

# Customized employment for transition-age youth in state vocational rehabilitation program PY2017 - PY2020: Analysis of service outcomes and related factors

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## Abstract.

**BACKGROUND:** Customized employment (CE) is positively correlated with competitive integrated employment (CIE) outcomes and potentially supports transition-age youth in achieving sustainable employment.

**OBJECTIVE:** This study examines the employment outcomes and related factors for transition-age youth with disabilities who received CE services through state vocational rehabilitation agencies (SVRAs) and their vendors from program year 2017 to 2020.

**METHODS:** Employing a combination of descriptive analysis, binary logistic and multiple regression, chi-square tests, and *t*-tests, the study investigates the demographics, potential barriers, and vocational rehabilitation (VR) services received by the research sample using the RSA-911 dataset.

**RESULTS:** The sample comprised 672 individuals with a mean age of 22.30 years. The most prevalent barrier to employment among CE participants was long-term unemployment, while Supplemental Security Income (SSI) was the most common social security benefit. Furthermore, only 13.2% of transition-age youth achieved CIE status, compared to 30.1% of adults. The key predictors of employment outcomes, including CIE status, weekly earnings, and working hours were identified.

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**CONCLUSION:** The research reveals significant differences in employment outcomes between transition-age youth and adult VR consumers. These insights emphasize the necessity for SVRAs to consider a range of factors, including demographics, potential employment barriers, and the effects of various VR services, to increase the CE service effectiveness for transition-age youth.

**Keywords:** Customized employment, transition-age youth, vocational rehabilitation, competitive integrated employment, individuals with significant disabilities

## 1. Introduction

Research has shown the importance of work as a predictor of positive transition outcomes (Carter et al., 2012; Mazzotti et al., 2016; Taylor et al., 2022; Wehman et al., 2015; Wehman et al., 2020). The vocational development and outcome experienced by transition-age youths with disabilities are critically influenced by the support received during this pivotal stage in their lives. The support received during this period also has a long-term employment impact. Despite the recent proliferation of transition services following the implementation of the Workforce Innovation and Opportunity Act ([WIOA], 2014) amendments emphasizing postsecondary education and competitive integrated employment (CIE) for transition-age youth with disabilities, youths with disabilities continue to face higher rates of unemployment and underemployment compared to adults with disabilities and to their non-disabled counterparts (Riesen et al., 2014; Shogren & Wittenburg, 2020). Whereas 40% of youths without disabilities between the ages of 16–20 are employed, only a quarter of those with disabilities in the same age range are employed (Schutz & Carter, 2022). Furthermore, studies indicate that youth who do not transition to employment or postsecondary education within three years of high school graduation are at an increased risk of chronic unemployment, poverty, and mental health issues (Eilenberg et al., 2019). Effective career interventions can help address these disparities by providing youths with the skills and support they need to find and retain meaningful employment.

Considering that transition-age youth with disabilities make up approximately 12% of all youth in the United States (Lipscomb et al., 2017), it is crucial to address their employment outcomes and consider individualized, evidence-based career supports to reduce the employment gap. Evidence-based career interventions ensure that youths receive the vocational support that is effective in helping

them navigate this critical period. Career interventions grounded in evidence can better prepare youths with disabilities for the workforce, leading to greater independence and self-sufficiency. Customized Employment (CE) is growing as an evidence-based vocational intervention that is focused on individualized employment support to meet the needs of both job seekers and employers. Research findings indicate state Vocational Rehabilitation (VR) provided CE has a positive impact on transition-age youth and adults (Castruita Rios et al., 2023; Wehman, 2023). VR can work with students, their families, their schools, and community partners to enrich transition planning and support students in gaining the knowledge and experiences necessary so they may make informed decisions about their futures.

CE is among the provisions federally mandated in the WIOA (2014). It was included as a strategy under the “supported employment services program” to improve CIE outcome for individuals with the most significant disabilities for whom CIE has not historically occurred or were intermittent. CE is a strategy that has been associated with positive CIE outcomes for individuals with significant disabilities (Riesen et al., 2023). Implementation of CE suggests a paradigm shift in how vocational services are developed and provided for people with the most significant disabilities (Griffin et al., 2008; Kim et al., 2023a).

CE is a tailored approach to employment for individuals with significant disabilities, focusing on their unique strengths, needs, and interests. It involves customizing job roles and work environments to fit both the individual’s abilities and the employer’s needs, achieved through job exploration, modifying job duties and schedules, and providing necessary on-site support and representation. The essential elements of CE include diverse and creative exploration of employment settings, individualization and negotiation of job duties and pay (at least minimum wage), mutually beneficial employment relationships, use of job development agents and ongoing supports, and

an inclusive approach presuming all individuals can work (WINTAC & Y-TAC, 2017).

CE has emerged as a promising practice that promotes improved employment outcomes for people with disabilities as recent studies suggest that CE produces quality CIE outcomes. In an updated literature review of CE (Riesen et al., 2022), 18 manuscripts were reviewed. The findings suggest that existing literature on CE consists mainly of descriptive studies. None of the articles were experimental or quasi-experimental, and only one article included a correlational analysis. Furthermore, there is a paucity of research that focuses on CE for transition-age youths with disabilities. There has been some research on CE in transition settings (Brown., 2009; Certo & Leucking, 2006).

Riesen and colleagues (2015) found preliminary positive outcomes associated with implementing CE with transition-age youth from an extensive literature review of CE. The authors identified increased quality of life, competitive wage earnings, and employment retainment at a 2-year follow-up with CE services for youths. Wehman and colleagues (2016) found potentially positive employment outcomes of CE for youth with intellectual and developmental disabilities (IDD). The study included 64 young individuals with ASD. The jobseekers directed their job search and selection, while employment specialists provided situational assessment, job development, on-site training and support, and job retention techniques. Ongoing support was provided to maintain employment. Most participants successfully secured CIE through CE techniques and strategies. The findings highlight the success of CE in facilitating employment for youth with IDD.

Inge and colleagues (2023) conducted a random control trial study to determine the impact of CE on the outcomes of transition-age youth who received CE services as the intervention when compared to a control group who continued in their services as usual. Using the Supports Intensity Scale-Adult Version (SIS-A), these researchers found a therapeutic effect of work activities on growth and development in important life domains for youth with disabilities who received CE services when compared to the youth with disabilities who were in the control group.

While these studies show CE as a promising intervention for youth with disabilities, there has not yet been a correlational examination of CE outcomes for transition-age youths with robust indicators. Riesen and colleagues (2022) suggest that future research

should focus on using correlational analysis to establish CE as an evidence-based practice. The purpose of this article is to explore the implementation of CE with transition-age youth with disabilities. This article reviews the data extracted from the Rehabilitation Services Administration Case Service Report (RSA-911) for program years (PY) 2017–2020 to determine outcomes for youth receiving CE. The utilization of CE service in SVRAs is examined by looking specifically at (a) CE service outcomes for transition-age youth, (b) predictors associated with service outcomes (e.g., demographic characteristics and psychosocial barriers), and (c) co-utilized VR services. The following research questions are examined in this study:

- RQ1. What are the demographic factors and common barriers associated with a referral for CE services for transition-age youth who have exited the state VR program?
- RQ2. What is the comparative analysis of employment outcomes, including CIE, weekly hours worked, and weekly earnings, between transition-age youth who exited after receiving CE services and adults?
- RQ3. What demographic factors, barriers, receipts of benefits, and state VR services are associated with exiting in CIE after receiving CE services for transition-age youth who have exited the state VR program?
- RQ4. For transition-age youth who exited in an employment status after receiving CE services, what demographic factors, barriers, receipts of benefits, and state VR services are associated with weekly earnings and hours worked at exit?

## 2. Methods

### 2.1. Participants and data source

The dataset for the current study was extracted from RSA-911 database, a federal data source about service provision from SVRAs and consumers served by SVRAs. The RSA-911 data, gathered annually by each SVRA, includes comprehensive information on consumers whose cases have been closed within a given program year. This extensive dataset is utilized for various purposes including analyzing the outcomes of VR services and informing policy, practice, and research in the field of VR throughout the

nation. The data analyzed in the current study were purposefully chosen according to the following criteria: consumers (a) who were served by SVRAs and have exited from PY 2017 through PY 2020; (b) who were identified as receiving CE service through the agencies or by agency staff/providers; (c-1) who were transition-age youth whose age was between 14 and 24 at the time of exit, and (c-2) who were adults whose age was equal or above 25 years of age at the time of exit. In the context of the RSA-911 data, the term exit refers to the closure of a case in the state VR program. This occurs when a consumer's involvement with the VR services is concluded. Based on these criteria, 672 transition-age youth and 1,182 adults with disabilities were selected for further analysis.

## 2.2. Research variables

The RSA-911 dataset includes a diverse range of variables, categorized according to various aspects of VR services and consumer characteristics. These categories typically encompass demographics, disability information, service information, and employment outcomes. In this research, researchers classified the RSA-911 variables into three types of independent variables to examine their impact on multiple employment outcomes, which were considered as dependent variables. The independent variables included demographics, potential barriers to employment, and types of vocational services provided. In addition to demographics and vocational services, several variables were grouped under the 'barriers to employment' category, based on empirical evidence indicating their negative impact on individuals' employment outcomes (Kim et al., 2023a; Mann et al., 2017). The dependent variables included CIE status at exit, weekly earnings, and hours worked per week.

First, for descriptive analyses, researchers included all variables from the RSA-911 dataset. Then, in the binary logistic regression analysis, variable selection from the RSA-911 dataset was intentional and deliberate, adhering to a widely recognized guideline for binary logistic regression. This guideline suggests ensuring at least 10 cases per category for each predictor variable, as recommended by Peduzzi et al. (1996) and Vittinghoff and McCulloch (2007). Considering the sample size of 672 and the dichotomization of most of the independent variables, researchers limited the number of independent variables to a maximum of 32. This decision was further guided by the need to maintain a balance within each variable's categories,

as categories with too low a representation (e.g., less than 5% of cases) could lead to unreliable estimates and reduced statistical power (Agresti, 2013). Consequently, we selected our set of independent variables that had at least 33 cases in each category. The list of the research variables is presented in Table 1.

### 2.2.1. Independent variables

Three sets of independent variables were used for the logistic regression analysis based on the two criteria above: (a) demographic characteristics, (b) potential barriers to SVRA services, and (c) types of SVRA services. The first set of independent variables included demographic characteristics such as age, gender (male or female), primary type of impairment (cognitive impairment and psychosocial impairment), primary source of impairment (autism, specific learning disability, intellectual disability, attention deficit & hyperactivity disorder, and anxiety disorder), and race/ethnicity (African American and White). In RSA-911 data, the type of impairment specifies the nature of the disability, while the source of impairment identifies its origin or cause.

The potential barriers included basic skills deficiency including a low level of literacy, low income, long-term unemployment, and receipt of Supplemental Security Income (SSI). From the RSA-911 definition, the term, basic skills deficiency is used to refer to (a) a youth, who has English reading, writing, or computing skills at or below the 8th-grade level on a generally accepted standardized test; or (b) a youth or adult who is unable to compute and solve problems, or read, write, or speak English at a level necessary to function on the job, in the participant's family, or in society (RSA, 2019). Types of SVRA services included assessment, benefits counseling, diagnosis and treatment of impairments, information and referral services, job placement assistance, job readiness training, job search assistance, maintenance services, miscellaneous training, other services, supported employment, short-term job support, transportation service, and VR counseling and guidance.

A total of 29 independent variables and three outcome variables were included in the logistic regression analyses. The reference category for all SVRA services was receiving the specific service (Yes) compared to not receiving services (No).

### 2.2.2. Dependent variables

The dependent variables were employment in CIE, weekly earnings, and weekly hours worked at the exit.

Table 1  
Research variables

Category	RSA-911 variables	Selected variables
Demographics	Age, sex, race/ethnicity, primary type impairment, primary source of impairment, disability severity.	Age, sex, race/ethnicity (African American, White), primary type of impairment (cognitive impairment, psychosocial impairment), primary source of impairment (autism, specific learning disability, intellectual disability, attention deficit & hyperactivity disorder, anxiety disorder).
Potential barriers	Veteran, dislocated homemaker and dependent, migrant farm worker and dependent, single parent, dislocated homemaker and dependent, ex-offender, homeless or runaway, foster care youth, cultural barriers, basic skills deficiency, low income, long-term unemployment, exhausted TANF, Receipt of SSI, SSDI, TANF.	Basic skills deficiency, low income, long-term unemployment, receipt of SSI.
Type of services by SVRAs	Assessment, benefits counseling, customized training, disability skills training, diagnosis and treatment of impairments, extended services, four-year college or university training, graduate college university training, information and referral services, interpreter services, junior community college training, job placement assistance, job readiness training, job search assistance maintenance services, miscellaneous training, on-the-job training, other services, occupational or vocational training, personal assistance, reader services, Randolph-Sheppard program, rehabilitation technology, supported employment, short-term job support, technical assistance, transportation service, vocational rehabilitation counseling and guidance.	Assessment, benefits counseling, diagnosis and treatment of impairments, information and referral services, job placement assistance, job readiness training, job search assistance, maintenance services, miscellaneous training, other services, supported employment, short-term job support, transportation service, vocational rehabilitation counseling and guidance.

Note. SSI = supplemental security income, SSDI = social security disability insurance, TANF = temporary assistance for needy families.

Employment in CIE status was coded as employed with a value of 1 and unemployed with 0. Weekly earnings and weekly working hours were numerical variables ranging from \$0 to \$675 and from 0 to 45 respectively.

### 2.3. Data analysis

The current research adopted a quantitative correlational design to examine the relationships between the predictors and employment outcomes. Statistical Package for Social Scientists (SPSS) 28.0 was used to conduct analyses. All predictor variables except age were dichotomized and used in the binary logistic and multiple regression analyses. Descriptive analysis and frequency tests were conducted to identify (a) demographic characteristics and (b) potential barriers to VR services experienced by transition-age youth. The group differences between transition-age youth and adult consumers were examined using the chi-square test and *t*-test for mean comparison in achieving CIE, weekly earnings, and weekly hours worked. This study also employed multiple binary logistic regression to investigate the relationships between independent variables (demographic infor-

mation, potential barriers, and SVRA services) and the exit in CIE status. Finally, multiple regression was used to identify which predictor variables have significant associations with the number of weekly working hours and weekly earnings among demographic characteristics, potential barriers, and SVRA services among those who exited in CIE status. Multicollinearity among the variables was assessed using the Variance Inflation Factor (VIF) in regression analysis. The VIF values for all variables were below 10 in these analyses, indicating a non-significant risk of multicollinearity (Chatterjee & Price, 1991; Midi & Bagheri, 2010).

## 3. Results

### 3.1. Demographic characteristics

Descriptive analysis was conducted to present the demographic information of transition-age youth referred for CE services. The demographics included age, gender, race/ethnicity, primary type of impairment, and primary source of impairment. Mean age was 22.30 years for this sample (*SD* = 1.39,

range=18–24 yrs.). The sample consisted of 398 (59.2%) males and 274 (40.8%) females. Regarding race/ethnicity, 508 (73.7%) were White, followed by 111 (15.8%) Black or African American, 16 (2.4%) Asian, 15 (2.2%) multi-racial, 10 (1.5%) American Indian, and 3 (0.4%) Native Hawaiian or Other Pacific Islander. Twenty-seven participants (4.0%) did not identify their race/ethnicity.

The primary type of impairment in this sample was cognitive impairment ( $n=348$ , 51.8%), followed by psychosocial impairment ( $n=186$ , 27.7%), physical impairment ( $n=27$ , 4.0%), communication impairments ( $n=24$ , 3.6%), mental impairments ( $n=16$ , 2.4%), and other remaining impairments across 13 categories constituted approximately 7% of the entire sample. Primary source of impairment in this sample was autism ( $n=149$ , 22.2%), followed by specific learning disabilities ( $n=118$ , 17.6%), intellectual disability ( $n=112$ , 16.7%), attention-deficit hyperactivity disorder (ADHD;  $n=79$ , 11.8%), anxiety disorder ( $n=34$ , 5.1%), depressive and other mood disorders ( $n=30$ , 4.5%), and congenital condition or birth injury ( $n=24$ , 3.6%). The other remaining sources of impairments accounted for approximately 16% of the sample.

Regarding disability significance, 519 (77.2%) transition-age youth were identified to have a most significant disability; 125 (18.6%) youth had a significant disability, and 28 (4.2%) of the transition-age youth reported to have no significant disability. Under the guideline for RSA-911 data, having a significant disability means (a) an individual has physical or mental impairment(s) that seriously limits functional capacities, (b) provision of multiple VR services over a long-term period are expected, and (c) one or more physical or mental disabilities resulting from certain health conditions/disabilities.

### 3.2. Potential barriers

Additional descriptive analysis results provided information on potential barriers faced by transition-age youth who received CE services. Specifically, out

of a total of 672 youth, the most frequent barrier was long-term unemployment (308, 45.8%), low-income status (245, 36.5%), basic skill deficiency (221, 32.9%), exhausted TANF (30, 4.5%), and foster care youth (21, 3.1%). When it comes to social security benefits, 203 (30.2%) youth were recipients of SSI, 23 (3.4%) received SSDI, and 12 (1.8%) received TANF benefits.

### 3.3. Employment outcomes of transition-age youth compared to adults with disabilities

Among 672 transition-age youth who received CE services, 89 (13.2%) were employed in CIE. In the adult population, 356 (30.1%) out of 1,182 consumers were employed at the time of exit after receiving CIE. In the comparison using chi-square analysis, it was found that adults showed a significantly higher proportion of those who achieved CIE at the exit than youth ( $\chi^2(1, N=1,854)=66.88, p<0.001$ ). Mean weekly earning was \$228.47 (SD=151.50) for youth and \$219.73 (SD=225.35) for adults. Weekly hours worked were 21.03 (SD=12.38) for transition-age youth and 18.32 (SD=12.13) for the adult population. As a result of mean comparison, there were no differences in weekly wages and weekly working hours between the two groups. Detailed information is presented in Table 2.

### 3.4. Predictors of competitive integrated employment at exit

Multiple binary logistic regression analysis was conducted to examine the significance of demographic characteristics, potential barriers, and SVRA service associated with exiting in CIE status for the transition-age youth served with CE services. The omnibus test of model coefficients showed that some of the predictor variables were significantly associated with CIE status at the exit of SVRA program,  $\chi^2(29, N=672)=176.428, p<0.001$ . The model explained 42.6% of the variability of the outcome variable (Nagelkerke  $R^2=0.43$ ). The Hosmer

Table 2  
Employment outcomes of transition-age youth and adult population

Employment outcomes	TAY ( $n=672$ )			Adult ( $n=1,182$ )			$\chi^2/t$
	$n$ (%)	M	SD	$n$ (%)	M	SD	
Exit in CIE	89 (13.2%)			356 (30.1%)			66.88***
Weekly working hours		21.03	12.38		18.32	12.13	-1.88
Weekly wage		228.47	151.50		219.73	225.35	-0.35

Note. TAY = transition-age youth, \*\*\* $p<0.001$ .

Table 3  
Logistic regression of competitive integrated employment at exit

Independent variable	B	SE	Wald	Odds Ratio
<b>Demographic variables</b>				
Age	0.38	0.13	8.36	1.46, 95% CI [1.13, 1.89] **
Gender (male)	0.85	0.32	7.19	2.34, 95% CI [1.26, 4.35] **
Black or African American	-0.26	0.63	0.18	0.77, 95% CI [0.23, 2.62]
White	0.03	0.55	0.00	1.03, 95% CI [0.35, 3.02]
Cognitive impairment	0.69	0.61	1.30	1.99, 95% CI [0.61, 6.55]
Psychosocial impairment	0.16	0.59	0.07	1.17, 95% CI [0.37, 3.71]
Autism	0.30	0.57	0.28	1.35, 95% CI [0.44, 4.14]
Specific learning disability	0.89	0.62	2.05	2.44, 95% CI [0.72, 8.27]
Intellectual disability	0.84	0.65	1.68	2.31, 95% CI [0.65, 8.20]
Anxiety disorder	0.96	0.79	1.49	2.61, 95% CI [0.56, 12.24]
ADHD	-0.28	0.80	0.13	0.75, 95% CI [0.16, 3.58]
<b>Potential barriers</b>				
Long-term unemployment	-0.50	0.35	2.04	0.71, 95% CI [0.40, 1.27]
Low-income status	-0.14	0.33	0.19	0.87, 95% CI [0.46, 1.65]
Basic skills deficiency	-0.34	0.30	1.32	0.61, 95% CI [0.31, 1.20]
Receiving SSI	-0.61	0.35	2.93	0.55, 95% CI [0.27, 1.09]
<b>VR services</b>				
Assessment	-0.34	0.42	0.66	0.71, 95% CI [0.32, 1.61]
Benefit counseling	-0.61	0.62	0.98	0.54, 95% CI [0.16, 1.82]
Diagnosis and treatment	-0.35	0.61	0.32	0.71, 95% CI [0.21, 2.35]
Information and referral	-1.12	0.72	2.40	0.33, 95% CI [0.08, 1.35]
Job placement assistance	1.70	0.36	22.14	5.47, 95% CI [2.69, 11.09] ***
Job readiness training	0.13	0.58	0.05	1.14, 95% CI [0.37, 3.54]
Job search assistance	0.11	0.57	0.04	1.12, 95% CI [0.36, 3.43]
Maintenance services	0.44	0.46	0.89	1.55, 95% CI [0.62, 3.83]
Miscellaneous training	0.33	0.48	0.46	1.39, 95% CI [0.54, 3.57]
Other services	0.47	0.58	0.65	1.59, 95% CI [0.52, 4.93]
Supported employment	1.58	0.38	17.43	4.85, 95% CI [2.31, 10.18] ***
Short-term job supports	1.12	0.46	5.99	3.07, 95% CI [1.25, 7.53] *
Transportation	0.97	0.41	5.45	2.63, 95% CI [1.17, 5.93] **
VR counseling and guidance	-1.63	0.41	15.70	0.20, 95% CI [0.09, 0.44] ***

Note. CI = confidence interval. \* $p < 0.05$ . \*\* $p < 0.01$ . \*\*\* $p < 0.001$ .

and Lemeshow test indicated that the model fit was not poor,  $\chi^2(8, N = 672) = 2.77, p > 0.05$ . The model classified 37.1% of consumers who achieved CIE status at exit and 98.1% of consumers who did not achieve CIE.

As can be seen in the final model (Table 3), among demographic variables, gender had a significant impact on the employment outcome. Specifically, male was found to be associated with increased employment rate compared to female (OR = 2.34; 95% CI [1.26, 4.35]). Age (OR = 1.46; 95% CI [1.13, 1.89]) was also a predictor of CIE status. None of the potential barrier variables were associated with achieving CIE at the time of exit. In the SVRA service variables, consumers who received job placement assistance (OR = 5.47 95% CI [2.69, 11.09]), supported employment (OR = 4.85; 95% CI [2.31, 10.18]), short-term job supports (OR = 3.07; 95% CI [1.25, 7.53]), and transportation service (OR = 2.63; 95% CI [1.17, 5.93]) are more likely to get CIE at exit, but consumers who received VR

counseling and guidance (OR = 0.20; 95% CI [0.09, 0.44]) are less likely to achieve CIE at exit.

### 3.5. Predictors of weekly earning and weekly hours worked at exit

Multiple regression analysis was used to identify significant predictors of weekly earning and weekly working hours at exit respectively. The results indicated that the independent variables explained 51% of the variance in weekly earning of the sample ( $R = 0.72, R^2 = 0.51, F(29, 59) = 2.15, p < 0.01$ ). Examination of regression coefficients (Table 4) indicated that male gender ( $\beta = 0.27, p < 0.05$ ) is positively associated with weekly earnings. On the other hand, receipt of SSI was a significant predictor of decreased weekly earnings ( $\beta = -0.25, p < 0.05$ ). Regarding weekly working hours, the predictor variables explained 52% of the variance in weekly hours worked ( $R = 0.72, R^2 = 0.52, F(29, 59) = 2.17, p < 0.01$ ). Examination of regression

Table 4  
Multiple linear regression analysis of weekly earning

Independent variable	B	SE	$\beta$	t
<b>Demographic variables</b>				
Age	27.55	16.05	0.20	1.72
Gender (male)	90.76	39.02	0.27	2.33*
Black or African American	16.05	78.13	0.04	0.21
White	-37.56	66.58	-0.11	-0.56
Cognitive impairment	68.30	75.80	0.21	0.90
Psychosocial impairment	109.18	70.65	0.29	1.55
Autism	-88.38	66.36	-0.25	-1.33
Specific learning disability	62.83	81.08	0.19	0.78
Intellectual disability	-90.76	80.02	-0.26	-1.13
Anxiety disorder	-142.98	91.06	-0.22	-1.57
ADHD	-16.01	101.54	-0.02	-0.16
<b>Potential barriers</b>				
Long-term unemployment	-21.55	33.45	-0.07	-0.64
Low-income status	-2.65	40.74	-0.01	-0.07
Basic skills deficiency	5.09	39.53	0.02	0.13
Receiving SSI	-86.32	40.59	-0.25	-2.13*
<b>VR services</b>				
Assessment	42.47	45.18	0.12	0.94
Benefit counseling	-46.58	65.83	-0.08	-0.71
Diagnosis and treatment	128.02	70.62	0.21	1.81
Information and referral	-34.36	80.94	-0.05	-0.43
Job placement assistance	-9.55	37.51	-0.03	-0.26
Job readiness training	-68.59	62.93	-0.14	-1.09
Job search assistance	39.92	75.43	0.08	0.53
Maintenance services	-32.96	43.70	-0.09	-0.75
Miscellaneous training	63.14	48.21	0.15	1.31
Other services	36.34	55.82	0.07	0.65
Supported employment	-26.53	40.77	-0.08	-0.65
Short-term job supports	-11.79	48.10	-0.03	-0.25
Transportation	6.57	39.83	0.02	0.17
Vocational rehabilitation	-76.60	54.04	-0.2	-1.42
<b>Counseling and guidance</b>				

Note. ADHD = attention deficit & hyperactivity disorder, \* $p < 0.05$ .

coefficients (Table 5) showed that male gender ( $\beta = 0.24$ ,  $p < 0.05$ ) and receiving diagnosis and treatment of impairment services ( $\beta = 0.26$ ,  $p < 0.05$ ) is likely to work more hours per week. In contrast, receipt of SSI ( $\beta = -0.26$ ,  $p < 0.05$ ) was negatively associated with weekly working hours.

#### 4. Discussion

Despite it being over a decade of the development of CE, research on CE continues to be concerningly understudied and there remains limited knowledge on the impact it has on transition-age youths' employment outcomes. This study provided further insight regarding the factors associated with transition-age youth being referred for CE services, employment outcomes (i.e., employment at exit, weekly earnings, weekly hours worked) of transition-age

youth receiving CE services, and group differences in employment outcomes between transition-age youth and adults. Findings of this study noted that transition-age youth that received CE while in the VR program were majority male (59.2%), White (73.77%), their primary type of impairment was cognitive (51.8%), autism was their primary source of impairment (22.2%), had a most significant disability (77.2%), and had a mean age of 22 years old ( $SD = 1.39$ ).

##### 4.1. Potential barriers and receipt of benefits

The top three most frequent potential barriers of transition-age youth who received CE services were status of long-term unemployment (45.8%), low-income (32.9%), and basic skills deficiency (32.9%). These findings were consistent with the literature given these three factors have been positively



Table 5  
Multiple regression analysis of weekly hours worked

Independent variable	B	SE	β	t
<b>Demographic variables</b>				
Age	2.00	1.31	0.18	1.53
Gender (male)	6.78	3.18	0.24	2.12*
Black or African American	0.26	6.37	0.01	0.04
White	-3.08	5.43	-0.11	-0.57
Cognitive impairment	1.24	6.18	0.05	0.2
Psychosocial impairment	5.31	5.76	0.17	0.92
Autism	-5.80	5.41	-0.2	-1.07
Specific learning disability	4.73	6.61	0.17	0.72
Intellectual disability	-7.17	6.53	-0.26	-1.10
Anxiety disorder	-10.34	7.43	-0.19	-1.39
ADHD	-1.15	8.28	-0.02	-0.14
<b>Potential barriers</b>				
Long-term unemployment	-1.75	2.73	-0.07	-0.64
Low-income status	1.47	3.32	0.06	0.44
Basic skills deficiency	0.05	3.22	0.00	0.02
Receiving SSI	-7.20	3.31	-0.26	-2.17*
<b>VR services</b>				
Assessment	4.39	3.68	0.15	1.19
Benefit counseling	-5.84	5.37	-0.12	-1.09
Diagnosis and treatment	12.89	5.76	0.26	2.24*
Information and referral	1.34	6.6	0.02	0.20
Job placement assistance	0.91	3.06	0.04	0.30
Job readiness training	-4.40	5.13	-0.11	-0.86
Job search assistance	-0.81	6.15	-0.02	-0.13
Maintenance services	-1.74	3.56	-0.06	-0.49
Miscellaneous training	3.75	3.93	0.11	0.96
Other services	3.73	4.55	0.09	0.82
Supported employment	-1.57	3.33	-0.06	-0.47
Short-term job supports	-3.14	3.92	-0.11	-0.80
Transportation	3.15	3.25	0.11	0.97
VR counseling and guidance	-6.10	4.406	-0.20	-1.38

Note. ADHD = attention deficit & hyperactivity disorder, \* $p < 0.05$ .

associated with receiving CE services. In Kim and colleagues (2023a) study it was observed that adult state VR consumers who received CE services were found to have status of long-term unemployment, low-income, and basic skills deficiency. Nonetheless, there remains limited knowledge as to why these three barriers are associated with being referred for CE services.

A possible explanation for why these three barriers were most represented among youth referred for CE services, could be due to the nature of CE services and its adaptability to individuals personal and environmental factors. CE is a process that is grounded in a social-ecological theory, with a key emphasis on achieving a person and environment fit while also considering external systems that impact the functioning of an individual (Smith et al., 2017). Furthermore, to better comprehend these findings, one must first understand the relationship between these barriers, the process of determination for a referral to CE services, and the key elements of CE.

According to the Vocational Rehabilitation Technical Assistance Center on Quality Employment (VRTAC-QE; 2022), there are two reasons individuals are referred to CE services. These reasons include either the individual not previously employed in CIE or was not able to sustain CIE due to not having long-term supports in place. Moreover, individuals who may be classified as being long-term unemployed (i.e., unemployed for 27 or more consecutive weeks; RSA, 2019) may fall under this category, and consequently be referred to CE services.

Key elements of CE, such as Discovery can also possibly explain the observed findings in this study. Discovery has been suggested for individuals who have: (a) limited exposure to work due to their perceptions of their abilities based on their disability; (b) limited opportunities to explore their career interests due to disability or segregation; (c) behaviors impacting workplace acceptance or integration; (d) limited adaptive skills (e.g., communication, reading, writing); or (e) poor performance in traditional

vocational assessments due to a significant disability (Smith et al., 2017; VRTAC-QE, 2022). Moreover, individuals who meet the basic skills deficiency criteria (i.e., have reading, writing, or computing skills at or below 8<sup>th</sup> grade level, or is unable to compute and resolve problems or read, write, or speak English at a level necessary for the job; RSA, 2019) and long-term unemployment would qualify for the Discovery process within CE services. Specifically, Discovery would be beneficial to these youths due to its flexibility and various forms of data gathering (e.g., interviews, conversations, observations; Smith et al., 2017). For example, low-income transition-age youth may experience more challenges in transportation than those who are not low-income. Through the implementation of the Discovery process, VR counselors can support and help plan for transportation support as needed by transition-age youth. Additionally, the Discovery process can take place in any natural environment (e.g., home, community area; Smith et al., 2017) thus helping reduce any accessibility challenges on behalf of youth. Moreover, another element of CE that would be supportive for youth facing these barriers is visual resume. Visual resume provides an alternative format for individuals to communicate their abilities and qualifications for the job they are applying to in various formats (e.g., pictures, videos, etc.). This option for alternative formats may be beneficial for youth who may have limited English reading, writing, or speaking skills (i.e., basic skills deficiency).

Additionally, SSI was the most frequent social security benefit among transition-age youth sample. From the previous studies, the receipt of SSI benefits has been linked with increased unemployment and lower weekly earnings (e.g., Mwachofi et al., 2009). At times this can be due to individuals not fully comprehending their disability benefits, along with not having access to benefits counseling. Although benefits counseling is an evidence-based practice that has been noted to positively impact individual's employment outcomes and weekly earnings (e.g., Delin et al., 2012; Hartman et al., 2015; Kregel et al., 2012), it remains uncertain the rate at which transition-age youth with SSI benefits receive this service during their VR program. However, previous literature has noted that individuals with SSI benefits underutilize VR services despite being eligible (Schlegelmilch et al., 2019), while transition-age Hispanic youth with SSI benefits in VR program underutilize benefits counseling services (Castruita Rios et al., 2023).

#### 4.2. Group differences

Findings of this present study revealed group differences in employment outcomes between transition-age youth and adult VR consumers. These observed differences can be due to various reasons including transition-age youth facing additional barriers to employment, practitioners having low expectations of transition-age youth, and practitioners' preparedness to serve transition-age youth, including providing CE services.

The literature has suggested transition-age youth with disabilities encounter additional barriers in obtaining employment including transition-age youth experiencing low self-confidence, lack of motivation, limited work experiences and unrealistic expectations on work life (Langi et al., 2017; Ose & Jensen, 2017). Considering transition-age youth do not have the same opportunities to engage in early work experiences than compared to peers without disabilities (Carter et al., 2009), this can negatively impact the development of work-related and life skills that are essential in obtaining employment (Lindsay et al., 2015). Similarly, transitional professionals (e.g., VR counselors, special educators) have commented on how transition-age youth with disabilities lack the necessary skills to obtain and maintain employment post-high school (Riesen et al., 2014). Thus, further suggesting the differences of youths' work-related skills than compared to adults with disabilities.

Transitional professionals' expectations and service delivery can also play a critical role in the post school outcomes (e.g., employment) of transition-age youth with disabilities (e.g., Curtiss et al., 2021; Smith et al., 2019). For example, Riesen and colleagues (2014) study revealed that transitional professionals had low employment expectations for transition-age youth. Consequently, these low employment expectations of transitional professionals towards transition-age youth could hinder their likelihood of obtaining successful employment outcomes. Moreover, a 5-year transition project that provided training to transition professionals in the provision of CE services demonstrated that a little over half of the youth in the project obtained CIE (Rogers et al., 2008). Thus, demonstrating the impact of CE training among professionals can have on service provision and ultimately employment outcomes among transition-age youth. Similarly, Smith and colleagues (2019) also emphasized the critical impact practitioners and providers can have on the success of a service or intervention.

Furthermore, several studies have examined transitional professionals' preparedness of working with transition-age youth (e.g., Plotner et al., 2012). For example, Awsumb and colleagues (2020) investigated transition providers' (e.g., VR personnel, school districts) perspectives on employment and interagency collaborations, whereby participants shared that VR counselors were not qualified to work with youth in the school district due to having limited knowledge in secondary education and best practices in providing employment services to youth. Similarly, other studies have also commented on this matter noting how VR counselors experience challenges (e.g., being unclear of their role in serving youth) in effectively providing services to transition-age youth with disabilities (e.g., Oertle & Trach, 2007; Oertle et al., 2013; Plotner et al., 2012, 2014). Moreover, researchers have strongly emphasized the need for training (pre- and in-service) for VR professionals in transition to strengthen the effectiveness of service provision (Plotner et al., 2012).

Although there is limited research on the preparedness of transitional professionals to provide CE services, the literature suggests the incorporation of CE strategies in VR can be a complex process, due to the organization and system changes involved (Smith et al., 2017). Several studies (e.g., Kim et al., 2023; Smith et al., 2017) have commented on some of the challenges experienced by SVRAs in implementing CE strategies in VR programs. Smith and colleagues (2017) discussed some of the challenges in the feasibility of the CE process in VR consisting of limited funding, turnover rates, large caseload, and counselor burnout as some of the challenges experienced. In addition, SVRAs may experience challenges in their capacity to implement CE due to an overlap with other matters (e.g., preparedness of community-based providers to provide CE services compliant with SVRA policies; Kim et al., 2023b). Due to these possible challenges encountered by SVRAs in implementing CE services as well as their preparedness to serve transition-age youth with disabilities, both of these factors could potentially be impacting the quality of provision of CE services and the successful employment outcomes of this group.

Another potential explanation for transition-age youth who received CE services having lower employment outcomes than adult VR consumers, could be due to some of the transition-age youth in this study requiring more targeted supports and experiences. Considering some of the challenges experienced by SVRAs in implementing CE services

that were discussed earlier (e.g., large caseloads), it may result in SVRAs having limited capacity to provide more targeted supports and experiences.

#### 4.3. *Predictors of competitive integrated employment at exit*

Transition-age youth who received CE services that were older and male were noted to have better employment outcomes. This aligns with current literature that has also observed male transition-age youth have a greater likelihood of obtaining employment than compared to females (e.g., Awsumb et al., 2020; Castruita Rios et al., 2023; Poppen et al., 2017). However, these studies were not examining specifically transition-age youth that received CE services as part of their VR program. Moreover, older consumers have also been noted to experience better employment outcomes when CE was provided. Services associated with attainment of employment among transition-age youth included job placement assistance, supported employment, short-term job support, and transportation. These findings are consistent with the literature with job placement services enhancing employment outcomes among transition-age youth with disabilities (Awsumb et al., 2020; Castruita Rios et al., 2023; Rumrill et al., 2016). Moreover, the combination of supported employment and CE services has been noted to be associated with obtainment of employment among individuals with autism (Wehman et al., 2017) and traumatic brain injury (Wehman et al., 1990, 1994). Transportation services and short-term job supports have been associated with successful employment outcomes among transition-age Hispanic youth with disabilities (Castruita Rios et al., 2023). Additionally, VR counseling and guidance was identified as a negative predictor of employment among transition-age youth who received CE services.

#### 4.4. *Predictors of weekly earnings and weekly hours worked at exit*

Our analysis examining the variables associated with weekly earnings for transition-age youth with disabilities who received CE and exited with employment noted that males were positively associated with higher weekly earnings, while receiving SSI resulted in lower weekly earnings. These findings are consistent with the literature that has identified males as having greater weekly earnings than compared to females (Boeltzig et al., 2009; Castruita Rios et al.,

2023). Moreover, transition-age youth who receive SSI benefits have also been observed to experience lower weekly earnings than compared to those not receiving SSI benefits (e.g., Castruita Rios et al., 2023; Rumrill et al., 2016).

Positive factors associated with weekly hours worked at exit among transition-age youth with disabilities that received CE services were males and diagnosis and treatment of impairment service. However, receiving SSI benefits was observed to be a negative predictor of weekly earnings. These findings are consistent with the literature whereby males with disabilities have been observed to work more hours than compared to females (Harvey, 2002), while individuals receiving SSI benefits work less hours than those without such benefits (Mwachofi et al., 2009). Moreover, findings surrounding diagnosis and treatment of impairment service also align with the literature that indicates that severity of symptoms impacts transition in education and employment (Cheatham, & Randolph, 2022).

#### 4.5. Implications

Receiving SSI was among one of the consistent negative predictors of weekly earnings and weekly hours worked among transition-age youth. This can be in part due to the policies of SSI benefits that may limit the number of hours and weekly earnings an individual can work without losing their benefits, as well as transition-age youth not fully understanding such policies. A lack of understanding of disability benefits, such as SSI, can result in youth not being interested in working due to fear of losing their benefits (Schlegelmilch et al., 2019), which consequently impacts their weekly earnings and weekly hours worked. Benefits counseling is an evidence-based practice that has demonstrated significant impact on individuals with disabilities' work attempts and weekly earnings (Delin et al., 2012; Hartman et al., 2015, 2019; Kregel, 2012; Leahy et al. 2014; Schimmel et al., 2010; Schlegelmilch et al., 2019; Tremblay et al., 2004, 2006; Wilhelm & McCormick, 2013). Hence, further exploration should be done in regard to the rate and quality of benefits counseling is being provided to transition-age youth considering the impact it has on their overall employment outcomes (i.e., employment at exit, weekly earnings, weekly hours worked).

Considering the definition of CE can at times be more centered on the negotiation of the job, aspects of the service such as discovery, and the level of sup-

port involved within the employment piece can at times be overlooked. Consequently, it could be possible that transition-age youth who have been referred for CE services during their VR program may have not received the level of support they needed to maintain jobs that were a good fit for them. This notion aligns with Riesen and Morgan's (2018) findings with results indicating that employment specialists must (a) identify and learn the operations of the business, (b) develop relationships with employers throughout the discovery and negotiation stages, (c) consistent, effective communication between the specialist and employer to ensure the completion of identified employment tasks, (d) provide adequate training for persons at the company on how to work with a person with a disability, and (e) understand the financial implications of customizing a job. Thus, it is essential that individuals included throughout the CE process build connections with employers while also providing additional disability-related training and business-related resources to ensure that individuals are adequately prepared to support transition-age youth with disabilities. Furthermore, we recommend the development of guidance for SVRAs on how to support and track CE cases.

Consistent with other recent articles on the utilization and outcomes of CE in state VR programs (Kim et al., 2023a; Kim et al., 2023b), the findings of this study indicate multiple issues. First, given the number of youth in transition with disabilities, CE appears to be lagging in full implementation with this population. Given literature that supports a desire for greater individuation of work settings among youth in transition (Brown, 2009), CE may represent a unique approach to engaging youth in work relevant and self-actualizing to them. However, efficacy in implementing CE interventions may be influenced by the approach, quality, and responsiveness of pre-Employment Transition Services (pre-ETS) that are provided to these youths. Pre-ETS programming can be geared toward discovery (i.e., job exploration counseling) or job customization (i.e., instruction in self-advocacy, workplace readiness training). The consideration of pre-ETS beyond a distinct service and moving toward structuring these services as precursors to a developmental, structured approach to serving youth may serve to maximize benefits and efficacy of services. Conceptualizing pre-ETS services as not the product, but rather strategies toward a larger goal, such as CIE, may result in great cohesion in service planning from presumed eligible to placement. However, such an effort requires an increased

discussion, conceptualization, and development or pre-ETS services geared toward subsequent intervention strategies (e.g., CE) as well as mechanisms to promote fidelity of service provision across different providers to promote comparable services throughout the state and the nation (Riesen et al., 2023).

Further research should develop and test CE interventions among transition-age youth with disabilities to better understand the effectiveness of CE and its components on employment outcomes of youth. Although there are studies supporting the effectiveness of CE among individuals with disabilities, it is critical for researchers to assess the fidelity of such interventions. As Riesen and colleagues (2015) suggested through assessment of the fidelity of such interventions it can help with replicating such interventions and provide further support and guidance to practitioners (i.e., VR counselors) about how CE, and which components, can be supportive of transition-age youths' transition to employment. Likewise, future needs assessments regarding technical assistance and training of the professionals in the field, such as the one recently completed by Tansey and colleagues (2023), should incorporate concepts of integration across different services and populations toward development of a comprehensive approach to serving transition-age youth.

Lastly, the demographics of our sample highlighted the lack of diversity among transition-age youth that are receiving a referral for CE services during their VR program, with over half of the sample identifying as White (73.77%). Efforts towards ensuring equity in service provision, specifically CE services, are critical in reducing this racial/ethnic disparity in service delivery. Future studies should further examine this discrepancy by examining potential external factors impacting transition-age youth from racial/ethnic minority groups being referred for CE services. Additionally, future studies could investigate the training and understanding VR counselors have on CE services that may be impacting their decision-making process on determining which transition-age youth receive CE services.

#### 4.6. Limitations

One limitation of the current study concerns the fidelity of CE services. In terms of generalizability, the predominantly White sample composition (73.7%) may limit the generalizability of the findings to racial/ethnic minority groups. Additionally, this study focused exclusively on descriptive infor-

mation about transition-age youth due to its limited scope concerning this population. Descriptive information on the adult population, however, can be found in the work of Kim et al. (2023a). Another consideration is the limitation in data entry for the RSA-911 dataset. Although RSA-911 provides information on the types of services offered by SVRAs and employment outcomes, it lacks detailed data on the quality and components of specific services. The implementation of CE requires an optimal level of fidelity, particularly in the implementation of assessment, discovery, and negotiation components. However, the RSA-911 dataset does not measure fidelity, which poses challenges in analyzing and interpreting the effectiveness of CE service provision. Finally, the study identified that only 89 transition-age youth exited with the CIE status. This small size could potentially undermine the statistical power of multiple regression analyses, especially given the use of 29 independent variables. To enhance the statistical validity of future research, it is crucial to include a larger sample of transition-age youth who achieved CIE after receiving CE.

## 5. Conclusion

This study aimed to identify the factors related with transition-age youth with disabilities being referred for CE services, employment outcomes of youth who received CE services, and group differences in employment outcomes between transition-age youth and adults who received CE services. Findings of this study noted that the majority of transition-age youth that received CE services were male, White, and their primary disability was autism. Although it was observed that adults with disabilities who received CE services had higher employment outcomes than compared to transition-age youth, there were no group differences between these groups in regard to weekly hours worked and weekly earnings. Additionally, factors associated with employment outcomes (i.e., employment at exit, weekly hours, and weekly earnings) among transition-age youth who received CE services were identified.

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## Conflict of interest

The authors declare that three of the authors are editorial board members of the Journal of Vocational Rehabilitation (Tim Riesen, Lauren Avellone and Timothy Tansey).

## Data availability statement

Data analyzed in the current study can be obtained from the corresponding author upon reasonable request.

## Ethics statement

This study used secondary data and is thus exempt from Institutional Review Board approval.

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## Informed consent

This study used secondary data so informed consent was not needed.

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