Vocational rehabilitation counselors with a moderate caseload achieved the highest employment closure rates for clients with disabilities

Abstract

A large caseload may lead to an increased risk of work-related stress and ineffective counseling among vocational rehabilitation (VR) counselors. Using a recent survey of VR counselors and the linked data with their clients with disabilities, we examined the impact of counselor's caseload on client's employment closure outcomes. The overall closure rate was 33% and the high-quality closure rate was 23.5%. There was a non-linear pattern between the counselor's caseload and the client's closure outcomes. Those with a moderate caseload (36-50 cases closed per year) had the highest client closure rate than either lower or higher caseload groups. After adjusting for both client's and counselor's characteristics, counselors with a caseload of 51-75 cases closed per year had 3.6% lower overall closure rates (p=0.03) and 3.4% lower high-quality closure rates (p=0.02) than those in the caseload group of 36-50 cases per year. State VR agencies should actively monitor counselor's caseload and provide proper training on caseload management to counselors to ensure the best performance among counselors.

Keywords: caseload; vocational rehabilitation; counselor; employment outcomes; closure rate

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Introduction

Vocational rehabilitation (VR) counseling is a complex and lengthy process, involving medical, psychological and vocational assessments, as well as vocational training and job placement assistance for clients with disabilities (CRCC, 2022; Leahy et al., 2019). Its goal is to help clients gain employment in a competitive environment (RSA, 2023). According to Rehabilitation Services Administration (RSA), there were 844,426 eligible individuals receiving VR counseling in the fiscal year of 2020, with an overall employment rate of 43.8% (RSA, 2023), much lower compared with about 75% employment rate among those without disabilities (ACS, 2023). Past research has demonstrated that VR counseling can significantly increase the employment rate at the exit of counseling program (Mann et al., 2017; O'Neill et al., 2015). However, variations in employment outcomes exist across different states and among VR counselors (Brucker & Houtenville, 2015; Hyde & O'Leary, 2018). Thus, it is critical to understand the determinants of employment outcomes and create strategies to improve the quality of rehabilitation counseling services.

Previous studies have explored how client and contextual factors impacted on the employment closure rates (Sevak et al., 2019; Sherman et al., 2017). For example, individuals from lower socioeconomic status and with lower educational attainment often had the lowest employment closure rates, and clients struggling with stigmatizing disabilities were subjected to adverse closure outcomes (Bates-Maves & O'Sullivan, 2017; Hollar et al., 2008; Sherman et al., 2017; Wheaton & Wilson, 1996; Yamamoto & Alverson, 2013). In addition, discouragement and lack of support from family and friends resulted in the lowest employment closure rates in a

recent survey on clients with disabilities (Sevak et al., 2019). On the other hand, counselors' experience and training also affected the employment rates. Counselors with a master's degree in rehabilitation counseling had more successful closures than those without (Wheaton & Berven, 1994). We also demonstrated that the type and level of educational credentials of VR counselors were commensurate with clients' closure rates. VR counselors with a master's degree in rehabilitation counseling were associated with higher employment closure rates compared with those with degrees in other related fields, particularly among counselors with a working experience of fewer than 6 years (Mackay et al., 2020; Mackay et al., 2018; Yu et al., 2023). More importantly, we found that counselors with a master's degree in rehabilitation counseling had higher closure rates of high-quality employment, including full-time (>=30 hours/week) or living wage (>=$11.25/hour, derived from the US President's Executive Order 13658) jobs than counselors with master's degrees in other fields.

In addition to the counselor's educational background and other personal characteristics, it is well recognized that an excessive caseload could increase work stress and the risk of burnout among counselors and reduce the quality of services they provide (Kierpiec et al., 2010; Maslach & Florian, 1988; O'Sullivan & Bates, 2014; Tabaj et al., 2015). There was a direct inverse correlation between caseload size and perceived difficulties in establishing a counselor-client working alliance, a stronger predictor for successful employment closures (Bates-Maves & O'Sullivan, 2017; Kierpiec et al., 2010; Layne et al., 2004; Main, 2002; Tabaj et al., 2015; Templeton & Satcher, 2007). Work-related burnout among counselors has been reported before (Layne et al., 2004; Tabaj et al., 2015) and during the COVID-19 pandemic (Strauser et al., 2021). Such burnout may also contribute to the increased rates of turnover among VR counselors (Chan, 2003; Kierpiec et al., 2010; O'Sullivan & Bates, 2014) .

The counselor's competence in handling caseload is essential to mitigate the negative relationship between counselor's caseload and client's employment outcomes. Caseload management goes beyond case management and requires skills in both counseling services and resource management (Grubbs et al., 2006). Unfortunately, VR agencies often institute quota regulations irrespective of counselors' caseload capacities and community needs. The average caseload size varied significantly, ranging 70-180 clients per year (Dew et al., 2008; O'Sullivan & Bates, 2014). For example, the average caseload size in the RSA 2022 report was about 75 in Kansas, but over 150 in New Jersey (RSA, 2023). But there is scarce evidence for the optimal level of caseload for counselors that lead to the best employment outcomes.

Therefore, this study will examine the relationship between the caseload of VR counselors and the employment closure rate of clients with disabilities from the outcome perspective. Additionally, we will explore how intrinsic and extrinsic factors moderate the association between counselor's caseload and employment closure rates.

Research Aims

To elucidate the relationship between counselor's caseloads and client's employment closure outcomes, this study will address three research questions (RQ):

RQ1: Is the counselor's caseload negatively associated with the client's overall closure rate and high-quality closure rate (HQCR, measured by obtaining a full-time job or living wage job)? We hypothesize that a heavy caseload will lead to a lower successful closure rate and the above association becomes more evident for HQCR.

RQ2: Can client's demographic and clinical characteristics moderate the above association? We hypothesize that client's lower education, older age, and more significant

disabilities may be related to a lower closure rate, regardless counselor's caseload, working experience, and educational training.

RQ3: Can counselor's working experience and educational training modify the above association? We hypothesize that both fewer years of working experience and a master's degree other than rehabilitation counseling were related to a lower closure rate.

Methods

The Institution Review Board (IRB) of the primary authors' institution approved the current study before its initiation, and official support was obtained from rehabilitation agencies of the participating states: Connecticut (CT), Florida (FL), Idaho (ID), and Utah (UT).

Measurements and procedures

The survey instruments were developed and tested by Dr. Mackay and the primary authors at the primary authors' institution using the Qualtrics® online survey system (Mackay et al., 2018). Email invitations with links to the online survey were sent to all their employed counselors by the state rehabilitation agencies in 2017. The counselor's participation was voluntary, and no incentive was provided. The survey questionnaire consisted of 23 items to collect counselors' demographics, highest education, and discipline, year of graduation, years of experience as a rehabilitation counselor, perceived preparedness for work as a rehabilitation counselor, and knowledge and concerns about rehabilitation counseling.

The state rehabilitation agencies linked counselor's survey records with their case service records that were used for generating RSA-911 reports for the year 2014 to 2017. These

individual case records included client's demographics, closure status (employed or not), job title, working hours per week, and hourly wage. The client's disability type and severity were also included. The final analytic data were anonymized before sending to the analysts.

Counselors

All VR counselors from the four states were invited to participate in the study if they were employed by the state rehabilitation agencies in 2017. In this study, we included only those counselors who had completed all survey questions and with a master's degree, resulting in 184 counselors in the final analysis (Table 1).

Clients

We included all clients with any types of disabilities who obtained services from the above VR counselors. However, to ensure the meaningfulness of findings and comparability with other studies, we excluded those who were employed before the counseling, died before the exit, were aged 60 or above, were not impaired or not eligible at the time of the exit, and had disabilities that were too significant to receive employment or continue the counseling at the exit. These excluded clients were known to be less likely to obtain employment. A total of 11,850 clients were excluded, resulting in 26,823 clients (Table 1).

Data analysis

In this study, the main outcomes were the client's overall closure status (employed or not) and employment at exit was considered as a successful closure (or simply closure rate in this text), high-quality closure status [HQCR] including: working for 30 or more hours per week, i.e., full-time job [FTCR], or earning a minimum of US $11.25 per hour, i.e., living wage job[LWCR]. The cut point for living wage was derived from the US President's Executive

Order 13658 which raised a minimum wage to $11.25 per hour for federal contractors, effective on Jan 1, 2022. This is higher than the federal minimum wage ($9/hour) but lower than the commonly advocated fair living wage ($15/hour).

The main predictor was the counselor's caseload per year which was obtained by counting all clients (including those excluded from the final analysis) reported in the RSA 911 data (including both successfully closed or not) for each counselor. This definition is based on the closed cases reported in RSA and linked to the counselor's survey, and different from the typical workload calculation in which all active cases were included. The caseloads of closed cases per year were categorized into four groups based on quartiles of caseloads: 1 – 35, 36 – 50, 51-75, and 75-180 cases per year (rounded). The distribution of the caseload was presented in Figure 1. It is a common analytical method to use quartiles as the empirically derived categories. This allows us to explore non-linear association between caseload and outcomes while ensuring sufficient sample size and avoiding the influences of extreme caseload values.

The important stratifying variables were the counselor's years of experience (less than 6 years vs. 6 years or more based on the median of working experience), having a master's degree in rehabilitation counseling or other master's degrees, and the client's significance of disability (less significant vs. more significant based on RSA disability significance variable). Other covariables included state, counselor's sex and age, and client's age and education at application (Table 1).

The characteristics of counselors and their clients with disabilities were described using means or medians for continuous variables, and frequencies for categorical variables. The comparisons of closure outcomes by the levels of caseloads were based on adjusted risk differences. Specifically, because clients were clustered within counselors, multilevel logistic

regressions with robust variance were used to obtain adjusted risk differences and proper standard error of the estimates. The adjusted risk differences were marginal probabilities calculated from the predicted probabilities from the models, assuming all counselors be one of the caseload levels, as suggested by the potential outcome-based causal framework (Imbens & Rubin, 2015). When exploring the different impacts of client's and counselor's characteristics, additional stratified analyses were conducted with separate multivariate models by these variables for both overall closure rate and HQCR outcomes.

Stata 16.1 (StataCorp., 2019) was used for conducting all statistical analyses and a p-value of less than 0.05 was considered statistical significance. However, no multiple comparisons were adjusted.

Results

Counselor's and client's characteristics

A total of 184 counselors from four states were included in the analysis, about 45% of them were recruited from UT (Table 1). Counselors from ID were more likely to have higher caseloads while those from UT were more likely to have lower caseloads. The average age was 37 for all counselors but those with higher caseloads tended to be older (43 in the highest caseload group and had more years of experience (mean:10 years). However, there was no difference in the percentage of people having a master's degree and a master's degree in rehabilitation counseling across caseload levels. The median caseload of closed cases in the whole population was 52 (interquartile range, IQR: 36-72) per year. The distribution of caseloads

was also shown in Figure 1 in which some counselors had very higher caseloads, leading to a right-skewed distribution.

A total of 26,823 clients with disabilities were linked with 184 counselors, with 41% of them in UT (Table 2). The client's age, race/ethnicity, and education distributions were similar across caseload groups. However, clients in the highest caseload group were more likely to have more significant disabilities than those with lower caseload groups (52.6% in the highest group vs below 43% in other groups). The overall closure rate was 33% for all clients, and highest in the 36-50 caseload group (42.9%), and lowest in the highest caseload group (24.3%). Similarly, the HQCR was highest (30.3%) in the 36-50 caseload group and lowest for those in the highest caseload group (18%). All these comparisons were statistically significant ($p<0.05$). Similar patterns for either full-time employment or living wage employment.

RQ1: Is counselor's caseload negatively associated with the client's overall closure rate and high-quality closure rate (HQCR, measured by obtaining a full-time job or living wage job)?

The association between the counselor's caseload and the client's closure rate was not linear, as the highest closure rate was observed in the second caseload group (36-50 closed cases per year) (Table 3). Using the second caseload group as the reference, we noticed that clients in the lowest caseload group (1-35 cases per year) had a non-significantly lower closure rate than those in the second group, while those in the third (51-75 cases per year) and the highest (76-180 cases per year) groups had much lower closure rates than the second group (unadjusted rate difference, -6.3%, $p=0.05$, and -18.2%, $p<0.0001$ for third and fourth groups, respectively). Similar findings exist for HQCR (unadjusted rate difference: -6.5% $p=0.009$, and -13.4%, $p<0.0001$ for third and fourth groups, respectively). The closure rates and rate differences for

full-time jobs and living wage jobs were lower across all caseload groups but the general pattern persisted.

RQ2: Can the client's demographic and clinical characteristics moderate the above association?

As shown in Table 3, adjusting for the client's demographic and clinical characteristics reduced the closure rate differences between the highest caseload group and the reference group (second caseload group). However, the rate difference between third caseload group and reference group persisted and was more evident for HQCR (adjusted rate difference: -3.2%, p=0.03), and for FTCR (adjusted rate difference: -2.8%, p=0.04). There were no statistically significant rate differences across caseload groups among clients with less severe disabilities.

RQ3: Can a counselor's working experience and educational training modify the above association?

Table 3 also presented adjusted rate differences further adjusted for the counselor's characteristics (Model 3). Clients of counselors with 51-75 cases per year had significantly low overall closure rates (adjusted rate difference: -3.6%, p=0.02), low HQCR (adjusted rate difference: -3.4%, p=0.02) and low FTCR (adjusted rate difference: -3.0%, p=0.03), compared with those of counselors with 36-50 cases per year.

To further examine the impact of a counselor's working experience and educational training, we conducted a separate analysis of these factors (Table 4). There were no differences in both overall and high-quality closure rates between caseload groups among counselors with six or fewer years of experience or those with other related master's degrees. However, for counselors with more than six years of experience, clients of counselors with higher caseload

groups had statistically significant lower closure rates than those in the group of 36-50 cases per year (adjusted rate difference: -11.3% p=0.0009, and -13.3%, p= 0.001 for overall and HQCR, respectively). Interestingly, among those with a master's degree in rehabilitation counseling, the caseload group of 51-75 had statistically significant lower closure rates than those in the group of 36-50 (adjusted rate difference: -4.9%, p=0.03, and -5.3%,p =0.008 for overall and HQCR, respectively). This pattern persisted even among clients with less severe disabilities.

Discussion

In this study, using counselor's survey data linked with their client's records, we found a non-linear association between counselor's caseloads and client's closure outcomes. Those with a moderate caseload (36-50 closed cases per year) had the highest client's successful closure rate than either lower caseload groups or higher caseload groups. After adjusting for both client's and counselor's characteristics, counselors with a caseload of 51-75 cases per year had 3.6% lower overall closure rates (p=0.03) and 3.4% lower high-quality closure rates (p=0.02) than those having a caseload group of 36-50 cases per year. Considering the overall closure rate was 33% and the high-quality closure rate was 23.5%, such differences were substantial and clinically meaningful.

There is no simple explanation for the impact of counselor's caseload on the client's employment outcomes. Lower caseloads may be due to lower demand for VR services in the community, or the counselor's inability to handle a larger caseload. As shown in our study, counselors in the lowest caseload group tend to have fewer years of experience than those with higher caseloads. In addition, lower client closure rates may indicate lower quality of services provided to clients, leading to clients leaving the incapable counselors. In our study, although the closure rate was lower among the lowest caseload group, the rate differences compared with the

second caseload group were not statistically significant, which suggests such rate differences may not be due to differences in the quality of services.

On the other hand, although more experienced counselors may be able to handle larger caseloads, a high caseload can increase the risk of burnout among counselors or reduce attentions on each client, resulting in lower quality of services and ineffective counseling. It is well recognized in human services, including health workers and rehabilitation counselors, working with vulnerable populations can lead the work-related stress, and a large caseload will increase the stress and lead to burnout and high turnover among counselors. In addition, as discussed in the introduction, effective counseling often relies on the counselor-client working alliance, a collaborative relationship that facilitates the client's possibility of finding employment in a competitive job environment (Kierpiec et al., 2010). A large caseload will reduce the counselor's capacity to establish such an alliance. It is important to provide training in caseload management so that counselors can effectively cope with large caseloads (Froehlich & Linkowski, 2002; Grubbs et al., 2006; Neubert et al., 2018).

Several theories have been proposed to explain the negative relationship between high caseloads and lower closure rates. Some studies suggested this negative relationship was due to overwhelming stress and compassion fatigue. When counselors suffered unbearable emotional exhaustion, depersonalization, preconceived prejudices, and alienation from the cases, counselors would experience work-related burnout and the rates of successful closure dropped precipitously (O'Sullivan & Bates, 2014). Thus, the solution lies in the improvement of the work environment and stress coping mechanism (Park, 2009; Tabaj et al., 2015). However, if the negative relationship was due to work culture and organizational bureaucracy, then the remediation should gear toward a culture of ethical decision-making (Lane et al., 2012). In

addition, it might be the counselors' perceived caseload difficulties that inadvertently affected the successful rehabilitation rate outcomes of clients. Thus, rectifying the wrong perception among counselors could reduce burnout (Lu et al., 2023; Payne, 1989). Furthermore, other external factors such as the severity of the client's disability, low adherence to appointments, and job availability in the community could also contribute to unsuccessful case closure (Cooper & Pearce, 1980; Rogers et al., 2011; Wang & Ethridge, 2022).

It is also of interest that the negative association between higher caseload and lower closure rate was more evident among counselors with more than six years of experience or with a master's degree in rehabilitation counseling. The underlying mechanisms may be complicated. For example, more experienced counselors may have higher caseloads, and counselors with rehabilitation counseling training may be more willing (or required) to take more complicated cases. Therefore, their clients may have lower closure rates partly due to more challenging cases. Other unmeasured or unknown factors may also play some important roles. Our research groups have identified some knowledge and skills gaps between counselors and are exploring the most effective methods to train VR counselors (Yu et al., 2023).

Furthermore, the goal of rehabilitation counseling is to help clients get employed. But more importantly, clients should be able to get a job in a competitive environment. In our previous studies, we have proposed the concept of high-quality closure rates which include both full-time jobs and living wage jobs (Mackay et al., 2020; Mackay et al., 2018). In this study, we have found that the rates of getting either a full-time job or a living wage job were relatively low, and only about 11% of clients obtained a living wage job, despite of about 33% of clients having any kind of job. That means only one-third of those jobs were paid competitively. We also found that the negative impact of higher caseloads on HQCR was more evident, independent of both

clients' and counselors' characteristics. These differences were also consistent across counselors' years of working experience and educational training. It is conceivable that coaching clients to obtain high-quality jobs requires more knowledge and skills, better work alliance between counselors and clients, and additional training for clients. Since higher caseloads may reduce the attentions to clients, they will impede the quality of services that help clients to obtain high-quality jobs.

Our study has some limitations. Despite a larger sample size for clients, there were only 184 counselors included in the analyses and had somewhat lower response rates among states such as CT and ID. This precludes us from conducting state comparisons. In addition, we did not have detailed clinical information regarding the client's disability severity, counseling processes, and other socioeconomic information. We also did not know the detailed practice patterns for counselors. Therefore, residual confounding exists. In addition, we did not have contextual information regarding community resources, local labor market, and social supports from family and friends. Our multilevel analysis treats counselor as the cluster variable. Thus, the comparisons of closure outcomes were made within the counselors, somewhat alleviating the bias due to lack of contextual information. Furthermore, our average caseload was smaller than those reported nationally, and the overall closure rate was also lower than the national average (RSA, 2023). This is likely due to the differences in the definition of caseload, as we only used the closed cases reported in the RSA data, while in practice, caseload include all active cases. This may also be due to more exclusions we applied to the study. Furthermore, counselors who responded to our survey may also lead to selection bias. For example, about 86% clients were white, a percentage significantly higher than national reports. Therefore, our study may not be generalizable to other regions. Finally, we were not able to fully understand the reasons for the

lower closure rates among those with higher caseloads. Some extreme observations in caseload values may also distort the results but we have no rationales to exclude those extreme values. Due to the limitation of data, we could not quantitatively establish a specific optimal caseload for counselors, though having an explicit cut-point for caseloads would facilitate policy making in allocating resources for VR counseling. Our research should be replicated in other states and with a larger and more diverse sample of counselors. We are currently expanding our research in this direction.

Conclusions and implications

In summary, VR counselors with a moderate caseload had the highest client closure outcomes, including high quality closure outcomes. Both lower and higher caseloads were related to lower client closure outcomes. State VR agencies should actively monitor counselor's caseloads to ensure the best performance among counselors. In addition, for regions with higher demands for VR services and lower supply of VR counselors, state VR agencies should allocate more resources to train and recruit additional counselors to the regions.

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Table 1: counselor's characteristics by caseload levels

	Caseload (%)				Total	
	1 - 35	**36 - 50**	**51 - 75**	**75 - 180**	**N**	**%**
Total (N, %)	46 (25%)	43 (23.4%)	54 (29.3%)	41 (22.3%)	184	100%
State						
CT	4.3%	18.6%	25.9%	0.0%	24	13.0%
FL	30.4%	14.0%	14.8%	31.7%	41	22.3%
ID	6.5%	9.3%	13.0%	56.1%	37	20.1%
UT	58.7%	58.1%	46.3%	12.2%	82	44.6%
Sex						
Female	76.1%	58.1%	68.5%	73.2%	127	69%
Male	23.9%	41.9%	31.5%	26.8%	57	31%
Age (mean, SD)	34.6 (13.4)	35.9 (11.5)	35.4 (13.7)	43.4 (12.8)	37.1 (13.3)	
Years of experience (mean, SD)	7.3 (6.0)	7.8 (5.8)	8.8 (6.6)	10.2 (9.3)	8.5(7)	
More than six years of working experience						
No	56.5%	51.2%	48.1%	53.7%	96	52.2%
Yes	43.5%	48.8%	51.9%	46.3%	88	47.8%
Caseload (median and IQR)	18 (12 - 25)	46 (42 - 49)	58 (54 - 66)	90 (80 - 110)	52 (36 – 72)	
Having a Master's degree						
No	19.6%	14.0%	7.4%	19.5%	27	14.7%
Yes	80.4%	86.0%	92.6%	80.5%	157	85.3%
Master's degree in Rehabilitation Counseling						
No	41.3%	46.5%	37.0%	41.5%	76	41.3%
Yes	58.7%	53.5%	63.0%	58.5%	108	58.7%

Table 2: client's characteristics by counselor's caseload

	Caseload (%)				Total	
	1 - 35	**36 - 50**	**51 – 75**	**75 - 180**	**N**	**%**
Total (N, %)	1,523(5.7%)	5,377 (20.0%)	9,115 (34.0%)	10,807 (40.3%)	26,823	100%
State						
CT	10.0%	17.2%	21.4%	0.0%	3,030	11.3%
FL	15.3%	3.5%	7.8%	21.3%	3,436	12.8%
ID	4.5%	13.7%	17.6%	63.9%	9,311	34.7%
UT	70.2%	65.7%	53.2%	14.8%	11,046	41.2%
Age (mean, SD)	32.7 (12.9)	31.9 (12.6)	33.5 (12.9)	33.5 (13.9)	33.1 (13.3)	
Race						
American Indian or Alaska Native	3.9%	1.6%	1.5%	1.7%	461	1.7%
Asian	2.0%	1.4%	1.4%	0.9%	326	1.2%
Black or African American	9.1%	8.4%	8.2%	5.7%	1,954	7.3%
Multiracial	1.1%	1.1%	1.6%	2.5%	487	1.8%
Unknown	1.9%	0.7%	1.4%	3.0%	521	1.9%
White	81.9%	86.9%	86.0%	86.2%	23,074	86%
Education at application						
Elementary education	1.5%	1.7%	2.8%	5.2%	931	3.5%
Secondary education, no HS degree	19.5%	22.1%	15.6%	19.3%	5,000	18.6%

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HS degree or equivalent	39.9%	37.1%	39.4%	36.3%	10,115	37.7%
Post-secondary, no degree	18.5%	15.2%	16.7%	12.3%	3,940	14.7%
Associate degree or vocation/tech	6.7%	5.5%	6.3%	8.2%	1,864	7%
Special education	6.9%	9.5%	9.2%	2.6%	1,728	6.4%
Bachelor or above	5.0%	6.8%	6.7%	6.1%	1,720	6.4%
Other or missing	2.0%	2.1%	3.3%	10.0%	1,525	5.7%
Current student at the application						
No	90.0%	89.7%	92.9%	93.5%	24,768	92.3%
Yes	10.0%	10.3%	7.1%	6.5%	2,055	7.7%
Disability status						
Less significant	61.9%	64.6%	57.8%	47.4%	14,812	55.2%
More significant	38.1%	35.4%	42.2%	52.6%	12,011	44.8%
Employed at closure						
No	61.3%	57.1%	63.6%	75.7%	17,982	67%
Yes	38.7%	42.9%	36.4%	24.3%	8,841	33%
Weekly hour working if employed (mean SD)	30.0 (10.8)	30.9 (10.5)	30.1 (11.0)	30.7 (11.4)	30.5	11%
Hourly wage if working (mean, SD)	12.0 (5.0)	11.6 (5.7)	11.6 (6.0)	10.8 (4.4)	11.4	5.5%
High-quality employment	29.4%	30.3%	25.0%	18.0%	6,311	23.5%
Full-time job	24.6%	27.3%	22.4%	16.8%	5,703	21.3%
Living wage job	16.3%	14.9%	12.5%	7.8%	3,038	11.3%

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Table 3: Overall closure rates (CR) and high-quality closure rates (HQCR) by counselor's caseload

		Unadjusted model			Adjusted for clients' characteristics			Adjusted for both clients' and counselors' characteristics		
Outcome variable	**Caseloads**	**Closure rate**	**Rate difference (vs. 36-50)**	**p-value**	**Adjusted closure rate**	**Rate difference (vs. 36-50)**	**p-value**	**Adjusted closure rate**	**Rate difference (vs. 36-50)**	**p-value**
Overall CR for all clients										
	1 - 35	33.5%	-6.70%	0.12	33.2%	-2.3%	0.39	33.0%	-3.0%	0.23
	36 – 50	40.2%			35.6%			36.1%		
	51-75	33.9%	-6.3%	**0.05**	32.5%	-3.0%	0.06	32.5%	-3.6%	**0.02**
	75-180	22.0%	-18.2%	**<0.0001**	33.9%	-1.6%	0.29	33.7%	-2.4%	0.24
Overall CR for clients with less significant disabilities										
	1 - 35	34.7%	-6.0%	0.2	36.7%	-21.0%	0.53	36.4%	-2.9%	0.38
	36 - 50	40.7%			38.8%			39.3%		
	51-75	33.8%	-6.9%	0.05	36.5%	-2.3%	0.21	36.4%	-2.9%	0.12
	75-180	19.2%	-2.1%	**<0.0001**	36.3%	-2.5%	0.34	36.2%	-3.1%	0.23
HQCR for all clients										
	1 - 35	27.4%	-3.40%	0.3	24.4%	-1.2%	0.6	24.6%	-1.2%	0.57
	36 - 50	30.8%			25.6%			25.8%		
	51-75	24.3%	-6.5%	**0.009**	22.5%	-3.2%	**0.03**	22.4%	-3.4%	**0.02**
	75-180	17.4%	-13.4%	**<0.0001**	23.6%	-2.0%	0.34	23.5%	-2.4%	0.24
HQCR for clients with less significant disabilities										
	1 - 35	30.3%	-3.5%	0.36	29.2%	-1.2%	0.69	29.4%	-1.2%	0.68
	36 - 50	33.8%			30.4%			30.6%		
	51-75	27.9%	-5.9%	**0.03**	28.1%	-2.3%	0.17	28.0%	-2.6%	0.12
	75-180	17.7%	-16.0%	**<0.0001**	29.3%	-1.1%	0.64	29.1%	-1.5%	0.53
FTCR for all clients										

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1 - 35	22.9%	-4.70%	0.14	20.2%	-2.8%	0.18	20.4%	-2.8%	0.16
36 - 50	27.6%			23.0%			23.2%		
51-75	21.6%	-6.0%	**0.01**	20.2%	-2.8%	**0.04**	20.2%	-3.0%	**0.03**
75-180	16.1%	-11.5%	**<0.0001**	21.7%	-1.3%	0.48	21.5%	-1.7%	0.36
FTCR for clients with less significant disabilities									
1 - 35	26.2%	-4.6%	0.2	25.1%	-2.8%	0.29	25.3%	-2.7%	0.29
36 - 50	30.8%			27.9%			28.1%		
51-75	25.4%	-5.3%	**0.05**	26.0%	-1.9%	0.24	25.9%	-2.2%	0.19
75-180	16.6%	-14.1%	**<0.0001**	27.5%	-0.4%	0.86	27.4%	-0.7%	0.77
LWCR for all clients									
1 - 35	15.3%	0.30%	0.86	13.6%	1.6%	0.26	13.6%	1.4%	0.32
36 - 50	15.0%			12.0%			12.2%		
51-75	12.6%	-2.4%	0.12	10.6%	-1.4%	0.13	10.5%	-1.7%	0.08
75-180	7.9%	-7.1%	**<0.0001**	12.1%	-0.1%	0.95	12.0%	-0.2%	0.88
LWCR for clients with less severe disabilities									
1 - 35	18.0%	0.6%	0.8	17.0%	2.0%	0.31	17.0%	1.7%	0.39
36 - 50	17.4%			15.0%			15.3%		
51-75	15.4%	-2.0%	0.23	13.8%	-1.2%	0.29	13.7%	-1.6%	0.18
75-180	9.2%	-8.2%	**<0.0001**	15.6%	0.6%	0.72	15.6%	0.3%	0.88

Note:

1. HQCR: high-quality closure rates, including both FTCR: full-time closure rates (30 or more hrs/week), LWCR: living wage closure rates (hourly wage >=11.25)
2. All models are based on the generalized estimation equation method in which the clients are assumed to be clustered within the counselors
3. The estimated rates are marginal probabilities based on the model predictions (called marginal prediction in statistics)
4. Model 1: unadjusted

5. Model 2: adjusted for clients' age, race, education, disease severity, and state

6. Model 3: adjusted for clients' age, race, education, disease severity, state, and counselors' age, sex, working years, and rehabilitation training
7. In the stratified analysis, the stratified variable will be removed from the variable, but the model is still adjusted for other co-variables

Table 4: Adjusted rate differences for overall and high-quality closure rates by counselor's working experience and education, adjusted for both client's and counselor's characteristics

			Overall closure rates			High-quality closure rates		
			Adjusted closure rate	Rate difference (vs. 36-50)	p-value	Adjusted closure rate	Rate difference (vs. 36-50)	p-value
Six or fewer years of working experience								
	All clients							
		1 - 35	28.4%	-6.5%	0.08	20.2%	-3.3%	0.3
		36 - 50	34.9%			23.4%		
		51-75	31.2%	-3.8%	0.11	20.9%	-2.5%	0.13
		75-180	34.9%	0.0%	0.99	25.2%	1.8%	0.35
	Clients with less severe disabilities							
		1 - 35	29.2%	-9.8%	0.05	23.1%	-5.7%	0.19
		36 - 50	39.1%			28.8%		
		51-75	35.6%	-3.4%	0.22	27.7%	-1.1%	0.61
		75-180	38.0%	-1.0%	0.74	31.0%	2.1%	0.42
More than six years of working experience								
	All clients							
		1 - 35	38.3%	-1.2%	0.67	30.6%	-9.7%	0.75
		36 - 50	39.5%			31.6%		
		51-75	35.4%	-4.2%	0.05	25.4%	-6.2%	**0.02**
		75-180	28.3%	-11.3%	**0.0009**	18.3%	-13.3%	**0.001**
	Clients with less severe disabilities							
		1 - 35	41.8%	0.4%	0.9	34.5%	0.5%	0.9
		36 - 50	41.3%			34.0%		
		51-75	37.7%	-3.7%	0.16	29.0%	-5.0%	0.09
		75-180	29.5%	-11.8%	**0.0006**	24.2%	-9.8%	**0.02**
With MRC	All clients							
		1 - 35	34.7%	-4.6%	0.16	26.3%	-2.2%	0.43

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		36 - 50	39.3%			28.5%		
		51-75	34.3%	-4.9%	**0.03**	23.2%	-5.3%	**0.008**
		75-180	36.0%	-3.3%	0.28	25.8%	-2.8%	0.32
	Clients with less significant disabilities							
		1 - 35	38.4%	-3.7%	0.35	31.4%	-2.6%	0.49
		36 - 50	42.2%			33.9%		
		51-75	38.1%	-4.1%	0.1	29.1%	-4.8%	**0.04**
		75-180	37.9%	-4.3%	0.2	30.4%	-3.6%	0.27
With RM	All clients							
		1 - 35	29.6%	-0.2%	0.95	21.4%	0.5%	0.86
		36 - 50	29.8%			20.8%		
		51-75	30.6%	0.8%	0.76	21.4%	0.6%	0.71
		75-180	29.2%	0.6%	0.79	19.6%	-1.3%	0.55
	Clients with less significant disabilities							
		1 - 35	31.5%	-1.6%	0.75	25.1%	0.7%	0.85
		36 - 50	33.1%			24.4%		
		51-75	33.7%	60.0%	0.85	26.0%	1.7%	0.42
		75-180	32.3%	-0.8%	0.81	26.1%	1.8%	0.56

Notes:

All models are based on the generalized estimation equation method in which the clients are assumed to be clustered within the counselors

The estimated rates are marginal probabilities based on the model predictions (called marginal prediction in statistics)

Models were adjusted for clients' age, race, education, disease severity, state, and counselors' age, sex, working years, and rehabilitation training. In the stratified analysis, the stratified variable will be removed from the variable, but the model is still adjusted for other co-variables.

Caseload of closed cases and closure rates

HQCR: high-quality closure rates, including both FTCR: full-time closure rates (30 or more hours/week), LWCR: living wage closure rates (hourly wage >=$11.25)

MRC: Master's degree in rehabilitation counseling, RM: other related master's degree

Caseload of closed cases and closure rates

Figure 1: Caseload distribution by counselor's characteristics