Intellectual and Developmental Disabilities

Factors that Influence the Tenure of Direct Support Professionals in New York State Provider Agencies
--Manuscript Draft--

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IN NEW YORK STATE PROVIDER AGENCIES

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Abstract

The New York State Office for People With Developmental Disabilities seeks to better understand the Direct Support Professional (DSP) workforce and offer data-informed strategies for DSP retention. We used the 2018 NCI-IDD Staff Stability Survey (now called State of the Workforce Survey) to investigate agency-level factors influencing DSP tenure. A total 303 provider agencies completed the survey in NYS, representing 72,252 DSPs. Multiple linear regression analysis revealed that selected agency-level variables explained 12.6% of the variance in DSP tenure ($R^2 = .16$, $R_{adj}^2 = .126$, $F(11, 260) = 4.54$, $p < .05$). This study yielded strong empirical evidence consistent with existing national reports and research on the role that wages, benefits, and supervisory support play on DSP tenure.

Keywords: direct support, intellectual and developmental disabilities, retention, staff stability, tenure

Definition and Function of Direct Support Professionals

Direct Support Professionals (DSPs) are the distinct workforce that supports people with intellectual and developmental disabilities (I/DD). DSPs support people with I/DD by providing one-on-one individualized personal assistance, enabling people to live, work, and participate in their communities. DSPs work in diverse environments, such as certified residential settings (e.g., intermediate care facilities), vocational support sites, day habilitation centers, private homes and residences, hospitals, and in any place where a person may need support. In 2018 in New York State (NYS), a total of 117,934 people with I/DD utilized Medicaid services provided by the NYS Office for People With Developmental Disabilities (OPWDD; OPWDD.NY.GOV). Also, in 2018, 72,252 DSPs were employed across 303 provider agencies, also called voluntary organizations (National Core Indicators Staff Stability Survey Report, 2018). DSPs in NYS receive rigorous competency training in seven goal areas: putting people first, building and maintaining positive relationships, demonstrating professionalism, supporting good health, supporting safety, having a home, and being active and productive in society (Regional Centers for Workforce Transformation, n.d.).

Workforce Crisis and Turnover Rate

The DSP workforce was one of the fasted growing workforces in the past three decades in the United States (Bureau of Labor Statistics, 2021). Hewitt (2014) estimated that 900,000 full-time DSPs were needed by the year 2020, indicating an even greater need for this workforce over time. Despite the growing demand for the DSP workforce, provider agencies have been experiencing difficulties with recruitment and retention for several years (American Network of Community Options and Resources, 2017). In 2018, the turnover rate for DSPs was 51.3% nationwide and 35.3% in NYS (National Core Indicators Staff Stability Survey Report, 2018).

Specifically, 45.7% of DSPs employed at NYS provider agencies left their position within one year of employment, indicating issues with retention.

According to President's Committee for People with Intellectual Disabilities (2017), high DSP turnover and the resulting instability of the workforce poses operational and financial burdens to the I/DD service system. Provider agencies must invest in constantly recruiting, training, and replacing staff, and people with disabilities and their families must deal with a revolving door of care providers and disruptions in their continuity of care. There is an emotional and psychological cost to people with I/DD who spend a substantial amount of time building a relationship with their DSPs, sharing essential and intimate details that allow for the delivery of person-centered supports and services. The negative effects of DSP turnover carry over to family members who then make up for the loss of daily services and supports that the DSP was providing (Anderson et al., 2018; Hewitt & Larson, 2007). To prevent permanent long-term adverse outcomes in home- and community-based supports for people with disabilities, it is important that the I/DD field continue to study and uncover how DSP tenure can be improved.

Factors that Influence DSP Workforce Outcomes

Within the last decade, several scholars in the I/DD field have identified factors that impact DSP turnover and tenure rates at the individual and agency level. A low or undesirable wage (Houseworth et al., 2020), lack of competitive benefits (Bogenschutz et al., 2014; Friedman, 2020), and lack of appropriate supervisory support (Friedman, 2018; National Direct Service Workforce Resource Center, 2008) are some factors considered to impact DSP turnover. Furthermore, many theories help to understand better the relationship of agency and individual level factors on employee turnover, tenure, and other behaviors. Studying these factors, especially ones at the agency level, can yield implications for supervisors, agencies, and

policymakers on how to better retain DSPs. In a rigorous empirical analysis, the current study

considers many variables at the agency level (e.g., wage, benefits, training) that may play a key

role in DSP retention.

Wage

In a study of DSP workforce data from provider agencies across 20 states including NYS,

Houseworth et al. (2020) found lower DSP wages significantly correlated with higher annual

DSP turnover. This finding is consistent with Equity Theory, which posits that there must be a

balance between the effort an employee makes and the results of that effort (Adams, 1963). If the

results of the effort, such as salary or recognition, are seen as unjust, employees are likely to

experience distress and even quit (Rynes, Gerhart, & Minette, 2004). Several researchers have

posed that turnover is a likely result of increasing responsibilities and demands on the DSP not

being met with increased salary or other compensation (e.g., National Direct Service Workforce

Center, 2008; Hewitt & Larson, 2007).

The current study examines the impact of DSP wages on employee behavior (i.e., tenure).

Specifically, we look at the current wage paid to DSPs, how much that wage has increased over

time, and the difference between that wage and the minimum wage of the regional area. By

considering these elements of a wage, we are better able to quantify the fairness and

competitiveness of the DSP wage and assess its impact on tenure.

Benefits and Bonus

Houseworth et al. (2020) found that offering health insurance to DSPs was associated

with lower annual turnover. In addition, agencies that offered paid time off experienced lower

turnover within the first six months of employment. The current study explores the relationship

that benefits have on DSP tenure. We considered health incentives, flexible spending accounts,

disability insurance, paid job-related training, post-secondary education benefits, and other benefits offered to DSPs by provider agencies.

In addition, employers often offer one-time benefits or rewards to encourage and motivate employees. In Expectancy Theory, employees are believed to be motivated to act based on what they expect will be the outcomes of their behavior (Vroom, 1965). These outcomes often include extrinsic rewards (Purvis et al., 2014), such as a one-time cash bonus, gift cards, and other incentives. The current study explores the impact of providing cash bonuses and recruitment incentives to DSPs on tenure.

Support and Supervisors

In the Job Demands-Resource Model, the balance between the demands of a job and the resources available to an employee to meet those demands is imperative to the employee's well-being (Bakker & Demerouti, 2016). In a research review, Hewitt and Larson (2007) emphasize the negative effect on DSPs when frontline supervisors (FLS) are not present or adequately trained to support them. Lack of supervision and high FLS turnover can impact DSP turnover. In the current study, we use a ratio of FLS to DSPs to indicate how much support DSPs might have to manage their workload. Other types of training and supports for DSPs have been found to impact DSP outcomes. For example, in a controlled study, Bogenschutz et al. (2015) found that DSPs who completed a credentialing program experienced lower turnover than DSP who did not complete the program. In the current study, we investigate the relationship that offering career advancements and education support, such as post-secondary education support and job-related training, have on DSP tenure.

Tenure of DSPs

NYS OPWDD recognizes the challenges facing the service system and seeks to better understand the current DSP workforce to offer data-informed strategies for DSP retention. A comprehensive analysis of factors that influence DSP behavior (e.g., tenure, turnover) is needed in NYS. Many existing studies investigating reasons for DSP tenure or turnover are qualitative in nature or program evaluations of a particular provider agency. A better understanding of DSP tenure is needed to equip policy makers and stakeholders to support this workforce and prevent costs associated with turnover, recruitment, and vacancy. Additionally, while investigating the effects of wage on tenure, the current study also emphasizes the role of other benefits and supports offered to DSPs that may impact tenure.

Current Study

The current study utilized the 2018 National Core Indicators Intellectual and Developmental Disabilities (NCI-IDD) Staff Stability Survey to employ a rigorous statistical methodology investigating the impact of several agency-level factors on DSP tenure in NYS. We refer to the particular instrument used in this study as the "2018 NCI-IDD Staff Stability Survey," while referring to later versions as the "NCI-IDD State of the Workforce Surveys." Furthermore, the current study represents approximately 82.4% of NYS voluntary provider agencies, which is close to population data (Warner, 2012). We investigated DSP tenure (i.e., as opposed to DSP turnover) to focus on actions that provider agencies can take to retain DSPs. This study examines the research question – what factors influence the tenure of DSPs at intellectual and developmental disabilities service delivery provider agencies in New York State?

Method

Participants

Data were collected through the 2018 NCI-IDD Staff Stability Survey. The survey was sent electronically to 330 eligible provider agencies, also called voluntary organizations, in NYS Only provider agencies that provide Medicaid- and OPWDD-funded support and services to adults with I/DD were asked to participate in the survey. Furthermore, the data in the survey represent DSPs who were employed by specific voluntary provider organizations. Data on DSPs employed by OPWDD, i.e., civil service employees, were not included in the survey. The response rate for the 2018 NCI-IDD Staff Stability Survey was 91.8%, with a total of 303 NYS voluntary provider agencies completing the survey. Provider agencies were located across NYS and within the five designated OPWDD Developmental Disability Regional Offices (DDRO) Regions. Region 1 refers to Finger Lakes and Western New York. Region 2 includes Central New York, Broome, and Sunmount. Region 3 contains the Capital District, Taconic, and Hudson Valley. Region 4 consists of Manhattan, Queens, Bronx, Brooklyn, Staten Island, and Bernard Fineson. Region 5 includes Long Island.

The 303 agencies who completed the 2018 NCI-IDD Staff Stability Survey represented a total 72,252 DSPs employed at provider agencies. The size of the DSP workforce at participating provider agencies ranged from 2 to 4,376 DSPs.

Instrument

The NCI-IDD State of the Workforce Survey is a combined effort between the National Association of State Directors of Developmental Services (NASDDDS) and the Human Services Research Institute (HSRI). The survey aims to collect comprehensive data on the DSP workforce and help states use that data to analyze workforce challenges, evaluate programs and policies to enhance the workforce, and provide better support to DSPs. The 2018 NCI-IDD Staff Stability Survey requires provider agencies to provide information on DSPs who were on payroll for any

length of time from January 1, 2018 to December 31, 2018. DSPs in the survey are defined as

staff who spend 50% or more of their time providing direct care to adults with I/DD.

The survey collects information through the following sections: agency profile, payroll

data, compensation, bonuses and overtime, benefits, recruitment and retention, and frontline

supervisors. Survey item types include check-all-that-apply, fill-in numbers, selected response,

and open-ended. The 2018 Survey also included an item specific to NYS that OPWDD drafted.

NYS OPWDD inquired provider agencies about the minimum wage region where the provider

agency employs DSPs. In NYS in 2018, there were 4 minimum wage regions, each with its own

minimum hourly wage requirement (NY.GOV, n.d.). Table 1 lists the minimum wage regions.

Procedure

The 2018 NCI-IDD Staff Stability Survey was administered by NCI on behalf of NYS

OPWDD. The 2018 NCI-IDD Staff Stability Survey link was sent electronically to provider

agency leadership, administrative staff, human resources departments, or payroll departments.

Each provider agency received a unique link to the survey and was given 2.5 months to

complete. The OPWDD Division of Data Strategy and Management and Division of Workforce

and Talent Management made phone calls to eligible provider agencies to elicit participation,

give reminders of the deadline, and provide technical assistance.

Data Preparation

Developmental of sample

Several steps were completed to develop a sample for statistical analyses. First, 19

agencies, who indicated in the 2018 NCI-IDD Staff Stability Survey that they could not

distinguish between full-time and part-time employees, were removed from the analysis. Second,

two additional agencies that answered less than 50% of the questions and accounted for 10% of

overall missing data were removed. Third, eight agencies that did not answer all ten questions needed to calculate the dependent variable of *Tenure Index* were removed due to insufficient information for missing data imputation. Lastly, the research team removed two agencies that were identified as influential multivariate outliers. The final analytic sample included 272 agencies.

Missing values and imputations

Data were examined for missing values, patterns in missingness, and outliers using IBM SPSS Statistics Version 26. Percent of missingness was 2.75% (504 values) across 113 agencies. Little's chi-square test was used to discover that data were missing completely at random (MCAR), which allowed for missing values to be imputed via multiple imputation analysis (Little's $\chi^2 = 12.79$, $df = 74$, $p = 1.00$). All variables were included in the imputation algorithm, and a subset of variables were selected for analysis (Field, 2013). In sum, data for 47 out of 65 variables were imputed.

Investigating imputed data

The imputed data were then investigated for outliers. For continuous variables, z-scores were used to assess univariate outliers; if a z-score surpassed the cut-off point of $z = \pm 2$ and was significant at a .05 alpha level, the data point was removed. Additionally, multivariate outliers in the data were identified using a rigorous Mahalanobis Distance value of 15 (Field, 2013).

Lastly, the standardized kurtosis and skewness values were assessed for each variable. Variables were considered as non-normal distribution if the kurtosis value was larger than 7 or smaller than -7 and/or the skewness scores larger than 2 or smaller than -2 (Kim, 2013). Additionally, if an imputation skewed the overall standard deviation of the variable or did not make sense quantitatively or practically, that imputation was removed.

Predictors

Wage Index. A wage index variable was created using existing variables in the dataset. In a wage index formula, the average current wage of a provider agency was compared to the minimum wage of the region and to the average starting wage at the provider agency. We calculated the wage index for each provider agency through the following formula: *average current wage**100/ *minimum wage of the region - 100 + average current wage**100/ *minimum wage of the region - average starting wage**100/ *minimum wage of the region.* This calculation resulted in a wage index score for each provider agency. A provider agency with a higher score represented a more competitive wage than an agency with a lower score. Sample calculations are provided in Table 2.

Wage index scores ranged from 0 to 180. A provider agency with a wage index score of 0 reported the same wage (e.g., $13.00) for their minimum wage, average starting wage, and average current wage. In contrast, a provider agency with a wage index score of 180 reported a minimum wage of $11.00, an average starting wage of $17.61, and an average current wage of $24.21.. Wage index scores were log transformed to achieve normal distribution and are illustrated in Figure 1. Throughout this paper, we refer to the *Wage Index* variable as simply *Wage*.

Benefits and Bonus. Several predictors were categorical with only two categories; provider agencies indicated that they either 1 = offered that benefit or 0 = did not offer that benefit. Categorical variables that reflected benefits offered to employees were: *Flexible Spending Account Benefit*, *Post-Secondary Education Assistance Benefit*, *Paid Job-Related Training Benefit*, and *Disability Insurance*. Other categorical variables reflected additional

incentives or compensation offered to DSPs: *Health Incentive Program Benefit (e.g., employee wellness initiatives), Recruitment Incentive,* and *At Least One Bonus Paid to DSPs*.

More than 10 DSPs per Front Line Supervisor. Responses from two survey items were used to create a variable representing the amount of support a DSP may have at the provider agency. Each provider agency reported (1) the total number of employed DSPs and (2) the total number of front line supervisors (FLS). Then, for each agency, we divided the total number of FLS by the total number of employed DSPs to arrive at a ratio of DSPs to FLS. Next, we grouped agencies who had 10 or less DSPs per FLS compared to agencies that had more than 10 DSPs per FLS. Ten was chosen as a reference group based on the variability of responses in the data; grouping the dataset with a different threshold resulted in little variability among groups.

DDRO Regions. We used the variable of Developmental Disabilities Regional Offices (DDRO) Regions to control for unequal population density in urban, sub-urban, and rural areas. Each provider agency in the dataset was located in one of the five DDRO Regions (i.e., Region 1 Western New York & Finger Lakes; Region 2 Central New York, Broome & Sunmount; Region 3 Capital District, Taconic & Hudson Valley; Region 4 Metro, Brooklyn, Staten Island & Bernard Fineson; and Region 5 Long Island). Based on metropolitan statistical area (MSA) classifications by the National Center for Health Statistics (NCHS, 2017), Region 1 is characterized by two large central metro counties, five large fringe metro counties, one small metro, and the rest micropolitan and non-core counties. There are no medium metro MSAs in Region 1. In contrast, Region 2 is characterized by medium metros, small metros, micropolitan, and non-core MSAs. There are no large central metro or large fringe metro MSAs in Region 2. Region 3 includes a combination of large fringe metro, small metro, micropolitan, and non-core MSAs. There are no large central metro MSAs in Region 3. Region 4 includes New York City

counties that are all classified as large central metro MSAs. Region 5 includes two counties only,

both of which are considered large fringe metro MSAs. We dummy-coded the DDRO variable

and utilized it as a control.

Dependent Variables - Tenure Index

Ten variables from the original dataset were used to create a tenure index, which is the

dependent variable, for each agency. Out of the ten original variables, five indicated length of

stay of *separated* DSPs and another five indicated length of stay of *employed* DSPs. Weight

function methodology, specifically weighted sum model, was used to assign weight factors to

each of the ten variables. DSPs who separated from the provider agency in less than 6 months of

employment were assigned the smallest weight while DSPs who were employed for more than

36 months were assigned the greatest weight out of the ten variables. Weight factors assignments

were based on the assumption that the more desirable outcome is for a provider agency to have

DSPs employed for a longer period of time. Many different weight factor values were tested for

meaningful results and numerical stability. Some options (e.g., 1, 2, 3, 4, 5…) yielded errors in

tenure index scores, such as similar scores for provider agencies that should have different

scores. The weight factor values that were chosen did not yield any discrepancies, and were the

best choices given alternatives that were tested.

We assigned the following weights to the five variables indicating the length of stay of

separated DSPs: 1) "1" for less than 6 months, 2) "6" for 6-12 months, 3) "13" for 12-24 months,

4) "24" for 24-36 months, and 5) "36" for more than 36 months. The five variables indicating

length of stay of currently employed DSPs received the following weights: 1) "48" for the

number of DSPs employed for less than 6 months, 2) "60" for the number of DSPs employed for

6-12 months, 3) "72" for the number of DSPs employed for 12-24 months, 4) "84" for the

number of DSPs employed for 24-36 months, and 5) "96" for the number of DSPs employed for

more than 36 months. Each of these 10 numbers was converted to a percentage of total DSPs

who had been employed in 2018 at that agency for that length of time. Then, each percentage

was multiplied by the assigned weight and summed to arrive at a tenure index score for each

provider agency. Overall, tenure index scores took into account to the average length of DSP

employment at the provider agency for currently employed and separated DSPs.

Tenure index scores ranged from 2,565 to 9,600. For the agency with the highest tenure

index score (9,600), 100% of DSPs had been employed at the provider agency for more than 36

months as of December 31, 2018. For the provider agency with the lowest tenure index score

(2,565), 25% of employed DSPs had been at the provider agency for less than 6 months and 39%

of separated DSPs had been employed for less than 6 months as of December 31, 2018. Detailed

examples of tenure index score calculations are presented in Table 3. Tenure index scores were

log transformed to achieve normal distribution and are illustrated in Figure 2. Throughout this

paper, we often refer to the *Tenure Index* variable as simply *Tenure.*

Test of Assumptions

Data met all assumptions of a Multiple Linear Regression (MLR) analysis (Fields, 2013):

non-zero variance, multicollinearity, predictors are uncorrelated with external variables,

homoscedasticity, independent errors, normally distributed errors, independence, and

linearity. One out of 10 predictors was quantitative (i.e., *Wage*), eight out of 10 predictors were

categorical with only two categories (i.e., *At Least One Bonus Paid to DSPs*, *More than 10 DSPs*

per FLS, *Recruitment Incentive*, *Post-secondary Education Assistance Benefit*, *Paid Job-Related*

Training Benefit, *Disability Insurance*, *Flexible Spending Account Benefit*, and *Health Incentive*

Program Benefit), and one variable (i.e., *DDRO Region*) was a control variable. The dependent

variable, *Tenure*, was continuous.

Analytic Strategy

Descriptive and correlation analyses were conducted to inspect the characteristics of the

sample and the correlations among the variables in the survey. We investigated the data for

percent missingness and patterns of missingness. Data were imputed and further inspected for

univariate and multivariate outliers. Descriptive statistics and correlational analysis were

conducted a second time on the imputed dataset. The MLR analysis was conducted on the

imputed data to answer the research question. *Tenure* was entered as a dependent variable. Nine

agency-level variables were included as predictors in the regression model, and *DDRO Region*

was included as the control variable. All statistical analyses were conducted in SPSS Version 26.

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Result

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Preliminary analyses

The descriptive statistics for all study variables after the imputation can be found in

Table 4. Before running the main investigation (i.e., MLR), best practice is to run Pearson

bivariate correlations to see if there are any relationships between variables that may be worth

exploring. If relationships are found, only then it is advised to conduct further statistical

investigation, such as MLR (Field, 2013). Pearson bivariate correlations between all observed

variables are displayed in Table 5. As existing research suggested, the dependent variable *Tenure*

had a relationship with the predictors. Specifically, *Tenure* was positively correlated with *Wage*

($r = .27$, $p < .05$) and negatively correlated with *Recruitment Incentive* ($r = -.13$, $p < .05$).

Multiple Linear Regression

Results of the MLR analysis revealed that the total variance in the predictors explained 12.6% of the variance in tenure index scores (pooled $R^2 = .16$, $R_{adj}^2 = .126$, F (11, 260) = 4.54, $p < .05$). The adjusted R^2 represents the percentage of the variance in Tenure Index explained by the total model. Table 6 illustrates the results of the MLR in detail for each predictor.

The individual effect sizes of the predictors were calculated as squared semi-partial correlations, which represent the percentage of the variance in Tenure Index explained by every predictor while controlling for the effect of other variables. *Wage* explained 6% of the total variance in *Tenure*. *Wage*, *Flexible Spending Account Benefit*, *Disability Insurance, Post-Secondary Education Benefit,* and *At Least One Bonus Paid to DSPs* had a positive association with *Tenure*. *Recruitment Incentive, Health Incentive Program Benefit, More than 10 DSPs per FLS*, and *Paid Job-Related Training* had a negative association with *Tenure*.

To report statistical significance, we used the alpha-level of .05. Four agency-level variables were significantly associated with the tenure of DSPs at the provider agencies. *Wage* ($\beta = .27$, $p < .001$), *At Least One Bonus Paid to DSPs* ($\beta = .14$, $p = .02$), *Recruitment Incentive* ($\beta = -.15$, $p = .03$), and *Flexible Spending Account Benefit* ($\beta = .16$, $p < .015$), had a significant association with *Tenure*. *Paid Job-Related Training Benefit, More than 10 DSPs Per FLS, Post-Secondary Education Assistance, Disability Insurance*, and *Health Incentive Program Benefit* did not have significant association with Tenure. All *p*-values can be found in Table 6.

Discussion

The goal of this empirical study was to investigate factors that influence the tenure of Direct Support Professionals (DSPs) who are employed at intellectual and developmental disability provider agencies in New York State. In accordance with published works by prominent researchers in the I/DD field (e.g., National Direct Service Workforce Resource

Center, 2008; Houseworth et al., 2020; ANCOR, 2017), our findings reveal that wage has the strongest impact on tenure of DSPs. Our analysis further illuminates that it is not just the average wage paid at the agency that impacts DSP tenure but how that wage compares to the minimum wage and starting wage at the agency. The wage index variable used in this study accounted for the percent deviation of the average wage from the starting wage at the agency, and the percent deviation of the average wage from the minimum wage of the region. In other words, agencies who offer a more competitive wage have higher tenure than agencies who offer a less competitive wage. The wage index variable also included percent increase in wage over time. Results suggest that agencies should provide DSPs with a starting wage that is above the minimum wage with increases in the wage over time.

Our results also show that wage is not the sole factor that impacts DSP tenure. In fact, a competitive wage plus offering flexible spending accounts, post-secondary education assistance, disability insurance, and at least one bonus contribute to better DSP tenure. Consistent with existing literature (e.g., National Direct Service Workforce Resource Center, 2008), this finding emphasizes the importance of offering DSPs a benefits package that addresses various needs, including social, educational, health, and wrap-around supports. Agencies may also consider offering holistic supports to DSPs on and off the job, such as those provided by employee assistance groups and resource networks, that help employees manage their personal and professional responsibilities, benefits, health, financial budgeting, childcare, career aspirations, and more.

Additionally, agencies who had a DSP to FLS ratio of 10 to one had better tenure than agencies who had more than 10 DSPs per one FLS. This finding supports the work of Hewitt and Larson (2007) and Bakker and Demerouti (2016), who emphasize the impact of supervisory

support, workload, and agency capacity on DSP tenure. DSPs who have less supervisory support

may be more likely to leave the agency for a variety of reasons. FLS who are managing more

than 10 DSPs may also be experiencing an unmanageable workload, which can lead to burnout,

stress, and impact tenure. It is important to consider FLS recruitment, tenure, and turnover to

maintain the organization's capacity to support and mentor DSPs.

Lastly, results show that offering recruitment incentives, paid job-related training, and/or

health incentive programs have a negative impact on DSP tenure. One potential explanation of

this is that agencies who offered one or a combination of these incentives were doing so while

providing a less competitive wage. These agencies were experiencing lower tenure than agencies

that offered a competitive wage and a good benefits package but might not have offered

recruitment incentives, paid job-related training, and/or health incentive programs. Results

suggest that agencies should first offer a competitive wage, benefits that address long-term health

care and planning needs (e.g., flexible spending accounts, post-secondary education benefit), and

on-the-job support from supervisors. Then agencies can commit to providing extrinsic rewards

through employee incentive programs, such as recruitment and health incentive programs.

Strengths of the Study

This study is the first to produce empirical findings on DSP tenure that can be

generalized to NYS provider agencies that employ DSPs to serve adults with I/DD. The

population of interest for this study is 330 NYS provider agencies that hire DSPs to provide

services to adults with I/DD. The researchers obtained a sample of 272 nonprofit provider

agencies, which is 82.4% of the population of interest.

Secondly, the study employed a rigorous statistical analysis that considered all possible

objective agency-level factors from the 2018 NCI-IDD Staff Stability Survey. The regression

model also accounted for the impact of contextual factors, such as region and minimum wage, on DSP tenure. The methodology for data preparation used on the 2018 dataset was rigorous in that missing values, multiple imputations, and assumptions were examined and used to retain all qualified cases (i.e., agencies) and increase statistical power. Originally, researchers conducted pilot regression studies using the 2016 and 2017 datasets. After promising results on these pilot studies, researchers conducted an empirical study with the 2018 dataset.

Due to the methodological rigor of the study, the findings provide strong empirical evidence in support of national reports and research in the I/DD field that name wages, supervision, and benefits as important influencers of DSP tenure. The factors in the MLR analysis accounted for 12.6% of the variance in DSP tenure, with wage alone explaining half of that variance.

Limitations and Future Directions

A few limitations of the current study are worth noting. First, due to the design of the NCI-IDD State of the Workforce Survey, the level of analysis in the study is the provider agency rather than DSPs; there is no information in the study about the first-hand experiences and perspectives of DSPs (e.g., an assessment of job satisfaction, employee motivation, or exit interviews), which can provide valuable insight on what impacts DSP tenure. DSP-level information might account for the remaining variance in change in DSP tenure. Future researchers can build a more comprehensive statistical model to investigate factors that influence tenure by triangulating different perspectives, including those of provider agencies, DSPs, and people receiving direct support services. Furthermore, researchers can utilize the NCI-IDD In-Person Survey, a national survey that collects objective systems-level data and interview data at

the level of the person receiving direct support, to study the effect of acuity, quality of supports, and other personal and contextual factors on DSP tenure.

Next, due to the nature of the survey, wage compression and local cost of living information were not available and therefore, not included in the regression model. Future statistical research could run structural equation modeling on the latest NCI-IDD State of the Workforce Survey to account for socioeconomic factors that may impact tenure and investigate a threshold for wage. A wage threshold would uncover exactly how competitive a wage must be for it to impact DSP tenure significantly.

Conclusion

In conclusion, our study presents strong empirical evidence elucidating what factors influence the tenure of DSPs at NYS provider agencies while setting the standard for rigorous empirical research in the study of DSP outcomes. Our findings suggest that a compelling and thoughtful benefits and compensation package that meets a variety of DSP needs, including the need for a competitive wage, supervisory support, and wrap-around supports, is key to retaining DSPs for longer periods of time. Understanding the factors that influence DSP tenure can directly inform provider agencies and policymakers on how to better support DSPs in and outside the work environment.

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Figure 1

Distribution of Wage Index Scores
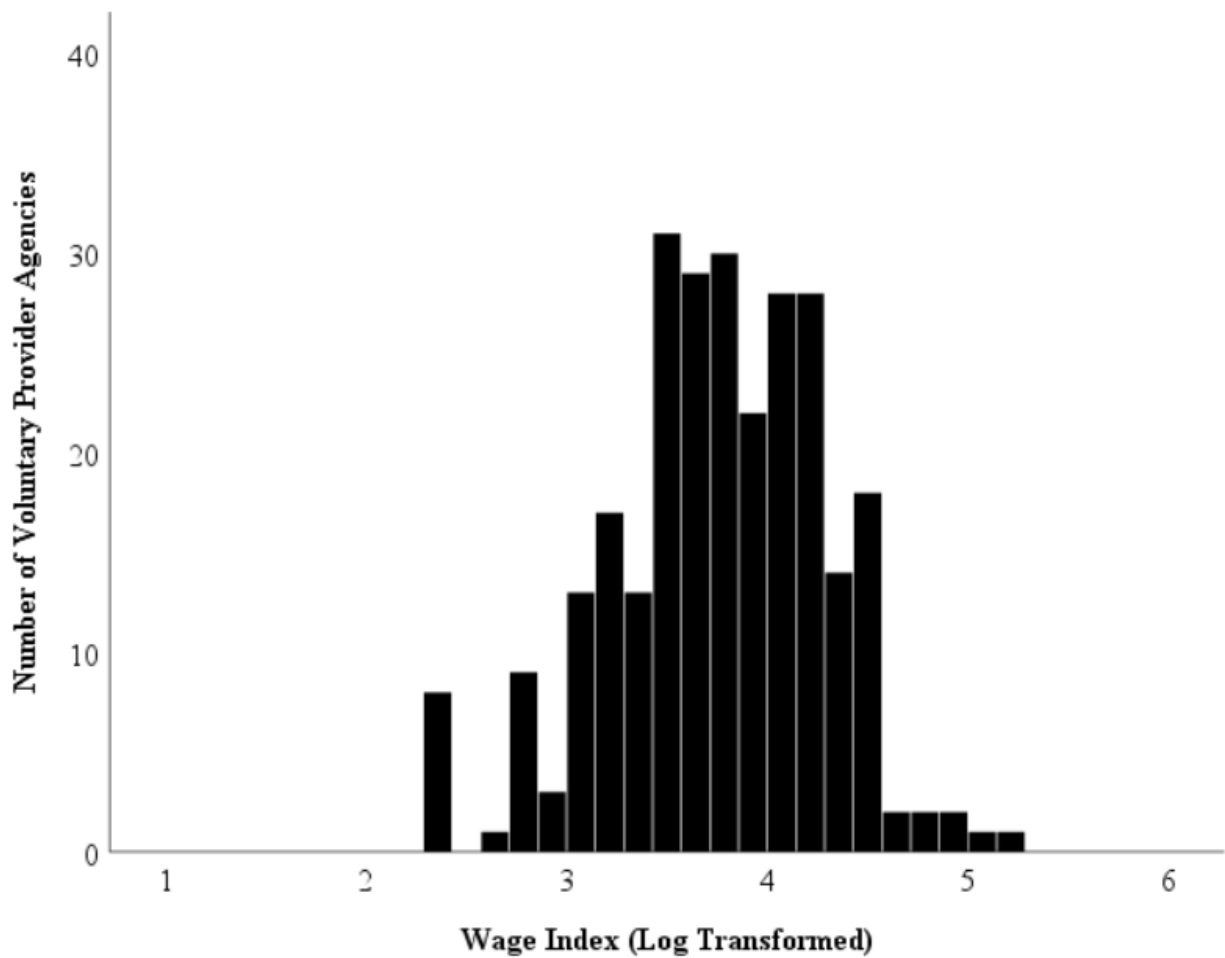
Note. Original wage index scores showed right (positive) skew distribution. Therefore, wage

index scores were log transformed to achieve normal distribution.

Figure 2
Distribution of Tenure Index Scores
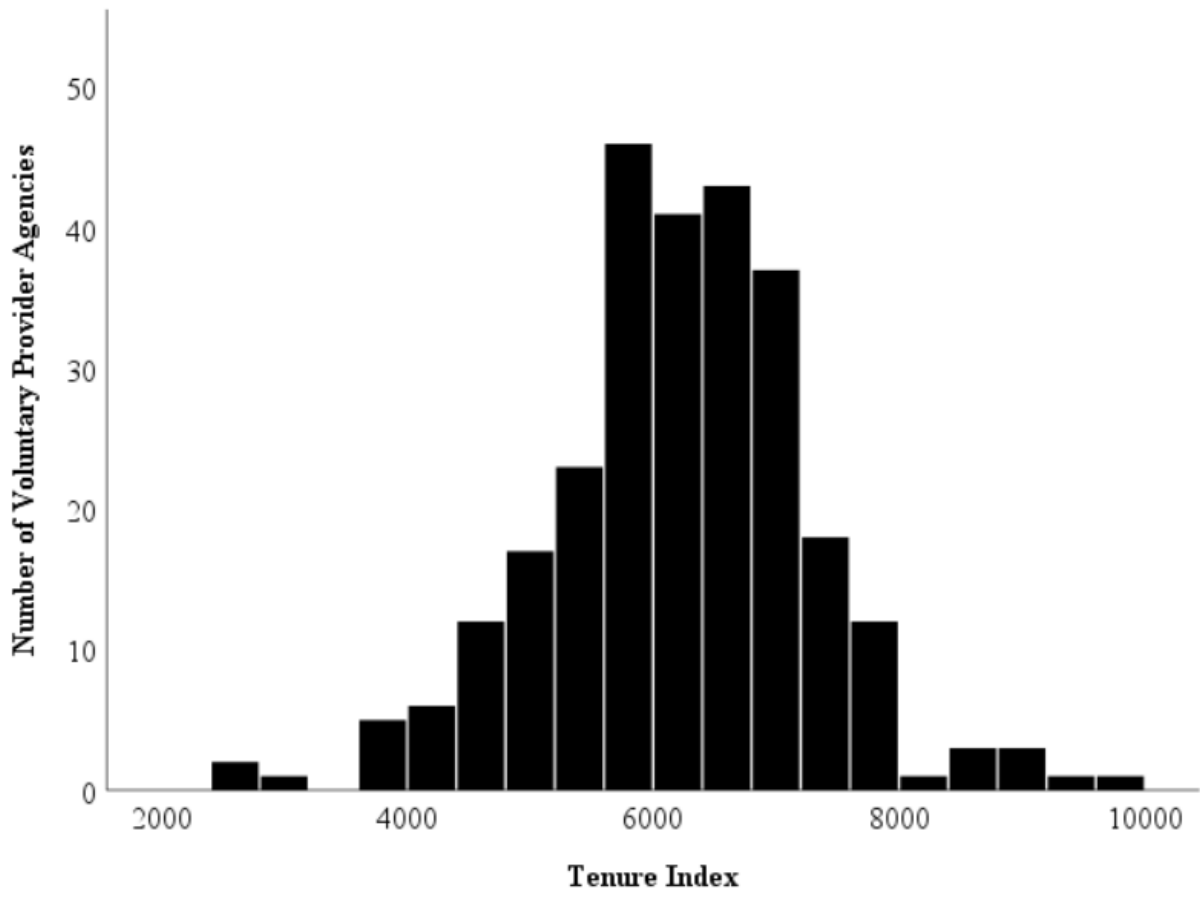
Table 1

Minimum Wage Regions of New York State

Location	Minimum Wage from 12/31/17 to 12/30/18
NYC – Big Employers (of 11 or more)	$13.00
NYC – Small Employers (10 or less)	$12.00
Long Island & Westchester	$11.00
Remainder of New York State Workers	$10.40

Note. Retrieved from https://www.ny.gov/new-york-states-minimum-wage/new-york-states-minimum-wage

Table 2

Sample Calculations and Methodology for Calculating Wage Index

EXAMPLE 1			

Average Current Wage = $24.20
Starting Wage = $17.61
Minimum Wage of the Region = $11.00

Method 1	Formula	With Data Input	Result
Step One Calculation	average current wage/ minimum wage of the region * 100 - 100	24.20/11.00 * 100 - 100	120
Step Two Calculation	average current wage/ minimum wage of the region * 100	24.20/11.00 * 100	220
Step Three Calculation	average starting wage/"minimum wage of the region * 100	17.61/11.00 * 100	160
Wage Index	Step One Calculation + Step Two Calculation – Step Three Calculation	120 + 220 -160	180
Method 2	**Formula**	**With Data Input**	**Result**
Use complete formula for Wage Index (follow order of operations)	average current wage/ minimum wage of the region * 100 – 100 + average current wage/ minimum wage of the region * 100 - average starting wage/ minimum wage of the region * 100	24.20/11.00*100-100+24.20/11.00*100-17.61/11.00*100	180

EXAMPLE 2			

Average Current Wage = $15.11
Starting Wage = $13.00
Minimum Wage of the Region = $13.00

Method 1	Formula	With Data Input	Result
Step One Calculation	average current wage/ minimum wage of the region * 100 - 100	15.11/13.00 * 100 - 100	16
Step Two Calculation	average current wage/ minimum wage of the region * 100	15.11/13.00 * 100	116
Step Three Calculation	average starting wage/"minimum wage of the region * 100	13.00/13.00 * 100	100
Wage Index	Step One Calculation + Step Two Calculation – Step Three Calculation	16+116-100	32
Method 2	**Formula**	**With Data Input**	**Result**
Use complete formula for Wage Index (follow order of operations)	average current wage/ minimum wage of the region * 100 – 100 + average current wage/ minimum wage of the region * 100 - average starting wage/ minimum wage of the region * 100	15.11/13.00*100-100+15.11/13.00*100-13.00/13.00*100	32

Note. Researchers did not include parentheses in the wage index formula because parentheses do not matter mathematically when order of operations is followed.

Table 3

Examples of Calculation of the Tenure Index Scores for Five Agencies

Variable groups	Agency A	Agency B	Agency C	Agency D	Agency E
*Length of Stay of **separated** of DSPs*					
% of DSPs separated for < 6 months	0%	0%	0%	0%	39%
% of DSPs separated for 6-12 months	0%	0%	0%	0%	10%
% of DSPs separated for 12 - 24 months	0%	0%	0%	**6.25%**	7%
% of DSPs separated for 24-36 months	0%	0%	**6.25%**	0%	3.9%
% of DSPs separated for > 36 months	0%	**6.25%**	0%	0%	0%
*Length of Stay of **employed** of DSPs*					
% of DSPs employed for < 6 months	0%	0%	0%	0%	25%
% of DSPs employed for 6-12 months	0%	0%	0%	0%	5%
% of DSPs employed for 12 - 24 months	0%	0%	0%	0%	2.4%
% of DSPs employed for 24-36 months	0%	0%	0%	0%	4%
% of DSPs employed for > 36 months	**100%**	93.75%	93.75%	93.75%	1.9%
Index of Tenure Score	9600	9225	9150	9081	2565

Note: Minimum value for Tenure of Index Score is 2565, maximum value is 9600

Table 4

Descriptives for Predictors and Dependent Variable (N = 272)

Variable	Range	*M*	*SD*
Tenure Index (DV)	2,565 – 9,600	6223	1082.53
Wage Index	0 – 180	38.39	25.3
At Least One Bonus Paid to DSPs	0 – 1		
More than 10 DSPs per Front Line Supervisor	0 – 1		
Recruitment Incentive	0 – 1		
Post-secondary Education Assistance Benefit	0 – 1		
Paid Job-Related Training Benefit	0 – 1		
Disability Insurance	0 – 1		
Flexible Spending Account Benefit	0 – 1		
Health Incentive Program Benefit	0 – 1		

Note. Table does not include descriptives for control variable – DDRO Region.

Table 5

Bivariate Correlations in the Correlation Model (N = 272)

Variable	1	2	3	4	5	6	7	8	9
Dependent Variable									
1. Tenure Index									
Predictors									
2. At Least One Bonus Paid to DSPs	.05								
3. Wage Index	.27***	-.004							
4. More than 10 DSPs Per Front Line Supervisor	-.06	.01	.04						
5. Recruitment Incentive	-.13*	.28***	.01	.09					
6. Post-Secondary Education Assistance Benefit	.02	.11	.08	-.02	.43***				
7. Paid Job-Related Training	-.01	.09	.08	.003	.11	.29***			
8. Disability Insurance	.04	.12	-.03	.05	.27***	.35***	.23***		
9. Flexible Spending Account Benefit	.08	.004	.16**	-.005	.30***	.40***	.19**	.30***	
10. Health Incentive Program Benefit	-.10	.06	-.04	-.11	.26***	.32***	.25***	.13*	.31***

Note. Table does not include correlations with control variable – DDRO Region.

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

Table 6

Results of Multiple Linear Regression

Variables	*B*	*β*	*p*	*Pearson's r (with DV)*	**Squared Semi-partial correlation**
Tenure Index (DV)				1	
Wage Index	550.5	.27	0***	.27*	.24
Bonus	298.7	.14	.02**	.08	.13
More Than 10 DSPs Per Front Line					
Supervisor	-127.83	-.06	.32	-.01	-.06
Recruitment Incentive Benefit	-321.85	-.15	.03**	-.04*	-.12
Post-secondary Education Assistance					
Benefit	190.12	.88	.21	.07	.07
Paid Job-Related Training Benefit	-236.74	-.11	.085	-.02	-.1
Disability Insurance	160.37	.07	.26	.07	.07
Flexible Spending Account Benefit	359.58	.16	.015**	.12	.14
Health Incentive Program Benefit	-271.54	-.10	.15	-.07	-.08

Note. Table does not include results for control variable – DDRO Region.
*$p < .05$. **$p < .01$. ***$p < .001$.