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# Characteristics, Services, and Outcomes of Vocational Rehabilitation Consumers who are Deaf-Blind

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## Cover Page Footnote

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## Introduction

Deaf-blindness is a complex, low-incidence, heterogeneous, and commonly misunderstood disability. People who are deaf-blind have differences in level, onset, and etiology of hearing and vision loss (Dalby et al., 2009; National Center on Deaf-Blindness [NCDB], 2017; Teglbjærg, Hovaldt, Lehane, & Dammeyer, 2018). They also often have additional disabilities and use a variety of communication methods (Dalby et al., 2009; Dammeyer, 2015; NCDB, 2017). The impact of deaf-blindness on human functioning can be greater than the sum of deafness and blindness (Dammeyer, 2015), and people who are deaf-blind typically have diverse and extensive rehabilitation needs (Watson, Jennings, Tomlinson, Boone, & Anderson, 2008). Some people who are deaf-blind seek services from vocational rehabilitation (VR) agencies to help them achieve employment, but research focusing on this population is limited. Furthermore, VR consumers who are deaf-blind have been historically underserved (Thirty-Eighth Institute on Rehabilitation Issues, 2015) and underreported (Rehabilitation Services Administration [RSA], 2000; Watson et al., 2008). In this study, data from the Rehabilitation Services Administration Case Service Report (RSA-911) were utilized to describe the population of VR consumers who are deaf-blind.

### Prevalence and Definitions

Less than one percent of the U.S. population has combined hearing and vision loss (i.e., dual sensory impairment), based on self-report data from the American Community Survey (Sui, 2017). Prevalence estimates differ based on the definition used, method of assessment, and use of subpopulations (Dammeyer, 2013; Smith, Bennett, & Wilson, 2008; Wittich, Watanabe, & Gagné, 2012). Use of medical versus functional definitions and different types of assessment procedures (e.g., objective vs. self-report) yield different estimates (Dammeyer, 2013). Prevalence of dual sensory impairment increases substantially with age (Dammeyer, 2013; Smith et al., 2008; Swenor, Ramulu, Willis, Friedman, & Lin, 2013; Wittich et al., 2012).

The distinction between dual sensory impairment and deaf-blindness is not clear-cut. Various definitions have been used to identify people as having dual sensory impairment and deaf-blindness. The absence of standard definitions is a persistent issue (Ask Larsen & Damen, 2014; Dammeyer, 2013; Smith et al., 2008; Wittich, Southall, Sikora, Watanabe, & Gagné, 2013). Terminology differs across fields and even between service providers and researchers (Wittich et al., 2013). Definitions may include medical criteria, functional criteria, or a combination. For example, the Nordic definition of deaf-blindness is purely functional (Dammeyer, 2013), whereas the U.S. definition from the Helen Keller National Center (HKNC) Act (1992) includes both medical and functional elements. The HKNC Act definition of deaf-blind includes the following criteria: (a) legal blindness (or progressive vision loss); (b) chronic, severe hearing impairment (or progressive hearing loss); and (c) the combination of vision and hearing loss causes "extreme difficulty in attaining independence in daily life activities, achieving psychosocial adjustment, or obtaining a vocation" (29 U.S.C. § 1905 [2]). An individual whose vision and hearing cannot be measured accurately (due to cognitive or behavioral constraints) but who has severe hearing and vision loss that cause extreme difficulty in the areas listed above would also be considered deaf-blind under the HKNC Act definition.

Despite acceptance and use of the HKNC Act definition among many VR agencies, VR consumers who are deaf-blind are often coded inconsistently or incorrectly in RSA-911, leading to underreporting of this population (RSA, 2000; Watson et al., 2008). For example, VR counselors may code consumers as deaf/hard of hearing or blind/visually impaired as their primary and secondary disabilities rather than using the deaf-blind code (RSA, 2000; Watson et al., 2008). Previously, the RSA-911 coding system included five categories of deaf-blindness, according to onset of hearing and vision loss (Ingraham, Carey, Vernon, & Berry, 1994), but not by severity or functioning. The five-category coding system was eventually replaced with the single "deaf-blindness" category currently in use. This category does not allow for specifying the

severity or onset of consumers' hearing and vision loss, and therefore, does not capture the heterogeneity of this population.

**Employment for Individuals who are Deaf-Blind**

Approximately 30.8% of working-age adults with self-reported hearing and vision loss in the United States are employed, compared to 74.6% of the general population (Sui, 2017). People with dual sensory impairment also have much higher unemployment and lower labor force participation rates than the general population (Sui, 2017). Researchers have reported even lower employment estimates for some groups of individuals identified as deaf-blind. For example, Dammeyer (2013) found that only 5.0% of deaf-blind adults under age 65 in Denmark were employed, and Petroff, Pancsofar, Caceres, Lazarus, and Stoner (2017) indicated that 25.0% of deaf-blind young adults (ages 18-35) in the United States were employed with pay.

Research on employment for people who are deaf-blind is emerging, but limited. In the past 20 years, researchers have conducted several employment-related studies focusing on different age groups of people who are deaf-blind, including transition-age youth and young adults (Cmar, McDonnall, & Markoski, 2018; McDonnall & Cmar, 2018b;), working-age adults (Ehn, Möller, Danermark, & Möller, 2016; McDonnall & Cmar, 2018a; Segal, 2000), and older adults (McDonnall, 2011; McDonnall & LeJeune, 2008). Other studies of transition-age youth and young adults who are deaf-blind have included information about employment status (Petroff, 2001, 2010; Petroff et al., 2017). Vocational services and vocational training have been identified as needs for transition-age youth, young adults, and adults who are deaf-blind (Ehn et al., 2016; McDonnall & Cmar, 2018b; Petroff, 2001, 2010; Petroff et al., 2017; Watters, Owen, & Munroe, 2004; Wolf, Delk, & Schein, 1982). Researchers have investigated associations between receipt of vocational services and employment outcomes for this population. For transition-age youth who are deaf-blind, vocational education services predicted sustained employment of at least six months (Cmar et al., 2018). For VR consumers who are deaf-blind, several VR service-related factors predicted competitive employment, including type of agency providing services (McDonnall & Cmar, 2018a). Although this population could clearly benefit from VR services, the Thirty-Eighth Institute on Rehabilitation Issues (2015) considered people who are deaf-blind as an underserved population. Only 42.5% of deaf-blind young adults who received vocational services received them from VR (McDonnall & Cmar, 2018b).

**Outcomes for VR Consumers**

The Workforce Innovation and Opportunity Act (WIOA, 2016) emphasizes competitive integrated employment as the optimal outcome for VR consumers, including those with the most significant disabilities. WIOA (2016) brought several changes that affect VR service provision, such as how employment outcomes are defined. For example, the revised definition of an employment outcome under WIOA no longer includes uncompensated outcomes (i.e., homemakers and unpaid family workers).

Many VR consumers who are deaf-blind achieve positive employment outcomes. In fiscal year (FY) 2006, 52.0% of VR consumers who were deaf-blind had their cases closed with successful outcomes, although this estimate involved all categories of successful outcomes, including uncompensated outcomes (Watson et al., 2008). More recent data indicate that 56.5% of VR consumers who were deaf-blind achieved competitive employment at closure (McDonnall & Cmar, 2018a). The only studies of VR consumers who were deaf-blind focused on factors predicting employment outcomes (McDonnall & Cmar, 2018a) and service models utilized by VR agencies (McDonnall & Cmar, in press) and thus provided limited descriptive information about consumers.

Limited current information is available about the characteristics, service receipt, and outcomes of VR consumers in the United States who are deaf-blind. The purpose of this study

was to examine the deaf-blind population served by VR at the agency level and describe characteristics, services, and outcomes at the individual level. The research questions were:

1. What disability categories are used with consumers who are deaf-blind?
2. What percentage of VR applicants who are deaf-blind receive services?
3. What percentage of deaf-blind consumers are served by each agency type?
4. What are the characteristics of VR consumers who are deaf-blind?
5. What services do VR consumers who are deaf-blind typically receive?
6. What are the outcomes of VR consumers who are deaf-blind?

## Method

### Sample

RSA-911 data for federal FY 2013, 2014, and 2015 were utilized for this study. RSA-911 data include demographic, disability-related, service-related, and outcome information for all consumers closed by VR agencies during the FY. Our sample was limited to those who resided in the United States and had a primary or secondary disability of deaf-blindness (code 08), or a primary and secondary disability that included both blindness (code 01) and deafness (code 03 or 04) or hearing loss – primary communication visual (code 05). For those not coded as deaf-blind, we utilized the most significant levels of vision loss and hearing loss to identify as such in an effort to match the HKNC Act definition of deaf-blindness. The sample of 2,520 included all consumers who applied for services and whose cases were closed, regardless of whether they received services, and was used to address research questions 1 and 2. This sample was reduced to consumers who were accepted for services and had an Individualized Plan for Employment (IPE) established ($n$ = 1,935) to address research questions 3 through 6. It is worth noting that an additional 2,847 people with less severe combined hearing and vision loss, who would not be expected to meet the HKNC Act definition of deaf-blindness, were present in the RSA-911 data for these three years.

### Variables and Data Analyses

*Agency type* indicates the population of consumers served by the VR agency. The three agency types are: (a) separate agencies, which serve all consumers in the state who are blind or have significant visual impairments; (b) general agencies, which serve all consumers in the state who have disabilities other than blindness or significant visual impairments; and (c) combined agencies, which serve all consumers with disabilities in the state. There are 75 VR agencies in the United States: 24 states have both a separate and a general agency, and 26 states, plus the District of Columbia, have a combined agency. During the time frame of this study, VR agencies provided 28 different *services* to consumers. For a list of services provided and a definition of each service, please see the RSA-911 Case Service Record Report (RSA-PD-13-05), available at www2.ed.gov/policy/speced/guid/rsa/pd/2013/pd-13-05.pdf. *Consumer outcomes* of interest to this study were (a) employment at case closure, which included both competitive and noncompetitive, or uncompensated, positions; (b) competitive employment at case closure, defined as employment in a job that pays at least minimum wage; and (c) types of jobs held at case closure, defined by 2010 Standard Occupational Classification System codes. We utilized descriptive statistics to answer our research questions, including frequencies, percentages, and means and standard deviations. SAS Version 9.4 was utilized for all statistical analyses.

## Results

### RQ1: Disability Categories

VR agencies classified the majority (80.1%) of consumers as deaf-blind (either primary or secondary disability), rather than blindness and deafness as their primary and secondary disabilities. The percentage classified as deaf-blind varied by agency. Three of the 75 VR agencies (4.0%) did not close anyone with deaf-blindness or blindness and deafness during the three-year period. Two agencies (2.7%) closed one or more consumers with blindness and deafness, but did not classify anyone as deaf-blind. Ten agencies (13.3%) classified 50% or fewer as deaf-blind, and 19 agencies (25.3%) classified between 51% and 75% as deaf-blind. Forty-one agencies (54.7%) classified 76% or more of these consumers as deaf-blind, including 11 agencies that classified 100% of their consumers as deaf-blind. The three types of agencies classified approximately equal percentages of consumers as deaf-blind: 78.1% for combined agencies, 81.1% for separate agencies, and 81.6% for general agencies.

### RQ2: Applicants who Received Services

The majority of individuals with deaf-blindness who applied for services were accepted and had an IPE established (76.8%). The percentage was similar for those coded with a disability category of deaf-blind (76.4%) and blindness and deafness (78.5%). The majority (63.4%) of the 585 people who did not receive services were closed after they were determined eligible but before an IPE was established. An additional 29.9% were closed before they were determined eligible. Of those whose cases were closed before receiving services, the top five reasons for being closed were: (a) no longer interested in receiving services (36.6%); (b) unable to locate or contact (24.6%); (c) other reasons, not specified (19.5%); (d) transferred to another agency (7.4%); and (e) disability too significant to benefit from VR (4.6%).

### RQ3: Agency Type

Separate agencies were most likely to serve consumers who are deaf-blind, with almost half of these consumers (47.6%) served by separate agencies. Combined agencies served 36.2% of consumers who are deaf-blind, and general agencies served 16.3% of these consumers. In states that have both a separate and a general agency, separate agencies served 74.5% of all deaf-blind consumers.

### RQ4: Characteristics of Consumers

Consumer demographic information is presented in Table 1. Consumers ranged in age from 11 to 100 at application, with an average age of 43.68 (*SD* = 18.00). The most common cause of consumers' deaf-blindness was a congenital condition (46.9% for those categorized as deaf-blind and 33.8% for those separately categorized as blind and deaf). The second most common cause was "unknown," with 29.9% of consumers categorized as deaf-blind and 16.2% of those categorized as blind and deaf having an unidentified cause of their sensory disabilities. Physical disorders or conditions was another common cause of deaf-blindness, identified for 16.3% of consumers categorized as deaf-blind and 11.9% of those categorized as blind and deaf. The only other cause identified for a substantial number of consumers was accident or injury (not including traumatic brain injury or spinal cord injury), with 2.5% of consumers categorized as deaf-blind and 2.0% of consumers separately identified as blind and deaf having this cause.

Approximately 30% of consumers were competitively employed at application. Most of these consumers (81.7%) held a job with an employer in an integrated setting, without ongoing support. The remaining employed applicants had jobs in an integrated setting with ongoing support (i.e., supported employment; 9.3%), were self-employed (6.9%), or held a Business Enterprise Program position (2.1%). Average hourly earnings for those employed at application were $14.71 (*SD* = 11.51), with median earnings of $11.09.

Table 1
*Characteristics of Vocational Rehabilitation Consumers who are Deaf-Blind*

| Characteristic | *n* | % |
|---|---|---|
| Age | | |
| Under 25 | 340 | 17.6 |
| 25 to 64 | 1,388 | 71.7 |
| 65 and older | 207 | 10.7 |
| Male gender | 1,006 | 52.0 |
| Race | | |
| White | 1,555 | 80.4 |
| African American | 282 | 14.6 |
| American Indian/Alaska Native | 17 | 0.9 |
| Asian | 35 | 1.8 |
| Native Hawaiian/Pacific Islander | 8 | 0.4 |
| Multirace | 38 | 2.0 |
| Hispanic or Latino ethnicity | 295 | 15.3 |
| Education at application | | |
| Less than high school | 465 | 24.0 |
| High school graduate or Some postsecondary | 933 | 48.2 |
| Associate's degree or Certificate/licensure | 216 | 11.2 |
| Bachelor's degree or higher | 321 | 16.6 |
| Education at closure | | |
| Less than high school | 332 | 17.2 |
| High school graduate or Some postsecondary | 958 | 49.5 |
| Associate's degree or Certificate/licensure | 257 | 13.3 |
| Bachelor's degree or higher | 388 | 20.1 |
| Congenital deaf-blindness | 857 | 44.3 |
| Additional disabilities[a] | | |
| None reported | 1,121 | 72.7 |
| Cognitive impairment | 109 | 7.1 |
| Physical impairment | 87 | 5.7 |
| Psychological impairment | 61 | 4.0 |
| General physical dehabilitation | 40 | 2.6 |
| Other mental impairment | 31 | 2.0 |
| Other | 92 | 6.0 |
| Receipt of SSI at application | 516 | 26.7 |
| Receipt of SSDI at application | 692 | 35.8 |
| Competitively employed at application | 579 | 29.9 |

*Note*. SSI = Supplemental Security Income; SSDI = Social Security Disability Insurance.
[a]Information about additional disabilities is only available for consumers who were classified as deaf-blind as their primary or secondary disability ($n$ = 1,541).

**RQ5: Services Received**

Consumers received an average of 5.67 (*SD* = 3.06) services, with a range of 0 to 17 services received. (Fifty-two people did not receive any of the services listed in the RSA-911 data, which may indicate an error in coding services or that the person was placed in the incorrect closure code.) The 10 most common services, all received by more than 22.0% of consumers, are provided in Table 2.

Table 2
*Ten Most Common Services Received by Consumers who are Deaf-Blind*

| Service | *n* | % |
|---|---|---|
| Assessment | 1,328 | 68.6 |
| VR counseling and guidance | 1,233 | 63.7 |
| Rehabilitation technology | 1,217 | 62.9 |
| Diagnosis and treatment of impairments | 1,121 | 57.9 |
| Other services | 783 | 40.5 |
| Transportation | 774 | 40.0 |
| Disability-related skills training | 749 | 38.7 |
| Information and referral | 530 | 27.4 |
| Interpreter services | 436 | 22.5 |
| Maintenance | 430 | 22.2 |

**RQ6: Outcomes at Case Closure**

Two-thirds of the consumers were closed with an employment outcome, which included both competitive and noncompetitive outcomes. More than one-fifth of consumers with an employment outcome were closed in uncompensated positions: 20.7% were closed as homemakers, and 0.3% were closed as unpaid family workers. Overall, 52.0% of consumers in our sample were closed in competitive employment. A large majority (85.7%) of consumers who were employed at application were closed with competitive employment, while only 37.7% of those who were not employed at application were closed with competitive employment. The majority of those closed with competitive employment held a job with an employer in an integrated setting, without supports (81.6%). Other employment categories were self-employment (8.4%), supported employment (8.2%), and Business Enterprise Program position (1.7%).

Types of jobs held by those closed with an employment outcome varied widely and included many professional and other high-income positions (e.g., lawyers, carpenters, computer occupations, financial advisors, administrative services managers, geological engineers). The 10 most common positions held by those closed with employment are provided in Table 3. Average earnings at closure were similar to earnings at application, with mean hourly earnings of $14.41 (*SD* = 10.43) and median earnings of $10.50. Hourly earnings ranged from below minimum wage (for six consumers) to $117.24.

The most common reason provided for being closed without an employment outcome was that the person was no longer interested in receiving services (42.4%), followed by the agency being unable to locate or contact the person (24.7%) and other reasons not specified (18.9%). Fewer consumers were closed unsuccessfully for the following reasons: death (4.8%), transferred to another agency (4.6%), and disability too significant to benefit from VR (3.4%).

Table 3
*Ten Most Common Occupations at Case Closure*

| Occupation | SOC code | *n* | % |
|---|---|---|---|
| Homemaker | N/A | 266 | 20.7 |
| Stock clerks and order fillers | 435081 | 57 | 4.4 |
| Janitors and cleaners | 372011 | 37 | 2.9 |
| Customer service representatives | 434051 | 30 | 2.3 |
| Office clerks, general | 439061 | 28 | 2.2 |
| Production workers | 519199 | 26 | 2.0 |
| Teachers and instructors | 253099 | 25 | 2.0 |
| Food preparation workers | 352021 | 22 | 1.7 |
| Retail salesperson | 412031 | 21 | 1.6 |
| Business Enterprise Program operator | N/A | 19 | 1.5 |

*Note*. SOC = Standard Occupational Classification.

## Discussion

In this study, RSA-911 data from FY 2013, 2014, and 2015 were utilized to describe the deaf-blind population served by VR agencies in the United States. We described the characteristics, services, and outcomes of VR consumers who were deaf-blind. Our sample included consumers with deaf-blindness listed as their primary or secondary disability, plus those who met the HKNC Act definition of deaf-blind based on their primary and secondary disabilities. Some consumers not included in our sample (e.g., those with less severe, but progressive hearing or vision loss) may have also fit the HKNC Act definition of deaf-blind; however, the disability information available in RSA-911 was insufficient for making that determination.

Inconsistent classification of VR consumers who were deaf-blind was evident in our sample. Approximately one-fifth of consumers with severe hearing and vision loss in this sample were not classified as deaf-blind. Classification was similar across the three agency types, but classification rates varied by agency. Inconsistencies in use of the deaf-blind RSA-911 code have been evident for at least 20 years (RSA, 2000), with seemingly little resolution. In addition, the current RSA-911 deaf-blind code provides no information about severity or functional implications of consumers' sensory disabilities. This lack of specificity combined with inconsistent use of the deaf-blind code make it difficult to obtain an accurate picture of the deaf-blind population served by VR agencies. One possible solution would involve expanding the single deaf-blind code to multiple codes to allow for specification of various levels of hearing and vision loss, with input from key stakeholders in the deaf-blind field. Regardless, to promote consistency within and across agencies, we recommend that RSA provide clear guidance to administrators and counselors on use of the deaf-blind code.

Discrepancies regarding deaf-blind classification extend beyond VR, so coming up with guidance may be challenging. Classification discrepancies have been noted among children who receive special education services in the United States. For example, only 16.5% of children and youth on the National Deaf-Blind Child Count were classified as deaf-blind under the Individuals with Disabilities Education Act (NCDB, 2017). Herbster (2015) identified five factors that could influence classification of children who are deaf-blind: previous records, performance data, federal and state requirements, evaluation team members, and referral sources. To our knowledge, factors contributing to the discrepancies in classification of VR consumers have not been examined empirically; future research would provide valuable insight into this persistent issue.

Of consumers classified as deaf-blind, only 27.3% had an additional (nonsensory) disability. This finding is surprising when considering existing knowledge of the deaf-blind

population. For instance, the most recent National Deaf-Blind Child Count indicated that 87.4% of children who are deaf-blind have at least one additional disability, and the number of additional disabilities of children and youth who are deaf-blind has been increasing over time (NCDB, 2017). Some people who are deaf-blind and have additional disabilities may not be served by VR, as suggested by McDonnall and Cmar's (2018b) findings that many young adults who are deaf-blind and have additional cognitive disabilities did not receive vocational services from VR, despite having needs in this area. VR agencies may serve more deaf-blind consumers with additional disabilities than are captured by the RSA-911 coding system. These consumers may be classified under other disability categories. For example, consumers with a nonsensory primary disability and deafness or blindness as a secondary disability could have a tertiary disability that is unaccounted for in the current system.

Consumers who were deaf-blind received an average of 5.67 services; over half received assessment, VR counseling and guidance, rehabilitation technology, and diagnosis and treatment of impairments. The most common types of services received were similar to those received by VR consumers with other sensory disabilities (Boutin, 2009; Giesen & Hierholzer, 2016). Consumers in our sample had generally low levels of education: only 27.8% had any type of postsecondary degree, certificate, or license at application, and this proportion increased slightly at case closure. We know that higher levels of education predict both competitive employment and job quality for VR consumers who are deaf-blind (McDonnall & Cmar, 2018a), yet few consumers in this study received college-related services from VR, and very few obtained a postsecondary degree, certificate, or license while receiving VR services. Educational advancement is an area that clearly warrants additional attention from VR counselors who work with this population. Furthermore, a small percentage of consumers received job placement and job-search assistance, although research indicates that these services are associated with employment outcomes for consumers who are deaf-blind (McDonnall & Cmar, 2018a) and for those with other sensory disabilities (Boutin, 2009; Boutin & Wilson, 2009; Bradley, Geyer, & Ebener, 2013; Cimera, Rumrill, Chan, Kaya, & Bezyak, 2015; Dutta, Gervey, Chan, Chou, & Ditchman, 2008; Giesen & Hierholzer, 2016; Moore, 2001, 2002).

Overall, about two-thirds of consumers who were deaf-blind were closed with a successful outcome, but 21.0% of these closures were uncompensated outcomes (20.7% were homemakers). During this three-year period, the percentage of homemaker closures for consumers who were deaf-blind was substantially higher than estimates for all consumers (1.8%) but only slightly higher than estimates for consumers with blindness or visual impairment as their primary or secondary disability (17.8%; McDonnall, 2018). Because uncompensated outcomes are not included in the definition of employment outcomes under WIOA, consumers who want to be homemakers no longer qualify for VR services. VR agency personnel can refer these consumers to other federal or state programs, such as Independent Living Services for Older Individuals who are Blind, Centers for Independent Living, and programs for the aging.

Competitive employment outcomes were most prevalent for consumers with deaf-blindness who were employed at application. About one-third of consumers were employed at application, and most of these consumers achieved competitive employment at closure, similar to findings from a study of consumers who were blind or visually impaired (Crudden, McDonnall, & Sui, 2018). In contrast, just over one-third of deaf-blind VR consumers who were not employed at application obtained competitive employment at closure. Deaf-blind consumers who enter the VR system without a job may need additional support to achieve competitive employment at rates commensurate with those who enter the system with a job. Based on the collective findings from this study and previous research on employment outcomes, we recommend that VR agencies place greater emphasis on job placement, job-search assistance, and college-related services leading to educational advancement for these consumers.

## Limitations

Several limitations are important to consider when interpreting the results of this study. First, some information that could have provided additional insight about our sample was not included in the RSA-911 data. For people classified as deaf-blind, data was not provided regarding severity of their hearing and vision loss. For people classified with deafness and blindness as primary and secondary disabilities, data regarding additional disabilities was not available (because RSA-911 only includes primary and secondary disabilities). Second, our dataset only included cases closed prior to WIOA implementation. Using more recent RSA-911 data to study the impact of WIOA on this population is an essential next step, and this study provides pre-WIOA data that researchers could use for future comparisons; however, RSA is no longer releasing the RSA-911 data to researchers. Unless RSA changes this policy, future research of this nature will require different approaches. Despite these limitations, this study adds to the limited research on VR consumers who are deaf-blind and highlights several important issues that have received little attention to date.

## Conclusion

This study provided information about the population of consumers who are deaf-blind served by U.S. VR agencies. On the surface, describing this population appears to be a relatively straightforward task; however, inconsistent classification and underreporting of deaf-blind consumers complicate the matter. To better understand VR consumers who are deaf-blind and their needs and ultimately improve their outcomes, we first need a consistent classification system that reflects the heterogeneity of this population. Implementing a consistent classification system will also facilitate investigations of changes in characteristics and outcomes over time, leading to informed decisions regarding personnel, funding, and policies.

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