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Models that predict competitive employment outcomes in the United States Federal/State Vocational Rehabilitation program for clients who are blind and clients with other disabilities

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MODELS THAT PREDICT COMPETITIVE EMPLOYMENT OUTCOMES IN THE UNITED STATES FEDERAL/STATE VOCATIONAL REHABILITATION PROGRAM FOR CLIENTS WHO ARE BLIND AND CLIENTS WITH OTHER DISABILITIES

By

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The majority of clients in the Federal/State Vocational Rehabilitation program (VR) have been successful in achieving competitive employment in recent years. However, one disability group – clients who are legally blind – has traditionally lagged and currently lags behind in obtaining similar proportions of competitive employment outcomes as their counterparts in the VR system. In this study, the 2007 RSA 911 data were used to explore potential explanations for the discrepancy between outcomes for clients who are legally blind and clients with other disabilities.

Similar to previous studies, frequency analyses confirmed that clients who are legally blind are far less likely to obtain a competitive employment outcome in the VR program. Although the most recent data reveals that 62.4% of clients who are legally blind attained a competitive outcome in 2007, 96.6% of clients with other disabilities achieved the same outcome. Backwards stepwise logistic regression generated two models yielding likelihoods of competitive employment for people who are blind and

people with other disabilities, respectively. The model that predicts competitive closure for clients who are blind was generally similar to the model that predicts competitive closure for clients with other disabilities. Most of the service variables that predicted competitive outcomes for clients with other disabilities also predicted competitive outcomes for clients who are legally blind. However, the rates with which clients who are legally blind received these services were lower when compared to clients with other disabilities. One difference between the two models was that the variables predictive of competitive employment in both models often had larger odds ratios for clients who are legally blind. The models generated in this study will hopefully provide VR professionals with information that will contribute to helping clients who are legally blind achieve higher percentages of competitive employment outcomes.

DEDICATION

To those who inspired and supported me throughout this very challenging journey and throughout my life – my mother, Pauline Redit Warren, my father, the late John Allen Warren, and my husband, Christopher Brian Peace.

In Memoriam

To my Minor Professor who believed in me: Mfanya D. Tryman, Ph.D.

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LIST OF ABBREVIATIONS AND ACRONYMS

ACB – American Council of the Blind: consumer organization

ADA – Americans with Disabilities Act of 1990

AFB – American Foundation for the Blind

BEP – Business Enterprise Program

CFR – Code of Federal Regulations

GAO – General Accounting Office (U.S. federal government)

FY – Fiscal Year

IPE – Individualized Plan for Employment

LB – Legally Blind: meeting the standard legal definition of blindness

LR – Logistic Regression

NCSAB – National Council of State Agencies for the Blind

NHIS – National Health Interview Survey

NIB – National Industries for the Blind

NIDRR – National Institute on Disability and Rehabilitation Research

NFB – National Federation of the Blind: consumer organization

OLS – Ordinary Least Squares

PL – Public Law (followed by a number/code)

PVA – Personal vocational adjustment

PWD – People with Disabilities

RSA – Rehabilitation Services Administration (U.S. Department of Education)

RSA 911 – data collected of client closures during a given fiscal year by state vocational rehabilitation agencies

SSA – Social Security Administration

SSDI – Social Security Disability Insurance

SSI – Supplemental Security Income

VI – Visual Impairment or Visually Impaired: having a visual impairment but not meeting the standard legal definition of blindness

VR – Vocational Rehabilitation agency: 1) Federal VR refers to the federal vocation rehabilitation program and 2) State VR refers to the state vocational rehabilitation agency in all U.S. states and territories

WIA – Workforce Investment Act of 1998

CHAPTER I

INTRODUCTION

Under-representation of Clients who are Blind in Competitive Employment

Persons with disabilities typically face more barriers to employment than the general population and hence find obtaining employment difficult (Kaye, 1998). This is especially true for persons who are blind. Historically, a large majority of people who are blind in the United States have been unemployed (Kirchner, Schmeidler, & Todorov, 1999). Amid an estimated U.S. population of 21.2 million people who experience vision loss, the unemployment trend for individuals who are blind and/or visually impaired continues in the twenty-first century (American Foundation for the Blind, 2006; 2008).

The problem of unemployment among individuals who are legally blind may not be fully addressed by simply increasing employment rates for individuals who are blind. The type and quality of employment are dimensions of the problem that must also be dealt with. An important goal of the Rehabilitation Act of 1973, Section 504 (Roberts, 1992; Rubin & Roessler, 2001) is to make the employment opportunities of people with disabilities fair and equal to those enjoyed by the general population. The role of the federal government as outlined in the Act is to provide individuals with disabilities the tools necessary to make informed choices and decisions, and to guarantee those individuals full inclusion and integration in society, employment, independent living, and

economic self-sufficiency. This goal of the Act is not fulfilled, despite increases in global employment percentages, unless a concomitant increase in competitive employment is observed. *Competitive employment* means work (a) in the competitive labor market that is performed on a full-time or part-time basis in an integrated setting, and (b) for which an individual is "compensated at or above the minimum wage, but not less than the customary wage and level of benefits paid by the employer for the same or similar work performed by individuals who are not disabled" (U.S. Department of Education, 2001a, p. 4385).

The goal of Vocational Rehabilitation (VR) is not only to increase employment of persons with disabilities but to increase representation throughout the labor market (including competitively obtained jobs). Therefore, employment status is a primary criterion variable of interest for the proposed research. Specifically, vocational rehabilitation professionals need to know and understand the variables that can influence the employment outcomes of clients who are legally blind. That understanding requires knowing whether the variables that predict competitive employment for a client who is blind are the same or different from those that predict competitive employment for people with other disabilities.

Comparing the Competitive Employment Outcome Rates of VR Clients who are Blind and VR Clients with Other Disabilities

To understand the employment outcomes of individuals with disabilities, one must not only examine overall employment rates but also the rates within each particular closure status. *Closure status* refers to the case service report outcome assigned to each

VR client who received services and subsequently had their case closed in a reporting period or fiscal year (RSA, 2007). Simply put, a closure status is the outcome that occurs after vocational rehabilitation services have been rendered to the client. Not all VR cases closed in a fiscal year result in a client obtaining employment. However, closure status associated with employment outcomes is the focus of this research. Where in the labor market does the VR system place clients who ultimately obtain employment?

A higher percentage of clients who are legally blind, compared with other disability groups, have been closed with non-competitive outcomes; this trend appears not to abate despite some recent increases in competitive closure rates. For example, in fiscal year (FY) 2001, approximately 45% of all VR clients who are legally blind that obtained gainful employment were working in non-competitive jobs (Peace, 2004). Nearly 55% of the clients in this group were closed in competitive work status, representing an approximate 11% increase in competitive outcomes when compared to FY 1998 data (Cavenaugh, 2003). Nevertheless, the FY 2001 data still indicate a dramatic lag in competitive employment outcomes for clients who are legally blind; approximately 90% of *all* clients who are successfully closed that year obtained competitive employment. Figures 1.1 and 1.2 below graphically display the competitive versus non-competitive employment outcomes of VR clients who are legally blind and the overall VR client population, respectively.

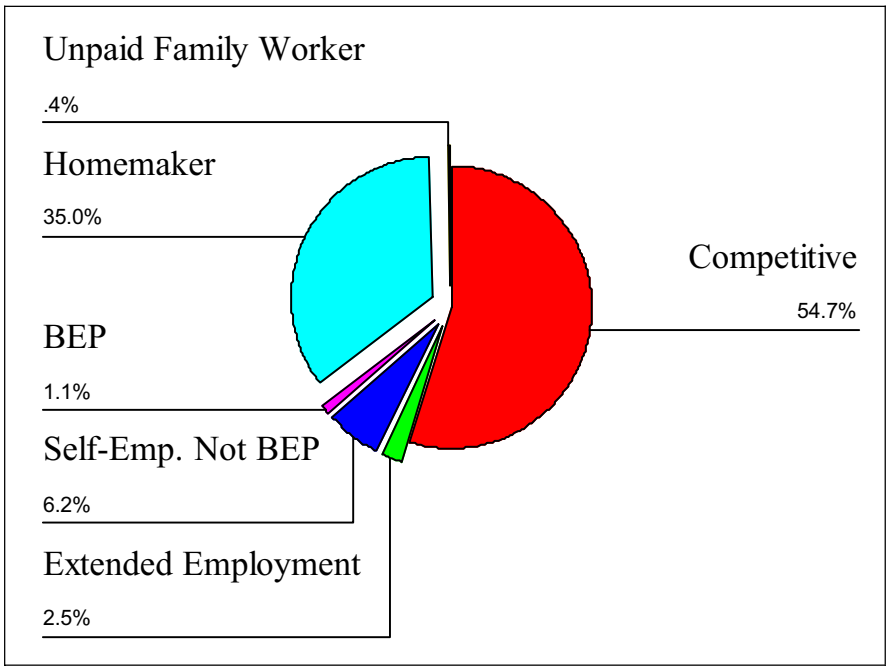

Figure 1.1: Breakdown of Work Status Closures of VR Clients who are Legally Blind that Obtained Gainful Employment, FY 2001.

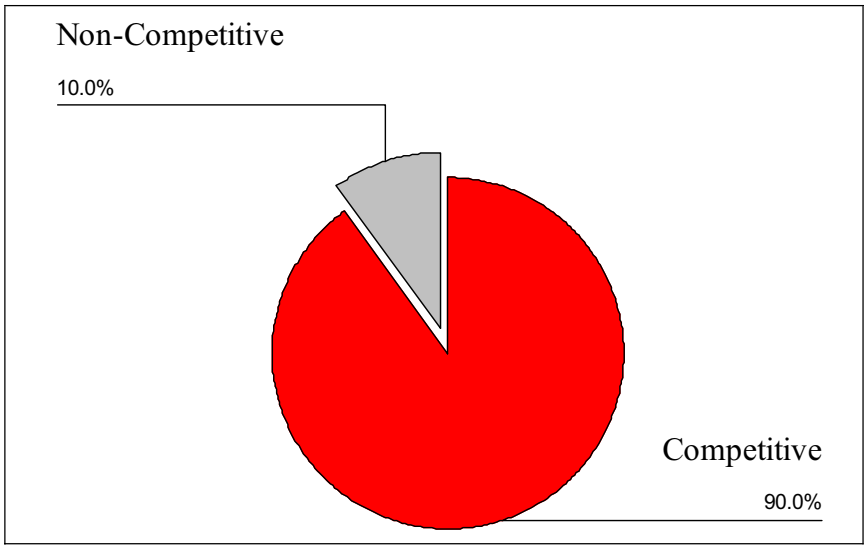

Figure 1.2: Competitive vs. Non-Competitive Closure Rates of Entire VR Client Population, FY 2001.

Contributions of the Research to Vocational Rehabilitation

One of the primary purposes of the Rehabilitation Act of 1973, as amended, is "to empower individuals with disabilities to maximize employment, economic self-sufficiency, independence, and inclusion and integration into society" (Section 2(b) of P.L. 105-220). Obtaining employment in the competitive labor market is one of the most profound indicators of community integration for people with disabilities. Recent literature suggests that competitive employment as an end goal is emphasized by leaders in the field of vocational rehabilitation (Rubin & Roessler, 2001). With federal and state VR program policy emphasis on *achievement of gainful employment* and competitive employment outcomes for clients, why then are the closure numbers associated with clients who are legally blind still higher in non-competitive employment as compared to other disability groups?

One could argue unconvincingly that the severity of blindness is such that competitive employment percentages will not approach that of the overall VR population, no matter the efforts exerted by vocational rehabilitation programs. This argument is a defeatist approach, resigned to the position that the competitive employment ceiling is simply much lower for clients who are blind than for many clients with other disabilities. Conversely, an argument could be made that equality in competitive employment rates can be achieved via changes in amounts and/or types of VR services provided. The latter argument suggests a more informed tailoring of VR services to clients who are blind. If this latter argument contains meaningful substance, vocational rehabilitation professionals need to have a greater understanding of the unique influences demographic, service, and other kinds of variables have on the employment of people who are blind.

The current research seeks to augment understanding of the variables that influence employment outcomes for individuals who are legally blind; those influences will be compared to the variables that most influence employment outcomes for people with other types of disability. The data analyzed in this research yielded results that impart information about variables that uniquely predict competitive employment in VR clients who are blind. The goal of this study is to inform efforts to increase the competitive employment rates of VR clients who are legally blind**.**

CHAPTER II

REVIEW OF THE LITERATURE

Civilians with disabilities began to participate in the federal vocational rehabilitation (VR) program in 1920 with the passage of the Smith–Fess Act (the Civilian Vocational Rehabilitation Act). The act marked the first federal legislation for civilian vocational rehabilitation. In previous legislation, rehabilitation funding was limited to veterans in their post war rehabilitation process. Under the new vocational education legislation, the Smith-Fess Act recognized appropriate occupations for which to provide training to a civilian client with a disability (Rubin & Roessler, 2001). This marked the beginning of the federal vocational rehabilitation system for people with disabilities who are not veterans.

Background of the Federal Vocational Rehabilitation Program

Traditional social attitudes toward people with disabilities typically expressed a care-giving perspective regarding the "handicapped" individual (Smart, 2002). It was not until some fifty years later that permanent federal funding and equal opportunity rights were granted to people with disabilities. The Rehabilitation Act of 1973 was considered the civil rights legislation for people with disabilities and is credited with contributing to a shift from the negative societal view of "handicapped" people to a more empowering viewpoint (Rubin & Roessler, 2001). The act provided mandates intended to 1) serve

individuals with severe disabilities, 2) promote consumer involvement, 3) stress program evaluation, 4) provide support for research, and 5) advance the civil rights of persons with disabilities. The mandates outlined in the act and subsequent amendments provided financial and legal support for the federal/state VR system and its goal of employment outcomes for people with disabilities.

Similarly, amendments to the Social Security Act of 1935 included incentives for employment of people who received Social Security Disability Insurance (SSDI) payments. These incentives include providing 1) a trial work period for recipients before SSDI payments are reduced or terminated, 2) impairment-related work expenses, 3) an extended period of eligibility for benefits, 4) continuation of Medicare coverage, and 5) Medicare for people with disabilities who work (Rubin & Roessler, 2001; Social Security Administration, 2006). These incentives have enabled those with the most severe disabilities such as blindness to seek gainful employment without losing all or most of their SSDI benefits. These provisions have encouraged people to seek employment without fear of losing the financial support provided by the SSDI benefits.

The current VR program assists people with disabilities in reaching their potential in employment. Today, successful employment outcome is defined in the federal/state VR program as any one of five rehabilitation outcomes provided under status 26 client closures or *closed achieving gainful employment* (Rubin & Roessler, 2001; RSA, 2007). The five status closures include competitive employment, self-employment (other than agency managed Business Enterprise Program), Business Enterprise Program (BEP), unpaid family worker, and homemaker. Closure status 26 indicates that a client has been suitably employed for a minimum of 90 days (RSA, 2007).

Several other terms need standard definitions in order to understand the nature of the federal/state VR program and the scope of the VR system. These terms are listed and defined as follows:

Disability

A person is considered to have a disability if he or she has (a) a physical or mental impairment that substantially limits one or more of the major life activities of such individual; (b) a record of such an impairment; or (c) being regarded as having such an impairment (Americans with Disabilities Act of 1990, P.L. 101-336 42 USC 12102). "Substantially limited" appears to be defined on an individual case-by-case decision. Generally, substantially limited is weighed against what an *average* person can do with no functional limitations. Thus, the physical or mental impairment constitutes or results in a "substantial impediment to employment" as defined in the Rehabilitation Act of 1973.

Blindness

Legal blindness is defined as having "central visual acuity of 20/200 or less in the better eye with best correction, or a limitation in the field of vision in the better eye so that the widest diameter of the visual field subtends an angle of 20 degrees" or less (SSA, 2006, p. 49). In the 1935 Social Security Act, people with severe visual impairment (i.e., legal blindness) are defined as those that cannot engage in productive work or work not at a level to be self-sufficient. In this definition, legally blind translates into being presumed unemployable (Kirchner et al., 1999).

Visual Impairment

For the purposes of this study, *visual impairment* describes clients who do not meet the definition of *blindness* but have been deemed eligible to participate in the federal/state vocational rehabilitation program. These clients have visual disabilities that do not reach the *severity* level of blindness.

Employment Outcomes

The Rehabilitation Act of 1973 (P.L. 93.112) defines *employment outcomes* for individuals as (a) entering or retaining full-time or part-time competitive employment in the integrated labor market; (b) satisfying the vocational outcome of supported employment; or (c) satisfying any other vocational outcome the Secretary may determine to be appropriate (including the vocational outcome of self-employment, telecommuting, or business ownership). Subsequent rules and regulations governing the state vocational rehabilitation program set by the Secretary of the U.S. Department of Education are listed in the Code of Federal Regulations (CFR) and are published in the Federal Register. In 1993, the Secretary defined employment outcomes as the achievement of employment in the competitive labor market, self-employment, homemaking, farm or family work, sheltered employment, home-based employment, and supported employment. In 2001, new regulations redefined the term *employment outcome* as it applies to the VR program to mean "outcomes in which an individual with a disability works in an *integrated* setting" (U.S. Department of Education, 2001, p. 7250). This change was enacted to reflect the purpose of Title I of the Rehabilitation Act of 1973, which is to enable

individuals with disabilities who participate in the VR program to achieve an employment outcome in an integrated setting.

Competitive Employment

Competitive employment means work (a) in the competitive labor market that is performed on a full-time or part-time basis in an integrated setting; and (b) for which an individual is "compensated at or above the minimum wage, but not less than the customary wage and level of benefits paid by the employer for the same or similar work performed by individuals who are not disabled" (U.S. Dept. of Education, 2001, p. 4385).

Integrated Setting

In reference to an employment outcome, *integrated setting* refers to a setting typically found in the community in which eligible individuals (under the state VR program) "interact with non-disabled individuals other than non-disabled individuals who are providing services to those applicants or eligible individuals, to the same extent that non-disabled individuals in comparable positions interact with other persons" (U.S. Department of Education, 2001, p. 4387). Simply stated, individuals with disabilities have the same opportunity to work in the integrated labor market along with the general population (see 34 CFR 361.5(b)(33)(ii).

Closure Goals

The Rehabilitation Services Administration (RSA) considers competitive employment in integrated settings the optimal employment outcome of persons with disabilities (RSA, 2004). However, noncompetitive employment outcomes such as

homemaker and unpaid family worker are considered viable employment outcomes under the Rehabilitation Act of 1973. According to the Rehabilitation Services Administration Program Regulations Guide (1976), homemaker and unpaid family worker closures are considered gainful work activity even though no earnings are generated. The guide states "individual's performance of the household tasks entailed in maintaining a home…can be considered productive within the definition of employability" and therefore "a status 26 closure can be taken" (p. 1541. p.1064). RSA Program Regulations Guide (1976) identifies two circumstances where homemaking is justified as a closure goal: 1) the person lives alone and 2) the person's vocational objective is changed to homemaking during the rehabilitation process.

Despite the instances where the homemaker closure can be a justified, competitive employment goals tend to be preferred. For instance, National Institute on Disability and Rehabilitation Research (NIDRR) reported in the *Chartbook on Work and Disability in the United States* (1995) that the mark of overall success for VR is placing 3 out of every 4 clients in competitive employment. To illustrate this point, in 1995 approximately 85% of all VR clients (N =178,927) were placed in competitive work. The remaining clients were placed as homemakers (7.6%), in sheltered workshops (4%), self-employed (2.7%) and unpaid family worker (.39%). That same year's and subsequent years' reports continued to reflect substantial overall VR closures in competitive employment. On the other hand, when the types of disability characterizing the VR clients were considered, clients who are legally blind were consistently closed more frequently in noncompetitive outcomes (Kirchner et al., 1999; Warren, Giesen, & Cavenaugh, 2004). The following

section examines more closely the disparity in competitive employment outcomes between clients who are blind and the overall client population.

Employment Outcomes Research

Individuals share the basic human need for fulfillment through meaningful work (McLennan, 1999). For persons with disabilities in general, obtaining employment is often problematic (Kaye, 2001). For persons who are blind, unemployment can be an even larger problem than for those with other disabilities. Historically, a large majority of people who are blind in the United States have been unemployed (Kirchner et al., 1999). In 1994-1995, approximately 46% of adult Americans with visual impairments were reported as employed (AFB, 2006). Conversely, only about 32% of people who are *legally blind* working-age (21 to 64 years of age) adult Americans were employed that same year. In austere contrast, 82% of people without a disability had a job or business and 77% of people with non-severe disabilities were reported working during 1994-1995 (U.S. Census Bureau, 1997).

Published data results from the 1997 Survey of Income and Program Participation found that 30.6% of persons between the ages of 21 and 64 who report severe difficulty seeing were employed (McNeil, 2000). Over 77% of the working-age, general population were employed in 1999 but only 57% of the working age population that reported having a disability were working (U.S. Census Bureau, 2000). Of those reported working in the 2000 census report, 60% of men with a disability and 51% of women with a disability worked. Sensory disabilities (e.g., vision and hearing) were grouped together

in the census 2000 report. Only 35% of the population reported having sensory disabilities were working full time in 1999 (U.S. Census Bureau, 2000).

Several researchers have considered distinctions in employability among levels of severity in visual disabilities (see Capella-McDonnall, 2005b, 2008; Cavenaugh, 1999; Houtenville, 2003; Kirchner et al., 1999). A national data source utilized in examining economic status and chronic illness of the civilian non-institutionalized population is the National Health Interview Survey (NHIS), conducted by the National Center for Health Statistics (NCHS). Houtenville (2003) reported on the NHIS data collected on approximately 60,000 working-age (25-61) individuals annually from 1983 through 1996. The study provided information that assigned different levels of visual disability among the respondents. Individual respondents self-reported their visual disability as blind in *both eyes* or *other* visual impairments. Individuals who are blind in both eyes had employment rates of 49.4% for men and 30% for women. Conversely, individuals with other visual impairments had employment rates of 82.3% for men and 54.7% for women. The reported probabilities suggested that individuals who reported being blind in both eyes were more likely to report a work-related limitation and a worse economic status than that of those who reported less-severe visual impairments (Houtenville, 2003).

These are a few of the available statistics that illustrate the significant problem unemployment continues to represent for a large majority of persons who are blind and visually impaired. The low employment rate reported for clients who are legally blind is lower than the employment rate for people with other disabilities and dramatically lower than the employment rate of the general population (Kirchner et al., 1999).

Historical Review of Client Closures for People who are Legally Blind

The following review briefly traces the rate of closure among VR clients who are blind and/or visually impaired during the last several decades. Studies examining demographic (e.g., gender, age, race, work history, education, severity of disability) and other disability characteristics of clients who are blind and/or visually impaired closed as status 26 were reviewed. Some findings were specific to (a) only clients who are legally blind, (b) only clients who are visually impaired (excludes legally blind), or (c) both clients who are blind and visually impaired. These distinctions – to the extent that they were present – were examined in each study.

Noncompetitive closure status and blindness. A close examination of status 26 employment outcome rates for clients who are legally blind reflects high numbers of the noncompetitive outcome of homemaker (General Accounting Office, 1993; Hill, 1989; Kirchner & Peterson, 1982; Warren et al., 2004). The person being placed under a homemaker closure is not considered to be working in an integrated setting within the competitive labor market; rather, the homemaker outcome refers to men and women with a disability whose vocational activity concerns managing a home (e.g. keeping a house, cleaning, meal preparation) for themselves and/or for others (RSA, 2000, 2004). Although current RSA policy does not consider the homemaker closure as a competitive employment outcome, it is still considered a successful closure, perhaps due to the historical value placed on homemaker skills training.

History of homemaker training. Homemaker training has traditionally been a service objective for women and VR clients who are blind (Giesen & McBroom, 1986; Kirchner et al., 1999; Smith, 1963). In the past, homemaking became a viable occupation in the general labor force as well. Beginning in the 1950s, a sharp increase in homemaker services evolved with the establishment of 118 homemaker service programs (Smith, 1963). These programs/agencies provided homemaking services to families participating in the public health system. By the early 1960s, the services of homemakers were in high demand. The demand is attributed to the growth rate of families being served in the public health system and the lack of social workers to fill those services. It was believed that the employment of homemakers was a necessity not a luxury for families in need of services during this time (Smith, 1963). Homemaker employment figures rose approximately 52% from the years 1958 to 1961. In 1958, during one month, 2,186 separate families (in the 40 states that had homemaking service providers) procured homemaking services; in contrast, 5,424 families received homemaking services during a single month in 1961. Not only were greater numbers of homemakers employed in the 1960's, many more families were seeking homemaking services from a labor market that appeared to be lacking trained personnel.

The need for training programs was indicative of labor force changes. Homemaker services personnel were employed in health and public welfare venues. The occupation also contributed to improvement of job opportunities for women during the 1960's (Smith, 1963). Homemaker occupational roles remained viable employment options for the next several decades (Atkins, 1983; Danek & Lawrence, 1985; Thurer, 1982). As evinced 50 years post-Smith Fess Act, 43% of all rehabilitation closures were

female and of those, 32% were homemaker closures (Johnson & Hafer, 1985). By 1976, one of every three females were closed as homemakers or unpaid family workers. In 1979, 82% of the total national VR homemaker closures were women (Goldner & Liedman, 1985).

A shift in employment outcomes. Contrary to the labor market trends of homemaking as a viable employment outcome for women in the 1950's and 1960's, the number of females entering the competitive (non-homemaking) workforce has steadily increased over the last few decades. Women workers now comprise the majority of competitive labor workers, as noted in the 2000 U.S. Census. However, in the vocational rehabilitation program, females with a disability achieving gainful employment in the competitive labor market have not mirrored their non-disabled counterparts (Danek & Lawrence, 1985; GAO, 1993; Goldner & Liebman, 1985; Thurer, 1982). This under-representation of competitive closures has been attributed to two variables characterizing the large numbers of non-competitive outcomes: gender (*females*) and *legal blindness* (Kirchner et al., 1999; Packer, 1983; Warren et al., 2004). As compared with male clients, females with visual disabilities are more commonly placed in homemaker status closing (Danek & Lawrence, 1985; NIDRR, 1998; Peace, 2004). Furthermore, Danek and Lawrence (1985) found that nearly half of the females with disabilities closed as homemaker in one state agency specified vocational goals other than homemaking.

Another example of predominately female homemaker closures is found in a 1980 national report. The 1980 federal VR closures reported 29% of female VR clients with physical disabilities were recorded as homemaker closures (GAO, 1993). In contrast, the

General Accounting Office (GAO) report (1993) cited that only 8% of male clients with physical disabilities were closed as homemakers in 1980. Female clients with emotional disabilities and mental retardation closed as homemakers at much lower percentages than those with physical disabilities – 13% and 11% respectively. Likewise, the homemaker closures for male clients with emotional disabilities and mental retardation were 2% and 1% respectively (GAO, 1993).

Taking a closer look at type of disability associated with female VR clients closed as homemakers, a trend begins to emerge. According to a 1982 RSA report/draft entitled *An Assessment of the Validity of the Homemaker Closure: The Homemaker Benefit Study*, which reported on case closures in 1979, approximately 10% of all homemaker closures were clients who are legally blind (RSA, 1982). An additional 12% of the total homemaker closures in the same year were clients with visual impairments (Kirchner & Peterson, 1982), leaving a substantial portion of clients closed as homemakers who have other types of disabilities. The data reported in the RSA document may lead one to underestimate the frequency with which VR clients with blindness or visual impairment are closed as homemakers. The statistics represented the *total* population of VR clients who had *any* type of case closure for that year; the figures do not represent *status 26* outcomes exclusive to clients with blindness or visual impairments. To clarify the issue, among clients who are legally blind and/or visually impaired that were successfully closed in FY 1980, approximately 40% were closed as homemakers (Kirchner & Peterson, 1982). In comparison, only 14% of successfully closed clients with other disabilities were closed as homemakers. Johnson and Hafer (1985) reported even higher homemaker rates for FY 1981, at least for clients who are legally blind. They cited RSA

data indicating that approximately 56% (5,346) of clients with blindness were successfully closed as homemakers. No rates for clients with visual impairments were reported.

Why then are the figures reported in the 1982 RSA document significantly lower for clients with visual impairments and blindness? The figures are somewhat misleading before considering percentage of *total* (all disability types) homemaker closures versus other closures among VR clients with blindness and/or visual impairments; therefore, a description of the Kirchner and Peterson (1982) study is necessary for clarification. The 1980 study focused on data collected regarding job placement of clients who are blind and/or visually impaired. In 1980, over 31,000 clients who are blind and/or visually impaired were closed in the VR system. Almost 78% were classified as rehabilitated or successful closure fitting into one of three categories: competitive employment, sheltered work or homemaker. The percentage of clients who are blind/visually impaired closed successfully was higher than that of clients with other disabilities (64%). However, approximately 40% of the successful closures (64%) for clients with blindness and/or visual impairments were homemaker closures.

The RSA case reports for the following year, 1981, indicate an increase in homemaker closures for clients who are blind and/or visually impaired. In 1981, there were 9,506 clients who are blind and closed as rehabilitated nationally (Johnson & Hafer, 1985). Of those clients classified as rehabilitated, 5,364 were homemaker closures and 3,646 were closed in competitive employment. In other words, approximately 56.4% of the case closures of clients with blindness and/or visual impairments were closed as homemakers and 38.4% were closed as competitive. A total of 61.6% of the clients with

blindness and/or visual impairments were closed in noncompetitive employment. The majority closure figure illustrates a substantial increase in the number of homemaker and other noncompetitive closures from FY 1980 to FY 1981 for rehabilitated clients who are blind and visually impaired. Thus, it is not surprising that in addition to these employment outcomes, Johnson and Hafer (1985) reported that salaries of workers who are blind and visually impaired also lagged behind the national average.

Findings of low competitive employment outcomes reported in the early 1980's marked the beginning of federal policy changes regarding employment outcomes for people with disabilities especially for individuals who are legally blind and/or visually impaired. Elevated noncompetitive closure rates for VR clients with blindness as compared to other disability types were attributed to policy ambiguity. Possible inappropriate use of the homemaker closure category was suggested as an "easy way to add to the count of successful closures" (Kirchner & Peterson, 1982, p. 426). However, as revealed in the literature, the policy changes seemed to have little effect on noncompetitive closures for clients who are legally blind during the next decade.

Kirchner and Peterson (1982) reported that individuals who are blind and visually impaired were similar in closures – homemaker 67% and others 60%. Further, 35% of people who are legally blind and/or visually impaired and were closed as homemakers - compared to only 17% of clients closed in competitive employment - received *PVA* or "personal vocational adjustment" (Kirchner & Peterson, 1982, p. 426). Looking at the available figures for all disability types, only 18% of homemakers received PVA which was slightly less than among non-homemakers. This is a key point in "whether most

homemaker closures met the formal criteria requiring substantial services that improve functioning" (as cited in Kirchner & Peterson, 1982, p. 428).

By the late 1980's and early 1990's, the homemaker closure rate across all disability groups decreased to between 9% and 10% of all successful closures (U.S. Department of Education, 1992). During this same time period, the homemaker closure rates for clients who are blind and/or visually impaired ranged from approximately 50% to 55% for clients who are legally blind and 30% to 33% for clients who are visually impaired (Cavenaugh, 2003). Rates continued to decrease throughout the 1990's for all disability groups with only 5% of all successful closures closed as homemakers during FY 1999 (Cavenaugh, 2003). The homemaker closure rate for legally blind and visually impaired groups declined slightly, with 45% of clients who are legally blind and 22% of clients who are visually impaired closed as homemakers in FY 1999.

Outcome trends in the 1990's. A significant trend of competitive employment outcomes for VR clients emerged in the 1990's. The noncompetitive employment closure of homemaker comprised less than 10% of total rehabilitated closures from 1988 to 1991 as reported by the U.S. Department of Education. Homemaker closure figures include 9.0% for FY 1988, 9.2% for FY 1989, 9.2% for FY 1990 and 9.6% for FY 1991 (U.S. Department of Education, 1992).

Rehabilitation Services Administration program case services (RSA 911 data) reported statistics for FY 1995 that indicated further decreases in noncompetitive employment closures. According to the National Institute on Disability and Rehabilitation Research (NIDRR) *Chartbook on Work and Disability in the United States*

(1995), 85.4% of the rehabilitated clients (status 26 closures) were placed in competitive work. Homemaker status closures ranked a distant second, accounting for only 7.6% of the VR client population. Clients placed in sheltered workshops comprised 4% of the population, self-employed closures totaled 2.7%, and unpaid family worker placements accounted for 0.39% of the total case closures (NIDRR, 1995).

The total number of VR clients closed in 1998 was 599,415 (RSA, 1998). Of that total, 37.3% or 223,703 were closed status 26. A breakdown of the status 26 outcome types in 1998 follows:

Table 2.1

Of Status 26 Closures, Breakdown of Work Status Closures of Entire VR Client Population, FY 1998.

Type	**Closed - FY 1998**
Competitive Labor Market	***70.4%***
Unpaid Family Worker	20.6%
Homemaker	4.2%
Sheltered or Extended	2.6%
Self-employed (except BEP)	2.0%
BEP	0.1%

Closer examination of the disability types and closure outcomes in the 1998 report revealed a striking disparity in closures among clients who are blind and/or visually impaired as compared to overall VR client closures is revealed. Of the total figures provided in the 1998 data on vocational rehabilitation closures (N = 599,415), 34,338 or

5.7% of the clients were classified as legally blind (Cavenaugh, 2003; RSA, 1998). Only 20,666 of those clients were assigned work status closures or gainful employment under status 26. Among these closures, 6,980 (33.8%) clients were homemaker closures. Forty-six percent (9,651 people) of the clients who are blind and/or visually impaired received an outcome of competitive employment closure (Cavenaugh, 2003). The number of clients who are blind and visually impaired closed as homemakers in 1998 accounted for approximately one-third of the total work status closures in that population (RSA, 1998). The 1998 figure indicated that homemaker closures represented a larger proportion of the closures among the clients who are blind and visually impaired than among the total VR client population. As illustrated in the percentages in Table 1, homemaker closures comprised *only* 4.2% of the total VR client work status 26 closures – significantly less representation than the homemaker outcomes that characterized one third of the legally blind group closures.

In more recent years, the higher percentage of clients who are blind closed under status 26 in noncompetitive closure outcomes continued, when compared with other disability groups (Johnson, 1998; Peace, 2004; Warren et al., 2004). For example, in fiscal year (FY) 2001, of those with successful employment outcomes (Status 26 closures), approximately 43% of all clients who are legally blind – compared to 2% of clients with other disabilities – were homemaker closures (Peace, 2004). A substantial majority (74%) of the clients with blindness were females. Further, females who are White and legally blind with successful employment outcomes were more likely than females who are African American (57% vs. 39%) to be closed as homemakers (Warren, Cavenaugh, & Giesen, 2003).

As we have illustrated in the historical review of the closure outcomes for clients who are blind and/or visually impaired, the federal program's emphasis of achieving competitive employment for VR clients has helped support most clients in gainful employment. However, when considering the figures depicting the outcomes for legally blind and visually impaired groups, the competitive employment outcomes are not as high as for the general disability groups. As we discuss the federal policy change to emphasize competitive outcomes in the next section, unlike the general disability population, the impact of policy change is slow to affect the legally blind and visually impaired groups' competitive employment outcome. Even with slight improvements in outcome figures for the legally blind and visually impaired groups over the last decade, the placement of a client who is blind in a competitive work setting is not as likely as placing another person with a different disability in competitive work.

Emphasis on Competitive Employment Outcomes

Changes have occurred in the nature of vocational rehabilitation policy and regulation language which have contributed to the growth of the federal program and subsequent emphasis on employment in integrated settings for people with disabilities. Much of these changes can be attributed to consumer involvement in lobbying efforts to promote equal rights for people with disabilities (Brodwin, Tellez, & Brodwin, 2002; Rubin & Roessler, 2001; Smart, 2001). What was previously referred to as the "*Golden Era of Rehabilitation"* began to fade in the early 1970's along with the public perception that vocational rehabilitation services consisted of essentially an income maintenance payment program for people with disabilities (Rubin & Roessler, 2001, p.41). However,

a growing population of people with disabilities began a consumer movement shortly thereafter. The movement supported equal rights and accessibility for all people with disabilities. The united efforts of these consumer organizations led to the passage of groundbreaking legislation akin to the Civil Rights Act of 1964 called the Rehabilitation Act of 1973. This legislation marked a societal and legislative shift from an emphasis on governmental financial support of "disabled" (Smart, 2001, p. 144) people to an emphasis on the integration of people with disabilities into mainstream society (Rubin & Roessler, 2001).

Beginning with the enactment of the Rehabilitation Act of 1973 and continuing with subsequent amendments, the goals of accountability and effective management in the rehabilitation system were incorporated (Parker, 1985). As illustrated in the Rehabilitation Act of 1973, as amended in 1992, the purpose of the federal program is to assist the States in operating a "comprehensive, coordinated, effective, efficient, and accountable program of vocational rehabilitation ..." (Sec. 100(a)(2)). In order to foster this purpose, the Rehabilitation Services Administration has promoted competitive employment for VR clients through changes in the federal program policy (NIDRR, 1992). The Rehabilitation Services Administration has continued to conduct program monitoring and evaluation activities, made recommended changes in policy, and conducted ongoing research - all aimed at improving *competitive* employment outcomes for VR clients (RSA, 1997, 2004; U.S. Department of Education, 1992).

The delivery of services to persons with disabilities by state agencies and the ultimate rehabilitation outcomes of their clients are vital in the rehabilitation process. Those outcome goals have focused on the empowerment of people with disabilities and

their integration into the workforce (Brodwin et al., 2002; Smart, 2001). Noncompetitive employment such as the sheltered (extended) employment and homemaker outcomes were evaluated for relevance to federal program goals. As a result of this evaluation, in FY 2002, the sheltered or extended employment outcome was eliminated as a status 26 closure in the federal VR system (Halliday, Gilmore, & Fichthorn, 2006). Although the homemaker closure has so far escaped a similar result, the scrutiny of the closure outcome and it's appropriateness as a "successful" employment outcome is ongoing (GAO, 2005; NIDRR, 1998; U.S. Department Education, 1992).

The homemaker closure status has been regarded as a less valued closure due to difficulties in defining what constitutes successful homemaker rehabilitation and when it is achieved (Guthrie, Crist, Sienicki, & Walls, 1981). In fact, the RSA report *The Homemaker Benefit Study* (1982) refers to the homemaker closure as an "anomaly in a program dedicated to returning disabled persons to employment" (as cited in Goldner & Liebman, 1985, p.43). As reported in the RSA document (1982), the homemaker closure is one that does not have an employment goal or generate earnings. The federal General Accounting Office (1982) did not simply reject the homemaker status as a valid occupational choice but cited a lack of compliance among state agencies with federal regulations as a source of policy ambiguity.

Regardless of the GAO findings of state-federal policy noncompliance as the primary issue with homemaker closure status, some state agencies seem to question the validity of the homemaker closure as an occupational goal. A weighted closure system was enlisted in one state agency. The system weighted closures based upon the perception of lowest (unpaid employment) to highest (competitive employment). The

extremely low weight range given to homemaker closures is intended to discourage use of this status closure (Goldner & Liebman, 1985).

Characteristic of the policy shift in the 1980's toward more gainful employment for VR clients, literature reflected instances of sex stereotyping by rehabilitation counselors that contributed to higher closures in noncompetitive employment outcomes. Homemaking and/or homemaker services that were once a viable occupational goal - paid or unpaid (Smith, 1963) - became viewed as stereotyping of gender (Packer, 1983). Beginning in the mid 1980's, counselors were encouraged to examine their job placement and client assessment methods as related to female clients. Recommendations were made for rehabilitation professionals to seek out alternatives in occupational objectives and explore career options other than homemaking for women (Goldner & Liedman, 1985; Packer, 1983).

As previously discussed, homemaker services were viewed as a vital employment outcome in the 1950's through the 1970's. Since then, the homemaker outcome has experienced extensive evaluation for it's effectiveness in meeting gainful employment objectives for VR clients (GAO, 1992, 2005; RSA, 1997). The most recent recommendation presented by the U.S. General Accounting Office (2005) is to *not include* homemaker as an employment outcome under status 26 closures. The U.S. Department of Education concurred with the GAO recommendations and expressed a desire to "eliminate *homemakers* as an acceptable employment outcome" (GAO, 2005, p. 3). The shift in perceptions of homemaker closure status to one of low rated expectations contributes to the driving force of RSA to discourage noncompetitive employment outcomes (NIDRR, 1997, 1999, 2006). Concerned with substantially higher rates of

noncompetitive employment closures among individuals with visual impairments compared with individuals with other disabilities, RSA is currently assessing state vocational rehabilitation (VR) agency policies and practices relating to noncompetitive outcomes (CSAVR, 2005). Additionally, the long range goals of NIDRR (2005-2009) outline the need for change in improving competitive employment outcomes for people with disabilities through research grant support (NIDRR, 2006). Other suggestions for determining the suitability of noncompetitive closures include addressing issues arising from initial assessment tools, improving training for personnel to deliver services, and correcting inadequate evaluation methods to track progress and accountability in closures (Guthrie, et al., 1981).

Research Relevant to Policy

A 1982 U.S. Department of Education General Accounting Office (GAO) report reviewed activities of state VR agencies pursuant to the Rehabilitation Act of 1973 as amended. The study found a discrepancy between services provided to clients and closure status. Rehabilitation counselors closed cases as homemakers "when clients did not fulfill their vocational plans" (GAO, 1982, p. 11). Additional findings reported by internal auditors of state agencies stated similar problems. It is reported that when counselors determined that a client's health prevented them from obtaining employment as specified in the vocational plan, "the cases were closed as rehabilitated homemakers" (GAO, 1982, p. 14). In the case closures reported in five states audited, clients were classified as rehabilitated homemakers or "found their own jobs in occupations that had no relationship to occupational goals" (p. 14). The report concludes that claiming

successful rehabilitation, when there is little or no contribution on the part of the VR agency, is overstating the U.S. Department of Education's and RSA's "accomplishments and thereby limits the reliability of statistical reports in assessing program effectiveness" (GAO, 1982, p. 14).

In 1993, the GAO issued another analysis of the effectiveness of the vocational rehabilitation program. The report uses 1980 combined data from RSA and Social Security Administration (SSA) databases to analyze type of outcome or closures. The analysis is divided into three groups: 1) rehabilitants with physical disabilities, 2) rehabilitants with emotional disabilities and 3) rehabilitants with mental retardation. Within the groups, the data are subdivided into men and women. Outcomes are listed as 1) Competitive employment, 2) Homemaker, 3) Sheltered work, 4) Other. Results using this data show that rehabilitants with physical disabilities closed as homemakers total 8% of men and 29% of women. Rehabilitants with emotional disabilities closed as homemakers total 2% of men and 13% of women. Rehabilitants with mental retardation closed as homemakers are 1% of men and 11% of women. As illustrated, a greater proportion of women than men were closed as homemakers. Additionally, across all groups of rehabilitants, competitive employment outcomes were higher for men than women – see the percentages of competitive employment outcomes in the following table (Table 2.2).

Table 2.2

Percentage of Rehabilitants with Competitive Employment Outcomes, based on RSA & SSA 1980 Data

Disability Group	Male	Female
Physical	83%	67%
Emotional	92%	82%
Mental	74%	58%

In recent years, some discussion has resulted from the considerably higher rates of noncompetitive status 26 closures for people who are blind. As noted earlier in this review, a number of studies over substantial periods of time have revealed the higher percentage of clients who are blind closed in noncompetitive outcomes when compared to other disability groups (Johnson, 1998; Johnson & Hafer, 1985; Kirchner & Peterson, 1982b). This is a trend that current research continues to confirm (Peace, 2004; Warren, Cavenaugh, & Giesen, 2003). An area of research interest that may address this trend, involves looking at the structure and services of the VR state agencies as it applies to serving people who are blind (Cavenaugh, 1999; Rubin & Roessler, 2001).

Beginning with the passage of the Barden-LaFollette Act of 1943 (P.L. 78-113), federal support was provided for serving people who are blind through the state vocational rehabilitation agency or a separate agency (Rubin & Roessler, 2001). This legislation allowed state agencies to enhance their services to clients who are blind by expanding the federal program to include separate agencies, commissions, or private agencies that provided the necessary rehabilitation services for clients with blindness. In other words, individuals who are blind could receive federally funded services in the VR

program by different agencies. Subsequent amendments to the Rehabilitation Act of 1973 have continued to support the separate agency ideology. For example, the Workforce Investment Act of 1998 allows state agencies to provide services or designate another agency to provide services to clients who are blind as the *sole State agency* (separate agency for the blind) to administer the part of the plan under which vocational rehabilitation services are provided for individuals who are blind (P.L. 105-220). Thus, clients with blindness can receive VR services by means of either a state program with two VR agencies – one serving only individuals who are blind or one general agency serving clients with other disabilities – or a state agency with one operating agency for all disability groups. This policy has been much debated in the rehabilitation community as to the effectiveness – cost, service, outcomes - in serving clients who are blind within a separate agency (Cavenaugh, 1999; Cavenaugh, Giesen, & Pierce, 2000; Cavenaugh & Pierce, 1998; Kirchner, 1982; Kirchner & Peterson, 1982a).

Proponents of the specialized or separate agency policy claim it is a necessity for people who are blind to receive the specialized services while general agency supporters question the efficacy of separate agency services for one (blind) disability group. The National Council of State Agencies for the Blind (NCSAB) adheres to the position that the "most effective and comprehensive services available to blind individuals are those delivered by separate state agencies for the blind" (NCSAB, 2009). Furthermore, NCSAB states that "a blind person requires an appropriate service system common to no other disability" in order to achieve his/her maximum employment potential (NCSAB, 2009). The combined/general VR agency vs. separate/blind VR agency debate continues today although many state agencies have moved to serve people with disabilities under a

combined agency (RSA, 2007). See Appendix A for a listing of current state agencies and their respective delineation.

Contemporary research by leaders in the field of vocational rehabilitation concurs with agency concerns that competitive employment as an end goal is vital (Rumrill & Roessler, 1999). It is recommended that VR agencies and counselors should stress personal career development in order to achieve competitive employment for clients. Rumrill and Roessler describe the new VR paradigm to include lifelong future planning, self-determination, self-satisfaction, informed decision making, job changes, and access to quality technology. This effort to improve VR policy has potential to positively impact clients who have difficulty achieving competitive employment – particularly clients who are female and legally blind.

Amendments to the Rehabilitation Act of 1973 during the 1990's have also contributed to the paradigm shift. In 1997, RSA policy directives defined the informed choice preference for vocational rehabilitation clients. The informed choice directive for clients in developing an IPE (individualized plan for employment) is geared for client involvement in career development (RSA, 1997). The VR client is empowered by taking a proactive role in the decision making process of his/her vocational rehabilitation process. State agencies are making changes to incorporate the new policy directives (Steinman et al., 2003; Warren & Peace, 2005).

As illustrated in the review of literature, the status 26 closures involving noncompetitive employment outcomes (e.g. homemaker, sheltered/extended, unpaid family worker) for the overall VR client population have steadily decreased in percentages. However, noncompetitive outcomes for clients who are legally blind have

not decreased at the same rate. New policy directives regarding informed choice and VR paradigm shifts involving career development appear to have been effective for the general client population but not so effective for clients who are blind. Therefore, more insight is needed regarding variables that do predict competitive employment for clients who are blind. The following passage examines research concerning predictors of successful employment.

Research on Predictors of Competitive Employment

Predictors used in General Disability Research

Researchers have examined predictors that provide information regarding competitive employment outcomes for all disability types (see Bellini & Neath, 1995; Bolton, Bellini, & Brookings, 2000; Capella, 2002; Capella-McDonnall, 2005a; Moore, 2002; Moore, Feist-Price, & Alston, 2002; Olney & Kennedy, 2002; Wheaton, Wilson, & Brown, 1996). Some of the most significant predictors appearing in the literature are gender, race, types of services, disability types, education at time of referral, and source of financial support. Specific services provided to VR clients such as job placement, college training, on the job training, transportation, and adjustment training (including counseling) are shown to be accurate predictors of successful employment outcomes (Moore, 2002; Moore et al., 2002; Wheaton et al., 1996). Several studies point out that not only was the types of services significant but the number of services provided to clients were also an indicator of employment outcomes (Atkins & Wright, 1980; Feist-Price, 1995; Wheaton et al., 1996). And many times, the number and types of services provided to VR clients are determined by severity of disability, gender, and race (Capella, 2002; Moore, Harley, & Gamble, 2004; Wheaton et al., 1996). Structure of state agency service delivery (combined or separate) for clients who are blind and/or visually impaired has also been a focus of interest in observing differences of employment outcomes for VR clients with blindness (Cavenaugh, 1999; Kirchner, 1982; Kirchner & Peterson, 1982a; NCSAB, 2009).

Wheaton, Wilson, and Brown (1996) looked at the effect of types of services on closure of VR clients (N = 6,156, n = 1,560) served in a Midwestern state-federal VR agency. Findings revealed that closure status was correlated with types and amounts of services provided to VR clients. Wheaton et al. (1996) examined several variables using RSA 911 (1995) data. No differences were found between persons closed successfully and persons closed unsuccessfully on the following services: diagnostic, business or vocational training, transportation, maintenance, and other services. Persons closed successfully were more likely to have received restoration, adjustment training, on-the-job training, miscellaneous training, counseling, a job referral, and job placement. Persons closed unsuccessfully were more likely to have received college or university training. The ANOVA results indicated that, on average, men, African Americans, and persons closed successfully received more VR services. The study offers evidence that the number of services a person receives is related to his or her race and closure status. Contrary to the Atkins and Wright (1980) findings that indicated inequity in services provided to African Americans, Wheaton et al.(1996) found that African American clients receive more services than European American clients. Therefore, Wheaton et al. (1996) concluded that African American clients are more likely to be closed in successful employment than European Americans.

Moore, Harley, and Gamble (2004) also examined number and types of services received by VR clients in 1995. The results of their analyses using RSA 911 data were similar to the findings in Wheaton et al. (1996). The researchers concluded that competitive outcomes depended in part on receiving job placement services. Unlike the Wheaton et al. (1996) study, Moore et al. (2004) found that vocational training services

were related to successful closure. The authors only examined closures of clients with mental retardation. Services received were determined by the severity of the client's level of mental retardation. Those with moderate to severe levels of mental retardation received less job placement and vocational training services; therefore, clients with more severe disability were less likely to be closed in gainful employment. The relative influences of severity and number and types of services received by clients need to be delineated.

Using RSA R-300 reporting forms in Arkansas from 1991 to 1994, Bellini and Neath (1995) examined employment outcome at closure for each VR case closed in Arkansas. The authors compared two approaches to predicting competitive employment after the provision of VR services using multiple regression analysis and a simplified scale. The two approaches yield nearly identical results when applied to an independent cross validation sample. Variables utilized in the analyses included VR client referral information such as work status at referral, education level, and primary disabling condition. The Scale of Social Disadvantage (SSD) composed the simplified prediction model and consisted of nine weighted items as predictors of outcome. Items in the scale are employment status at referral, education level, family monthly income at referral, age at referral, marital status at referral, disability status at referral, primary disability, and secondary disability.

Bolton, Bellini, and Brookings (2000) investigated the predictability of two client employment outcomes from personal background information, counselor-rated functional limitations of the client, and rehabilitation services provided. Using a sample of 4000 VR clients with orthopedic, chronic medical, psychiatric, mental retardation, and learning

disabilities, the findings yielded a multiple correlation of .58 with vocational adequacy at closure. Among the variables that significantly contributed to the prediction of vocational adequacy were total service costs, provision of restoration services, gender, and education level at referral.

Olney and Kennedy (2002) investigated racial and ethnic disparities in vocational rehabilitation services. The study utilized data from the Disability Supplement to the 1994 and 1995 National Health Interview Surveys (NHIS) to assess VR services and employment outcomes. It was reported that European or White VR clients had the highest rates of competitive employment outcomes. The variables of income, education, and race were found to be significant as predictors of employment outcomes. Gender, age, and severity of disability were not significant.

Blindness Specific Closure Predictors

Researchers have reported demographic and disability predictors of employment outcomes specific to legally blind client case closures. Variables of race, age, gender, source of financial support at time of application, total expenditures of case services, education, severity of visual impairment, agency structure, and marital status (see Capella-McDonnall, 2005a; Cavenaugh, 1999; Cavenaugh, Giesen, & Pierce, 2000; Crimmins & Jameson, 1984; Giesen et al. 2002; Giesen & McBroom, 1986; Goldner & Liebman, 1985; Hill, 1989; Kirchner & Peterson, 1982b; Peace, 2004; Taheri-Araghi & Hendren, 1994; Warren, Cavenaugh & Giesen, 2003; Warren et al., 2004; Warren & Peace, 2003). Several of the blindness specific studies found similar relationships between types of services provided and severity of disability to employment outcomes as

noted in the general disability studies (e.g. Atkins & Wright, 1980; Houtenville, 2003; Moore, 2002; Moore et al., 2002; Olney & Kennedy, 2002; Wheaton et al., 1996). Studies have also explored the correlation between employment outcomes for people who are blind and the type of agency (combined or separate) the individual received rehabilitation services (Cavenaugh, 1999; Cavenaugh & Pierce, 1998; Kirchner, 1982; Kirchner & Peterson, 1982a; NCSAB, 2009).

Hill (1989) analyzed the successfully closed cases involving clients who are visually impaired in 1982 using RSA 911 data. Hill (1989) estimated the effects of socioeconomic and VR program variables on the probability that a client will be closed in status 26 employment outcomes that include competitive, self-employed sheltered workshop, and homemaker. Findings reported a maximum likelihood estimation which yielded empirical results that gender, age, race, marital status, the severity of the visual impairment, and the type of services provided significantly influence the employment outcomes of clients who are visually impaired. Older clients were more likely to be closed as homemaker than in any other work status, and being female increased the likelihood of being closed as homemaker.

Likewise, Goldner and Liebman (1985), Kirchner and Peterson (1982b), and Crimmins and Jameson (1984) used similar variables in their noncompetitive outcome studies that integrated several data sources in the reported results. In Goldner and Liebman (1985), the authors examined the validity of noncompetitive closure of homemaker using several sources of data. Their analyses were based on the following sources: RSA research document *An Assessment of the Validity of Homemaker Closure: The Homemaker Benefit Study*; case closures in Ohio (Himmel, 1983 as cited in Goldner

& Liebman, 1985); a national study of homemaker closures of clients who are blind and visually impaired conducted by Kirchner and Peterson (1982b); and an in-house study of status 26 closures by the New Jersey Commission for the Blind and Visually Impaired by Crimmins and Jameson (1984). The RSA document reported on closure through the FY 1979; the Himmel study reported cases closed in Ohio from 1980-1982; Kirchner and Peterson used RSA FY 1980 data; the New Jersey study used FY 1983 data from the New Jersey Commission for the Blind and Visually Impaired. Results from all three research analyses found that clients who are blind and visually impaired closed as homemakers were older, White, were married or widowed, received public support benefits, and had less education.

Other studies included the variables of financial support and case expenditures. Client self-support at application, in contrast with other types of support, was found to be predictive of competitive employment outcomes (Cavenaugh, Giesen, & Pierce, 2000; Taheri-Araghi & Hendren, 1994). Further, Taheri-Araghi and Hendren (1994) found that total amount of case service expenditures on behalf of VR clients who are legally blind were predictive of employment outcomes.

While examining the RSA 911 (FY 2001) data set, Warren, Giesen, and Cavenaugh (2004) found that a number of predictors added more information regarding noncompetitive outcomes for clients who are legally blind. The criterion variable employed in the analyses was homemaker verses competitive closure status. The predictor variables – race/ethnicity, secondary disability, self-support at application, gender, marital status, education, and age at application – were found to significantly predict the likelihood of homemaker closure. Clients who are older, White, female,

married or widowed, had a secondary disability, and had no financial self-support were more likely to be closed as homemakers.

Recently, Capella-McDonnall (2005a) analyzed data from the Longitudinal Study of the Vocational Rehabilitation Services Program (LSVRSP) made available through Cornell University. Four variables were reported to have a significant association with competitive employment outcomes for consumers who are blind and visually impaired who received vocational rehabilitation services. These variables were (a) the receipt of education as a rehabilitation service that resulted in an educational certificate or degree, (b) having worked since the onset of the disability, (c) reason for applying to vocational rehabilitation, and (d) the relationship between the counselor and the consumer being rated as high quality. Additionally, over the past decade, clients who received services from a seperate agency for the blind indicated a higher percentage of successful rehabilitation outcomes (Cavenaugh, 1999). Specialized VR services provided by separate agencies for people who are blind such as orientation and mobility, vision rehabilitation teaching, library services, pre-school activities, and technical assistance have been deemed essential contributors to successful employment (NCSAB, 2009).

In Cavenaugh (2003), Giesen and McBroom (1986), Hill (1989), Kirchner and Peterson (1982b), and Kirchner et al. (1999), some common demographic variables that were predictive of noncompetitive outcomes for clients who are blind and/or visually impaired were described. Individuals closed in noncompetitive employment were primarily female, older, legally blind, less educated, and married (i.e. demographics of gender, age, severity of disability, education, marital status). Giesen and McBroom (1986) analyzed data from clients who are blind and visually impaired closed in five

states during FY(s) 1978 through 1980. Results indicated that the typical noncompetitive homemaker was about 56 years of age with late onset of blindness, had multiple disabilities, was married, and had less education than clients with competitive closures. Using FY 1980 data, Kirchner and Peterson (1982b) also found that in comparison with competitive closures, clients who are blind and visually impaired closed as homemakers were older, married or widowed, received public support benefits, and had less education. In an analysis of FY 1982 data, Hill (1989) reported that age and gender were the most significant predictors of work status at closure for clients who are blind and visually impaired. Older clients were more likely to be closed as homemaker than in any other work status, and being female increased the likelihood of being closed as homemaker (Cavenaugh, 2003; Kirchner et al., 1999).

Impact of Gender

One variable that remains significant in many of the studies investigating employment outcomes for people with disabilities is the impact of gender. In addition to findings reported in the literature earlier, results from a 1973 U. S. Department of Labor report showed that between 1920 and 1970, 43% of all rehabilitation closures (all disabilities) were female and that 32% of these females were homemaker closures (as cited in Johnson & Hafer, 1985). Thurer (1982) also reported higher rates of homemaker closures for females than males. For example, in 1976, one out of every three female VR clients were closed as homemakers or unpaid family workers. In contrast, one out of every fifteen male VR clients were closed as homemakers or unpaid family workers. Goldner and Liebman (1985) cited a RSA document indicating that in FY 1979, 82% of

all homemaker closures were female. In the longitudinal study of the National Health Institute Survey (1983-1996), Houtenville (2003) found no other groups with significantly lower adjusted household incomes than that of women who reported being blind in both eyes.

Similar to VR clients with other disabilities, clients who are blind and visually impaired closed as homemakers were more likely to be female than male. To illustrate, in FY 1980, approximately 76% of homemaker closures were clients who are blind and visually impaired and female (Kirchner & Peterson, 1982b). In FY 1999, 77% of the blind and visually impaired individuals closed as homemakers were female (Cavenaugh, 2003), and 75% were females in FY 2001 (Peace, 2004). Further, in all cases the majority of men with visual disabilities were closed in competitive employment. For instance, in 2001, 80.5% of male clients who are visually impaired were closed in the competitive labor market, whereas, 67.4% of females with visual impairments were closed in competitive employment (Peace, 2004). The disparity of gender among clients who are legally blind is even greater. Fifty-eight percent of male clients who are legally blind had their cases closed in competitive employment. On the other hand, just 38% of the female clients who are legally blind had cases closed in competitive employment.

In Danek and Lawrence (1985), successful and unsuccessful closures within a one-year period of an individual state agency were examined. Participants included 6,653 male clients and 3,399 female clients. The two purposes of the study were (a) to examine relationship between gender, education, and occupational level at the time of closure and (b) to examine the relationship between client gender, the similarity of occupational level, and vocational objectives. The four categories used in the study

which would most likely distinguish male and female clients are as follows: 1) professional, technical and managerial, 2) clerical and sales, 3) homemaking and 4) other.

Findings in the Danek and Lawrence (1985) study revealed that female clients are underrepresented as rehabilitation applicants although they have a higher rate of acceptance for services and successful case closure. Regardless of educational level, females were employed most frequently in homemaking. One significant finding reported in the study is that almost half of female clients who are closed as homemakers had not reported homemaking as their initial vocational objective. Contrary to the Danek and Lawrence (1985) study, an analysis of four state agencies serving clients who are blind and visually impaired found that 80% of the females who are closed had homemaking as a vocational goal (Giesen, Graves, Machalow, Schmitt, & Dietz, 1984).

In Packer (1983), a correlation between a VR counselor's attitude and the assignment of noncompetitive closures for female clients was explored. The nationwide study suggested that the counselors contributed to the higher number of homemaker closures for female clients. In the study, the respondents (VR counselors) were provided biographical case examples and were instructed to assign an occupational objective for each sample client/character. Findings revealed that the vocational objective described as homemaker was assigned to female characters at a larger rate than male characters. In one of the sample biographies, 23% of the counselors assigned the homemaker occupation for the female character versus 0% for the male character.

Impact of Race

The variable of race has been noted to be a common predictive factor in employment outcomes for VR clients with all disability types. Clients who are male, and African American that receive more rehabilitation services are more successful in obtaining gainful employment than clients who are Caucasian even though they received more college training services than the clients who are African American (Wheaton et al., 1996). However, African Americans who received *fewer* VR services including types such as job training and job placement were closed in lower paying jobs and noncompetitive employment (Atkins & Wright, 1980; Feist-Price, 1998; Moore, 2002).

In a descriptive analysis of RSA FY 1999 data on clients who are blind and visually impaired, Cavenaugh (2003) found that homemakers were generally older, White, not married, had less education, and received public support benefits. Giesen and Cavenaugh (2003), examining RSA FY 1998 data on clients who are legally blind, reported few race only differences yet when examining race-gender combinations, a notably lower percentage of African American females, in comparison with White females, were closed as homemakers.

Warren, Giesen, and Cavenaugh (2004) examined the effect of race on homemaker closures using RSA 911 (FY 2001) data. Race/ethnicity, when considered alone, was found to be a statistically significant but weak predictor of homemaker closure. Although race/ethnicity was a reliable predictor, there was still substantial variance left unexplained by race/ethnicity alone (hence the "weak" descriptor). In the initial analysis, African American clients who are blind or visually impaired appeared less likely than Caucasian clients who are blind or visually impaired to be closed as

homemakers. A follow-up analysis was conducted to better define the predictive ability of race/ethnicity. Several control variables were examined as a set: education, secondary disability, age, gender, self-support at application, and marital status. This set of predictors significantly predicted homemaker closure vs. competitive closure status. Persons with more education or who are self-supporting at application were less likely to be closed as a homemaker. Clients with a secondary disability, older, female, Caucasian, widowed or single were more likely to be closed as a homemaker. With these control variables held constant, race/ethnicity no longer was a significant predictor of homemaker verses competitive closure status.

Summary of Literature Review and Research Questions

As illustrated in the review of literature, the noncompetitive employment outcome closure has been most prevalent among female VR clients who are blind or visually impaired. Previous studies also have found that demographic and disability characteristics including age, marital status, education, presence of secondary disability, and self-support/income are predictors of status 26 closures for all disability types.

The current study seeks to further explore the relationship of predictors and competitive outcomes for VR clients who are blind. The following research questions were investigated:

1) Based on the most recent data (FY 2007 RSA-911) available, do the rates of competitive employment outcomes of VR clients who are legally blind differ from the rates of competitive employment outcomes of VR clients with other disability types?

2) What subset of variables from the FY 2007 RSA-911 data significantly predicts competitive employment outcomes for VR clients who are legally blind? What subset(s) of variables from the RSA-911 data predict competitive employment outcomes for VR clients with other disability types?

3) Is the model that best predicts competitive employment outcomes for clients who are legally blind different from the best predictive model for clients with other disabilities? Specifically, do the two models differ in type of predictors, number of predictors, and/or predictive strength?

The methodology of investigating the research questions, and the potential results of the data analysis, are described in the following chapter: Research Methods.

CHAPTER III

RESEARCH METHODS

The ultimate goal of this research is to inform efforts to increase the competitive employment rates of VR clients who are legally blind. The focus is on determining the variables that are associated with competitive employment. As previously discussed, a number of studies have examined variables that potentially influence employment outcomes. Still, previous work has not sufficiently investigated these predictors employing a method that can yield explanation(s) of the discrepancy in competitive employment outcomes between clients who are legally blind and clients with other disabilities. The analyses described in this section generated separate predictive models for clients who are legally blind and clients with other disabilities, allowing comparisons between models in order to provide greater understanding of the nature of this discrepancy and hopefully suggest enhancement strategies for the vocational rehabilitation system.

Research Questions/Hypotheses

Research Question 1

Based on the most recent data available, do the rates of competitive employment outcomes of VR clients who are legally blind differ from the rates of competitive employment outcomes of VR clients with other disability types?

Previous research suggests that the null hypothesis (no difference) will not be supported; clients who are legally blind will likely be closed competitively at a much lower rate than clients who are not legally blind.

Research Question 2

Is there a subset(s) of variables from the FY 2007 RSA-911 data that predict competitive employment outcomes for VR clients who are legally blind? Is there a subset(s) of variables from the RSA-911 data that predict competitive employment outcomes for VR clients with other disability types?

Alternative hypotheses for each of these related questions suggest that models composed of variables from the FY 2007 RSA-911 data will not be predictive of competitive employment outcomes for either group; however, previous research indicates that a subset of the variables available in the RSA-911 data from preceding years do predict employment outcomes for VR clients (e.g. Cavenaugh, 2003; Hill, 1989; Warren et al., 2004). Hypotheses regarding the relative contributions of individual variables within each model were generated via backwards stepwise logistic regression.

Research Question 3

Is the model that best predicts competitive employment outcomes for clients who are legally blind different from the best predictive model for clients with other disabilities?

The alternative hypothesis relevant to this question suggests that the two groups are not different and that a model that predicts competitive employment for one group will be equally predictive for the other. There is little evidence in the field that provides substantial evidence about the nature of any differences between clients who are legally blind and clients with other disabilities in predictors of competitive employment. Separate analyses are employed comparing the models to determine whether two separate kinds of differences exist: differences in variable make-up of the models and differences in predictive strength.

Methods

Data Source

The National Case Service Report (RSA-911) data, obtained from Rehabilitation Services Administration, U.S. Department of Education, for the Fiscal Year 2007 (FY 2007) was used for analysis. The RSA-911 database contains population data on all cases closed nationwide in the federal/state VR system in a given fiscal year. Information on each client closure is submitted by state agencies to the U.S. Department of Education, State Monitoring and Program Improvement Division, by November 30 following the federal fiscal year of reference (October 1 to September 30). Instructions for data entry are made available to agencies in the *Case Service Report (RSA-911)* which

is published annually (see RSA, 2007). Each RSA-911 client record includes demographic, socioeconomic, and disability information at referral; information on all types of services received; and outcome information (e.g., type of closure, earnings at closure) for all cases closed status 26 during the fiscal year (e.g. valid closures for FY 2007 is *N* =205,449). All RSA-911 FY 2007 complete case records for clients who are legally blind and clients who have disabilities other than legal blindness, had an Individualized Plan for Employment (IPE), and who are subsequently closed successfully employed (Status 26) were analyzed.

Analysis Variables

Variables that were employed in the analyses are 1) competitive vs. non-competitive closure status (the criterion) and 2) predictor variables – agency structure (combined/general or separate/blind), race and ethnicity, gender, presence of a secondary disability, primary source of support at application, education at application, costs of case services, and types of services provided. The dichotomous criterion variable, competitive vs. noncompetitive closure, is based on type of successful (Status 26) closure. Competitive closure status is coded "1" – this refers to employment without and with supports in an integrated setting. In the RSA-911 2007 data, employment without supports is coded as a Code 1 and employment with supports is coded as a Code 7 under the "Employment Status at Closure" variable. Although the 2007 RSA-911 database records competitive closure to include self-employment (except BEP) and state agency-managed Business Enterprise Program (BEP), these two closures are *not* necessarily characteristic of employment in an integrated setting and were filtered from the analysis

(*N* = 200, 958). In other words, self-employment and BEP outcomes were not included in the criterion variable because the intent of the study is to emphasize the contrast between *integrated* and *non-integrated* work settings; the contrast was stronger between employment without and with supports in an integrated setting and non-competitive closure, as defined next. In this study, non-competitive employment is defined as "achieving an employment outcome" (RSA, 2007, p. 32) in a *non-integrated* work setting. The non-competitive employment variables of homemaker and unpaid family worker were coded "0." The closure type of *extended employment* is no longer considered as a Status 26 employment outcome, so it was not included in the criterion variable. Closure types coded under the "Employment Status at Closure" variable in the FY 2007 RSA-911 record that was not included in this study – self-employment (except BEP), state agency-managed Business Enterprise Program and extended employment – were filtered from the subsequent analyses which resulted in a population of 200,958 for the analyses (*N* = 200,958).

Agency structure was coded as "0" for the states having a combined or general agency structure whereas states having a separate agency for the blind were coded as "1". Race and ethnicity categories are White – Non-Hispanic (coded "0"), Black or African American – Non-Hispanic (coded "1"), American Indian or Alaska Native (coded "2"), Asian American (coded "3"), Native Hawaiian or Other Pacific Islander (coded "4"), Hispanic or Latino – Non-white/Non-Black (coded "6"), and Multiple race/ethnicity (coded "7"). Simple contrasts for each of the categories were computed using the SPSS logistic regression procedure, with "White" designated as the reference category. Gender was coded "1" for female and "0" for male.

Presence of a secondary disability, a dichotomous variable, was coded with "1" indicating presence of a secondary disability and "0" for none present. Primary source of support at application was included as a predictor, and responses were coded into four categories. The first category is Personal Income (earnings, interest, dividends, rent); it was coded a "0" and serves as the reference category. The remaining categories – Family and Friends (coded a "1"), Public Support (coded a "2"), and All other sources such as private disability insurance and private charities (coded a "3") – were contrasted with Personal Income. Education at application is a variable with a number of discrete categories, as indicated in the FY 2007 RSA-911 data. "High school diploma or GED" was coded as "0" and used as the reference category; the remaining categories are "no high school diploma or GED" coded as "1", "special education" coded as "2", "some post-secondary education, Associate degree or Vocational/Technical Certificate" coded as "3", "Bachelor's degree" coded "4", or "Master's degree or higher" coded "5". Cost of purchased services is a continuous variable and was entered as a total dollar amount; this variable refers to the total amount of money spent by the State VR agency to purchase services for an individual over the life of the current service record.

Services actually provided is a series of variables, each dichotomized and coded either "1" or "0" (indicating the client received a particular service – for example, "college/university training" – or did not receive the service). The types of services included in the analyses are Assessment, Vocational Rehabilitation Counseling and Guidance, College training, Occupational and Vocational training, On-the-Job training, Remedial training, Job Readiness training, Augmentative Skills training, Job Search assistance, Job Placement assistance, On-the-Job Supports, Transportation, Maintenance,

Rehabilitation Technology, and Reader. The RSA 911 (2007) case service report manual provides the following definitions for the types of services. Assessment services include activities performed to determine eligibility, priority, nature, and scope of VR services assigned to a case. Vocational Rehabilitation Counseling and Guidance services are therapeutic counseling for a client such as personal adjustment, medical, family, or social issues, and vocational counseling. College training is defined as full or part time academic training beyond the high school level of education leading to a degree.

Occupational/Vocational training is provided by a business, community college, or other technical institution to prepare students for a specific occupation - not leading to a degree or certificate. On-the-Job training is specific job skills training by a prospective employer. Basic academic Remedial or literacy training is academic skills needed to function on the job. Job Readiness training is preparing a client for the workplace. Examples of job readiness training are appropriate behaviors of dress, timeliness, grooming, and productivity. Disability related Augmentative Skills training includes orientation and mobility, rehabilitation teaching, Braille, speech reading, sign language, and cognitive retraining. Job Search assistance refers to helping a client search for an appropriate job. This assistance can include helping with resume preparation, interviewing skills, identifying appropriate job opportunities, and making contacts (networking) on the client's behalf.

Job Placement assistance is a referral to a specific job which results in a job interview for the client. On-the-Job Supports applies to the client who has been placed in a job and needs assistance in retaining the job. Examples of on-the-job supports are job coaching and job retention services. Transportation services include training in the use of

public transportation and assistance with travel expenses. Maintenance services are monetary support for expenses such as food, shelter, and clothing that are necessitated in assisting the client obtain an employment outcome. Rehabilitation Technology is the use of technologies to meet the needs of clients in overcoming barriers to education, employment, independent living, rehabilitation, transportation, and recreation. Technologies may include engineering services, assistive devices, and personal assistive services. Reader services are for clients who cannot read print or printed media because of blindness. See Appendix C for a quick reference of definitions for service types. All of the analysis variables remained the same for each analysis conducted – for both the legally blind group and the group with other disabilities.

Procedure

A descriptive profile on the analysis variables was obtained via cross tabulation by status and the discrete variables. Separate frequency analyses for VR clients who are legally blind and for clients with other disabilities indicated whether the discrepancy in competitive employment outcomes persists (Research Question #1).

In order to address Research Question #2, separate logistic regression analyses were performed on the clients who are legally blind data and clients with other disabilities data. Initially no *a priori* assumptions about the relative importance of the individual variables or the mediating influence of certain variables over others were made. Hence, all variables were entered into the equation in a stepwise logistic regression procedure, using likelihood ratio estimates to determine which variables are included in the final models. Backwards stepwise variable entry was used, in which all

independent variables of interest were initially entered at once. Variables with likelihood ratios achieving p-values of .10 or greater were then removed one step at a time until all variables that failed to contribute to the model were removed. Backwards stepwise regression was used for two reasons. Although the literature review suggested many of the predictor variables were related to competitive employment outcomes (and hence could be used as predictors), the literature was unclear with regards to the potential impact of each of the service variables. Second, the literature did not provide direction concerning what influence each independent variable may have on the predictive ability of the other independent variables. Therefore, the decision regarding initial entry of variables was guided by the literature, but any removal of variables from the model was guided by statistical results.

Backwards stepwise logistic regression was used here as a means by which to produce models for comparing VR clients who are legally blind to clients with other disabilities, as well as a means for generating further hypotheses (Tabachnick & Fidell, 2001; Menard, 2001). In addition, it is necessary to recognize that the apparent predictive abilities of some variables may best be explained by a relationship to other variables; for example, Warren, Giesen, and Cavenaugh (2004) found that the ability of race/ethnicity to predict closure status of clients who are legally blind disappeared when age at application, self-support at application, gender, education level, presence of secondary disability, and marital status were held constant. Because of the probable mediation of variable effects by control variables, and because further hypotheses may be generated from the stepwise procedure, hierarchical logistic regression employing the

sequential entering of separate blocks of variables may be used to follow-up initial analyses.

To address Research Question #3, the models that predict competitive employment outcomes for clients who are legally blind were compared to those that predict competitive employment for clients with other disabilities. Differences in terms of what variables are included in the models, the relative predictive contributions of the variables within the models, and the overall predictive strength of the models were compared.

Data Analysis

Logistic regression using SPSS Version 14 was employed to analyze FY 2007 data yielding predictive models. A modified version of the Wheaton (2005) syntax developed specifically for use with the RSA 911 data was utilized. Logistic regression (LR), namely backwards stepwise logistic regression, was selected for the analyses because the criterion variable (closure status) is dichotomous, and LR is preferred in this context (Hair, Anderson, Tatham, & Black, 1998). The predictor variables chosen for this study are a mix of dichotomous and continuous variables; LR is one of the few analytic tools that can combine dichotomous and continuous predictors in a model. Further, LR imposes fewer assumptions on the data than some other statistical analyses (e.g., MANOVA, Discriminant Function Analysis), and so the assumptions of LR are completely met by the RSA 911 data. Also, LR allows for inclusion of control variables that are expected to influence outcome, and LR provides odds ratios that may be used to compare outcome groups.

SPSS outputs exp(B) results that are interpretable odds ratios. For example, an odds ratio indicates how clients who are legally blind and other clients may differ in their odds of closure as competitive or non-competitive. Odds ratio values greater than 1 indicate that the odds likelihood or the probability of an event occurrence for a person from a specific group (e.g., disability other than blindness) is greater than that for a person in the reference group (e.g., legally blind) in obtaining the designated outcome (competitive closure status). In this example, an odds ratio exp(B) = 1.45 can be interpreted to indicate that a group is 1.45 times as likely to achieve competitive employment as the reference group. That finding can also be phrased to indicate the group is 45% more likely to attain competitive employment than the reference group. Odds ratio values less than 1 for the same variable indicate that the odds likelihood for a client with a disability other than blindness is less than that for a client who is legally blind. An odds ratio of 0.45 means that the group in question is .45 times as likely (or 55% less likely) than the reference group to achieve competitive employment.

Furthermore, statistical significance tests are not pertinent because the analyses performed with the data set are based on population data and not a sample of the population (Pedhazur, 1997). Thus, differences found between the groups are real differences that exist in the population and not merely a representative sample of that population. Effect sizes using the Nagelkerke pseudo R^2 are reported to determine the significance of the findings including the explanation of variance in the groups. In addition, the omnibus test of coefficients is reported to explain the likelihood odds ratio significance of the predictor variables. Classification tables were used to explain the

correct classification of the models including how well the models predicted for competitive employment.

Assumptions of Logistic Regression

Few data assumptions need to be met in order to employ logistic regression analysis. The observations should be independent of each other; the cases should come from a large population that can be classified into one of the levels of a dichotomous variable (in this case, competitive outcome or non-competitive outcome); and the log odds of competitive closure should be a linear function of the predictors included in the model (Hair, Anderson, Tatham, & Black, 1998). The RSA-911, FY 2001 data met these assumptions (Warren et al., 2004). Likewise, the RSA 911 FY 2007 data met these assumptions.

Another important assumption for logistic regression is the absence of *multicollinearity*. Like previous years' RSA 911 data, the FY 2007 data has been examined for this assumption which revealed no multicollinearity mirroring the FY 2001 data (Warren et al., 2004). All predictors were examined for intercorrelations and possible multicollinearity. All independent variables, with appropriate indicator codings, were entered into an ordinary least squares (OLS) multiple regression routine in order to obtain tolerance values and intercorrelations for assessing multicollinearity. Like previous years' data, the obtained tolerance values for all variables and intercorrelations of predictors revealed no problems related to multicollinearity.

CHAPTER IV

DATA ANALYSIS AND DISCUSSION

Research Question 1 Analysis

A frequency analysis was conducted using the FY 2007 RSA 911 data in order to answer the research question "Based on the most recent data (FY 2007 RSA-911) available, do the rates of competitive employment outcomes of VR clients who are legally blind differ from the rates of competitive employment outcomes of VR clients with other disability types?" The results revealed differences between the groups of clients who are legally blind and clients with other disabilities closed in competitive employment. The competitive and non-competitive employment closures were compared of clients who are legally blind and clients with other disabilities. Competitive employment closures included employment with and without supports in an integrated work setting. Non-competitive employment consisted of homemaker and unpaid family worker outcomes. The outcomes of self-employment (except for state agency BEP) and state agency BEP were excluded from the analysis.

The FY2007 RSA 911 data provides information on 600,188 client cases in the federal state VR program for that year. Of the total cases, 205,449 clients were closed in successful employment outcomes which included self-employment and BEP. For this study, the exclusion of self-employment and BEP in the successful employment closure

resulted in 200,958 total cases examined for logistic regression analyses. Clients who are legally blind and were closed in successful employment (status 26) numbered 7,528. Of those closed in employment, 4,697 or 62.4% were closed in competitive employment (with or without supports in an integrated work setting). The remaining 197,921 cases were closed in employment for clients with other disabilities. Competitive employment outcomes for clients with other disabilities totaled 191,161 or 96.6%. When compared to clients with other disabilities, an approximate 34% lesser proportion of clients who are legally blind were closed competitively.

Cases closed in non-competitive employment outcomes for people who are legally blind totaled 2,223 or 29.5%. For the other disabilities group, only 2,877 or 1.5% cases were closed in non-competitive employment. See table 4.1 for frequency breakdown of successful employment categories within each disability groups.

Table 4.1

Frequencies of Employment Types by Disability Categories

	Employment Types			
Disability Types	Non-competitive employment status	Competitive employment status	Self-employment and BEP	Total
Other Disabilities	2877	191161	3883	197921
	1.5%	96.6%	2.0%	100.0%
Legally Blind	2223	4697	608	7528
	29.5%	62.4%	8.1%	100.0%
Total	5100	195858	4491	205449
	2.5%	95.3%	2.2%	100.0%

Looking at Table 4.1, it is interesting to note that in the total counts for the entire population closed in employment, the noncompetitive group total was 5,100 or 2.5% of *N* = 205,449. Of the total noncompetitive closure group, 2,223 (43.6%) were clients who are legally blind cases. This means that the legally blind group accounted for a large proportion of the homemaker and unpaid family worker (noncompetitive) closures out of the population total (all disability types). The remaining 46.4% of noncompetitive closures consisted of clients having one of 18 other disabilities – not blindness. Thus, one group (legally blind) out of the 19 disability type groups accounted for a significant amount of the total overall noncompetitive closures in FY 2007.

Research Question 2 Analysis

Logistic regression was employed to answer the research questions "What subset of variables from the FY 2007 RSA-911 data significantly predicts competitive employment outcomes for VR clients who are legally blind? What subset(s) of variables from the RSA-911 data predict competitive employment outcomes for VR clients with other disability types?" Backwards stepwise variable entry was used, in which all independent variables of interest were initially entered at once. Variables with likelihood ratios achieving p-values of .10 or greater were then removed one step at a time until all variables that failed to contribute to the model were removed.

Model 1 - Legally Blind Group, Competitive vs. Noncompetitive

The omnibus test of model coefficients (likelihood ratio test) for the model was statistically significant, χ^2 (32, N = 6,890) = 3,737.64, $p < .001$, indicating that the set of predictors in the model were significant predictors of competitive vs. noncompetitive

closure status for the legally blind group. The Nagelkerke pseudo R^2 = .586, indicated a large effect size. According to the Nagelkerke pseudo R^2, approximately 59% of the variance in the data can be accounted for by the model.

Additionally, the accuracy of the model's predictability was determined by the classification statistics. The classification figures indicate how accurate the model predicts for the dependent variable of competitive and noncompetitive employment. The overall percent correct classification was 85% with variables entered into Model 1. This figure represents an increase of 17% in correct classification when compared to a model with no independent variables entered; that is to say, only about 68% of the outcomes could be correctly predicted without considering any of the predictor variables. When the closure groups are examined separately, with the independent variables entered, the overall correct classification for competitive and noncompetitive employment is 91% and 73% respectively. The increase in ability to correctly classify case outcomes based on model predictors, along with the Nagelkerke R^2, suggests that the model produced for clients who are legally blind is a valid model.

Results for Model 1 are shown in Table 4.2. Each of the independent variables entered into the stepwise procedure were significant predictors of competitive vs. noncompetitive employment except for Occupational/Vocational Training services. Therefore, the SPSS backwards stepwise procedure removed the service variable of Occupational/Vocational Training from the model. The odds ratios for the significant variables (Table 4.2) indicated that a person who is legally blind and African American/Black, Hispanic or Latino (non-White and non-Black), or Multiple race/ethnicity were all more likely than the reference group (clients who are White and

legally blind) to be closed in competitive employment. Specifically, African Americans were 63% more likely, the Hispanic or Latino group 58% more likely, and the multiple race/ethnicity group 2.2 times as likely to be closed in competitive employment. On the other hand, the probability was less likely for clients who are female (47% less likely) or clients with a secondary disability (51% less likely) to achieve the same employment outcome.

When compared to clients who received their high school diploma or equivalency (GED), clients completing a Special Education certificate were an astonishing 3.6 times as likely to secure a competitive job as those with a high school diploma or GED. Similarly, clients who received some secondary education, Associate's degree, or Vocational Technical education (51% more likely); completed a Bachelor's degree (2.2 times as likely); and attained a Master's degree or higher (2.4 times as likely) had more competitive outcomes. Clients who are legally blind and did not complete their high school diploma or GED were 17% less likely to achieve competitive employment.

All of the primary sources of income at application variables that were compared to the reference group (clients having personal income such as earnings, interest, dividends, etc.) were predictors of less likely odds for achieving competitive employment. A client who had only friends and family for income support was 73% less likely; received primarily public financial support was 84% less likely; and, reported other financial support such as private insurance, and charitable contributions was 96% less likely to be placed in a competitive job than those who had personal income such as earnings.

Types of services and agency structure were all statistically significant contributors to the model except for Occupational/Vocational Training for clients who are legally blind. Noticeably, clients who received VR services from a separate agency for the blind were three times as likely to achieve a competitive employment outcome. Five of the service variables were associated with a decrease in likelihood of competitive employment. Those who received Assessment Services were 35% less likely to be closed in competitive employment. Those who received Counseling Services were 26% less likely. Clients who obtained Remedial Academic Training were 47% less likely, Augmentative Skills Training 73% less likely, and Reader Services 43% less likely.

The services received that predicted competitive employment for clients who are legally blind are as follows: College training was 3.5 times as likely; On-the-Job training was 7.5 times as likely; Job readiness services were 35% more likely; Job Search services were 3.2 times as likely; On-the-Job Supports were 4.4 times as likely; Job Placement services were 6.9 times as likely; Transportation services were 25% more likely; Maintenance services were 2.5 times as likely; and, Rehabilitation Technology services were 27% more likely.

Table 4.2

Logistic Regression Model for the Legally Blind Group (Model 1)

Variable	Wald	df	Sig.	Exp(B)
Race/Ethnicity: White, non Hispanic (Reference Category)	31.809	6	.000	
Race/ethnicity: African American/Black, non Hispanic	22.628	1	.000	1.626
Race/ethnicity: American Indian, Alaskan Native	.026	1	.871	1.073
Race/ethnicity: Asian American	.339	1	.560	1.171
Race/ethnicity: Native Hawaiian, Pacific Islander	.051	1	.821	1.187
Race/ethnicity: Hispanic or Latino, non White/non Black	12.532	1	.000	1.584
Race/ethnicity: Multiple race/ethnicity	1.594	1	.207	2.221
Combined (Reference Category) or Separate Agency	203.593	1	.000	3.016
Secondary Disability Presence (Absence as Reference Category)	94.772	1	.000	.487
Education at application: HS diploma (Reference Category)	98.918	5	.000	
Education at application: No HS diploma	2.989	1	.084	.834
Education at application: Special Education certificate	10.560	1	.001	3.580
Education at application: Some Post-secondary, Associates degree, or Vocational/Technical degree	22.536	1	.000	1.556
Education at application: Bachelor's degree	41.529	1	.000	2.151
Education at application: Masters degree or higher	34.068	1	.000	2.440
Gender (Male as Reference Category)	75.271	1	.000	.530
Cost	53.735	1	.000	1.000
Primary Source of Support at Application: Personal income (Reference Category)	635.030	3	.000	
Primary Source of Support at Application: Family/Friends	155.172	1	.000	.267
Primary Source of Support at Application: Public support	378.265	1	.000	.159

Table 4.2

Logistic Regression Model for the Legally Blind Group (Model 1)

Variable	Wald	df	Sig.	Exp(B)
Primary Source of Support at Application: Private Insurance, Charities, & Other	508.207	1	.000	.038
Assessment Services	22.714	1	.000	.654
Counseling Services	13.718	1	.000	.737
College Training	42.015	1	.000	3.533
On the Job Training	38.010	1	.000	7.491
Remedial Training	4.193	1	.041	.534
Job Readiness	3.935	1	.047	1.347
Augmentative Skills	285.654	1	.000	.272
Job Search Assistance	56.589	1	.000	3.189
Job Placement Assistance	153.412	1	.000	6.881
On the Job Supports	68.738	1	.000	4.439
Transportation Services	6.290	1	.012	1.254
Maintenance	42.756	1	.000	2.533
Rehab Technology Services	9.904	1	.002	1.271
Reader Services	3.965	1	.046	.568
Constant	148.931	1	.000	63.170

Cost of services was entered as a continuous variable, and the results showed that as the amount of costs spent on clients increased the odds of a competitive outcome also increased. Descriptive statistics were computed for the cost of services variable in order to clarify the variable's relationship with competitive closure. The mean cost of purchased services for clients who are legally blind and closed in non-competitive employment was $3,765.81 (median = $2,120.00). Conversely, clients who are closed in competitive employment had a mean cost of services of $10,730.86 (median = $4,904.00).

Results from Model 1 suggest that a client who is legally blind, male, has no presence of a secondary disability, and is African American, Hispanic ethnicity, and/or Multiple race/ethnicity has a greater probability of achieving a competitive employment outcome after receiving VR services. In addition, the client who has a personal income (earnings, interest, etc.) as a primary source of support at application, and has attained a special education certificate or college degree is more likely to secure a competitive job. For the variable of education at application, the strongest predictor was the achievement of a special education certificate.

Overwhelmingly, the client who received services from a separate agency for the blind is more likely to be closed in an integrated work setting. And, the probability of a client who is legally blind securing competitive employment is greater if the client receives the VR services of College training, On-the-Job training, Job Readiness services, Job Search services, On-the-Job Supports, Job Placement services, Transportation services, Maintenance services, and Rehabilitation Technology services. Of those services, the strongest predictors of competitive employment were On-the-Job training,

Job Placement services, On-the-Job supports, Job Search services, and College training for clients who are legally blind. Surprisingly, services that were assigned to specifically clients who are blind, namely Reader services and Augmentative skills training, were indicative of less probability for clients in achieving a competitive outcome.

Model 2 - Other Disabilities Group, Competitive vs. Noncompetitive

The omnibus test of model coefficients for model 2 was statistically significant, χ^2 (30, N = 193,221) = 6,591.59, $p < .001$, indicating that the set of predictors in the model were significant predictors of competitive vs. noncompetitive closure status for the other disabilities group. The Nagelkerke pseudo R^2 = .235, indicating a moderate effect size. According to the Nagelkerke pseudo R^2, approximately 24% of the variance in the data can be accounted for by the model.

Likewise, the accuracy of the model's predictability was determined by the classification statistics. The overall percent correct classification was 98.5% with independent variables entered into Model 2. This figure represents the same correct classification when compared to the model with no independent variables entered. In other words, when looking at only the dependent variable of *competitive vs. noncompetitive* totals for clients who have other disabilities, 98.5% are correctly classified in the model. When the closure groups are examined separately, with the independent variables entered, the overall correct classification for competitive and noncompetitive employment is 100% and 3% respectively. The classification figures indicate how accurate the model predicts for the dependent variable of competitive and noncompetitive employment. The competitive percentage classification of 100% is

representative of the large number of clients closed within the group (N = 193,068) competitively whereas only 153 clients were closed in noncompetitive status. This is interpreted as the model can classify or predict approximately 100% for competitive outcomes in the other disabilities group.

Results for Model 2 are shown in Table 4.3. Each of the independent variables entered into the stepwise procedure were significant predictors of competitive vs. noncompetitive employment yielding odds ratios (probabilities for an event) except for the variable of cost and two of the service variables – Reader services and Job Readiness training. Therefore, the stepwise procedure removed the variable of cost and the two services (Reader, Job Readiness) that were not significant from the model. Results for the odds ratios for the significant variables (Table 4.3) indicated that a person with a disability other than blindness, and African American/Black, American Indian or Alaska Native, Hispanic or Latino (non-White or non-Black), or Multiple race/ethnicity were all more likely than the reference group of clients who are White to be closed in competitive employment. Specifically, African Americans/Blacks were 38% more likely, American Indians or Alaska Natives were 29% more likely, the Hispanic or Latino group (non-White or non-Black) were 34% more likely, and the multiple race/ethnicity group were 61% more likely to be closed in competitive employment. Conversely, the probability was less likely for clients who are female (59% less likely) or clients with a secondary disability (35% less likely) to achieving the same employment outcome as clients who are male and had no presence of a secondary disability.

When compared to clients who received their high school diploma or equivalency (GED), clients completing a Special Education certificate were 77% more likely to secure

a competitive job than those with a high school diploma or GED. Similarly, clients who received some secondary education, Associate's degree, or Vocational Technical education (29% more likely); completed a Bachelor's degree (21% more likely); and attained a Master's degree or higher (89% more likely) had more competitive outcomes. Clients with other disabilities that did not complete their high school diploma or GED were 6% less likely to achieve competitive employment.

All of the primary sources of income at application variables that were compared to the reference group (clients having personal income such as earnings, interest, dividends, etc.) were predictors of less probabilities for the client in achieving competitive employment. A client who had only friends and family for income support was 80% less likely; received primarily public financial support was 93% less likely; and, reported other financial support such as private insurance, and charitable contributions was 94% less likely to be placed in a competitive job than those who had personal income such as earnings.

Types of services and agency structure were all significantly related to competitive closure outcomes except for Reader services and Job Readiness training for clients with other disabilities. Interestingly, clients who received VR services from a separate agency for the blind were 77% less likely to achieve a competitive employment outcome even though separate agencies served clients in this group that have visual impairments and/or deafness-blindness (deaf-blind disability). Four of the types of service variables were associated with a decreased likelihood of competitive employment. Clients who received Assessment Services were 38% less likely to be closed competitively. Clients who received Remedial Academic Training were 31% less

likely to achieve competitive employment. Surprisingly, those who received Augmentative Skills Training were 67% less likely and Rehabilitation Technology Services were 76% less likely to be placed in an integrated work setting. The services received by clients that predicted a likelihood of competitive employment for clients in the other disabilities group are as follows: Counseling Services were 35% more likely; College Training was 2.2 times as likely; Occupational and Vocational training were 2.1 times as likely; On-the-Job training was 2.7 times as likely; Job Search services were 87% more likely; On-the-Job Supports were 4.4 times as likely; Job Placement services were 3.3 times as likely; Transportation services were 26% more likely; and, Maintenance services were 85% more likely.

Table 4.3

Logistic Regression Model for the Other Disabilities Group (Model 2)

Variable	Wald	df	Sig.	Exp(B)
Race/Ethnicity: White, non Hispanic (Reference Category)	44.679	6	.000	
Race/ethnicity: African American/Black, non Hispanic	32.160	1	.000	1.375
Race/ethnicity: American Indian, Alaskan Native	1.076	1	.300	1.292
Race/ethnicity: Asian American	.269	1	.604	.909
Race/ethnicity: Native Hawaiian, Pacific Islander	.062	1	.803	1.091
Race/ethnicity: Hispanic or Latino, non White/non Black	14.114	1	.000	1.341
Race/ethnicity: Multiple race/ethnicity	3.778	1	.052	1.610
Combined (Reference Category) or Separate Agency	326.611	1	.000	.231
Secondary Disability Presence (Absence as Reference Category)	108.504	1	.000	.654
Education at application: HS diploma (Reference Category)	75.216	5	.000	
Education at application: No HS diploma	1.482	1	.224	.939
Education at application: Special Education certificate	26.360	1	.000	1.768
Education at application: Some Post-secondary, Associates degree, or Vocational/Technical degree	22.626	1	.000	1.287
Education at application: Bachelor's degree	5.731	1	.017	1.216
Education at application: Masters degree or higher	20.999	1	.000	1.888
Gender (Male as Reference Category)	448.087	1	.000	.410
Primary Source of Support at Application: Personal income (Reference Category)	1576.874	3	.000	
Primary Source of Support at Application: Family/Friends	435.028	1	.000	.198
Primary Source of Support at Application: Public support	1214.187	1	.000	.071
Primary Source of Support at Application: Private Insurance, Charities, & Other	1055.841	1	.000	.063

Table 4.3

Logistic Regression Model for the Other Disabilities Group (Model 2)

Variable	Wald	df	Sig.	Exp(B)
Assessment Services	107.899	1	.000	.618
Counseling Services	51.527	1	.000	1.352
College Training	130.616	1	.000	2.176
Occupational Vocational Training	106.380	1	.000	2.078
On the Job Training	25.131	1	.000	2.694
Remedial Training	6.426	1	.011	.685
Augmentative Skills	221.327	1	.000	.329
Job Search Assistance	95.617	1	.000	1.871
Job Placement Assistance	409.548	1	.000	3.279
On the Job Supports	320.553	1	.000	4.447
Transportation Services	22.768	1	.000	1.258
Maintenance	87.267	1	.000	1.850
Rehab Technology Services	1037.405	1	.000	.235
Constant	1050.704	1	.000	187.090

Results from Model 2 suggest that a client with a disability other than blindness, male, with no presence of a secondary disability, and African American, American Indian or Alaska Native, Hispanic ethnicity, and/or Multiple race/ethnicity has a greater probability of achieving a competitive employment outcome after receiving VR services. In addition, the client who has a personal income (earnings, interest, etc.) as a primary source of support at application, and has attained a special education certificate or college degree was more likely to secure a competitive job. For the variable of education at application, the strongest predictor was the achievement of a Master's degree or higher. After that, the next strongest education variable predictor was the attainment of a special education certificate.

Plausibly, the client with a disability other than blindness who received services from a general or combined agency was more likely to be closed in an integrated work setting. And, the probability of that client securing competitive employment was greater if the client received the VR services of Counseling services, College training, Vocational/Occupational training, On-the-Job training, Job Search services, On-the-Job Supports, Job Placement services, Transportation services, and, Maintenance services. Of those services listed, the strongest predictors of competitive employment were On-the-Job training; Job Placement services, On-the-Job supports, Occupational and Vocational training, and College training for clients with other disabilities. Job Search services and Maintenance services were moderate predictors for the other disabilities group. Again, surprisingly, services that were designed to assist clients with other disabilities perform daily activities, namely Rehabilitation Technology services and Augmentative Skills

training, were indicative of less probability for the clients in achieving a competitive outcome.

Research Question 3 Analysis

Model 1 and Model 2 were compared and contrasted in order to answer the following questions: "Is the model that best predicts competitive employment outcomes for clients who are legally blind different from the best predictive model for clients with other disabilities? Specifically, do the two models differ in type of predictors, number of predictors, and/or predictive strength?" The model for clients who are legally blind does differ in variable make-up from the model for clients with other disabilities, although there are more similarities than differences between the two models. Most of the variables entered into each model were retained by the backwards stepwise procedure, resulting in two generally similar models with a few notable exceptions.

Model 1 (the model for clients who are legally blind) and Model 2 (for clients with other disabilities) differed from each other in the retention/removal of four variables (see Table 4.4 for a comparison of the select variables from the two models and respective odds ratios.) Occupational Vocational Training did not contribute to Model 1 and was removed; however, it was a significant contributor to Model 2. Clients with other disabilities were greater than twice as likely to be closed in competitive employment if they received occupational vocational training. Job Readiness Training, Reader Services, and Cost of Services were all removed from Model 2 but were retained in Model 1. Clients who are legally blind were about 35% more likely to be closed competitively if they received job readiness training. They were about 43% less likely to

obtain competitive employment if they received reader services. Greater costs of services were associated with competitive employment for clients who are legally blind but not for other clients.

Three of the variables that are in both models predicted different employment categories for the two models (see Table 4.4 for a listing that includes these variables and respective odds ratios). Combined or Separate Agency yielded an odds ratio of 3.016 for Model 1, but the odds ratio was only .231 for Model 2. This indicates that clients who are legally blind were over 3 times as likely to obtain competitive employment if they received services from a separate agency for the blind. Conversely, clients with other disabilities were 77% less likely to be closed competitively if they received services from a separate agency. Likewise, clients who are legally blind were 27% more likely to be closed competitively if they received Rehabilitation Technology Services, while clients with other disabilities were about 76% less likely to be closed in competitive employment. Competitive employment was about 35% more likely for clients with other disabilities who received Counseling Services; clients who are legally blind and received counseling services were about 26% less likely to be closed competitively.

The remainder of the variables that were entered into both models were retained by both, and all predict in the same direction for both models. For example, Presence of a Secondary Disability is associated with a lower likelihood of competitive closure for clients who are legally blind and for clients with other disabilities. Still, the logistic regression analyses revealed a general tendency for variables associated with competitive employment to be more strongly predictive for clients who are legally blind than for clients with other disabilities. The most obvious example of this is On the Job Training.

Clients with other disabilities who received on-the-job training were about 2.7 times as likely to obtain competitive employment as those who did not. However, clients who are legally blind were almost 7.5 times as likely to be closed competitively if they received on-the-job training. Service variables that followed the same pattern (although not with the same magnitude as On the Job Training), along with the odds ratios for both models, can be found in table 4.4 below.

Table 4.4

Odds ratios for select variables in Model 1 and Model 2

	Odds Ratios	
Variables	Legally Blind	Other Disabilities
Combined or Separate Agency	3.016	.231
Counseling Services	.737	1.352
Rehabilitation Technology Services	1.271	.235
Occupational Vocational Training	*	2.078
Job Readiness Training	1.347	*
Reader Services	.568	*
On the Job Training	7.491	2.694
College Training	3.533	2.176
Job Search Assistance	3.189	1.871
Job Placement Assistance	6.881	3.279
Maintenance	2.533	1.850

* The variable was removed from the model by the backwards stepwise procedure.

The two models differed in overall predictive strength as well as in individual variables. The Nagelkerke pseudo R^2 for Model 2 was .235, indicating that the model for clients with other disabilities accounted for less than 24% of the variance in the data. The Nagelkerke pseudo R^2 for Model 1 was .586, suggesting that about 59% of the variance in the data for clients who are legally blind was accounted for by the model. Another method of assessing predictive strength is percent correct classification. Model 1 correctly classified 85% of the clients who are legally blind. Model 2 had a better overall classification accuracy at 98.5%. However, Model 1's 85% correct classification represented a 17% increase in classification accuracy over the baseline. Model 2's 98.5% was exactly the same classification accuracy as the baseline percentage (due to the ease of correctly classifying based on sheer frequency of competitive closures in clients with other disabilities.) Overall, there is some evidence to suggest that Model 1 is the better model in terms of predictive strength because it accounted for more variance and improved the ability to predict whether a case will be closed in competitive employment.

Follow-up Frequency Analysis on Service Variables

With a few exceptions, the service variables that predicted competitive employment in Model 1 tended to also predict competitive employment in Model 2. Moreover, the receipt of some service variables indicated a stronger likelihood of competitive employment for clients who are legally blind than for clients with other disabilities. Yet, clients who are legally blind continue to show lower rates of competitive employment than other clients as established historically and in the analysis for Research Question 1. This discrepancy prompted an additional frequency analysis of

the service receipt for clients who are legally blind and clients with other disabilities. The percentage of each group who received each service was tabulated. Only those clients closed in either competitive or non-competitive employment (as defined for the logistic regression analyses) were used in the frequency analysis.

Variables Associated with an Increased Likelihood of Competitive Employment for Clients who are Legally Blind

Several service variables that yielded higher likelihoods of achieving competitive employment for both groups had striking results when examining the frequency of service delivery. Job Placement Services, Job Search Assistance, On-the-Job Supports, College Training, Maintenance, and Job Readiness were all indicative of a greater likelihood of competitive employment for clients who are legally blind. Nevertheless, smaller proportions of clients who are legally blind received these services when compared to clients with other disabilities. For clients who are blind and received Job Placement Services, a competitive job outcome was 6.8 times as likely as those who did not receive Job Placement. However, only 22.6% or 1,700 of those clients received the service. Over 40% (n = 80,418) of clients with other disabilities received Job Placement Services and were 3.3 times as likely to achieve work in an integrated setting. Similarly, Job Search Assistance was found to be predictive of competitive outcomes in both models but only 20% or 1,503 clients who are legally blind received this service. Approximately one-third (31.3% or 61, 978) of clients with other disabilities received Job Search Assistance. On-the-Job Supports were only provided to 13.2% or 997 clients who are legally blind, and those clients were 4.4 times as likely to achieve competitive work.

For clients with other disabilities, 21.8% (n = 43,148) of the clients received On-the-Job Supports. College Training was a strong predictor of competitive employment in both models. However, 13.8% (n = 27,388) of clients with other disabilities received the services and only 11.2% (n = 845) of clients who are blind received college training.

Although clients in both groups who received Maintenance Services were more likely to achieve integrated jobs, a small percentage actually received the services - 18% (or 35,600) of clients with other disabilities and 16.8% or 1,268 of clients who are legally blind. Job Readiness Training was removed from Model 2, but Job Readiness was included in Model 1 and indicated that clients who are legally blind and received job readiness training were more likely to obtain competitive jobs. Fourteen percent (n = 28,248) of clients with other disabilities and 12.3% (n = 926) of clients who are legally blind received the training. See figure 4.1 for a graphical display of the respective proportions of the two disability groups who received these services.

Other Services Associated with Competitive Employment

A few service variables indicated increased likelihood of competitive employment and were provided to similar proportions of each disability group. For example, Transportation Services were provided for 31.8% or 2,396 clients who are legally blind and for 31.6% or 62,466 clients with other disabilities. Both Model 1 and Model 2 indicated an increase in the likelihood that a client who received Transportation Services would be closed competitively.

Although clients who are blind and received On-the-Job Training were 7.5 times as likely to obtain competitive work, a mere 6.9% or only 523 of those clients received

the training. Similarly, a small minority of clients with other disabilities (3.9% or 7,634 clients) received the training. In Model 2, clients who received On-the-Job Training were 2.7 times as likely to get a competitive job as clients who did not receive On-the-Job Training.

Clients who are legally blind received one service associated with competitive employment more frequently than other clients. A majority (59.2%; n = 4,456) of clients with blindness received Rehabilitation Technology Services and were more likely to obtain a competitive job. A minority (10.2%; n = 20,269) of clients with other disabilities received the same service; they were less likely to achieve a competitive outcome. Rehabilitation Technology is the use of technologies to meet the needs of clients in overcoming barriers to education, employment, independent living, rehabilitation, transportation, and recreation. Technologies may include engineering services, assistive devices, and personal assistive services. Due to the definition of this service, it is feasible to note that only clients with severe disabilities (e.g. blindness) are provided Rehabilitation Technology services.

Variables Associated with a Decreased Likelihood of Competitive Employment for Clients who are Legally Blind

Clients who are legally blind tended to receive services associated with non-competitive employment in greater proportions than clients with other disabilities. Augmentative Skills Training was the most dramatic exemplar of that tendency. In both models, Augmentative Skills Training yielded odds ratios that denoted lowered odds of achieving competitive employment. Interestingly, 45% or 3,388 clients who are legally

blind received the training while only 2.4% or 4,654 clients with other disabilities did so. Since the nature of Augmentative Skills Training is focused on disability related needs that includes orientation and mobility, rehabilitation teaching, Braille, speech reading, sign language, and cognitive retraining, it can be acknowledged that this type of training serves those with more severe disabilities such as blindness, developmental disabilities, and deafness. This may explain the larger number of clients who are blind who received the service as compared to clients with other disabilities. However, it does not explain how this type of training yields a likelihood of noncompetitive outcomes for clients who are blind.

Assessment Services were received by 77.9% (n = 5,863) of clients who are legally blind while 64.3% (n = 127,179) of the clients with other disabilities received the same service. In both group models (Model 1 and Model 2), receiving Assessment Services pointed to a decrease in the likelihood of obtaining competitive outcomes. Reader Services were provided to only .2% or 435 clients with other disabilities, and the variable was removed by the SPSS stepwise procedure in Model 2. However, Reader Services were received by 4% (n = 298) of the legally blind group and had a lessened likelihood of achieving competitive employment for clients who are legally blind.

Clients with other disabilities were *more* likely to achieve competitive employment if they received Counseling Services, but clients who are legally blind and received Counseling Services were *less* likely to achieve the same outcome. Though clients who are legally blind were less likely to obtain competitive employment if they received counseling, a greater proportion of them (74.1%, n = 5,575) received counseling than clients with other disabilities (67.2%, n = 133,070).

Only 1.8% (or 134) of clients who are legally blind and 1.7% (or 3,309) of clients with other disabilities received Remedial Academic Training. These clients were less likely to achieve a competitive outcome as illustrated in both models. Please reference Figure 4.2 for a graphical display of the proportions of clients receiving select services associated with decreased competitive employment likelihood for clients who are legally blind.

Service Variable Removed from Model 1

Occupational/Vocational Training was removed from the model for clients who are legally blind for statistical reasons and therefore was not included in the above description of proportions of clients who received various services. However, it is worth noting that a slightly smaller proportion of clients who are legally blind received Occupational/Vocational Training when compared to other clients. About 27,000 (13.7% of) clients with other disabilities received Occupational/Vocational Training, and 12.4% (or 930) of clients with blindness received the service. Model 2 indicated that clients with other disabilities who received this service were two times as likely to achieve competitive outcomes.

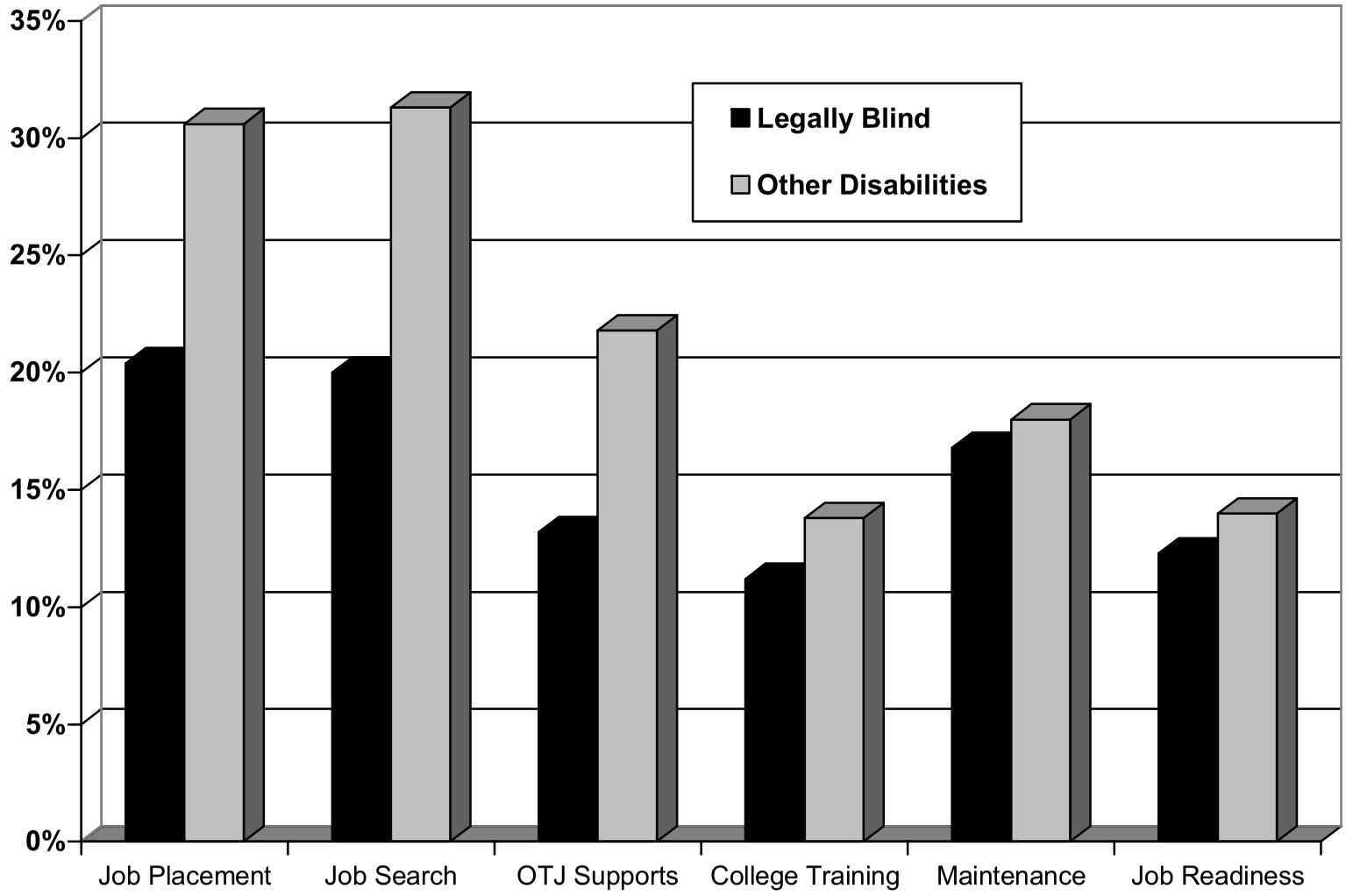

Figure 4.1: Proportion of Clients who Received Select Services Associated with Competitive Outcomes

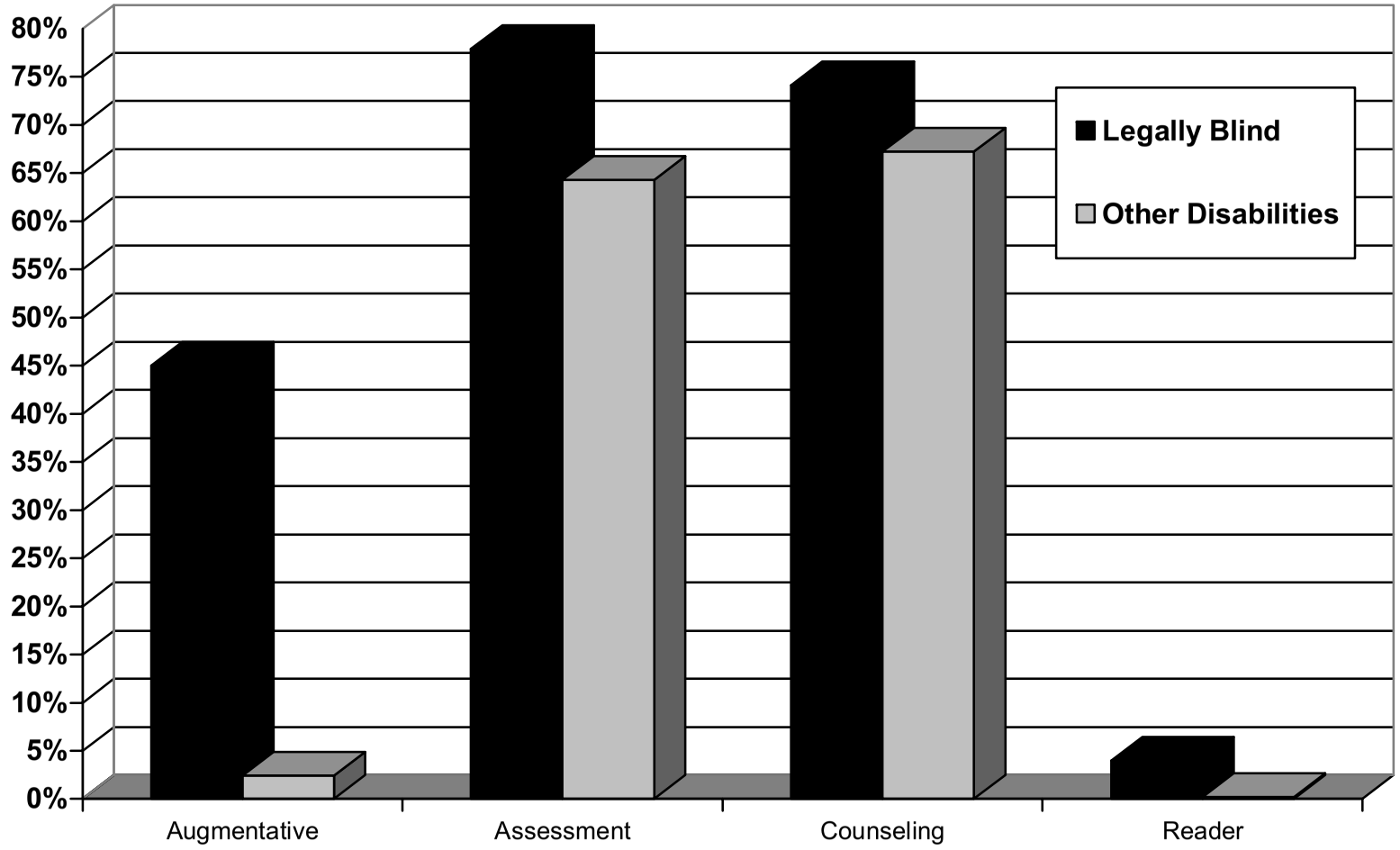

Figure 4.2: Proportion of Clients who Received Select Services Associated with Non-Competitive Outcomes for Clients who are Legally Blind

CHAPTER V

CONCLUSIONS

The results from the analyses of the FY 2007 RSA 911 data are timely and offer new insights into the effectiveness of the federal/state vocational rehabilitation program – namely the program's goal of assisting people with disabilities to achieve successful competitive employment. As illustrated in the literature and further examined in this study, the majority of VR clients have been successful in achieving competitive employment in recent years. However, one disability group, clients who are legally blind, have traditionally and currently lag behind in obtaining similar proportions of competitive employment outcomes as their counterparts in the VR system. By using a comprehensive set of variables available in the newest RSA 911 (2007) data, research questions have been explored leading to possible explanations concerning the discrepancy between outcomes for clients who are legally blind and clients with other disabilities.

The literature review established, and the frequency analysis of this study confirmed, that clients who are legally blind are far less likely to obtain a competitive employment outcome in the VR program. Although the most recent data reveals that 62.4% of clients who are legally blind attained a competitive outcome in 2007, 96.6% of clients with other disabilities achieved the same outcome. The large discrepancy in

achieving work in an integrated setting has existed for decades in the federal/state VR program and persists today. The aim of this research is to provide VR professionals with models containing information that will contribute to better serving clients who are legally blind in achieving competitive employment outcomes analogous to those achieved by clients with other disabilities.

There are several general findings of this research, any of which is beneficial to the vocational rehabilitation of clients who are legally blind. First, the model that predicts competitive closure for clients who are blind is generally similar to the model that predicts competitive closure for clients with other disabilities. The main similarity between the two models is that they have similar variable make-ups; in other words, most of the variables that predict competitive outcomes for clients with other disabilities also predict competitive outcomes for clients who are legally blind. However, upon closer examination in a follow-up frequency analysis, the rates with which clients who are legally blind receive the services indicative of higher probabilities in competitive employment is lower when compared to clients with other disabilities. Second, the variables that are predictive of competitive employment in both models have differences in the odds ratios or likelihood and in predictive strength.

Models' Implications

As illustrated in Table 4.4, the two predictive models are similar in variable make-up; the variables that predict competitive employment outcomes for clients who are legally blind are similar to those of clients with other disabilities with some exceptions. Some variables that differ are service-related; the general implication from this finding is

that clients who are legally blind may not benefit by receiving exactly the same group of services as clients with other disabilities. For example, all clients who are legally blind may not benefit from services that are only associated with competitive employment outcomes for clients with other disabilities (e.g., Counseling & Guidance Services) even if these services are delivered in greater quantities to clients who are blind. Another implication of the findings is that there are variables that *should* receive greater emphasis for clients who are legally blind in order to increase their rates of competitive employment outcomes. Some examples of types of services shown to increase the odds of competitive employment include Job Placement assistance, On-the-Job training, Job Search assistance, On-the-Job supports, and College/University training.

Personal Characteristics Variables

Although personal characteristic variables in the models are not amenable to change for clients, their role in professional practice considerations can be changed. Both models found females to be less likely of achieving competitive employment than their male counterparts. Additionally, clients who had no presence of a secondary disability and were African American, Hispanic ethnicity, or multiple ethnicities all had higher probabilities of attaining competitive jobs when compared to White clients. For clients in both disability groups that obtained special education certificates and/or higher education degrees, competitive employment outcomes were more likely than for clients with a high school degree only. These characteristics tell us what a typical VR client who is placed in an integrated work setting may look like. It also tells us that VR services may be less effective for those clients not meeting that *typical* description.

Types of Services Variables

Several service-oriented variables (e.g., Job Placement services, On the Job Training, and On the Job Supports) tended to have greater odds ratios for clients who are legally blind and hence indicated that clients who are legally blind, when compared to other clients, had even greater likelihoods of being closed in competitive employment if they received the particular service. This result suggests that services that yield competitive outcomes for clients with disabilities other than blindness should produce at least a corresponding rate of competitive outcomes in clients who are legally blind. However, as frequently documented, the rates of competitive closure are in fact much lower for clients who are legally blind.

If service variables such as Job Placement Services are so highly predictive of competitive employment for clients who are legally blind, why does a lower rate of competitive employment outcomes persist? One possible implication of this finding is that analysis of the RSA 911 data may not be capable of revealing critical factors that explain the competitive closure rate discrepancy between clients who are legally blind and clients with other disabilities. Employment barriers for people who are blind such as social and employer negative attitudes, self-efficacy, and accessibility issues can all be contributing factors to a lower employment rate of people who are legally blind (Crudden, McBroom, Skinner, & Moore, 1998; Crudden, Sansing, & Butler, 2005). The lower competitive employment rate, coupled with the existing rate discrepancy between the legally blind group and other disabilities group, points to a direct and immediate need for more comprehensive research into factors that are not measured for the RSA 911

database and are essential to understanding why clients who are legally blind seem to be at a disadvantage with regards to obtaining competitive employment.

A second possible implication is that service variables that are highly predictive of competitive employment in both clients who are legally blind and clients with other disabilities are not being provided at the same rates to both groups. A follow-up frequency analysis of the FY 2007 RSA 911 data revealed that lower proportions of clients who are legally blind received College or University Training, Job Readiness Training, Job Search Assistance, Job Placement Assistance, On-the-Job Supports, and Maintenance services than did clients with other disabilities. The odds ratios obtained suggest that these services can be just as, if not more, effective in helping clients who are legally blind achieve competitive employment; however, clients who are legally blind simply are not receiving these services as frequently as clients with other disabilities.

Differences in Predictive Strength

The two models do have somewhat different predictive strengths in that the model for clients who are legally blind accounts for more variance in the data and improves one's ability to predict whether clients will be closed in competitive or non-competitive employment. Specifically, the predictive ability of the model for the legally blind group indicated that about 59% of the variance could be explained as opposed to only about 24% of the variance explained by the model for clients with other disabilities. This means that the model for clients who are legally blind, while predictive of competitive closure, consists of stronger predictors in likelihood outcome variables. An implication of this result is that VR professionals should emphasize the variables in these models

when developing and implementing services for clients who are legally blind. For example, types of services such as Job Placement Assistance, College Training, On-The-Job Training, Job Readiness services, Job Search services, On-The-Job Supports, Transportation, and Maintenance services, because of their predictive outcomes for competitive employment, should be implemented into the client's IPE.

Services that Predict a Decreased Likelihood of Competitive Employment

In both group models, some services related to basic daily activities were associated with decreased likelihoods of competitive employment. The services that predicted lower probabilities of competitive employment included Augmentative Skills Training, Reader services (for clients who are legally blind), and Rehabilitation Technology (for clients with other disabilities) and may need to be reevaluated for their use in the federal/state VR program as employment training services. Independent living programs utilize similar skills training, and perhaps this is where such services should be provided exclusively. Homemaker type services may be a more appropriate fit in the independent living program before a client makes an informed choice on career objectives (Guthrie, Crist, Sienickl, & Walls; 1981). The majority of competitive employment likelihood predictors appeared to emphasize actual job training and counselor involvement in job placement and follow-up (retention) activities (e.g. Job Placement, On-The-Job Training, On-The-Job Supports, College Training).

A Caveat Regarding Services Associated with Non-Competitive Employment

While there was a number of service variables associated with a lowered likelihood of obtaining competitive employment, none of the odds ratios should be

interpreted as a need to eradicate services. Certain services (including Augmentative Skills training, Counseling Services, Remedial Academic Training, and Reader Services) are more likely to be delivered to clients who are particularly challenged with regards to ability to obtain competitive employment. Therefore, the service itself does not necessarily contribute to non-competitive closures. The odds of competitive closure are simply less for those who need the service when compared to those who do not need the service. One can correctly make the following statement based on the results of this study: When it comes to obtaining competitive employment, the service variables with odds ratios less than one clearly did not place the clients who received them at the same level as clients who did not need them.

Use of the Models in Developing IPEs

Overall, the models appear to emphasize predictors that describe services aimed at job preparation and job-related performance. This seems on the surface to be wholly appropriate; however, the frequency with which clients who are legally blind receive these services appears lacking. Instead, clients who are legally blind receive a greater proportion of services intended to improve basic living functions (e.g., augmentative skills training, counseling). Beginning with a policy directive aimed at informed choice by RSA in 1997, a more comprehensive approach for VR clients was stressed. Concurring with the directive, Rumrill and Roessler (1999) described the new emphasis on career development to necessitate better employment outcomes for people with disabilities - not simply one's preparation for one job but for the client's entire working life. Career development is contrary to merely designing and/or planning strategies for

client case closure traditionally utilized in state VR agencies. The traditional thinking may be a factor in contributing to the higher numbers of noncompetitive closure among clients who are legally blind. Instead of case closure being the ultimate outcome for clients, an emphasis on personal career development is more reflective of societal changes in the workforce and ultimately, better preparation for clients working in the competitive labor market (Rumrill & Roessler, 1999).

Assessment services currently provided by VR counselors would be helpful in designing an informed choice IPE and a better fit through personal career development for clients. However, it is interesting that the Assessment services variable proved to be associated with less likelihood of achieving competitive employment for both models. This type of service is typically one that dictates the nature of the IPE for clients. If assessment services are truly evaluative, clients who need more comprehensive or even remedial training included in their IPE would be identified from the onset of service delivery. Neglecting to apply appropriate assessment measures, allowing assessment attempts to be influenced by rehabilitation counselor routines, and/or relying on stereotypes when developing IPEs can result in fewer competitive employment outcomes for clients who are legally blind.

VR counselors can help alleviate the disparity of outcomes between clients who are legally blind and clients with other types of disabilities by taking a more comprehensive approach. When developing IPEs for clients who are legally blind, rehabilitation counselors can (a) consider the variables associated with greater likelihoods of competitive outcome found in Model 1, and (b) tailor the IPE according to individual needs, strengths, and informed choices. Services such as Job Placement, Job Search

Assistance, Job Readiness Training, and On-the-Job Supports can make clients better prepared to find a job, get a job, and keep the job. However, these services should be applied in order to facilitate client life choices rather than to simply satisfy immediate case closure goals. In such a manner, increasing the frequency of services associated with greater likelihoods of competitive closure may raise competitive closures for clients who are legally blind, as well as further the mandate of informed choice and empower the individual client.

On the other hand, one could argue that informed choice gives the VR client the right to choose any employment outcome, including non-competitive outcomes such as homemaker and unpaid family worker. If this is the case, and the client has been offered information upon which to guide his/her vocational decision, then the mandate of informed choice has been rendered. It could be that more clients who are blind simply choose to pursue a noncompetitive job. However, in the case of homemaker closures, the literature has shown that women many times are closed in homemaker closure despite having alternative goals in their IPE, perhaps as a result of counselor bias (Danek & Lawrence, 1985; Packer, 1983). It is ultimately the responsibility of the VR counselor to provide the client with information on vocational goals so an informed choice can be made regardless of the outcome.

Limitations of the Study

Despite its size, the RSA-911 database is not comprehensive enough to include every variable that has an impact on likelihood of competitive employment. For example, the database does not offer sufficient detail to explain why the service variable

Occupational Vocational Training was not a significant predictor of employment outcome for clients who are legally blind. If the database contained additional variables such as the exact implementation of the training and quantity of the training, the difference in predictive ability for the Occupational Vocational Training variable noted between the two models could potentially be explained. The circumstances under which the variable can predict competitive employment could be delineated. The same can be said for Augmentative Skills Training and Rehabilitation Technology Services. Both of these variables were associated with a lowered likelihood of competitive employment for at least one of the groups. The RSA 911 database is not sufficient to explain why these (and any variable with odds ratios less than one) indicated greater chances of being closed in non-competitive employment. Augmentative Skills Training and Rehabilitation Technology Services can each be implemented in highly variable ways in order to meet specific needs for different disabilities. For example, Braille training, sign language training, orientation and mobility training, and training to use wheelchairs are each different implementations of Augmentative Skills Training. Additional data such as implementation type, quantity of training, and mastery of skills and/or technology use could allow researchers to pinpoint the circumstances in which the services are most effective and least effective.

Psychological variables such as self-efficacy and cognitive ability, as well as variables such as social attitudes, are beyond the scope of the data utilized in this project. Furthermore, the RSA 911 database does not document the career goals chosen by clients when developing IPEs. Knowing the career choices of clients would enable clearer interpretations of the impacts of the service variables. For example, one reason why

some variables were negatively associated with competitive employment could be that services were poorly matched to clients' chosen career objectives. If that indeed were the case, a service that would otherwise be beneficial for achieving competitive employment might be rendered ineffective by incorrect implementation. However, one cannot ascertain the effectiveness of that service based on what is currently in the database. Therefore, the results of the study only form a piece of the total knowledge of the problem. The results indicate the necessity of exploring other methods.

Another limitation is that many of the variables that predict competitive employment are personal characteristics that do not change (e.g., race or gender). While these variables do not change, it is important to know how they interact with variables that are amenable to change. This limitation can be addressed by including demographic variables as control variables, similar to the method employed in Warren, Giesen, and Cavenaugh (2004).

Future Research

More research in other areas (e.g. social attitudes of employers and counselors, self-efficacy and self-determination of clients) should be encouraged in order to determine additional variables predictive of competitive employment. Because of the current disproportionate number of females closed in noncompetitive employment, it is important that research examines the relationship of potential counselor stereotyping and bias when working with female clients (see Packer, 1983; Danek, & Lawrence, 1985; Thurer, 1982). Since the studies examining gender stereotyping particularly for clients who are blind are somewhat dated, new investigations into the issue is needed. Despite

the fact that women comprise the majority of the current work force in the United States, women with disabilities have lower probabilities of achieving competitive employment when compared to men. More emphasis on career development for women with disabilities is suggested in the literature (e.g. McLennan, 1999) and obviously, this emphasis has not been met. The reality is that consistently lower numbers of females with all disability types are achieving competitive employment even today as illustrated in this study's findings. Clearly, research concerned with the impact of informed choice would offer some insight into the gender discrepancies of employment outcomes.

In addition, studies that explore the impact of societal attitudes including employer attitudes toward people with blindness as an employment barrier need further investigation (see Crudden, Sansing, & Butler, 2005). The three service variables found to predict the highest probabilities of competitive employment for clients who are blind were Job Placement (6.9 as likely), On-The-Job training (7.5 times as likely), and On-The-Job Supports (4.4 times as likely). This leads one to believe that the transition to work, placement, and ongoing supports of a client who is legally blind in an integrated setting may influence employers' attitudes toward hiring employees who are blind.

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APPENDIX A

U.S. STATE VR AGENCY STRUCTURE BREAKDOWN

Table A.1

States with Separate Agencies for the Blind, with Frequencies of Competitive Closures

State	Frequency
Arkansas	347
Connecticut	127
Delaware	13
Florida	710
Idaho	91
Iowa	124
Kentucky	377
Maine	184
Massachusetts	191
Michigan	285
Minnesota	81
Missouri	256
Nebraska	57
New Jersey	303
New Mexico	42
New York	665
North Carolina	700
Oregon	113
South Carolina	301
South Dakota	100
Texas	1385
Vermont	101
Virginia	197
Washington	172

Table A.2

Frequencies of Competitive Closures by General/Combined Agency and Separate Agency for the Blind

	Frequency	Percent
General/Combined Agency	198527	96.6
Separate Agency for Blind	6922	3.4
Total	205449	100.0

APPENDIX B

IRB APPROVAL LETTERS

Mississippi State University

September 12, 2006

Paula Warren
128 Cooper Lane
Starkville, MS 39759

RE: IRB Study #06-203: Employment Outcomes of VR Clients who are Legally Blind: A comparison of Models that Predict Competitive Closures

Dear Ms. Warren:

The above referenced project was reviewed and approved via administrative review on 9/12/2006 in accordance with 45 CFR 46.101(b)(4). Continuing review is not necessary for this project. However, any modification to the project must be reviewed and approved by the IRB prior to implementation. Any failure to adhere to the approved protocol could result in suspension or termination of your project. The IRB reserves the right, at anytime during the project period, to observe you and the additional researchers on this project.

Please refer to your IRB number (#06-203) when contacting our office regarding this application.

Thank you for your cooperation and good luck to you in conducting this research project. If you have questions or concerns, please contact Christine Williams at cwilliams@research.msstate.edu or 325-5220.

Sincerely,

R. Dwight Hare
Chairman

cc: Charles Palmer

Office of Regulatory Compliance
P. O. Box 6223 • 8A Morgan Street • Mailstop 9563 • Mississippi State, MS 39762 • (662) 325-3294 • FAX (662) 325-8776

September 23, 2008

Paula Warren
1198 Muirfield Drive
Starkville, MS 39759

RE: IRB Study #06-203: Employment Outcomes of VR Clients who are Legally Blind: A comparison of Models that Predict Competitive Closures

Dear Ms. Warren:

The procedural modification you submitted for the above referenced project was reviewed and approved via administrative review on 9/23/2008 in accordance with 45 CFR 46.101(b)(4). You may implement the changes effective immediately.

Please refer to your IRB number (#06-203) when contacting our office regarding this application.

Thank you for your cooperation and good luck to you in conducting this research project. If you have questions or concerns, please contact Christine Williams at cwilliams@research.msstate.edu or call 662-325-5220.

Sincerely,

[For use with electronic submissions]

Christine Williams
IRB Compliance Administrator

cc: Glen Hendren (for Charles Palmer)

Office for Regulatory Compliance
P. O. Box 6223 • 70 Morgan Avenue • Mailstop 9563 • Mississippi State, MS 39762 • (662) 325-3294 • FAX (662) 325-8776

APPENDIX C

DEFINITIONS OF SERVICE TYPES

RSA DEFINITIONS FOR VR SERVICES

1. **Assessment Services** - include activities performed to determine eligibility, priority, nature, and scope of VR services assigned to a case

2. **Vocational Rehabilitation Counseling and Guidance Services** - therapeutic counseling for a client such as personal adjustment, medical, family, or social issues, and vocational counseling

3. **College Training** - full or part time academic training beyond the high school level of education leading to a degree

4. **Occupational/Vocational Training** - provided by a business, community college, or other technical institution to prepare students for a specific occupation - not leading to a degree or certificate

5. **On-the-Job Training** - specific job skills training by a prospective employer

6. **Basic Academic Remedial or Literacy Training** - academic skills needed to function on the job

7. **Job Readiness Training** - preparing a client for the workplace. Examples of job readiness training are appropriate behaviors of dress, timeliness, grooming, and productivity.

8. **Augmentative Skills Training** - includes orientation and mobility, rehabilitation teaching, Braille, speech reading, sign language, and cognitive retraining

9. **Job Search Assistance** - refers to helping a client search for an appropriate job. This assistance can include helping with resume preparation, interviewing skills, identifying appropriate job opportunities, and making contacts (networking) on the client's behalf.

10. **Job Placement Assistance** - referral to a specific job which results in a job interview for the client

11. **On-the-Job Supports** - applies to the client who has been placed in a job and needs assistance in retaining the job. Examples of on-the-job supports are job coaching and job retention services.

12. **Transportation Services** - include training in the use of public transportation and assistance with travel expenses

13. **Maintenance Services** - monetary support for expenses such as food, shelter, and clothing that are necessitated in assisting the client obtain an employment outcome

14. **Rehabilitation Technology** - the use of technologies to meet the needs of clients in overcoming barriers to education, employment, independent living, rehabilitation, transportation, and recreation. Technologies may include engineering services, assistive devices, and personal assistive services.

15. **Reader Services** - for clients who cannot read print or printed media because of blindness or other disability. Reader services include reading aloud and transcription of printed information into Braille or sound recordings. These services are generally for individuals who are blind or deaf/blind but may also

include individuals who cannot read print because of serious neurological disorders, specific learning disabilities, or other physical or mental impairments.