Becoming Employed Starts Today (BEST)
Program Evaluation

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BECOMING EMPLOYED STARTS TODAY (BEST) was a federally funded, five-year pilot program that provided supported employment services at four local mental health provider organizations in Washington State. Between March 1, 2015 and September 30, 2019, BEST employment specialists helped individuals with serious mental illness obtain and maintain competitive employment using the Individual Placement and Support model of supported employment (IPS-SE). This report summarizes an evaluation of the following key outcomes: employment; criminal justice involvement; mental health treatment; utilization of other social and health services; and self-reported well-being. All outcome analyses, other than those examining changes in self-reported well-being, compare BEST participants to a group of similar individuals who did not receive IPS-SE services.
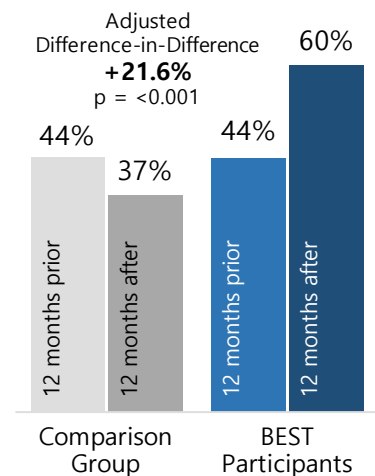

Principles of IPS-SE Services
• Anyone who wants to work is eligible for IPS-SE services • Individuals will be placed in competitive jobs • Benefits counseling is important • Job search begins as soon as a client expresses interest in employment • Services are grounded in client preferences and choice • Services are integrated with mental health treatment • Employment specialists develop relationships with employers based on client preferences • Follow-along supports are individualized and continue as long as a client wants/needs them

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Key Findings

Participants in the BEST program self-reported statistically significant improvements in well-being, functioning, retention in the community (i.e., were not homeless, jailed, or admitted to an inpatient treatment facility), and school attendance and employment. Relative to a comparison group of similar individuals who did not participate in the program, BEST participants also had:

- Significant improvement in employment rates (Figure 1), hours worked, and number of quarters employed. However, BEST participants did not experience statistically significant increases in earned income relative to the comparison group.

- Slightly longer enrollment in Medicaid, greater engagement with mental health services, and fewer arrests.

- No significant reductions in emergency department utilization, hospitalizations, or receipt of state or federal financial assistance. There was, however, an increase in the utilization of food assistance (SNAP).

FIGURE 1.
Employment Rate

Adjusted Difference-in-Difference **+21.6%** $p = <0.001$

Comparison Group: 44% (12 months prior), 37% (12 months after)
BEST Participants: 44% (12 months prior), 60% (12 months after)

Background

Program Description. The Washington State Division of Behavioral Health and Recovery (DBHR) received a federal grant in 2015 from the Substance Abuse and Mental Health Services Administration (SAMSHA) as part of the Transforming Lives through Supported Employment initiative. The resulting five-year intervention, known as the Becoming Employed Starts Today (BEST) program, provided supported employment (SE) services to individuals with serious mental illness. The program also produced broader system changes to promote employment for individuals with behavioral health conditions and address barriers to labor market success.[1]

Under BEST, DBHR partnered with four community-based mental health providers to provide SE services to mental health clients. SE services were initially offered by Grant Mental Healthcare (GMH) in Grant County and Columbia River Mental Health Services (CRMHS) in Clark County. These sites were selected to determine if the effectiveness of SE services differed across rural and urban areas. GMH exited the program in April 2018 to provide SE services under the state's 1115 Medicaid waiver. Following GMH's departure, two additional sites—Lower Elwha and Kalispel—joined the BEST grant in September 2018 and began providing SE services to tribal members.

Each participating site adopted the evidence-based Individual Placement and Support model of supported employment (IPS-SE) services, which aims to rapidly place individuals in jobs within the community that pay at least minimum wage and are not set aside for persons with disabilities (i.e., competitive employment; Bond et al., 2011). As part of their contractual obligations, sites participated in ongoing reviews performed by DBHR staff and peer reviewers to ensure fidelity to the IPS model. Individuals were eligible for SE services under BEST if they had a serious mental illness or co-occurring mental health and substance use disorder, were receiving mental health services, had expressed an interest in pursuing employment, and resided within the catchment area of a BEST program site. Employment specialists worked with 459 distinct BEST participants to identify employment opportunities aligned with participant interests and preferences, address potential barriers to employment, and provide ongoing supports and services before and after job placement.

Prior Research. Mental illness is a barrier to successful navigation of the labor market, resulting in weak labor force attachment and long-term unemployment (Butterworth et al., 2012; Harkko et al., 2018; Paul & Moser, 2009). Research also suggests that IPS-SE services help individuals overcome these barriers, resulting in substantial increases in competitive employment rates, earnings, job tenure, and weeks employed (Campbell et al., 2011; Frederick & VanderWeele 2019; Kinoshita et al., 2013; Modini et al., 2016; O'Day et al., 2017; Reme et al., 2019; Suijkerbujik et al., 2017). These findings were consistent regardless of the acuity of their symptoms and overall job readiness (Campbell et al., 2011).

Receipt of IPS-SE services may yield additional benefits for clients. Long-term unemployment adversely affects mental well-being and increases the likelihood that individuals will experience additional negative unemployment-related outcomes, such as poverty, homelessness, and increased reliance on state and federal assistance (Aydiner-Avsar & Piovani, 2019; Canton et al., 2005; Harkko et al., 2018; Jahoda, 1981; McKee-Ryan et al., 2005; Murphy & Athanasou, 1999; Paul & Moser 2009). IPS-SE services may prevent these outcomes by helping clients become financially independent. Furthermore, by providing individuals with structure in their daily lives, IPS-SE services may also improve subjective client well-being along several psychosocial dimensions, including self-reported quality of life, global functioning, and overall mental health (Frederick & VanderWeele, 2019; Jahoda, 1981).

Given these findings, we expected that enrollment in BEST would result in: 1) higher employment rates, earnings, hours worked, and number of quarters employed; 2) improvements in client well-being; and 3) reductions in the receipt of state or federal financial assistance. Based on prior

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[1] DBHR's progress toward these broader systemic goals is summarized in the annual reports submitted to SAMHSA.

evaluations of SE programs in Washington State (*see* Fan et al., 2016), we expected that participation in BEST would also be associated with: 1) reductions in arrest rates; and 2) increased utilization of outpatient mental health treatment services.

Methods

Study Population. This study focused on BEST participants ages 16 to 64 who: 1) enrolled in BEST at either the CRMHS or GMH program sites between March 2015 and September 2018; 2) had some indication of a mental illness in administrative data in the two years prior to enrollment; and 3) received publicly funded medical coverage for at least one month in the year prior to and following enrollment.[2] The two tribal sites that participated in BEST were excluded due to insufficient follow-up periods and sample sizes of less than 30. Each BEST participant was assigned an "index month" corresponding to the first month that they enrolled in the program. This index month was then used to define the 12-month pre- and post-periods used to compare changes in client outcomes over time.

BEST participants were statistically matched to two similar individuals selected from a pool of mental health clients residing in the same catchment area. The index month for individuals in the matched comparison group corresponds to the month that an individual met the eligibility criteria for inclusion in the study. After matching, balance was achieved within each county for these two populations across a range of baseline characteristics, including client demographics, indicators of serious mental illness, mental health diagnoses, past service receipt, employment histories, and pre-period outcomes. The final study population included 362 BEST participants and 724 comparators.[3] A comparison of BEST participant characteristics relative to the matched comparison group is available in the Appendix.

Statistical Analyses. Unless otherwise noted, we employed a difference-in-difference (DID) framework to estimate the effects of BEST enrollment on participant outcomes. We compared changes in BEST participants' outcomes between the 12-months prior to and following their index months to those of the comparison group. Results presented here are based on the regression-adjusted DID estimates, with standard errors corrected to account for individuals who appear multiple times in the comparison group. Additional analyses (not shown here) tested for differences in the treatment effect by program site. For all but one of our outcome measures (average number of arrests), the estimated interaction between program site and BEST enrollment was non-significant, suggesting that IPS-SE services were equally effective in both rural and urban areas.

What is Difference-in-Difference?

Difference-in-difference (DID) rates are the differences in change over time between the treatment and comparison groups. For example, to calculate the unadjusted DID employment rate, we followed these steps:

- Calculate pre-post change in employment rates for BEST participants:
  44% in pre-period and 60% in post-period = **+16%**

- Calculate pre-post change in employment rates for the comparison group:
  44% in pre-period and 37% in the post period = **– 7%**

- Calculate the unadjusted difference-in-difference rate:
  (+16%) – (-7%) = **+23%**

In this report we present regression-adjusted DID rates that account for remaining imbalances between BEST participants and the comparison group. *See the Technical Notes section for more detail.*

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[2] Information on additional restrictions applied to our analyses are available in the Technical Notes section of this report.

[3] The 362 BEST participants were matched to 724 observations from the pool of potential controls using a 2-to-1 nearest neighbor matching approach without replacement. Because individuals qualified for inclusion in the pool of potential controls multiple times, a number of individuals in the control population contributed more than one observation to the comparison group. There are 618 unique individuals in the comparison group. *See* the Technical Notes for more detailed information on these eligibility criteria and the construction of the matched comparison group.

Participant Characteristics

Detailed demographic information for BEST participants included in these analyses is available in the Appendix. In addition to having an identified mental illness, BEST participants faced several barriers to employment, including low educational attainment, weak labor force attachment, and relatively high rates of co-occurring mental health and substance use disorders (SUD). In addition, 41 percent of BEST participants had been arrested at some point prior to enrollment in the program, and 22 percent were homeless in the year prior to program entry. The majority of BEST participants (88 percent) were members of households at or below the federal poverty level, and 65 percent lived alone. Slightly less than half (44 percent) of program participants met state or federal disability standards during the year prior to enrollment.

Outcomes

Employment. For the purposes of this study, an individual was considered employed if they had any earnings reported to the Employment Security Department (ESD) during the measurement period. As illustrated in Figure 2, annual employment rates (e.g. any earnings in the baseline or follow-up periods) between the pre- and post-periods decreased 6 percentage points for the comparison group and increased 16 percentage points for BEST participants. After applying statistical adjustments for repeated observations and residual imbalances, BEST participants were employed at a significantly higher rate relative to the comparison group (DID = +21.6%, $p < 0.001$).

Additional analyses indicate that individuals in both the BEST and comparison groups experienced similar employment trajectories (i.e., no statistically significant differences) in the eight quarters prior to enrollment, ranging between employment rates of 27 and 33 percent (*see* Figure 2). However, the quarterly employment rate for BEST participants increased to roughly 42 percent in the four quarters after enrollment, while quarterly employment rates for the comparison group remained relatively unchanged.

FIGURE 2.
Employment Outcomes
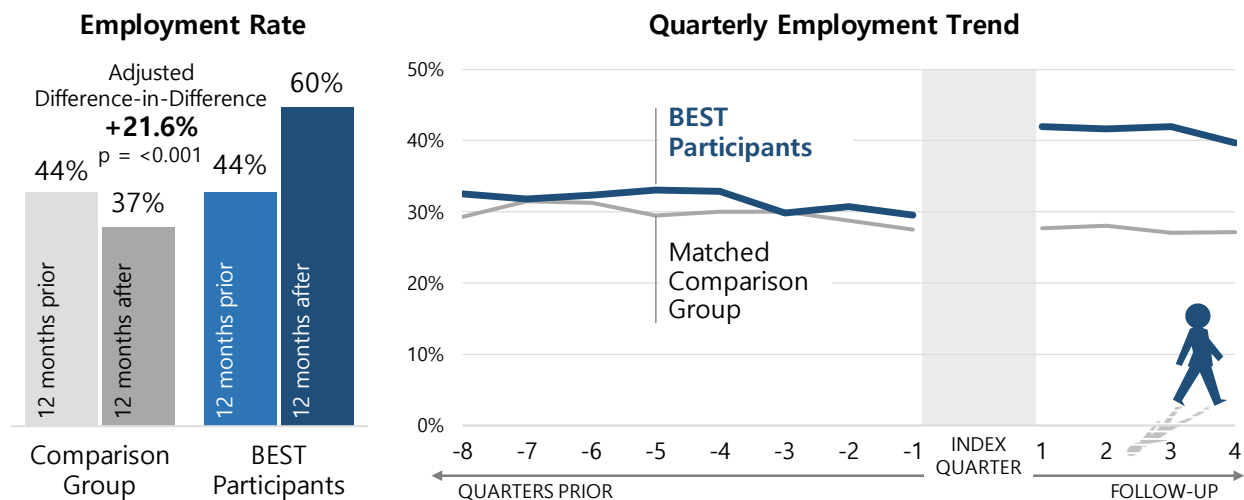
Changes in employment were most evident among those who were unemployed in the pre-period (Figure 3): 1) BEST participants who were employed in the pre-period were 1.2 times more likely to be employed in the post-period relative to previously employed comparison group members; 2) BEST participants who were unemployed in the pre-period were 3.2 times more likely to be employed in the post-period relative to previously unemployed comparison group members.

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Figure 4 (below) shows time worked and earnings for the study groups. BEST participants and members of the comparison group worked more hours on average in the post-period relative to the pre-period; these gains, however, were higher among BEST participants (DID = +101.4, p <0.01). Similarly, the average number of quarters worked in the outcome year increased significantly for BEST participants relative to the comparison group (DID = +0.5, p <0.01).

Both groups' total earnings were higher in the outcome period compared to baseline, with BEST participants earning slightly more on average. The difference in earnings was not statistically significant (DID = +$827, p = 0.18).
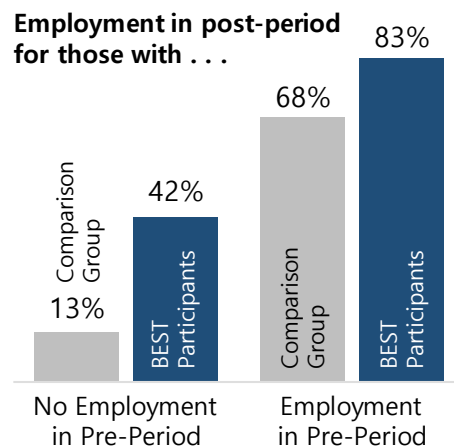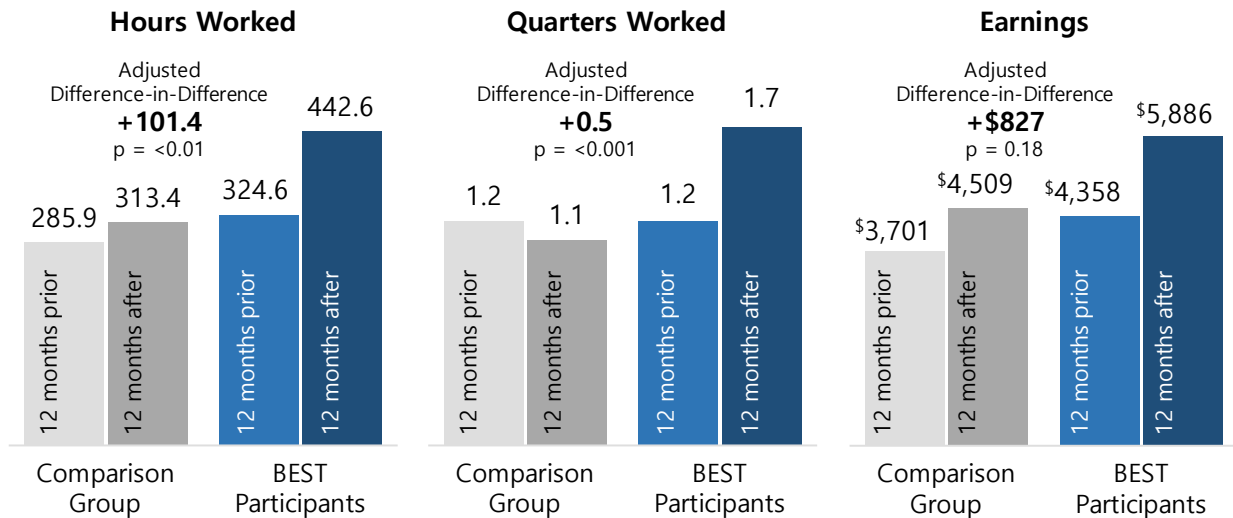
FIGURE 3.

Employment 12-Months Following

Employment in post-period for those with . . .
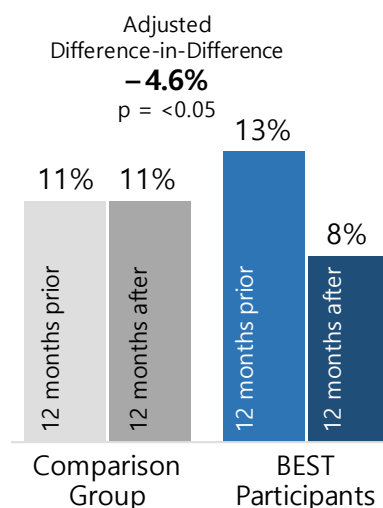
FIGURE 4.
Employment Outcomes

Criminal Justice Involvement. There was a small, but statistically significant, difference in arrest rates between BEST participants and the comparison group (*see* Figure 5).

- Arrest rates for the comparison group remained the same between the pre- and post-periods, but declined for BEST participants (DID = -4.6%, p <0.05).
- There was a small decline in the average number of arrests for BEST participants (DID = -0.2, p <0.01).

Other Health and Social Services. We examined the effects of BEST on a number of additional outcomes related to client stability, well-being, and financial independence: engagement in SUD treatment; inpatient psychiatric hospitalizations; utilization of physical health services (e.g., emergency department visits, hospitalizations in general medical settings); and receipt of publicly funded financial assistance (e.g., Basic Food, TANF, Supplemental Security Income, etc.).

FIGURE 5.
Arrest Rates

We found that BEST participants did not significantly differ from the comparison group for the majority of these outcomes (*see* Appendix). There were significant differences between groups (*see* Figure 6) in the percentage receiving Basic Food (DID = +6.0%, p <0.01), the average number of months receiving Basic Food (DID = +0.9, p<0.01), and the number of months enrolled in Medicaid (DID = +0.5, p <0.05).

FIGURE 6.
Basic Food and Medical Assistance

Basic Food Receipt

Adjusted Difference-in-Difference
+6.0
p = <0.01

85% 83% 87% 90%

Comparison Group / BEST Participants

Months of Basic Food Receipt
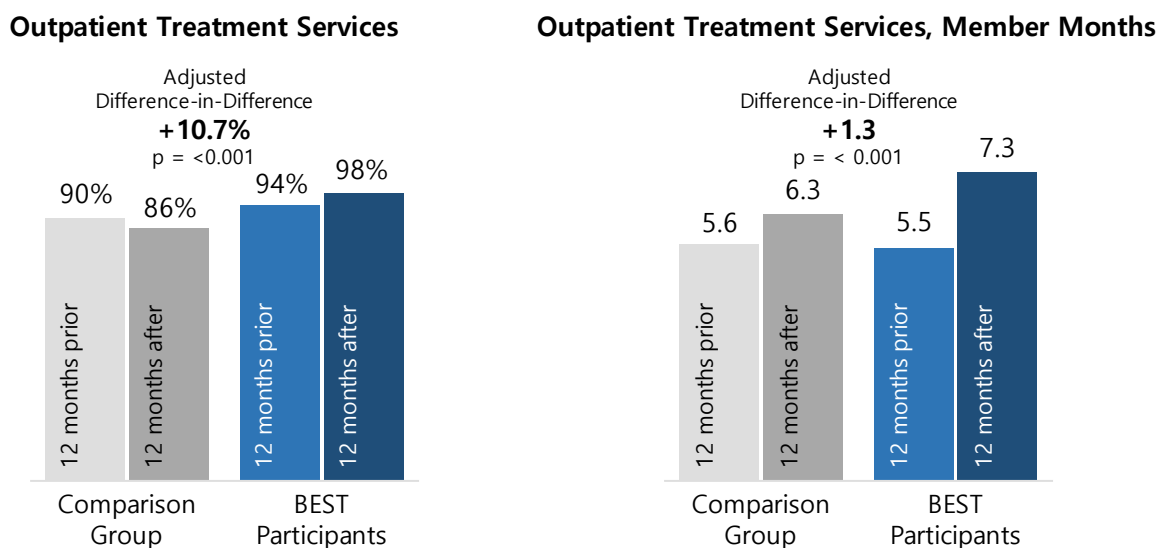
Adjusted Difference-in-Difference
+0.9
p = <0.01

8.3 8.4 8.3 9.1

Comparison Group / BEST Participants

Months Enrolled in Medicaid

Adjusted Difference-in-Difference
+0.5
p = <0.05

10.6 11.2 10.5 11.4

Comparison Group / BEST Participants
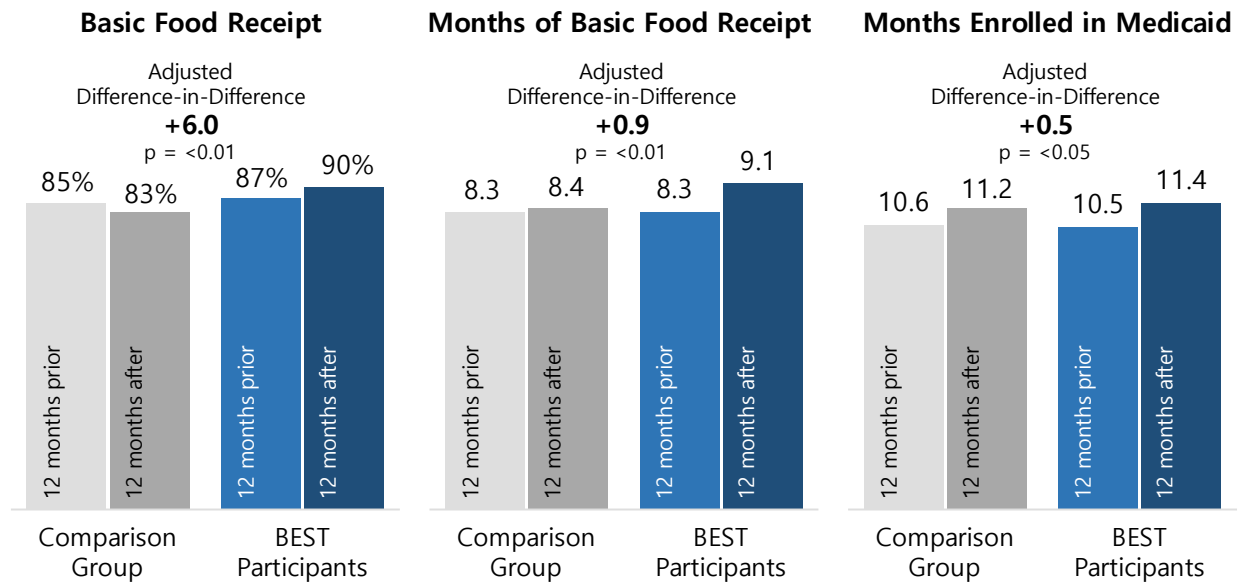
Mental Health Outpatient Services. The percentage of BEST participants receiving any outpatient mental health treatment services (Figure 7) increased between the pre- and post-periods, while the percentage of comparison group members decreased (DID = +10.7%, p <0.001). Analyses comparing changes in the total number of member months engaged in mental health treatment indicate that BEST participants were also more likely to remain engaged with mental health services longer than individuals in the comparison group (DID = +1.3, p <0.05).

FIGURE 7.
Mental Health Treatment

Outpatient Treatment Services

Adjusted Difference-in-Difference
+10.7%
p = <0.001

90% 86% 94% 98%

Comparison Group / BEST Participants

Outpatient Treatment Services, Member Months

Adjusted Difference-in-Difference
+1.3
p = < 0.001

5.6 6.3 5.5 7.3

Comparison Group / BEST Participants

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Self-Reported Well-Being. In addition to our matched comparison group analyses, we also examined changes in BEST participants' perceived well-being across 11 different psychosocial domains (*see list right*) using survey data gathered under the Government Performance and Results Act (GPRA). These analyses were restricted to individuals who completed an intake interview between March 2015 and September 2018 and either a six-month follow-up interview or discharge interview, whichever occurred first.[4]

Sample sizes vary across the domains examined due to differences in response rates for the underlying survey items. We compared changes in these self-reported measures using chi-square tests of independence to determine if enrollment in BEST was associated with significant improvements across eleven different domains.

Relative to the pre-period, clients reported statistically significant reductions in feelings of psychological distress, improvements in their overall functioning in everyday life, and were more likely to be employed/attending school regularly and retained in the community in the post-period (Figure 8). No other statistically significant changes were observed.

Self-Reported Outcomes from GPRA Questionnaire Data

1. Overall health
2. Perceptions of functioning in everyday life
3. Feelings of psychological distress
4. Illicit drug use
5. Tobacco use
6. Binge drinking
7. Were not homeless, incarcerated, or institutionalized in the 30 days prior to interview date (i.e., "retained in the community")
8. Housing stability
9. School attendance or employment/retirement status
10. Involvement with the criminal justice system
11. Social integration/connections to friends and family

FIGURE 8.

Self-Reported Functioning at Intake and 12 Months after Enrolling in BEST

Total (both sites) = 180 as of September 30, 2018
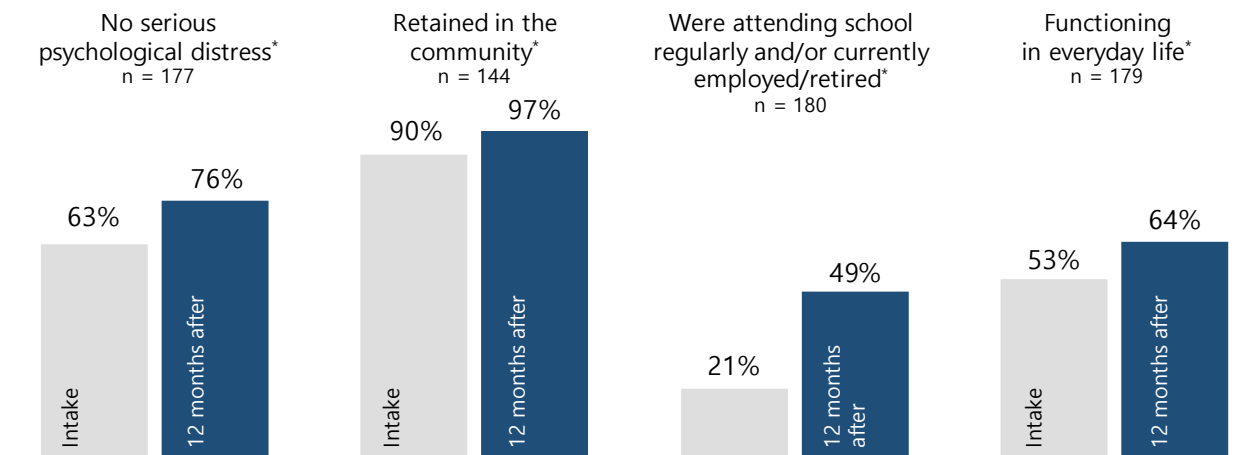
*All changes are statistically significant at p = <0.05

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[4] Between March 2015 and September 2018, 409 BEST participants completed an intake interview. Of these 409 participants, 180 (44 percent) participants completed a valid six-month follow-up interview or discharge interview.

Conclusion

BEST was a federally funded pilot program that offered IPS-SE services to 459 participants across four local mental health providers in Washington State. In this evaluation, we compared outcomes for 362 BEST participants who enrolled at one of two sites—Grant Mental Healthcare or Columbia River Mental Health Services—to a statistically matched comparison group of working-age individuals in Grant and Clark Counties who had some indication of a mental illness. In line with prior research and one of our hypotheses, we found that, relative to the comparison group, BEST participants experienced statistically significant improvements in their overall employment rate, average number of hours worked, and average number of quarters employed. These employment gains were particularly pronounced among clients who were unemployed in the year prior to enrollment in the program.

Participation in the BEST program yielded additional benefits beyond improvements in employment outcomes. BEST participants remained engaged with mental health treatment services longer than the comparison group[5] and were less likely to be arrested. Contrary to the expectation that IPS-SE services would reduce reliance on federal or state benefits, BEST participants were more likely to be enrolled in Washington State's food assistance program and, on average, received food and medical assistance for a longer period of time than members of the comparison group.

No significant differences were observed between BEST participants and the comparison group for the following outcomes: SUD treatment rates; inpatient psychiatric hospitalizations; utilization of physical health services (e.g., emergency department visits, hospitalizations in general medical settings); and receipt of publicly funded cash assistance (e.g., Supplemental Security Income, Temporary Assistance for Needy Families [TANF], etc.). Pre-post comparisons of survey data indicate that receipt of IPS-SE services reduced feelings of psychological distress and improved overall functioning in everyday life. BEST participants were also more likely to report that they were employed or attending school regularly and less likely to be institutionalized or homeless in the 30 days before follow-up.

While this study finds that participation in BEST improved individual outcomes across several domains, it is subject to four limitations. First, the study period includes the period of time when the administration of mental health services in both Clark and Grant Counties transitioned to fully integrated managed care coordinated by the state's Managed Care Organizations (MCOs). This made it difficult to obtain reliable information on the number of IPS-SE services that BEST participants received. Second, we cannot account for self-selection—unobserved differences in individual motivation or functioning that may affect a participant's success in the labor market as well as other outcomes. We controlled for employment history, mental health diagnoses, and prior mental health service receipt, but this does not fully mitigate the selection issue.[6] Third, only 44 percent (n = 180) of the 409 BEST participants who completed a GPRA intake interview between March 2015 and September 2018 completed a qualifying discharge or six-month follow-up interview.[7] Consequently, the results of our pre-post comparisons of the GPRA survey data should be interpreted with caution. Fourth, high staff turnover and difficulties coordinating with local Department of Vocational Rehabilitation (DVR) offices may have impacted the effectiveness of IPS-SE services offered under BEST, attenuating the effect of these services on client outcomes.

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[5] This may be an artifact of how this measure is constructed given that SE services are included in mental health treatment services.

[6] However, we re-analyzed our matched comparison group data using a Heckman control function (not shown here) to determine if unobserved differences in client motivation may have affected employment outcomes. Based on these analyses, only changes in client earnings were affected by self-selection into the treatment population.

[7] GRPA data collection was impacted by transitions between multiple data collection platforms over the course of the grant, such as the Common Data Platform (CDP), Transformation Accountability (TRAC) data system and SAMHSA's Performance Accountability and Reporting System (SPARS).

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TABLE A1
Baseline Characteristics

			Absolute Standardized Mean Difference
		BEST Participants	
	Matched Comparison Group		
TOTAL CASES	**724**	**362**	
Demographics			
Mean Age at Baseline	36.4	36.5	0.01
Under 18 Years of Age	2%	1%	0.08
18 - 24 Years of Age	15%	15%	0.02
25 - 34 Years of Age	32%	35%	0.07
35 - 44 Years of Age	24%	22%	0.05
45 - 54 Years of Age	18%	19%	0.02
55 - 64 Years of Age	10%	9%	0.02
White, Non-Hispanic	67%	70%	0.06
Minority	33%	30%	0.06
African American	7%	6%	0.02
Hispanic/Latino(a)	17%	17%	0.01
Asian or Pacific Islander	4%	3%	0.09
American Indian	9%	7%	0.05
Female	60%	56%	0.09
Male	40%	44%	0.09
High School or Less Education	78%	76%	0.05
Less than High School	23%	24%	0.02
High School/GED	55%	52%	0.06
Some College	18%	18%	0.01
College Education or Higher	3%	4%	0.08
Household Characteristics, as of Index Month			
Average Household Size	1.9	1.7	0.13
Live Alone	61%	65%	0.08
Any Minor in Household	32%	30%	0.04
Any Minor 12 Years of Age or Younger in Household	25%	23%	0.05
Household Earnings at or below Poverty Level	87%	88%	0.03
Employment History			
Employed in Prior Year	44%	44%	0.00
Average Earnings in Prior Year	$3,701	$4,358	0.07
Average Hours Worked in Prior Year	285.9	324.6	0.07
Average Number of Quarters Employed in Prior Year	1.2	1.2	0.02
Employed in Index Quarter	30%	32%	0.05
Employed, 1 to 3 months prior to index	27%	30%	0.05
Employed, 4 to 6 months prior to index	29%	31%	0.04
Employed, 7 to 12 months prior to index	36%	37%	0.02
Employed, 13 to 24 months prior to index	45%	45%	0.01
Average Length of Most Recent Unemployment Span, *in quarters*	22.8	22.3	0.02
Risk Factors			
Disability Status, *12 months prior to index*	46%	44%	0.04
Unstably Housed or Homeless, *12 months prior to index*	29%	29%	0.00
Homeless, *12 months prior to index*	22%	22%	0.00
Arrested, *12 months prior to index*	11%	13%	0.07
Ever Arrested	39%	41%	0.03
Ever Arrested for a Felony	24%	25%	0.01
Ever Convicted of a Crime	38%	40%	0.04

	Absolute Standardized Mean Difference		
	BEST Participants		
Matched Comparison Group			
Receipt of Human and Social Services, 12 Months Prior to Index			
Any Economic Services Administration Service (DSHS)	90%	91%	0.06
Basic Food	85%	87%	0.05
Temporary Assistance for Needy Families (TANF)	12%	11%	0.02
Aged, Blind, or Disabled Cash Assistance	12%	12%	0.01
Housing and Essential Needs	8%	8%	0.01
Division of Vocational Rehabilitation Service (DSHS)	5%	6%	0.02
Developmental Disabilities Administration Service (DSHS)	2%	2%	0.00
Aging and Long-Term Services (DSHS)	6%	4%	0.05
Federal Supplemental Security Income (SSI)	16%	18%	0.05
Child Welfare Services (DCYF)	13%	13%	0.01
Working Connections Child Care (DCYF)	3%	5%	0.10
Medicaid Coverage, 12 Months Prior to Index			
Title XIX Full Benefit	99%	99%	0.06
Disabled Medicaid	22%	22%	0.00
Expansion Adult	61%	63%	0.04
Dually Enrolled in Medicaid and Medicare	12%	12%	0.00
Third-Party Liability Coverage	6%	5%	0.08
Average Months Enrolled in Medicaid	10.6	10.5	0.06
Medicaid Coverage, as of Index Month			
Title XIX Full Benefit	98%	99%	0.08
Disabled Medicaid	21%	21%	0.01
Expansion Adult	57%	59%	0.02
Dually Enrolled in Medicaid and Medicare	11%	11%	0.02
Third-Party Liability Coverage	4%	3%	0.04
Medical History- Physical Health, 12 Months Prior to Index			
Chronic Disease Burden at or Above Average for SSI Population	28%	29%	0.02
ED Outpatient Visit (1 or more)	42%	43%	0.03
Any Inpatient Hospitalization - General Medical Setting	11%	9%	0.05
Total Number of ED Visits or Inpatient Admissions Per 1000 Member Months, 12 Months Prior to Index			
Number of ED Outpatient Visits	93.0	90.6	0.02
Number of Inpatient Hospitalizations - General Medical Setting	13.5	11.4	0.05
Medical History- Behavioral Health, 24 Months Prior to Index for Those with Medical Assistance			
Indication of Mental Illness	97%	97%	0.01
Mental Illness Diagnosis	96%	96%	0.03
Psychotic Disorder Diagnosis	20%	18%	0.05
Mania or Bipolar Disorder Diagnosis	24%	27%	0.05
Depressive Disorder Diagnosis	81%	80%	0.01
Anxiety Disorder Diagnosis	62%	63%	0.01
Attention Deficit Hyperactivity Disorder (ADHD) Diagnosis	10%	13%	0.08
Disruptive/Impulse/Conduct Disorder Diagnosis	2%	3%	0.04
Adjustment Disorder Diagnosis	9%	6%	0.09
Serious Mental Illness Indicator	90%	90%	0.00
Psychotropic Medication (Any)	67%	70%	0.07
Antipsychotic Medication	29%	28%	0.02
Antimania Medication	4%	2%	0.07
Antidepressant Medication	55%	60%	0.10
Antianxiety Medication	32%	33%	0.01
ADHD Medication	7%	7%	0.02
Indication of a Substance Use Disorder (SUD)	36%	39%	0.07
Drug Use Disorder Diagnosis	17%	18%	0.02
Alcohol Use Disorder Diagnosis	31%	34%	0.06

RDA

		Absolute Standardized Mean Difference
	BEST Participants	
	Matched Comparison Group	
Opioid Use Disorder Diagnosis	8%	8%	0.02
Indication of a Co-Occurring Disorder Mental Illness and SUD	35%	39%	0.07
Behavioral Health Treatment Services, 12 Months Prior to Index			
Any Mental Health Outpatient Services	90%	94%	0.18
Inpatient Psychiatric Hospitalization	5%	5%	0.02
Any SUD Treatment Services	11%	12%	0.03
SUD Outpatient Services	9%	11%	0.07
SUD Inpatient Treatment	4%	2%	0.10
Ever Received Supported Employment Services	22%	28%	0.13
Behavioral Health Treatment Services, Index Month			
Any Mental Health Outpatient Services	98%	98%	0.00

TABLE A2

Results of the Matched Comparison Analyses

	Matched Comparison Group		BEST Participants		Adjusted DID	Statistically Significant
	12-Month Pre-Period	12-Month Post-Period	12-Month Pre-Period	12-Month Post-Period		
Employed	43.9%	37.4%	43.9%	59.9%	+21.6%	p <0.001
Adjusted Earnings	$3,701.26	$4,509.27	$4,357.93	$5,886.17	+$827	N.S.
Hours Worked	285.9	313.4	324.6	442.6	+101.4	p <0.01
Quarters Worked	1.2	1.1	1.2	1.7	+0.5	p <0.001
Any Outpatient MH Treatment	90.1%	86.5%	94.2%	98.3%	+10.7%	p <0.001
Member Months with at Least 1 Mental Health Treatment Visit	5.6	6.3	5.5	7.3	+1.3	p <0.001
SUD Services	11.3%	12.7%	12.2%	12.7%	-0.8%	N.S.
Arrested	10.8%	10.8%	13.0%	8.3%	-4.6%	p <0.05
Average Number of Arrests	0.2	0.2	0.3	0.1	-0.2	p <0.01
ED Outpatient Visit	41.9%	39.9%	43.4%	37.3%	-3.4%	N.S.
ED Outpatient Visits, per 1,000 Member Months	93.0	100.5	90.6	80.6	-16.5	N.S.
Hospitalization (ED or non-ED)	10.5%	9.8%	9.1%	10.5%	+1.8%	N.S.
ED Inpatient Event	5.7%	6.5%	5.0%	6.4%	+0.4%	N.S.
Inpatient Psychiatric Hospitalization	5.1%	4.6%	4.7%	2.8%	-1.3%	N.S.
Supplemental Security Income (SSI)	16.0%	17.8%	18.0%	19.3%	-0.4%	N.S.
Months of SSI Receipt	1.8	1.9	1.9	2.0	+0.1	N.S.
Temporary Assistance for Needy Families (TANF)	11.6%	9.4%	11.0%	10.8%	+1.6%	N.S.
Months of TANF Receipt	0.7	0.7	0.6	0.7	+0.1	N.S.
Basic Food Receipt	85.4%	82.9%	87.0%	90.1%	+6.0%	p <0.01
Months of Basic Food Receipt	8.3	8.4	8.3	9.1	+0.9	p <0.01
Aged, Blind and Disabled Cash Assistance (ABD)	12.3%	15.9%	11.9%	16.0%	+0.3%	N.S.
Months of ABD Receipt	0.8	0.8	0.9	0.9	+0.0	N.S.
Housing and Essential Needs (HEN)	8.1%	7.3%	8.3%	7.7%	+0.2%	N.S.
Months of HEN Receipt	0.5	0.5	0.5	0.5	+0.1	N.S.
Months of Medicaid Receipt	10.6	11.2	10.5	11.4	+0.5	p <0.05

Becoming Employed Starts Today (BEST)
Program Evaluation

DSHS

OVERVIEW AND STUDY POPULATION

A total of 459 participants enrolled in the Becoming Employed Starts Today (BEST) program from March 1, 2015 through September, 30 2019 across four program sites: Columbia River Mental Health Services (CRMHS) in Clark County, Grant Mental Healthcare (GMH) in Grant County, Kalispel Tribe of Indians, and Lower Elwha Klallam Tribe. Program participants were identified using monthly participant log data submitted by the four BEST sites to the Department of Social and Health Services' Research and Data Analysis Division (DSHS-RDA). For the purposes of this study, we restricted our starting population to the 393 program participants who enrolled in BEST through September 30, 2018 with either CRMHS or GMH and had sufficient follow-up periods for our difference-in-difference analyses.

We then restricted our attention to individuals who: (1) were successfully linked to administrative data available in the Integrated Client Database (ICDB); (2) were between the ages of 16 and 64 at index; (3) received at least one month of medical assistance in the 12 months prior to and following their enrollment date; (4) had some indication of a mental illness in either the 24 months prior to, or as of, their index month; (5) were alive for the entirety of the follow-up period; and (6) were correctly linked to their Automated Client Eligibility System (ACES) records. After applying these restrictions, 362 unique BEST participants (92 percent of the 393 enrolled through September 30, 2018) were included in the treated population used in the matching process; all of these individuals were successfully matched to observations selected from the pool of potential controls.

COMPARISON GROUP SELECTION

The matched comparison group was selected from the broader population of mental health clients who: (1) resided in Clark and Grant counties during the study timeframe; (2) met the population restrictions applied to the treated population; and (3) were not enrolled in supported employment services offered under Washington's 1115 Medicaid Transformation waiver at any time prior to or during a 15-month follow-up period. A separate observation was created for each month that an individual was deemed eligible for participation in the BEST program to maximize the possibility of identifying a potential match for each BEST participant. The index month for each observation in the control group corresponds to the month that an individual resided in one of the two program catchment areas and was found eligible for inclusion in the comparison group.

We used the Matching (Sekhon, 2011) procedure in R 3.5.0 (R Core Team 2018) to match individuals in the treatment and control groups based on their propensity to receive the treatment (i.e., enroll in the BEST program). Separate propensity score models were estimated for Grant and Clark County to account for demographic differences in the populations served by CRMHS and GMH and regional differences in employment rates and access to behavioral health services.

These propensity score models included individual-level measures such as demographics (age, gender, and race/ethnicity), employment and earnings histories, household characteristics (e.g., household size, any minors residing in the household, etc.), educational attainment, prior mental health diagnoses, receipt of mental health services, receipt of supported employment services, inpatient psychiatric hospitalizations, substance use disorder treatment, social service use (e.g., TANF, Department of Vocational Rehabilitation services, etc.), arrest histories, housing instability/homelessness, medical coverage type in the 12 months prior to, and as of, index month, and prior health care utilization.

In addition to matching clients using propensity scores, we also required exact matching between clients in the treatment and comparison groups on several key characteristics:

- Index month,
- Dual eligibility for Medicaid and Medicare in the prior 12 months,
- Employment status in the prior 12 months,
- Any indication of a serious mental illness in the prior 24 months,
- Received any mental health treatment services as of the index month, and
- County of residence.

For the purposes of this study, individuals in the treated population were assigned a residential county based on the location of the enrollment site even if they resided in an adjoining county. Each BEST participant was matched to two unique observations from the pool of potential controls from the same county to increase the statistical power of our analyses. We used the absolute standardized mean difference (ASMD) for each of the baseline characteristics selected for the matching process to determine if clients in the treatment and comparison groups were adequately matched at both the county level and in the aggregate. An ASMD score of less than 0.10 was used as an indicator of a well-balanced variable, while an ASMD score between 0.10 and 0.20 indicated adequate matching on the variable in question. Using these criteria, we identified a matched comparison group that was well-balanced on the variables used in the propensity score model and on additional variables not included in the matching process.

The final population for our analyses included 362 individuals in the treatment group matched to a comparison group of 724 observations (corresponding to 618 unique individuals) selected from the pool of potential controls. The quarter containing an individual's index month was identified as the "index quarter" that was used for employment outcomes including employment rates, earnings, and hours worked. Baseline characteristics were measured over a 12- or 24-month period prior to the index month, while outcomes were measured over a 12-month period prior to and following the index month. Outcomes for employment were measured over a four-quarter pre-/post-period that excluded the index quarter.

Following the development of the matched group, all other analyses were conducted using SAS 9.4 (SAS Institute, Cary NC). Difference-in-difference models were estimated using PROC REG to assess the impact of IPS-SE services on client outcomes in the 12 months prior to and following first service receipt. Because an individual could qualify for inclusion in the comparison group for multiple months and be matched to more than one individual in the treated population, all standard error estimates were adjusted to account for this possibility. Impact analyses were also adjusted for residual post-match differences in baseline characteristics between the treatment and control groups by inclusion of covariates in the difference-in-difference models.

LIMITATIONS

Selection bias is an inherent threat to the validity of drawing causal inferences from observational data. We mitigated the risk of selection bias by using the propensity score matching with variables derived from the Integrated Client Database (e.g., demographics, employment trajectory, and prior mental health service history) to identify a comparison group that, in the aggregate, closely resembled BEST participants. However, unobserved variables related to client engagement, motivation, health status, and level of functioning that are not available in administrative data may have influenced outcomes in our study population. It is not possible to balance treatment and comparison groups on unobservable variables.

DATA SOURCES AND MEASURES

Participant Log

- Employment specialists documented information on BEST enrollment, job development, job placement, and participant earnings in a participant log. In addition to contributing to site-specific quality assurance efforts, the monthly data were used for tracking program participation, services, and preliminary outcomes such as job placement.

Government Performance Report Act National Outcome Measures (GPRA NOMS)

- GPRA survey data was gathered by employment specialists and subsequently entered into SAMHSA's Performance Accountability and Reporting System (SPARS) to track changes in client outcomes prior to and following BEST enrollment. The GPRA data reported here was downloaded from SPARS on October 25, 2019.

Demographics

- Demographics (age, race/ethnicity, and gender) were drawn from the DSHS Integrated Client Database (ICDB; Mancuso, 2020) using information from DSHS and health service systems.
- Information on educational attainment was extracted from the Automated Client Eligibility System (ACES), which also includes information on participants receiving state and federally funded cash, food, and medical assistance.

Household Information

- Household data is based on assistance unit (AUs) information obtained from ACES. In situations where a client belonged to multiple AUs in a month, these AUs are ranked based on the client's relationship to the head of household, financial responsibility code, and AU type. Clients are assigned to the AU that was most closely aligned with the concept of a household or family for that month.

- Family income and poverty level information are based on income data reported to DSHS financial workers and recorded in ACES for all individuals associated with a household in that month.

Medical Coverage

- Medicaid and other medical coverage information was obtained from eligibility codes recorded in ProviderOne.

Behavioral Health, Chronic Illness, and Disability Status

- Data from two information systems—ProviderOne (medical) and the Behavioral Health Data System (mental health and substance use disorders)— were used to identify the presence of substance use disorders and/or mental illness over a 24-month window prior to enrollment based on diagnoses, prescriptions, and treatment records.

- Drug and alcohol-related arrest data maintained by the Washington State Patrol were also used to identify probable substance use issues.

- An indicator of chronic illness was developed to identify individuals with significant health problems. A risk score equal to one is the score for the average Medicaid participant 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; Kronick et al., 2000).

- Disability status records in ACES were used to identify participants who met state or federal disability standards.

- Information on psychotropic medication receipt is derived from data on filled prescriptions recorded in ProviderOne.

- Serious mental illness was indicated if a client was assigned to the Psychiatric High, Medium, or Medium Low Chronic Illness and Disability Payment System (CDPS) diagnostic categories (Kronick et al. 2000) during the 24 months prior to enrollment. Clients were assigned to CDPS categories based on diagnosis data available in ProviderOne, the Behavioral Health Data System, and the DSHS Aging and Long-Term Services Administration's CARE database. Example diagnoses include: schizophrenia, bipolar affective disorder, and major depressive disorder.

Outpatient Behavioral Health Service Encounters

- Service encounter records in ProviderOne and the Behavioral Health Data System were used to track outpatient mental health services. Specific service modalities were identified using the Division of Behavioral Health and Recovery's (DBHR) Service Encounter Reporting Instruction (SERI) categories and Healthcare Common Procedure Coding Systems (HCPCS) codes and/or Current Procedure Terminology (CPT) codes.

- Service encounter records in ProviderOne and the Behavioral Health Data System were used to track outpatient substance use disorder services.

Inpatient Behavioral Health Treatment Data

- Information on client inpatient stays was obtained from ProviderOne, the Behavioral Health Data System, and state hospital records. Spans of inpatient service were transformed into a series of flags that indicated whether a client received treatment in an inpatient setting in a given month and year. These flags were then used to determine if a client was treated in an inpatient setting during the study period.

Emergency Department Use and Hospitalizations in General Medical Settings

- Emergency department and hospitalizations in general medical settings were identified from Medicaid claims and encounters in ProviderOne.

Housing Instability

- Homelessness status is based on living arrangement and address information recorded in ACES and housing service information recorded in the Homelessness Management Information System (HMIS).

Public Assistance

- Receipt of publicly funded financial assistance was identified using data from the DSHS Automated Client Eligibility System (ACES) summarized in the ICDB.
- Receipt of social services provided by divisions within DSHS (e.g., the Division of Vocational Rehabilitation Services, the Aging and Long Term Services Administration, etc.) or other sister agencies (e.g., the Department of Children, Youth, and Families) are based on information obtained from ProviderOne, the Social Service Payment System, and/or agency-specific databases and summarized in the ICDB.

Employment

- Employer-reported data on quarterly employment status, earnings, and hours worked came from the Washington State Employment Security Department (ESD) Unemployment Insurance wage file. Individuals were flagged as employed if they had at least one quarter of non-zero earnings during the 12 months prior to enrollment. Yearly earnings were calculated by summing quarterly earnings within the 12-month pre-/post-periods.

Criminal Justice Involvement

- Arrest rates were based on offenses reported to the Washington State Patrol (WSP), which include arrests for felonies, gross misdemeanors, and other offenses. WSP records arrests regardless of whether they led to a conviction. Some less serious misdemeanor offenses or non-criminal infractions handled by local law enforcement agencies were not required to be reported in the WSP database and are not included in the analyses.

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