FACTORS ASSOCIATED WITH SUCCESSFUL EMPLOYMENT OUTCOMES IN PUBLIC VOCATIONAL REHABILITATION CUSTOMERS WHO HAVE RECEIVED COLLEGE TRAINING

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The rate of people with disabilities who are attempting and attending post-secondary education has been rising over the past ten years (Stokes & Lyhus, 2006). Given the trends for non-disabled citizens, it would be fair to anticipate that those individuals with disabilities who obtain post-secondary degrees will be more successful in obtaining and maintaining competitive employment. Unfortunately while these degrees do increase employment among [people with Disabilities] without post-secondary degrees, it does not happen at the rate in which [people without disabilities] are able to enjoy (Erickson & Lee, 2008). The Pennsylvania Office of Vocational Rehabilitation (OVR) provides a valuable service, facilitating this transition for people of all ages, types of disability and education level. In order to shed some light on the efficacy of this program, statistics were collected from the RSA 911 database for 2009, and analyzed by selecting specific variables and comparing successful versus unsuccessful outcomes.

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1.0 INTRODUCTION

Employment is a pillar of independent living. It is an aspect of life that contributes to meaning, self-efficacy, financial independence as well as social participation and a personal, emotional connection to society (Crist & Stoffel, 1992). Individuals with disabilities have significantly higher rates of unemployment than those individuals without disability. Even in persons who attend and graduate from college, this difference in employment outcomes persists. Despite being provided support and accommodation in college, vocational rehabilitation services, and the existence of legislation (Americans with Disabilities Act), which have attempted to remove barriers to employment, individuals with disabilities continue to fall well behind their non-disabled counterparts with regard to employment outcomes. Among the services provided by public vocational rehabilitation, post-secondary academic and vocational training is frequently identified as a means to achieving employment. While achieving a college education has been associated with better employment outcomes in persons without disabilities, this trend does not consistently apply to persons with disabilities. Concerns exist that the provision of post-secondary training, particularly college training, continues to fall behind expectations. This literature review seeks to evidence on the effect of post-secondary college training on rehabilitation outcomes. The specific research question being addressed in this review is: "For people with disabilities, does college training result in higher employment outcomes?"

1.1 REVIEW OF LITERATURE REVIEW METHODOLOGY

For selection, all articles included in this review were examined to determine if they met a set of inclusion / exclusion criteria. The following *inclusion/exclusion* criteria were employed:

1.1.1 Inclusion criteria

1. Studies in which participants were individuals with a documented disability.
2. Studies in which participants were exposed to or graduated from a 2 or 4 year post-secondary educational institution
3. Studies were published in peer-reviewed journals
4. Studies were published between 2000 and 2013

1.1.2 Exclusion criteria

1. Studies published before 2000
2. Studies with insufficient or missing detail to determine methodology, design, population, analysis or results.

1.1.3 Information source

The databases PubMed, PsyLit, Google Scholar and ERIC were used as information sources. The timeline for articles included in the search ranged from January 1990 to December 2013. The National Library of Medicine and the National Institutes of Health maintain PubMed. ERIC is provided by the US Department of Education. Studies were gathered from ERIC, using a specific set of keywords.

1.1.4 Search Strategy: Keywords

The following keywords were used in the literature search, either alone or in combination: Vocational rehabilitation, rehabilitation, employment, job placement, career outcomes, outcomes, college graduate, education, post-secondary education, college services, college training, training, vocational rehabilitation services, and vocational services.

1.1.5 Selection Process

The articles that appeared in ERIC, PsyLit, and PubMed were identified by review of titles and abstracts. Full texts of these articles were then examined to ensure their suitability. After using key words and inclusion/exclusion criteria to screen the articles, the articles chosen for further analysis in this review are identified in Figure 1.

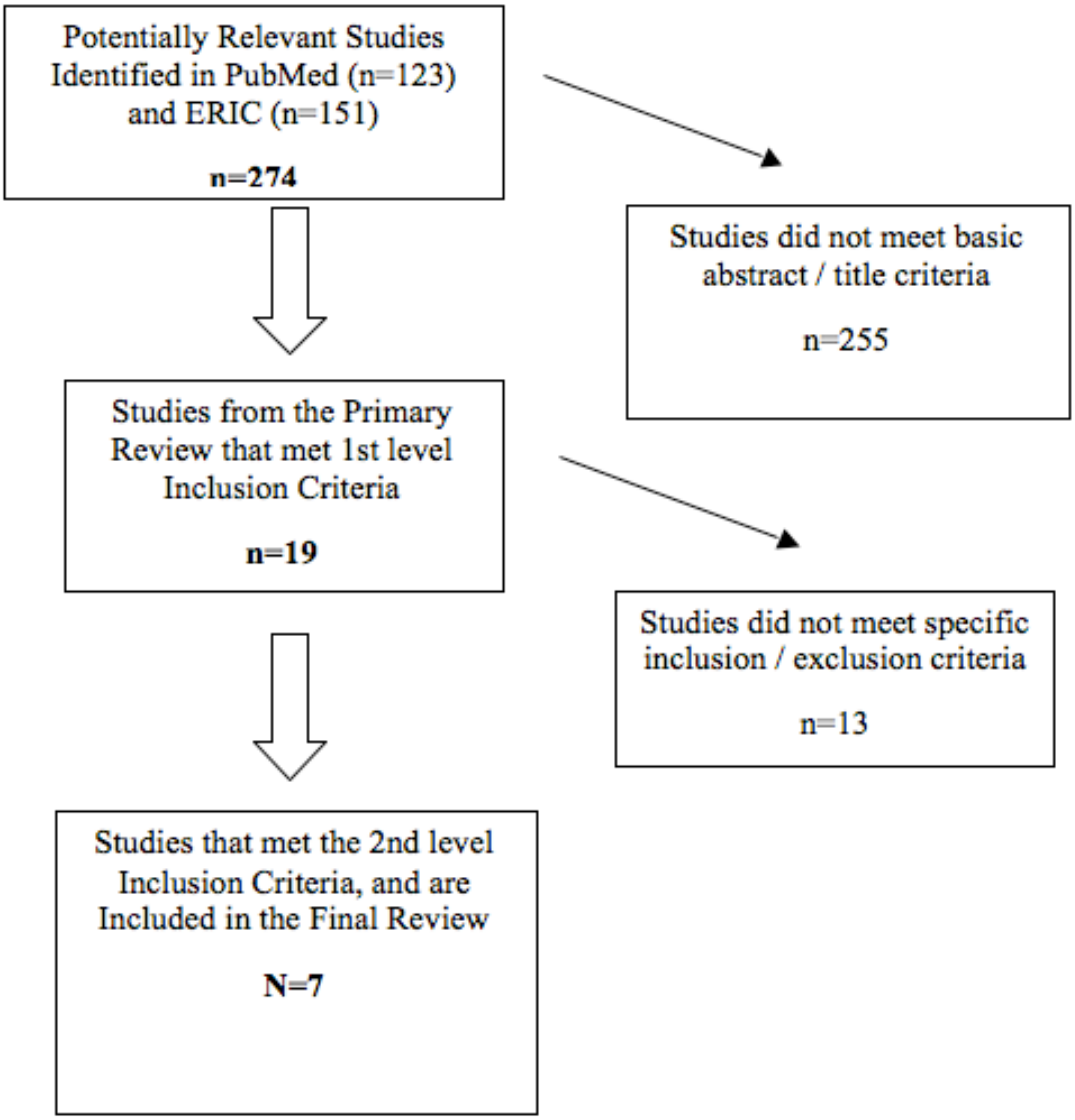

Figure 1. Study Selection

The initial search found 274 articles. However, once inclusion and exclusion criteria were applied, the sample decreased to 19 articles. Those articles were read thoroughly by the researcher and assessed for how well they related to the research question and whether or not they met inclusion/exclusion criteria. Data were extracted from the articles to find similarities. For example Stodden, Whelley, Chang, & Harding (2001) were initially considered and fit the criteria determined by the researcher. However, although published in 2001, the study did not

disclose its time frame. In addition, Stodden et al.'s (2011) findings were based on survey results from disability support coordinators. Therefore, the study was not included because it focused on the perceived needs of people with disabilities, instead of sampling directly from people with disabilities themselves. Seven studies were ultimately included in the current review.

1.1.6 Literature on Vocational Rehabilitation Outcomes Following College or University Training

Based on the reviewed studies, there is some evidence to support that college or university training increases the likelihood of employment for vocational rehabilitation (VR) consumers. Boutin and Accordino (2009) conducted a retrospective data analysis to identify the relationship between college training and competitive employment for people with mental illness (MI). This review ultimately evaluated the effectiveness of VR services. The researchers utilized existing data collected by the Rehabilitation Service Administration. RSA-911 data from 2006 were coded and post-secondary training was conceptualized as a list of independent variables including the following: assessment, diagnosis and treatment, VR counseling and guidance, training services, job-related services, transportation, maintenance, rehabilitation technology, personal assistance services, technical assistance services, as well as information and referral services. These independent variables were then analyzed using a hierarchal multiple logistic regression in order to identify any relationships between the independent variables and the dependent variable, competitive employment. Using existing coding structures such as the RSA's reporting manual greatly increases reliability. Beginning with data from 617,149 consumers, the authors employed exclusion criteria pairing the sample down to 25,806 consumers. A few independent variables, including on-the-job occupational/vocational training,

assessment services, and demographic information such as level of education, were found to have a positive relationship on the outcome of competitive employment. The only negative relationship associated with competitive employment was transportation services.

Boutin and Wilson (2009) conducted a descriptive field study as an ex post facto retrospective analysis of RSA-911 data to determine the predictive ability of vocational rehabilitation services for deaf and hard of hearing Customers who received college and university training. Again, RSA-911 data was utilized providing high external validity allowing for greater generalization. The original data set consisted of 654,040 cases and was trimmed using inclusion and exclusion criteria. "A total of 9.1% of all eligible consumers with hearing impairments who received VR services received college or university training as a VR service and thus composed the sample for this study (N = 2,852)," (Boutin & Wilson, 2009, p.158). Using a logistic regression model, twenty-one demographic and service variables similar to those described in Boutin and Accordino (2009) were analyzed to identify their predictive ability in determining successful competitive employment. Because random selection did not occur, there is a lack of validity. The researchers atone for this by claiming only rational, rather than statistical, generalizations. Boutin and Wilson (2009) studied the effect of particular VR services on employment outcomes and found that rehabilitation technology and job placement were the number two and one, respectively, most influential variables that contributed to competitive employment.

In 2012, the same authors published the article, "Who's Going to College? Predicting Education Training From Pre-VR Consumer Characteristics". This study was a retrospective data analysis that was reportedly conducted: (a) to identify the relationship between post-secondary training and competitive employment across disability types, and (b) to identify relationships

between predictor variables and reception of post-secondary training within the VR program (Boutin & Wilson, 2012). Consumer characteristics were divided into two categories, intrinsic and extrinsic. Intrinsic factors consist of demographic information such as race or gender, while extrinsic factors include level of education and severity of disability, for example. All data for this study were gathered from the RSA-911 database in 2009. Originally, the sample was 588,818 before being paired down to 300,278 after applying inclusion and exclusion criteria. Inclusion criteria included eligibility for VR services, identifying with only one racial group, cases were closed between October 1, 2008, and September 30, 2009. Nineteen independent variables were used in order to identify predictors of receiving college training. "VR consumers with psychiatric disabilities were 33% more likely to secure employment after receiving college and education training," (Boutin & Wilson, 2012). The authors' research claims "the prediction of competitive employment from the reception of college and university training may be disability specific and difficult to determine when aggregating the various disability types found in the VR program" (p. 173).

Boutin and Wilson (2012) found that Customers were more likely to receive college and university training if they were female, had medical insurance coverage (financial support), and lived in a private residence. Boutin and Wilson (2012) also found that Customers younger than 30 years of age were more likely to receive university training. Also, limitations exist within this review. More information involving varied types of disability would increase the validity of this review. Therefore, additional research is needed in order to more successfully identify the relationship between VR services and employment outcomes.

Schley et al., (2010) conducted an ex post facto retrospective analysis of merged National Technical Institute for the Deaf (NTID) and Social Security Administration (SSA) data. This

data consisted of information supplied by non-admitted applicants, deaf or hard of hearing students who did not complete a post-secondary education program, and graduates of NTID post-secondary institutions. Of these individuals, 130,477 were included in the sample. The purpose of this study was to estimate the efficacy of college post-secondary education in increasing earnings and employment outcomes. It was found that graduation from college yields higher economic benefit for deaf and hard of hearing individuals (Schley et al., 2010).

An ex post facto retrospective analysis of 2010 American Community Survey (ACS) data was conducted by Walter and Dirmeyer (2013). The aim of this study was to evaluate the effect of education on career outcomes. By utilizing existing United States census data comparisons were drawn between the general population and those with deafness or who are hard of hearing in a number of areas. The study focused on the effects of education on two areas of occupational status: employment rates and earnings. A large gap was found in employment rates when comparing people with severe to profound hearing loss and US population. Data from the ACS show significant gaps in labor force participation rates between nondisabled US workers and those with deafness or who are hard of hearing. The researchers noted that this gap in labor force status decreases consistently as the level of education increases. The gap for individuals without a high school diploma hovers at 27% while the gap for those with graduate degrees is reduced to only 11%. Average earnings for US workers also were reported and a similar progression was found in the gaps between nondisabled workers and those with deafness and who are hard of hearing. Without a high school diploma, an individual with deafness or who is heard of hearing can expect to earn 43% less than their nondisabled counterpart. However, with a graduate degree, the gap is reduced to only 22% (Walter and Dirmeyer, 2013).

A follow-up survey of individuals identified through National Longitudinal Transition Study 2 (NLTS2) was conducted examining the prevalence and correlations present among post-secondary education and employment for youth with autism spectrum disorder (ASD) (Shattuck et al., 2012). The NLTS2 was a perspective study of youth receiving special education services. For this study, three conditions, in addition to ASD, were analyzed: speech language impairment (SLI), learning disability (LD), and mental retardation (MR). A total of 2,040 participants were included (ASD [n = 680]; SLI [n = 470]; LD [n = 460]; MR [n = 430]). The results of this study showed inequality, not only for individuals with disability, but also for individuals with specific diagnoses such as ASD. "Compared with youth in the three other disability categories, those with an ASD had significantly lower rates of employment…" (Shattuck et al., 2012, p. 1,046). According to Shattuck et al. (2012), the transition period between high school and college yields the highest unemployment rate for youth with ASD.

Research conducted by Madaus (2006) differs from most of the articles included in this review. Utilizing a post education survey, students with learning disabilities were surveyed from three universities. The three schools had a combined sample of 1,438 students with LD. The survey yielded 541 responses, a 37 percent response rate. The survey consisted of four variable categories: 1) respondent demographic information; 2) educational experiences including time of initial LD diagnosis, additional education since graduation, and highest degree obtained; 3) current employment status including current level of employment, whether an individual was actively seeking employment if not employed, and salary level; and 4) questions regarding the impact of LD on employment and disclosure (e.g., frequency of impact on work, requests for accommodations, reasons for not disclosing). This study yielded fairly positive results, finding individuals with LD and post-secondary degrees on par with average nondisabled US citizens in

two important areas: unemployment rate and annual earnings. "…the percentage of respondents who were unemployed and looking for work represented 5% of the total sample, which mirrors the unemployment rate in the United States at the time of the final data collection (5.7%)" (Madaus, 2006). Table 1 provides a summary of studies reviewed.

Table 1. Summary of Studies Reviewed

Authors	Study Design	Setting	Sample Inclusion/exclusion criteria	Condition or Intervention/ Control/ (Independent variables)	Primary Outcome Measures (Dependent Measures)
Boutin & Wilson, 2012	Ex post facto retrospective analysis of RSA 911 data	Public vocational rehabilitation program across US	300,278 eligible vocational rehabilitation clients, receiving VR services, identified w/ 1 racial group, no missing variables, whose cases were closed during 2009 fiscal year	19 independent predictor variables; Presence of post-secondary training, disability types	Reception of post-secondary training Competitive employment outcome
Boutin &Wilson, 2009	Ex post facto retrospective analysis of RSA 911 data (Descriptive field study)	Public vocational rehabilitation program across US	2,852 VR Customers were identified from 654,040 cases coded as having hearing impairments based upon eligible cases with evidence of degree of hearing impairment, receiving college and university training.	21 demographic and service variables	Successful competitive employment

Table 1 (Continued)

Madaus, 2006	Post education survey (no reliability or validity data on survey presented) Descriptive analysis only	College and University graduates from institutions with LD support	2131 Students with LD from 3 universities nationwide	NA	28 total variables across 4 categories 1. Demographic info; Respondent Info, Educ. Experiences, Employment Info. Career Exp. 2. ADA and Transition to Career as a PWD. 3. Job Satisfaction; 4. Items related to Employment Self- Efficacy.
Authors	**Study Design**	**Setting**	**Sample Inclusion/exclusion criteria**	**Condition or Intervention/ Control/ (Independent variables)**	**Primary Outcome Measures (Dependent Measures)**

Table 1 (Continued)

Schley et. al. 2011	Ex post facto retrospective analysis of merged NTID and SSA data	Non admitted applicants, students who did not complete and graduates of NTID post-secondary institutions	130,477 individuals who are deaf or HoH, who met criteria for non admission, admission but did not attend or did not complete degree and graduation.	Post-secondary educational experience	Participation in labor force; lifetime earnings; transition from SSI/SSDI participation
Walter & Dirmyer 2013	Ex post facto / retrospective analysis of 2010 American Community Survey (ACS) data	US General population	US census data for general population and for those with deafness or who are hard of hearing	Control: US general population w/ and w/o college education Condition: Deafness HoH w/ and w/o college education	Employment / Labor force status; Earnings
Shattuck et. al. 2012	Follow up survey of individuals identified through National Longitudinal Transition Study 2 (NLTS2)	US Dept. of Education 10 year longitudinal transition data	Individuals with ASD (n=680), SLI (n=470), LD (n=460), MR (n=430) were identified. Data from surveys of 500 parents, guardians and youth capable of participating. Data from telephone surveys.	Demographic variables, Health variables Functional independence	Post-secondary vocational or technical education, 2 or 4 year college, employment.

Table 1 (Continued)

Boutin & Accordino	Ex post facto retrospective analysis of RSA 911 data	Public vocational rehabilitation program across US	Customers with MI who received college training in 2006 (n = 25, 806).	College training variables: Assessment, diagnosis and treatment, VR counseling and guidance, training services, job-related services, transportation, rehabilitation tech, personal assistance, technical assistance, information and referral.	Competitive employment

1.2 LITERATURE REVIEW CONCLUSION

Overall, study findings reported that college training lead to higher employment rates among people with disabilities. While this was the common conclusion of the higher-ranking studies (according to the researcher's criteria) in this review, these conclusions should be interpreted very cautiously because of the overall weaknesses of the studies. More robust experiments including prospective randomized control trials that will more definitively determine the impact of college training on increasing employment outcomes are recommended. Because of the sizeable cost and time investment of college training for persons with disabilities, it is important

to address empirical support for the value of such rehabilitation and educational services for increasing employment outcomes.

This systematic review examines the efficacy of college training on increasing employment outcomes for people with disabilities. The review found that college training does increase employment outcomes. While this finding has been supported by other reviews, they are all weak in their generalizability due to their study designs and the diversity of their disability populations.

1.3 STUDY AIMS

Individuals with disabilities have significantly higher rates of unemployment than those individuals without disability. Even in persons who attend and graduate from college, this difference in employment outcomes persists (Erickson & Lee, 2008). Despite being provided vocational rehabilitation services, and the existence of legislation (Americans with Disabilities Act), which has attempted to remove barriers to employment, individuals with disabilities continue to fall well behind their non-disabled counterparts with regard to employment outcomes. Among the services provided by public vocational rehabilitation, post-secondary academic and vocational training is frequently identified as a means to achieving employment. While achieving a college education has been associated with better employment outcomes in persons without disabilities, this trend does not consistently apply to persons with disabilities (Erickson & Lee, 2008). Concerns exist that the provision of post-secondary training, particularly college training continues to fall behind expectations in terms of leading to successful employment outcomes.

This proposed thesis is a retrospective and descriptive analysis of data gathered by the PA Office of Vocational Rehabilitation using the RSA 911 database relative to rehabilitation outcomes for Customers who have received college training. The data includes outcome variables of successful (26) and unsuccessful (28) case closures, along with demographics, funding status, types of services administered, level of education (pre and post service provision), length of service and information regarding types of disability.

The purpose of this analysis is to explore trends among variables that may be related to rehabilitation outcomes for customers receiving post-secondary college training. Results are expected to inform recommendations for enhancing employment outcomes for college-educated persons with disabilities. The specific research question is: In OVR clients who received funding to attend college, what factors are related to successful and unsuccessful employment outcomes, as measured by closure status?

2.0 METHODS

2.1 DESIGN

This study was a retrospective analysis of a large public vocational rehabilitation's service and outcome data for a population of VR customers who have received college or university training. The data analyzed in this retrospective study of a federal RSA 911 dataset was from the Pennsylvania Office of Vocational Rehabilitation (OVR) during 2011 and 2012. Specifically, customers who were authorized to receive college training were selected by OVR staff from the dataset and provided to the research team for analysis. This dataset contained information collected on each customer who met the criteria of having been provided (fiscally authorized) with a closed case within the timeframe (2011-2012). Study variables included the outcome (dependent) variable of successful (26) or unsuccessful (28) case closure. Other study variables included demographic information, funding status, types of services administered, level of education, length of service and type of disability (independent variables). These variables were selected by OVR staff in collaboration with the study research team because of their likelihood of impacting overall employment outcomes.

The variables selected for analysis are listed in Table 2, along with variable definitions provided in the Rehabilitation Services Administration's Reporting Manual for the Case Service Report, RSA 911 (Policy Directive RSA-PD-04-04). For the primary disability variable the

recoding was done according to the diagnoses that were most closely associated with the ICD 9 and the DSM 5. A table breakdown of original primary disability data and corresponding recoded variable can be found in appendix B.

Table 2. Study Variables

Demographic Variable	**Variable Definition**
Status	1 26 Closure (successful) 2 28 Closure (unsuccessful)
Year	1 2011 2 2012
Office	1 Allentown 2 Altoona 3 Dubois 4 Erie 5 Harrisburg 6 Johnstown 7 New Castle 8 Norristown 9 Philadelphia 10 Pittsburgh 11 Reading 12 Washington 13 Wilkes-Barre 14 Williamsport 15 York
Age at Application (recoded)	Age in years calculated from DOB and DOA
Gender	1 Male 2 Female
Race	1 White 2 African American or African American 3 American Indian or Alaska Native 4 Asian 5 Native Hawaiian or Other Pacific Islander 6 Mixed
Hispanic or Latino Ethnicity	1 Yes 2 No

Table 2. (Continued)

Level of Education at Application	0 No formal schooling 1 Elementary education (grades 1-8) 2 Secondary education, no high school diploma (grades 9-12) 3 Special education certificate of completion/diploma or in attendance 4 High school graduate or equivalency certificate (regular education students) 5 Post-secondary education, no degree 6 Associate degree or Vocational/Technical Certificate 7 Bachelor's degree 8 Master's degree or higher
Level of Education at Closure	0 No formal schooling 1 Elementary education (grades 1-8) 2 Secondary education, no high school diploma (grades 9-12) 3 Special education certificate of completion/diploma or in attendance 4 High school graduate or equivalency certificate (regular education students) 5 Post-secondary education, no degree 6 Associate degree or Vocational/Technical Certificate 7 Bachelor's degree 8 Master's degree or higher

Table 2. (Continued)

Primary Disability	Recoded to reflect cause or source and impairment: 1 ADHD 2 Anxiety 3 Arthritis 4 Autism 5 Cerebral Palsy 6 Chronic Medical Condition 7 Cognitive Impairment 8 Depression 9 Substance Abuse 10 General Physical Debilitation 11 Mental Illness Other 12 Intellectual Disability 13 Orthopedic Impairment 14 Schizophrenic Disorders 15 SCI 16 Sensory Disability 17 SLD 18 Stroke 19 TBI
Secondary Disability (recoded)	1 Yes 2 No secondary disability or impairment
Cost (recoded)	Total amount spent (recoded) 1 $0 to $999 2 $1,000 to $3,999 3 $4,000 to $7,499 4 $7,500 to $9,999 5 $10,000 to $19,999 6 $20,000 to $74,999 7 $75,000 and higher
SSI/SSDI at Application	1 No SSI/SSDI 2 SSDI 3 SSI 4 SSI/SSDI

Table 3. Service Duration Variables

Milestone Variable	Variable Definition
Application to closure in years	Recoded in years from DOA to DOC

Table 4. Service Variables

Service Variables	Variable Definition
Assessment Service	1 Provided 2 Not provided
Diagnosis and Treatment Service	1 Provided 2 Not provided
Vocational Rehabilitation Counseling Service	1 Provided 2 Not provided
College Training Service	1 Provided 2 Not provided
Job Search Service	1 Provided 2 Not provided
On the Job Services	1 Provided 2 Not provided
Transportation Service	1 Provided 2 Not provided

2.2 SUBJECTS

Subjects were identified from the Office of Vocational Rehabilitation caseloads using the RSA - 911 case service report. Subject data were provided to the researchers by OVR as de-identified RSA - 911 case service report data files in Excel format. A Letter of Understanding (LOU) was signed by OVR personnel and by a University of Pittsburgh faculty member (see Appendix A). University of Pittsburgh Institutional Review Board approval was obtained prior to access to study data.

Subjects include 4,696 customers of the Pennsylvania Office of Vocational Rehabilitation whose cases were closed as either successful (status 26) or as unsuccessful (status 28) in fiscal years 2011 and 2012. All subjects have received funding or services for college training. (see Table 1 for variable definitions).

Subject data were cleaned and recoded for analysis and to account for inconsistencies in how individual counselors interpreted the coding of certain variables. Also, there appeared to be differences in coding between 2011 and 2012 subjects. Because of these inconsistencies, several variables were recoded from the original dataset. Recoding was done primarily by collapsing related data points into more broad categories than originally coded for the purpose of straightforwardness, and clarity. The following variables were recoded: *primary disability* and *secondary disability*, *level of education attained at application*, and *level of education attained at closure*, *age at application* was changed from a continuous variable to a categorical variable 0) No formal schooling, 1) Elementary education (grades 1-8), 2) Secondary education, no high school diploma (grades 9-12), 3) Special education certificate of completion/diploma or in attendance, 4) High school graduate or equivalency certificate (regular education students), 5) Post-secondary education, no degree, 6) Associate degree or Vocational/Technical Certificate, 7) Bachelor's degree, 8) Master's degree or higher.

Cost of services was also changed from continuous to categorical using the following categories 1) $0 to $999 2) $1,000 to $3,999 3) $4,000 to $7,499 4) $7,500 to $9,999 5) $10,000 to $19,999 6) $20,000 to $74,999 7) $75,000 and higher.

Regarding primary and secondary disability, the RSA – PD-04-04 Policy Directive on coding primary and secondary disability on the RSA – 911 identifies both an impairment coding and a cause/source coding. This coding structure does not correspond directly with known

diagnostic classification systems (for example the Diagnostic Statistical Manual or the International Classification of Disability). Additionally, there were significant inconsistencies in the manner in which these impairment and cause/source coding were applied across individual cases.

We recoded the disability classifications in a fashion that would reflect the most prevalent disability and diagnostic descriptors. Moreover, we determined that identification of condition, on the basis of the literature, would logically present with different patterns of service, employment and training obstacles and employment outcomes. The recoded classification; therefore, will include the following disability/diagnostic categories: 1) Attention Deficit Hyperactivity Disorder (ADHD), 2) Anxiety, 3) Arthritis, 4) Autism, 5) Cerebral Palsy, 6) Chronic Medical Condition, 7) Cognitive Impairment, 8) Depression, 9) Drug and Alcohol Abuse, 10) General Physical Debilitation, 11) Mental Illness, 12) Intellectual Disability, 13) Orthopedic Impairment, 14) Schizophrenic Disorders, 15) Spinal Cord Injury (SCI), 16) Sensory Disability, 17) Specific Learning Disability (SLD), 18) Stroke, 19) Traumatic Brain Injury (TBI).

2.3 DATA ANALYSIS

Descriptive data (means and standard deviations and frequency counts) for all variables were conducted and reported using SPSS (IBM SPSS Statistics, Version 20). Based upon a priori review of the literature and the results of the descriptive analysis, the relationships between selected variables were investigated using t-tests (for continuous data) and Chi-square (for categorical data) analyses to determine the relationships between service type, service length,

disability, funding, and demographic variables and successful or unsuccessful VR outcomes. If strong relationships were identified, inferences could be made that may lead to recommendations for increasing the rate of successful case closures for VR customers receiving college and university training services. The alpha level was set at $p<0.05$ (0.01) a priori.

3.0 RESULTS

3.1 FREQUENCIES

The sample was made up of 4696 individuals whose OVR cases were closed in 2011 and 2012. Average age for the overall sample was 26.12 (±11.210). There were 2364 females (50.3%) and 2332 males (49.7%). With respect to race, a large majority of the subjects were white (4083; 86.9%). African-Americans comprised 11.4% of the sample (536), while Asians, American Indians or Alaskan natives, Hawaiian or Pacific Islanders made up less than 1% (n=45) of the sample combined. Individuals of mixed race made up less than 1% (n=41).

At application, there were 62 individuals who attained a special education certificate or diploma. A total of 880 individuals attended secondary education but did not graduate (40%) while 1213 graduated from high school (25.8%). A total of 461 individuals (49.8%) achieved an associate's, or vocational technical degree, 171 (3.6%) obtained a bachelor's degree and 35 (0.7%) individuals earned a master's degree or higher. Eight-hundred and fifty eight (18.3%) attended some post-secondary education but had not earned a degree.

Table 4 presents a listing of the number of individuals in each of the 19 primary disability categories. The most prevalent disability was Specific Learning Disability (SLD) with 971 (20.7%), followed by Depressive disorders (656; 14%), General Physical Debilitation (532; 11.3%), Chronic Medical Condition (484; 10.3%) and Sensory Disability (391; 8.3%), ADHD

(360; 7.7%) and Substance Abuse (304; 6.5%). Of the total sample 52.4% (n=2463) of the individuals were coded as having a secondary disability while 47.6% (n=2233) did not have a secondary disability.

With respect to cost, OVR spent an average of $8,681.56 (±16,320.13) on services for individuals in the sample. A breakdown of services provided, payers and providers for the entire sample is included in table 16.

3.2 RELATIONSHIP BETWEEN VARIABLES AND EMPLOYMENT OUTCOMES

A number of analyses were conducted to establish the relationship between demographic, disability, cost, length and type of services and employment outcomes. Overall, there were 2613 (55.6%) individuals who achieved a successful employment outcome (Status 26), while 2083 (44.4%) individuals were closed as unsuccessful (Status 28)

3.2.1 Age

When examining the relationship of age to employment outcomes, a t-test was calculated and found means for each status (26 and 28) were significantly different *($p<.001$)*. Those in the unsuccessful outcome group were older (M=28.40 SD= 12.234) than those in the successful outcome group (M=23.84: SD=10.187) (Table 5). Of particular interest to the research group was whether individuals of transition age differed from older, non-transition age customers. In order to examine this, a chi-square analysis was conducted on age recoded into two categories,

transition age (ages 14-24) and non-transition age (age 25 and up). The analysis revealed that transition age customers fair far better in terms of employment outcomes, with a success rate of 63.2% while their older counterparts success rate was 42.9% (*p<.001)* (Table 6).

Table 5. Age by employment outcomes

	Status	N	Mean	Std. Deviation
Age	26	2613	23.84	10.187
	28	2076	28.40	12.234

*p<0.001, F=22.57

Table 6. Age recoded by employment outcomes

Age Recoded % (n)	Status 26	Status 28
Non-transition	42.9%743	57.1%987
Transition	63.2%1870	36.8%1089

*Chi-Square =181.432, *p<0.001, df=1

3.2.2 Race

A large disparity in the category of race was found. Regarding race, 85% of the sample was White, 11% was African American, and 2% was Hispanic. The final 2% was made up of mixed race and others including Asians, American Indian or Alaskan natives, Hawaiian and Pacific Islanders. Within this sample individuals who are white were successful at a rate of 58.1% while the success rate for African Americans was 38.1%. While the remainder totaled under 4%, their success rates were reported as mixed race (65.8%), Hispanic (46.5%), and other races (45.2%).

In Table 7, results from a chi-square analysis indicated that there was a significant relationship between race and employment outcome (*p<.001*).

Table 7. Race by employment outcomes

Race % (n)	Status 26	Status 28
African American	38.1% (198)	61.9% (322)
Hispanic	46.5% (47)	53.5% (54)
Mixed	65.8% (25)	34.2% (13)
Other	45.2% (14)	54.8% (17)
White	58.1% (2328)	41.9% (1677)

*Chi Square = 81.381, p < 0.001, df=4

3.2.3 Level of Education

In Tables 8 and 9, chi-square analyses examined the relationships between level of education at application and at closure, and in both cases the relationship was significant. Among the education level at application, there were no clear trends that occurred, even though the overall chi-square was significant (*p< .001).* In contrast, when examining level of education at closure, completion of a degree appeared to be strongly related to positive employment outcome (*p< .001*).

Those customers who had an education level at or below a high school diploma, and completed either a master's (89%), bachelor's (85.6%) or associate's (76.8%) degree, were considerably more successful than the rest of the college training population (55.6%). Moreover, of this population, the mean age for successful outcomes (status 26) was younger (20 years old)

than the mean age for unsuccessful outcomes (25.6 years old). This information implies that customers who utilize OVR college training services will fair far better when joining earlier, during transition ages. Further proof of this can be seen when looking at those customers who, at the time of application have a level of education equal to or below a high school degree, for transition age customers, the success rate is 62.9% while it is only 35.7% for non-transition customers.

Table 8. Level of Education at Application by employment outcomes

Level of education at application % (n)	Status 26	Status 28
A.S. or Vo-Tech Cert. or Deg.	47.5% (219)	52.5% (242)
Bachelor's degree	57.3% (98)	42.7% (73)
H.S. Grad (Reg. Ed.)	49.4% (599)	50.6% (614)
Master's or higher	54.3% (19)	45.7% (16)
Middle school or less	50.0% (8)	50.0% (8)
Post-Second. Ed. (No Degree	54.0% (463)	46.0% (395)
Second. Ed (No Diploma)	62.4% (1174)	37.6% (706)
Sp. Ed. Cert. or Diploma	53.2% (33)	46.8% (29)

*Chi-Square = 68.450 $p < .001$ df = 7

Table 9. Level of Education at Closure by employment outcomes

Level of Education at Closure % (n)	Status 26	Status 28
A.S. or Vo-Tech Cert. or Deg.	63.5% (686)	36.5% (394)
Bachelor's degree	79.6% (1034)	20.4% (265)
H.S. Grad (Reg. Ed.)	33.7% (118)	66.3% (232)
Master's or higher	83.6% (168)	16.4% (33)
Middle school or less	0.0% (0)	100.0% (3)

Table 9 (Continued)

Level of Education at Closure % (n)	Status 26	Status 28
Post- Secondary (no degree)	34.8% (584)	65.2% (1093)
Secondary Ed. (no diploma)	10.4% (5)	89.6% (43)
Sp. Ed. Cert. or Diploma	47.4% (18)	52.6% (20)

*Chi-Square = 800.048 $p < .001$ df =7

Table 10. Level of Education at Closure for High School Applicants by employment outcomes

HS or below at app % (n)	Status 26	Status 28
A.S. or Vo-Tech Cert. or Deg.	76.8% (423)	23.2% (128)
Bachelor's degree	85.1% (675)	14.9% (118)
H.S. Grad (Reg. Ed.)	34.4% (118)	65.6% (225)
Master's or higher	89.0% (81)	11.0% (10)
Middle school or less	0.0% (0)	100.0% (3)
Post- Secondary (no degree)	37.9% (494)	62.1% (810)
Secondary Ed. (no diploma)	10.4% (5)	89.6% (43)
Sp. Ed. Cert. or Diploma	47.4% (18)	52.6% (20)
Totals	57.3% (1814)	42.7 (1357)

*Chi-Square = 696.315 $p < .001$ df =7

3.2.4 SSI/SSDI

The presence of SSI and/or SSDI at application was examined. Table 11 illustrates that those individuals who received SSI, SSDI or both had poorer outcomes than those who did not receive social security benefits ($p < .001$).

Table 11. SSI/SSDI at Application by employment outcomes

SSI/SSDI at application % (n)	Status 26	Status 28
None	59.8% (2165)	40.2% (1455)
SSDI	41.2% (231)	58.8% (329)
SSI	43.7% (194)	56.3% (250)
SSI/SSDI	31.9% (23)	68.1% (49)

*Chi-Square =114.498 *p= .000 df = 3*

3.2.5 Gender

Success rates for gender were calculated. While the difference was not significant at the level established for this study, there was a trend that men (57.2%) had more successful outcomes than women (54.1%) (*p=.038).*

Table 12. Gender by employment outcomes

Gender % (n)	Status 26	Status 28
Female	54.1% (1280)	45.9% (1084)
Male	57.2% (1333)	42.8% (999)

*Chi-Square = 4.326 *P=.038*

3.2.6 Primary Disability

Primary disability diagnoses were evaluated and were found to be positively associated with employment outcomes ($p<.001$). The disabilities that were most strongly related to successful outcomes were cognitive impairments (70.9%), Attention Deficit Hyperactivity Disorder (ADHD) (69.2%), Sensory Disabilities (67%), Traumatic Brain Injuries (TBI) (66.2%), and Specific Learning Disabilities (SLD) (64%). Those disabilities that were more strongly associated with unsuccessful employment outcomes were schizophrenia and other psychiatric disorders (71.1%), Stroke (64%), Spinal Cord Injury (SCI) (59.2%), and Mental Illness (59%).

Table 13. Primary disability by employment outcomes

Primary Disability % (n)	Status 26	Status 28
ADHD	69.2 (249)	30.8 (111)
Anxiety	50.4 (62)	49.6 (61)
Arthritis	57.5 (50)	42.5 (37)
Autism	52.6 (40)	47.4 (36)
Cerebral Palsy	52.1 (37)	47.9 (34)
Chronic medical Condition	55.4 (268)	44.6 (216)
Cognitive Impairment	70.9 (56)	29.1 (23)
Depressive	43.6 (286)	56.4 (370)
Drug and Alcohol Abuse	44.7 (136)	55.3 (168)
General Physical Debilitation	54.1 (288)	45.9 (244)
Mental Illness	41.0 (48)	59.0 (69)
Mental Retardation	54.0 (27)	46.0 (23)
Orthopedic Impair.	50.0 (72)	50.0 (72)
Schizophrenia and other Psychiatric Disorders	28.9 (24)	71.1 (59)
SCI	40.8 (29)	59.2 (42)

Table 13. (Continued)

Sensory Disability	67.0 (262)	33.0 (129)
Specific Learning Disability	64.2 (623)	35.8 (348)
Stroke	36.0 (9)	64.0 (16)
TBI	66.2 (47)	33.8 (24)

*Chi-Square = 188.441 P<.001 df =18

3.2.7 Secondary Disability

A determination to analyze secondary disability as a dichotomous variable that coded either the presence of a secondary disability or no secondary disability was made. The presence of a secondary disability factored significantly in a chi-square analyses with respect to employment outcomes (p<.001). Table 14 shows that customers who did not have a secondary disability had a 60.1% chance of gaining employment, while those with a secondary impairment had a 51.6% chance.

Table 14. Secondary Disability by employment outcomes

Secondary Disability % (n)	Status 26	Status 28
Disability Present	51.6% (1270)	48.4% (1193)
No Impairment	60.1% (1343)	39.9% (890)

*Chi-Square =34.934 *p= .000* df = 1

3.2.8 OVR Office

Table 15 presents the breakdown of successful and unsuccessful closures across office locations, New Castle (70.6%), Altoona (69%), DuBois (68%), had the highest success rates, while Allentown (33.9%) and York (40.9%) had the lowest in this sample**.**

Table 15. OVR Office by employment outcomes

Office % (n)	26	28
Allentown OVR	33.9% (64)	66.1% (125)
Altoona OVR	69.0% (171)	31.0% (77)
DuBois OVR	68.0% (117)	32.0% (55)
Erie OVR	63.9% (241)	36.1% (136)
Harrisburg OVR	49.4% (78)	50.6% (80)
Johnstown OVR	65.3% (239)	34.7% (127)
New Castle OVR	70.6% (397)	29.4% (165)
Norristown OVR	45.5% (92)	54.5% (110)
Philadelphia OVR	55.3% (78)	44.7% (63)
Pittsburgh OVR	45.1% (436)	54.9% (531)
Reading OVR	54.3% (113)	45.7% (95)
Washington OVR	62.9% (112)	37.1% (66)
Wilkes-Barre OVR	54.3% (184)	45.7% (155)
Williamsport OVR	60.6% (154)	39.4% (100)
York OVR	40.9% (137)	59.1% (198)

*Chi-Square = 231.155 $P < .001$ df = 14

3.2.9 Cost

With respect to cost of services, a t-test revealed an effect on outcome (Table 16). Successful outcome was positively associated with higher costs of services (*p<.001).* The mean cost for a successful outcome was $10,415.13 compared with $6,506.89 for those that were unsuccessful.

In order to further analyze the impact of cost ranges, we categorized the sample into seven roughly equivalent cost breakdowns. A clear trend was noted from chi-square analysis on this recoded cost variable (*p<.001*). Table 17 shows that when $4,000 or more was spent on a customer, they were more likely to have a positive employment outcome. The cost ranges and obtained percentages for the 7 categories are: $0-$999 (40.6%), $1,000-$3,999 (45.5%), $4,000-$7,499 (55.8%), $7,500-$9,999 (66.3%), $10,000-$19,999 (74.3%), $20,000-$74,999 (70.4%), and $75,000 and up (58%).

Table 16. Continuous Cost by employment outcomes

Cost Continuous	Status	N	Mean	Std. Deviation
Cost of Purchased Services	26	2613	10415.1339	17535.67211
	28	2083	6506.8896	14364.60314

*F=21.922 *p<.001*

Table 17. Cost Recoded by employment outcomes

Cost % (n)	Status 26	Status 28
1) $0 to $999	40.6% (430)	59.4% (628)
2) $1,000 to $3,999	45.5% (485)	54.5% (582)
3) $4,000 to $7,499	55.8% (470)	44.2% (372)
4) $7,500 to $9,999	66.3% (301)	33.7% (153)
5) $10,000 to $19,999	74.3% (672)	25.7% (232)

Table 17 (Continued)

6) $20,000 to $74,999	70.4% (226)	29.6% (95)
7) $75,000 and higher	58.0% (29)	42.0% (21)

*Chi-Square =318.669 P<.001 df-6

3.2.10 Services

A number of services were provided by OVR, other state VR services and private VR agencies, for the purpose of this study the service variables were recoded into a dichotomous yes / no category.

Although the vast majority of individuals received assessment (4,079) and Vocational rehabilitation services (4,582) (tables 18 and 19), the results were not significant as success was similarly distributed over the population.

With regard to diagnostic and treatment services, there was a significant finding that when individuals had access to services, they were 4% more likely to reach successful outcomes.

In tables 20 and 21 job search and on the job services were the most significant service variables, yielding 71.6% and 84% success rates respectively. Of note these two services were less frequently provided.

In contrast to the positive trends for service variables, transportation services yielded a negative effect on success. Only 40.2% of individuals who received transportation were successful, compared with a 57% success rate for those who did not receive transportation services.

Table 18. Assessment Services by employment outcomes

Assessment Services % (n)	Status 26	Status 28
Not Provided	53.8% (332)	46.2% (285)
Provided	55.9% (2281)	44.1% (1798)

*Chi-square = .968 p=.325

Table 19. Diagnostic and Treatment services by employment outcomes

Diagnostic and Treatment % (n)	Status 26	Status 28
Not Provided	53.2% (981)	46.8% (862)
Provided	57.2% (1632)	42.8% (1219)

*Chi sq=7.311 P=.007

Table 20. Vocational Rehabilitation Services by employment outcomes

Vocational Rehabilitation % (n)	Status 26	Status 28
Not Provided	49.1% (56)	50.9% (58)
Provided	55.8% (2557)	44.2% (2025)

*Chi-square = 2.013 p=.156

Table 21. Job Search services by employment outcomes

Job Search Services % (n)	Status 26	Status 28
Not Provided	51.7% (1938)	48.3% (1814)
Provided	71.6% (675)	28.4% (268)

*Chi-square=122.503 p<.001

Table 22. On the Job Services by employment outcomes

On the Job Services % (n)	26	28
Not Provided	54.6% (2477)	45.4% (2057)
Provided	84.0% (136)	16.0% (26)

*Chi-square=54.474 p<.001

Table 23. Transportation Services by employment outcomes

Transportation Services	Status 26	Status 28
Not Provided	57.0% (2464)	43.0% (1861)
Provided	40.2% (149)	59.8% (222)

*Chi-square=39.117 p<.001

3.2.11 Service Duration

Though the difference in the means is only 1.3 years, there was a significant finding in the difference between successful and unsuccessful closures (*p<.001).* The mean duration was 5.14 years for successful closures and 4.4 years for unsuccessful closures.

Table 24. Total Service Duration by employment outcomes

Status	N	Mean	Std. Deviation
26	2613	5.14	2.6850031
28	2080	4.43	8.0691253

*p<.001 F= 33.426

4.0 DISCUSSION

The purpose of this study was to investigate and determine trends associated with state VR customers who have received college or university training with respect to the effect of demographic variables, disability type, service type, payer and provider, cost, and length of service on employment outcomes. The results of this study will be discussed below.

Regarding the sample, the RSA 9-11 database has provided a large sample of individuals from the PA OVR. Given the size of the sample (N=4,696), it is likely that this dataset is representative of state VR customers who have been provided post-secondary college or university training. The demographic makeup of this sample reflects individuals who are predominately white, transition age (14-24) and less likely to be recipients of social security benefits. Males and females are equally represented in the sample. The discrepancy in social security benefits may reflect that the majority of the population does not meet the disability severity requirements for eligibility for social security; therefore, the sample may disproportionately reflect individuals who have less severe disabilities.

Regarding the results of the analysis of race, although a considerably smaller number of African Americans were represented in the sample, they fared 20% worse in achieving a successful case closure than customers who were White. The small size of the other race groups prohibits drawing any inferences. In considering the significant difference between whites and African Americans, it would appear that race plays a role in determining successful employment

outcomes. It may be that specific factors commonly associated with racial disparities, such as geographic location, socioeconomic status and poverty, prior educational experiences, and availability of resources might be related to race; however, it was beyond the scope of this study to examine the co-variation of these potential moderating variables on race and employment outcome. Future studies should attempt to replicate these findings with respect to race and if replicated, should address in more depth the cause of such disparity.

Age at application appeared to be a variable that affected positive outcomes as younger individuals fared better, both with respect to the overall mean age groups between successful and unsuccessful and also when age was dichotomized to transition and non-transition age groups. In fact, transition age subjects fared nearly 20% better in obtaining an employment outcome than those who were 25 and older. This finding supports VR involvement with persons with disabilities at younger ages. Roughly one quarter of customers were age 17 or under at the time of application; therefore, this study provides supports for engaging individuals earlier in secondary schools to work transition.

The high number of individuals without high school diplomas at application whose cases were closed as successful further indicated the prevalence and positive influence of involving customers at an early age. This appears to be supported further when looking at a 13% lower success rate for individuals who have entered VR after having completed high school (but have not begun post-secondary education).

Another finding regarding education at application was seen in a positive outcome for those who enter VR either while in college or after completing a bachelor's degree. These findings suggest that earlier involvement in the VR process is related to successful employment outcomes.

Results indicate a trend toward more successful results in customers from more rural offices than those in metropolitan areas. The greatest levels of success were noted in New Castle, Altoona, Erie, DuBois and Johnstown, while customers who came from Allentown, Pittsburgh, and Norristown had greater challenges regarding employment outcome. Further analysis would be beneficial to provide a better understanding of the differences across OVR office locations.

The manner in which disabilities were coded presented challenges in this study. The coding conventions of the RSA-911 take into consideration both the presenting impairment and the presumed cause of the impairment. This coding convention appeared to be interpreted differently both within and across offices. Moreover, the classification does not align well with known disability classification systems like the International Classifications of Diseases (9^{th} Edition) or the American Psychiatric Association's DSM-IV-TR or V. An attempt was made to reclassify the data to reflect diagnosis over presenting functional impairment. Cause was more likely to be identified but even this was inconsistent and required recoding at times.

Acknowledging that data were recoded, the results revealed that the disabilities that were more likely to benefit from college training in terms of employment outcome were persons with a broad range of primarily cognitive disabilities, including ADHD, SLD, traumatic brain injuries, and general cognitive impairment. Also, quite successful were sensory disabilities. The disability populations who fared more poorly were individuals who experienced mental health and behavioral disabilities including schizophrenia and other psychiatric disorders, depression, drug and alcohol abuse and general mental illness. Those with spinal cord injury also fared poorly.

As might be expected, persons who were classified as having more than one disability (coded as having a secondary disability) were 11.5% less likely to obtain employment. This appears to be attributable to the compounding effects of co-morbid disabilities.

One might explain the success of those with cognitive disabilities by an increased awareness and range of supports and accommodations available for post-secondary and vocational intervention. Also, persons with sensory disabilities routinely demonstrate the highest levels of successful vocational rehabilitation when compared with other disability populations. Additional analysis might assist in better identifying why persons with behavioral and emotional disabilities have less successful outcomes. Clearly, those with mental health and behavioral disabilities would seem to require further study to identify rehabilitation needs and services to enhance vocational outcomes.

According to the results of the categorical analysis of cost of services, it was found that there is a threshold for total cost at approximately $4,000. That is, in those cases in which the overall cost was less than $4,000, less successful outcomes were obtained. The total cost amount associated with the highest frequency of successful closures ranged from $10,000 to $75,000. The average amount spent for successful closures was $10,415 versus only $6,507 for unsuccessful closures. These data generally support the notion that successful rehabilitation may be more costly. It is also possible, however, that the lower number reflects a shorter length of services for unsuccessful cases; and therefore, less money spent.

In general, the provision of services by any VR agency, public or private was a positive indicator of successful employment outcomes. For diagnostic and treatment, job search and on-the-job services, the success rates ranged from 57.2% to 84%. As one might expect, job related services have the greatest impact on successful employment outcomes. A contrasting finding

was the negative relationship between transportation services and success. Fifty seven percent of individuals who did not receive transportation services were successful, while only 40.2% of those who did were successful. One possible explanation for this finding is that those who seek and access transportation services have more significant impairments than those who do not. This possible explanation may be further supported by the small sample of individuals (n=371) who received this service compared to 4325 who did not.

A t-test evaluating the relationship of service duration to outcome suggested that more time with a client results in more successful employment outcomes. For successful outcomes, the mean in years of total service provision was 5.14 years while the mean for unsuccessful outcomes was 4.43. While a 1.3 difference in mean years is statistically significant, one might question whether the practical significance of these findings, given the large variability in overall duration of services.

This study builds upon Boutin and Accordino (2009), supporting the findings that certain variables, such as job related services, and transportation services have strong relationships with employment outcomes. This study is also more generalizable in that it examined data across multiple disabilities.

4.1 IMPLICATIONS

This study stresses the importance of placement services, particularly in the case of transition age customers. Follow along services are particularly appropriate and advantageous for this population. After direct support in high school, and accommodations in post-secondary

education, similar supports for job searching and on the job supports are crucial to continued success.

While these follow along supports are often costly, the findings in this report show that generally higher costs of services yield higher rates of successful closures.

This study supports the provision of college and university training as a mechanism for enhancing rehabilitation outcomes. The overall success rate for those receiving college and university training was 55.4%. College training is; therefore, judged to be a viable VR service that can be expected to yield positive outcomes.

A number of variables appear to be related to greater success. These include younger age, earlier involvement in VR, possible existence of resources for specific populations, such as persons with cognitive disabilities, and an optimal service cost for success. In order to capitalize on these factors, OVR might consider integrating these findings into service delivery, for example, emphasizing involvement well before high school graduation. Another example might be to identify the successful supports provided for those disabilities found to be most successful such as SLD, ADHD, and TBI and replicate those services for other disability populations. Additional research is suggested to further evaluate variables such as cost, race, geographic location, and specific services delivered.

Negative findings such as success rates for African Americans and persons with behavioral and mental health disabilities should be further explored for the purpose of identifying new rehabilitation supports and strategies to reverse these negative outcome trends. It might be worth exploring making resources available to individuals with cognitive disabilities available to other groups as is or modified to better meet the needs of those groups. Additional

research looking at moderator variables may assist in determining the specific types of service modifications likely to produce more positive outcomes.

It seems from this research that key services are underutilized. Job related services including job search and on-the-job supports appear to be beneficial, however, customers who are receiving college training services infrequently use them. The reasons for the infrequent use of these services are unclear. If this is due to a lack of resources to provide the services I would recommend that these services take a higher priority for resource development and funding, given their apparent efficacy.

Finally, it appears that success is positively related to both time and money. Both variables are often targeted as negative indicators in human service delivery systems. However, the relationship between success and these variables suggests that greater cost and more time may be necessary in order to achieve more frequent successful outcomes for customers using college and university training as the pathway to employment.

4.2 LIMITATIONS

This study was undertaken only as an exploratory study, in that regard it did appear to meet expectations; however, there were limitations that prevent definitive conclusions and limit generalizability. Limitations include, the data analyzed only represents Pennsylvania, which may differ from how other states handle college and university training services. Also, there were inconsistencies in coding across and within offices and years of data. In particular, the primary and secondary disability variable categories were coded in a way that prohibited statistical

analysis. As a result recoding was necessary, which may have biased the overall findings. In order to control for this bias, recoding was agreed upon by the research team.

There were also limitations due to the design of the study. Retrospective data analyses limit the weight of the findings when compared to controlled, prospective studies. Exploratory studies merely suggest trends rather than show causality.

Another limitation is that critical variables, such as reason for closure were unavailable. These variables may have been helpful in better understanding the differences between successful and unsuccessful outcomes. For example, if an individual chose to discontinue services, their unsuccessful closure may not be attributable to these variables.

More generally, the problem of using a large data set that was not designed to answer specific research questions such as those proposed in this study lead to overpowering, type one error, running the risk of finding significance when, in practicality these relationships may not be as strong. This should be taken into consideration when looking at data.

While there is a large amount of data, it is spread over a relatively short period of time. A longer time horizon would be beneficial to analyze additional years in order to determine if these trends continue.

5.0 SUMMARY AND CONCLUSION

The purpose of this study was to analyze a large sample of public vocational rehabilitation service and outcome data for VR customers who have received college or university training. The data analyzed in this retrospective study were from a federal RSA 911 dataset for the Pennsylvania Office of Vocational Rehabilitation (OVR) during 2011 and 2012. Results of the study revealed that key variables including Age, job search and on the job services, cost of services, level of education, and type of disability were significantly related to outcomes. A key finding supports early intervention by OVR in the transition population. These data also give support to current OVR approaches that appear to be positively associated with rehabilitation success. Implications include a combination of continuing to implement services that yield successful outcomes. Development and allocation of new or enhanced resources and funding that can replicate the success seen in some populations in other disability groups who experience greater challenges to success.

Additional research is needed to better understand the underlying causes of success and unsuccessful rehabilitation outcomes, however some areas of further development and improvement have been identified and expanded upon below.

The trends that have been observed in this study lead to some general conclusions and recommendations for increasing the number of successful case closures for OVR customers who are receiving college training. It should be a priority to follow up with failed college attempts. It

is valuable to understand why a customer was unsuccessful at this level. A large array causal factors and explanations can be attributed to unsuccessful closures. Any given customer may be unsuccessful as a result of truancy, inappropriate academic levels, drug and alcohol relapse, amongst other difficulties related to their disability.

One way to reduce the number of unsuccessful case closures is to use a prescribed contingency plan. With this recommendation in place, the customer, when entering in to a post-secondary training program, would establish three distinct goals for a specific contingency plan which the customer and counselor collaborate and agree on what the next steps would be in the event that the customer is unsuccessful. (The plan would be amenable to change in accordance with the customer's growth). For example, a customer who is enrolled at a four-year university with the specific job goal of financial accountant is not able to complete the bachelor's degree due to the high level of academic rigor. At this point, the customer and counselor would look to the contingency plan and opt to stay with post-secondary training but change the focus slightly to a more attainable bachelor's degree (i.e., marketing). In the event that the customer is still unsuccessful, the second level of the contingency plan would come into effect. The customer would shift from a traditional four-year bachelor's degree to an associate's or certificate program (e.g., Bidwell Training Center for the medical claims certificate program). Lastly, when a customer is unable to complete any of their prior plans for training, they would choose a direct employment route that does not require post-secondary training. The customer would then be referred to OVR's business services department for job search services, seeking a related position such as a teller at a bank.

The number of transition students who attempt college is not commensurate with the number of those graduating and, as a result, obtaining competitive employment. Nevertheless, it

is important to afford each customer a fair and comprehensive plan that balances his or her own personal career exploration (dream or reach career) with the strongest chance for a successful case closure (i.e., their realistic goals in an obtainable field with good labor market outlook).

One major deterrent to gainful employment for people with disabilities is perceived work disincentives. Many people who are receiving SSI or SSDI funding rely on it to offset a considerable portion of their healthcare and living costs. Working more and therefore earning more can reduce their monthly compensation, which may threaten their independence and, ultimately, their health. There is some foundation to the fear associated with working while on social security; however, there are many popular misconceptions regarding work and social security benefits. In order to combat these misconceptions, SSI/SSDI work incentives counseling should be utilized. There are many programs that focus on this type of counseling and guidance; AHEDD, Goodwill, and The Social Security Administration (SSA) provide programs that help consumers navigate their benefits and the Ticket to Work (TTW). Some of these programs include Work Incentive Seminar Events (WISE) and Work Incentive Planning and Assistance (WIPA).

Perhaps the most basic and available solution for reducing unsuccessful case closures among customers receiving college training is vocational counseling and guidance. It is important for the counselor to get involved early in a customer's career exploration. Vocational counseling and guidance should start as soon as possible. The vocational rehabilitation counselor should initiate the conversation and process of interest inventories and aptitude tests early in order to avoid misdirected efforts and wasted resources. The focus in these early counseling sessions should be on the customer's strengths and weaknesses as they relate to the unique

stresses and demands of post-secondary training. In this stage, neuropsychological evaluations and in vivo assessments (as reported by high school teachers or community based assessments) should be utilized. The counselor should then provide supports to employment and training to prevent premature drop out and/or never initiating appropriate college training. One way this can be done more efficiently is by making the general public more aware of OVR and the services that OVR provides. This would be particularly effective in high schools, universities, trade and technical schools. With the continued use of early reach coordinators and vocational rehabilitation counselors who provide informational sessions, OVR can succeed in generating greater awareness in the transition community.

APPENDIX A

OVR and the University of Pittsburgh Letter of Understanding (Lou)

University of Pittsburgh
School of Health and Rehabilitation Sciences
5040 Forbes Tower
Atwood & Sennott Streets
Pittsburgh, PA 15260

Re: Initial RSA 911 Aggregate Data Analysis of 28 and 26 Closures with Post-Secondary Training Services FFY 2012

Dear Dr. McCue:

This correspondence serves as the Letter of Understanding (LOU) between the Commonwealth of Pennsylvania, Department of Labor and Industry, Office of Vocational Rehabilitation (hereinafter "OVR") and the University of Pittsburgh (hereinafter "Pitt") with respect to the initial analysis of OVR FFY 2012 aggregate data on 28 and 26 closures that received training services.

OVR is the agency within the Commonwealth responsible for promoting the employment of individuals with disabilities through the provision of vocational rehabilitation, job training and placement services pursuant to the federal Rehabilitation Act of 1973, *as amended*, (29 U.S.C. § 701 *et. seq.*), the Vocational Rehabilitation Act of 1988 (43 P.S. § 682.1 *et. seq.*) and Article XXII of the Administrative Code of 1929, *as amended*, (71 P.S. § 580.1 *et. seq.*).

The University of Pittsburgh Master's Degree Program is an entity responsible for the training of professionals in the field of Vocational Rehabilitation Counseling and Administration. Through the university's faculty and graduate students, Pitt has the ability to provide a preliminary analysis of OVR's 911 data that may suggest patterns or questions for further review and consideration by OVR.

OVR and Pitt intend to collaborate in the analysis of this data to facilitate the improvement of service provision to OVR consumers. The following responsibilities set forth the mutual understandings of OVR and Pitt:

OVR will:

- Compile FFY 2012 RSA 911 data on 28 closures receiving training services
- Compile FFY 2012 RSA 911 data on 26 closures receiving training services

- Provide compiled data in an electronic spreadsheet to the University of Pittsburgh
- Preserve the confidentiality of OVR customer identifiable information in the data sharing process

Pitt will:

- Perform a preliminary analysis of the FFY 2012 RSA 911 data provided by OVR
- Identify patterns or areas that would require further review or analysis by OVR
- Respect the confidentiality of the data provided
- Agree not to utilize the data or related recommendations and conclusions for publication or for other purposes related to the university without the written consent of OVR
- Participate in this collaborative partnership without compensation

OVR looks forward to collaborating with Pitt in a successful and mutually beneficial project of data analysis in order to improve service delivery to OVR customers. OVR recognizes the great benefit to be derived through this collaboration. If this correspondence is in accordance with your understanding of the arrangement, please indicate such by placing your signature in the space provided and return to me at the above address.

If you have any questions or need additional information, please do not hesitate to contact me at the above address or telephone number.

Very truly yours,

Michele Bornman
Eastern Regional Manager

The signature below confirms the mutual understanding between the Office of Vocational Rehabilitation and University of Pittsburgh with respect to the analysis of FFY 2012 RSA 911 data.

University of Pittsburgh
By:_____
Date: 6-3-13
Dr. Michael McCue
University of Pittsburgh

APPENDIX B

CODING OF PRIMARY DISABILITY

	Psychosocial impairment // ADHD
	Cognitive impairment // ADHD
	Other mental impairment // ADHD
Anxiety	Psychosocial impairment // Anxiety disorders
	Psychosocial impairment // Anxiety
	Cognitive impairment // Anxiety disorders
	Cognitive impairment // Anxiety
	Other mental impairment // Anxiety disorders
Autism	Cognitive impairment // Autism
	Psychosocial impairment // Autism
	Other mental impairment // Autism
Cerebral Palsy	Manipulation/dexterity/neurological // Cerebral Palsy
	General physical debilitation // Cerebral Palsy
	Mobility and manipulation // Cerebral Palsy
	Mobility orthopedic/neurological // Cerebral Palsy
	Mobility/neurological // Cerebral Palsy
	Other physical impairment // Cerebral Palsy

Chronic Medical Condition	Cognitive impairment // Asthma and allergies
	Cognitive impairment // Asthma and others
	Cognitive impairment // Cancer
	General physical debilitation // Multiple sclerosis
	General physical debilitation // Epilepsy
	General physical debilitation // Diabetes mellitus
	General physical debilitation // Cancer
	General physical debilitation // Blood disorders
	General physical debilitation // Digestive
	General physical debilitation // HIV and AIDS
	General physical debilitation // Asthma
	General physical debilitation // Cardiac and other condition
	Manipulation/Dexterity/Neurological // Cancer
	Manipulation/Dexterity/Neurological // Epilepsy
	Manipulation/Dexterity/Neurological // Multiple Sclerosis
	Manipulation/Dexterity/Neurological // Parkinson's Disease
	Mobility/Orthopedic/Neurological // Cancer
	Mobility/Orthopedic/Neurological // Cardiac/other
	Mobility/Orthopedic/Neurological // Parkinson's Disease
	Mobility/Orthopedic/Neurological // Parkinson's Disease
	Mobility/Orthopedic/Neurological // Multiple Sclerosis
	Mobility and manipulation // Multiple Sclerosis
	Mobility and manipulation // Epilepsy
	Mobility and manipulation // Parkinson's Disease
	Mobility and manipulation // Diabetes Mellitus
	Mobility/ Neurological // Multiple Sclerosis
	Mobility/ Neurological // Cardiac
	Mobility/ Neurological // Epilepsy
	Mobility/ Neurological // Cancer

	Mobility/ Neurological // Parkinson's Disease
	Other physical impairment // Asthma
	Other physical impairment // Blood disorder
	Other physical impairment // Other
	Other physical impairment // Cardiac and other
	Other physical impairment // Cancer
	Other physical impairment // Diabetes Mellitus
	Other physical impairment // Digestive
	Other physical impairment // End stage Renal Disease
	Other physical impairment // Epilepsy
	Other physical impairment // Immune deficiency
	Other physical impairment // Parkinson's Disease
	Other physical impairment // Asthma and allergies
	Other physical impairment // HIV and Aids
	Other physical impairment // Multiple Sclerosis
	Other visual impairment // Diabetes Mellitus
	Other visual impairment // Multiple Sclerosis
	Psychosocial impairment // Epilepsy
	Respiratory impairment // Asthma and allergies
	Respiratory impairment // Respiratory disease other than cystic fibrosis
	Respiratory impairment // Cystic fibrosis
	Respiratory impairment // Cardiac
	Respiratory impairment // Cause unknown
	Respiratory impairment // Congenital condition
	Respiratory impairment // Respiratory disorder
	General physical debilitation // Cardiac/other condition
	Other orthopedic impairment // Parkinson's Disease
Cognitive Impairment	Cognitive impairment // Cause unknown
	Cognitive impairment // Accident

	Cognitive impairment // Congenital condition
	Cognitive impairment // Physical disorders not listed
	Communicative impairment // Accident
	Communicative impairment // Unknown
	Communicative impairment // Congenital condition
	Communicative impairment // Parkinson's Disease and other
	Communicative impairment // Physical disorder not listed
Depression	Cognitive impairment // Depressive and other mood disorder
	Other mental impairment // Depressive and other mood disorder
	Psychosocial impairment // Depressive and other mood disorder
Drug and Alcohol Abuse	Cognitive impairment // Alcohol abuse
	Cognitive impairment // Drug abuse
	General physical debilitation // Alcohol abuse
	Other mental impairment // Alcohol abuse
	Other mental impairment // Drug abuse
	Psychosocial impairment // Alcohol abuse
	Psychosocial impairment // Drug abuse
General Physical Debilitation	General physical debilitation // Physical disorder
	General physical debilitation // Cause unknown
	General physical debilitation // Accident
	General physical debilitation // Physical disorder
	Manipulation/Dexterity/Neurological // Accident
	Manipulation/Dexterity/Neurological // Amputation
	Manipulation/Dexterity/Neurological // Cause unknown
	Manipulation/Dexterity/Neurological // Congenital condition
	Manipulation/Dexterity/Neurological // Physical disorder
	Mobility and manipulation // Accident
	Mobility and manipulation // Amputation
	Mobility and manipulation // Cause unknown

	Mobility and manipulation // Congenital condition
	Mobility and manipulation // Physical disorder
	Mobility and manipulation // Muscular dystrophy
	Mobility/Orthopedic/Neurological // Accident
	Mobility/Orthopedic/Neurological // Amputation
	Mobility/Orthopedic/Neurological // Cause unknown
	Mobility/Orthopedic/Neurological // Congenital condition
	Mobility/Orthopedic/Neurological // Muscular dystrophy
	Mobility/Orthopedic/Neurological // Physical disorder
	Mobility/Orthopedic/Neurological // Polio
	Mobility/Neurological // Cause unknown
	Mobility/Neurological // Accident
	Mobility/Neurological // Amputation
	Mobility/Neurological // Congenital condition
	Mobility/Neurological // Muscular dystrophy
	Mobility/Neurological // Physical disorder
	Mobility/Neurological // Polio
	Other physical impairment // Accident
	Other physical impairment // Amputation
	Other physical impairment // Cause unknown
	Other physical impairment // Congenital condition
	Other physical impairment // Cystic fibrosis
	Other physical impairment // Physical disorders
Mental Illness	Cognitive Impairment //Mental Illness
	Cognitive Impairment//Personality Disorders
	General Physical Debilitation//Eating Disorders
	Mental Impairment //Eating Disorders
	Mental Impairment //Mental Illness
	Mental Impairment //Parkinson's Disease

	Other Mental Impairment // Personality Disorder
	Other Mental Impairment // Cause Unknown
Intellectual Disability (Mental Retardation)	Cognitive Impairment //Mental Retardation
	Psychosocial Impairment // Mental Retardation
Orthopedic Impairment	Other Orthopedic impairment // Accident
	Other Orthopedic Impairment //Physical Disorder
	Other Orthopedic Impairment // Congenital Condition
	Other Orthopedic Impairment // TBI
	Other Orthopedic Impair // Muscular Dystrophy
	Orthopedic Impairment // Cause Unknown
	Other Orthopedic Impairment // Parkinson's Disease
	Other Orthopedic Impairment // Amputations
Schizophrenia and Other Psychiatric Disorders	Cognitive Impairment // Schizophrenia and Other Psychiatric Disorders
	Psychosocial Impairment // Schizophrenia and Other Psychiatric Disorders
Spinal Cord Injury	Mobility/Neurological//SCI
	Mobility and Manipulation//SCI
	Orthopedic Impairment //SCI
	Cognitive Impairment // SCI
	Manipulation/Dexterity/Neurological//SCI
	Mobility Orthopedic / Neurological //Spinal Cord Injury
	Other Physical Impairment // SCI
	Other Orthopedic Impairment // SCI
	General Physical Debilitation//SCI
Sensory Disability	Other Visual Impairment // Congenital
	Blindness//Congenital
	Blindness//Accident
	Deafness, Primary Communication Visual
	Hearing Loss, Communication Auditory // Physical Disorders

	Other Visual Impairment // Cardiac
	Other Visual Impairment // Physical Disorders
	Hearing Loss, Communication. Auditory//Cause Unknown
	Other Hearing Impairments//Physical Disorder
	Hearing Loss, Primary Communication Visual // congenital
	Visual Impairment // Cause Unknown
	Other Visual Impairment // Cause Unknown
	Hearing Loss, Communication Auditory // Accident
Specific Learning Disability	Cognitive Impairment // Specific Learning Disability
Stroke	Mobility and Manipulation // Stroke
	Mobility/Neurological // Stroke
	Manipulation/Dexterity/Neurological // Stroke
	General Physical Debilitation // Stroke
	Other Physical Impairment // Stroke
	Other Orthopedic Impairment // Stroke
	Cognitive Impairment // Stroke
	Mobility and Manipulation//Stroke
	Mobility/Neurological // Stroke
	Communicative Impairment // Stroke
Traumatic Brain Injury	Cognitive Impairment // TBI
	Other Physical Impairment // TBI
	Other Physical Impairment // TBI
	Manipulation/Dexterity/Neurological // TBI
	Psychosocial Impairment // TBI
	Mobility and Manipulation // TBI
	Other Visual Impairment // TBI

APPENDIX C

REPORTING MANUAL FOR THE CASESERVICE REPORT (RSA-911)

Reporting Manual for the

CASE SERVICE REPORT

(RSA-911)

STATE-FEDERAL PROGRAM FOR VOCATIONAL REHABILITATION

3

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

Table of Contents

Table of Contents

4	Closed after individual received services, without an employment outcome
5	Closed after an individualized plan for employment (IPE) was signed, but before receiving services
6	Closed from an order of selection wait list
7	Closed after a determination of eligibility, but before an IPE was signed

5. Date of Application

Indicate the date (year, month, and day) that the individual applied for VR services. An individual is considered to have submitted an application when the individual has completed and signed an agency application form or has otherwise requested services; has provided information necessary to initiate an assessment to determine eligibility and priority for services; and is available to complete the assessment process.

Enter the year, month, and day, using the eight-digit protocol described below:

5(a) Year of Application
Record Positions: 15-18

Record the year using all four digits of the year.
Example: 1997, 1998, 2000, 2001, etc.

5(b) Month of Application
Record Positions: 19-20

Record the months as follows:

01	January	07	July
02	February	08	August
03	March	09	September
04	April	10	October
05	May	11	November
06	June	12	December

5(c) Day of Application
Record Positions: 21-22

Enter 01, 02, etc., using a "0" prefix for single digit days.

6. Date of Birth

Record date (year, month, and day) of birth using the eight-digit protocol:

6(a) Year of Birth
Record Positions: 23-26

6(b) Month of Birth
Record Positions: 27-28

6(c) Day of Birth
Record Positions: 29-30

Use Code ******** if this information is not available for Closure Code 1.

7. Gender
Record Position: 31

Code as follows:

1	Male
2	Female
*	Information is not available for Closure Code 1

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.

RSA continues to require self-identification to the greatest extent possible. It is generally expected that the information recorded will reflect the individual's own identification of race and ethnicity from the categories provided. However, if a customer truly refuses to identify his/her race or Hispanic ethnicity status, the counselor should, at a minimum, notify respondents that if they fail to self-identify that observer-identification methods would be used. The counselor or interviewer would then provide the best assessment of the customer's race and Hispanic ethnicity. This guidance follows OMB standards for collecting race/ethnicity data. OMB prefers self-identification methods, but allows for observer-identification methods when necessary.

Both race and ethnicity should be reported. The ethnic category Hispanic or Latino (RP 37) should have a code of 0 or 1 and at least one of the race categories (RP 32 through 36) must be coded as 1 (is this race). Remaining

categories should have codes of 0 (not this race). Since a person can have more than one race, more than one race variable can contain a code of 1 for an individual.

NOTE: It is known that some Hispanic people treat Hispanic ethnicity like a race. Since they cannot relate to race categories, they may refuse or be unable to respond to the race question. In such a case code the person as Hispanic and follow the same procedure for race as the one for individuals who refuse to identify both race and Hispanic ethnicity: notify respondents that if they fail to self-identify then observer-identification methods will be used. The interviewer or counselor should make the best possible judgment and enter a 1 in the race field that best reflects that judgment and enter a 0 in the other race variables. Hispanics may belong to any race group.

Use Code * only if the information is not available due to circumstances beyond the agency's control for closure type 1. Such cases will be few in number. For example, if the customer is never seen, such as an applicant who mails a letter and is then closed without any further contact, one probably would use a code of * because race and ethnicity is not known. This is the type of case for which the asterisk (*) is intended. No blanks are permitted in any category. **Remember: race and ethnicity is one of the 9 essential variables in which data is required for all closure types 1 through 7.**

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

13. Primary Disability
Record Positions: 43-46

Enter the four-digit code that best describes the individual's primary physical or mental impairment that causes or results in a substantial impediment to employment. The number reported is a combination of the impairment code and cause/source code. The first two digits designate the impairment (sensory, physical or mental), and the last two digits indicate the cause or source of the impairment.

If the person is found not to have a disability, this item should be coded 0000. Use Code **** if the information is not available for Closure Code 1.

14. Secondary Disability
Record Positions: 47-50

Enter the four-digit code that best describes the secondary disability. This is the physical or mental impairment that contributes to, but is not the primary basis of, the impediment to employment. The number reported is a combination of the impairment code and cause/source code. Enter Code 0000 to indicate that the individual does not have a secondary disability. Use Code **** if the information is not available for Closure Code 1.

CODES FOR IMPAIRMENTS

00 No impairment

SENSORY/COMMUNICATIVE IMPAIRMENTS:

01 Blindness
02 Other Visual Impairments
03 Deafness, Primary Communication Visual
04 Deafness, Primary Communication Auditory
05 Hearing Loss, Primary Communication Visual
06 Hearing Loss, Primary Communication Auditory
07 Other Hearing Impairments (Tinnitus, Meniere's Disease, hyperacusis, etc.)
08 Deaf-Blindness
09 Communicative Impairments (expressive/receptive)

PHYSICAL IMPAIRMENTS:

10 Mobility Orthopedic/Neurological Impairments
11 Manipulation/Dexterity Orthopedic/Neurological Impairments

12 Both mobility and Manipulation/Dexterity Orthopedic/Neurological Impairments
13 Other Orthopedic Impairments (e.g., limited range of motion)
14 Respiratory Impairments
15 General Physical Debilitation (fatigue, weakness, pain, etc.)
16 Other Physical Impairments (not listed above)

MENTAL IMPAIRMENTS:

17 Cognitive Impairments (impairments involving learning, thinking, processing information and concentration)
18 Psychosocial Impairments (interpersonal and behavioral impairments, difficulty coping)
19 Other Mental Impairments

CODES FOR CAUSES/SOURCES OF IMPAIRMENTS

00 Cause unknown
01 Accident/Injury (other than TBI or SCI)
02 Alcohol Abuse or Dependence
03 Amputations
04 Anxiety Disorders
05 Arthritis and Rheumatism
06 Asthma and other Allergies
07 Attention-Deficit Hyperactivity Disorder (ADHD)
08 Autism
09 Blood Disorders
10 Cancer
11 Cardiac and other Conditions of the Circulatory System
12 Cerebral Palsy
13 Congenital Condition or Birth Injury
14 Cystic Fibrosis
15 Depressive and other Mood Disorders
16 Diabetes Mellitus
17 Digestive
18 Drug Abuse or Dependence (other than alcohol)
19 Eating Disorders (e.g., anorexia, bulimia, or compulsive overeating)
20 End-Stage Renal Disease and other Genitourinary System Disorders
21 Epilepsy
22 HIV and AIDS
23 Immune Deficiencies excluding HIV/AIDS
24 Mental Illness (not listed elsewhere)
25 Mental Retardation
26 Multiple Sclerosis
27 Muscular Dystrophy
28 Parkinson's Disease and other Neurological Disorders

21. Medical Insurance Coverage at Application

Record whether an individual had medical insurance coverage at the time he/she applied for VR services. Enter a Code 0 or Code 1 in each of the following record positions. Use Code 0 if the individual had no medical coverage and Code 1 if the individual had that type of medical insurance coverage. Persons with no medical insurance coverage would be coded 0 for each type of medical insurance listed. Use Code * in the position if the information is not available for Closure Code 1 or the information is not available for all other closure codes due to circumstances beyond the agency's control.

Medicaid
Record Position: 83

Medicare
Record Position: 84

Public Insurance from Other Sources
Record Position: 85

Private Insurance Through own Employment
Record Position: 86

Private Insurance Through other Means
Record Position: 87

22. Date of Eligibility Determination

Record the date (year, month, and day) that an eligibility determination was made. For individuals whose service records were closed before a determination of eligibility, use Code ********.

For those individuals who were initially determined to be eligible but later in the VR process were determined to be ineligible because of changed circumstances, record just the date they were determined eligible in this field. For all others, enter the date that the initial determination was made that they were either eligible or ineligible.

Code date of eligibility determination using eight-digit protocol.

22(a) Year eligibility was determined
Record Positions: 88-91

22(b) Month eligibility was determined
Record Positions: 92-93

22(c) Day eligibility was determined
Record Positions: 94-95

23. Date of Individualized Plan for Employment (IPE)

Record the date (year, month, and day) on which the first IPE for the individual became effective. For purposes of this data element, assume that the IPE is effective on the date on which both parties reach agreement. If the two signatures bear two different dates, the later date should govern. If an individual's service record is closed before an IPE is developed, use Code ********.

Code date of IPE using the eight-digit protocol.

23(a) Year IPE became effective
Record Positions: 96-99

23(b) Month IPE became effective
Record Positions: 100-101

23(c) Day IPE became effective
Record Positions: 102-103

24. Cost of Purchased Services
Record Positions: 104-109

Enter, to the nearest dollar, the total amount of money spent by the State VR agency to purchase services for an individual, over the life of the current service record.

Include all expenditures made to public and/or private vendors, individuals or an organization. Include expenditures for all types of purchased services such as assessment, training, medical services, maintenance, transportation, tuition for higher education, rehabilitation technology services, personal assistance, or any other rehabilitation services. Exclude costs incurred for program administration and for salaries of counselors and other staff. Also exclude costs for services provided by rehabilitation programs owned and operated by the State VR agency that are not directly billed on an individual basis.

If an individual's service record is closed without an expense having been incurred by the State agency, enter 000000. If the agency expended $999,999 or more, enter 999999. Fill in leading zeros when they apply.

25. Services Provided

Enter the appropriate two-digit code to indicate the vendor and source of funding for each service listed. Services must have been provided to the individual in determining eligibility and/or in developing and carrying out the IPE.

Include all services furnished over the life of the current service record whether paid for with VR funds or from other sources (comparable services). If an individual received the same service from more than one provider, record only the major provider.

The first digit identifies the vendor or provider of the service. The second digit indicates the source of funding. Use Code 00 if a service was not provided to an individual. Funding Code 0 should only be used if the service was not provided to an individual. If a service was provided directly by the State VR agency without a direct cost use Code 11.

Codes for Vendors/Providers:

0 Not provided
1 Provided directly by State VR agency
2 Provided by Community Rehabilitation Programs in the Public Sector (owned and managed by Federal, State, or local government, such as those run by State VR agencies).
3 Provided by Community Rehabilitation Programs in the Private Sector (owned and managed by non-governmental entities, such as individuals, associations, corporations, etc.)
4 Provided by One-stop Employment/Training Centers
5 Provided by other Public Sources
6 Provided by other Private Sources

Codes for Source of Funding

0 Not provided
1 VR funds
2 Non-VR Sources
3 Combination of VR and Other Sources

Assessment
Record Positions: 110-111

Assessment means services provided and activities performed to determine an individual's eligibility for VR services, to assign an individual to a priority category of a State VR agency that operates under an order of selection, and/or to determine the nature and scope of VR services to be included in the IPE. Include here trial work experiences and extended evaluation.

Diagnosis and Treatment of Impairments
Record Positions: 112-113

Diagnosis and treatment of impairments means:

a) Corrective surgery or therapeutic treatment that is likely, within a reasonable period of time, to correct or modify substantially a physical or mental impairment that constitutes a substantial impediment to employment;

b) Diagnosis and treatment for mental and emotional disorders by qualified personnel who meet State licensure laws;

c) Dentistry;

d) Nursing services;

e) Necessary hospitalization (either inpatient or outpatient care) in connection with surgery or treatment;

f) Drugs and supplies;

g) Prosthetic, orthotic, or other assistive devices, including hearing aids;

h) Eyeglasses and visual services, including visual training, and the examination and services necessary for the prescription and provision of eyeglasses, contact lenses, microscopic lenses, telescopic lenses, and other visual aids prescribed by personnel who meet State licensure laws and are selected by the individual;

i) Podiatry;

j) Physical therapy;

k) Occupational therapy;

l) Speech or hearing therapy;

m) Mental health services;

n) Treatment of either acute or chronic medical complications and emergencies that are associated with or arise out of the provision of physical and mental restoration services or that are inherent in the condition under treatment;

o) Special services for the treatment of individuals with end-stage renal disease, including transplantation, dialysis, artificial kidneys, and supplies; and

p) Other medical or medically related rehabilitation services.

Vocational Rehabilitation Counseling and Guidance
Record Positions: 114-115

Vocational rehabilitation counseling and guidance means discrete therapeutic counseling and guidance services that are necessary for an individual to achieve an employment outcome, including personal adjustment counseling, counseling that addresses medical, family, or social issues, vocational counseling, and any other form of counseling and guidance that is necessary for an individual with a disability to achieve an employment outcome. This service is distinct from the general counseling and guidance relationship that exists between the counselor and the individual during the entire rehabilitation process.

Training

General note: Training services are designed to help the individual improve educationally or vocationally or to adjust to the functional limitations of his or her impairment. If the individual receives more than one type of training, each type should be recorded.

College or University Training
Record Positions: 116-117

Full-time or part-time academic training above the high school level leading to a degree (associate, baccalaureate, graduate, or professional), a certificate or other recognized educational credential. Such training may be provided by a four-year college or university, community college, junior college, or technical college.

Occupational/Vocational Training
Record Positions: 118-119

Occupational, vocational, or job skill training provided by a community college and/or business, vocational/trade or technical school to prepare students for gainful employment in a recognized occupation, not leading to an academic degree or certification.

On-the-job Training
Record Positions: 120-121

Training in specific job skills by a prospective employer. Generally the individual is paid during this training and will remain in the same or a similar job upon successful completion. Also include apprenticeship-training programs conducted or sponsored by an employer, a group of employers, or a joint apprenticeship committee representing both employers and a union.

Basic Academic Remedial or Literacy Training
Record Positions: 122-123

Literacy training or training provided to remediate basic academic skills that are needed to function on the job in the competitive labor market.

Job Readiness Training
Record Positions: 124-125

Training to prepare an individual for the world of work (e.g., appropriate work behaviors, getting to work on time, appropriate dress and grooming, increasing productivity).

Disability Related Augmentative Skills Training
Record Positions: 126-127

Disability related augmentative skills training includes but is not limited to: orientation and mobility; rehabilitation teaching; training in the use of low vision aids; Braille; speech reading; sign language; and cognitive training/retraining.

Miscellaneous Training
Record Positions: 128-129

Any training not recorded in one of the other categories listed, including GED or high school training leading to a diploma.

d) Training in the use of public transportation vehicles and systems.

Maintenance
Record Positions: 138-139

Maintenance means monetary support provided for those expenses such as food, shelter and clothing that are in excess of the normal expenses of the individual, and that are necessitated by the individual's participation in an assessment for determining eligibility and VR needs or while receiving services under an IPE. Examples of maintenance expenses include, but are not limited to:

a) cost of uniforms or other suitable clothing required for an individual's job placement or job seeking activities;

b) cost of short-term expenses, such as food and shelter, that are required in order for an individual to participate in assessment or vocational training at a site that is not within commuting distance of an individual's home;

c) initial one-time costs, such as security deposits or charges for the initiation of utilities, that are required in order for an individual to relocate for a job placement; and

d) costs of an individual's participation in enrichment activities related to that individual's training program.

Rehabilitation Technology
Record Positions: 140-141

General note: Rehabilitation technology means the systematic application of technologies, engineering methodologies, or scientific principles to meet the needs of, and address the barriers confronted by, individuals with disabilities in areas that include education, rehabilitation, employment, transportation, independent living, and recreation. The term includes the following:

Rehabilitation Engineering Service

Rehabilitation engineering is the systematic application of engineering sciences to design, develop, test, evaluate, apply, and distribute technological solutions to problems confronted by individuals with disabilities in functional areas such as mobility, communications, hearing, vision, and cognition, and in activities associated with employment, independent living, education, and integration into the community.

Technical Assistance Services
Record Positions: 148-149

Technical assistance and other consultation services provided to conduct market analyses, to develop business plans, and to provide resources to individuals in the pursuit of self-employment, telecommuting and small business operation outcomes.

Information and Referral Services
Record Positions: 150-151

Information and referral services are provided to individuals who need services from other agencies (through cooperative agreements) not available through the VR program.

Other Services
Record Positions: 152-153

Use this category for all other VR services that cannot be recorded elsewhere. Included here are occupational licenses, tools and equipment, initial stocks and supplies. Medical care for acute conditions arising during rehabilitation and constituting a barrier to the achievement of an employment outcome is also included in this category.

26. Level of Education Attained At Closure
Record Position: 154

Record the level of education the individual had attained when the service record was closed. If an actual educational level is not documented, record an estimated level.

Use the following codes:

0	No formal schooling
1	Elementary education (grades 1-8)
2	Secondary education, no high school diploma (grades 9-12)
3	Special education certificate of completion/diploma or in attendance
4	High school graduate or equivalency certificate (regular education students)
5	Post-secondary education, no degree
6	Associate degree or Vocational/Technical Certificate
7	Bachelor's degree
8	Master's degree or higher
*	Information is not available for Closure Code 1

37. Reason for Closure
Record Positions: 199-200

Enter a two-digit code that identifies the reason for closing the service record of an individual. The code 00 applies only to cases with a code of 3 in item #36, type of closure. Codes of 01 or higher apply to all other types of closure, viz. 1, 2, 4, 5, 6, and 7. Fill in leading zero when it applies.

00 Achieved employment outcome (applicable only to closure type 3).

01 Unable to locate or contact
Use this code when the individual has moved without a forwarding address or is otherwise unavailable. Also use this code for persons who have left the State and show no intentions of continuing in their VR program.

02 Disability too significant to benefit from VR services
Use this code to identify an individual whose mental or physical disability is so significant that the individual cannot benefit from VR services in terms of employment.

03 Refused Services or Further Services
Use this code for individuals who choose not to participate or continue in their VR program at this time.

04 Death

05 Individual in Institution
Use this code when an individual has entered an institution and will be unavailable to participate in a VR program for an indefinite or considerable period of time. An institution includes a hospital, a nursing home, a prison or jail, a treatment center, etc.

06 Transferred to another agency
Use this code when an individual needs services that are more appropriately obtained elsewhere. Transfer to the other agency indicates that appropriate referral information is forwarded to the other agency so that agency may provide services more effectively. Include individuals transferred to other State VR agencies.

07 Failure to cooperate
Use this code to indicate when an individual's actions (or non-actions) make it impossible to begin or continue a VR program. Failure to cooperate includes repeated failures to keep appointments for assessment, counseling, or other services.

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