



INTRODUCTION

- Individuals with brain injury are employed at lower rates compared to the general population of persons with disabilities (Cuthbert et al., 2015; Gormley et al., 2019).
- State vocational rehabilitation (VR) agencies provide integral services in supporting people with disabilities, including those with brain injuries, prepare for and attain employment (Dutta et al., 2008; Wehman et al., 2005).
- In Colorado, accessing VR services remains problematic for individuals experiencing brain injury, despite iterative improvements to service systems across the state, (Colorado Brain Injury Program, 2017; Sample & Langlois, 2005).
- Little is known about the population of Coloradans with brain injury who do get into VR and how those services impact their employability and financial security.
- Findings explicate the client and VR service factors significantly associated with achieving competitive, integrated employment (CIE) upon exiting VR services. Recommendations are provided to better meet the needs of Coloradans with brain injury seeking employment.

OBJECTIVES

- There is a significant gap in current knowledge of individuals with TBI who get referred to VR, how they experience the state VR system, and their employment status as they exit VR.
- The purpose of this study is twofold: (1) to comprehensively describe characteristics of Coloradans with traumatic brain injury (TBI) in VR and (2) to determine relevant factors that influence how Coloradans exit VR, with or without meeting employment goals.

SAMPLE AND METHODS

- A sample of 846 Coloradans with TBI in VR services from June 30th, 2018 to July 1st, 2021. **Table 1** displays the most pertinent demographics for all program years as well as the full sample. Participants had an average age of 36.55 (SD = 14.36); ages ranging from 15 to 80.
- A secondary analysis of the U.S. Department of Education’s Rehabilitation Services Administration (RSA) Case Service Report (RSA-911). We employed descriptive statistics to examine demographic and program-related characteristics of Coloradans with TBI (**Table 2**) and logistic regression to analyze factors influencing employment outcomes (**Table 3**).

| Colorado VR clients with TBI | | | | | | | | | | |
|----------------------------------|-----------------|----|-----------------|----|-----------------|----|-----------------|----|----------------|----|
| Characteristic | PY2018 n=277 | | PY2019 n=310 | | PY2020 n=134 | | PY2021 n=125 | | Total N=846 | |
| | n | % | n | % | n | % | n | % | n | % |
| Gender | | | | | | | | | | |
| Male | 169 | 61 | 191 | 62 | 71 | 53 | 73 | 58 | 504 | 60 |
| Female | 108 | 39 | 118 | 38 | 63 | 47 | 51 | 41 | 340 | 40 |
| Not Reported | 0 | 0 | 1 | <1 | 0 | 0 | 1 | <1 | 2 | <1 |
| Age at application | | | | | | | | | | |
| M(SD) | 36.06 (14.30) | | 36.61 (14.80) | | 38.26 (13.43) | | 35.66 (14.38) | | 36.55 (14.36) | |
| Race and Ethnicity ^a | | | | | | | | | | |
| American Indian | 9 | <1 | 9 | <1 | 6 | 4 | 3 | 2 | 27 | 3 |
| Asian | 5 | <1 | 4 | <1 | 2 | <1 | 1 | <1 | 12 | <1 |
| Black | 14 | 5 | 11 | 4 | 4 | 3 | 6 | 5 | 35 | 4 |
| Hawaiian | 0 | <1 | 1 | <1 | 0 | <1 | 1 | <1 | 2 | <1 |
| White | 256 | 92 | 291 | 94 | 123 | 92 | 112 | 90 | 782 | 92 |
| Hispanic | 55 | 20 | 53 | 17 | 25 | 19 | 23 | 18 | 156 | 18 |
| Education | | | | | | | | | | |
| Less than Bachelors | 228 | 82 | 250 | 81 | 115 | 86 | 117 | 94 | 710 | 84 |
| Bachelors or higher | 49 | 17 | 60 | 19 | 19 | 14 | 8 | 6 | 136 | 16 |
| Public support (SSI/SSDI, other) | | | | | | | | | | |
| No | 157 | 57 | 180 | 58 | 64 | 48 | 68 | 54 | 469 | 55 |
| Yes | 120 | 43 | 130 | 42 | 70 | 52 | 57 | 46 | 377 | 45 |
| Employed at IPE | | | | | | | | | | |
| No | 234 | 84 | 247 | 80 | 112 | 84 | 104 | 83 | 697 | 82 |
| Yes | 43 | 16 | 63 | 20 | 22 | 16 | 21 | 17 | 149 | 18 |
| Significant disability | | | | | | | | | | |
| No | 4 | <1 | 5 | <1 | 2 | <1 | 1 | <1 | 12 | <1 |
| Yes, Significant | 32 | 12 | 36 | 12 | 18 | 13 | 17 | 14 | 103 | 12 |
| Yes, Most Significant | 241 | 87 | 269 | 87 | 114 | 85 | 107 | 86 | 731 | 86 |

Note. SSI = Supplementary Security Income; SSDI = Social Security Disability Income.
^aParticipants could select more than one race/ethnicity.

REFERENCES AVAILABLE UPON REQUEST

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Table 2. Services accessed by Colorado vocational rehabilitation (VR) clients with traumatic brain injury (TBI) from program years (PY) 2018–2021.

| | VR Staff | VR Purchase | Comparable Provider | Total Services ^a |
|---|----------|-------------|---------------------|-----------------------------|
| Pre-Employment Transition Services | | | | |
| Job Exploration Counseling | 23 | 3 | 0 | 24 |
| Work-Based Learning Experiences | 19 | 11 | 0 | 30 |
| Work Readiness Training | 27 | 8 | 0 | 35 |
| Instruction in Self-Advocacy | 21 | 3 | 0 | 24 |
| Training Services | | | | |
| Job Readiness Training | 6 | 15 | 0 | 21 |
| Disability Related Skills Training | 10 | 27 | 0 | 37 |
| Miscellaneous Training | 8 | 9 | 3 | 17 |
| Career Services | | | | |
| Assessment | 10 | 81 | 1 | 90 |
| Diagnosis and Treatment of Impairments | 35 | 14 | 60 | 74 |
| VR Counseling and Guidance | 462 | 21 | 2 | 469 |
| Job Search Assistance | 26 | 66 | 2 | 87 |
| Job Placement Assistance | 27 | 77 | 1 | 100 |
| Short Term Job Supports | 11 | 68 | 1 | 77 |
| Supported Employment Services | 0 | 11 | 2 | 13 |
| Information and Referral Services | 45 | 1 | 2 | 48 |
| Benefits Counseling | 3 | 10 | 0 | 13 |
| Other Services | | | | |
| Transportation | 9 | 17 | 0 | 26 |
| Rehabilitation Technology | 4 | 26 | 0 | 30 |

Note: VR = Vocational Rehabilitation. ^aWhen a client received a service in more than one way (e.g., “in-house” and other provider) it is only counted as one, therefore totals may be slightly less than the sum of the middle three columns.

RESULTS

- Individual characteristics of clients including (1) already having employment, (2) higher education, and (3) race/ethnicity were all significantly associated with achieving CIE
- Receipt of career services including job placement assistance, short term job supports, and supported employment services were positively and significantly associated with CIE
- Contrarily, receipt of job search assistance reduced the likelihood of achieving CIE.

Table 3. The relationship between significant predictor variables and competitive integrated employment for Colorado vocational rehabilitation (VR) clients with traumatic brain injury (TBI) from program years (PY) 2018–2021.

| Predictors | B | SE B | Sig. | Odds ratio | 95 percent CI | |
|---|--------|-------|-------|------------|---------------|--------|
| Employed at IPE start | 2.050 | 0.232 | 0.000 | 7.770 | 4.968 | 12.357 |
| Bachelor’s degree or higher | 1.085 | 0.226 | 0.000 | 2.960 | 1.901 | 4.613 |
| Native Hawaiian or Other Pacific Islander | -0.729 | 0.256 | 0.004 | 0.482 | 0.285 | 0.790 |
| Hispanic | 0.460 | 0.223 | 0.039 | 1.583 | 1.017 | 2.446 |
| Job search assistance | -1.789 | 0.455 | 0.000 | 0.167 | 0.065 | 0.390 |
| Job placement assistance | 2.557 | 0.416 | 0.000 | 12.897 | 5.923 | 30.785 |
| Short term job supports | 2.640 | 0.476 | 0.000 | 14.012 | 5.849 | 38.425 |
| Supported employment services | 2.191 | 0.844 | 0.009 | 8.947 | 1.972 | 63.544 |
| Job readiness training | 1.922 | 0.610 | 0.002 | 6.836 | 2.125 | 24.188 |
| Job exploration counseling | 0.867 | 0.256 | 0.007 | 2.379 | 1.450 | 4.025 |

Note: Final model = $\chi^2 (10, N = 846) = 300.59, p < 0.001$, McFadden’s pseudo $R^2 = 0.27$. Hosmer and Lemeshow = $\chi^2 (5, N = 846) = 4.61, p = 0.47, n.s.$

CONCLUSIONS

- Coloradan VR clients with TBI are mostly white males in their mid-thirties who have not received a Bachelors degree. Most receive less than two VR services during their program and of those who exit without CIE, many cite they are no longer interested in receiving VR
- Over a third (37%) achieve CIE; comparable to nationwide trends in TBI VR outcomes
- Participants were more likely to achieve CIE if they had a job when starting VR, held a Bachelors degree or higher, or identified as Hispanic. Clients who received job placement assistance, short term job supports, and supported employment services were especially more likely to obtain CIE upon program exit.