

# Agency Decision-Making Control and Employment Outcomes by Vocational Rehabilitation Consumers Who Are Blind or Visually Impaired

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**Structured abstract:** *Introduction:* We hypothesized that consumers who are blind or visually impaired (that is, those who have low vision) who were served by state vocational rehabilitation agencies with decision-making control over administrative functions would experience better vocational rehabilitation outcomes than consumers served by vocational rehabilitation agencies with less control in these areas. *Methods:* We merged person-level RSA-911 (fiscal year 2010) data with agency-level data collected as part of the National Survey of State Vocational Rehabilitation Agencies, which we conducted in 2011. We employed multilevel modeling, controlling for select person-level characteristics, and agency-level indicators of primary decision-making control by vocational rehabilitation agencies in six key administrative functions: human resources, infrastructure, management information systems, policies and procedures, program evaluation, and purchasing. Dependent variables were measures of “any employment” and “competitive employment” outcomes. *Results:* We report a positive association between agency decision-making control over policies and procedures and competitive employment outcomes by consumers who were blind (odds ratio = 2.64; 95% confidence interval 1.23–5.72). Among consumers who are visually impaired, agency decision-making control over human resources was negatively associated with any employment closures (odds ratio = 0.56; 95% confidence interval = 0.36–0.93) and competitive employment outcomes (odds ratio = 0.56; 95% confidence interval = 0.33–0.97). *Discussion:* Results demonstrate the potential for factors related to agencies, in addition to factors related to individuals, to function as mediators of vocational rehabilitation outcomes for consumers who are blind or visually impaired. *Implications for practitioners:* Findings highlight the importance of understanding how management control over areas such as policy and procedures have the potential to influence service delivery and subsequent employment outcomes.

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Over time, federal legislation has aimed to provide states more flexibility with respect to the organizational structure and control over administrative functions in state vocational rehabilitation agencies that serve individuals who are blind or visually impaired (in this article, *visually impaired* refers to people who have low vision). Since the early enactment of the Barden-LaFollette Act of 1943 (Vocational Rehabilitation Act of 1943, P.L. 78-113), which first extended federal-state rehabilitation support to individuals who are blind or visually impaired (Rubin & Roessler, 2008), federal regulations have evolved to ensure that vocational rehabilitation agencies do not lose their abilities to make decisions by being submerged too deeply within larger government agencies and structures. For instance, an important legacy of the Barden-LaFollette Act is that it provided more flexibility to states with legally constituted commissions for the blind. These states' commissions for the blind were allowed to control the administration of independent state or federal vocational rehabilitation programs specifically for consumers who are blind or visually impaired (Cavanaugh, 2010). Currently, many state vocational rehabilitation programs offer specialized intensive services to individuals who are blind or visually impaired, within agencies that are separate from general or combined vocational rehabilitation agencies. Combined agencies often have separate subdivisions that provide services to people who are blind or visually impaired, and general agencies often have counselors who specialize in and exclu-

sively work with people who are blind or visually impaired (Rehabilitation Act amendments of 1998, P.L. 105-220).

Other legislative changes that influenced the placement of vocational rehabilitation agencies within state organizational structures were implemented as a result of the Vocational Rehabilitation Act amendments of 1954 (P.L. 83-565). These amendments allowed states to establish independent agencies dedicated to the administration of vocational rehabilitation programs (RSA-TAC-12-03, April 16, 2012; U.S. Department of Education, 2012). In addition, the 1965 amendments to the Vocational Rehabilitation Act (P.L. 89-333) granted states the option to administer vocational rehabilitation programs within larger state agencies. State vocational rehabilitation programs are required to adopt organizational structures in which agencies designated to administer vocational rehabilitation programs are either uniquely designated state agencies primarily concerned with vocational rehabilitation, or other rehabilitation of individuals with disabilities, or both; or designated state units within designated state agencies charged primarily with responding to a broader swath of social needs (departments of education, for example). When vocational rehabilitation programs are implemented under a "designated state unit within designated state agency" structure, the vocational rehabilitation designated state unit must be located at an

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organizational level that is comparable to other major units within the larger designated state agency (U.S. Department of Education, 2012). Finally, the Workforce Investment Act and Rehabilitation Act Amendments of 1998 (P.L. 105-220) empowered vocational rehabilitation agencies by broadening connections with and access to other programs that provide job-training and employment services. These legislative gestures encourage the retention of control within agencies to direct the course of services, and presumably improve outcomes for consumers.

In addition to organizational structure, the Rehabilitation Services Administration (RSA) has made explicit recommendations regarding program management to facilitate agency-level control over day-to-day functioning and administrative activities. For example, some program management activities—including planning, personnel management, and use of management information systems—are to be carried out within the vocational rehabilitation designated state unit as part of its day-to-day administration (U.S. Department of Education, 2012). As a matter of course, other activities, including eligibility determinations, policy formulation and implementation, and allocation and expenditure of vocational rehabilitation funds, cannot be delegated by designated state units to another agency or individual. As a result, vocational rehabilitation agencies, regardless of their placement within a state's organizational structure, are able to maintain the same scope and effectiveness as comparable agencies within state government, while retaining relative autonomy and control over the agency's own operations and functioning.

Federal legislative efforts aimed at increasing the flexibility with which the administration of rehabilitation services are controlled have resulted in great variation with regard to the placement of vocational rehabilitation agencies within states' organizational structures. Since control over administrative functions could affect the delivery of vocational rehabilitation services and outcomes for consumers who are blind or visually impaired, there is a need for research that examines person-level vocational rehabilitation outcomes within the context of agency-level variables. Most studies on employment outcomes in vocational rehabilitation have focused primarily on person-level characteristics such as sociodemographics (for example, age when vocational rehabilitation services began, gender, race or ethnicity, or education) and physical traits (including the presence of secondary or multiple disabilities and health status) (Giesen et al., 1985; Kirchner, Schmeidler, & Todorov, 1999). More recently, researchers have addressed person-level variables that assessed the quality of relationships between vocational rehabilitation counselors and consumers who are blind or visually impaired (Capella-McDonnall, 2005), and the impact of skills and training (including orientation and mobility), personal adjustment and social skills, technology training, and literacy proficiency, on the improvement of employment outcomes for transition-age consumers (Giesen & Cavanaugh, 2012; McDonnall, 2011; McDonnall & Cruden, 2009).

Fewer studies have examined the role of agency-level factors that affect vocational rehabilitation outcomes for consumers who are blind or visually impaired. A notable exception is work that addressed whether

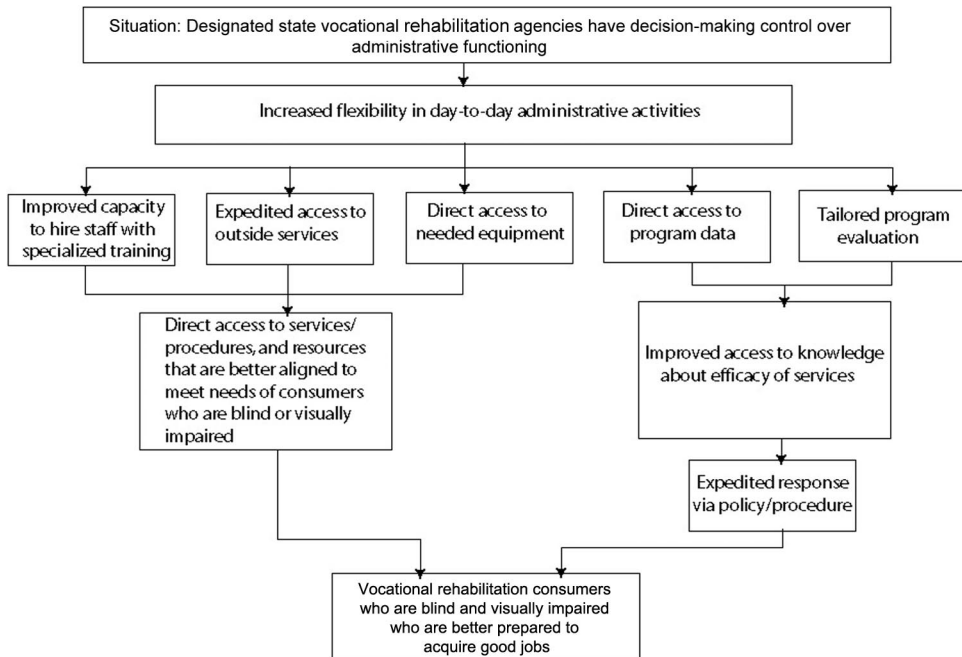


Figure 1. Theory model depicting process leading from decision-making control by vocational rehabilitation agencies over administrative activities to improved employment outcomes.

separate agencies for consumers who are blind or visually impaired report better outcomes than agencies that serve this population within a general or combined agency structure (Cavanaugh, 2010). Advocates for specialized services have argued that vision loss is unique, since the rehabilitation of such people requires specially trained skills that enable blind individuals to perform job tasks such as accessing printed materials or information on computer screens, moving about a place of employment freely and safely, and using public transportation to get to and from work (American Foundation for the Blind [AFB], 2012a). The wisdom of the structural organization spawned by the Barden-LaFollette Act is supported by research indicating somewhat better outcomes (for example, competitive placement rates and weekly earnings at the conclusion of rehabilitation) for individuals served in separate

agencies for people who are blind (Cavanaugh, Giesen, & Pierce, 2000). Thus, there is evidence that agency-level factors can impact individual outcomes.

In this study, we hypothesized that individuals served by agencies that exercised greater control over daily administrative functions would experience better vocational rehabilitation outcomes at closure (that is, the conclusion of rehabilitation) with respect to employment. *Daily administrative functions* included human resources, infrastructure, management information systems, policies and procedures, program evaluation, and purchasing. Figure 1 displays the theory model that illustrates the process by which improved outcomes result from agencies being given greater flexibility over day-to-day administrative functions. Specifically, the model proposes a two-pronged path to better closure statuses by (1) improving access

to resources (for example, staff, services, and equipment) that are aligned to meet the specific needs of consumers who are blind or visually impaired and (2) expediting policy decisions by allowing direct access to consumer and program-evaluation data. We empirically tested whether consumers served by designated state units with administrative decision-making control in these functions would have a greater likelihood of achieving any or competitive employment compared to consumers served by agencies with less control over these functions.

## Methods

### DATA AND PARTICIPANTS

Data for this study came from two sources. Person-level data were derived from the fiscal year 2010 *Rehabilitation Services Administration Case Service Report* (RSA-911) database, a public database compiled with input from agencies that provide services within the state-federal program for vocational rehabilitation. The RSA-911 is an administrative dataset on individual characteristics, services provided, and employment outcomes of all vocational rehabilitation customers who complete rehabilitation in a fiscal year. We merged RSA-911 data with agency-level survey data collected in 2011 by the Institute for Community Inclusion (ICI) researchers as part of the National Institute on Disability Rehabilitation Research (NIDRR)-funded National Survey of State Vocational Rehabilitation Agencies (NSSVRA). The purpose of this survey was to develop an understanding of how vocational rehabilitation agencies operate within and across states. Data regarding administrative control were collected

from 71 agency administrators, including survey responses from general or combined agencies in 45 states (data from Arizona, Georgia, Hawaii, Kansas, and Pennsylvania were missing), 3 territories (Guam's data were missing), the Commonwealth of Puerto Rico, and Washington DC, as well as 21 (data for Arizona, Nebraska, and New York were missing) state agencies that serve persons who are blind or visually impaired separately from the general or combined vocational rehabilitation population. Vocational rehabilitation directors (or their designees) were asked to respond on behalf of their entire state or territory. Whereas 46 of the responses came from designated state units that operate under the auspices of larger designated state agencies (for example, the Department of Labor), the remaining 25 responses came from agencies in which the designated state agency and designated state unit that provides vocational rehabilitation services were the same for the state (for example, a department of rehabilitation services). A total of 71 of 80 vocational rehabilitation agencies responded to the survey, for a response rate of 89%.

As depicted in Figure 2, RSA-911 contained 612,537 cases in fiscal year 2010. After merging available data from NSSVRA, 558,646 cases remained, of which 11,185 cases were consumers whose primary impairment was reported as legal blindness (RSA-911 primary disability code 01) and 13,173 cases whose primary impairment was visual impairment (but not legally blind; code 02). To be included in our sample, participants had to have been eligible for services, and had completed Individualized Plan for Employment forms on record. We selected consumers who were aged 22 years or older, but under age 66 (the approximate Social Security full-retirement age



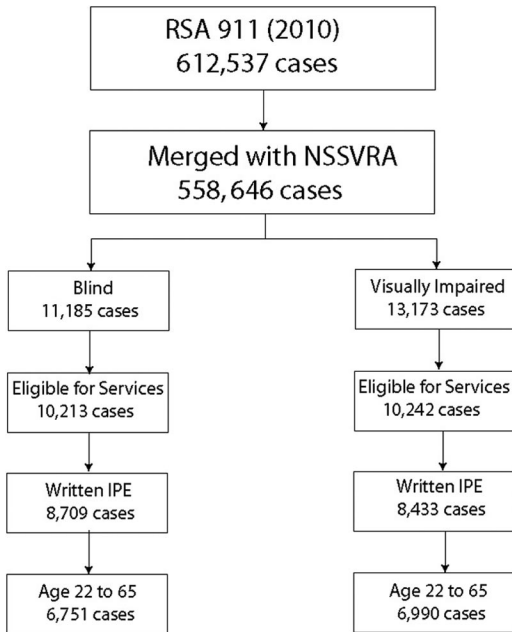


Figure 2. Flowchart showing included cases by vision status.

in 2010), because we were interested in capturing outcomes for the traditional working-age population. When these criteria were applied, 6,751 cases representing persons who were blind, and 6,990 cases representing individuals who are visually impaired remained for analysis.

### INDIVIDUAL CHARACTERISTICS AND SERVICES

In following with previous research that has been conducted to evaluate the effects of person-level variables on vocational rehabilitation closures, our analyses included sociodemographic covariates controlling for age, gender, race, Hispanic ethnicity, and education level at application. In addition, we controlled for whether consumers had a secondary impairment; whether consumers entered vocational rehabilitation as beneficiaries of Social Security Disability Insurance (SSDI); and

for the total number of service categories received. Finally, a person-level variable representing “cost of purchased services” was recoded for each case into an indicator variable, where the quartile with the greatest dollar amount of expenditures (4th quartile = 1) was referenced against the bottom three quartiles.

### AGENCY CHARACTERISTICS

Our analyses included two agency-level control variables. We created a dichotomous variable that indicated whether agencies that provided services operated as separate state agencies that serve only individuals who are blind or visually impaired; or whether agencies operated as general or combined state vocational rehabilitation agencies that also served individuals with other types of disabilities. We created a second indicator variable for agencies that represented the average “cost of purchased services” by calculating the average dollar amount spent by vocational rehabilitation agencies to purchase services for their consumers who were blind or visually impaired (4th quartile = 1).

Key explanatory variables came from NSSVRA. We identified six items that asked about core administrative functions and whether agencies that provide vocational rehabilitation services had primary decision-making control over these functions. Vocational rehabilitation directors were asked to indicate whether they (that is, the designated state unit they directed; the designated state agency, if different from the designated state unit; or some other entity) made decisions about human resources, infrastructure, management information systems, policies and procedures, program evaluation, and purchasing and contracting. We

## **Core administrative functions and subfunctions probed in NSSVRA**

### **Human resources**

- Decisions about numbers of staff
- Decisions about types of staff or staff classification
- Recruitment decisions
- Hiring decisions
- Staff training
- Staff promotion
- Staff performance evaluation, including disciplinary actions

### **Infrastructure**

- Decisions on location of space
- Decisions on structure of space
- Decisions on equipment (types, cost, and use)

### **Management information systems**

- Decisions about MIS hardware and software
- Data analysis and use

### **Policies and procedures**

- Development and implementation of organizational change based on planning or evaluation
- Policy development or modification
- Policy implementation

### **Program evaluation purchasing and contracting**

- Decisions on types of CRPs and vendors
- Approval of CRPs and vendors
- Rates for CRPs and vendors
- Methods of service delivery used by CRPs and vendors
- Methods of billing and reporting used by CRPs and vendors

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*Note:* CRPs = community rehabilitation programs.

### *Box 1*

constructed dichotomous indicator variables based on whether the state unit director stated that they had primary decision-making control over each core administrative function (has control = 1). Prior to answering these key items, re-

spondents were probed about decision-making control of sub-functions in these categories. Box 1 displays the core administrative functions that were analyzed, as well as the sub-functions that were probed in the survey. Although we did not

directly assess sub-functions, we include information about them in the table to provide descriptive context for key explanatory variables.

### DEPENDENT VARIABLES

We constructed dependent variables from indicators of closure status contained within the RSA-911. We started by creating a dichotomous variable based on the “type of closure,” that indicated whether cases were closed because consumers had achieved “any employment” following services, or if they had finished rehabilitation without an employment outcome. Cases that were coded positively (yes = 1) on seven possible employment outcomes—including employment without support; extended employment; Business Enterprise Program; self-employment (besides Business Enterprise Program); homemaker; unpaid family worker; and employment with supports in an integrated setting—were recoded into an indicator variable representing the “any employment” outcome (yes = 1).

Next, we constructed a dichotomous variable that indicated whether consumers had achieved competitive employment. For purposes of the RSA-911, *competitive employment* is defined as employment in an integrated setting, self-employment, or full-time or part-time participation in a state-managed Business Enterprise Program for which the employee is paid at or above minimum wage (yes = 1). In addition to the wage distinction, “competitive employment” also differs from the “any employment” outcome, because it does not include cases that closed because of extended employment or homemaker or unpaid family

worker statuses. Thus, “competitive employment” is composed from a subset of consumers whose cases closed with “any employment” outcomes.

### ANALYSES

Analyses were conducted using the quantitative data analysis software Stata, version 11 (StataCorp, 2009). We initially conducted basic descriptive statistics (see Table 2), including means, standard deviations, and percentages for selected person- and agency-level control variables, key explanatory variables, and dependent variables. In our main analyses, we conceptualized the combined datasets to be hierarchically structured; that is, comprised of individuals (at level 1) nested within agencies (at level 2). Given that our dependent variables were binary responses, we employed multilevel logistic regressions (2-level model) to fit the data for two targeted sample groups (that is, individuals who were blind or visually impaired). Main analyses were run in four steps: In Model 1 (empty model), no explanatory variable was included. This model represented the total variance in specified outcomes (any employment and competitive employment) between agencies. In Model 2, only person-level characteristics (level 1) were included to test the extent to which agency-level differences were explained by individual characteristics. In Model 3, only agency-level factors (level 2) were included to examine the effects of agency-level factors on the specified outcomes. Finally, in Model 4 (full model, shown in Tables 2 and 3), both person-level characteristics and agency-level factors were included. The results of fixed effects (measures of association) are reported as odds ratios, with 95% confidence intervals.



**Table 1**  
**Descriptive statistics for consumers who are blind ( $n = 6,751$ ) and visually impaired ( $n = 6,990$ ).**

Variables	Blind	Visually impaired
<b>Person-level variables</b>		
Age (mean years, <i>SD</i> )	44.6 (11.4)	47.4 (11.3)
Gender (male)	53.0%	51.0%
Race		
White	73.4%	72.9%
Black	23.7%	24.4%
Other	3.4%	3.3%
Ethnicity (Hispanic)	12.4%	10.6%
Education		
LT HS	15.0%	19.3%
HS	35.6%	39.2%
GT HS	49.4%	41.6%
Secondary impairment	38.9%	35.0%
SSDI at application	40.3%	14.7%
Total services (mean, <i>SD</i> )	4.8 (2.2)	4.0 (1.9)
High CPS (person)	Q4 $\geq$ \$7,560	Q4 $\geq$ \$5,902
CPS (mean, <i>SD</i> )	\$7,213 (\$14,395)	\$5,158 (\$7,647)
<b>Agency-level variables</b>		
Blind agency	59.5%	43.9%
High CPS (agency)	Q4 $\geq$ \$5,158	Q4 $\geq$ \$3,883
Agency CPS (mean, <i>sd</i> )	\$3,855 (\$1,858)	\$3,310 (\$1,401)
Human resources	70.9%	76.3%
Infrastructure	60.4%	65.2%
Management information systems	61.4%	59.5%
Policies and procedures	91.3%	95.7%
Program evaluation	86.0%	89.0%
Purchasing and contracting	79.3%	77.3%
<b>Outcome variables</b>		
Successful closure (26)	60.6%	68.5%
Competitive employment	45.1%	62.4%

Note: LT HS = less than high school diploma; HS = high school diploma; GT HS = greater than high school diploma; CPS = cost of purchased services.

## Results

Table 1 displays descriptive statistics for person- and agency-level variables, and employment outcomes according to vision status. The average age of vocational rehabilitation consumers who were blind was 44.6 years ( $SD = 11.4$  years); consumers who are visually impaired were slightly older on average (47.4 years;  $SD = 11.3$ ). The vast majority of consumers who were blind (73.4%) and visually impaired (72.9%) were white, and the narrow majority was male (53% and 51%,

respectively). The plurality of consumers who were blind or visually impaired had attained greater than a high school-level education (49.4% and 41.6%, respectively). With regard to key explanatory variables, the vast majority of cases were served by vocational rehabilitation agencies that reported having primary decision-making control over all six core administrative functions.

Although most (60.6%) consumers who were blind achieved any employment closures, less than half of consumers who were

**Table 2**  
**Successful closure—Odds ratios (OR) and 95% confidence intervals (CI) by vision status.**

Variables	Blind			Visually Impaired		
	OR	95% CI	P	OR	95% CI	P
<b>Person-level variables</b>						
Age (years)	1.03	1.02–1.03	***	1.02	1.02–1.03	***
Gender (ref = female)	0.91	0.81–1.01	NS	0.91	0.82–1.02	NS
Race (ref = white)						
Black	0.66	0.58–0.75	***	0.65	0.57–0.75	***
Other	0.72	0.53–0.96	*	0.71	0.53–0.95	*
Ethnicity (ref = non-Hispanic)						
Hispanic	0.99	0.83–1.17	NS	1.19	0.97–1.47	NS
Education (ref = HS diploma)						
LT HS	0.75	0.64–0.88	***	0.82	0.71–0.96	*
GT HS	1.50	1.34–1.68	***	1.17	1.03–1.32	*
Secondary impairment (ref = no)	0.67	0.60–0.75	***	0.60	0.53–0.67	***
SSDI at application (ref = no)	0.77	0.69–0.86	***	0.61	0.52–0.71	***
Total services	1.18	1.15–1.22	***	1.11	1.08–1.15	***
High cost of purchased services	0.91	0.79–1.04	NS	0.99	0.87–1.14	NS
<b>Agency-level variables</b>						
Blind agency	1.01	0.69–1.49	NS	1.55	0.89–2.70	NS
High cost of purchased services	0.81	0.48–1.38	NS	0.67	0.35–1.30	NS
Human resources	0.88	0.53–1.49	NS	0.56	0.36–0.93	*
Infrastructure	0.67	0.41–1.09	NS	1.01	0.64–1.60	NS
Management information systems	1.20	0.83–1.75	NS	1.02	0.71–1.49	NS
Policies and procedures	1.29	0.58–2.84	NS	1.01	0.32–3.17	NS
Program evaluation	1.45	0.73–2.89	NS	1.37	0.64–2.94	NS
Purchasing	0.96	0.55–1.68	NS	1.01	0.60–1.67	NS

Note: NS = not significant; \* $p \leq 0.05$ ; \*\* $p \leq 0.005$ ; \*\*\* $p \leq 0.0005$ ; LT HS = less than high school diploma; HS = high school diploma; GT HS = greater than high school diploma.

blind (45.1%) were reported to have achieved competitive employment. By contrast, more than two-thirds (68.5%) of consumers who are visually impaired achieved any employment closures; and 62.4% achieved competitive employment.

Tables 2 and 3 display final model odds ratios and 95% confidence intervals, representing results of the multilevel modeling used to assess the role of person-level and agency-level variables in any employment closures and competitive employment outcomes, respectively, by vision status.

#### “ANY EMPLOYMENT” CLOSURE

Table 2 indicates that for both consumers who were blind and visually impaired, several person-level variables were associated with

any employment closures. Nevertheless, for consumers who were blind, none of the agency-level variables were associated with any employment closures. Among consumers who are visually impaired, agency decision-making control over human resources was negatively associated with any employment closures (odds ratio = 0.88; 95% confidence interval = 0.36–0.93).

#### “COMPETITIVE EMPLOYMENT” CLOSURE

Among consumers who are blind, agency decision-making control over policies and procedures was associated with achieving competitive employment (see Table 3). Specifically, when agencies had decision-making control over policy development and procedures, consumers who are blind

**Table 3**  
**Competitive employment—Odds ratios (OR) and 95% confidence intervals (CI) by vision status.**

Variables	Blind			Visually impaired		
	OR	95% CI	P	OR	95% CI	P
<b>Person-level variables</b>						
Age (years)	1.01	1.00–1.01	**	1.02	1.01–1.02	***
Gender (ref = female)	1.26	1.13–1.40	***	1.09	0.98–1.21	NS
Race (ref = white)						
Black	0.70	0.61–0.80	***	0.67	0.59–0.77	***
Other	0.83	0.61–1.12	NS	0.77	0.57–1.04	NS
Ethnicity (ref = nonHispanic)						
Hispanic	0.90	0.75–1.07	NS	1.14	0.93–1.40	NS
Education (ref = HS diploma)						
LT HS	0.67	0.56–0.79	***	0.82	0.71–0.96	*
GT HS	1.97	1.75–2.21	***	1.29	1.14–1.45	***
Secondary impairment (ref = no)	0.51	0.46–0.57	***	0.51	0.45–0.57	***
SSDI at application (ref = no)	0.70	0.63–0.78	***	0.48	0.41–0.56	***
Total services	1.13	1.09–1.16	***	1.07	1.03–1.10	***
High cost of purchased services	1.14	0.99–1.30	NS	1.06	0.93–1.21	NS
<b>Agency-level variables</b>						
Blind agency	1.33	0.91–1.94	NS	1.55	0.86–2.82	NS
High cost of purchased services	0.98	0.59–1.64	NS	0.57	0.28–1.15	NS
Human resources	0.86	0.52–1.42	NS	0.56	0.33–0.97	*
Infrastructure	0.89	0.56–1.44	NS	1.07	0.66–1.74	NS
Management information systems	1.37	0.95–1.98	NS	1.05	0.71–1.55	NS
Policies and procedures	2.64	1.23–5.72	*	0.95	0.27–3.30	NS
Program evaluation	1.14	0.58–2.24	NS	1.10	0.49–2.47	NS
Purchasing	0.73	0.42–1.25	NS	0.92	0.53–1.58	NS

Note: NS = not significant; \* $p \leq 0.05$ ; \*\* $p \leq 0.005$ ; \*\*\* $p \leq 0.0005$ ; LT HS = less than high school diploma; HS = high school diploma; GT HS = greater than high school diploma.

were more than 2.5 times more likely to achieve competitive employment (odds ratio = 2.64; 95% confidence interval = 1.23–5.72) compared to consumers served in agencies that did not have control over this administrative function. Among consumers who are visually impaired, agency decision-making control over human resources was associated with reduced likelihood of achieving competitive employment (odds ratio = 0.56; 95% confidence interval = 0.33–0.97), compared to consumers served in agencies without decision-making control of this administrative function.

## RANDOM EFFECTS

There was significant variation in the log odds of achieving “any employment” closures across vocational rehabilitation agencies. The variance of full models was 0.24 ( $p \leq 0.0005$ ; variance partition coefficient [VPC] = 0.068) for blind consumers, and 0.26 ( $p \leq 0.0005$ ; VPC = 0.073) for visually impaired consumers. Thus, 6.8% (for blind) and 7.3% (for visually impaired) of the residual variation for “any employment” closures was attributed to unobserved agency characteristics. Similarly,

there was a significant variation in the log odds of achieving competitive employment closures across vocational rehabilitation agencies. The variance of full models was 0.22 ( $p \leq 0.000$ ;  $VPC = 0.063$ ) for blind consumers, and 0.32 ( $p \leq 0.0005$ ;  $VPC = 0.091$ ) for visually impaired consumers.

## Discussion

For some time now, researchers have sought to identify factors that improve employment outcomes for vocational rehabilitation consumers who are blind or visually impaired. For most people, employment is an essential means of financial support and an important avenue for engaging with others in the community. Nevertheless, individuals who are blind or visually impaired have historically been more likely than peers without disabilities to experience an array of barriers that may prevent them from participating optimally in the competitive job market (Crudden & McBroom, 1999). According to data collected by the Bureau of Labor Statistics (BLS) and reported by AFB (2012b), only 43% of approximately 2.1 million working-age Americans who reported serious difficulty seeing participated in the labor force in 2010. Furthermore, just 38% of individuals with severe visual impairments were identified as employed, amounting to an unemployment rate of around 12% (not including the 57% who were not in the labor force). This compares to 74% of persons in that age group without disabilities who participated in the labor force in 2010, 9.8% of whom were unemployed during that year of economic recession (BLS, 2010). Given these disparate outcomes, it is essential that researchers continue to iden-

tify factors that could influence community inclusion among individuals who are blind or visually impaired, and to assess the potential impact these factors may have on employment.

In our research, we have continued the important examination of agency-level factors and their role as potential mediators of vocational rehabilitation outcomes for consumers who are blind or visually impaired. Our main hypotheses were formed on the premise that vocational rehabilitation agencies that exercise more control over administrative functions would have greater flexibility to provide specialized services to their consumers—by way of improved access to staff, outside services, and equipment—than vocational rehabilitation agencies with less control in these areas. Furthermore, we expected that greater control over program data, evaluation, and policy decisions would improve the capacity of vocational rehabilitation agencies to detect program weaknesses and to facilitate responses to prospective problems.

In regard to these expectations, our results are somewhat mixed and difficult to interpret. For example, we did not expect to find a negative relationship between control over human resources and any or competitive employment closures. Our results seem to suggest that control over this aspect of administrative function is associated with relatively worse outcomes for consumers whose primary disability is reported as visual impairment. Although not statistically significant, our results point to similar trends among consumers who are blind. It is possible that greater focus on this administrative function, while having no direct negative effect, could divert scarce resources from other functions, which if

enhanced could improve prospects for achieving employment. In addition, it seems likely that contributions of control over human resources share variance with our indicator of agency type (that is, separate versus general or combined). Given that the majority of consumers who are blind, and a large proportion of consumers who are visually impaired, were served in separate agencies where specially trained staff members would be the norm, effects of control over human resources could be somewhat diluted. Similarly, covariance between all agency administrative control variables and agency type could explain the lack of association between agency type and dependent variables, a finding that has been reported previously. In our study, we included agency type as a control variable at the agency level; thus, results of that analysis go beyond the scope of this paper. Nevertheless, because the question of whether separate agencies are more efficacious than general or combined agencies is vitally important to future planning of vocational rehabilitation services, we wish to emphasize the necessity of continued research on this complicated relationship before conclusions are drawn on the matter.

Our second major finding—that control over policies and procedures is associated with improved closures—was relatively robust, at least with respect to consumers who are blind achieving competitive employment. According to our theory model (Figure 1), we proposed that administrative control over policies and procedures would exercise its effect via improved access to program data and program evaluation. That is, we believed agencies that exerted control over management infor-

mation systems and evaluation could respond faster and more efficiently to problems in program design as they arose. Our finding of no association between administrative control over management information systems or program evaluation and the dependent variables is not consistent with our a priori theory regarding a mediated effect. We did not test this indirect pathway explicitly; however, our findings suggest that agency control over policies and procedure is associated independently with competitive employment.

### LIMITATIONS

Although we believe the results of this study reflect important relationships between agency-level control over administrative functions and vocational rehabilitation outcomes for consumers who are blind or visually impaired, some limitations related to data collection needs to be acknowledged. First, it is important to note that RSA-911 is primarily considered a management tool, designed for use internally by RSA for maintaining case records. Although evaluators have concluded that the data is sufficiently reliable for use in research (Government Accountability Office [GAO], 2005), only limited quality control is conducted to correct errors and anomalies before the data is published. Research findings based on RSA-911 should therefore be interpreted tentatively, at least until results can be replicated using alternative data sources.

Second, with respect to NSSVRA, we acknowledge the potential for bias stemming from multiple sources. Most notably, we were unable to collect data from all 80 vocational rehabilitation agencies.



Consequently, we cannot be certain whether missing data are random or whether a selection bias was at work. An important strength of RSA-911 is that it represents the population of consumers served by vocational rehabilitation in any given year. In the future, we hope to continue developing NSSVRA so that it can be merged easily and fully with RSA-911.

On a related note, because NSSVRA is a relatively new survey, many items used in our analyses have not been analyzed for reliability and validity in a research context; therefore, it is uncertain whether respondents interpreted items in NSSVRA consistently between agencies. We believe there is a need to develop and rigorously test and validate, via qualitative and quantitative methods, new measures that capture agency-level characteristics—particularly the indicators of decision-making control depicted in Table 1. It is possible that measures related to decision-making control have already been developed and validated in other fields (for example, business, management); therefore, disability researchers could benefit by looking beyond the vocational rehabilitation system for measures that can be tested in a vocational rehabilitation context.

## Conclusion

As practitioners, administrators, and researchers in the field of vocational rehabilitation partner to improve services and outcomes for consumers who are blind or visually impaired, the importance of taking into consideration factors other than those that relate to individuals is increasingly evident. In particular, our research points to the importance of understanding

organizational options and how management's control over areas such as policy and procedures have the potential to directly influence the way services are delivered and their resulting employment outcomes. Continued exploration and understanding of agency-level factors is particularly desirable, since these factors are amenable to change by the agencies that control them. At present, the research on this topic is in the initial stages; thus, it is important that vocational rehabilitation agencies continue to work with researchers to expand understanding of organizational influences on employment outcomes of individuals who are blind or visually impaired.

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