-0.09	0.58***	-
<i>M</i>	0.62	43.55	45.21	12.96	181.40	11.94	4.11
<i>SD</i>	0.28	3.40	7.23	0.61	250.00	3.12	1.01

Note. Age, gender and HGC are the consumer's age, gender, and highest grade completed.

Density, Pov and Rate are the state's population density, poverty rate, and unemployment rate. One asterisk means significant at the .05 level; three asterisks are significant at the .0001 level.

Post Hoc Analyses

Specialized Services. Previous research by Cavanaugh (1999) suggested that specialized services were important to the effective rehabilitation of individuals who are legally blind. Approximately 26 of the 50 United States maintain separate vocational rehabilitation agencies specifically designated to serve the population of individuals with significant visual impairments, including blindness. The remaining agencies serve all individuals with disabilities under one umbrella; however, a number of those agencies additionally house separate departments or services specifically for consumers who are legally blind. Cavanaugh (1999) hypothesized that state VR agencies that were chartered to serve legally blind consumers would have higher rates of competitive employment and wages. Using a liberal α of .08, Cavanaugh (1999) demonstrated that, indeed, specialized services yielded better employment outcomes for this population. Capella (2001) challenged the findings of Cavanaugh (1999), and instead, demonstrated that type of agency structure contributed virtually nothing to the explanation of employment outcomes for consumers who were legally blind.

This study did not attempt to distinguish between agency structures; but rather, sought to identify those agencies that were most effective at achieving employment closures, irrespective of agency structure. Post Hoc analysis, however, revealed an interesting trend related to agency structure. The 12 state agencies analyzed throughout this study were chosen because they were either consistently high or consistently low in terms of competitive employment closure rates over a five-year period. Of the six state VR agencies that consistently maintained low CCR over this time period, exactly half were specifically chartered to serve the legally blind population (Maine, Minnesota, &

New York), while the other three VR agencies maintained a general program for all individuals with disabilities (California, Montana, & Wisconsin). This is consistent with the findings of Capella (2001) that agency structure was not important in the rehabilitation process. However, when making the same analysis of those state VR agencies with consistently high rates of competitive employment, the trend shifted. Within the six high CCR agencies used in this study, four were specialized "blind" programs (Iowa, Kentucky, South Dakota, & South Carolina). Additionally, one of the six high-CCR states (Utah) maintained a separate program for individuals who are legally blind within the combined agency. Consequently, five of the six state VR agencies with high-CCR maintained specialized services for legally blind consumers in some form during this time period, demonstrating a trend similar to the findings of Cavanaugh (1999) that legally blind consumers are best served under a separate program. Interestingly, the one state which had no special services for the blind (Alabama) had the highest rates of competitive employment across all three fiscal years considered in this study.

Employment at Application. The Rehabilitation Services Administration (RSA) states three priorities with respect to the delivery of vocational rehabilitation services to individuals with disabilities. The priorities are to assist the individual with a disability to (a) obtain, (b) maintain, or (c) regain employment. Consequently, a percentage of the caseload in every state will contain individuals who are already employed at the time they apply for services. If all other things were equal, the ratio of consumers seeking to obtain, maintain or regain employment would be approximately equivalent across the United States. In other words, one would expect the percentage of individuals requiring services

to maintain their job to be approximately equal across VR agencies, as compared with the percentage of individuals within the state who are seeking to obtain a job. This would not be true if a particular industry in one state were responsible for the employment of most individuals who are legally blind and that company was experiencing major cut backs in its workforce. This scenario, however, has not occurred in this country and therefore is not explanatory for significant differences in the reasons for which individuals seek VR services.

This topic was considered important for this study because of a concern that some VR agencies engage in a practice of prioritizing services towards individuals who will be “easy employment closures.” Employment status at the time of application is therefore important because a state agency will receive credit for the employment closure as long as the individual remains employed at the time his/her case is closed, even if the VR agency provided very little service to that individual (see Table 8). Consequently, these data present a comparison of the percentages of individuals in the high- and low-CCR state agencies and their employment status before and after receiving VR services. Five columns appear in Table 8, which include (a) the agencies Competitive Closure Rate (CCR); (b) the percentage of individuals who were employed at the time of application, and who subsequently maintained their employment; (c) the percentage of individuals who obtained their job while receiving VR services (i.e., were not employed at application, but had achieved employment before their case was closed); (d) the percentage of individuals who lost their employment while receiving VR services (i.e., were employed at application, and not employed at the time of closure), and (e) the

percentage of individuals who were neither employed at the time of application nor at case closure.

The Post Hoc analysis revealed a significant difference between the high- and low-CCR groups in terms of the number of individuals who were already employed at the time they applied for VR services, and who remained employed after receiving services ($F(1, 10)=17.86, p<.01$). This meant that the low-CCR state agencies started off with considerably fewer individuals who were already in employment status ($M=8.41, SD=4.31$) than the high-CCR states ($M=22.76, SD=7.10$), which resulted in a considerable magnitude of effect size difference $\Delta=2.51$. Consequently, one of the factors which explain the considerably higher rates of competitive employment across VR agencies is the practice of some of those agencies that accept for services a larger proportion of individuals who are already employed, requiring fewer dollars and counselor resources. This finding is somewhat tempered, however, by the fact that the high-CCR group still had a considerably higher rate of employment for individuals who were unemployed at the time of application ($F(1, 10)=18.46, p<.01$). The mean proportion of individuals who obtained a job while receiving VR services was ($M=10.37, SD=3.57$) for the low CCR group, and ($M=27.77, SD=9.25$) for the high CCR states, $\Delta=2.71$.

Table 8

*Proportion of Competitively Employed Consumers Before and After VR Services
In Top and Bottom State VR Agencies*

Low CCR	% Competitive	Maintain	VR Employed	Lost Emp	Not
		Emp			Employed
California	12.48	2.90	9.58	2.39	85.12
Maine	18.14	7.35	10.78	1.96	79.90
Minnesota	22.92	6.72	16.21	4.74	72.33
Montana	16.67	10.53	6.14	3.51	79.82
New York	14.78	7.30	7.48	2.36	82.86
Wisconsin	27.75	15.71	12.04	31.41	40.84
<i>M</i>	18.79	8.41	10.37	7.73	73.47
<i>SD</i>	5.62	4.31	3.57	11.64	16.56
High CCR	% Competitive	Maintain	VR Employed	Lost Emp	Not
		Emp			Employed
Alabama	57.63	13.90	43.73	2.71	39.62
Iowa	49.72	34.08	15.64	8.38	41.90
Kentucky	49.56	19.30	30.26	3.51	46.93
S. Carolina	49.77	22.58	27.19	2.30	47.93
S. Dakota	50.98	27.45	23.53	1.96	47.06
Utah	45.61	19.30	26.32	3.51	50.86
<i>M</i>	50.54	22.76	27.77	3.72	45.72
<i>SD</i>	3.92	7.11	9.25	2.36	4.14

Note. Employed is the proportion of consumers who maintained their jobs; VR Employed is the proportion of consumers who obtained a job; Lost Emp is the individuals who lost their jobs during VR; Not Employed is those having no job before or after VR services.

Chapter V

Discussion

Rationale of the Study. Although the vast majority of working-age individuals residing in the United States are able to secure employment, this opportunity is not afforded to many individuals with disabilities. In fact, while over 90% of working-age non-disabled individuals are employed in this country, only 25.1% of individuals who are legally blind have secured the same status. Despite advances in technology and vocational rehabilitation services, this low rate of employment has not changed considerably over the past couple of decades (Cavanaugh, 1999; Hill, 1989; Kirchner and Peterson, 1982). The reasons for this paucity of employment is undoubtedly due to a host of factors, some of which include the severity of the disability itself (Bolton, Bellini & Brookings, 2000), social and cultural attitudes (Szymanski & Vancollins, 2003), and environmental barriers such as the lack of transportation (Jonstone, Price, Bounds, Schopp, Schootman & Schumate, 2003).

Vocational rehabilitation (VR) services were created in this country as a means of addressing the multitude of factors which inhibit an individual with a disability from obtaining gainful employment. The vocational rehabilitation (VR) system attempts to address these problems by providing restorative services, educational and vocational training, and technology and equipment necessary to perform in competitive employment. Clearly, a large number of individuals who are legally blind have benefited from such services. This is evidenced by the range and type of occupations currently being completed by this population, as noted by Wolffe and Spungin (2002). Nevertheless, the vast number of individuals with significant visual disabilities in this

country continue to remain unemployed, and underemployed. The problem to be addressed, therefore, is not whether vocational rehabilitation services are useful in assisting individuals with disabilities to obtain employment but why greater numbers of individuals are not benefiting from such services.

Previous outcome research has investigated the VR system and predictive factors such as consumer personal/work history (Bolton, Bellini & Brookings, 2000; Capella, 2001; Cavanaugh & Pierce, 1998; Hill, 1989), the quality of the VR counselor (Bolton & Neath, 1995; Cook & Bolton, 1992; Mullins & Roessler, 1997; Szymanski & Parker, 1989), and the overall State-Federal VR system (Cavanaugh, 1999; Rumrill & Roessler, 1999). Additionally, research into consumer satisfaction with VR services has demonstrated that the quality of the job obtained is a crucial component of overall satisfaction (Gilbride, Ressler & Stensrud, 1998). Although all of these factors play a role in the delivery of comprehensive rehabilitation services, this study examined the provision of VR services through the state-federal vocational rehabilitation system. While each state must comply with certain rules and regulations set forth by RSA, it is incumbent upon each state agency to write, administer and evaluate their own plan for vocational rehabilitation.

Purpose of the Study. This study sought to rank state vocational rehabilitation (VR) agencies by the rate of competitive employment for consumers who are legally blind. The second aim of this study was to evaluate those top- and bottom-ranked agencies on a number of criteria, which included (a) the quality of jobs obtained by consumers; (b) a number of service variables hypothesized to account for the observed differences, and (c) to rule out several consumer and geo-economic factors as explanatory

of VR outcomes.

Review of the Study Results

Participants. The characteristics of legally blind consumers in this study included 8,582 men (45.83%) and 10,145 women (55.17%). Interestingly, there was almost an exact reversal of these percentages for consumers who had obtained competitive employment, which was 3,242 men (54.24%) and 2,740 women (45.80%). Capella (2002) suggested that disparities still exist in the VR system with respect to employment outcomes for women, and these data demonstrated a similar trend. The average age of consumers obtaining competitive employment was 44.70 years ($SD=14.13$), with a racial make-up similar to that of the general population. . Consequently, the demographic consistency of consumers used in this study was similar to the general U.S. workforce.

Competitive Closure Rate (CCR). A number of indices have been used over the years in order to measure the effectiveness of the vocational rehabilitation system. Among the factors evaluated, the consumer's ability to obtain employment with earnings at or above the minimum wage has remained a popular measure. Competitive Closure Rate (CCR) was first presented as a measure of VR counselor effectiveness by Szymanski and Parker (1989) and has been applied to the study of VR counselor effectiveness in a number of subsequent studies (Szymanski, Parker & Butler, 1990; Cook & Bolton, 1992; Bolton & Neath, 1995).

Competitive Closure Rate (CCR), as defined in the literature, is the ratio of competitive employment closures over all other case closures. This divisor includes individuals who achieved an employment outcome in a non-competitive setting (sheltered employment, homemaker, or unpaid worker), those who received rehabilitation services

under a plan for employment but who did not obtain employment (Status 28), and those who applied for services and may have received assessment and diagnosis services but never developed a plan for employment (Statuses 08, 30, & 38). Even though these latter three categories did not receive services aimed at vocational attainment, there is justification for including them within the index since caseload dollars are spent, and counselor time is invested in the processing of these cases.

It is important to understand how the CCR variable is constructed because similar measures may yield considerably different results. The Rehabilitation Services Administration, for example, also calculates the percentage of consumers who obtained an employment outcome; however, their formula is quite different. During the calculation of employment closures for the Standards and Indicators reports, RSA only considers cases in which a plan for employment was carried out (closure Statuses 26 & 28). Consequently, all cases which were closed because the individual was not eligible (Status 08) or was determined eligible but never served (Statuses 30, 38) are not considered in the calculation. There is also sufficient justification for this approach to measurement, since the argument can be made that the VR system should only be measured based on those individuals who were active participants in the VR process (Statuses 26 & 28). The calculation of closure rate would be a moot point if the relative proportion of individuals not served was equivalent across VR counselors, or VR agencies. Evaluation of the closure data across VR agencies for fiscal year 2001, however, revealed considerable variability in the number of individuals who never received VR services. Statewide percentages of individuals closed in Statuses 08, 30, and 38 ranged from less than 10% to greater than 40% for consumers who were legally blind. Consequently, these case

closures should be taken into consideration during the evaluation of the effectiveness of VR counselors, as well as the entire agency.

For this study, CCR was calculated based on the definition provided by Szymanski and her colleagues (1989). The CCR variable worked well as a means of ranking state agencies by their relative proportion of legally blind consumers obtaining competitive employment. Because agencies were ranked by CCR, no overlap occurred between the six low- or six high-CCR state agencies, leading to an automatic rejection of the null hypothesis. The magnitude of differences between the mean of the low CCR group ($M=.23$, $SD=.09$) and the high CCR group ($M=1.03$, $SD=.17$) was substantial $\Delta=6.15$. These data represent an average difference of 19% competitive employment closures for the low group, versus 51% of consumers closed competitively in the high group. Statistics aside, these numbers represent considerable variability across the United States in the rate of employment outcomes for consumers who are legally blind (i.e., several state VR agencies were considerably more successful at placing members of the target population in competitive employment than a number of other agencies). This finding supports hypothesis one, suggesting that considerable variability exists across the country in competitive closure rate for consumers who are legally blind.

Job Quality Measures. The second hypothesis to be addressed in this study was whether the rate of employment was related to the quality of jobs obtained by legally blind consumers. In other words, were state VR agencies sacrificing quality employment for the sake of obtaining greater closures, or were they considering both the quantity and quality of jobs obtained? Based on research by Gilbride, Ressler and Stensrud (1998) and the RSA Standards and Indicators reports (Rehabilitation Services Administration, 2001),

three indices of job quality were considered for this study. They included (a) the ratio of wages earned by legally blind consumers to that of the general workforce in the same state and the proportion of legally blind consumers in each state for whom (b) medical insurance was available through their employment and (c) whose earnings were sufficient to constitute their primary source of support.

The results of the job quality measures did not provide evidence to support the hypothesis that the quantity of jobs was related to the quality of jobs obtained. The evaluation of the ratio of consumer wages to general workforce wages was non-significant, and demonstrated considerable overlap between high- and low-CCR states. While one of the high-CCR state agencies did have the highest ratio of consumer to general workforce wages (\$.85), it also had one of the lowest relative earnings (\$.54). Conversely, while the low-closure states did have the lowest ratio of wages (\$.51), it also contained one of the highest ratios (\$.70). Similarly, the availability of medical insurance through the consumer's job was also not different between high and Low CCR states based on the analysis of variance. Mean difference between these groups, however, demonstrated a moderate effect size $d=.67$, with the higher mean belonging to the low CCR group. Visual evaluation of Table 2 reveals a greater tendency towards the availability of medical insurance in Midwestern and larger states, several of which happened to have lower closure rates. These data are inconclusive with respect to job quality, and it is possible that the availability of medical insurance has more to do with metropolitan versus rural location, rather than level of employment. The ability of consumers to be self-supportive after employment was the only quality measure used in this study, which seemed to be related to closure rate. Although the F statistic was non-

significant, the magnitude of difference was large $\Delta=1.02$, with the greater mean in the high CCR group. It makes sense that state VR agencies with greater numbers of consumers obtaining competitive employment would also have greater numbers of consumers who are self-supportive, and this evaluation seems to support that hypothesis.

Vocational Rehabilitation Services. It was hypothesized for this study that several services provided by vocational rehabilitation agencies would be associated with greater employment outcomes. Although RSA has more than 16 general service categories, six were chosen for this study based on their representation in research literature. These services were (a) the average cost of case services and the proportion of consumers within a state that the agency provided for (b) adjustment training; (c) college/university education; (d) business/vocational training; (e) job placement services, and (f) assistive technology. Hypothesis three stated that higher ranked agencies would differ from lower ranked ones in the amount of services provided. Based on the analysis of variance, this hypothesis was not tenable.

The cost of purchased services had a moderate-to-large magnitude of difference between groups $\Delta=.71$, with the greater dollar amount belonging to the low-CCR group. Analysis of table three shows considerable variability among low ranked states in the amount of money spent, from more than \$15,000 to less than \$2,000 on average. The high ranked states, however, were much more consistent with respect to the amount of money spent for case service dollars. No meaningful conclusion can be drawn from these data, except that this study was not able to support the theory that greater dollar expenditure results in higher rates of employment. Adjustment training, college/university, and business/vocational education are often considered prevocational

services, since these skills are prerequisite to employment for consumers who are newly blinded, or who are just entering the workforce. The average age of legally blind consumers obtaining competitive employment for this study was 43.7 years ($SD=2.9$), and a considerable number of these consumers were already employed while receiving VR services. One faulty assumption at the outset of this study was that the majority of VR closures would be consumers entering the workforce for the first time. Future research should evaluate the type of services provided against the consumer's age and work history. Job placement services and assistive technology are services that would be important for consumers of all ages and work history; however, the analysis of variance and effect size statistics were both non-significant. Table 3 demonstrates that there was considerable variability across state agencies with respect to the proportion of consumers receiving each of these services. In sum, these data did not support the theory that greater provision of VR services is related to higher CCR. It was not clear from these data whether these trends represent differences in the populations being served, or policies and priorities of agency directors.

Consumer Demographics. Previous research has suggested that the characteristics of consumers being served were predictive of competitive employment outcomes (Capella, 2001; Hill, 1989). In comparing the effectiveness of VR agencies across the country, it was important to demonstrate that the pool of consumers being served was not different. Several lines of research (Capella, 2001; Capella, 2002; Hill, 1989) reported that the consumer's age, education level and gender were associated with employment outcomes. Consequently, this study sought to ascertain whether higher versus lower ranked state VR agencies differed in the type of consumers served based on these three

factors. Analysis of variance on all three of these variables was non-significant. Only the education of consumers at the time of application showed a moderate magnitude of differences $\Delta=.59$, where the low-CCR states had a higher education level ($M=13.14$, $SD=.53$) than did the high-ranked states ($M=12.85$, $SD=.50$). Based on the very small standard deviation scores, however, even the difference in relative education level does not seem practically significant. Taken together, the analysis of consumer demographics tends to support hypothesis four, which stated that demographics were not related to state closure rate.

State Geographic/Economic Factors. Similar to consumer demographics, this study sought to determine whether several factors inherent to the state were associated with competitive closure rate. For example, lower employment closures in one state may be related to unemployment conditions within the state and not to the service being provided by the agency. Three variables were chosen to compare top- versus bottom-ranked agencies, which included (a) the population density of the state; (b) the poverty rate; and (c) the unemployment rate. Previous research examining similar factors was not located in the literature. Instead, these variables were chosen based on the assumption that (a) more densely populated states would have more centralized employment opportunities, and (b) that poverty and unemployment are two powerful predictors of the economic conditions inherent to the state.

Population density was found not to differ statistically between the top- and bottom-ranked agencies; however, a moderate effect size ($\Delta=.71$) was found, with the larger mean belonging to the low-ranked agencies. The population density within the low-state agencies, however, varied from as rural as 6.2 people per square mile to over

400 people per square mile, resulting in a large standard deviation. Although the higher ranked agencies were more consistent with respect to population density, they still ranged from less than ten, to greater than 100 people per square mile. Poverty Rate and unemployment rate demonstrated no statistical or practical difference between groups. Poverty rate was slightly higher in the high-ranked agencies; however, unemployment rate was slightly higher for the low-ranked agencies. Consequently, state VR agencies with high CCR did not vary significantly from low-CCR states with respect to these three variables; lending support to hypothesis 5, which stated that competitive closure rate is not related to state geographic or economic conditions.

Post Hoc Analyses. After the initial hypotheses were tested for this study, two additional factors were examined. The first question addressed in the post hoc analysis considered the structure of agencies within which consumers were served. Separate VR agencies have existed in a number of states to serve the population of consumers who are legally blind. No other group of individuals with disabilities similarly has an entire agency dedicated to its special needs. Obviously, this has caused controversy and discussion of abolishing the separate agency model for the blind. Cavanaugh (1999) reviewed the research literature on this topic and located a number of studies and testimonies which supported the efficacy of the separate agency model for this population. Using the RSA 911 data, Cavanaugh (1999) reported that legally blind consumers served within a separate agency model indeed had higher rates of competitive employment than those served within a combined structure. Capella (2001) challenged the findings of Cavanaugh and demonstrated instead that agency structure had virtually no predictive power towards competitive employment for legally blind consumers.

While agency structure was not a focus of this study, it was a factor worth investigating. Evaluation of the results of this study revealed that within the six low-CCR state agencies, three were combined and three were specialized agencies to serve consumers who are blind. With such low rates of competitive employment, this fact supports the finding of Capella (2001) that the separate agency model is just as ineffective as the combined structure in serving this population. Evaluation of the high-ranked agencies, on the other hand, revealed that four-of-the-six states had specialized agencies for the blind. Additionally, one of the remaining two agencies, although directed as one combined unit, had a department specialized to meet the needs of consumers who are legally blind, which is similar to the findings of Cavanaugh (1999) who reported that specialized programs for consumers who are blind are more effective in achieving employment outcomes. Although the first post hoc analysis revealed a greater trend in these agencies of serving consumers who were already employed, they, nevertheless, still help to employ a statistically significant higher proportion of consumers who were not employed when they applied for VR services ($F(1, 10)=18.46, p<.01, \Delta=2.71$).

The second issue which was addressed in the post hoc analysis sought to determine why vocational rehabilitation services were not related to greater competitive closure rates. In fact, some of the lowest CCR state agencies had the greatest per-consumer expenditure, and proportion of services provided. It was suggested that, in order to bolster closure numbers, some agencies sought out consumers who were already employed, provided minimal service, and then received credit for that employment closure. What was revealed during this analysis was a substantially greater proportion of consumers closed in high-CCR states who were already employed at the time they

applied for VR services. RSA policy states that the goal of vocational rehabilitation services is to assist consumers in gaining, maintaining, or advancing in employment. This is a valid mission; however, one would expect that the relative proportion of consumers across the country seeking to gain versus maintain a job would be approximately equivalent. Because state agencies were ranked by CCR, no overlap occurred on the proportion of competitive employment, leading to a rejection of the null hypothesis. State agencies were not ranked, however, with respect to the employment status of consumers at the time of application, which should have resulted in overlap across agencies. Evaluation of Table 6, however, reveals almost no overlap between top- and bottom-ranked agencies on the proportion of consumers who entered, and left the system employed, which was highly statistically significant ($F(1, 10)=17.86, p<.01$). The mean score on this variable for the low-CCR state agencies was ($M=8.41, SD=4.31$), and the high-CCR states were ($M=22.76, SD=7.10$), which resulted in a magnitude of effect of ($\Delta=2.51$.) Although it was anticipated that higher ranked agencies would have a greater proportion of consumers already in employment status, it was not anticipated that the results would be this highly significant. It is also important to note, however, that higher ranked VR agencies, nevertheless, still closed a significantly higher proportion of consumers in employment who came to the agency unemployed. In fact, removing those individuals who were already employed at application revealed a difference between high- and low-ranked agencies of ($F(1, 10)=18.46, p<.01$). The mean proportion of individuals who obtained a job while receiving VR services was ($M=10.37, SD=3.57$) for the low-CCR group and ($M=27.77, SD=9.25$) for the high-CCR states, $\Delta=2.71$. Clearly

there are substantial differences across state VR agencies in their policies and practices for serving the population of consumers who are legally blind.

Limitations, Summary and Conclusions

Limitations. This was a descriptive evaluation of the rates of competitive employment obtained in all fifty state VR agencies for consumers who are legally blind. This analysis described the service patterns and employment outcomes for the target population after exiting the VR system. Perhaps the greatest limitation to this study was the low power to detect differences between high- versus low-ranked state VR agencies, which could result in a high type II error rate. The low power was a result of the small sample size ($N=12$), because only six high and six low states were evaluated with respect to their competitive closure rate. Nevertheless, these 12 states were chosen because they presented the most stable ranking of CCR across the five-year period, and consequently, the findings were also more stable for the agencies considered. To counteract the low power, Cohen's Δ was chosen as the measure of effect size because it is considered descriptive of a population (Rosnow and Rosenthal, 2003). No predictions about causality were made, and care should be taken when drawing inferences from these findings.

Summary. The salient findings of this study can be summarized in the following manner and are supported with Tables 1-8.

1. The proportion of legally blind consumers who obtain competitive employment after exiting the vocational rehabilitation system varies considerably from agency to agency. In fact, some agencies close fewer than 10% of legally blind

consumers in competitive employment, while others close near 60% with a competitive employment outcome.

2. Beyond the number of competitive employment closures, this study sought to establish several indices to measure the quality of jobs obtained by legally blind consumers. At the aggregate level, however, neither the consumers adjusted wages or the proportion of consumers having availability of medical insurance through their work differed as a function of the number of closures. The proportion of consumers within a state who were self-supporting at the time of case closure was one index of quality which was related to the rates of competitive employment; however, many of these consumers were already working, and thus were more likely to already be self-supporting.
3. This study hypothesized that the difference in competitive employment outcomes would be partially explained through greater provision of six specific VR services that were cited in the literature as important for consumers who are legally blind. The provision of these services, however, explained little variability. In fact, service provision was greater in the group of agencies with the lowest rates of competitive employment.
4. A number of consumer demographics have been cited in the literature as explanatory of competitive employment outcomes, and it was important to establish that state VR agencies did not differ systematically on the types of consumers served. No statistical difference was found between high-and low-ranked agencies in either the age or gender of legally blind consumers served. The

education level of these consumers at application was higher in the low-ranked states; however, this difference was less than one year on average.

5. This study also sought to determine if factors inherent to the state's geographic or economic condition were related to the proportion of competitive employment closures. There was considerable overlap between high- and low-ranked agencies with respect to their population density. Interestingly, the two states with the largest population (California and New York) were also the two most densely populated states in this analysis and were among the lowest with respect to competitive employment closures across all reporting periods studied. Neither the state's poverty rate nor unemployment rate were related to the competitive employment of legally blind consumers.
6. A Post Hoc analysis revealed that four-of-the-six top-ranked VR agencies maintained specialized agencies designated to serve the visually impaired population, while one of the remaining two maintained a specialized department within the agency. In contrast, Specialized and combined programs were equally represented within the low-ranked agencies.
7. One of the factors which had considerable explanatory power in distinguishing between high- and low-ranked agencies was the consumer's employment status at application. In other words, high-ranked VR agencies had a significantly higher proportion of consumers closed with a competitive outcome who were already competitively employed at the time they applied for VR services.

8. Irrespective of those consumers who maintained their employment, high-ranked agencies nevertheless had a significantly higher proportion of consumers who obtained their jobs during the VR process.

Conclusions. The most important conclusion that can be drawn from these findings is that state VR agencies differ substantially in the rates of competitive employment for consumers who are legally blind. Competitive closure rates ranged from less than 10% of consumers, to over 50% of consumers. This, however, depends largely upon variations in agency policy and whether competitive closure rates are computed based on RSA guidelines, or the method defined in the research literature. Homemaker closures are considered valid employment outcomes but not in the competitive market. Because agencies sometimes use VR dollars in serving elderly and independent living caseloads, some agencies close as many as 45% of legally blind consumers as homemakers (California), while others close less than 1% of consumers in this category (Maryland). As noted, RSA considers only individuals closed in Statuses 26 or 28 when computing the competitive employment ratio because these individuals received services under an Individualized Plan for Employment (IPE). In other words, this excludes those individuals who were not accepted for services or accepted but did not develop or initiate an IPE (Statuses 08, 30, 38). While this is justifiable, some agencies had as few as 5% of the case load closed in these latter statuses (Vermont), while other agencies closed near half of the legally blind consumers who made an application without providing any VR services under an IPE (Texas at 45%). All of these factors play a considerable role in the calculation of competitive closure rate.

Perhaps the most troubling finding of this study was the lack of relationship between VR services and competitive employment closures. It is the provision of VR services that is credited with assisting consumers in securing employment; however, this study revealed that the agencies that provided a greater proportion of services had the lowest rates of competitive employment. There may be several explanations for this phenomenon. The service categories contained in the RSA-911 form are categorical in nature (i.e., the consumer either did or did not receive a given service). These categories provide no information as to the duration or quality of those services, or whether the consumer benefited from those services at all. Additionally, RSA has stated that VR agencies should prioritize services to individuals who are most significantly disabled. These individuals will require greater counselor time, a greater number of services, and will be more difficult to place in employment. Consequently, higher costs and provision of services, coupled with fewer competitive closures, may not reflect agency inefficiency but rather a dedication towards serving the most significantly disabled individuals, without concern for obtaining numbers. Nevertheless, this study was unable to support the theory that states that provide more services have greater employment outcomes. Considerable research has demonstrated that the quality of the counselor-consumer relationship is related to competitive employment (Cottone, 1987; Lustig, Strauser, Rice & Rucker, 2002; Mullins & Roessler, 1997). Presumably, the VR counselor's understanding of the potential of consumers, disability-specific barriers to employment, and knowledge of resources would play a role in the delivery of VR services. In other words, VR counselors may be throwing money and services at a problem without understanding the nature of the problem or appropriate solutions. It is possible that these

deficiencies may partially explain some of the 40% of consumers who never developed a plan for employment, despite being eligible for services. Unfortunately, the RSA-911 form does not contain any information about VR counselors' education or professional experience in working with individuals with disabilities.

Finally, some of the agencies studied had a higher proportion of consumers who were denied services than who achieved an employment outcome. While one state assisted over 40% of its consumers to transition from unemployment to work, another state had 31% of its consumers transition from working at application to being unemployed during the VR process. Even the most effective VR agencies, however, closed in competitive employment fewer than 60% of the consumers who came to their agency seeking work. Among those agencies with greater than 50% of legally blind consumers closed in competitive employment, near half that number were already working when they applied for services. If all other variables were equal, what would account for such disparities across the country in the proportion of consumers seeking to maintain their jobs, versus gaining work? Furthermore, this study did not find that VR agencies with high CCR sacrificed job quality in order to obtain greater numbers. Clearly, vocational rehabilitation agencies have considerable progress to make in achieving their stated goals for consumers who are legally blind.

Directions for Future Research

The RSA 911 data form contains a considerable number of variables which should be researched further. Perhaps the greatest limitation to the 911 Report, however, is the manner in which data are captured. All of the service variables are categorical (i.e., the consumer either received or did not receive the service). This reveals nothing related

to the duration, money spent, or whether the consumer benefited from the service. Future research should ascertain information related to the depth and quality of services provided by the VR agency. The pattern of service provision in this study did not provide any clarity as to which services are most beneficial for the target population. Future research should investigate service patterns on the individual consumer level, irrespective of the agency providing the service. In conducting this research, care should be taken to separate consumers who have a history of employment, who are already working, or who have not previously worked.

This study has identified those agencies which were consistently ranked high or low by competitive employment over a five-year period of time. The next step in evaluating agency effectiveness should be to study these twelve agencies in greater detail. In-depth analysis of the policies, procedures, VR counselor education, and disability-specific knowledge may help to clarify the considerable discrepancies in competitive employment for consumers who are legally blind. Qualitative study should be conducted to examine in detail organizational culture, consumer to counselor ratios, and other factors which make each agency unique. Future research should evaluate the mission statement and policies of these agencies against consumer outcomes to determine whether their efforts are achieving the stated goals. In other words, despite statistical numbers and proportions, do VR agency administrators and counselors understand the needs of consumers who are legally blind? Are they receptive to consumer input? Have they put into place procedures which reflect a consumer-focused program of service delivery? With the passage of the Americans with Disabilities Act, the emphasis on consumer's informed choice, and emerging research and resources that are consumer-

focused, VR agencies should reevaluate their stated mission and their strategies for achieving that mission.

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COMPARING STATE VOCATIONAL REHABILITATION AGENCIES WITH HIGH
VERSES LOW
RATES OF COMPETITIVE EMPLOYMENT FOR BLIND CONSUMERS:
DEFINING QUALITY EMPLOYMENT AND DESCRIBING EFFECTIVE SERVICE
PATTERNS

Abstract of dissertation submitted in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

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Abstract

State vocational rehabilitation (VR) agencies were rank ordered by their rate of competitive employment for consumers who are legally blind. Based on each state's competitive closure rate (CCR), the top six- and bottom six-ranked agencies were identified and formed two groups of high- and low-performing states. Top- versus bottom-ranked agencies were compared by quality of jobs obtained, services offered, consumer characteristics, and geographic/economic differences. The quality of jobs obtained was assessed via three indices: average wage, medical insurance, and self-support. Six services were hypothesized to explain differences between high- and low-ranked states: cost of case services, adjustment training, college education, business/vocational training, job placement services, and assistive technology. Three consumer characteristics, consumer's age, education at application, and gender, were compared. Finally, three geographic/economic variables, population density, average poverty rate, and unemployment rate of each state, also were compared. Analysis of variance and effect size statistics were used to assess differences between top- and bottom-ranked agencies. Five salient findings were (a) significant variability exists across VR agencies in CCR for legally blind consumers; (b) VR services did not explain the differences in CCR; (c) high- versus low-ranked agencies neither differed in the characteristics of consumers served nor in the geographic/economic factors within the state; (d) agencies ranked high on CCR had a significantly higher proportion of consumers who were already employed at application, and (e) higher ranked agencies nevertheless had a significantly higher employment closure rate for consumers who were hired during the VR process. Conclusions, implications and suggestions for future

research were discussed, also.

