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Topical Manuscript

The Influence of Demographics and Workforce Innovation Opportunity Act (WIOA) Employment and Training Services on Employment Outcomes for Teenagers Receiving Supplemental Security Income (SSI) and Their Parents

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Transition age youth with disabilities and their families can access a variety of Workforce Innovation Opportunity Act (WIOA)-funded employment and training services. This study evaluated the impact of these services on youth and parent employment outcomes. These services were coordinated as part of the Wisconsin Promoting Readiness of Minors in SSI (PROMISE) federal demonstration grant. Youth with disabilities receiving Supplemental Security Income (SSI) benefits were randomly assigned to 'usual' services, including those available through school and vocational rehabilitation (VR) transition services, or 'enhanced' case management and transition services through the Wisconsin PROMISE demonstration. Parents who consented to participate could receive educational, employment, and financial self-sufficiency services and support through the Family Service Plan (FSP) connected to the youth's PROMISE VR case. Youth and parents could also choose to receive WIOA Title I and Title III employment and training services, as well as Youth Apprenticeship, available through the Wisconsin Department of Workforce Development's Division of Employment and Training (DET). A hierarchical logistic regression analysis demonstrated that VR services predicted higher youth employment rates and DET services predicted higher youth and parent employment rates. A linear regression analysis demonstrated that PROMISE services predicted higher youth wages and DET services predicted higher youth and parent employment wages. Findings suggest the coordination of employment-focused services across programs leads to increases in employment outcomes. Limitations and implications are discussed regarding the relationship between VR services, DET employment and training services, and employment outcomes.

The number of job vacancies in the United States has been increasing as baby boomers have been retiring (Linos & Riesch, 2020; OECD, 2016). Considering the labor pool needed to fill these gaps, individuals with disabilities present an untapped market in the workforce, as 40.7% are employed compared to 76.6% of their nondisabled peers (Rogers et al., 2023). With the recent coronavirus disease (COVID-19), O'Neil stated, "the labor market's continuing strength should be reassuring for workers with disabilities…however there's a greater uncertainty regarding the COVID-19 epidemic, and its potential to disrupt labor markets'' (Kessler Foundation and Institute on Disability, 2020, p. 1). Initially, individuals with disabilities were disproportionately affected by COVID-19 (Armitage & Nellums, 2020; World Health Organization, 2020); however, it presented remote work opportunities for people with disabilities when this might not have been an option previously (Houtenville et al., 2021; Schur et al., 2020). Recent research shows that job placement, on-the-job support, maintenance, and other services are positively associated with employment rates for individuals with disabilities (Dutta et al., 2008). Therefore, to promote employment and career advancement opportunities in both in-person and remote work, it is important to incorporate training services and support for individuals with all ability levels.

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One way to promote positive postsecondary education and employment outcomes for youth with disabilities is by connecting these individuals with federal-state programs. To help address this need, the State of Wisconsin's Department of Workforce Development (DWD) created a four-year learning agenda to deliver inclusive and effective services to meet Wisconsin's diverse workforce needs, as well as advocate for the protection and economic advancements of workers, job seekers, and employers (DWD, 2021a). The plan consists of four agency strategic goals with the first being a focus on improving employment services and training outcomes. This strategic goal aligns with the Workforce Innovation and Opportunity Act (WIOA) emphasis on career pathways, work-based learning, and credential attainment training strategies (Cahill, 2016).

In a recent Training and Employment Notice (TEN) No. 07-22, the Department of Labor Employment and Training Administration (ETA) and the Office of Disability Employment Policy (ODEP) shared the importance of service coordination to increase competitive integrated employment for individuals with disabilities (Employment and Training Administration, 2022). Consistent with this TEN 07-22, Wisconsin Vocational Rehabilitation (VR) coordinates services with Wisconsin's Department of Public Instruction and Department of Health Services to increase competitive integrated employment (CIE) and, in a recent CIE report, highlighted the importance of coordinating with other WIOA title programs, specifically job centers and Title I and III programs (Department of Workforce Development, 2023). Knowing the roles and functions of both programs provides a foundational understanding regarding how they can be good assets for people with disabilities seeking employment (Sarna & Strawn, 2018).

Prior research demonstrates the importance of paid work experiences during high school as predictive of employment in adulthood (Carter et al., 2012). Furthermore, research shows that VR improves employment outcomes for people with disabilities by providing individualized services to those who want to work (Mann & Hock, 2020; Young Illies et al., 2021). These services include, but are not limited to, vocational counseling, skills development, internship/temporary work, job development, and education necessary to achieve career goals (Kaya, 2018; Kaya et al., 2016; Rumrill et al., 2017). To be eligible for VR services, individuals must have a documented disability that presents barriers to employment and the potential to benefit from VR services in finding a job and/or obtaining a better job (DWD, 2021b). For youth with disabilities, pre-employment transition services such as job exploration counseling, work-based learning experiences, counseling on postsecondary enrollment opportunities, workplace readiness training, paid work experiences, and instruction in self-advocacy can increase youth connection to VR services (Honeycutt et al., 2019). Previous research indicated that VR services have stronger influences on employment outcomes for youth with autism and learning disabilities than demographic or Social Security disability benefit factors (Kaya et al., 2016; Rumrill et al., 2017).

Less research focuses on the association between employment and training services available through job centers, workforce boards and partner trainers, and employment outcomes. Some research found that training programs available through the Trade Adjustment Act (TAA) were not associated with employment rates or wages (Reynolds & Palatucci, 2012). However, the Clearinghouse for Labor Evaluation and Research (CLEAR) suggested a need for further consideration, given the notable differences between the intervention and comparison groups.

When looking at a more similar comparison group, researchers found Workforce Investment Act (WIA) participants who received training, core, and intensive services increased employment rates and wages for adults, but not necessarily dislocated workers (Andersson et al., 2016). Examples of core services included job search assistance and information and referral, whereas examples of intensive services included individualized career counseling and the development of an individual employment plan. Training services included the cost of tuition and fees associated with a specific training program needed to achieve the employment goal as identified through the individual employment plan (Workforce Investment Act, 1998). More recent research aimed to find a more similar comparison group and found that participation in TAA was associated with higher labor force participation (Hyman, 2018). TAA participants had higher earnings, averaging $50,000 in higher cumulative earnings 10 years following training. TAA participants were also more likely to switch to jobs with better opportunities, increased earning potential, and advancement opportunities.

Other research shows that training programs based on labor market demands, along with wraparound support services, lead to higher employment rates and wages (e.g., Judkins et al., 2020; Maguire et al., 2010; Naidu & Sojourner, 2020). Studies found that increases in employment rates and earnings were initially suppressed as people received training, but those who switched to a high-demand field (e.g., healthcare) had earning increases that multiplied over time (Leung & Pei, 2020). Researchers found that training programs worked when they targeted low-wage workers who were screened for job match/fit and provided occupational and soft skills training with wraparound services. Particularly important factors were training, transferable and certifiable skills, addressing barriers through job placement and advancement support, and attending to barriers to employment such as childcare, transportation, or other needed supports (Katz et al., 2020; Kazis & Molina, 2016).

The interagency collaboration between VR and WIOA Title I and III programs is imperative, but these agencies may face barriers implementing effective interagency collaboration for transition age youth. Previous research has found that staff turnover, little knowledge of other agencies, resource-sharing difficulties, not enough time for collaboration, not identifying common values, lack of accountability, inconsistent follow-through, leadership and agency priorities, and inconsistent alignment of goals can impede interagency collaboration (Magee & Plotner, 2022; Oertle & Trach, 2007; Riesen et al., 2014). Understanding the roles

and functions of WIOA Title I and III programs is essential when working with youth with disabilities and their families to achieve positive employment outcomes.

The Wisconsin's Division of Employment and Training (DET) provides WIOA Title I and III services through a seamless continuum of services that are provided to and accessed by employers, members of the workforce, and their families so that:

- employers have the workforce they need,
- individuals and their families can achieve economic self-sufficiency by making informed employment decisions and maximizing their potential in the workforce,
- individuals that qualify under Title I: Adult, Youth, Dislocated Worker Services receive support,
- job seekers have access to job centers under Title III Wagner-Peyser Services, and
- individuals who are unemployed, underemployed, or not in the labor force but would with the right supports receive services (based on the WIOA categories of services) including basic career self-info, basic career staff assisted, individual career services, training services, youth services, follow-up services, other services, and support services.

The Wisconsin PROMISE research grant showed evidence of improving employment outcomes and career readiness for low-income youth with disabilities (Hartman et al., 2019; Selekman et al., 2018). This joint initiative from the U.S. Department of Education, the Social Security Administration, the U.S. Department of Health and Human Services, and the U.S. Department of Labor spanned a four-year period from April 2014 to September 2018, where 2,024 youth (ages 14, 15, and 16) receiving Supplemental Security Income (SSI) and their families were enrolled (Selekman et al., 2018). Half of the participants were randomly assigned to the control group where they received services "as usual." For example, those in the control group could still connect with a local VR office and/or job center on their own (Hartman et al., 2019). Those youth and their families assigned to the treatment group were automatically enrolled to receive employment services through DVR and the youth received an array of evidence-informed services including at least one paid job, work incentive benefits counseling, financial coaching, on-the-job social skills training, family and self-advocacy training, and health promotion (Hartman et al., 2019).

The program model emphasized engaging both the youth and their family in intensive case counseling and employment services, and working with youth through traditional DVR services early in the process (Selekman et al., 2018). PROMISE's results were multifold. Wisconsin PROMISE advanced fostering interagency collaboration at the federal and state levels to improve services and drive innovation. Secondly, PROMISE enhanced the importance of the interagency resource team to help connect youth and families to other resources including but not limited to employment and training programs, schools, long-term care, mental health, foster care, and juvenile justice (Hartman et al., 2019).

Purpose of the Study

Previous research on PROMISE examining relationships between demographics, PROMISE, DVR, and school services found that PROMISE was associated with higher employment outcomes, which may be explained by connecting more youth to VR services (Hartman et al., 2021). Previous research focused on the employment rates of youth, while this study looked not only at employment rates but also wage increases. Further, this study looked at the influence of services on the youth's parents' employment rates. Finally, this study aimed to learn about the additional influence WIOA Title I and III and Youth Apprenticeship services may have on employment outcomes of low-income youth and their parents, as these individuals were uniquely positioned to benefit from career and training services. Research questions include:

1. What is the influence of demographics, VR services, PROMISE services, WIOA Title I and III, and Youth Apprenticeship services on youth and parent employment rates and wages?
2. What is the influence of specific types of WIOA Title I and III services and Youth Apprenticeship on youth and parent employment rates and wages?

Method

Participants

Data were collected through the Wisconsin PROMISE federal research demonstration grant from the U.S. Department of Education. Participants were youth receiving SSI who were 14, 15, or 16 years old when they enrolled in the project between April 2014 and April 2016 (Hartman et al., 2019). Parents who signed the participant consent form could receive educational, employment, and financial self-sufficiency services and support through the Family Service Plan (FSP) connected to the youth's PROMISE DVR case. The term 'parents' includes both parents and guardians of participating youth. Parents' ages varied from 21 to 95, as guardians could be siblings, aunts, uncles, grandparents, family friends, or others. A total of 2,024 youth participants and 2,111 parents enrolled in the Wisconsin PROMISE grant. The analysis was conducted with the 1,957 youth and 2,075 parents for whom all demographic, service, and employment outcomes values for all PROMISE data elements were available.

Predictor Variables

Demographics

Age, race/ethnicity, gender, and primary disability were self-reported on the Wisconsin PROMISE intake form. Age at intake was calculated based on the enrollment date and birthdate. Gender was self-reported as male (youth: 67%; parent: 10%) or female (youth: 33%; parent: 90%). Race/ethnicity was self-reported as African American (youth:

49%; parent: 43%), White (youth: 36%; parent: 45%), Hispanic (youth: 10%; parent: 8%), and Other (youth: 5%; parent: 3%). Youth self-reported primary disability as psychiatric (34%), intellectual and/or developmental disability (IDD) (30%), or Other (36%; Hartman et al., 2019). Disability information was not collected for parents, so disability demographic information was excluded from analysis for this target group.

Employment and Training Services

Services started in April 2014 and continued through September 2018. Youth could receive employment and training services from PROMISE, VR, WIOA Title I Youth, and local job centers (WIOA Title III services). Half of the youth were randomly assigned to receive PROMISE services (treatment) and half to services as usual (control). VR (WIOA Title IV), WIOA Title I and WIOA Title III (job center), and Youth Apprenticeship services were included in the Wisconsin PROMISE Management Information System (MIS) via administrative data sharing agreements (Guentherman et al., 2021). Youth were counted as having received VR services if they had at least one paid VR service on their Individualized Plan for Employment (IPE). DVR provided services to 1,042 youth (53%) and 125 parents (6%). Youth were counted as having received WIOA Title I and/or III services if they received a service noted in Wisconsin's employment and training case management system, Automated System Support for Employment Training (ASSET). In ASSET, 349 youth (18%) and 737 (36%) parents were recorded to have received WIOA Title I and/or III services during the study period.

Outcome Variables

Employment Rates

Measured employment rates were based on quarterly wages reported to Wisconsin's Unemployment Insurance (WI-UI) by employers and provided to the PROMISE data system via administrative data sharing agreements. A dichotomous employment variable (ever worked) was defined as having WI-UI wages reported in any quarter from April 2014 to September 2018.

Employment Wages

Employment wages were based on quarterly wages reported to WI-UI by employers and provided to the PROMISE data system via administrative data sharing agreements. A continuous employment variable (wages) was defined as the maximum WI-UI wages reported in any quarter for the individual from April 2014 to September 2018.

Statistical Analysis

Hierarchical Logistic Regression Analysis

IBM SPSS Statistics (Version 29) was used for data analysis. Hierarchical logistic regression (HLR) analysis was used to examine the relationship between the predictor variables and the employment rates outcome variable for each target group. Multilevel analysis, or hierarchical modeling, was used to compare models with repeating predictor variables (nested) at more than one level. HLR provides a mechanism to implement hierarchical modeling when predictor and outcome variables are categorical, as is the case in the current study (Tabachnick & Fidell, 2019). Statistical analysis was conducted in a step-by-step fashion, identifying the statistical significance of each step of the model, determining what variables significantly predicted employment outcomes, and comparing results in each step with the previous step and with the final model that included all predictor variables and the outcome variable. The predictor variables for the current study's HLR analyses included each demographic variable and each employment and training services group. The outcome variable was employment rate (ever employed during the study period).

In the first step of the HLR, demographic covariates (age, gender, race/ethnicity, disability) were entered; disability was excluded from analysis for the parent target group. For the demographic variables, the focal group was the group with the most individuals. The demographic variables were coded as follows: (a) age (continuous variable), (b) gender (female as the reference group and male as the focal group), (c) race/ethnicity (White, Hispanic, and other as reference groups and African American as the focal group), and (d) disability (IDD and other disabilities as the reference groups and psychiatric disability as the focal group). In the second step of the HLR, the PROMISE service (treatment, control) variable was entered.

PROMISE transition services (treatment) was coded as the reference group and usual services (control) as the focal group. In the third step of the HLR, the VR services variable was entered. VR services were coded as the reference group and no VR services as the focal group. In the fourth step of the HLR, the WIOA Title I and III service category variables were entered. WIOA Title I and III services were coded as the reference group and no WIOA Title I and III services as the focal group. WIOA Title I and III service categories with fewer than 15 recipients were not included in the analysis. For the youth target group, the Youth Apprenticeship variable was entered in the fifth and final step of the HLR.

Linear Regression Analysis

Linear regression analysis was used to examine the relationship between the predictor variables and the employment wages outcome variable for each target group. Model one included only demographic variables (age, gender, race/ethnicity, and disability). Disability was included in the youth linear regression model only, as disability information was not available for parents. In model two, the PROMISE variable was entered. In model three, the VR service variable was entered. In the fourth model, the DET service category variables were entered. For the youth target group, the Youth Apprenticeship variable was again entered in the fifth and final model of the linear regression.

WIOA Title I and III Categorical Services Analysis

Each analysis was run a second time with WIOA Title I and III services added based on categories of service at step 4 or model 4. First, services were categories based on WIOA Participant Individual Record Layout (PIRL) reporting categories. Service categories were added if at least 15 youth received the category of services for youth models, or 15 parents received the services for parent models. The WIOA PIRL categories for youth were online Job Center of Wisconsin (JCW) basic career self-information (n = 325) and WIOA Title I Youth services (n = 48). The WIOA PIRL categories for parents were online JCW basic career self-information (n = 729), basic career staff-assisted services (n = 146), Title I Adult or Dislocated Worker individual career services (n = 169), training services (n = 23), and support services (n = 16).

WIOA Title I and III services were then recategorized into categories of services that were of focus as part of the PROMISE grant (Hartman et al., 2019). Again, categories of services were included in the model if at least 15 youth or parents received the category of services. The recategorized services for youth were assessment (n = 52), case management (n = 22), employment counseling (n = 28), employment planning (n = 39), financial literacy (n = 22), job development (n = 16), training (n = 29), work experience (n = 21), and other (n = 347). The recategorized services for parents were assessment (n = 208), case management (n = 43), employment counseling (n = 19), employment planning (n = 93), job development (n = 85), training (n = 104), and other (n = 743).

Results

Employment Rates

The HLR model predicted youth employment rates with chi-square values statistically significant for each step of the model. Chi-square values and Nagelkerke R2 values increased with each addition of employment and training services in the model. The largest increases were observed when WIOA Title I and III services were added to the model. The analysis that only included demographics (age, gender, race/ethnicity, and disability) was statistically significant with $\chi2(7, N = 1{,}957) = 106.832$, $p < .001$ and the Nagelkerke R^2 at .072. When the analysis added PROMISE services, in addition to participant demographics, the model was statistically significant with $\chi2(8, N = 1{,}957) = 134.296$, $p < .001$ and the Nagelkerke R^2 at .090. Moreover, the model remained statistically significant with more variance explained when the analysis included participant demographics, along with PROMISE, and VR services, $\chi2(9, N = 1{,}957) = 229.502$, $p < .001$, Nagelkerke $R^2 = .151$. Finally, variance explained increased even more when the analysis included participant demographics and the employment training services (PROMISE, VR, and WIOA Title I and III services), $\chi2(10, N = 1{,}957) = 331.354$, $p < .001$, Nagelkerke $R^2 = .212$.

Finally, the omnibus test for the final model, including demographics, PROMISE, VR, WIOA Title I and III services, and Youth Apprenticeship as predictors and employment rate as the outcome, was found to be statistically significant with $\chi2(11, N = 1{,}957) = 337.532$, $p < .001$. The Hosmer-Lemeshow test was not significant, $\chi2(8, N = 1{,}957) = 6.390$, $p = .604$, ns, indicating a good model fit. The Nagelkerke R^2 was computed to be .216, indicating a robust association between the demographic covariates, PROMISE services, VR services, WIOA Title I and III services, and Youth Apprenticeship, and employment rates, explaining 21.6% of the variance.

Similar results were found when looking at the HLR model predicting parent employment rates. Again, each step of the model was statistically significant and chi-square and Nagelkerke R^2 values increased with the addition of each category of employment and training services, and especially so when WIOA Title I and III services were added to the model. When the analysis only included demographics (age, gender, and race/ethnicity), the model was statistically significant with $\chi2(5, N = 2{,}075) = 117.128$, $p < .001$ and the Nagelkerke R^2 at .077. When the analysis included both participant demographics and PROMISE services, the model remained statistically significant with $\chi2(6, N = 2{,}075) = 118.675$, $p < .001$, Nagelkerke $R^2 = .078$. When the analysis included participant demographics, PROMISE services, and VR services, the model remained statistically significant and variance explained increased slightly, $\chi2(7, N = 2{,}075) = 127.902$, $p < .001$, Nagelkerke $R^2 = .084$. Finally, the omnibus test for the final model, including demographics, PROMISE, VR, and WIOA Title I and III services, as predictors and employment rate as the outcome, was found to be statistically significant, $\chi2(8, N = 2{,}075) = 491.954$, $p < .001$. The Hosmer-Lemeshow test was not significant, $\chi2(8, N = 2{,}075) = 6.156$, $p = .630$, ns, indicating a good model fit. More variance was explained with the Nagelkerke R^2 computed to be .296, indicating a robust association between the demographic covariates, PROMISE services, VR services, WIOA Title I and III services, and employment rates, explaining 29.6% of the variance.

Maximum Quarterly Earnings

Predictability of youth employment maximum quarterly earnings also improved as demographics and services were added to linear regression models. The linear model that only included demographics (age, gender, race/ethnicity, and disability) had an $F(7, N = 1{,}957) = 14.780$, $p < .001$ and R^2 was .050. Model two, which included demographics and PROMISE, $F(8, N = 1{,}957) = 13.764$, $p < .001$ and R^2 was .054. Model three including demographics, PROMISE, and VR services, had an $F(9, N = 1{,}957) = 12.243$, $p < .001$ and R^2 of .054. Model four including demographics, PROMISE, VR, and WIOA Title I and III services, had an $F(10, N = 1{,}957) = 17.674$, $p < .001$ and R^2 of .083. Finally, the full model, including demographics, PROMISE, VR, and WIOA Title I and III services, and Youth Apprenticeship as predictors and maximum youth quarterly earnings as the outcome, was found to be statistically significant, $F(11, N = 1{,}957) = 19.167$ $p < .001$. and $R^2$was computed to be .098, explaining almost 10% of the variance. F values and R^2 values had the largest increases when WIOA Title I and III services were added to the model.

Table 1. Hierarchical Logistic Regression (HLR) Prediction of Youth and Parent Employment Rates

Independent variable	Final model with WIOA Title 1 & 3 services combined youth employment rates			Final model with WIOA Title 1 & 3 services combined parent employment rates		
	n	Odds ratio	*p* level	*n*	Odds ratio	*p* level
Step 1						
Age (youth 14 to 16; parents 21 to 95)	1957	1.53	<.001***	2075	0.95	<.001***
Gender (Female)	645	0.98	0.880	1873	0.63	0.012*
Race (African American)	962			893		
White	716	0.71	0.002**	940	0.87	0.209
Hispanic	195	0.60	0.003**	170	0.53	0.001**
Other	84	0.75	<.001***	72	1.03	0.926
Disability (Psychiatric)	670					
IDD	591	0.50	<.001***			
Other	696	0.58	<.001***			
Step 2						
PROMISE	985	1.04	0.913	1057	1.14	0.224
Step 3						
WIOA Title 4 VR services	1042	2.48	<.001***	125	0.95	0.857
Step 4						
WIOA Title 1 & 3 job services	349	5.48	<.001***	737	12.93	<.001***
Step 5						
Youth apprenticeship	15	5.64	0.030*			
Constant	1957	0.003	<.001***	2075	13.34	<.001***

*$p < .05$. **$p < .01$. ***$p < .001$.

The parent linear regression model predicting maximum quarterly earnings also had higher increased predictability when WIOA Title I and III services were added to the model. The linear model that only included demographics (age, gender, and race/ethnicity) had an $F(5, N = 2{,}075) = 22.209$, $p < .001$ and R^2 of .051. Model two including demographics and PROMISE had an $F(6, N = 2{,}075) = 18.500$, $p < .001$ and R^2 of .051. Step three including demographics, PROMISE, and VR services had an $F(7, N = 2{,}075) = 16.438$, $p < .001$ and R^2 of .053. Finally, the full model, including demographics, PROMISE, VR, and WIOA Title I and III services as predictors and maximum parent quarterly earnings as the outcome was found to be statistically significant, $F(8, N = 2{,}075) = 45.168$ $p < .001$. and R^2 was computed to be .149, explaining almost 15% of the variance.

Demographics

Age was positively related to youth employment rates and maximum quarterly earnings. Youth who were 15 years old at enrollment were 1.5 times more likely to be employed than youth who were 14 at enrollment, and youth who were 16 years old at enrollment were 1.5 times more likely to be employed than youth who were 15 at enrollment (see Table 1).

For each additional year of age at enrollment, the youth's maximum quarterly earnings increased on average by $356.84 (see Table 2).

The opposite trend, although observed at a smaller magnitude, was observed for parents. Older parents were slightly less likely to be employed and had lower earnings, estimated at $71.92 less in maximum quarterly wages for each additional year of age. This differing trend may be because parents (which included guardians) ranged in age from 21 to 95 years old, and older parents at retirement age may have been less likely to work.

Gender differences were not observed for PROMISE youth. In contrast, female parents were less likely to be employed (odds ratio = 0.63) and had lower predicted maximum quarterly earnings, $2,506.18 less than male parents. Compared with male parents, female parents had a 37% reduction in odds for employment. To better understand this percent reduction, the reverse odds were calculated by dividing one by the odds ratio, 1/0.63 = 1.59. Male parents had 1.59 times greater odds of employment than female parents.

Employment rates varied by race and ethnicity. African American youth's employment rate was 1.41 times greater than White youth, 1.67 times higher than Hispanic youth, and 1.33 times higher than youth with another classification of race/ethnicity. African American parents' employment rate was 1.89 times higher than Hispanic parents' em-

Table 2. Linear Regression Prediction of Youth and Parent Max Quarterly Wages

Independent variable	Final model with WIOA Title 1 & 3 services combined youth max quarterly wages			Final model with WIOA Title 1 & 3 services combined parent max quarterly wages		
	n	Coefficient	*p* level	*n*	Coefficient	*p* level
Step 1						
Age (youth 14 to 16; parents 21 to 95)	1957	356.84	<.001***	2075	-71.92	<.001***
Gender (Female)	645	-56.61	0.436	1873	-2506.18	<.001***
Race						
African American	962	-63.15	0.713	893	431.23	0.427
White	716	-200.03	0.249	940	366.98	0.498
Hispanic	195	-96.441	0.623	170	78.30	0.900
Disability						
Psychiatric	670	152.19	0.063			
IDD	591	-48.10	0.570			
Step 2						
PROMISE	985	186.33	0.016*	1057	7.69	0.968
Step 3						
WIOA Title 4 VR services	1042	-167.46	0.039*	125	-1908.76	<.001***
Step 4						
WIOA Title 1 & 3 job services	349	740.68	<.001***	737	3194.77	<.001***
Step 5						
Youth apprenticeship	15	2184.72	<.001***			
Constant	1957	-4315.68	<.001***	2075	8255.37	<.001***

*$p < .05$. **$p < .01$. ***$p < .001$.

ployment rate. In contrast, wage differences did not vary significantly by race/ethnicity for either youth or parents.

Youth disability also predicted employment rates. Youth with psychiatric disabilities were two times more likely to be employed than youth with intellectual and/or developmental disabilities, and 1.72 times more likely to be employed than youth with other types of disabilities. In contrast, earning differences between youth with different disabilities were not statistically significant. Disability information was not systematically collected for all parents, as not all parents had a disability, so disability type was not included in the models for parents.

Employment and Training Services

Half the youth and parents were randomly assigned to receive PROMISE services.

PROMISE services were not associated with statistically significant differences in employment rates for both youth and parents. When youth received VR services, they were 2.48 times more likely to be employed. VR services alone were associated with lower earnings, averaging $167.46 less in maximum quarterly earnings. Yet, when youth received both VR services and PROMISE services, their maximum earnings averaged $186.33 more than those who did not receive PROMISE services, indicating the combination of VR and PROMISE services increased youth employment rates and wages respectively.

A small percentage of parents (6%) connected to VR services. For parents, VR services were not associated with differences in employment rates. Parents who did receive VR services averaged $1,908.76 less in maximum quarterly wages, but these lower wage amounts could have been attributed to employment barriers related to the parents' disabilities or other related factors, as not all parents in this study had disabilities.

Youth employment rates increased even more when youth received WIOA Title I and/or Title III services. Youth who received WIOA Title I and/or III services were 5.48 times more likely to be employed. Further, youth maximum quarterly earnings averaged $740.68 more if they received WIOA Title I and/or III services. Youth employment rates were 5.64 times higher and average maximum quarterly wages were $2,184.72 even higher for youth who participated in a Youth Apprenticeship. Parent employment rates and wages also increased when they received WIOA Title I and III services. Parents who received WIOA Title I and/or III services were 12.93 times more likely to be employed, and their maximum quarterly earnings averaged even higher, $3,194.77 more if they received WIOA Title I and/or III services.

Categories of WIOA Title I and III Services

The youth employment rate model with WIOA Title I and III services categorized per WIOA categorization was found to be statistically significant, with $\chi 2(12, N = 1{,}957) = 339.5288$, $p < .001$, and the Nagelkerke R^2 computed at .217. When the youth WIOA Title I and III services were recategorized consistent with PROMISE services, the chi-square statistic and Nagelkerke R^2 increased slightly with $\chi 2(19, N = 1{,}957) = 344.602$, $p < .001$, and the Nagelkerke $R^2 = .220$. For the parent employment rate model with WIOA categorization of services, the model was statistically significant at $\chi 2(11, N = 2{,}057) = 499.932$, $p < .001$, Nagelkerke $R^2 = .300$. The parent model that recategorized parent WIOA Title I and III services consistent with PROMISE focused services was also statistically significant with a similar amount of variance explained, $\chi 2(14, N = 2{,}057) = 500.818$, $p < .001$, Nagelkerke $R^2 = .301$.

The youth wage model with WIOA Title I and III services categorized with WIOA categorization had a smaller F statistic, but greater variance explained, statistically significant at $F(12, N = 1{,}957) = 18.088$ $p < .001$. and $R^2 = .100$. Recategorizing WIOA Title I and III services lowered the F statistic further, but the model was still statistically significant and explained slightly more variance at $F(19, N = 1{,}957) = 11.999$ $p < .001$. and $R^2 = .105$. A similar pattern was found with the parent wage models, albeit with larger F statistics and greater variance explained. The parent wage model with WIOA Title I and III services categorized with WIOA categorization was statistically significant at $F(11, N = 2{,}075) = 31.079$ $p < .001$. and $R^2 = .153$. Recategorizing WIOA services resulted in similar results with a model at $F(14, N = 2{,}075) = 26.773$ $p < .001$. and $R^2 = .154$. Table 3 provides odds ratios by WIOA Title I and III categories of services.

Table 4 provides the coefficients predicting differences in maximum quarterly earnings by WIOA Title I and III categories of services. In looking at WIOA categories of services, youth and parents who registered for JCW online and utilized the online basic self-services were more likely to be employed (youth odds ratio = 5.40; parent odds ratio = 10.12) and had higher earnings with averaged increased quarterly maximum earnings of $687.01 for youth and $2,811.22 for parents. Youth who received WIOA Title I youth services were four times more likely to be employed and had average maximum quarterly earnings that were $776.10 higher. Similarly, parents who received individualized career services were seven times more likely to be employed and averaged $1,371.96 more in maximum quarterly earnings. Of note, the quarterly wage coefficient for parents ($n = 22$) who received training services was $1,716.56 but was not statistically significant.

With services recategorized based on PROMISE-focused services, a smaller number of youth and parents received these specified services through WIOA Title I and III, so most of their WIOA Title I and III services were classified as other, which remained statistically significant in predicting increased employment and wages for both youth and parents. In addition, parents who received assessment services were four and a half times more likely to be employed and averaged $1,190.43 more in quarterly maximum earnings. Youth who received case management services averaged $1,292.67 more in quarterly maximum earnings. The odds ratio for youth ($n = 22$) who received financial literacy services was large, but not statistically significant. It was likely the number of youth who received these services was too low to adequately calculate the odds ratio.

Discussion

Results from this study highlight the importance of coordinating services across WIOA employment programs with a focus on youth with disabilities and their parents. In Wisconsin, these programs are managed by divisions co-located within DWD, Wisconsin's governmental labor department responsible for administering statewide youth and adult career services. DVR, Wisconsin's WIOA Title IV program, specializes in assisting individuals with disabilities find a job or get a better job with a focus on career development and increased earnings. DET oversees WIOA Title I and III programs and other employment and training programs, such as apprenticeship programs, including Youth Apprenticeship. The Title I offerings in Wisconsin include adult, dislocated worker, and youth programs. The Wagner-Peyser WIOA Title III program includes a statewide network of virtual and in-person Job Centers. Workforce Development Boards (WDBs) govern and select Title I service providers, as well as convene and collaborate with employment resources from WIOA Title I, III, and Youth Apprenticeship programs. To account for the coordination of key WIOA programs, the addition of comprehensive, employment-focused case management services provided through PROMISE was included in the analysis.

Career service navigation through case management was a focus of PROMISE, a federally funded initiative that demonstrated the effectiveness of providing key evidence-based services and support. PROMISE youth case management and family supports aided youth with disabilities and their families in navigating systems to increase engagement in paid work experiences, career development, and employment. The Wisconsin PROMISE model demonstrated that intentionally connecting youth receiving SSI benefits with the public VR program using targeted outreach strategies resulted in increased employment for these youth (Anderson et al., 2021; Hartman et al., 2021). Furthermore, an external longitudinal evaluation of the Wisconsin PROMISE model confirmed the importance of early employment experiences with wraparound supports have a positive impact on youth employment five years following the initial receipt of services (Patnaik et al., 2022).

Consistent with past research, when youth in this study received VR services, they were almost two and a half times more likely to be employed. Furthermore, when youth received both VR and PROMISE services, their maximum quarterly earnings increased by an average of $186.33, providing evidence that the combination of these services may improve employment quality outcomes more effectively than either of these services in isolation. Findings from the current study revealed significant outcomes in both

Table 3. Hierarchical Logistic Regression (HLR) Prediction of Youth and Parent Employment Rates by WIOA Categories of Job Services

Step 4 service categories for WIOA Title 1 & 3 services	Youth employment rates			Parent employment rates		
	n	Odds Ratio	*p* level	*n*	Odds Ratio	*p* level
WIOA official categories						
Basic career self info	321	5.40	<.001***	722	10.12	<.001***
Youth services	47	4.02	0.011*			
Basic career staff assisted				144	1.93	0.260
Individual career services				167	7.26	0.023*
Training services				22	0.08	0.061
Support services				16	3.21	0.444
Recategorized Services						
Assessment	51	0.37	0.281	205	4.495	0.024*
Case management	22	2.23	0.562	42	0.548	0.593
Employment counseling	27	2.18	0.623	18	0.758	0.829
Employment plan	38	1.90	0.706	92	1.402	0.749
Financial literacy	22	416805319.00	0.998			
Job development	16	0.96	0.971	84	1.755	0.457
Training	37	1.48	0.754	103	0.926	0.907
Work experience	20	0.31	0.470			
Other	342	5.16	<.001***	726	9.968	<.001***

*p < .05. **p < .01. ***p < .00

Table 4. Linear Regression Prediction of Youth and Parent Employment Rates by WIOA Categories of Job Services

Step 4 service categories for WIOA Title 1 & 3 services	Youth wages			Parent wages		
	n	Coefficient	*p* level	*n*	Coefficient	*p* level
WIOA official categories						
Basic career self info	321	687.01	<.001***	722	2811.92	<.001***
Youth services	47	776.10	<.001***			
Basic career staff assisted				144	30.14	0.953
Individual career services				167	1371.96	0.005**
Training services				22	1716.56	0.126
Support services				16	-329.13	0.796
Recategorized Services						
Assessment	51	-457.11	0.321	205	1190.43	0.013*
Case management	22	1292.67	0.012*	42	579.17	0.515
Employment counseling	27	15.76	0.979	18	318.49	0.779
Employment plan	38	119.48	0.843	92	-652.49	0.335
Financial literacy	22	706.86	0.148			
Job development	16	-811.43	0.121	84	428.91	0.499
Training	37	200.98	0.628	103	707.34	0.224
Work experience	20	-44.19	0.930			
Other	342	694.67	<.001***	726	2742.19	<.001***

*p < .05. **p < .01. ***p < .001.

employment rates and earnings for youth with disabilities when intentionally leveraging services across not only PROMISE and VR, but further accessing employment resources through WIOA Titles I, III, and Youth Apprenticeship programs.

These findings are consistent with current recommendations regarding intentional service coordination across programs to increase competitive integrated employment for individuals with disabilities (Sarna & Strawn, 2018). Furthermore, the findings from the current study support the premise that youth with disabilities can benefit by participating in career pathways programming and apprenticeship, aligned with VR, as a means of achieving quality outcomes (Cocks et al., 2015; Mazzotti et al., 2021; Wehman et al., 2017). Quality employment outcomes are particularly important in effectively addressing poverty, which disproportionately impacts individuals with disabilities (Brucker & Houtenville, 2015). Developing meaningful and intentional career pathways for youth with disabilities across partnering WIOA programs provides opportunities for employment in sectors with substantially higher wages and access to employer-sponsored benefits, both of which serve as quality indicators (Moore et al., 2020).

Given the increases in employment outcomes achieved for youth and parents who received Title I and III services, further analyses sought to identify specific services associated with these increases. Youth and parents who received WIOA Title I youth, adult, and dislocated worker individual career services were associated with both higher employment rates and higher average wages, by an average of almost $750 more in maximum quarterly earnings for youth and over $3,000 more for parents. Specific services were associated with even higher maximum quarterly earnings. Youth who received case management services averaged almost $1,300 more in maximum quarterly earnings, and youth with an apprenticeship averaged $2,000 more in quarterly earnings.

Employment rates also varied by race and ethnicity. The employment rate of African Americans was higher than White, Hispanic, and youth with another classification of race/ethnicity. African American parents' employment rate was also higher than Hispanic parents' employment rate. In contrast, wage differences did not vary significantly by race/ethnicity for either youth or parents. Similar differences were found in prior Wisconsin studies suggesting that intentionally targeting and coordinating employment-focused services via cross-program referrals to diverse groups, including traditionally underserved and/or marginalized populations, yields a positive return on investment (Hartman et al., 2021; Lewis, 2019). And, purposefully conducting targeted outreach to youth and families receiving SSI benefits serves as a cost-effective mechanism for engaging underserved populations (Anderson et al., 2019; Crane et al., 2019; Enayati & Shaw, 2019).

Recommendations

Previous research and the findings of this study demonstrate comprehensive, employment-focused case management for youth with disabilities that combines VR and WIOA Title I and III services to ensure early engagement in paid work experiences and individualized career development, including career pathways and apprenticeship options, significantly increases the likelihood that youth with disabilities will obtain CIE and have higher quarterly earnings (Anderson et al., 2021; Cocks et al., 2015; Hartman et al., 2021; Mazzotti et al., 2021; Wehman et al., 2017). Therefore, it is recommended that VR seek to increase the number of applications for VR services from students with disabilities receiving Pre-Employment Transition Services to ensure access to individualized career planning and development. Additionally, it is recommended that VR encourage students with disabilities, who are receiving Pre-Employment Transition Services, to apply for VR services at an earlier age, as opposed to waiting until the student is closer to finishing school, as is often the practice. Finally, it is recommended that VR develop a strong relationship with the WIOA Title I and Title III partners in their local area(s), as well as Youth Apprenticeship opportunities, including increased knowledge of what services WIOA Titles I and III and local apprenticeship programs offer, and how to effectively braid those services together with VR services to ensure a more comprehensive, individualized, and employment-focused approach.

Limitations

While the approach applied in this study represents a good starting point in answering specific questions on the coordination and association of WIOA services and employment outcomes, the correlational methods do not imply causation. Additionally, the small group size observed with some specific WIOA Title I and III services (e.g., training, financial literacy, job development, employment counseling and planning, and work experiences) made it challenging to meaningfully calculate the correlation between these WIOA services and employment outcomes. Furthermore, the generalizability of these results may be limited given that PROMISE youth, parents, and household members represent a specific population during an established timeframe.

Future Research

It is recommended that future research include a larger, more generalizable sample to further explore the relationship between specific categories of services and employment outcomes. Systematic inquiry is needed to better understand why and what about these specific combinations of WIOA services are particularly beneficial in improving outcomes. This includes exploring relationships between WIOA Title I and III services and employment outcomes for larger groups, inclusive of those with and without disabilities. Examples include employment counseling, employment plan development, financial literacy, training, basic career staff assisted, support services, and job development, all of which are offered as WIOA Title I and III service options. Within these programs, wide variability exists regarding which services are offered, where, and how. Further exploration to better understand these issues may present opportunities to better define and refine effective service provision leading to improved outcomes for individuals with disabilities.

Future research is also recommended to better understand how the addition of case management services for

youth with disabilities engaged in multiple WIOA programs, including VR (Title IV), Titles I and III, and apprenticeship helps to improve outcomes. While the Integrated Resource Team (IRT) model was originally introduced to serve this purpose under the prior WIA legislation, it bears revisiting in the current environment. The model has been implemented intermittently within job centers and is recognized as an emerging and sustainable approach at a local level (Klayman et al., 2019). More recently, the IRT approach was implemented by state VR agencies through Project Educate, Empower, and Employ (E3) and is currently being used by multiple United States Department of Education, Rehabilitation Services Administration, Disability Innovation Fund grantees as a key strategy in supporting movement from subminimum wage to competitive integrated employment and in supporting access to and advancement in career pathways. However, the IRT model has yet to be studied thoroughly using an experimental or quasi-experimental design. Defining and analyzing the IRT model as a means of providing coordinated case management across WIOA programs for youth with disabilities is recommended.

Exploring the comparative relationships between services identified in this study with other groups will also be beneficial in better understanding unique considerations experienced by low-income youth of color with and without disabilities and their families (see Anderson et al., 2021 as an example model). Developing further knowledge regarding the differences in youth employment outcomes based on disability, in relation to the combination of services received, will be instrumental in informing the development of future evidence-based practices for use in VR and workforce development system partners.

Implications for Policy and Practice

This study focused on better understanding whether the coordination and receipt of services by low-income youth with disabilities and their parents' improved employment and earnings outcomes, and interestingly, the highest odds ratios and predicted earnings were seen for WIOA Title I and III services. These results demonstrate how WIOA Title programs can implement resource leveraging and service coordination to increase competitive integrated employment for individuals with disabilities, consistent with recommendations highlighted in the Training and Employment Notice No. 07-22. While youth apprenticeships had a particularly strong correlation, positive relationships were also observed for other WIOA Title I and III services including basic career self-information, youth services, case management, and assessment. These relationships are important for both practitioners and policymakers as they offer opportunities to better align and coordinate services at the individual level, as well as inform which constellations of employment services yield stronger programmatic outcomes. Moreover, the current focus on improving employment and earnings opportunities, both of which serve as employment quality indicators, by intentionally establishing career pathways can help address poverty issues that disproportionately impact individuals with disabilities (Chan et al., 2016; Lombardi et al., 2018; Rabren et al., 2014).

Conclusion

Connecting youth and their families to federal-state programs can provide positive postsecondary education and employment outcome, such as providing WIOA Title I and III and apprenticeship opportunities in combination with VR services. With these services, youth and their parents were more likely to gain and retain competitive integrated employment with higher wages. The recommendation is to engage youth and their families early, connecting youth to VR early, and begin to strengthen interagency service collaboration with the WIOA Title I and Title III partners, as well as apprenticeship programs, in their local areas.

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