

Improving Employment Outcomes for People with Mental Health Disorders in Washington State

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THE SUPPORTED EMPLOYMENT program in Washington State provides assistance with choosing, acquiring, and maintaining employment to individuals for whom competitive employment has not been achieved, has been interrupted, or is intermittent due to mental illness. By integrating employment services with mental health treatment, the primary goal of the program is competitive employment, defined as a job that pays at least minimum wage and is not specifically set aside for people with disabilities (Bond *et al.*, 2011). This report examined whether employment and other outcomes were associated with the receipt of supported employment services through the Medicaid Supported Employment Program previously available in Washington State.

This study focused on 3,642 adults with mental health needs who first received supported employment services between January 2006 and December 2008. Analyses were conducted for a one-year baseline and one-year follow-up period for the service recipients, relative to a statistically matched sample of DSHS clients. To determine whether or not the quantity of supported employment services improved outcomes, clients were divided into three subgroups based on whether they only received such services in the initial month of service (low use) or continued to receive services during the one-year outcome period at medium or high levels of use (see Technical Notes for details).

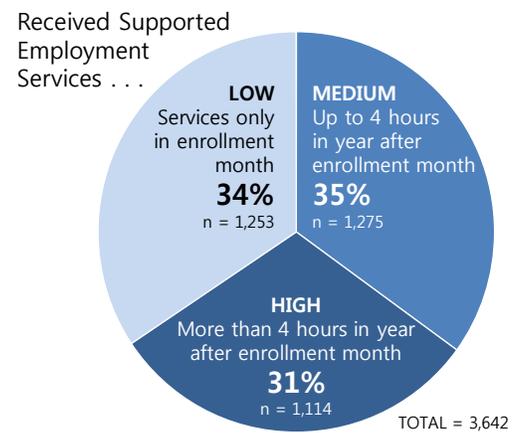
Key Findings

In the 12 months after receiving their first supported employment service, mental health clients were significantly more likely than a closely matched comparison group to experience:

- Increased employment rates.
- Increased use of community-based outpatient mental health services (non-crisis).
- Decreased arrest rates.

Furthermore, these outcomes were strongest among clients who received more hours of supported employment services.

FIGURE 1.
Low, Medium, and High Use of Supported Employment Services



Background and Methods

The Intervention

This study examined outcomes associated with the supported employment program under the State's section 1915(b) waiver authorizing the use of managed care to deliver community mental health services. These services implemented mental health "carve out" delivery system for the seriously mentally ill. The (b)(3) option under the 1915(b) waiver allowed the use of Medicaid funding that was previously available from waiver-related savings to provide additional services including respite care, mental health clubhouse, and supported employment services. These supplementary activities are known as (b)(3) services.

The supported employment services were provided by licensed community behavioral health agencies from 2004 to 2012 to about 8,000 clients who used outpatient mental health services. The services were not evenly available in Washington State, with more than 70 percent clients served by three Regional Support Networks. After the termination of (b)(3) services in 2012, supported employment services were only available through local funding in a small number of areas. Further, the evidence-based practice known as Individual Placement and Support (IPS) model of supported employment was not a requirement in the (b)(3) services. Therefore, data on fidelity (Bond *et al.*, 2011) were not available for this study.

Study population and design

This study focused on adults aged 18 to 64 years who received their first supported employment services, the "treatment group", during a three-year intake window (2006 – 2008). The treatment group excluded those who received any supported employment services prior to this intake window. A comparison group was selected using a multi-step process that included propensity score matching to identify clients who were similar to supported employment service recipients at baseline. The sampling pool for the comparison group included all clients aged 18 to 64 years who used community-based outpatient mental health services at least once in the intake window and who did not use any supported employment services before or during the three-year intake window or the 12-month outcome period.

The comparison group was matched to supported employment service recipients on a number of baseline characteristics including demographic, employment, criminal justice involvement, behavioral health and physical health care indicators (see the Technical Notes for more detail). Most of these characteristics were measured over a 12-month baseline period. For several important baseline characteristics—employment, prior arrests, and Medicaid eligibility—longer baseline periods were used to improve comparability between the treatment and comparison groups. As shown in Table 1, the treatment and the comparison groups were well matched on the baseline measures.

Based on overall goals of supported employment programs and prior research, we expected to see increased employment rates, higher earnings, and increased hours worked (Marshall *et al.*, 2014, Burns *et al.*, 2007, Cook *et al.*, 2016) for those who received supported employment services. Other possible outcomes include an increase in engagement with outpatient mental health services and a decrease in use of crisis mental health services reflecting stabilization of mental health status. Similarly, other programs designed to support recovery for people with substance use disorders have been found to be associated with reductions in arrest rates (Estee *et al.*, 2015). Depending on the degree to which supported employment services affect the functional stability of persons with mental health needs, we considered use of economic assistance such as Temporary Assistance for Needy Families (TANF) and Basic Food services and use of medical care including hospital emergency department visits.

Statistical analyses

We used difference-in-differences (DID) technique to test whether receiving supported employment services was associated with favorable outcomes (Shadish *et al.*, 2002). Using this approach, we compared the change in outcomes between 12-month baseline and 12-month outcome periods for clients who received supported employment services, relative to the change over time for a matched comparison group that did not receive these services. Final outcome analyses were adjusted for post-match baseline differences in demographic characteristics (age, gender, and race/ethnicity); employment; arrests; and outpatient mental health service experiences.

Study timeline

For each client in the treatment group who received a supported employment service during the three-year intake window (CY 2006 – 2008), an “index month” was identified as the first month of receiving such a service. For clients in the comparison group, an index month was identified from the month(s) in which the client received any mental health service during the intake window, and the propensity score process then selected clients who were closely matched to the treatment group.

FIGURE 2.

Study Timeline



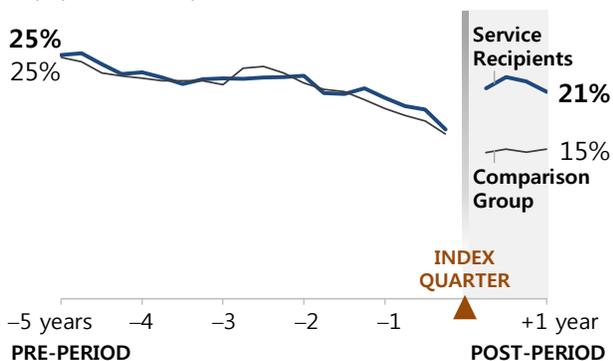
Annual Employment Outcomes

Quarterly Employment Rates

FIGURE 3.

Quarterly Employment Rates

Any type of employment



A client was considered to be employed if they had any earnings reported in Employment Security Department (ESD) wage data in the measurement period.¹

Quarterly employment rates declined steadily at similar rates for the treatment and comparison groups over the five years before the index month.

In the one-year post period, however, quarterly employment rates of recipients of supported employment services increased, while the rates for the matched comparison group continued at a lower level (Figure 3).

¹ESD earnings data do not include self-employment, federal government employment, or unreported earnings.

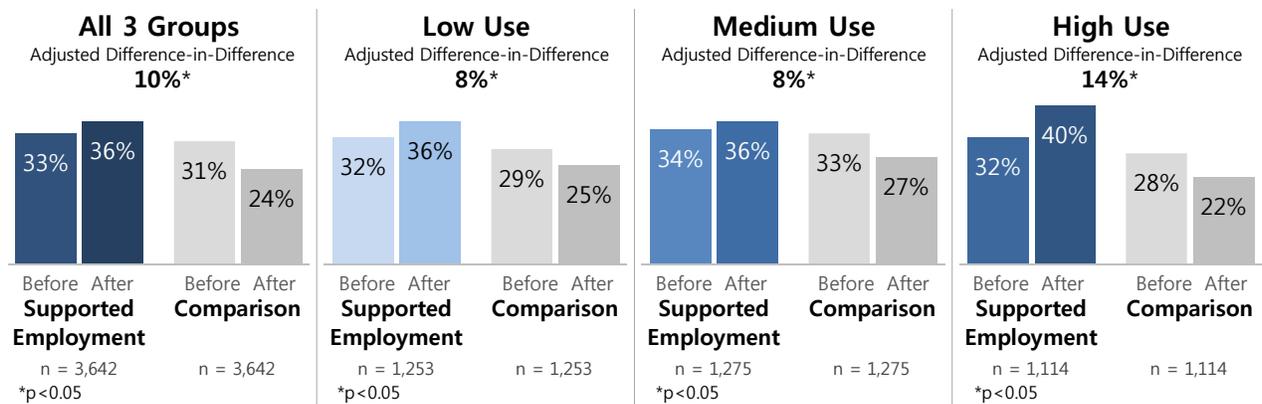
Annual Employment Rates

Annual employment rates were based on having earnings in any quarter in the 12-month baseline (before) or follow-up (after) period. The annual employment rate increased from 33 percent in the baseline year to 36 percent in the outcome year for the overall sample of supported employment service recipients while declining from 31 to 24 percent over the same period for the comparison group, resulting in a statistically significant difference-in-differences coefficient (DID=10 percent, $p < 0.05$). The greatest change in annual employment rates was found for the high-use subgroup where employment increased from 32 to 40 percent among recipients of supported employment services compared to a decline from 28 to 22 percent among matched non-recipients. The resulting difference-in-differences was statistically significant (DID=14 percent, $p < 0.05$). More modest, but still statistically significant, differences were found for the low-use (DID=8 percent, $p < 0.05$) and medium-use (DID=8 percent, $p < 0.05$) subgroups.

FIGURE 4.

Annual Employment Rates

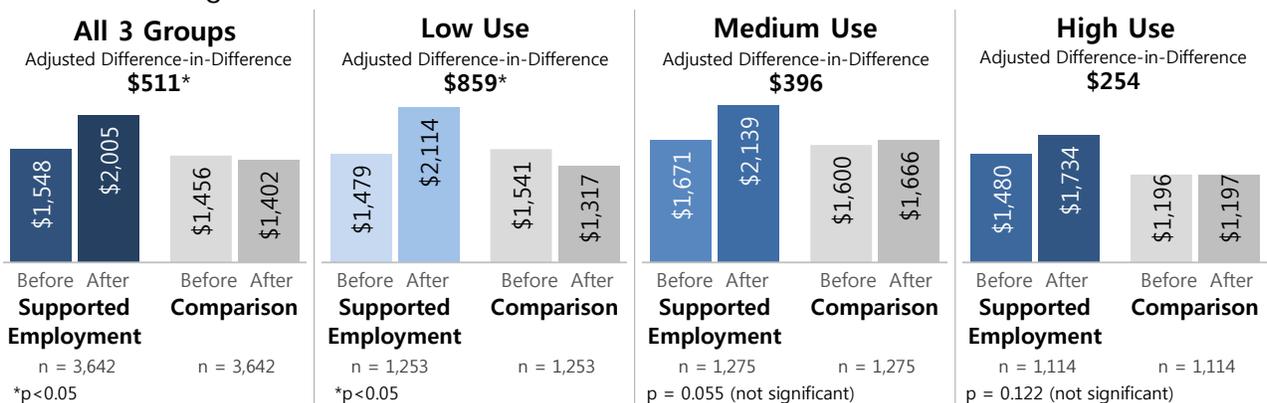
Any type of employment



Average annual wages were higher in the outcome period compared to the baseline among recipients of supported employment services, while little change in annual wages were found among non-recipients. The relative difference between recipients and non-recipients in average annual wage changes was statistically significant in the overall sample (DID=\$511 per year, $p < 0.05$) and in the low-use subgroups (DID=\$859 per year, $p < 0.05$). The relative difference in the change in annual wages was marginally significant in the medium-use subgroup (DID=\$396 per year, $p = 0.055$) but not significant in the high-use subgroup.

FIGURE 5.

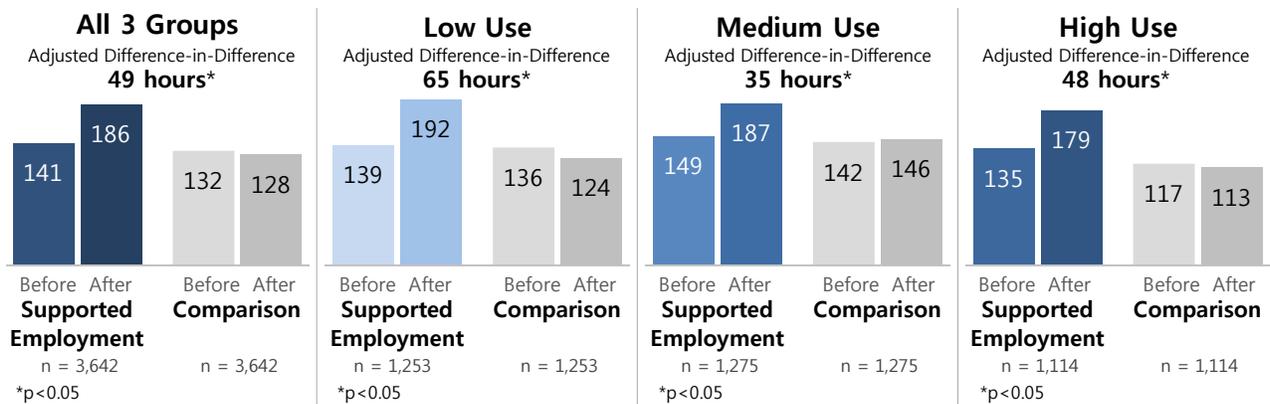
Annual Earnings



Overall, average hours worked in the outcome year increased significantly for recipients of supported employment services compared to a slight drop for the comparison group (DID=49 hours, $p < 0.05$). Similar statistically significant differences in hours worked were found in each of the three subgroups.

FIGURE 6.

Annual Hours Worked



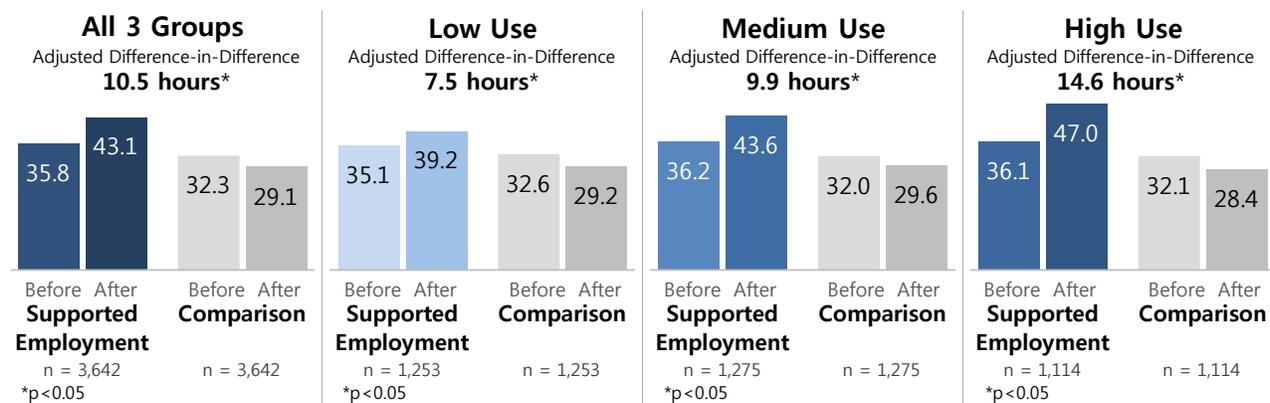
Community-Based Outpatient Mental Health Services

Outpatient mental health treatment services (non-crisis) were defined in this study as any community-based mental health services excluding supported employment services or crisis services. The use of outpatient non-crisis mental health services increased in the outcome year for those who received supported employment services compared to those who did not, with statistically significant difference-in-difference (DID) coefficients in the overall sample (DID=10.5 hours per recipient, $p < .05$), and all three subgroups, increasing with the amount of supported employment service received.

FIGURE 7.

Use of Outpatient Mental Health Services (Non-Crisis)

Average hours of service use per client

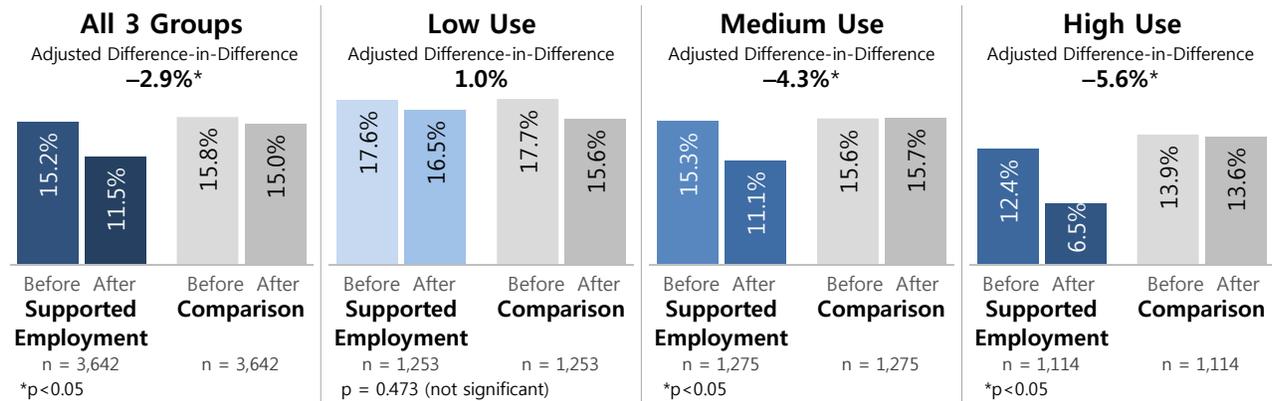


Criminal Justice Involvement

Arrest rates are based on offenses reported to the Washington State Patrol (WSP), which include arrests for felonies, gross misdemeanors, and other offenses. Arrest rates decreased more for supported employment service recipients than for non-recipients in the overall sample (DID=-2.9 percent, $p < 0.05$), and in the medium and high-use subgroups.

FIGURE 8.

Arrests (Any type)



Other Outcomes

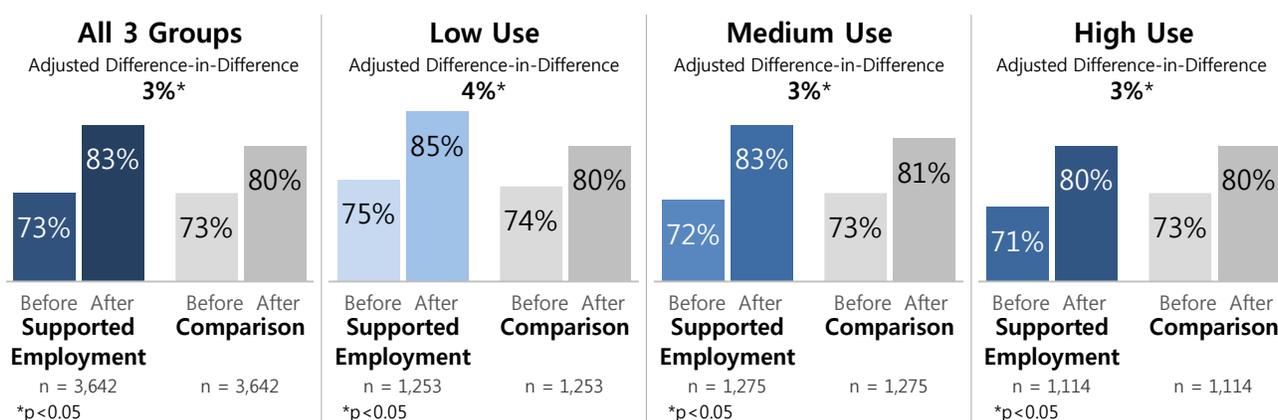
We examined a number of other outcomes which we thought could be associated with the receipt of supported employment services through improved stability or increased engagement in needed treatment or services. Specifically, we ran analyses to determine whether receipt of supported employment services was related to changes in the use of physical and behavioral health services (hospital emergency department services, receipt of treatment for substance use disorders, and use of community-based mental health crisis services), the receipt of economic services (TANF and Basic Food), and housing instability (homelessness).

We did find small but statistically significant differences between the treatment and comparison groups in the percent receiving Basic Food. Use of Basic Food increased for both supported employment service recipients and the comparison groups, but the increase was greater in the supported employment recipients.²

We found no significant differences between the treatment and the comparison groups for emergency department care, substance use disorder treatment, community-based mental health crisis services, use of TANF, or homelessness.

² Increases in Basic Food use in the outcome period for both the treatment and comparison groups could be due to broadening of eligibility requirements implemented in October 2008 and the elimination of work requirements in King County in April 2009 (DSHS 2015; U.S. Congress 2009).

FIGURE 9.
Basic Food



Discussion

Receipt of supported employment services appeared to have mitigated the long-term decline in employment rates compared to those not receiving the services. The employment rates for the mental health clients included in this study decreased steadily during the five years before their first receipt of supported employment services. In the year following the index month, clients who received supported employment services experienced an increase in employment rates while comparable clients who did not receive these services continued to experience a decline. The increased employment rates for those who received supported employment services is consistent with findings in other studies (Marshall 2014, Bond, 2008; Burns *et al.*, 2007; Latimer *et al.*, 2006, Crowther *et al.*, 2001; Twamley, *et al.*, 2003).

Several randomized controlled trials that compared supported employment services to other vocational interventions such as prevocational training, sheltered work, and transitional employment show that supported employment services produce better competitive employment outcomes (Bond, 2008; Burns *et al.*, 2007; Latimer *et al.*, 2006). Two meta-analyses have yielded similar findings (Crowther, *et al.*, 2001; Twamley, *et al.*, 2003). A recent study found long-term effects of supported employment services after a 13-year follow-up (Cook *et al.*, 2016). Notably, most of the previous studies implemented the evidence-based practice known as Individual Placement and Support (IPS) model of supported employment services (Bond *et al.*, 2011) which includes key components of: rapid job placement instead of prevocational activities; zero exclusion which implies everyone who is interesting in working is eligible to enroll; and continuous employment support as long as needed to ensure job retention.

Despite the significant increase in the rate of employment for mental health clients who received supported employment services through Washington State’s program, the annual rates of employment, hours worked, and average wages fall well below accepted standards for full-time employment at competitive wages in this time period. Only 35 percent (1,271 of all program recipients) were employed in at least one quarter of the outcome period. During that year, they worked an average of 524 hours compared to 2,000 hours which a full-time employee would work in a year. Furthermore, their annual wages averaged \$5,640 (or \$10.76 per hour), which falls well short of the \$17,100 a full-time worker would have been paid at minimum wage of \$8.55 in 2009.

These findings should be considered in light of the overall goals of the supported employment program. Many service recipients were formally determined to be disabled and unable to work due to their mental illness. As evident in Table 1, about three-quarters of all clients in this study received

Disability Medicaid during 12 months prior to the index month. While the program, as implemented in Washington State, clearly improved employment rates, wages, and hours worked among those who received the supported employment services, the resulting hours of employment or annual wages were not commensurate with full-time employment.

Receipt of supported employment services was associated with more use of non-crisis community-based outpatient mental health services. The increased use of non-crisis outpatient mental health services during the outcome period for those who received supported employment services compared to those who did not could be an indication of greater engagement in their mental health treatment program. Engagement in outpatient mental health services is expected to help facilitate job seeking among the unemployed. For clients who became employed, increased participation in outpatient services could help mental health clients in sustaining employment.

The use of mental health *crisis* services decreased in the outcome period for both the recipients of supported employment services and clients in the comparison group. There was no significant difference in their rates of decline suggesting that the receipt of supported employment services did not have any effect on the use of crisis intervention services.

Research on the association between supported employment services and criminal justice involvement has been limited (Anthony 2006). The present study found that receiving supported employment services was associated with lower annual arrest rates among clients who received employment support services at medium or high levels during a one-year outcome period, but not for those who only received services in the initial month of service. To our knowledge, this is the first study that examines the association between supported employment services and criminal justice involvement using administrative data. Mental health clients with criminal justice involvement need a variety of services that promote recovery, increase self-sufficiency, and reduce recidivism. Further research would be needed to explore the amount, duration, and type(s) of supported employment services that most effectively reduce criminal activity among mental health clients.

Receipt of supported employment services did not appear to affect TANF use, homelessness, emergency department use, or the receipt of substance use treatment, but did increase use of Basic Food services.

Summary

This study explored the relationship between the receipt of supported employment services and outcomes such as employment rates, use of mental health services, arrests, and other indicators of social and health stability among clients receiving publicly funded mental health services in Washington State. The results indicated significant relationships with several important outcomes for clients who received any supported employment services during a three-year intake window from 2006 through 2008.

Compared to clients who shared similar baseline characteristics but did not receive the services, clients who received supported employment services experienced significantly:

- **An increase in employment rates.**
- **An increase in non-crisis community-based outpatient mental health service use.**
- **A decrease in total arrest rates.**
- **The more supported employment services received in the outcome period, the larger the effect for each of these outcomes.**

Table 1 | Baseline Characteristics*

Matched Comparison Group		
Supported Employment Service Recipients		
TOTAL	3,642	3,642
DEMOGRAPHICS		
Age		
Average age	38.6	38.6
18 to 24 years	13%	13%
25 to 34 years	25%	25%
35 to 44 years	27%	28%
45 to 54 years	27%	27%
55 to 64 years	7%	7%
Gender		
Male	46%	46%
Female	54%	54%
Race/Ethnicity not mutually exclusive		
White Only	71%	70%
Any Minority	29%	30%
Minority Group		
Black	12%	12%
American Indian	10%	10%
Hispanic	5%	5%
URBANICITY in index month		
Urban, high density	64%	63%
Urban, medium/low	21%	21%
Large town	10%	10%
Rural	5%	5%
SOCIAL SERVICE USE in 12-month baseline		
Basic Food	73%	73%
TANF	13%	13%
EMPLOYMENT/EARNINGS in 4-quarter baseline		
Part-time or full-time job	33%	31%
Earnings, of those employed	\$4,747	\$4,764
Hours, of those employed	441	446
HOMELESSNESS in 12-month baseline		
Homeless Indicator	20%	21%
CRIMINAL JUSTICE INVOLVEMENT		
12-month baseline		
Arrest, any type	15%	16%
Felony arrest	4%	6%
Gross misdemeanor arrest	10%	11%
24-month baseline		
Arrest, any type	24%	24%
Felony arrest	9%	10%
Gross misdemeanor arrest	17%	18%
60-month baseline		
Arrest, any type	36%	37%

Matched Comparison Group		
Supported Employment Service Recipients		
BEHAVIORAL HEALTH INDICATORS		
Mental Health Outpatient Services in 12-month baseline		
Any outpatient service, total hours	37.9	35.3
Crisis service, total hours	2.1	3.0
Other mental health service, hours	35.8	32.3
Any Mental Health Indicator in 12-month baseline		
Any Indicator	98%	98%
Psychotic	38%	36%
Mania	36%	39%
Depression	54%	54%
Anxiety	42%	46%
ADHD	6%	8%
Any Mental Health Indicator in 24-month baseline		
Any Indicator	99%	99%
Psychotic	40%	40%
Mania	39%	43%
Depression	59%	59%
Anxiety	47%	50%
ADHD	9%	10%
Substance Use Disorder Treatment Need		
12-month baseline	39%	39%
24-month baseline	43%	46%
HEALTH INDICATORS		
Chronic disease indicator score ≥ 1	26%	27%
Emergency department visits	23%	24%
Outpatient emergency dept visits	20%	21%
MEDICAL COVERAGE		
12-month baseline		
Medical Assistance	94%	95%
Disability Medicaid	74%	76%
Family Medicaid	21%	20%
Dual Eligible	29%	30%
24-month baseline		
Medical Assistance	95%	96%
Disability Medicaid	76%	78%
Family Medicaid	24%	23%
Dual Eligible	30%	30%
60-month baseline		
Medical Assistance	97%	97%
Dual Eligible	30%	30%

*The propensity score matching process was conducted independently for each of the three subgroups. All matched variables achieved Absolute Standardized Mean difference <0.20.

STUDY POPULATION SELECTION

A total of 3,839 working-age adults (18 to 64 years old) received at least one supported employment service through the publicly funded mental health system for the first time between January 1, 2006 and December 31, 2008. These clients were identified based on having a Healthcare Common Procedure Coding Systems code "H2023" for initial supported employment service or "H2025" for ongoing supported employment services recorded in their medical records. Clients were excluded from the sample who met any of the following conditions: (1) had any supported employment services records during the August 2003 through December 2005 time period (n=2,612), (2) had missing demographics (n=123), or (3) did not live in Washington State during the outcome period (n=74). After these exclusions, 3,642 supported employment service recipients (94.9 percent) remained in the overall study sample.

Since the volume of supported employment services varies by service recipient, analyses were conducted for each of three subgroups based on the following criteria:

1. **Low Use** (n=1,253). Clients who only received supported employment services in the index month and not in the 12-month outcome period were included in this category, which we labeled as "low" use.
2. **Medium Use** (n=1,275). This category includes clients who received supported employment services in the outcome period as well as in the index month. The cumulative service time in the 12-month outcome period was 4 hours or less, which we labeled as "medium" use. The median cumulative hours of supported employment service time in the outcome period equaled 1 hour and 20 minutes for this group and ranged from 15 min to 4 hours. The median number of service encounters equaled 2, with the number of events ranging from 1 to 14 times.
3. **High Use** (n=1,114). This category includes clients who received supported employment services in the outcome period as well as in the index month. The cumulative service time in the 12-month outcome period was over 4 hours, which we labeled as "high" use. The median cumulative hours of supported employment service time in the outcome period equaled 12 hours for this group and ranged from 4 hours 15 minutes to 132 hours. The median number of service encounters equaled 15, with the number of events ranging from 2 to 179 times.

COMPARISON GROUP SELECTION

Since supported employment service recipients included adults aged 18 to 64 years who had received outpatient mental health treatment services, the potential comparison group included individuals in the same age range who had any mental health treatment services but not for supported employment services. Specifically, we restricted the pool of potential comparison clients to individuals whose most recent mental health outpatient treatment episodes matched that of individual supported employment service recipients on the following criteria: 1) comparable start date of the most recent mental health treatment episodes; 2) no supported employment services prior to or during the 36-month intake window, or during the 12-month outcome period; 3) volume of crisis and non-crisis services; and 4) comparable residential urbanicity.

The propensity score matching process was used to select the treatment and comparison clients. The propensity score model included demographics (age, gender, and race/ethnicity), prior mental health history, prior behavioral and health risk indicators, prior social service use including Basic Food and TANF, prior employment, prior arrests, prior housing instability, prior medical coverage with categorically needy for disability and family needy, prior dual Medicaid-Medicare eligibility, prior health care use, and urbanicity of residence.

To identify comparison group members who were similar to supported employment service clients in the key characteristics, the matching process applied an exact match on gender, employment rates, arrest rates, hours of community-based outpatient services, hours of crisis services, quartile of a chronic disease risk indicator, and medical coverage category. An indicator of the urbanicity of a client's county of residence was also included as an exact match variable because supported employment services were only provided in certain areas of the state.

The matching ratio was set as 1:1 to provide a one-to-one match of the nearest neighbor of the comparison clients to the clients in the supported employment “treatment” group. The propensity score matching process was conducted independently for each of the three subgroups described above. The three comparison subgroups created through the matching processes were combined to create the overall comparison group.

In Table 1, we show the baseline characteristics used to assess the comparability between the supported employment service recipients and the overall comparison group. Baseline characteristics were measured over a 12-, 24-, and 60-month period prior to the index month and outcomes were measured over a 12-month post-period that did not include the index month. The calendar year quarter containing an index month was identified as the “index quarter” which was used for employment outcomes including employment rates, earnings, and hours worked. Outcomes for employment were measured over a 4-quarter post-period that did not include the index quarter.

To determine whether or not the clients in the comparison group were adequately matched to the supported employment service clients, we calculated the Absolute Standardized Mean difference (ASMD) for each of the baseline characteristics selected for the matching process. Using the criteria of an ASMD less than or equal to 0.20 as an indicator for a well-balanced and matched variable, we obtained the comparison group of non-supported employment service clients for the overall matched sample as well as for each of the three subgroups. For each of the characteristics used in the propensity score matching equation, we achieved acceptable balance between the supported employment service treatment group and the non-supported employment service comparison group (ASMD < 0.20). Except for the propensity score matching process in which MatchIt in R 3.2.2 was used (R Core Team 2013), all other analyses were conducted using SAS 9.4 (SAS Institute, Cary NC).

LIMITATIONS

The potential for selection bias is an inherent risk in attempting to draw causal inferences from observational data. We controlled for selection bias by using the propensity score matching process described above with variables available in administrative data (e.g., demographics, employment trajectory, and prior mental health service history). Variables such as motivation and level of functioning, however, are not available in administrative data. Programs that deliver services such as supported employment service in the public mental health setting may have a tendency to enroll individuals who are motivated, higher functioning, and more likely to engage and succeed with such services. We excluded a small number of adolescents of working age (16-17 years) who received supported employment services. Therefore, the analyses do not address whether supported employment services are beneficial for adolescents.

We used a measure of urbanicity based on the population density and urban/rural character of a patient’s place of residence as a matching criterion for selecting the comparison group since supported employment services were only available in a few, mostly urban areas of the state. Although the treatment and comparison groups were well balanced on the measure of urbanicity we used for matching, the groups were not as well matched on geographic units such as county or RSN. Other methods for adjusting for geographic variation in the availability of services could be used in future studies to address potential selection bias by RSN or county.

DATA SOURCES AND MEASURES

The following measures were obtained from the DSHS Integrated Client Database developed and maintained by DSHS’s Research and Data Analysis (RDA) Division (Mancuso 2014):

Demographics

- The RDA Client Services Database (CSDB) provided information on county of residence, age, race and ethnicity, and gender.

Geography

- Using U.S. Census data, a measure of “urbanicity” was constructed based on the county-level population density and percent of each county’s population residing in an urbanized area. Clients were assigned to one of the following categories based on their county of residence in the index month: 1) rural, 2) large town, 3) urban – low or medium density, and 4) urban – high density.

Medical Coverage

- Medical coverage is obtained from eligibility codes available in ProviderOne. Medicaid disability coverage includes individuals who meet income and resource limits and one of the aged, blind, or disabled coverage categories. Family needy includes pregnant women or children who meet the criteria of categorically needy based on income. Family needy also includes the Children’s Health Insurance program.

Health and Safety Risk Factors

- Mental illness, alcohol/drug treatment need, and chronic illness indicator come from administrative data in ProviderOne. These measures are calculated over a 12- and 24-month period and are restricted to those with at least one month of medical eligibility during that period.
- Data from three information systems—ProviderOne (medical), the Consumer Information System (mental health), and the Treatment and Assessment Report Generation Tool (chemical dependency)—were used to identify the presence of substance use disorder and mental illness over a 12- and 24-month window of time based on health and behavioral health diagnoses, prescriptions, and treatment records. In addition, drug and alcohol-related arrest data maintained by the Washington State Patrol was used to identify probable substance use issues and was included in the definition of treatment needs for substance use disorder.
- An indicator of chronic illness was developed to identify individuals with chronic illness risk scores equal to or greater than 1, which represents the score for the average Medicaid client in Washington State meeting Supplemental Security Income disability criteria. Chronic illness risk scores were calculated from health service diagnoses and pharmacy claim information, with scoring weights based on a predictive model associating health conditions with future medical costs (Gilmer et al. 2001, Krnock et al. 2000).

Public Assistance

- Basic Food and TANF receipt were identified through data from the DSHS Automated Client Eligibility System (ACES) summarized in RDA’s Client Services Database.

Homelessness

- Homelessness was identified through living arrangement status reported to DSHS caseworkers and recorded in ACES, as well as through records indicating receipt of homeless housing assistance in the state’s Department of Commerce, Homeless Management Information System (HMIS). In particular, clients who were homeless with housing (HH), homeless without housing (HO), in emergency shelter (EH), or in a domestic violence shelter (BT) in ACES and those who were receiving emergency shelter, transitional housing, or rapid re-housing in HMIS were identified as being homeless.

Employment

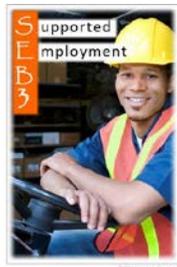
- Data on employment, earnings, and hours worked came from the Washington State Employment Security Department (ESD) Unemployment Insurance wage file provided information on employer-reported quarterly employment. Over a 12-, 24-, and 60-month pre-period as well as over a 12-month outcome period, individuals are flagged as employed if they had at least one quarter of non-zero earnings during the calendar year. Yearly earnings are calculated by summing quarterly earnings within each calendar year.

Criminal Justice Involvement

- Arrest data is from the Washington State Patrol (WSP). Some less serious misdemeanor offenses or non-criminal infractions handled by local law enforcement agencies are not required to be reported in the WSP database and so could not be included in the analyses.

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