THE IMPACT OF STATE-FEDERAL AGENCY STRUCTURE ON SERVICE DELIVERY AND OUTCOMES FOR INDIVIDUALS WITH VISUAL IMPAIRMENTS

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

By

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ABSTRACT

The purpose of this study was to examine service delivery and outcomes for individuals with visual impairments. The study sought to examine whether differences existed in service delivery and outcomes based on agency structure within the state-federal vocational rehabilitation system. Within the state-federal vocational rehabilitation system there are two major agency structures that serve as service delivery vehicles for persons with visual impairments. There is a combined agency structure, providing vocational rehabilitation services to individuals of all disability types, including those with visual impairments. The other major service delivery system is the separate/blind agency structure. This system provides vocational rehabilitation services to individuals who have visual impairments. This ex-post facto study utilized national data from the closure records of consumers whose cases were closed from the state-federal vocational rehabilitation system in federal fiscal year 2002.
A multivariate analysis of variance (MANOVA) was selected for evaluating the relationship between agency type and variables such as weekly earnings, hours worked, number of types services, case expenditures, and number of services. Furthermore, chi-square analysis was utilized to study any statistical differences in the type of services that individuals with visual impairments received from the agency structures providing vocational rehabilitation services to that population.

The MANOVA and chi-square results of the study showed that statistical differences existed between the agency structures in vocational rehabilitation outcomes and service delivery for individuals with visual impairments. MANOVA analysis found that consumers of combined agencies had higher means on all variables studied. Of note was that consumers of combined agencies had higher weekly earnings, $365.54 vs. $354.73, and more hours worked per week, 34.09 vs. 31.93. The chi-square analysis found statistical significance in virtually every type of service category with consumers of combined agencies receiving disproportionately more type of services than individuals with visual impairments working with separate agencies.
There is a dearth of empirical data in this area. This study’s aim is to add meaningful information to the body of research on this topic.
This dissertation is dedicated to my parents and greatest supporters, Barbara Paige Sabo and Carl John Sabo.

It is also dedicated to the memory of the greatest canine companion a person could have known.

Sam, long may you run.
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CHAPTER 1

INTRODUCTION

There is a growing trend towards consolidation in both government and private business. Attempting to do more with less has many governmental entities searching for more efficient means in which to operate. “Most legislators want to know what works when they vote on laws and appropriations pertaining to rehabilitation services for people with disabilities” (Kosciulek, 2004, p.173). The state-federal rehabilitation agencies are publicly funded entities facing economic challenges while competing for sparse public resources, (Bargal & Schmid, 1989; Hasenfeld, 1989; Adams & Perlmutter, 1995) and rehabilitation administrators must recognize that in terms of budgetary limitations it is not enough to have only a worthy cause (Tyer & Brabham, 1981). Public agencies continue to be faced with increasing demands for accountability (Burchard & Schaefer, 1992). As part of this challenge, providing quality services that lead to the most successful outcomes for the greatest number of disabled
individuals for the least amount of dollars has become a charge within the state/federal vocational rehabilitation (VR) system. One area to address in the continuing attempt of doing more with less is the organizational structure and the administrative costs that accompany it. Planning, evaluation, and program improvement are critical management functions in every organization. Government program accountability continues to increase, and improving the ability to judge the success of rehabilitation agencies and programs in achieving agreed-upon outcomes is currently a major reform strategy (Schalock, 2001). As such, demand for utilizing planning, research, and evaluation data in managing vocational rehabilitation services has increased (Struthers & Miller, 1981).

Within the state-federal vocational rehabilitation system each state has determining control of the organizational structure of the vocational rehabilitation agency structure with their state. Although there are state differences in structure, the overall state-federal vocational rehabilitation system is defined by federal regulations.

Currently 24 states have separate vocational rehabilitation agencies or commissions that provide
rehabilitation services exclusively for consumers who have visual impairments as their primary disability (Rehabilitation Services Administration, 2003a). Each separate agency that provides services to individuals with visual impairments has a separate state budget, spending authority, and plan for the provision of services. In each of the 24 states with a separate agency there is also a general vocational rehabilitation agency that is responsible for administering and providing services to the remainder of consumers with disabilities (Cavenaugh, Geisen, & Pierce, 2000). In each of the remaining 26 states, territories, and the District of Columbia, consumers who are visually impaired are served in a single, combined, vocational rehabilitation agency that provides vocational rehabilitation services to consumers with all disabilities. The states with combined agency structures have differing service delivery systems. Some states have an identifiable sub-unit responsible for the separate administration and delivery of services to individuals with visual impairments (e.g., Mississippi and Ohio), while some have no separate administration and no specialized service delivery staff for provision of services to those with visual impairments (Cavenaugh et al., 2000).
The question arises: should states have separate vocational rehabilitation agencies for persons who are blind or visually impaired (specialized agencies) or have a single general vocational rehabilitation agency that provides services to all consumers (Salkever & Domino, 1996)? Some have argued that separate specialized agencies as part of the state-federal vocational rehabilitation system may result in greater resources for people who are blind at the expense of broader programs for persons with disabilities in general (Berkowitz, 1987). Although visually impaired consumers have historically supported the separate agency model of service delivery, other disability groups have tended to favor a general or cross-disability integrative model. In context of the debate surrounding the reauthorization of the Rehabilitation Act of 1973 in 1997, the National Council of Disability (NCD) recommended that the Rehabilitation Services Administration (RSA) discontinue funding separate vocational rehabilitation programs for clients with visual impairments.

Over the years there has been considerable pressure to merge separate state agencies into general agencies for delivering services under the state-federal vocational rehabilitation program. Proponents
of general agencies believe it is a less costly approach and that the advantages of separate administrative structures for blind and visually impaired clients have to be demonstrated, not assumed (Kirchner, 1982, p. 31).

Purpose of the Study

The purpose of this study was to investigate the role that the type of state-federal vocational rehabilitation agency (separate vs. combined/general) has on service delivery and outcomes for individuals with visual impairments receiving vocational rehabilitation services within the state-federal vocational rehabilitation system.

The following sections addressed the significance of the problem, the problem statement, the variables considered, the need for the study, the objectives, research questions, and hypotheses. Other sections addressed the basic assumptions and the limitations of the study and provide a definition of terms.

Significance of the Problem

The civilian vocational rehabilitation program began with the passage of the Smith-Fess Act (P.L. 66-236) (also known as the Civilian Rehabilitation Act) in 1920. During the following decades state vocational rehabilitation
programs provided few, if any, services to persons who were visually impaired (Clunk, 1966; Koestler, 1976; Rives, 1966; Rubin & Roessler, 2001). For the most part visually impaired applicants were not considered candidates for vocational rehabilitation and were referred to separate state commissions and agencies serving only visually impaired persons. Since these commissions and agencies operated with limited budgets and no federal funding, individuals with significant visual impairments continued to receive minimal vocational services (Magers, 1969).

The first major piece of federal legislation to have a direct positive impact on individuals with visual impairments was the Randolph-Sheppard Act of 1936. This legislation directed individuals who were blind to operate vending stands on federal property (Benshoff & Janikowski, 2000; Martin, Jr. & Gandy, 1999; Rubin & Roessler, 2001).

In 1938 the Wagner-O’Day Act built on a portion of the Social Security Act of 1935 that committed the federal government to support efforts to develop and expand a market for products made by persons who are blind by instituting a requirement for the federal government to purchase certain products from workshops for the blind (Nelson, 1971). As a
result of this legislation, more persons who were blind were able to secure employment in these workshops.

The Randolph-Sheppard Act of 1936 and the Wagner-O’Day Act of 1938 helped provide expanded vocational opportunities for individuals who were visually impaired. An important component of these acts was job opportunities that were made available at the federal level for persons who were blind in administrative positions associated in the administration of these two acts. This created an increased awareness in the Civil Service system of the potential of employees with visual impairments (Risley & Hoehne, 1970).

In what is generally regarded as the most important legislation for individuals who are visually impaired, the Bardon-LaFollette Act was enacted in 1943. Often referred to as the “Magna Carta of the Blind” (Koestler, 1976, p.232) the Bardon-LaFollette Act provided the first federal support for consumers with visual impairments by giving financial support to the separate vocational rehabilitation agencies or state commissions serving persons who were blind, which had previously been set up under a state commissioner for the blind (Rubin & Roessler, 2001). From this point there was accelerated growth in vocational rehabilitation services to those who were blind; and an enormous increase in the
number of individuals who were blind who were rehabilitated followed. In the United States in 1936 two clients who were blind were vocationally rehabilitated through the state-federal vocational rehabilitation system, whereas by 1969, there were 8,884 individuals who were blind that were vocationally rehabilitated (Risley & Hoehne, 1970). The number of individuals with visual impairments rehabilitated status 26 in competitive employment outcomes increased to 11,492 in 2002 (RSA, 2005).

The lack of access to VR services to individuals with visual impairments in the early development of the state-federal VR system facilitated the separate agency delivery system. These separate commissions/agencies that provide VR services to individuals with visual impairments were eventually incorporated into the state-federal VR system with the Bardon-Lafollette Act of 1943. The question of the appropriateness of having a separate delivery system for one disability group continues to this day, as does the question of whether there are outcome benefits in serving persons with visual impairments through a separate VR service delivery entity.
Need for the Study

Chiang, Bossi, and Javitt (1992) estimated that in 1990, 1.1 million Americans of all age groups were legally blind. According to Baron (1991), 12 million persons in the United States have visual acuities (with conventional eyeglasses or contact lenses) of 20/50 to 20/200. The National Institute on Disability and Research (NIDRR) (1993, p.2) stated that "estimates of the number of people with visual impairments in the United States range from 6 to 11.4 million." NIDRR also stated that 60 percent of those with visual impairments also have additional disabilities. According to data from the U.S. Bureau of the Census (McNeil, 1993), in 1991-1992, 9,685,00 individuals (5 percent of the general population) were reported to have difficulty seeing words and letters. Of that number 1,590,00 (0.8 percent) were unable to see words or letters. Demographic data reveal some differences in presence of visual impairments by race. African Americans were more likely to have difficulty with vision (7.6 percent) than were Caucasian Americans (4.7 percent). The prevalence among people of Hispanic origin was 5.0 percent (McNeil, 1993).
With regard to people aged 40 years and older in 1990, Prevent Blindness America (1994) found a higher percentage of African Americans who were either blind or visually impaired (defined as having a best-corrected visual acuity of less than 20/40) than all other groups (Caucasians and others). The incidence of specific conditions among those aged 40 or older was also higher among certain groups. For example, both Mexican Americans and African Americans develop diabetes more frequently than do Caucasian Americans and therefore have a higher rate of diabetic retinopathy among African Americans and Hispanic Americans. African Americans also have a higher rate of glaucoma than do other groups.

There is a substantial need to have suitable vocational rehabilitation services available to individuals with visual impairments in the United States. The benefits of providing specialized vocational rehabilitation (VR) services to consumers who are visually impaired in separate agencies has generated debate throughout the history of the state-federal vocational rehabilitation program. Proponents of separate VR agencies (Augusto, 1997; Jernigan, 1996) have argued that the dissolution of separate agencies will result in the loss of specialized services and expertise that are
essential for visually impaired consumers to be more successful in their vocational rehabilitation. Opponents have contended that the separate service delivery system is duplicative and may be inequitable for persons with other disabilities (Berkowitz, 1987; NCD, 1997).

Although opposing disability groups and others have called for the end of federal vocational rehabilitation funding of separate agencies serving only those who are visually impaired, or at least questioned the need of separate delivery systems (Berkowitz, 1987; NCD, 1997), there have been few empirical studies addressing the effect of agency structure on vocational rehabilitation services and outcomes (Cavenaugh & Pierce, 1998). Some of the research conducted investigating service delivery, and outcomes for individuals with visual impairments, has shown that (1) the heterogeneity of administrative structures has complicated the process of making valid comparisons of rehabilitation programs (JWK, 1981; Talor, Maxson, Johnson, & Robertson, 1996); (2) the mixed findings from studies have not provided conclusive evidence that separate agencies are more effective or that general agencies are equally effective and (3) additional research is needed (Cavenaugh & Pierce, 1998).
There is a demonstrated lack of research in addressing the agency structure within the public VR system. This study will have the opportunity to add to the limited body of knowledge in this area.

Research Questions and Variables

The research questions to be answered by this study were:

*Question 1*: Is there a significant difference in the number of types of services provided by separate agencies vs. combined agencies to successfully rehabilitated (status 26) visually impaired consumers?

*Question 2*: Is there a significant difference in the number of types of services provided by separate agencies vs. combined agencies to unsuccessfully rehabilitated (status 28/30) visually impaired consumers?

*Question 3*: Is there a significant difference in the time a case is open by separate agencies vs. combined agencies providing services to successfully rehabilitated (status 26) visually impaired consumers?

*Question 4*: Is there a significant difference in the time a case is open by separate agencies vs. combined agencies providing services to unsuccessfully rehabilitated (status 28/30) visually impaired consumers?
Question 5: Is there a significant difference in case expenditures between separate vs. combined agencies providing services to successfully rehabilitated (status 26) visually impaired consumers?

Question 6: Is there a significant difference in case expenditures between separate vs. combined agencies providing services to unsuccessfully rehabilitated (closed 28/30) visually impaired consumers?

Question 7: Is there a significant difference in earnings per week for those successfully rehabilitated (status 26) by separate vs. combined agencies?

Question 8: Is there a significant difference in hours worked per week for those successfully rehabilitated (status 26) by separate agencies vs. combined agencies?

Question 9: Is there a significant difference in the types of services provided to those successfully rehabilitated (status 26) by separate agencies vs. combined agencies?

Question 10: Is there a significant difference in the types of services provided to those unsuccessfully rehabilitated (status 28) by separate agencies vs. combined agencies?
The independent variable for all of the research questions outlined in this study is the type of agency (separate vs. combined). The dependent variables are the number of types of services, time a case is open, case expenditures, earnings per week, hours worked per week, and types of services.

Hypotheses

\( H_0 \): There is no relationship between the type of agency (separate vs. combined) and the number of types of services provided to visually impaired consumers (successfully rehabilitated and unsuccessfully rehabilitated).

\( H_1 \): There is a relationship between the type of agency (separate vs. combined) and the number of types of services provided to visually impaired consumers (successfully rehabilitated and unsuccessfully rehabilitated).

\( H_0 \): There is no relationship between the type of agency (separate vs. combined) and the time a case is open providing services to visually impaired consumers (successfully rehabilitated and unsuccessfully rehabilitated).
**H2:** There is a relationship between the type of agency (separate vs. combined) and the time a case is open providing services to visually impaired consumers (successfully rehabilitated and unsuccessfully rehabilitated).

**H0:** There is no relationship between the type of agency (combined vs. separate) and expenditures provided to visually impaired consumers (successfully rehabilitated and unsuccessfully rehabilitated).

**H3:** There is a relationship between the type of agency (separate vs. combined) and expenditures provided to visually impaired consumers (successfully rehabilitated and unsuccessfully rehabilitated).

**H0:** There is no relationship between the type of agency (separate vs. combined) and the earnings at successful rehabilitation (status 26) for visually impaired consumers.

**H4:** There is a relationship between the type of agency (separate vs. combined) and the earnings at successful rehabilitation (status 26) for visually impaired consumers.
H0: There is no relationship between the type agency (separate vs. combined) and the hours worked at successful rehabilitation (status 26) for visually impaired consumers.

H5: There is a relationship between the type of agency (separate vs. combined) and the hours worked at successful rehabilitation (status 26) for visually impaired consumers.

H0: There is no relationship between the type of agency (separate vs. combined) and the types of services provided to visually impaired consumers (successfully rehabilitated and unsuccessfully rehabilitated).

H6: There is a relationship between the type of agency (separate vs. combined) and the types of services provided to visually impaired consumers (successfully rehabilitated and unsuccessfully rehabilitated).

Limitations of the Study

The limitations of this study will be the self-selected sample of individuals with visual impairments who voluntarily sought vocational rehabilitation services through the state-federal vocational rehabilitation system and not a random sample of individuals with visual impairments in the United States. This study will not address the potential differing skill and experience levels
of the vocational rehabilitation counselors throughout the
state-federal vocational rehabilitation system. The study
will not address the quality of the service providers
utilized by VR counselors, or the local employment
opportunities. This study will not be addressing
qualitative factors that individuals with visual impairments
may benefit from through involvement with the state-federal
vocational rehabilitation system, such as emotional
adjustment to disability, daily living skills, and overall
satisfaction with the vocational rehabilitation experience.

Methodologically this study will be limited by its use
of an ex post facto research design rather than a true
experimental design. When utilizing archival data there is
an unknown amount of miscoding (wrongly coded or omitted)
and that may have taken place during data input. This
unknown error factor is a limitation to this study. This
study utilizes data from one federal fiscal year, 2002, thus
the results of this study cannot be generalized to other
federal fiscal years.
Definition of Terms

The following terms were determined to need further clarification:

**Case expenditures:** All costs incurred on a VR case by the VR agency working with that case while the case is open.

**Combined agency:** A type of State-Federal vocational rehabilitation agency structure. This agency structure works with all individuals with disabilities, including those with visual impairments. A combined agency can have a specialized sub-unit working exclusively with individuals with visual impairments or have no specialization at all for those with visual impairments.

**General agency:** A type of State-Federal vocational rehabilitation agency structure. This type of agency primarily works with individuals of all disabilities, except those with visual impairments. However, there is a small percentage of individuals closed status 26 successfully rehabilitated served by general agencies who are coded as having a visual impairment. This agency structure is found in states that also have a separate (blind) agency.

**Hours worked at closure:** The number of hours worked per week at the time the VR case is closed status 26.
Individuals with significant/substantial visual impairment: An individual has enough functional and employment limitations that cause a substantial impediment to performing what would be essential elements of work and/or daily living skills.

Separate agency: A type of State-Federal vocational rehabilitation agency structure. This type of agency works exclusively in providing vocational rehabilitation services to individuals with visual impairments.

Status 26: When an individual has completed 90 days of successful employment and no additional VR services are necessary, his or her case is closed by the public VR agency, Status 26.

Status 28: When an individual fails to achieve employment after completing all or some of the VR services outlined on their Individualized Plan for Employment (IPE), his or her case is closed by the public VR agency, Status 28.

Status 30: An individual is found eligible for services and an Individualized Plan for Employment (IPE) is completed; however, no services from the IPE were initiated.
**Time a case is open:** The time from when an application is taken on a VR consumer until that case is closed either status 26 or status 28.

**Types of Services:** Assessment, Restoration (Diagnosis & Treatment of Impairment), Training (College or University), Training (Occupational or Vocational), Counseling and Guidance-Vocational, Job Search Assistance, Job Placement Assistance, Transportation, Maintenance, Rehabilitation Technology-Services and Devices.

**Weekly earnings:** At case closure, the consumer’s gross hourly earnings and the resulting weekly earnings are recorded.
CHAPTER 2

REVIEW OF THE LITERATURE

INTRODUCTION

The state-federal vocational rehabilitation (VR) system is one of the largest suppliers of services to persons with disabilities in the United States (Ficke, 1992). Each state has one or two agencies associated with the state-federal VR system that provide VR services to eligible persons with disabilities. One of the major objectives of the state-federal VR agencies is to enable persons with disabilities to achieve their highest vocational potential. Some of the potential benefits of participating in a VR program may include improved functioning, job training, education, placement in the competitive labor market, and increased earnings (Hill, 1989).

Shortly after the inception of the state-federal VR system, in 1921, the Rehabilitation Services Administration (RSA) has attempted to collect data on the individuals
served by this system (Gilmore, Schuster, Timmons, & Butterworth, 2000). From the early stages of data collection RSA has used various means of doing so. Currently, RSA uses the RSA-911 data reporting system. This system is one of the longest-standing national data collection efforts addressing employment of people with disabilities and serves as the basis for examining the employment activities of the RSA (Kierman, Gilmore, & Butterworth, 1997). Information on consumer demographics, the nature of services provided, and the outcomes realized are collected. This data can be utilized to determine the state-federal systems’ effectiveness in assisting individuals with disabilities to either enter the workforce or return to work. The collection effort not only allows for the analysis of trends in rehabilitation services for persons with disabilities, it also addresses the employment outcomes of individuals served within the state-federal public VR system.

The data necessary for the RSA-911 dataset is provided by the information gathered by VR counselors’ interaction, with VR consumers and VR personnel entering this information. Typically some information is recorded at the time a case is opened and then the information required at
case closure is recorded at time a case is closed, either successfully rehabilitated (status 26) or unsuccessfully (status 28/30). There are 43 data element categories that can produce over 100 data points for each consumer closed in the state-federal system. The RSA-911 currently follows federal guidelines established by the RSA (Rehabilitation Services Administration, 2003a) and is used in each state. RSA has developed edit specifications as a means to lessen inappropriate data input. At the time of data entry, 129 edit specification checks are utilized to promote consistency, and utility of RSA-911 data elements, as well as affording greater validity of measurements derived from these data elements (Rehabilitation Services Administration, 2003a).

The state-federal VR system is based on an economic model, assisting persons with disabilities in their securing or retaining an employment outcome. Services are provided not only to maximize functioning of persons with disabilities, but also to assist them in becoming independent from government benefits and participating as wage earningtaxpaying members of the United States economy (Berkowitz, 1979). The emphasis on economic indicators of success continues as the state-federal VR program is
justified legislatively as an excellent investment of taxpayers money: some estimates of benefit-to-cost ratios exceed $10 returned to the economy for $1 expended for vocational rehabilitation services (Bolton, 1987). With this is a somewhat surprising dearth of outcome studies utilizing the RSA-911 database with vocational rehabilitation counseling literature.

Vocational Rehabilitation Agency Structure

When addressing the vocational rehabilitation of individuals with visual impairments, there are two modes of service delivery within the public state-federal VR system in the United States. The options are combined agencies, providing VR services to individuals with all disability types, or separate agencies, specializing in providing vocational rehabilitation services to those individuals who are blind or visually impaired (Salkever & Domino, 1996). Specialists work with individuals whose primary disability is a substantial visual impairment; however, many individuals that specialists work with have substantial and sometimes multiple secondary disabilities. When working with individuals with substantial visual impairments, the specialist rehabilitation counselor must understand and then address the unique aspects posed by a visual disability.
Vocational rehabilitation services that must be considered are orientation and mobility, daily living skills training (food preparation, home care, personal care, home mechanics), and communication training (including the use of Braille, visual enhancement systems, auditory reading devices, and adaptive computer systems). Low vision services, specialized prescription eyeglasses, magnifiers, lighting, etc., may need to be explored with those individuals who have enough residual vision to receive benefits from these types of services (LaGrow, Ponchilla, & Ponchilla, 1998).

With these types of unique and detailed services the question arises, are individuals with visual impairments better served by separate (specialized) or combined/general vocational rehabilitation agencies? There have been very few studies that have broached this subject.

Research Addressing Agency Structure

Management Services Associates (MSA, 1975) conducted the first study addressing agency structure, also referred to as the Mallas study. This study was undertaken in response to growing concerns to those in the blindness field of the trend for state governments to create large, umbrella-type human services organizations for the provision
of generic rehabilitation services. This study concluded that “the strongest, most effective and most dynamic (in respect to impact of services on clients) systems are those in separate agency status” (MSA, 1975, p.22). This study has received criticism, for a lack of sufficient documentation of the research methodology and supporting data has caused many to question the validity of this study’s findings (JWK International, 1981; Kirchner, 1982).

In 1981 the Rehabilitation Services Administration (RSA) commissioned a study by JWK International that investigated differences among three agency structures on rehabilitation process and outcomes. The JWK study (1981) reported that consumers who were visually impaired were served better by counselors with specialized caseloads, regardless of the structure of the agency. It was found that type of administrative structure had only a slight relationship to outcomes, and there was no apparent evidence that one administrative structure was more cost-effective than another (JWK International, 1981).

Kirchner and Peterson (1982) utilizing the RSA database of all rehabilitation cases closed in 1971, found that separate agencies served a much higher percentage of consumers who were legally blind (54%) than did general
agencies (16%). It was found that both types of agencies accepted legally blind applicants at the same rate. However general agencies accepted persons classified as “other visually impaired” (OVI) at a slightly higher rate than did separate agencies. The percent of clients closed “rehabilitated” was higher for separate agencies; however, the percent of these closures that were in competitive employment was higher for general agencies. The percent of rehabilitants employed one year after case closure was slightly higher for those served by general agencies. The study found that minority applicants were accepted at a higher rate by separate (80%) than by general agencies (60%) across all visual statuses. It was found that OVI white applicants were accepted at a somewhat lower rate by separate than by general agencies (55% vs. 69%) (Kirchner & Peterson, 1982).

As with the JWK study, the results of the Kirchner and Peterson study were somewhat mixed, with no sharp or consistent patterns of differences between the two agency structures. However this study noted that consumers with visual impairments of separate agencies tended to be more socially disadvantaged (Kirchner & Peterson, 1982).
The 1997 the National Accreditation Council for Agencies Serving the Blind and Visually Handicapped (NAC) published the results of its study of the 1994 RSA database comparing the rehabilitation outcomes served in separate and general agencies. The NAC study (1997) showed separate agencies reported a higher rate of competitive closures with a lower rate homemaker closures. The study also found separate agencies had higher average weekly earnings for closures than did the general agencies. The average cost of services was $600 more for closed cases in separate agencies, although consumers spent about the same amount of time in their vocational rehabilitation programs in both types of agencies.

Cavenaugh et al. (2000) reported that consumers of separate agencies had different demographic and disability characteristics than those of general agencies. A higher proportion of applicants of separate agencies had more severe vision loss (52.2% vs. 42.2% were legally blind). It was reported that more were female (56.1% vs. 50.4%), were nonwhite (22.1% vs. 20.0%), were of Hispanic origin (12.2% vs. 5.4%), had secondary disabilities (48.6% vs. 37.3%), received some form of public assistance (13.8% vs. 12.4%), received Supplemental Security Income (SSI) or Social
Security Disability Insurance (SSDI) (39.3% versus 29.8%), had a lower level of education (M=10.4 years versus 11.2 years), and were older (M=46.4 years versus 42.8 years). From these results Cavenaugh et al. (2000) stated that “consumers of separate agencies were more socially and economically disadvantaged than were the consumers of general agencies” (p.138).

Cavenaugh et al. (2000) reported that consumers with visual impairments received more services from separate agencies (4.2 vs. 3.8) at a higher average cost per consumer ($3,597 vs. $2,241). Of the total number of legally blind consumers who applied for services, the separate agencies reported a higher percentage of competitive employment, sheltered employment, self-employment, and Business Enterprise Program closures, and a lower percentage of homemaker and unpaid family worker closures. The percentage of those classified as visually impaired who applied for services were closed at a lower rate by separate agencies (45.6% vs. 54.5%), as with those designated with some vision loss (52.2% vs. 78.1%).

The study concluded that separate agencies serve a higher percentage of consumers with socio-demographic characteristics associated with lower rates of participation
in the labor force. It found that separate agencies serve a higher percentage of consumers with the most severe visual impairments (those who are legally blind) (Cavenaugh et al., 2000).

However, Capella (2001) found that there were no differences in weekly earnings of consumers with visual impairments based on the type of agency that served them. It was found that there were no significant interactions between agency type and the other independent variables addressed. Capella (2001) indicated that the effect of a client’s age, education, case expenditures, number of services received, and the months a case was open on earnings was the same regardless of which type of agency provided services.

Summary

This chapter has presented a review of the data collection efforts by the state-federal system. The chapter also offered a review of vocational rehabilitation agency structure and research addressing agency structure within the state-federal VR system. Chapter III provides a description of the methodology that will be utilized in this study.
CHAPTER 3

METHODOLOGY

Introduction

The purpose of this study was to investigate the role that the type of state-federal vocational rehabilitation agency (separate vs. combined/general) has on service delivery and case outcomes for individuals with visual impairments receiving vocational rehabilitation services within the state-federal vocational rehabilitation system. Consumers in this study participated in vocational rehabilitation services through the state-federal vocational rehabilitation system during the federal fiscal year 2002 (FFY 02).

Research questions related to service outcomes for individuals with visual impairments and the different state-federal VR system agency structures were:

Research question 1: Is there a significant difference in the number of types of VR services provided by separate
agencies vs. combined agencies to successfully rehabilitated (status 26) visually impaired consumers?

Research question 2: Is there a significant difference in the number of types of services provided by separate agencies vs. combined agencies to unsuccessfully rehabilitated (status 28/30) visually impaired consumers?

Research question 3: Is there a significant difference in the time a case is open by separate agencies vs. combined agencies providing services to successfully rehabilitated (status 26) visually impaired consumers?

Research question 4: Is there a significant difference in the time a case is open by separate agencies vs. combined agencies providing services to unsuccessfully rehabilitated (status 28/30) visually impaired consumers?

Research question 5: Is there a significant difference in case expenditures between separate agencies vs. combined agencies providing services to successfully rehabilitated (status 26) visually impaired consumers?

Research question 6: Is there a significant difference in the case expenditures between separate vs. combined agencies providing services to unsuccessfully rehabilitated (status 28/30) visually impaired consumers?
Research question 7: Is there a significant difference in earnings per week for those successfully rehabilitated (status 26) by separate agencies vs. combined agencies?

Research question 8: Is there a significant difference in hours worked per week for those successfully rehabilitated (status 26) by separate agencies vs. combined agencies?

Research question 9: Is there a significant difference in the types of services provided to those successfully rehabilitated (status 26) by separate agencies vs. combined agencies?

Research question 10: Is there a significant difference in the types of services provided to those unsuccessfully rehabilitated (status 28/30) by separate agencies vs. combined agencies?

Structure of the Study

This investigation was categorized as an ex post facto research study, also referred to as causal-comparative research. The Latin phrase, ex post facto, literally means "after the fact" and refers to the nature of the treatment (independent variable) (Bolton & Parker, 1992). Ex post facto research as outlined by Vogt (1999) is

(a) Any investigation using existing data rather than
new data gathered specifically for the study. Causes will be studied after (post) they have had their effect. (b) Any non-experimental research design that takes place after the conditions to be studied have occurred (p. 105).

Ex post facto research allows researchers to investigate the possibility of a causal relationship among variables that cannot, as in experimental research, be manipulated (Fraenkel & Wallen, 2000). “In casual-comparative research, investigators attempt to determine the cause or consequence of differences that already exist between or among groups of individuals. As a result, it is sometimes viewed ... as a form of associational research” (Fraenkel & Wallen, 2000, p. 393).

Ex post facto research is the most frequent type of design used in rehabilitation counseling research (Bolton & Parker, 1992). In ex post facto research design, the treatment occurred at some time in the past and is not under the control of the researcher, and as such the effects of the treatment are studied after the fact. Many phenomena of interest to rehabilitation researchers are not and cannot be under the control of the researcher (Bolton & Parker, 1992).
With the RSA-911 data being an all-inclusive data set for FFY 2002, there are at least two statistical methods available to address this data. Cavenaugh et al. (2000) in their study considered the closed cases for FFY 1989 to be a population data set and as such reported only descriptive statistics (means, proportions, and percentages) for the variables that were evaluated. Cavenaugh et al. (2000) stated, “Because population data were available, estimations and such tests were not necessary or appropriate...It is recommended that interpretations be guided by the apparent practical significance of differences as judged by readers...” (p.137). However, Capella (2001) considered the closed cases of a single year, 1997, to be considered a sample of the population of persons with visual impairments who have ever been served by the state-federal vocational rehabilitation system. There are a number of studies that have utilized the RSA-911 dataset and used inferential statistics for the analysis of the investigations (Capella, 2001; Feist-Price, 1995; Gilmore, Schuster, Timmons, & Butterworth, 2000; Moore, Flowers, & Taylor, 2000; Moore, 2001; Moore, Feist-Price, & Alston, 2002; Moore, Alston, Donnell, & Hollis, 2003; Wheaton, 1995; Wheaton, Wilson, & Brown, 1996; Wheaton, Finch, Wilson, & Granello, 1997;
A factor that a rehabilitation researcher needs to be aware of when accessing a large dataset such as the RSA-911 dataset is the concept of power. At any given alpha level, increased sample sizes always produce greater power of the statistical test. But increasing sample size can also produce “too much” power. By this we mean that by increasing sample size, smaller and smaller effects will be found to be statistically significant, until at very large sample sizes almost any effect is significant. The researcher must always be aware that sample size can impact the statistical test by either making it insensitive (at small sample sizes) or overly sensitive (at very large sample sizes) (Hair, Anderson, Tatham, & Black, 1998, p. 11-12).

Subjects

The subjects in this study were consumers of the United States state-federal public vocational rehabilitation system who were closed status 26, status 28, or status 30 during
FFY 02. Subjects were obtained through examination of the 2002 client data through the RSA-911 reporting system. 630,205 consumers made up the sampling frame whose cases were closed during federal fiscal year 2002. The RSA-911 data follows federal guidelines established by the Rehabilitation Services Administration and is used in each state (Rehabilitation Services Administration, 2003b). Data from all state agencies and the District of Columbia were utilized for this study. The sample used for the study was limited to individuals who were closed successfully (status 26) N=11,492 and unsuccessfully (status 28/30) N=6,796 with major disability codes that indicated visual impairment as their primary disability (01XX, 02XX, or 08XX). All successfully (status 26) and unsuccessfully (status 28/30) closed consumers with visual impairments were made available for this sample, regardless of severity of their visual impairments. The case service data comes from 75 state-federal vocational rehabilitation agencies. This included 24 separate agencies, 27 combined agencies, and 24 general agencies. Please note that when the term “combined agencies” is used this includes data from the general agencies as well. The number of those successfully rehabilitated status 26 for FFY 02 from general agencies was
There were 10 cases for FFY 02 unsuccessfully rehabilitated status 28/30 included in this analysis.

Variables

The independent variable for all of the research questions in this study was the type of agency structure. The independent variable had two levels: separate vs. combined/general agency structure. Both descriptive and inferential statistics were employed in the data analysis of this study. With the use of descriptive statistics, (e.g., mean, range, standard deviations) were identified. Inferential statistics, multivariate analysis of variance (MANOVA) and chi-square analysis were also utilized in this study as methods of more in-depth data analysis.

The dependent variables addressed in this study were: number of types of services, time a case is open, case expenditures, earnings per week at case closure, and hours worked per week at case closure. All dependent variables were addressed as vocational rehabilitation employment outcomes.

Instrument

Each state utilizes a procedure in collecting the necessary information that makes up the RSA-911 data. Vocational rehabilitation staff completes the instrument
during the life of the case, most typically at case opening and case closure. There are 43 data elements; however, this study used only the following:

- Primary Disabling Condition
- Age
- Race/Ethnicity
- Gender
- Education Level of Application
- Employment Status at Closure
- Number of Types of Services
- Time Case is Open
- Total Case Expenditure
- Earnings Per Week at Closure
- Hours Worked Per Week at Closure
- Types of Services

The RSA-911 follows federal guidelines established by the Rehabilitation Services Administration (Rehabilitation Services Administration, 2003a) and are used in each state. The Rehabilitation Services Administration (2003a) has devised edit specifications that work as a cross-checking method of the data. However even with the edit specifications there is an unknown amount of miscoding that exists with collection of this type of archival data. Due
to the large number of people collecting and entering data, there is room for error (Fraenkel & Wallen, 2000; Campbell & Stanley, 1963).

Data from all state agencies and the District of Columbia were utilized. Data from the United States territories were not included in this study.

Data Collection Procedure

This study utilized archival data reported by combined and separate state-federal agencies during the federal fiscal year (FFY 02). The Statistical Package for Social Sciences (SPSS) was used to perform the data analysis in this study. SPSS is well known for its flexible and omnibus application program that allows researchers to meet all of the computing needs in one integrated system (Bryman & Cramer, 2001). SPSS has the capacity to calculate both descriptive and inferential statistics.

Threats to Internal and External Validity

Bolton and Parker (1992) stated that in ex post facto research studies, because of the multitude of uncontrolled, extraneous variables operating on the dependent variable, it is not possible to detect causal relationships or even simple, direct relationships. Campbell and Stanley (1963) were critical of ex post facto research designs because of
the lack of control over contaminating variables. Ex post facto research is weaker in relation to true experimental research because the researcher cannot control the independent variable or variables through manipulation or by randomization. The changes in the independent variable or variables have already taken place (Fraenkel & Wallen, 2000; Van Dalen, 1979). Because of this lack of control, it is more hazardous to infer that there is a genuine relationship between X and Y in ex post facto studies (Ary, Cheser-Jacobs & Razavieh, 1996). “Relationships can be identified, but causation cannot be fully established...the alleged cause may really be an effect, the effect may be a cause, or there may be a third variable that produced both the alleged cause and effect” (Fraenkel & Wallen, 2000, p. 395). The inability to control extraneous variables leads to low levels of internal validity. This lack of internal validity restricts researchers from drawing firm conclusions regarding the results of statistical tests utilized in ex post facto research.

In addition to internal validity limitations, this ex post facto study has external validity limitations as well. “External validity asks the question of generalizability: To what populations, settings, treatment variables, and
measurement variables can this effect be generalized” (Campbell & Stanley, 1963, p. 5). “External validity, like inductive inference, is never completely answerable” (Campbell & Stanley, 1963, p. 5). When interpreting findings of ex post facto research, caution must be exercised not to interpret correlation as causation (Van Dalen, 1979).

An external validity concern identified by Smith and Glass (1987) is population external validity. Population external validity is concerned with the identification of population to which the results of an experiment are generalizable. Wheaton (1995) identified population as an external validity threat, which applies to many RSA-911 studies including this study. Wheaton (1995) stated, “examination of ... other states, or even the same state at a different time may have yielded different results” (p. 229). In this study while analyzing the entire national RSA-911 dataset, it addressed data from only one federal fiscal year. It is possible that RSA-911 data from another year would yield different results. The results of RSA-911 studies cannot be generalized by the researcher beyond the sample on which the study is conducted. However, as exploratory, hypothesis generating, heuristic studies, ex
post facto research has an important role to play in many areas of applied behavioral science (Cook & Campbell, 1979), including the field of vocational rehabilitation counseling.

Methods Utilized for Data Analysis

Multivariate analysis of variance (MANOVA) was the data analysis procedure utilized for the largest portion of this study, research questions 1-8. The study investigated the statistical significance of differences and the mean differences between the differing agency structures within the state-federal VR system (separate vs. combined) serving persons with visual impairments as it related to the following program outcomes: number of types of services, mean time a case is open, mean case expenditures at closure, earnings per week at closure, hours worked per week at closure.

As a theoretical construct, multivariate analysis of variance (MANOVA) was introduced several decades ago by Wilks’ original formulation. However, it was not until the development of appropriate test statistics tabled distributions and the wide availability of computer programs to compute these statistics that MANOVA became a practical tool for researchers (Hair, et al., 1998, p.326).
Multivariate analysis of variance is an extension of analysis of variance (ANOVA) designed to accommodate more than one dependent variable. MANOVA measures the differences for two or more metric dependent variables based on a set of categorical (non-metric) variables acting as independent variables (Hair et al., 1998).

The use of MANOVA is termed a multivariate procedure because we use it to assess group differences across multiple metric dependent variables simultaneously (Hair et al., 1998). The use of MANOVA assists in control of the study error rate. The use of ANOVAs or $t$ tests can lessen the overall control of the error rate.

An example could be, if evaluating a series of five separate tests the probability of a Type I error lies somewhere between 5 percent, if all dependent variables are perfectly correlated, and 23 percent (1 – 95) if all dependent variables are uncorrelated. With this, a series of separate statistical tests leaves us without control of our overall Type I error rate. If the researcher desires to maintain control over the experiment-wide error rate and there is at least some degree of intercorrelation among the
dependent variables, then MANOVA is appropriate” (Hair et al., 1998, p.339).

Chi-square analysis is a frequently utilized form of data analysis employed in rehabilitation research. Utilizing the chi-square test for independence was determined to be appropriate for research questions 9-10. As this investigation included analyzing categorical data, the chi-square test was the appropriate test statistic (Ary et al., 1996; Fraenkel & Wallen, 2000). The chi-square test for independence is one of the quantitative data analyses that permit nominal data to be compared with each other to demonstrate a relationship. The chi-square is not influenced by outliers or asymmetrical shapes of distributions that could be seen as problematic in others (Schweigert, 1994). The chi-square test is a test statistic for categorical data (Vogt, 1999). Chi-square is a “statistical technique designed to be used when the data being analyzed depart from the distributions that can be analyzed with parametric statistics. Nonparametric tests generally have less power than parametric tests. The chi-square is a well known example” (Vogt, 1999, p. 192). The chi-square test has two principal applications: (1) the chi-square goodness-of-fit test, and (2) the chi-square test of
association (Hopkins et al., 1996). “Both chi-square tests are used to determine whether the observed frequencies \( (o) \) in the categories differ significantly from the expected frequencies \( (\epsilon) \). For the goodness-of-fit test, the expected frequencies are hypothesized on the basis of some a priori theory” (Hopkins et al., 1996, p. 234).

“The chi-square statistic is an index employed to find the significance of difference between proportions of subjects, objects, events, and so forth that fall into different categories, by comparing observed frequencies and frequencies expected a true null hypothesis” (Ary et al., 1996, p. 220).

The simplest use of the chi-square test occurs when a researcher wants to see if statistically significant differences exist between the observed (or actual) frequency and the expected (or hypothesized, given the null hypothesis) frequencies of variables presented in a cross-tabulation or contingency table. The larger the observed frequency is in comparison with the expected frequency, the larger the chi-square statistic and the more likely it is that the difference is statistically significant (Vogt, 1999).
If the obtained frequencies are similar to the expected frequencies, then researchers conclude that the groups do not differ. If there are considerable differences between the expected and obtained frequencies, on the other hand, then researchers conclude that there is a significant difference in attitude between the two groups (Fraenkel & Wallen, 2000, p. 261).

A disadvantage of utilizing chi-square is it is greatly influenced by large sample sizes. Thus when making use of large databases such as the RSA-911 dataset there is an increased probability that statistical significance will be found. This is not dependent upon whether or not practical significant differences exist (Capella, 2002). For that reason, an analysis was performed using the Phi coefficient as a follow-up test to compare the mean of the groups to assist in assessing the strength of the relationship. The chi-square test is dependent on the strength of relationship and sample size. The phi coefficient allows the researcher to divide the sample size and takes the square root of the results. Hence, the Phi coefficient eradicates the effect of sample size. With this
it was deemed the most appropriate statistic to use with this analysis with its large sample size (Garson, 2004).

The power of a statistical test is similar to the power of a telescope, as the higher the power the more detail the astronomer will be capable of making out on the intergalactic object being observed (Fraenkel & Wallen, 2000). “The probability of correctly rejecting a false null hypothesis is called the power of the test and is represented by \( 1 - \beta \)” (Elzey, 1976, p. 117). “When the purpose of a statistical test is to assess differences, power is the probability that the test will correctly lead to the conclusion that there is a difference when, in fact, a difference exists” (Fraenkel & Wallen, 2000, p. 263). “Parametric tests (e.g., MANOVA, \( t \) tests) are generally, but not always, more powerful than nonparametric tests (e.g., chi-square, The Mann-Whitney \( U \) test)” (Fraenkel & Wallen, 2000, p. 264). “Power is the probably of correctly rejecting the null hypothesis when it is false, that is, correctly finding a hypothesized relationship when it exists” (Hair et al., 1998, P.3). Statistical significance determines whether the results are due to chance. Practical significance determines if the result is useful, meaning is it substantial enough to warrant action (Hair et al., 1998).
With the characteristics of this sample, namely the large size of the sample, follow-up analysis was conducted. The results found a high power, 1.0. This means the study achieved the highest power possible: if any differences existed they would be identified. A decision was made not to reduce the sample size, but use statistics such as the phi coefficient and Wilk’s lambda to assess the strength of the relationship between the groups once statistical significance was found.
Chapter 4

Results

This chapter presents the results of the statistical analysis for the data as it pertains to each of the variables examined. The information contained in the chapter came from data extracted from closure records of individuals who were coded with visual impairments and had their services through the state-federal vocational rehabilitation program concluded during federal fiscal year 2002. The purpose of this study was to investigate if differences existed in vocational rehabilitation outcomes and service delivery to individuals with visual impairments when receiving vocational rehabilitation services through the different agency structures (separate or combined/general) that make up the state-federal vocational rehabilitation system in the United States. From this point the comparison will be referred to as separate vs. combined. General agencies are located in states where there are separate agencies whose purpose is to provide vocational
rehabilitation services to individuals with visual impairments. In those states, the general agencies are to provide vocational rehabilitation services to individuals with all other disabilities. However, there are some individuals with visual impairments successfully rehabilitated status 26 after receiving vocational rehabilitation services from general agencies. The number of those successfully rehabilitated status 26 for FFY 02 from general agencies was 941. There are 10 cases for FFY 02 unsuccessfully rehabilitated status 28/30 included in this analysis.

The following research questions were examined in the study:

Research Question 1. Is there a significant difference in the number of types services provided by agencies separate vs. combined agencies to successfully rehabilitated (status 26) visually impaired consumers?

Research Question 2. Is there a significant difference in the number of types of services provided by separate agencies vs. combined agencies to unsuccessfully rehabilitated (status 28/30) visually impaired consumers?
Research Question 3. Is there a significant difference in the time a case is open by separate agencies vs. combined agencies providing services to successfully rehabilitated (status 26) visually impaired consumers?

Research Question 4. Is there a significant difference in the time a case is open by separate agencies vs. combined agencies providing services for unsuccessfully rehabilitated (status 28/30) visually impaired consumers?

Research Question 5. Is there a significant difference in case expenditures between separate agencies vs. agencies providing services to successfully rehabilitated (status 26) visually impaired consumers?

Research Question 6. Is there a significant difference in case expenditures between separate vs. combined agencies providing services to unsuccessfully rehabilitated (status 28/30) visually impaired consumers?

Research Question 7. Is there a significant difference in earnings per week for those successfully rehabilitated (status 26) by separate vs. combined agencies?
Research Question 8. Is there a significant difference in hours worked per week for those successfully rehabilitated (status 26) by separate vs. combined Agencies?

Research Question 9. Is there a significant difference in the types of services provided to those successfully rehabilitated (status 26) by separate vs. combined agencies?

Research Question 10. Is there a significant difference in the types of services provided to those unsuccessfully rehabilitated (status 28/30) by separate vs. combined agencies?

Presentation of the Results

The remainder of this chapter is divided into four sections. The first section will include certain demographic factors related to the subjects in the population under study. The second section will provide demographic information for those individuals closed status 26 competitively rehabilitated. The third section will provide demographic information for individuals with cases closed status 28/30 unsuccessfully rehabilitated. The fourth section will provide findings, descriptive statistics, and data analysis comparison of the population.
utilizing Multivariate Analysis of Variance (MANOVA) for research questions 1-8. In addition, Chi-Square analysis was used for research questions 9-10.

Population Characteristics

The RSA-911 dataset from federal fiscal year 2002 consisted of 643,415 consumers who received services from the United States state-federal vocational rehabilitation system during federal fiscal year 2002. Descriptive statistics are provided for the total population of 28,470 consumers with visual impairments and closed successfully (status 26) or unsuccessfully (status 28/30) during federal fiscal year 2002.

Race/Ethnicity—Overall

There were 21,187 white people, consisting 74.4% of the total population. There were 7,227 non-white people, consisting 25.4% of the total population. There were 56 cases with missing race data, consisting of .2% of the total population. The non-white racial breakdown is as follows: 5,590 African Americans/black, consisting of 19.6% of the population, 2,793 Hispanic or Latino Americans, consisting of 9.8% of the population, 415 Asian Americans, consisting of 1.5% of the population, 270 Native Americans or Alaskan Natives, consisting of .9%, and 74 Native Hawaiians or
Pacific Islanders, consisting of .3% of the population. African Americans account for approximately 14% of the general population and Hispanic or Latino Americans account for approximately 15% of the general United States population. Asian Americans are 4.2% of the general population (US Census Bureau, 2005). Thus African Americans with visual impairments occurred at a disproportionately high rate in this study. However, Hispanic or Latino Americans and Asian Americans with visual impairments occurred at a disproportionately low rate in this study.

Race/Ethnicity-Separate Agencies

The total number of individuals served by separate agencies was 13,252. Of that number 10,169 were identified as White, or 76.7%. African Americans/Black made-up 2,573 or 19.4% of those served by this agency structure, while 1,491 Hispanic/Latino Americans, or 11.3% received services through this agency structure. For the complete race/ethnicity breakdown, see Table 4.1.

Race/Ethnicity-Combined Agencies

The total number of individuals with visual impairments served by combined agencies was 15,218. Of that number 11,018, consisting 72.4%, were White. There were 3,017, or 19.8% identified as African American/Black and
1,302, equaling 8.6%, were Hispanic/Latino Americans of those receiving services from combined agencies throughout the United States. For entire race/ethnicity breakdown, see Table 4.1.

<table>
<thead>
<tr>
<th>Race</th>
<th>Separate</th>
<th>%</th>
<th>Combined</th>
<th>%</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Missing</td>
<td>20</td>
<td>.2</td>
<td>36</td>
<td>.2</td>
<td>56</td>
<td>.2</td>
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<tr>
<td>White</td>
<td>10,169</td>
<td>76.7</td>
<td>11,018</td>
<td>72.4</td>
<td>21,187</td>
<td>74.4</td>
</tr>
<tr>
<td>African American/Black</td>
<td>2,573</td>
<td>19.4</td>
<td>3,017</td>
<td>19.8</td>
<td>5,590</td>
<td>19.6</td>
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<tr>
<td>Hispanic/Latino</td>
<td>1,491</td>
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<td>8.6</td>
<td>2,793</td>
<td>9.8</td>
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<tr>
<td>Asian American</td>
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<td>273</td>
<td>1.8</td>
<td>415</td>
<td>1.5</td>
</tr>
<tr>
<td>Native American/Alaskan Native</td>
<td>106</td>
<td>.7</td>
<td>164</td>
<td>1.1</td>
<td>270</td>
<td>.9</td>
</tr>
<tr>
<td>Native Hawaiian/Pacific Islander</td>
<td>23</td>
<td>.2</td>
<td>51</td>
<td>.3</td>
<td>74</td>
<td>.3</td>
</tr>
</tbody>
</table>

Table 4.1 Race/Ethnicity of Population/Each Agency Structure

Note: The total numbers were higher than the total actually served by agency structure and percentages equaled greater than 100% as VR consumers can self-identify and/or counselors can through observation report consumers as
multi-racial/ethnic in the RSA-911 data collection system. For an explanation on race/ethnicity reporting, refer to Appendix A.

Gender-Overall

There were 14,557 females that accounted for 51.1% of the population closed during FFY02. There were 13,913 males that accounted for 48.9% of the studied population.

Gender-Separate Agencies

Within the separate agencies there were 6,990 females consisting of 52.7% of those served. There were 6,262 males accounting for 47.3% of the total served through this agency structure.

Gender-Combined Agencies

There were 7,567 females with visual impairments served through combined agencies consisting of 49.7% of the total. Combined agencies assisted 7,651 males or 50.3% of the total number of individuals with visual impairments served during FFY02.
Table 4.2 Gender – Overall

Education Level at Application—Overall

The highest percentage of the study population had a high school or GED level education; this consisted of 11,612 individuals or 40.8%. There were 4,826 or 17.0% with an education level at Grades 9-12, no diploma. From there, the educational level breakdown is as follows: Post-secondary education, no degree 3,253, 11.4%; Bachelor’s degree 2,672, 9.4%; Associate’s degree or vocational certificate 2,204, 7.7%; Grades 1-8 2,045, 7.2%; Master’s degree or higher 1,110, 3.9%; Special education 466, 1.6%; and no formal schooling 282, 1.0%.

Education Level at Application—Separate Agencies

For those served through the separate agencies the educational breakdown is as follows: High school graduate or GED level 5,192, 39.2%; Grades 9-12, no diploma 2,103, 15.9%; Post-secondary education, no degree 1,403, 10.6%; Bachelor’s degree 1,280, 9.7%; Grades 1-8 1,125, 8.5%;

<table>
<thead>
<tr>
<th>Gender</th>
<th>Separate</th>
<th>%</th>
<th>Combined</th>
<th>%</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>6,262</td>
<td>47.3</td>
<td>7,651</td>
<td>50.7</td>
<td>13,913</td>
<td>48.9</td>
</tr>
<tr>
<td>Female</td>
<td>6,990</td>
<td>52.7</td>
<td>7,567</td>
<td>49.3</td>
<td>14,557</td>
<td>51.1</td>
</tr>
</tbody>
</table>

Table 4.2 Gender – Overall
Associate degree or vocational certificate 1,021, 7.7%; 
Master’s degree or higher 633, 4.8%; Special education 274, 2.1%; and no formal schooling 221, 1.7%.

**Education—Combined Agencies**

For individuals with visual impairments served through combined agencies and closed in FFY02, the educational breakdown is as follows: High school graduate or GED level 6,420, 42.2%; Grades 9-12, no diploma 2,723, 17.9%; Post-secondary education, no degree 1,850, 12.2%; Bachelor’s degree 1,392, 9.1%; Associate’s degree or vocational certificate 1,183, 7.8%; Grades 1-8 920, 6.0%; Master’s degree or higher 477, 3.1%; Special education 192, 1.3%; and no formal schooling 61, .04%.
<table>
<thead>
<tr>
<th>Education Level</th>
<th>Separate</th>
<th>%</th>
<th>Combined</th>
<th>%</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Formal Schooling</td>
<td>221</td>
<td>1.7</td>
<td>61</td>
<td>.4</td>
<td>282</td>
<td>1.0</td>
</tr>
<tr>
<td>Grades 1-8</td>
<td>1,125</td>
<td>8.5</td>
<td>920</td>
<td>6.0</td>
<td>2,045</td>
<td>7.2</td>
</tr>
<tr>
<td>Grades 9-12</td>
<td>2,103</td>
<td>15.9</td>
<td>2,723</td>
<td>17.9</td>
<td>4,826</td>
<td>17.0</td>
</tr>
<tr>
<td>Special Ed.</td>
<td>274</td>
<td>2.1</td>
<td>192</td>
<td>1.3</td>
<td>466</td>
<td>1.6</td>
</tr>
<tr>
<td>High School Grad or GED</td>
<td>5,192</td>
<td>39.2</td>
<td>6,420</td>
<td>42.2</td>
<td>11,612</td>
<td>40.8</td>
</tr>
<tr>
<td>Post Secondary Ed., No Degree</td>
<td>1,403</td>
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<td>1,850</td>
<td>12.2</td>
<td>3,253</td>
<td>11.4</td>
</tr>
<tr>
<td>Assoc. Degree or Vocational Certificate</td>
<td>1,021</td>
<td>7.7</td>
<td>1,183</td>
<td>7.8</td>
<td>2,204</td>
<td>7.7</td>
</tr>
<tr>
<td>Bachelor’s Degree</td>
<td>1,280</td>
<td>9.7</td>
<td>1,392</td>
<td>9.1</td>
<td>2,672</td>
<td>9.4</td>
</tr>
<tr>
<td>Master’s Degree Higher</td>
<td>633</td>
<td>4.8</td>
<td>477</td>
<td>3.1</td>
<td>1,110</td>
<td>3.9</td>
</tr>
</tbody>
</table>

Table 4.3 Education Level at Application – Overall

**Employment Status at Case Closure-Separate Agencies**

The largest employment status at case closure for separate agencies is employment w/o supports that accounted for 4,441, 53.1% of all successful case closures. Homemakers were the second most prevalent employment status at closure. 2,736 individuals with visual impairments were closed in this fashion consisting of 32.7% of total separate agencies’ closures. Self-employment status accounted for 815
Case closures consisting 9.8% of total separate agencies’ closures. For the entire employment status breakdown, see Table 4.4.

Employment Status at Case Closure—Combined Agencies

The largest employment status at case closure for combined agencies is employment w/o supports that accounted for 5,765, 60.6% of all successful closures for combined agencies. The homemaker closure was the second most prevalent employment status for combined agencies as well, accounting for 2,954 and 31.1% of total successful closures. Self-employment status accounted for 459 case closures consisting 4.8% of total combined agencies’ closures. For the entire employment status breakdown, see Table 4.4.
<table>
<thead>
<tr>
<th>Employment Status</th>
<th>Separate</th>
<th>%</th>
<th>Combined</th>
<th>%</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Data</td>
<td>3</td>
<td>.03</td>
<td>22</td>
<td>.2</td>
<td>25</td>
<td>.1</td>
</tr>
<tr>
<td>Employment w/o Supports</td>
<td>4,441</td>
<td>53.1</td>
<td>5,765</td>
<td>60.6</td>
<td>10,206</td>
<td>57.1</td>
</tr>
<tr>
<td>Extended Employment</td>
<td>13</td>
<td>.1</td>
<td>15</td>
<td>.2</td>
<td>28</td>
<td>.2</td>
</tr>
<tr>
<td>Self-Employment</td>
<td>815</td>
<td>9.8</td>
<td>459</td>
<td>4.8</td>
<td>1,274</td>
<td>7.1</td>
</tr>
<tr>
<td>BEP</td>
<td>158</td>
<td>1.9</td>
<td>102</td>
<td>1.1</td>
<td>260</td>
<td>1.5</td>
</tr>
<tr>
<td>Homemaker</td>
<td>2,736</td>
<td>32.7</td>
<td>2,954</td>
<td>31.1</td>
<td>5,690</td>
<td>31.9</td>
</tr>
<tr>
<td>Unpaid Family Worker</td>
<td>31</td>
<td>.3</td>
<td>27</td>
<td>.2</td>
<td>58</td>
<td>.3</td>
</tr>
<tr>
<td>Employment w/ Supports</td>
<td>159</td>
<td>1.9</td>
<td>159</td>
<td>1.6</td>
<td>318</td>
<td>1.8</td>
</tr>
</tbody>
</table>

Table 4.4 Employment Status at Closure

**Age-Overall**

The mean age of consumers in the total population studied was 46.9. The range was 100.8–9.6, with a range of 91.2 years.

**Age-Separate Agencies**

The mean age of individuals with visual impairments served through separate agencies was 48.3. The range was 100.8–12.5, with a range of 88.3 years.
Age-Combined Agencies

The mean age of consumers served through combined agencies was 45.8. The range was 97.1-9.6, with a range of 87.5 years.

<table>
<thead>
<tr>
<th></th>
<th>Separate</th>
<th>Combined</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>13,252</td>
<td>15,218</td>
</tr>
<tr>
<td>Mean</td>
<td>48.3</td>
<td>45.8</td>
</tr>
<tr>
<td>Median</td>
<td>47.9</td>
<td>45.3</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>19.0</td>
<td>18.5</td>
</tr>
<tr>
<td>Maximum</td>
<td>100.8</td>
<td>97.1</td>
</tr>
<tr>
<td>Minimum</td>
<td>12.5</td>
<td>9.6</td>
</tr>
<tr>
<td>Range</td>
<td>88.3</td>
<td>87.5</td>
</tr>
</tbody>
</table>

Table 4.5 Age-Population

Status 26/Competitive Closure Characteristics

This section includes the descriptive statistics provided for the cases that were closed status 26 in competitive employment for FFY02 N=11,492. In the RSA-911 dataset, competitive employment cases can be closed with the following employment outcomes: Employment without supports in integrated setting; Self-employment (except BEP); State
Agency-managed Business Enterprise Program (BEP); and Employment with supports in integrated setting. These cases must also be coded as competitively employed in the RSA-911 data collection system in two additional record positions. For the Rehabilitation Services Administration’s explanation of competitive employment, see Appendix A.

Race/Ethnicity-Overall

There are 8,738 white people, consisting 76.0 % of the total N=11,492 of those closed status 26 competitively employed. There are 963 individuals reported as African-American/Black, accounting for 18.4%. The remainder of the racial breakdown is as follows: 592 Hispanic or Latino American, 11.3%; 59 Asian American, 1.1%; 38 Native American or Alaskan Native, .7%; 14 Native Hawaiian or Pacific Islander, .3%; and 5 cases with missing data, .09%. African Americans account for approximately 14% of the general population and Hispanic or Latino Americans account for approximately 15% of the general population in the United States (US Census Bureau, 2005). Thus African Americans with visual impairments closed status 26 in competitive employment occurred at a disproportionately high rate in this study. However, Hispanic or Latino Americans with
visual impairments closed status 26 in competitive employment occurred at a disproportionately low rate in this study.

Race/Ethnicity-Separate Agencies

The total number of individuals closed status 26 in competitive employment with separate agencies during FFY02 was N=5243. Of that number 4,054 were reported as white, or 77.3%. African Americans/Black made up 963 or 18.4% of those closed status 26 in competitive employment by this agency structure, while 592 Hispanic or Latino Americans, 11.3%, were closed 26 in competitive employment by this agency structure. For the complete breakdown of Race/Ethnicity, see Table 4.6.

Race/Ethnicity-Combined Agencies

The total number of individuals closed status 26 in competitive employment with combined agencies during FFY02 was N=6249. Of that number 4,684 were reported as white, or 75.0%. There were 1,235, or 19.8% identified as African-Americans/Black and 478 Hispanic or Latino Americans, or 7.6% of those closed status 26 in competitive employment by the combined agency structure. For the entire race/ethnicity breakdown, see Table 4.6.
<table>
<thead>
<tr>
<th>Race</th>
<th>Separate</th>
<th>%</th>
<th>Combined</th>
<th>%</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Missing</td>
<td>5</td>
<td>.09</td>
<td>6</td>
<td>.09</td>
<td>11</td>
<td>.09</td>
</tr>
<tr>
<td>White</td>
<td>4,054</td>
<td>77.3</td>
<td>4,684</td>
<td>75.0</td>
<td>8,738</td>
<td>76.0</td>
</tr>
<tr>
<td>African American/Black</td>
<td>963</td>
<td>18.4</td>
<td>1,235</td>
<td>19.8</td>
<td>2,198</td>
<td>19.1</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>592</td>
<td>11.3</td>
<td>478</td>
<td>7.6</td>
<td>1,070</td>
<td>9.3</td>
</tr>
<tr>
<td>Asian American</td>
<td>59</td>
<td>1.1</td>
<td>86</td>
<td>1.4</td>
<td>145</td>
<td>1.3</td>
</tr>
<tr>
<td>Native American/Alaskan Native</td>
<td>38</td>
<td>.7</td>
<td>51</td>
<td>.8</td>
<td>89</td>
<td>.8</td>
</tr>
<tr>
<td>Native Hawaiian/Pacific Islander</td>
<td>14</td>
<td>.3</td>
<td>18</td>
<td>.3</td>
<td>32</td>
<td>.3</td>
</tr>
</tbody>
</table>

Table 4.6 Race/Ethnicity - Status 26-Competitive Employment

Note: The total numbers will be higher than the total actually closed status 26 competitively employed and percentages will equal greater than 100% as VR consumers can self-identify and/or VR counselors can through observation report consumers as multi-racial/ethnic in the RSA-911 data collection system. For a full explanation on race/ethnicity reporting, refer to Appendix A.

Gender-Overall

There were N=6,216 males closed status 26 in competitive employment, accounting for 54.1% of the total closed in that manner. There were 5,276 females accounting
for 45.9% of the total individuals with visual impairments whose cases were closed in this manner during FFY02.

Gender-Separate Agencies

Within the separate agencies there were 2,832 males consisting of 54.0% of the individuals closed successfully in competitive employment. There were 2,411 females accounting for 46.0% of those closed in this status.

Gender-Combined Agencies

There were 3,384 males accounting for 54.2% of those closed successfully in competitive employment. 2,865 females, or 45.8% were closed in this status by combined agencies throughout FFY02.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Separate</th>
<th>%</th>
<th>Combined</th>
<th>%</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>2,832</td>
<td>54.0</td>
<td>3,384</td>
<td>54.2</td>
<td>6,216</td>
<td>54.1</td>
</tr>
<tr>
<td>Female</td>
<td>2,411</td>
<td>46.0</td>
<td>2,865</td>
<td>45.8</td>
<td>5,276</td>
<td>45.9</td>
</tr>
</tbody>
</table>

Table 4.7 Gender-Status 26-Competitive Employment

Education Level at Application-Overall

The highest percentage of individuals in this portion of the study had a high school or GED level education; this consisted of 4,366 individuals or 38.0%. There were 1,777
or 15.5% with an education level at Grades 9-12, no diploma. The remainder of the education breakdown is as follows: Bachelor’s degree 1,497, 13.0%; Post-secondary, no degree 1,457, 12.7%; Associate’s degree or vocational certificate 941, 8.2%; Master’s degree or higher 636, 5.5%; Grades 1-8 610, 5.3%; Special education 143, 1.2%; and no formal schooling 65, 0.6%.

Education Level at Application—Separate Agencies

For those served through the separate agencies the educational level breakdown is as follows: High School graduate or GED level 1,885, 36.0%; Bachelor’s degree 722, 13.8%; Grades 9-12, no diploma 680, 13.0%; Post-secondary education, no diploma 637, 12.1%; Associate’s degree or vocational certificate 513, 9.8%; Master’s degree or higher 378, 7.2%; Grades 1 to 8 309, 5.9%; Special education 77, 1.5%; and no formal schooling 42, .8%.

Education Level at Application—Combined Agencies

For individuals served through the combined agencies and were closed status 26 competitively employed the education level at application is as follows: High School graduate or GED level 2,481, 39.7%; Grades 9-12, no diploma 1097, 17.6%; Post-secondary education, no degree 820, 13.1%; Bachelor’s degree 775, 12.4%; Associate’s degree or
vocational certificate 428 6.9%; Grades 1-8 301, 4.8%; Master’s degree or higher 258, 4.1%; Special education 66, 1.1%; and no formal schooling 23, .4%.

<table>
<thead>
<tr>
<th>Education Level</th>
<th>Separate</th>
<th>%</th>
<th>Combined</th>
<th>%</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Formal Schooling</td>
<td>42</td>
<td>.8</td>
<td>23</td>
<td>.4</td>
<td>65</td>
<td>.6</td>
</tr>
<tr>
<td>Grades 1-8</td>
<td>309</td>
<td>5.9</td>
<td>301</td>
<td>4.8</td>
<td>610</td>
<td>5.3</td>
</tr>
<tr>
<td>Grades 9-12 No Diploma</td>
<td>680</td>
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<td>1777</td>
<td>15.5</td>
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<tr>
<td>Special Education</td>
<td>77</td>
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<td>66</td>
<td>1.1</td>
<td>143</td>
<td>1.2</td>
</tr>
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<td>High School Grad or GED</td>
<td>1885</td>
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<td>4366</td>
<td>38.0</td>
</tr>
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<td>Post Secondary Ed., No Degree</td>
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<td>820</td>
<td>13.1</td>
<td>1457</td>
<td>12.7</td>
</tr>
<tr>
<td>Assoc. Degree or Vocational Certificate</td>
<td>513</td>
<td>9.8</td>
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<td>6.9</td>
<td>941</td>
<td>8.2</td>
</tr>
<tr>
<td>Bachelor’s Degree</td>
<td>722</td>
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<td>775</td>
<td>12.4</td>
<td>1497</td>
<td>13.0</td>
</tr>
<tr>
<td>Master’s Degree or Higher</td>
<td>378</td>
<td>7.2</td>
<td>258</td>
<td>4.1</td>
<td>636</td>
<td>5.5</td>
</tr>
</tbody>
</table>

Table 4.8 Education Level-Status 26-Competitive Employment

Age-Status 26-Competitive Employment-Separate Agencies

The mean age of those closed status 26 in competitive employment was 44.8 years old. The range was 91.1-13.1, with a range of 78 years.
Age-Status 26-Competitive Employment-Combined Agencies

The mean age of those closed status 26 in competitive employment was 42.1. The range was 92.0-11.1, for a range of 80.9 years.

<table>
<thead>
<tr>
<th></th>
<th>Separate</th>
<th>Combined</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>5243</td>
<td>6249</td>
</tr>
<tr>
<td>Mean</td>
<td>44.8</td>
<td>42.08</td>
</tr>
<tr>
<td>Median</td>
<td>45.86</td>
<td>43.24</td>
</tr>
<tr>
<td>Standard Deviation</td>
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<td>15.06</td>
</tr>
<tr>
<td>Max.</td>
<td>91.1</td>
<td>92.0</td>
</tr>
<tr>
<td>Min.</td>
<td>13.1</td>
<td>11.1</td>
</tr>
<tr>
<td>Range</td>
<td>78.0</td>
<td>80.9</td>
</tr>
</tbody>
</table>

Table 4.9 Age – Status 26-Competitive Employment

Status 28/30 Closure Characteristics

This section includes the descriptive statistics provided for the cases that were closed status 28 for FFY02 N=6792. These closures are not limited to cases where competitive employment was the goal. The RSA-911 dataset and reporting documents do not have a mechanism to identify
the employment goal of cases that are closed unsuccessfully, status 28 or status 30. A full list of RSA closures and definitions is available at Appendix A.

Race/Ethnicity-Overall

There were 4,810 White Americans, consisting of 70.8% of those closed status 28. There were 1,575 individuals reported as African American/Black, accounting for 23.2%. The remainder of the racial breakdown is as follows: 744 Hispanic or Latino Americans, 11.0%; 116 Asian Americans, 1.8%; 92 Native Americans or Alaskan Natives, 1.4%; 19 Native Hawaiians or Pacific Islanders, .3%; and missing data accounts for 12 cases or .2%.

Race/Ethnicity-Separate Agencies

The total number of individuals with cases closed status 28/30 by separate agencies was N=3,473 for FFY02. Of that number 2,566, 73.9% were reported as white. African Americans/Black made up 798 or 23.0% of those closed status 28/30 by this agency structure. 434 individuals were coded as Hispanic or Latino Americans, or 12.5%, closed status 28/30. For the complete breakdown of race/ethnicity, see Table 4.10.
Race/Ethnicity—Combined Agencies

The total number of individuals with cases closed status 28/30 through combined agencies for FFY02 was 3,323. Of that number 2,244 were reported as white, or 67.5%. There were 777, or 23.4% identified as African American/Black and 310 Hispanic or Latino Americans, or 9.3% of the cases closed unsuccessfully by this agency structure. For the entire breakdown of race/ethnicity, see Table 4.10.

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Separate</th>
<th>%</th>
<th>Combined</th>
<th>%</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Missing</td>
<td>1</td>
<td>.03</td>
<td>11</td>
<td>.3</td>
<td>12</td>
<td>.2</td>
</tr>
<tr>
<td>White</td>
<td>2,566</td>
<td>73.9</td>
<td>2,244</td>
<td>67.5</td>
<td>4,810</td>
<td>70.8</td>
</tr>
<tr>
<td>African American/Black</td>
<td>798</td>
<td>23.0</td>
<td>777</td>
<td>23.4</td>
<td>1,575</td>
<td>23.2</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>434</td>
<td>12.5</td>
<td>310</td>
<td>9.3</td>
<td>744</td>
<td>11.0</td>
</tr>
<tr>
<td>Asian American</td>
<td>44</td>
<td>1.3</td>
<td>72</td>
<td>2.2</td>
<td>116</td>
<td>1.7</td>
</tr>
<tr>
<td>Native American/Alaskan Native</td>
<td>32</td>
<td>.9</td>
<td>60</td>
<td>1.8</td>
<td>92</td>
<td>1.4</td>
</tr>
<tr>
<td>Native Hawaiian/Pacific Islander</td>
<td>3</td>
<td>.09</td>
<td>16</td>
<td>.5</td>
<td>19</td>
<td>.3</td>
</tr>
</tbody>
</table>

Table 4.10 Race/Ethnicity Status 28/30

Note: The total numbers will be higher than the total actually closed status 28/30 and percentages will equal greater than 100% as VR consumers can self-identify and/or
VR counselors can through observation report consumers as multi-racial/ethnic in the RSA-911 data collection system. For a full explanation on race/ethnicity reporting, refer to Appendix A.

**Gender-Overall**

There were 3,588 males closed either status 28 or 30 during FFY02, this accounted for 52.8% of the total cases closed status 28 or 30. There were 3,208 females, or 47.2% of those closed status 28 or 30 by all the state-federal VR agencies.

**Gender-Separate Agencies**

The separate agencies closed 1,844 males, consisting of 53.1% of all individuals closed status 28/30. 1,629, or 46.9% females were closed status 28/30.

**Gender-Combined Agencies**

The combined agencies closed 1,744 males, consisting of 52.5% of cases closed status 28/30. There were 1,579 females, accounting for 47.5% of the total number of individuals closed status 28/30 by combined agencies.
Gender Separate | % | Combined | % | Total | %
---|---|---|---|---|---
Male | 1,844 | 53.1 | 1,744 | 52.5 | 3,588 | 52.8
Female | 1,629 | 46.9 | 1,579 | 47.5 | 3,208 | 47.2

Table 4.11 Gender Status 28/30

Education Level at Application-Status 28/30-Overall

The highest percentage of individuals in this portion of the study had a high school or GED level education; this consisted of 2,757 individuals or 40.6%. There were 1,385 or 20.4% with an education level at Grades 9-12, no diploma. The remainder of the education breakdown is as follows: Post-secondary education, no diploma, 11.1%; Grades 1-8 542, 8.0%; Associate’s degree or vocational certificate 472, 6.9%; Bachelor’s degree 471, 6.9%; Special education 175, 2.6%; Master’s degree or higher 167, 2.5%; and no formal schooling 66, 1.0%.

Education Level at Application-Status 28/30-Separate Agencies

For those served through the blind agencies the educational level is as follows: High school graduate or GED level 1,408, 41.0%; Grades 9-12, no diploma 625, 18.0%; Post-secondary education, no degree 346, 10.0%; Grades 1-8 341, 9.8%; Bachelor’s degree 257, 7.4%; Associate’s degree
or vocational certificate 243, 7.0%; Special education 106, 3.0%; Master’s degree or higher 95, 2.7%; and no formal schooling 52, 1.5%.

Education Level at Application-Status 28/30-Combined Agencies

For individuals provided services through the combined agencies and were closed status 28/30 the education level at application is as follows: High school graduate or GED level 1,349, 40.6%; Grades 9-12, no diploma 760, 22.9%; Post-secondary education, no diploma 415, 12.5%; Associate’s degree or vocational certificate 229, 6.9%; Bachelor’s degree 214, 6.4%; Grades 1-8 201, 6.1%; Master’s degree 72, 2.2%; Special education 69, 2.1%; and no formal schooling 14, .4%.
<table>
<thead>
<tr>
<th>Education Level</th>
<th>Separate</th>
<th>%</th>
<th>Combined</th>
<th>%</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Formal Schooling</td>
<td>52</td>
<td>1.5</td>
<td>14</td>
<td>.4</td>
<td>66</td>
<td>1.0</td>
</tr>
<tr>
<td>Grades 1-8</td>
<td>341</td>
<td>9.8</td>
<td>201</td>
<td>6.1</td>
<td>542</td>
<td>8.0</td>
</tr>
<tr>
<td>Grades 9-12 No Diploma</td>
<td>625</td>
<td>18.0</td>
<td>760</td>
<td>22.9</td>
<td>1385</td>
<td>20.1</td>
</tr>
<tr>
<td>Special Education</td>
<td>106</td>
<td>3.1</td>
<td>69</td>
<td>2.1</td>
<td>175</td>
<td>2.6</td>
</tr>
<tr>
<td>High School Grad or GED</td>
<td>1,408</td>
<td>40.5</td>
<td>1,349</td>
<td>40.6</td>
<td>2757</td>
<td>40.6</td>
</tr>
<tr>
<td>Post Secondary Ed., No Degree</td>
<td>346</td>
<td>10.0</td>
<td>415</td>
<td>12.5</td>
<td>761</td>
<td>11.2</td>
</tr>
<tr>
<td>Assoc. Degree or Vocational Certificate</td>
<td>243</td>
<td>7.0</td>
<td>229</td>
<td>6.9</td>
<td>472</td>
<td>7.0</td>
</tr>
<tr>
<td>Bachelor’s Degree</td>
<td>257</td>
<td>7.4</td>
<td>214</td>
<td>6.4</td>
<td>471</td>
<td>7.0</td>
</tr>
<tr>
<td>Master’s Degree or Higher</td>
<td>95</td>
<td>2.7</td>
<td>72</td>
<td>2.2</td>
<td>167</td>
<td>2.5</td>
</tr>
</tbody>
</table>

Table 4.12 Education Level Status 28/30

**Age - Status 28/30 - Separate Agencies**

The mean age for individuals with cases closed status 28/30 was 42.8. The range was 100.0-12.5, for a total range of 87.5 years.

**Age - Status 28/30 - Combined Agencies**

The mean age for individuals with cases closed status 28/30 was 40.9. The range was 96.0-14.5, for a total range of 81.5 years.
Results for the Research Hypotheses

Assumptions of Multivariate Analysis of Variance (MANOVA)

Multiple Analysis of Variance (MANOVA) was utilized in this study to evaluate outcome variables that contributed to group differences. MANOVA was selected for studying the relationship between one factor, a nominal variable (agency structure) and several ratio-dependent variables (number of types of services, time a case is open, case expenditures, earnings per week at case closure, and hours worked per week at case closure). “MANOVA allows the simultaneous study of two or more related dependent variables while controlling for the correlations among them” (Vogt, 1999, p.185).
“Three assumptions that must be considered in order for MANOVA to be valid: (1) the observations must be independent, (2) the covariance matrices must be equal for all groups, and (3) the set of dependent variables should follow a normal distribution” (Hair et al., 1998, p.347). “If the equal group covariances and multivariate normality assumptions of MANOVA are violated, this can result in too few or many Type I errors” (Moore et al., 2002, p.12). “Multivariate normality assumes that the joint effect of two variables is normally distributed. Since there is no direct test for multivariate normality, univariate normality of each variable will be tested” (Hair et al., 1998, p.276).

Research Hypotheses 1 through 8 are studied by utilizing Multivariate Analysis of Variance (MANOVA). The predictor or independent variable was type of agency, specifically, separate and combined. The response or dependent variables for this section of the study were the number of types of services, the time a case is open, the amount of case expenditures, earnings per week, and the hours worked per week.
Findings

Multivariate Analysis of Variance - Status 26

Research questions 1, 3, 5, 7, 8 were addressed through MANOVA analysis. These research questions addressed the dependent variables for cases closed status 26 in competitive employment outcomes.

Table 4.14 imparts the descriptive statistics for visually impaired consumers whose cases were closed during FFY02 in competitive employment and with data available on all of the dependent variables under investigation. The results show mean differences for each dependent variable. The N=11,492 for this portion of the study are those consumers with visual impairments whose cases were closed with a competitive employment designation as outlined in Appendix A.
<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Agency Type</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekly earnings at closure</td>
<td>Separate</td>
<td>354.73</td>
<td>269.159</td>
<td>5243</td>
</tr>
<tr>
<td></td>
<td>Combined</td>
<td>365.54</td>
<td>278.386</td>
<td>6249</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>360.61</td>
<td>274.256</td>
<td>11492</td>
</tr>
<tr>
<td>Hours worked per week at closure</td>
<td>Separate</td>
<td>31.93</td>
<td>11.228</td>
<td>5243</td>
</tr>
<tr>
<td></td>
<td>Combined</td>
<td>34.09</td>
<td>9.841</td>
<td>6249</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>33.10</td>
<td>10.551</td>
<td>11492</td>
</tr>
<tr>
<td>Cost of purchased services</td>
<td>Separate</td>
<td>5057.86</td>
<td>8768.853</td>
<td>5243</td>
</tr>
<tr>
<td></td>
<td>Combined</td>
<td>6440.81</td>
<td>10694.716</td>
<td>6249</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>5809.86</td>
<td>9886.449</td>
<td>11492</td>
</tr>
<tr>
<td>Number of types of services</td>
<td>Separate</td>
<td>3.9165</td>
<td>3.14047</td>
<td>5243</td>
</tr>
<tr>
<td></td>
<td>Combined</td>
<td>4.3943</td>
<td>2.62518</td>
<td>6249</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>4.1763</td>
<td>2.88148</td>
<td>11492</td>
</tr>
<tr>
<td>Application-closure Time a case is open</td>
<td>Separate</td>
<td>720.4860</td>
<td>828.33259</td>
<td>5243</td>
</tr>
<tr>
<td></td>
<td>Combined</td>
<td>812.9416</td>
<td>869.16585</td>
<td>6249</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>770.7605</td>
<td>851.98844</td>
<td>11492</td>
</tr>
</tbody>
</table>

Table 4.14 Descriptive Statistics—Status 26
The multivariate tests section simultaneously tests the factor, and agency type (separate and combined) effect on the dependent groups (number of types of services, time a case is open, cost of services, weekly earnings, and hours worked per week).

SPSS offers four alternative multivariate significance tests. Hotelling’s Trace is commonly used for two dependent groups and Wilks’ Lambda if there are more than two groups. The significance of the F tests show whether that effect is significant. Here all effects are significant. Eta-squared is the proportion of the total variability in the dependent variable accounted for by the variation in the independent variable. Significance is the chance of making a Type I error, whereas power is the chance of not making a Type II error. One wants the power level to be high (e.g., above .90).

Multivariate tests, table 4.15, were utilized to determine if the independent variable (type of agency-separate or combined) has significant effect simultaneously on the dependent variables (number of types of services, case expenditures, application-closure-time a case is open, weekly earning at closure, and hours worked per week at
MANOVA was computed exercising an exact F statistic. The degrees of freedom are 6. Degrees of freedom are a mathematical property of a set of data that is related to the number of restrictions imposed on the data (Ary et al., 1996). In general terms the number of degrees of freedom is based on the sample size. The alpha level was set at .05 to calculate the power and to reduce Type I error.

The main effect addresses the individual effect of the independent variable on the dependent variable. With this study, the effect of agency type on number of types of services, case expenditures, time a case is open (application-closure), weekly earnings, and hours worked per week were studied. There are four multivariate significance tests to address each main effect and each intercept. This study employed the four most utilized; Hotelling’s Trace, Wilks’ Lambda, Pillai’s Trace, and Roy’s Largest Root. If the dependent variables are strongly interrelated on a single dimension, then Roy’s is the most appropriate test to use. Hotelling’s Trace is commonly used for two dependent groups and Wilks’ Lambda is better employed if there are more than two groups. Which test statistic to utilize should be determined by which test is most immune to
violations of the assumptions of MANOVA and still maintains the greatest power (Hair et al., 1998). “There is agreement that either Pillai’s or Wilks’ lambda best meets these needs, although evidence suggests Pillai’s is more robust and should be used if sample size decreases, unequal cell sizes appear, or homogeneity of covariances is violated” (Hair et al., 1998, p.351). Roy’s is the most powerful statistic and should be employed if the researcher is confident that all assumptions are strictly met. A comparison can be made between all of these measures, as many statistical packages make these tests available (Hair et al., 1998). This is so with SPSS that was utilized as the statistical package for this analysis. The results of all of the tests, Pillai’s Trace (.000), Wilks’ lambda (.000), Hotelling’s Trace (.000), and Roy’s Largest Root (.000) are the same, thus showing that all effects are significant. Eta-squared is the proportion of the total variability in the dependent variable accounted for by the variation in the independent variable. Significance is the chance of making a Type I error.
MANOVA assumes that each dependent variable will have similar variance for all groups (all cells in the factor design matrix). The Levene test is used to assess whether the variances of a single metric variable is equal across groups. Levene tests this assumption. If the Levene statistic is significant at the .05 level or better, the researcher rejects the null hypothesis that the groups have equal variances. The Levene test is robust in the face of departures from normality. However, the failure to meet this assumption of homogeneity of variances is not fatal to
MANOVA, which is relatively robust, particularly when groups are of equal sample size. For this data, the homogeneity of variances assumption was met for all of the dependent variables as denoted by the Sig. of <.05.

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>F</th>
<th>df1</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekly earnings at closure</td>
<td>8.538</td>
<td>1</td>
<td>.003</td>
</tr>
<tr>
<td>Hours worked per week at closure</td>
<td>193.681</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>Cost of purchased services</td>
<td>37.182</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>Number of services</td>
<td>155.228</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>Application-closure Time case is open</td>
<td>29.946</td>
<td>1</td>
<td>.000</td>
</tr>
</tbody>
</table>

Table 4.16 Levene’s Test of Equality of Error Variances-Status 26

This section of output, between-subjects effects gives the univariate ANOVA effects for agency factor. The analysis has shown through the multivariate tests that the independent variable (type of agency) has significant effect simultaneously on the dependent variables (number of types of services, case expenditures, time a case is open, weekly earnings, and hours worked per work). The between-subjects effects analysis determines on which dependent variables or all of them this effect is significant. The findings of the
univariate ANOVA is given in Table 4.17. With the statistics computed at the alpha level of .05, the analysis established that all the univariate effects for agency are significant. The significance of F in the between-subjects effects test has the same interpretation as in the aforementioned multivariate analysis.

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Squares</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekly earnings at closure</td>
<td>333185.591</td>
<td>1</td>
<td>333185.591</td>
<td>4.431</td>
<td>.035</td>
</tr>
<tr>
<td>Hours worked per work at closure</td>
<td>13249.526</td>
<td>1</td>
<td>13249.526</td>
<td>120.25</td>
<td>.000</td>
</tr>
<tr>
<td>Cost of purchased services</td>
<td>5452669328.903</td>
<td>1</td>
<td>5452669328.903</td>
<td>56.054</td>
<td>.000</td>
</tr>
<tr>
<td>Number of types of services</td>
<td>650.976</td>
<td>1</td>
<td>650.976</td>
<td>78.935</td>
<td>.000</td>
</tr>
<tr>
<td>Application/ closure</td>
<td>24370323.576</td>
<td>1</td>
<td>24370323.576</td>
<td>33.669</td>
<td>.000</td>
</tr>
</tbody>
</table>

Table 4.17 Test of Between-Subjects Effects-Status 26

Table 4.18 gives information on parameter estimation. This output allows one to assess the significance of each parameter coefficient, which is highlighted in the model. The separate agencies are coded 0 and the combined agencies are coded 1. The analysis shows that consumers of separate agencies earned $10.810 less than those served through
combined agencies. The entirety of the output shows that consumers of separate agencies worked less hours, cost of purchased services were less, received a lesser number of types of services, and their cases were open less time, than consumers of combined agencies. There is statistical significance for all dependent variables since the P-Value is <.05 for all dependent variables.
<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Parameter</th>
<th>B</th>
<th>Std. Error</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower Bound</td>
</tr>
<tr>
<td>Weekly earnings</td>
<td>Intercept</td>
<td>365.538</td>
<td>3.469</td>
<td>.000</td>
<td>358.739</td>
</tr>
<tr>
<td></td>
<td>[agency=0]</td>
<td>-10.810</td>
<td>5.136</td>
<td>.035</td>
<td>-20.877</td>
</tr>
<tr>
<td></td>
<td>[agency=1]</td>
<td>0(b)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hours worked per week</td>
<td>Intercept</td>
<td>34.086</td>
<td>.133</td>
<td>.000</td>
<td>33.346</td>
</tr>
<tr>
<td></td>
<td>[agency=0]</td>
<td>-2.156</td>
<td>.197</td>
<td>.000</td>
<td>-2.541</td>
</tr>
<tr>
<td></td>
<td>[agency=1]</td>
<td>0(b)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost of purchased services</td>
<td>Intercept</td>
<td>6440.808</td>
<td>124.766</td>
<td>.000</td>
<td>6196.245</td>
</tr>
<tr>
<td></td>
<td>[agency=0]</td>
<td>-1382.952</td>
<td>184.716</td>
<td>.000</td>
<td>-1745.028</td>
</tr>
<tr>
<td></td>
<td>[agency=1]</td>
<td>0(b)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of services</td>
<td>Intercept</td>
<td>4.394</td>
<td>.036</td>
<td>.000</td>
<td>4.323</td>
</tr>
<tr>
<td></td>
<td>[agency=0]</td>
<td>-.478</td>
<td>.054</td>
<td>.000</td>
<td>-.583</td>
</tr>
<tr>
<td></td>
<td>[agency=1]</td>
<td>0(b)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Application/closure</td>
<td>Intercept</td>
<td>812.942</td>
<td>10.762</td>
<td>.000</td>
<td>791.845</td>
</tr>
<tr>
<td></td>
<td>[agency=0]</td>
<td>-92.456</td>
<td>15.934</td>
<td>.000</td>
<td>-123.689</td>
</tr>
<tr>
<td></td>
<td>[agency=1]</td>
<td>0(b)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.18 Parameter Estimates-Status 26
The pairwise comparison procedure compares the means between the combined agencies and separate agencies and tests whether their differences are significant for each of the dependent variables. From the result, it can be seen that for each dependent variable, combined agencies’ means were higher than separate agencies. The number of types of services for combined agencies was .478 higher than for separate agencies. Their difference is highly significant from the P-value (.000) and the 95% confidence interval.

The mean time a case is open was 92.456 days more for combined agencies than for separate agencies. The analysis shows that this difference is significant from the P-value (.000) and the 95% confidence level.

The mean cost for purchased VR services was $1,382.952 higher for combined agencies than for separate agencies. The difference is significant from the P-value (.000) and the 95% confidence interval.

The mean weekly earnings at case closure were $10.810 higher for combined agencies than for separate agencies. This difference is found to be statistically significant from the P-value (.035) and the 95% confidence level.

The mean hours worked per week at case closure were 2.156 hours more for combined agencies than for separate
agencies. The mean difference between the two agencies is found to be significant based on the P-value (.000) and the 95% confidence interval.
<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>(I)</th>
<th>(J)</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig.</th>
<th>95% Confidence Interval for Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekly earnings</td>
<td>Separate</td>
<td>Combined</td>
<td>-10.810(*)</td>
<td>5.136</td>
<td>.035</td>
<td>-20.877          - .744</td>
</tr>
<tr>
<td></td>
<td>Combined</td>
<td>Separate</td>
<td>10.810(*)</td>
<td>5.136</td>
<td>.035</td>
<td>.744                  20.877</td>
</tr>
<tr>
<td>Hours worked per week</td>
<td>Separate</td>
<td>Combined</td>
<td>-2.156(*)</td>
<td>.197</td>
<td>.000</td>
<td>-2.541          -1.770</td>
</tr>
<tr>
<td></td>
<td>Combined</td>
<td>Separate</td>
<td>2.156(*)</td>
<td>.197</td>
<td>.000</td>
<td>1.770                  2.541</td>
</tr>
<tr>
<td>Cost of purchased services</td>
<td>Separate</td>
<td>Combined</td>
<td>-1382.952(*)</td>
<td>184.716</td>
<td>.000</td>
<td>-1745.028 -1020.877</td>
</tr>
<tr>
<td></td>
<td>Combined</td>
<td>Separate</td>
<td>1382.952(*)</td>
<td>184.716</td>
<td>.000</td>
<td>1020.877                 1745.028</td>
</tr>
<tr>
<td>Number of types of services</td>
<td>Separate</td>
<td>Combined</td>
<td>-.478(*)</td>
<td>.054</td>
<td>.000</td>
<td>-.583                -.372</td>
</tr>
<tr>
<td></td>
<td>Combined</td>
<td>Separate</td>
<td>.478(*)</td>
<td>.054</td>
<td>.000</td>
<td>.372                   .583</td>
</tr>
<tr>
<td>Appl./ closure</td>
<td>Separate</td>
<td>Combined</td>
<td>-92.456(*)</td>
<td>15.934</td>
<td>.000</td>
<td>-123.689 -61.223</td>
</tr>
<tr>
<td></td>
<td>Combined</td>
<td>Separate</td>
<td>92.456(*)</td>
<td>15.934</td>
<td>.000</td>
<td>61.223                 123.689</td>
</tr>
</tbody>
</table>

(*) The mean difference is significant at the .05 level.

Table 4.19 Pairwise Comparisons-Status 26

91
Multivariate Analysis of Variance - Status 28/30

Research questions 2, 4, and 6 were addressed through MANOVA analysis. These research questions addressed the dependent variables for cases closed status 28. These closures are not limited to cases with a competitive employment goal. The RSA-dataset does not have a mechanism to identify the employment goal of cases that are closed unsuccessfully, status 28 or status 30.

Table 4.20 illustrates the descriptive statistics for visually impaired consumers total N=6,796 whose cases were closed unsuccessfully, status 28/30, during FFY02 and with data available on all of the dependent variables under investigation. The results show the mean differences for each dependent variable under consideration for this portion of the study.
<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Separate</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of purchased services</td>
<td></td>
<td>4003.50</td>
<td>8390.244</td>
<td>3473</td>
</tr>
<tr>
<td>Combined</td>
<td></td>
<td>5017.92</td>
<td>10266.487</td>
<td>3323</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>4499.51</td>
<td>9367.836</td>
<td>6796</td>
</tr>
<tr>
<td>Number of types of services</td>
<td></td>
<td>3.2822</td>
<td>2.95655</td>
<td>3473</td>
</tr>
<tr>
<td>Combined</td>
<td></td>
<td>3.8787</td>
<td>2.56417</td>
<td>3323</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>3.5739</td>
<td>2.78744</td>
<td>6796</td>
</tr>
<tr>
<td>Application/closure</td>
<td></td>
<td>1029.2851</td>
<td>994.15025</td>
<td>3473</td>
</tr>
<tr>
<td>Combined</td>
<td></td>
<td>1031.8926</td>
<td>912.41265</td>
<td>3323</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>1030.5600</td>
<td>954.98878</td>
<td>6796</td>
</tr>
</tbody>
</table>

Table 4.20 Descriptive Statistics-Status 28/30

Multivariate tests, table 4.21, were utilized to determine if the independent variable (type of agency—separate or combined) has significant effect simultaneously on the dependent variables (number of types of services, case expenditures, application-closure-time a case is open). MANOVA was computed exercising an exact F statistic. The degrees of freedom are 4. Degrees of freedom are a mathematical property of a set of data that is related to the number of restrictions imposed on the data (Ary et al., 1996). In general terms the number of degrees of freedom is
based on the sample size. The alpha level was set at .05 to calculate the power and to reduce Type I error.

The main effect addresses the individual effect of the independent variable on the dependent variable. With this portion of the study the effect of agency type on number of types of services, case expenditures, time a case is open (application-closure) is studied. There are four multivariate significance tests to address each main effect and each intercept. This study employed the four most utilized: Hotelling’s Trace, Wilks’ Lambda, Pillai’s Trace, and Roy’s Largest Root. If the dependent variables are strongly interrelated on a single dimension, then Roy’s is the most appropriate test to use. Hotelling’s Trace is commonly used for two dependent groups and Wilks’ Lambda is better employed if there are more than two groups. Which test statistic to utilize should be determined by which test is most immune to violations of the assumptions of MANOVA and still maintains the greatest power (Hair et al., 1998). “There is agreement that either Pillai’s or Wilks’ Lambda best meets these needs, although evidence suggests Pillai’s is more robust and should be used if sample size decreases, unequal cell sizes appear, or homogeneity of covariances is violated” (Hair et al., 1998, p.351). Roy’s is the most
powerful statistic and should be employed if the researcher is confident that all assumptions are strictly met. A comparison can be made between all of these measures, as many statistical packages make these tests available (Hair et al., 1998). SPSS was the statistical analysis software utilized for this study. SPSS makes all of these tests available. The results of all of the tests, Pillai’s Trace (.000), Wilks’ Lambda (.000), Hotelling’s Trace (.000), and Roy’s Largest Root (.000) are the same, thus showing that all effects are significant.
<table>
<thead>
<tr>
<th>Effect</th>
<th>Value</th>
<th>F</th>
<th>df</th>
<th>Sig.</th>
<th>Partial Eta Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>.703</td>
<td>4026.419(b)</td>
<td>4</td>
<td>.000</td>
<td>.703</td>
</tr>
<tr>
<td>Wilks’ Lambda</td>
<td>.297</td>
<td>4026.419(b)</td>
<td>4</td>
<td>.000</td>
<td>.703</td>
</tr>
<tr>
<td>Hotelling’s Trace</td>
<td>2.372</td>
<td>4026.419(b)</td>
<td>4</td>
<td>.000</td>
<td>.703</td>
</tr>
<tr>
<td>Roy’s Largest Root</td>
<td>2.372</td>
<td>4026.419(b)</td>
<td>4</td>
<td>.000</td>
<td>.703</td>
</tr>
<tr>
<td>Agency</td>
<td>.014</td>
<td>23.396(b)</td>
<td>4</td>
<td>.000</td>
<td>.014</td>
</tr>
<tr>
<td>Wilks’ Lambda</td>
<td>.986</td>
<td>23.396(b)</td>
<td>4</td>
<td>.000</td>
<td>.014</td>
</tr>
<tr>
<td>Hotelling’s Trace</td>
<td>.014</td>
<td>23.396(b)</td>
<td>4</td>
<td>.000</td>
<td>.014</td>
</tr>
<tr>
<td>Roy’s Largest Root</td>
<td>.014</td>
<td>23.396(b)</td>
<td>4</td>
<td>.000</td>
<td>.014</td>
</tr>
</tbody>
</table>

Table 4.21 Multivariate Tests-Status 28/30

MANOVA assumes that each dependent variable will have similar variance for all groups (all cells in the factor design matrix). The Levene test is used to assess whether the variances of a single metric variable is equal across groups.

The Levene statistic tests this assumption. If the Levene statistic is significant at the .05 level or better, the researcher rejects the null hypothesis that the groups have equal variances. The Levene test is robust in the face of departures from normality. However the failure to meet
this assumption of homogeneity of variances is not fatal to MANOVA, which is relatively robust, particularly when groups are of equal sample size. For this data, the homogeneity of variances assumption is met for two of the dependent variables (cost of purchased services, and number of types of services) as denoted by the Sig. of <.05 for those dependent variables. The assumption was not met by the variable, time a case is open (application-closure) shown by Sig. of .910. The significance of F has the same interpretation as in the multivariate analysis.

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>F</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of purchased services</td>
<td>18.337</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>Number of types of services</td>
<td>90.558</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>Application-closure</td>
<td>16.062</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>Time case is open</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.22 Levene’s Test of Equality of Error Variances-Status 28/30

This section of output, between-subjects effects gives the univariate ANOVA effects for agency factor. The analysis has shown through the multivariate tests that the independent variable (type of agency) has significant effect
simultaneously on the dependent variables (number of types of services, case expenditures, time a case is open, weekly earnings, and hours worked per week). The between-subjects effects analysis determines on which dependent variables or all of them this effect is significant. The findings of the univariate ANOVA is given in Table 4.23. With the statistics computed at the alpha level of .05, the analysis established the univariate effects for agency are significant for, cost of purchased services (.000), and number of types of services (.000). However, application-closure (time a case is open), was deemed insignificant. The significance of F for the between-subjects effects test has the same interpretation as in the aforementioned multivariate analysis.

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Squares</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of purchased services</td>
<td>1747512174.791</td>
<td>1</td>
<td>1747512174.791</td>
<td>19.969</td>
<td>.000</td>
</tr>
<tr>
<td>Number of types of services</td>
<td>604.326</td>
<td>1</td>
<td>604.326</td>
<td>78.668</td>
<td>.000</td>
</tr>
<tr>
<td>Application/closure</td>
<td>11546.065</td>
<td>1</td>
<td>11546.065</td>
<td>.013</td>
<td>.910</td>
</tr>
</tbody>
</table>

Table 4.23 Test of Between-Subjects Effects—Status 28/30
Table 4.24 gives information on parameter estimation. This output allows one to assess the significance of each parameter coefficient, which is highlighted in the model. The separate agencies are coded 0 and the combined agencies are coded 1. The analysis shows that consumers of separate agencies’ cost of purchased services were $1,014.423 less than those of combined agencies. Consumers of separate agencies received .597 less number of types of services than their combined agencies counterparts. These differences are statistically significant with P-Values < .05, as both are .000. The analysis shows that separate agencies’ consumers’ cases were open 2.608 days less than combined agencies consumers. However this difference was found insignificant in the analysis with a P-Value of .910 and thus not < .05.
<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Parameter</th>
<th>B</th>
<th>Std. Error</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of purchased services</td>
<td>Intercept</td>
<td>5017.921</td>
<td>162.281</td>
<td>.000</td>
<td>30.921</td>
</tr>
<tr>
<td></td>
<td>[agency=0]</td>
<td>-1014.423</td>
<td>227.009</td>
<td>.000</td>
<td>4.469</td>
</tr>
<tr>
<td></td>
<td>[agency=1]</td>
<td>0(b)</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of types of services</td>
<td>Intercept</td>
<td>3.879</td>
<td>.048</td>
<td>.000</td>
<td>3.784</td>
</tr>
<tr>
<td></td>
<td>[agency=0]</td>
<td>-0.597</td>
<td>.067</td>
<td>.000</td>
<td>-0.728</td>
</tr>
<tr>
<td></td>
<td>[agency=1]</td>
<td>0(b)</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Application/closure</td>
<td>Intercept</td>
<td>1031.893</td>
<td>16.568</td>
<td>.000</td>
<td>999.415</td>
</tr>
<tr>
<td></td>
<td>[agency=0]</td>
<td>-2.608</td>
<td>23.176</td>
<td>.910</td>
<td>-48.040</td>
</tr>
<tr>
<td></td>
<td>[agency=1]</td>
<td>0(b)</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.24 Parameter Estimates-Status 28/30
The pairwise comparisons procedure compares the means between the separate agencies and combined agencies and tests whether the differences are significant for each of the dependent variables.

The mean cost of VR services is $1,014.423 more with combined agencies than separate agencies. The analysis found this difference to be statistically significant based on the P-Value (.000) and the 95% confidence level.

The number of types of services is .597 more with the combined agencies than for the separate agencies. Their difference is highly significant for the P-Value (.000) and the 95% confidence interval.

The time a case is open is 2.608 days more for combined agencies than for separate agencies. This mean difference is not statistically significant between combined agencies and separate agencies for the time a case is open from application to closure for cases closed status 28, P-Value (.910).
<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>(I)</th>
<th>(J)</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig.</th>
<th>95% Confidence Interval for Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower Bound</td>
</tr>
<tr>
<td>Cost of purchased services</td>
<td>Separate</td>
<td>Combined</td>
<td>-1014.423(*)</td>
<td>227.009</td>
<td>.000</td>
<td>-1459.432</td>
</tr>
<tr>
<td></td>
<td>Combined</td>
<td>Separate</td>
<td>1014.423(*)</td>
<td>227.009</td>
<td>.000</td>
<td>569.415</td>
</tr>
<tr>
<td>Number of services</td>
<td>Separate</td>
<td>Combined</td>
<td>-.597(*)</td>
<td>.067</td>
<td>.000</td>
<td>-.728</td>
</tr>
<tr>
<td></td>
<td>Combined</td>
<td>Separate</td>
<td>.597(*)</td>
<td>.067</td>
<td>.000</td>
<td>.456</td>
</tr>
<tr>
<td>Appl.to closure</td>
<td>Separate</td>
<td>Combined</td>
<td>-2.608</td>
<td>23.176</td>
<td>.910</td>
<td>-48.040</td>
</tr>
<tr>
<td></td>
<td>Combined</td>
<td>Separate</td>
<td>2.608</td>
<td>23.176</td>
<td>.910</td>
<td>-42.825</td>
</tr>
</tbody>
</table>

*The mean difference is significant at the .05 level

Table 4.25 Pairwise Comparisons—Status 28/30

Chi-Square Analysis—Status 26

Chi-square analysis was used to investigate the types of services provided to individuals with visual impairments between the two vocational rehabilitation agency structures. The independent, categorical variable was agency structure, separate and combined. The dependent, categorical variable addressed was the type of service that the consumers received.

Chi-square analysis was judged to be suitable for this portion of the study as it is utilized for independent variables that are nominal and have two categories along with a categorical dependent variable, types of service.
Caution must be employed not to violate assumptions, as if the independent variable is interval or ratio, then a different analysis needs to be utilized (Hopkins et al., 1996). The assumptions were not violated in this study, as the independent variable is non-metric. Chi-square was utilized to find the significance of differences among the proportions of subjects that fall into different categories (Ary et al., 1996). “Chi-square analysis can also be employed to test a null hypothesis, by indicating that there is no significant difference between the proportions of the subjects falling into any number of different categories” (Ary et al., 1996, p.216).

Table 4.26 presents descriptive statistics for the chi-square analysis that was applied to address research question 9. Chi-square tests were used to test whether there was a significant relationship between type of agency (separate/combined) and each type of service provided. With this analysis if the p-value (Sig.) is less than 0.05, then there is evidence in the data to conclude that the relationship between type of agency (separate/combined) and each type of service provided is statistically significant. Consequently, this study found statistical significance, with 9 of the 10 services examined, with the exception being
rehabilitation technology. Hence, the chi-square analysis deemed that there is a relationship between the type of agency (separate/combined) and the type of service provided to consumers with visual impairment who were successfully closed.

The chi-square analysis was utilized to look at proportions of 10 of the major services that were received by individuals with visual impairments between two agency structures (separate/combined). The likelihood-ratio chi square test statistic was employed to test the statistical null hypothesis. Of the 11,492 consumers that were closed in competitive employment, 4,746 consumers of combined agencies received assessment services. Likewise, 3,321 consumers of separate agencies received assessment services. The likelihood-ratio chi-square statistic for assessment services was 216.256 and had 1 degree of freedom. Services provided to consumers are shown to be statistically insignificant when p>0.05, and statistically significant when p<0.05. The P-Value for assessment services was .000. Thus there is statistical significance for this dependent variable.

For the diagnosis and treatment of impairments services, 3,630 consumers from combined agencies received
these types of services. 2,480 consumers from separate agencies received services from this service category. The likelihood-ratio chi-square statistic for diagnosis and treatment of impairment services was 133.421 with a degree of freedom of 1. The P-Value was .000. Therefore statistical significance was identified for this dependent variable.

3,655 consumers from combined agencies received counseling services, while 2,660 consumers of separate agencies obtained counseling services. The likelihood-ratio chi-square statistic for counseling services was 69.275 with a degree of freedom of 1. The P-Value was .000. Therefore statistical significance was identified for this dependent variable.

For college/university training, 851 combined agencies’ consumers obtained this service. 499 consumers from separate agencies received college/university training. The likelihood-ratio chi-square statistic for college/university training was 46.875 with 1 degree of freedom. The P-Value was .000. Hence statistical significance was found for this dependent variable.

Consumers from combined agencies received occupational/vocational training 608 times, whereas 379
consumers from separate agencies received these services. The likelihood-ratio chi-square statistic for occupational/vocational training was 22.965 with a degree of freedom of 1. The P-Value was .000. With this there is a statistical significance for this type of service.

1,464 combined agencies consumers were given job search assistance services. For this element, 931 consumers of separate agencies obtained job search assistance services. The likelihood-ratio chi-square statistic for job search assistance services was 56.044 with a degree of freedom of 1. The P-Value was .000. On this service type statistic significance was identified.

For job placement assistance services, 1,565 combined agencies consumers received these services. 863 individuals with visual impairments receiving services through separate agencies obtained job placement services. The likelihood-ratio chi-square statistic for job placement assistance services was 127.915 with a degree of freedom of 1. The P-Value was .000. Statistical significance was found for this service type.

For transportation services 1,587 consumers of combined agencies obtained these services. 970 were identified as receiving this service from separate agencies.
The likelihood-ratio chi-square statistic for transportation services was 79.125 with 1 degree of freedom. The P-Value was .000. As such for this service type, there is statistical significance.

On the service type of maintenance, 879 consumers of combined agencies received this service type. 579 Consumers of separate agencies obtained maintenance services. The likelihood ratio chi-square statistic was 23.710 with 1 degree of freedom. The P-Value was .000, hence showing statistical significance for this service type.

On the final service type studied, rehabilitation technology, 2,189 combined agencies’ consumers were identified as receiving this service type. It was found that 1,828 consumers from separate agencies received this type of service. The likelihood ratio chi-square statistic was .034 with 1 degree of freedom. The P-Value was .854 and thus p>0.05, signifying there is no statistical difference between the proportion of combined agencies’ consumers and separate agencies’ consumers receiving rehabilitation technology services.

Chi-square analysis is sensitive to large sample sizes, such as found with the RSA-911 dataset. For that reason, phi coefficient was run as a post hoc test for the
importance of significance. The function of the post hoc was to aid in establishing the strength of the relationship between the mean differences of the groups. Statistical significance determines whether the results can be attributed to chance, while practical significance assists in determining whether the results are useful or substantial enough to warrant action (Hair et al., 1998).
<table>
<thead>
<tr>
<th>Service</th>
<th>Separate</th>
<th>Combined</th>
<th>Chi-square Likelihood Value</th>
<th>df</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment</td>
<td>3,321</td>
<td>4,746</td>
<td>216.256</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>Diagnostic</td>
<td>2,480</td>
<td>3,630</td>
<td>133.421</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>Counseling</td>
<td>2,660</td>
<td>3,655</td>
<td>69.275</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>College/Univ. Training</td>
<td>499</td>
<td>851</td>
<td>46.875</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>Occ/Vocational Training</td>
<td>379</td>
<td>608</td>
<td>22.965</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>Job Search</td>
<td>931</td>
<td>1,464</td>
<td>56.044</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>Job Placement</td>
<td>863</td>
<td>1,565</td>
<td>127.915</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>Transportation</td>
<td>879</td>
<td>1,587</td>
<td>79.125</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>Maintenance</td>
<td>579</td>
<td>879</td>
<td>23.710</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>Rehabilitation Technology</td>
<td>1,828</td>
<td>2,189</td>
<td>.034</td>
<td>1</td>
<td>.854</td>
</tr>
</tbody>
</table>

Table 4.26 Types of Services Provided-Status 26
With the chi-square sensitivity to large sample sizes, a phi coefficient was performed as a post hoc test to address the importance of the differences found in the chi-square analysis. Phi values should be between -1 and 1. If the value is closer to 0, then there is a weak relationship between type of agency (separate and combined) and whether the consumer received services. If the value is closer to 1, then the association is very strong. Of the services found to be statistically significant, assessment, diagnosis and treatment of impairments, and job placement had phi values in the vicinity of .10. This shows a small effect size. Counseling, and transportation services had phi values approaching a small effect size, while the rest of the services, college/university training, occupational/vocational training, job search and maintenance had values less than .10 and closer to 0 that are suggestive of a weaker relationship. Cohen’s (1988) interpretations for phi coefficient are that .10 is a small effect size, .30 is a medium effect size, and .50 is a large effect size.

The likelihood-ratio chi-square is the most fundamental measure of overall fit and is the only statistically based measure of goodness-of-fit available in structural equation modeling. A large value of chi-square
relative to the degrees of freedom signifies that the observed and estimated matrices differ considerably. “Statistical significance levels indicate the probability that these differences are due solely to sampling variations. Low chi-square values, resulting in significance levels greater than .05 or .01, indicate that the actual and predicted input matrices are not statistically different” (Hair et al., 1998, p.654).
<table>
<thead>
<tr>
<th>Service</th>
<th>Combined</th>
<th>Separate</th>
<th>phi</th>
<th>Likelihood ratio value</th>
<th>df</th>
<th>P-Value</th>
<th>% Combined</th>
<th>% Separate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment</td>
<td>4,746</td>
<td>3,321</td>
<td>.137</td>
<td>216.256</td>
<td>1</td>
<td>.000</td>
<td>76.0</td>
<td>63.3</td>
</tr>
<tr>
<td>Diagnostic</td>
<td>3,630</td>
<td>2,480</td>
<td>.108</td>
<td>133.421</td>
<td>1</td>
<td>.000</td>
<td>58.1</td>
<td>47.3</td>
</tr>
<tr>
<td>Counseling</td>
<td>3,655</td>
<td>2,660</td>
<td>.078</td>
<td>69.275</td>
<td>1</td>
<td>.000</td>
<td>58.5</td>
<td>50.7</td>
</tr>
<tr>
<td>College/Univ Training</td>
<td>851</td>
<td>499</td>
<td>.063</td>
<td>46.875</td>
<td>1</td>
<td>.000</td>
<td>13.6</td>
<td>9.5</td>
</tr>
<tr>
<td>Occ/Vocational Training</td>
<td>608</td>
<td>379</td>
<td>.044</td>
<td>22.965</td>
<td>1</td>
<td>.000</td>
<td>9.7</td>
<td>7.2</td>
</tr>
<tr>
<td>Job Search</td>
<td>1,464</td>
<td>931</td>
<td>.070</td>
<td>56.044</td>
<td>1</td>
<td>.000</td>
<td>23.4</td>
<td>17.8</td>
</tr>
<tr>
<td>Job Placement</td>
<td>1,565</td>
<td>863</td>
<td>.105</td>
<td>127.915</td>
<td>1</td>
<td>.000</td>
<td>25.0</td>
<td>16.5</td>
</tr>
<tr>
<td>Transportation</td>
<td>1,587</td>
<td>970</td>
<td>.083</td>
<td>79.125</td>
<td>1</td>
<td>.000</td>
<td>25.4</td>
<td>18.5</td>
</tr>
<tr>
<td>Maintenance</td>
<td>879</td>
<td>579</td>
<td>.045</td>
<td>23.710</td>
<td>1</td>
<td>.000</td>
<td>14.1</td>
<td>11.0</td>
</tr>
<tr>
<td>Rehabilitation Technology</td>
<td>2,189</td>
<td>1,828</td>
<td>.002</td>
<td>.034</td>
<td>1</td>
<td>.854</td>
<td>35.0</td>
<td>34.9</td>
</tr>
</tbody>
</table>

Table 4.27 Phi Coefficient-Types of Services Received-Status 26
Chi-Square Analysis-Status 28/30

The N for this analysis was 6,796, with 3,473 from separate agencies and 3,323 from combined agencies. This includes all 28/30 closures. There is no mechanism in the RSA-911 to identify the employment goal of cases closed status 28/30, so the closures can include all unsuccessful closure types as outlined in Appendix A.

Chi-square was used to look at the same 10 types of services for those closed status 28/30 to determine if consumers of one agency, separate or combined, received those services statistically significantly more often. The likelihood-ratio chi-square test statistic was used to test the statistical null hypothesis. Of the 3,473 consumers of separate agencies closed status 28/30, 413 received maintenance services, while 447 consumers of combined agencies received maintenance services. The likelihood-ratio chi-square statistic for maintenance services was 3.738 and had 1 degree of freedom. Services provided to consumers were shown to be statistically insignificant when p>0.05 and statistically significant when p<0.05. The P-Value for maintenance services was .053. Therefore there is
no statistical difference between maintenance services received by individuals with visual impairments through separate and combined agencies.

The services, assessment, diagnosis and treatment of impairments, counseling, college/university, occupational/vocational training, job placement, transportation, and rehabilitation technology had P-Values of .000. The service job search had a P-Value of .004. Thus statistical significance was found for all those services.
<table>
<thead>
<tr>
<th>Service</th>
<th>Separate</th>
<th>Combined</th>
<th>Chi-square Likelihood Value</th>
<th>df</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment</td>
<td>2,087</td>
<td>2,456</td>
<td>171.548</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>Diagnostic</td>
<td>1,235</td>
<td>1,388</td>
<td>27.639</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>Counseling</td>
<td>1,548</td>
<td>1,748</td>
<td>43.891</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>College/Univ. Training</td>
<td>324</td>
<td>464</td>
<td>35.698</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>Occ/Vocational Training</td>
<td>225</td>
<td>364</td>
<td>43.264</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>Job Search</td>
<td>472</td>
<td>533</td>
<td>8.083</td>
<td>1</td>
<td>.004</td>
</tr>
<tr>
<td>Job Placement</td>
<td>302</td>
<td>410</td>
<td>24.078</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>Transportation</td>
<td>740</td>
<td>992</td>
<td>65.430</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>Maintenance</td>
<td>413</td>
<td>447</td>
<td>3.738</td>
<td>1</td>
<td>.053</td>
</tr>
<tr>
<td>Rehabilitation Technology</td>
<td>716</td>
<td>816</td>
<td>15.099</td>
<td>1</td>
<td>.000</td>
</tr>
</tbody>
</table>

Table 4.28 Types of Services Provided-Status 28/30

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As with the services rendered to those cases closed status 26, phi coefficient was performed as a follow-up test in chi-square to test the magnitude of differences found in the chi-square analysis since chi-square tends to be sensitive to large sample sizes. Phi values should be between -1 and 1. If the value is closer to 0, then there is a weaker relationship between agency type (separate or combined) and whether the consumers received services in statistically relevant proportions. If the value is closer to 1, then the association is very strong. Cohen’s (1988) interpretations for the phi coefficient are that .10 is a small effect size, .30 is a medium effect size, and .50 is a large effect size. Of the services provided that showed a statistical significance, P-Value <.05, assessment, and transportation showed a small effect. Counseling, college/university training, and occupational/vocational training have phi values that are in the vicinity of a small effect size. Whereas diagnosis and treatment of impairments, job search, job placement, and rehabilitation technology services showed phi values closer to 0 and thus suggestive of a weak relationship.

The likelihood-ratio chi-square is the most fundamental measure of overall fit and is the only statistically based measure of goodness-of-fit available in structural equation
modeling. A large value of chi-square relative to the degrees of freedom signifies that the observed and estimated matrices differ considerably. “Statistical significance levels indicate the probability that these differences are due solely to sampling variations. Low chi-square values, resulting in significance levels greater than .05 or .01, indicate that the actual and predicted input matrices are not statistically different” (Hair et al., 1998, p.654).
<table>
<thead>
<tr>
<th>Service</th>
<th>Combined</th>
<th>Separate</th>
<th>phi</th>
<th>Likelihood ratio value</th>
<th>df</th>
<th>P-Value</th>
<th>% Combined</th>
<th>% Separate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment</td>
<td>2,456</td>
<td>2,047</td>
<td>.158</td>
<td>171.548</td>
<td>1</td>
<td>.000</td>
<td>73.9</td>
<td>58.9</td>
</tr>
<tr>
<td>Diagnostic</td>
<td>1,388</td>
<td>1,235</td>
<td>.064</td>
<td>27.639</td>
<td>1</td>
<td>.000</td>
<td>41.8</td>
<td>35.6</td>
</tr>
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<td>1,548</td>
<td>.080</td>
<td>43.891</td>
<td>1</td>
<td>.000</td>
<td>52.6</td>
<td>44.6</td>
</tr>
<tr>
<td>College/ Univ Training</td>
<td>464</td>
<td>324</td>
<td>.072</td>
<td>35.698</td>
<td>1</td>
<td>.000</td>
<td>14.0</td>
<td>9.3</td>
</tr>
<tr>
<td>Occ/ Vocational Training</td>
<td>364</td>
<td>225</td>
<td>.080</td>
<td>43.264</td>
<td>1</td>
<td>.000</td>
<td>11.0</td>
<td>6.5</td>
</tr>
<tr>
<td>Job Search</td>
<td>533</td>
<td>472</td>
<td>.034</td>
<td>8.083</td>
<td>1</td>
<td>.004</td>
<td>16.0</td>
<td>13.6</td>
</tr>
<tr>
<td>Job Placement</td>
<td>410</td>
<td>302</td>
<td>.059</td>
<td>24.078</td>
<td>1</td>
<td>.000</td>
<td>12.3</td>
<td>8.7</td>
</tr>
<tr>
<td>Trans.</td>
<td>992</td>
<td>740</td>
<td>.098</td>
<td>65.430</td>
<td>1</td>
<td>.000</td>
<td>29.9</td>
<td>21.3</td>
</tr>
<tr>
<td>Maintenance</td>
<td>447</td>
<td>413</td>
<td>.023</td>
<td>3.738</td>
<td>1</td>
<td>.053</td>
<td>13.4</td>
<td>11.9</td>
</tr>
<tr>
<td>Rehab Technology</td>
<td>816</td>
<td>716</td>
<td>.047</td>
<td>15.099</td>
<td>1</td>
<td>.000</td>
<td>24.6</td>
<td>20.6</td>
</tr>
</tbody>
</table>

Table 4.29 Phi Coefficient-Types of Services Received-Status 28/30
CHAPTER 5

SUMMARY

This chapter contains eight sections: (1) Purpose of the Study; (2) Significant Findings; (3) Summary of the Research Questions; (4) General Discussion; (5) Administrators’ Thoughts and Perspectives; (6) Limitations of the Study; (7) Directions for Future Research; and (8) Conclusion.

This study examined the differences in program outcomes and service delivery of persons with visual impairments in relation to the state-federal vocational rehabilitation agency structure (separate or combined) in which they received VR services. Specifically this study sought to address the following research questions.

Research Question 1. Is there a significant difference in the number of types services provided by separate agencies vs. combined agencies to successfully rehabilitated (status 26) visually impaired consumers?
Research Question 2. Is there a significant difference in the number of types of services provided by separate agencies vs. combined agencies to unsuccessfully rehabilitated (status 28/30) visually impaired consumers?

Research Question 3. Is there a significant difference in the time a case is open by agencies vs. separate combined agencies providing services to successfully rehabilitated (status 26) visually impaired consumers?

Research Question 4. Is there a significant difference in the time a case is open by agencies vs. separate combined agencies providing services for unsuccessfully rehabilitated (status 28/30) visually impaired consumers?

Research Question 5. Is there a significant difference in case expenditures between separate vs. combined agencies providing services to successfully rehabilitated (status 26) visually impaired consumers?

Research Question 6. Is there a significant difference in case expenditures between separate vs. combined agencies providing services to unsuccessfully rehabilitated (status 28/30) visually impaired consumers?
Research Question 7. Is there a significant difference in earnings per week for those served successfully (status 26) by separate vs. combined agencies?

Research Question 8. Is there a significant difference in hours worked per week for those successfully rehabilitated (status 26) by separate vs. combined agencies?

Research Question 9. Is there a significant difference in the types of services provided to those successfully rehabilitated (status 26) by separate vs. combined agencies?

Research Question 10. Is there a significant difference in the types of services provided to those unsuccessfully rehabilitated (status 28/30) by separate vs. combined agencies?

Purpose of the Study

The purpose of this study was to contribute to the understanding of the role that the type of state-federal vocational rehabilitation agency (separate and combined) has on selected outcomes and service delivery for individuals with visual impairments receiving vocational rehabilitation services within the state-federal vocational rehabilitation system.
The civilian vocational rehabilitation program began with the passage of the Smith-Fess Act (1920) (also known as the Civilian Rehabilitation Act). During the following decades state vocational rehabilitation programs provided few, if any, services to persons who were visually impaired (Clunk, 1966; Koestler, 1976; Rives, 1966; Rubin & Roessler, 2001). Visually impaired applicants were not considered candidates for vocational rehabilitation services and were generally referred to state commissions and agencies serving only individuals with visual impairments. These state commissions and agencies were brought under the purview of the state-federal vocational rehabilitation auspices in 1943 with the passage of the Bardon-LaFollette Act. This legislation provided the first federal support for consumers with visual impairments by giving financial support to the separate vocational rehabilitation agencies or state commissions serving persons who were blind (Rubin & Roessler, 2001). The benefits of providing specialized vocational rehabilitation services to consumers who are visually impaired from separate (specialized blind) agencies has generated debate from that time through today.

The subjects used in this study were obtained from the Rehabilitation Services Administration (RSA) 911 database.
The cases of the subjects were closed from the state-federal rehabilitation agency throughout the United States during federal fiscal year 2002. The original database consisted of 643,415. The original population of individuals coded with visual impairments consisted of 28,470 consumers. Consumers who were coded as having a visual impairment were compared to determine if there were difference in the number of types of services, the time a case is open, case expenditures, earnings per week, hours worked per week, and the types of services provided. This study utilized Multivariate Analysis of Variance (MANOVA) for research questions 1 through 8 to compare mean differences between agency structures (separate vs. combined) on the aforementioned variables. A Chi-square analysis was conducted for research questions 9 and 10. This addressed the types of services provided. In most instances, statistically significant differences were found between consumers served by the different agency types (separate or combined).

**Significant Findings**

This study found statistical significance on all dependent variables in the model when looking at status 26 case closures. Of specific interest is that the means for
all dependent variables (number of types of services, time a case is open, case expenditures, earnings per work, hours worked per week) utilizing MANOVA analysis were higher for consumers with visual impairments rehabilitated successfully in competitive employment by combined agencies for status 26 competitive rehabilitations. Of particular interest is that combined agencies’ consumers earned approximately $11 more per week (approximately $572 a year) than their separate agencies’ counterparts.

The National Accreditation Council for Agencies Serving the Blind and Visually Handicapped (NAC) (1997) utilizing the 1994 RSA 911 database found that separate (blind) agencies had higher mean weekly earnings for closures than did the combined agencies. However, Capella (2001) found that there were no differences in weekly earnings of consumers with visual impairments based on the type of agency that served them. This current analysis found results differing from both of the previous studies on this variable, weekly earnings at closure.

Summary of Research Questions

Research Question 1. Is there a significant difference in the number of types of services provided by separate agencies vs. combined agencies to successfully rehabilitated
visually impaired consumers? MANOVA was utilized for the data analysis for this research question. The Levene Test of Equality of Error Variances was utilized to test the assumptions of MANOVA. The homogeneity of variance was met for this dependent variable as it was for all studied variables.

The consumers of separate agencies received a mean of 3.92 types of services, whereas combined agencies' consumers received a mean of 4.40 types of services during the life of their cases. The MANOVA analysis found this difference to be statistically significant at the .05 level.

Research Question 2. Is there a significant difference in the number of types of services provided by separate agencies vs. combined agencies to unsuccessfully rehabilitated (status 28/30) visually impaired consumers? There is a statistically significant difference in the number of types of services received by consumers closed status 28/30 by the different agency structures. Consumers of combined agencies received 3.88 types of services and visually impaired consumers of separate agencies obtained 3.30 types of services.

Research Question 3. Is there a significant difference in the time a case is open by separate agencies
vs. combined agencies providing services to successfully closed (status 26) visually impaired consumers? This question looked at the time a case was open from the date the consumer signed their application for vocational rehabilitation services until their case was closed after successfully achieving a competitive employment outcome. Consumers of separate agencies’ cases were open for a mean of 720.48 days (2.02 years), while combined agencies’ consumers cases were open a mean time of 812.94 days (2.28 years). This difference of approximately 92 days was identified in the MANOVA analysis as statistically significant at the .05 level.

Research Question 4. Is there a significant difference in the time a case is open by separate agencies vs. combined agencies providing services to unsuccessfully closed (status 28/30) visually impaired consumers? Of the total N=6,796 whose cases were closed status 28 during the FFY02, 3,473 were closed by the separate agencies and 3,323 were closed from the combined agencies. For the individuals worked through the separate agencies, their cases were open for a mean time of 1029.29 days. The combined agencies’ cases for those individuals closed status 28 were open a mean of 1031.90 days. The mean difference of only
approximately 2.6 days was deemed though the MANOVA analysis as statistically insignificant with a P-Value of >.05 at .910.

Research Question 5. Is there a significant difference in case expenditures between separate agencies vs. combined agencies providing services to successfully rehabilitated (status 26) visually impaired consumers? The standard deviation for successfully vocationally rehabilitated consumers of separate agencies was 8768.853 representing an N=5,243. The standard deviation for consumers rehabilitated status 26 by combined agencies was 10,694.716 representing an N=6,249. The mean cost of purchased services was $6,440.81 for combined agencies’ cases. Separate agencies’ cases mean cost was 5,057.86. This is a mean difference of $1,382.95. This mean disparity was identified as statistically significant with a P-Value of .000.

Research Question 6. Is there a significant difference in case expenditures between separate agencies vs. combined agencies providing services to unsuccessfully rehabilitated (status 28/30) visually impaired consumers? For status 28/30 closures the combined agencies’ standard deviation for the cost of purchased services was 10,266.487

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for the N=3,323. The standard deviation in this category for separate agencies cases in 8,390.50 for the N=3,473. For unsuccessful closures the mean for purchased services was $5,017.92 for combined agencies, while the mean was $4,003.50. Statistical significance was found in the cost of purchased services for cases closed status 28/30, with the mean difference of $1,014.42.

Research Question 7. Is there a significant difference in earnings per week for those served successfully (status 26) by separate agencies vs. combined agencies? Statistical significance was found in earnings per week as consumers successfully rehabilitated earned $365.54 a week while successfully rehabilitated separate agencies' consumers earned a mean of $354.73 a week. The standard deviation for combined agencies was 278.386, while the separate agencies' standard deviation for weekly earnings at closure was 269.159. The mean difference equates to $562.12 more earning per year for successfully rehabilitated visually impaired consumers of combined agencies.

Research Question 8. Is there a significant difference in hours worked per week for those served successfully (status 26) by separate agencies vs. combined
agencies? The mean for the hours worked per week at closure for consumers of separate agencies was 31.93 hours. Consumers of combined agencies had a mean of 34.09 hours worked per week at successful case closure. The mean difference is 2.16 hours a week or 112.32 hours when extrapolated out over a 52-week (one year) period of time. The MANOVA analysis found this mean difference to be statistically significant.

Research Question 9. Is there a significant difference in the types of services provided to those served successfully (status 26) by separate agencies vs. combined agencies? Chi-square analysis was performed to examine any differences that may possibly exist between consumers of separate and combined agencies in regard to the types of services provided to them. Chi-square is sensitive to larger sample sizes (Hair et al., 1998), such as found with the RSA-911 dataset. For that reason, phi coefficient was run as a post hoc test to assess the importance of significance. The function of the follow-up tests was to assist in appraising the strength of the relationship between the differences of both groups. “The likelihood-ratio chi-square is the most fundamental measure of overall
fit and is the only statistically based measure of goodness-of-fit available in structural equation modeling” (Hair et al., 1998).

The Chi-square data analysis from this study determined that there were statistically significant differences found in the types of services given to consumers successfully rehabilitated status 26 of separate agencies and consumers of combined agencies with the exception of rehabilitation technology services. Combined agencies’ consumers received more assessment services 4,746 to 3,321. However the more relevant bit of information is that 76% of consumers of combined agencies received assessment services. In relation, 63.3% of consumers that obtained services through separate agencies and closed status 26 received assessment services. “The basic idea of any chi-square test is that you compare how well an observed breakdown of people over various categories fits some expected breakdown (such as an equal breakdown)” (Aron & Aron, 1998, p.430). As one can see on the type of service, assessment, the breakdown is far from equal. “A breakdown of numbers of people expected in each category is actually a frequency distribution. Thus, a chi-square test is more formally described as comparing an observed frequency
distribution to an expected frequency distribution” (Aron & Aron, 1998, p. 431). The question at this time is how strong is the relationship (importance of significance). In order to attempt to obtain further clarification, the phi coefficient was conducted. On the type of service element, assessment, the phi value is .137 and thus a small relationship between type of agency (separate or combined) and whether the consumer received the service of assessment.

The chi-square analysis found that the difference between consumers of combined agencies and separate agencies receiving diagnosis and treatment of impairment services to be statistically significant: 3,630 consumers of combined agencies, consisting of 58.1% of the total number, closed status 26, N=6,249. Whereas 2,480 consumers of separate agencies accounted for 47.3% of the total number closed by that agency type, N=5,243. The phi coefficient found this association to be a small effect (.108).

Counseling services were given to 3,655, making up 58.5%, consumers of combined agencies. 50.7% of consumers of separate agencies received counseling, consisting of 2,660 consumers. The Cramer’s phi follow-up testing identified this relationship as somewhat less than small (.078).
Many fewer consumers of both agency types received college/university training. There were 851 consumers of combined agencies consisting 13.6% that received this service. 499 consumers, or 9.5% of separate agencies’ consumers, received college/university training. The phi value (.063) showed fairly weak relationship.

Again fewer consumers of both agencies received occupational/vocational training with 608 consumers of combined agencies, or 9.7%. 379 consumers of separate agencies, making up 7.2%, received this same type of service. The phi coefficient value (.044) shows a lesser relationship than the other variables.

Job search services were provided to 1,464 (23.4%) consumers of combined agencies. 931 (17.8%) consumers of separate agencies obtained this type of service. The (.070) phi coefficient value illustrates a less than small relationship between the type of agency and whether the consumers received job search services.

Job placement services were granted to 1,587 consumers of combined services, consisting of 25.0% of consumers receiving services and closed status 26 in competitive employment. Only 863 consumers of separate agencies received job placement services. This accounts for 16.5% of
consumers of blind agencies successfully rehabilitated during FFY02. The phi coefficient value (.105) deems a small relationship between the type of agency and whether the consumers received job placement services.

1,587 consumers of combined services, accounting for 25.4% of their total, obtained transportation services. Again consumers of separate agencies received this type of service to a lesser degree with 18.5%, or 970 individuals, having attained transportation services. Again the Cramer’s phi value (.083) shows a somewhat small relationship between the type of agency and whether a consumer received transportation services.

Maintenance services were provided to 879 combined agencies’ consumers. This accounted for 14.1% of all combined agencies’ consumers successfully rehabilitated. Merely 579 (11.0%) separate agencies’ consumers received services in the type of service category of maintenance services. This difference was found to be statistically significant however the phi coefficient (.044) found a weak relationship between the type of agency and whether a consumer receives maintenance services.

As stated prior, the difference in the delivery of rehabilitation technology services was found to be
insignificant in the Chi-square analysis. 2,189 consumers of combined agencies obtained rehabilitation technology services. This accounted for 35.0% of all consumers successfully rehabilitated by the combined agencies. 1,828 consumers of separate agencies were given rehabilitation technology services. This accounted for 34.9% of all consumers successfully rehabilitated by separate agencies.

Research Question 10. Is there a significant difference in types of services provided to those served unsuccessfully (status 28/30) by separate agencies vs. combined agencies? Chi-square analysis was performed to examine any differences that may possibly exist between consumers of separate and combined agencies in regard to the types of services provided to them. Chi-square is sensitive to larger sample sizes (Hair et al., 1998), such as found with the RSA-911 dataset. For that reason, phi coefficient was run as a post hoc test to assess the importance of significance. The function of the follow-up tests was to assist in appraising the strength of the relationship between the differences of both groups. Chi-square was used to look at the same 10 types of services for those cases closed status 28/30, as done with cases closed status 26, to determine if consumers of one agency, separate or combined,

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received those services statistically significantly more often. The likelihood-ratio chi-square test statistic was used to test the statistic null hypothesis.

The Chi-square data analysis from this study determined that there were statistically significant differences found in the types of services given to consumers of separate agencies and consumers of combined agencies with the exception of maintenance services. Combined agencies' consumers with cases closed unsuccessfully rehabilitated (status 28/30) received more types of services in 9 of the 10 categories studied than their counterparts served through the separate agencies. The differences were found to be statistically significant in all types of services categories except for maintenance services. In those types of services areas where statistical significance was established, the phi coefficient values assessing the strength of the association found small to weak relationships in all types of services categories.

General Discussion

The importance of this study is to add to and enhance the limited amount of research addressing the provision of vocational rehabilitation services to one disability group,
specifically, individuals with visual impairments, and if the type of agency structure providing those VR services is meaningful. There is little research addressing the question of efficiency and effectiveness in providing VR services to individuals with visual impairments. Accountability pressures come from taxpayers, consumers, their families, and formal advocacy groups (Lewis, 2005). The emphasis of accountability along with “doing more with less” requires that vocational rehabilitation programs not engage in the delivery of services that have questionable efficiency. It is more imperative at this time that public rehabilitation programs identify what works and to make every effort to institute practices that are most effective in producing positive outcomes (Lewis, 2005). Hence, the importance of comparative studies such as this one. Also a goal of this study was to further explore this topic because of the disparities in the current literature. The study is essentially divided into two areas: 1) addressing important outcome measures and service delivery to visually impaired individuals that were successfully rehabilitated (status 26); 2) addressing important outcome measures and service delivery to visually impaired individuals that were unsuccessfully rehabilitated (status 28/30). In both areas
a comparison between the two major agency structures (separate vs. combined) providing VR assistance to individuals with visual impairments was conducted utilizing the relevant statistical analysis.

The descriptive statistics obtained from the analysis yielded some information of note. Combined agencies had a higher percentage of consumers rehabilitated in employment without supports (competitive employment), 60.6% vs. 53.1%. Separate agencies had a higher percentage of individuals rehabilitated in self-employment, 9.8% vs. 4.8%, and homemakers, 32.7% vs. 31.1. Cavenaugh et al. (2000) reported legally blind consumers working through separate agencies had a higher percentage of competitive employment, self-employment, and a lower percentage of homemaker closures.

Some additional compelling descriptive characteristics were, separate agencies had a higher percentage of females (52.7% vs. 49.3%) for the population; however, this difference was negligible when looking at consumers rehabilitated status 26 (46.0% vs. 45.8). Combined agencies closed more females (47.5% vs. 46.9) unsuccessfully rehabilitated.
The population of consumers that worked through the VR system showed that separate agencies worked with a higher percentage of those reported as White (76.7% vs. 72.4%), Hispanic/Latino (11.3% vs. 8.6%), while differences were minimal with a higher percentage worked with by combined agencies for the following racial/ethnicity categories: African Americans (19.8% vs. 19.4%) and Asian Americans (1.8% vs. 1.1%). When looking at consumers closed status 26 rehabilitated in competitive employment, essentially the same breakdowns on race/ethnicity occurred. Separate agencies worked with a higher percentage of Whites (77.3% vs. 75.0%), and Hispanic/Latino (11.3% vs. 7.6%). While combined agencies worked with a higher percentage of African Americans (19.8% vs. 18.4%), and Asian Americans (1.4% vs. 1.1%). Cavenaugh et al. (2000) reported that separate agencies worked with a higher percentage of females (56.1% vs. 50.4), were non-white (22.1% vs. 20.0%), and were Hispanic (12.2% vs. 5.4%).

This study found that consumers that were rehabilitated successfully by combined agencies started their vocational rehabilitation process with a lower level of education, with 63.6% having a high school degree/GED or less, while 57.2% of separate agencies’ consumers were in
that same range of education when applying for services. Cavenaugh et al. (2000) stated that separate agencies had a lower level of education (M=10.4 vs. 11.2).

On most of the aforementioned characteristics the current study found dissimilar results when compared with the Cavenaugh et al. (2000) research.

The results obtained from this study showed that combined agencies achieved better performance in the two most importance outcome measures addressed, weekly earnings at closure, and hours worked per week at closure. The primary purpose of the state-federal vocational rehabilitation system is to work with individuals with substantial disabilities in achieving suitable substantial gainful employment. With that, assisting individuals with disabilities to maximize the number of hours worked and wages earned are at the heart of VR’s mission. These results are contrary to some previous research. The NAC study (1997) showed that separate agencies had higher average weekly earnings for closures than did general (combined) agencies. Capella (2001) found that there were no differences in weekly earnings of consumers with visual impairments based on the type of agency that served them.
This current study identified that combined agencies provided more types of vocational rehabilitation services at a higher cost than their separate agencies’ counterparts. This again is contrary to some of the limited prior research. The NAC study (1997) showed that the average cost of services was $600 more for closed cases in separate agencies than with combined agencies. Whereas Cavenaugh et al. (2000) reported that consumers of separate agencies had a higher cost per consumer ($3,597 vs. $2,241) In this current study the analysis found combined agencies spent a mean of approximately $1,383 more per case for status 26 rehabilitations.

This study also found that combined agencies provided a higher number of types of services (4.4 vs. 4.0) for status 26 rehabilitations. Cavenaugh et al. (2000) found that consumers from separate (blind) services received more VR services (4.2 vs. 3.8).

The NAC study (1997) reported that consumers of both major types of agency structures (separate & combined) providing services to individuals with visual impairments spent essentially the same amount of time in their rehabilitation programs. This researcher’s current study identified separate agencies’ consumers traversing their
rehabilitation programs approximately 3 months more quickly than their combined agencies’ counterparts.

The current study’s results in several areas show logical consistency in that combined agencies provided more number of services, more types of services (through the Chi-square analysis), and had a higher cost of purchased services per consumer. The more number of services means more types of services and thus higher case expenditures. One might then state that these variables translate into successfully rehabilitated consumers achieving employment outcomes resulting in higher weekly earnings and more hours worked. However, it should be noted that when the number of hours worked per week is divided into the weekly earnings per week, the consumers of separate agencies are actually being placed into employment with higher per hour earnings ($11.11 vs. $10.72). Thus the most important economic variable for consumers is truly the number of hours worked, as that ultimately translates into the higher total earnings.

Overall economic factors need to be considered when making comparisons between the two agency structures for consumer economic outcomes. Two important economic factors that need to be addressed are the mean income and
unemployment rate of each state. When these factors are divided into the corresponding categories, separate agency states and combined agency states, the results show slightly better economic conditions in the separate states category. For 2002 the mean unemployment rate for separate states was 5.26% while 5.44% in combined states. The mean personal income per capita in separate states was $30,394 while the mean per capita income was $29,492 in combined states in 2002 (US Department of Commerce, 2003). There are some differences with these two economic factors between the two classifications. The advantage would seem to favor the separate states classification.

When addressing the status 28/30 portion of the study the results are essentially the same; however, the interpretation of those results may differ. The consumers of combined agencies received more types of services as identified through the chi-square analysis. This again is consistent with it being shown that there is a statistically significant difference in the number of types and cost of purchased services, with the consumers of combined agencies having a higher mean. However, this translates to the cost of unsuccessfully rehabilitated (status 28/30) visually impaired consumers being substantially higher with combined
agencies. With the difference in cost of $1,104 per case, that extrapolates out to a total expense of $3,369,522 more than the cost of unsuccessfully rehabilitated (status 28/30) served by separate agencies.

One area that this study is unable to grasp is the concept of appropriateness of services. As identified in the study, combined agencies’ consumers received a higher number of services, and a higher proportion of all types of services studied. However there is no way a study such as this one can assess the appropriateness of those services. Does more really translate into better? It could be just as reasonably argued that combined agencies provided more services and more types of services because of inefficiency and/or lack of expertise in the needs of individuals with visual impairments. While separate agencies provided fewer services and types of services at a much lower cost, this possibly could be because of more efficient, expert specialty vocational rehabilitation counselors. While combined agencies provided visually impaired consumers with competitive employment placements with higher weekly earnings (based on a higher mean for hours worked per week), this came with additional costs of $1,383 per case. This translates to combined agencies spending 8.6 million dollars
more than separate agencies would spend to serve the same number of consumers closed successfully rehabilitated (status 26). When we merge the increased costs of both status 26 and status 28/30 closures for combined agencies they spend approximately 12 million dollars more than what separate agencies would spend to serve the same numbers of status 26 and status 28/30 consumers. So jumping to immediate inferences that more equates to better may prove costly.

Administrators’ Thoughts and Perspectives

This researcher interviewed a small cross-section of state-federal agency administrators from around the country to get their unique thoughts and perspectives concerning separate agencies and specialty services providing vocational rehabilitation services to individuals with visual impairments. Interviews were conducted with four administrators. Bill Casto is the Director of the Bureau of Services for the Visually Impaired (BSVI) in the State of Ohio. BSVI is a sub-unit of the Ohio Rehabilitation Services Commission. RSA classifies Ohio as a combined agency state.

Dr. Pearl Van Zandt is the Executive Director of Nebraska Commission for Blind and Visually Impaired. The
Nebraska Commission for Blind and Visually Impaired is a separate agency and as such RSA classifies it as a separate (blind) agency.

Kay McGill is the State Coordinator for the Blind for the Georgia Department of Labor Vocational Rehabilitation Program. There is no sub-unit agency providing services to individuals with visual impairments within the larger Georgia vocational rehabilitation organization. There is special consideration given to individuals with visual impairments in Georgia through Kay’s office. VR counselors are provided specialty resources, training, and support in order to best serve those with visual impairments. RSA considers Georgia as a combined agency state.

Mr. Jim McIntosh is the Administrator for the Wyoming Division of Vocational Rehabilitation. Wyoming has no specialization for serving those with visual impairments. Wyoming is classified as a combined agency state by RSA.

Individual state administrators within the state-federal vocational rehabilitation system are increasingly addressing issues of efficacy and effectiveness of the vocational rehabilitation agencies they oversee and the services they administer. “Such demands make clear these
programs must be able to identify and quantify those practices and services that are effectual and those that are not (Lewis, 2005, p.43).

One area that individual state administrators must grapple is the question of the need and appropriateness of specialized services to individuals with visual impairments. Bill Casto (personal communication, July 7, 2005) stated that some form of separate agency structure is something he “strongly believes in.” He also stated, “If people who are blind are to get the services and the opportunity that they need, they need a specialized program with specialized services provided by specially trained individuals in order to achieve their (i.e., individuals with visual impairments) optimal potential.”

“I believe in the specialized services for the blind, because the services are so different, such as orientation and mobility instruction, the adaptive technology with all the software, JAWS, Windoweyes, and Zoomtext for example.” Not everyone knows how to address these service needs. These folks (i.e., specialty VR counselors) are skilled in very, very specific subject matter. Those are the kinds of services that people who are blind need and therefore however one does it (i.e., whichever agency structure), they
need to hire people who have those very specialized skills” (Kay McGill, personal communication, July 29, 2005). Pearl Van Zandt, (personal communication, July 26, 2005) stated that a separate VR agency serving blind and visually impaired individuals is “a preferable way to go for an agency structure. A general or combined agency almost never can provide the kinds of intensive training needed for adjustment to the visual impairment and have enough staff, even though it’s small incidence to best serve those with blindness.”

Jim McIntosh, Administrator of the Wyoming Division of Vocational Rehabilitation, localized his thoughts on separate service delivery and specialization stating, “The biggest problem we have with that disability group (i.e., visually impaired) is that we have a definite lack of services, both within the division of vocational rehabilitation but within the state itself, with the lack of vendors providing services that individuals with visual impairments need. Most individuals have to leave the state to (i.e., in order to get necessary services) and it’s the same with hearing impaired individuals. Both just cannot find the services they need within the state. The population (i.e., individuals with visual impairments) that
we see on our caseloads is pretty low. It would be nice to have a group that specialized in that disability area, but it’s not practical for us” (Jim McIntosh, personal communication, July 28, 2005).

For agencies that are part of the larger state VR agency structure there are particular challenges. Bill Casto (personal communication, July 7, 2005) stated, “When you are within a larger organization you always have to be vigilant to a mentality, particularly in this time of right sizing agencies and efficiency and all of that, that you don’t subscribe to templates or models, I call them one size fits all, (i.e., of service delivery to all individuals receiving services). The one size process may be very sighted oriented or may not take into account the special needs, the special programs, the special way staff goes about delivering their special skills and working with that person (i.e., consumers).

Kay McGill thinks that the challenge of being a part of the larger umbrella VR structure is “having counselors with enough knowledge and skills to know how to best serve individuals with visual impairments” (personal communication, July 29, 2005).
“It’s harder to stay really distinct and separate when part of a big entity” (Dr. Pearl Van Zandt, personal communication, July 26, 2005).

When addressing the benefits of being part of a larger VR entity, Bill Casto (personal communication, July 7, 2005) stated, “With the current political and economic environment with state government across the nation, I think that our (i.e., Ohio) structure where we have in law the ability to have a separate director, a separate bureau, separate staff, separate budget, but yet we share human resources, finance, legal, IT,… and all those ancillary units, that makes it the healthiest way to do it now (i.e., agency structure), because is maximizes efficiency for all public rehabilitation services and at the same time it enables us to concentrate our dollars on a lesser administrative cost and a higher availability of case service dollars and technology dollars to put people back to work or to work for the first time.”

Kay McGill thought a benefit of being more immersed in the general VR structure is a benefit for her and those interested in specialty services in Georgia is “not fighting every year to maintain the agency (i.e., separateness).
Energies can be utilized in other ways in providing services” (personal communication, July 29, 2005).

Bill Casto thought that separate (blind) agencies showing lesser quantitative results in this researcher’s current study and other studies could be because we are “comparing apples to oranges. The question of which states are in order of selection could contribute to differing results. This could have states serving individuals with differing levels of impairments” (personal communication, July 7, 2005).

“Part of the problem with the studies (i.e., VR studies) is how to differentiate the organization structures that are classified the same but really aren’t” (Dr. Pearl Van Zandt, personal communication, July 27, 2005).

On the lack of quantitative results showing separate agencies’ strengths, Kay McGill thought there are many “intangible understandings of interacting with individuals with visual impairments that specialty can enhance. Counselors attending conventions of various blindness organizations and training seminars on issues related to visual impairments strengthen their understanding of the disability” (personal communication, July 29, 2005).
Mr. McIntosh (personal communication, July 28, 2005) simply stated, “I don’t know that I would be able to provide a decent answer” when addressing why separate agencies don’t seem to show enhanced quantitative results.

Of particular interest to those within the vocational rehabilitation field is what does the future hold for separate agencies and specialty services for those with visual impairments? “I see that the only way that rehabilitation, especially, will be able to provide the kind of services in the future for a variety of disability groups is to specialize. I incorporate not only visually impaired or the hearing impaired, our acquired brain injury population (i.e., in Wyoming) is pretty significant, because we have so many one car rollovers on all the long open stretches of road. We don’t do a very good job with that group because our caseloads are fairly high and counselors have a lot of windshield time. So my expectation is that we will begin to look at specialization in a lot of different disability groups, including the visually impaired” (Jim McIntosh, personal communication, July 28, 2005).

Kay McGill (personal communication, July 29, 2005) stated, “In terms of the specialist I just cannot see how that would change. We have to have people (i.e., VR
counselors) who are schooled in those subjects to provide these particular services. Whether it’s in a general agency or whatever combination, I cannot see a time that those particular specialists would not be needed.”

“I think it is pretty good (i.e., the future of separate agencies/specialty services). I know that the consumers are strong and well organized. The consumers are the ones that make sure consolidation doesn’t happen. Consumers know that if services for the blind are enmeshed with the larger VR agency, they probably will get their college paid for or other types of tech training but they almost certainly are not going to get the skills training they need, based on the proportion of funds going to a small group. Individuals with visual impairments have more adaptive and adjustment needs than other disabilities” (Dr. Pearl Van Zandt, July 27, 2005).

In addressing the future of separate agencies and specialty services Bill Casto (personal communication, July 7, 2005) stated, “As long as the consumer organizations of the blind, with their strong political influence, are out there, I can see from state to state, depending on the economy of that state, efforts to maybe take separate commissions for the blind, separate departments, and try to
incorporate them in a larger agency. I think philosophically that is an un-thought out action. It’s looked at only from the perspective of saving dollars.”

There is a saying that “all politics is local.” Maybe the same is true in vocational rehabilitation, “all vocational rehabilitation is local.” Even when asked to give global or national perspectives, each administrator interviewed seemed to go back to what they knew the best and the perspectives associated with how vocational rehabilitation services are administered to individuals with visual impairments in their respective state. That is understandable; and the interviews still yielded meaningful insights to the thoughts and perspectives of four vocational rehabilitation administrators on issues. The strength of perspectives provided is that the administrators represented a cross-section of agencies on the continuum of separateness and specialty services, from totally separate to no specialty at all.

Limitations of the Study

A couple of limitations of the study pertain to methodological choices. First, this study can only be conducted via an ex-post facto research design. A true experimental design is not possible in much of social
science research. In ex-post facto research design, the treatment occurred at some time in the past and is not under the control of the researcher; and as such, the effects of the treatment are studied after the fact. Many phenomena of interest to rehabilitation researchers are not and cannot be under the control of the researcher (Bolton & Parker, 1992).

Second, the design of the study was limited to only those closed successfully (status 26) and unsuccessfully (status 28/30) for federal fiscal year 2002. All cases without missing data elements on the studied variables were utilized. There are differences in the interpretation of how to assess the utilization of the vast data available from the RSA-911 dataset. Some rehabilitation researchers view the dataset as population data and think this lends itself to reporting only descriptive statistics (means, proportions, and percentages) (Cavenaugh et al., 2000). Some others, notably Capella (2001), considered the closed cases of a single year to be a sample of the population of persons with visual impairments who have ever been served by the state-federal vocational rehabilitation system.

The RSA-911 dataset has potential for inaccuracies and inconsistent reporting throughout the state-federal system. While RSA has a system in place (Reporting Manual for the
Case Service Report – RSA-911- for the state-federal program for vocational rehabilitation) that attempts to enhance the accuracy of the information entered into the RSA-911 dataset, there undoubtedly is some unknown percentage of coding errors that occur throughout the system for the information entered.

This study does not take into account potential differences in the vocational rehabilitation counselors, mainly in experience in the field of rehabilitation counseling, that make up the agencies providing the vocational rehabilitation services to individuals with visual impairments. Experiential differences could affect the kind of rehabilitation programs that are developed with their consumers, thus having an impact on the number of types of services, types of services, and the cost of services provided to their consumers. If experiential differences for vocational rehabilitation counselors fall disproportionately into one of the agency structures, then this would have the potential of affecting the outcomes and service delivery for individuals with visual impairments served through that agency structure.

One additional weakness of an outcome study such as this one is there is no way to assess the total adjustment
to disability of the consumers served through the state-federal VR system. Adjustment to disability issues is an extremely important element for individuals with visual impairments. Individuals with substantial visual impairments typically need services assisting with addressing daily living skills, and personal adjustment training. There is no good way to assess if a consumer’s adjustment needs are best met by either of the differing agency structures.

Directions for Future Research

This study provides a useful addition to the scarcity of meaningful research on the role that agency structure (separate vs. combined) has on the outcomes and service delivery for individuals with visual impairments. The prior research conducted on this topic area has yielded differing results. This current study adds to the body of knowledge and gives additional findings, some of which differ with prior research and some that are in agreement with other prior research. Much of the findings of this current study and prior research studies on the topic area are open to divergent interpretations. However, additional study on this topic is warranted before major policy decisions are made by rehabilitation administrators or politicians on the question
of which agency structure best meets the vocational rehabilitation needs of individuals with visual impairments. Thus, it is recommended that replication or confirmatory studies are undertaken using comparable data from the state-federal vocational rehabilitation program addressing different federal fiscal years.

There are many additional areas which future research should address. There is a large body of research addressing service delivery and outcomes for minorities served by the state-federal system; however, nothing looks at how visual impaired minorities fare between the agency structures providing the bulk of the VR services to individuals with visual impairments.

Research on satisfaction with the quality of services provided to consumers with visual impairments could prove a useful body of research addressing which agency structure best meets the needs of the consumers. This could be done through quantitative and qualitative research approaches.

Last, all research addressing agency structure would be better served if agency type were divided into three agency structure types. Difficulty with determining the practicality of the results of all research done by rehabilitation researchers addressing the impact of agency
structure comes from Rehabilitation Services Administration’s merging of two different types of agency structures under one classification. Within the combined agency structure some states have no discernible sub-unit that provides specialized VR services to individuals with visual impairments; whereas in other states there is an identifiable sub-unit that provides specialized VR services to individuals with visual impairments. It would seem relevant for future research to concentrate on classifying which states belong in which category, combined or specialized. The JWK study (1980) attempted this undertaking. However, there is great potential for agency structure change since that time. So the classifications from that study would not be relevant today. It would be useful to give researchers three agency structures, separate, specialized, and combined, when conducting research in addressing the impact of agency structure on outcomes and service delivery to individuals with visual impairments.

Conclusion

The question of the effect that state-federal agency structure has on the outcomes and service delivery for individuals with visual impairments is one with great
complexities. Things such as confounding agency structure definitions, a large difficult to utilize dataset, political inertia along with potentially many other obstructions, make it challenging for rehabilitation researchers to address this area. The results from this study add another brick in the wall of knowledge on this topic; however, by no means build the entire wall. As stated earlier, there is a great need to have many additional replication studies along with studies incorporating other important variables, such as outcomes and service delivery to minorities, satisfaction of consumers, etc., in determining if one agency structure does a better job in administering vocational rehabilitation services than the other.

Outcome studies can have an important role to play in the discussions on many issues confronted by the field of vocational rehabilitation. The resulting data can have an impact on decisions made by rehabilitation organizations, administrators, and politicians, related to the services and practices that are effective and those that may require restructuring, reevaluation and/or elimination. These entities must make informed decisions that will maximize the use of resources in the services to those with disabilities (Lewis, 2005). However, caution must be taken in the
interpretation of the resulting data of outcome and service delivery studies. The real challenge for rehabilitation researchers and rehabilitation administrators may be in coming to a reasonable consensus on what the data truly indicates.
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APPENDIX A

Reporting Manual for the Case Service Report (RSA-911)

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8. **Race and Ethnicity**

Race and ethnicity information should be recorded for all individuals whose service records were closed in the FY. Use Code 0 if the individual is not of that race/ethnicity and Code 1 if the person is of that race/ethnicity. The information recorded must reflect the individual’s own identification of race and ethnicity from the categories listed below. Both race and ethnicity should be reported. If the ethnic category Hispanic or Latino (RP 37) is coded as 0, then one of the race categories (RP 32 through 36) must be coded as 1. Multiple Code 1 responses are permitted for an individual. Use Code * only if the information is not available due to circumstances beyond the agency’s control. No blanks are permitted in any category.

- **White**
  Record Position: 32
- **Black or African American**
  Record Position: 33
- **American Indian or Alaska Native**
  Record Position: 34
- **Asian**
  Record Position: 35
- **Native Hawaiian or Other Pacific Islander**
  Record Position: 36
- **Hispanic or Latino**
  Record Position: 37

28. **Employment Status at Closure**

Record Position: 161

For an individual who achieved an employment outcome, enter the applicable one-digit code that describes the employment outcome of the individual when his or her service record was closed. Codes 1 and 3 through 7 are applicable for individuals who achieved an employment outcome (closure type 3). Beginning in FY 2002, Code 2 applies only to an individual who received services and was placed in extended employment, which is no longer an employment outcome. Such
an individual would have a closure type of 4. Use Code * for closure types other than 3 and for closure type 4 cases not placed in extended employment. If classifying the individual into two different employment statuses from Codes 1-7 is possible, select a code designing the principal status.

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
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<tr>
<td>3</td>
<td>Self-employment (except BEP)</td>
</tr>
<tr>
<td>4</td>
<td>State Agency-managed Business Enterprise Program (BEP)</td>
</tr>
<tr>
<td>5</td>
<td>Homemaker</td>
</tr>
<tr>
<td>6</td>
<td>Unpaid Family Worker</td>
</tr>
<tr>
<td>7</td>
<td>Employment with Supports in Integrated Setting</td>
</tr>
</tbody>
</table>

1 - Employment without Supports in Integrated Setting is full-time or part-time employment in an integrated setting without ongoing support services. For purposes of this report, this is work performed for wages, salary, commissions, tips, or piece-rates, below, at, or above the minimum wage. Do not include self-employed individuals.

2 - Extended Employment refers to work for wages or salary in a non-integrated setting for a public or nonprofit organization. Such settings are variously referred to as community rehabilitation programs, or sheltered, industrial, or occupational workshops. Individuals are compensated according to the Fair Labor Standards Act and the organization provides any needed support services that enable the individual to train or prepare for competitive employment. Beginning in FY 2002, this code applies only to an individual who received services and was placed in extended employment, which is no longer an employment outcome. The appropriate closure type for such placements is 4.

3 - Self-employment (except BEP) is work for profit or fees including operating one’s own business, farm, shop or office. “Self-employment” includes sharecroppers, but not wage earners on farms.

4 - State Agency-managed Business Enterprise Program (BEP) refers to Randolph-Sheppard vending facilities and other small businesses operated by individuals with significant disabilities under the management and
supervision of a State VR agency. Include home industry where the work is done under the management and supervision of a State VR agency in the individual’s own home or residence for wages, salary, or a piece-rate. Individuals capable of activity outside the home, as well as by homebound individuals, may engage in such employment.

5 - Homemaker refers to men and women whose activity is keeping house for persons in their households or for themselves if they live alone.

6 - Unpaid Family Worker refers to persons who work without pay on a family farm or in a family business.

7 - Employment with Supports in Integrated Setting is full-time or part-time employment in an integrated setting with ongoing support services for individuals with significant disabilities. For purposes of this report, compensation for such employment may be below, at, or above the minimum wage.
APPENDIX B

LIST OF STATE-FEDERAL AGENCY TYPES

Separate/Blind

Arkansas
Connecticut
Delaware
Florida
Idaho
Iowa
Kentucky
Maine
Massachusetts
Michigan
Minnesota
Missouri
Nebraska
New Jersey
New Mexico
New York
North Carolina
Oregon
South Dakota
South Carolina
Texas
Vermont
Virginia
Washington

Combined

Alabama
Alaska
Arizona
California
Colorado
Georgia
Illinois
Combined (Continued)

Indiana
Kansas
Louisiana
Maryland
Mississippi
Montana
Nevada
New Hampshire
North Dakota
Ohio
Oklahoma
Pennsylvania
Rhode Island
Tennessee
Utah
Washington D.C.
West Virginia
Wisconsin
Wyoming

General

Arkansas
Connecticut
Delaware
Florida
Idaho
Iowa
Kentucky
Maine
Massachusetts
Michigan
Minnesota
Missouri
Nebraska
New Jersey
New Mexico
New York
North Carolina
Oregon
South Dakota
South Carolina
Texas
General (Continued)

Vermont
Virginia
Washington
APPENDIX C

DISCLAIMER FOR FY 2002 DATA

FY 2002 was the first year that State VR agencies reported RSA-911 data using the revised format transmitted via PD-00-06. The FY 2002 database on this CD is comprised of data cleared by RSA and may contain information not usually available. Some errors do remain. It was decided to accept these errors in FY2002 because they still remained despite extensive efforts to obtain the necessary corrections. All of the data in the file have been validated by State VR agencies.

Some agencies encountered problems reporting asterisks for data not available. Therefore, some fields report 0’s instead of asterisks for data not available where 0 is not a valid code. In addition some agencies reported valid codes for closure types that are not applicable for several elements. For example, valid employment at closure codes are reported for closure types other than Code 3 (achieved employment outcome). Please refer to the Edit Specification by Element section of PD-00-06 to identify these elements.