Washington State Institute for Public Policy

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FACTORS RELATED TO EMPLOYMENT AND HOUSING OUTCOMES OF PUBLIC MENTAL HEALTH CONSUMERS IN WASHINGTON STATE

INTRODUCTION

In the last decade, state mental health agencies have increasingly focused on a "recovery-oriented" approach to providing public mental health care. While recovery sounds like a straightforward and important goal for mental health consumers, definitions of recovery are diverse and varied.[1] Consequently, outcome measures for public mental health consumers in Washington State have not always been consistent or uniform.[2] Successful independent living may be one important indicator of treatment success. Specifically, improvements in employment and housing stability are two important gauges of recovery that can be measured and tracked using administrative data sources.

The strategic plan for the Washington State Division of Behavioral Health and Recovery sets a goal to "increase the number of consumers showing positive outcomes in the areas of: employment, independent living, social connectedness, and substance use."[3] This study examines the relationship between mental health services and consumer characteristics on two of these outcomes—employment and independent housing.

SUMMARY

The Washington State Institute for Public Policy was directed by the 2001 Washington State Legislature to "conduct a longitudinal study of long-term [mental health] client outcomes to assess any changes in client status at two, five, and ten years." In addition to the reports specified by the Legislature, the Institute has released a series of reports covering topics of interest. This latest discusses supported employment and housing outcomes for public mental health consumers in Washington State.

For this analysis, we selected all adults who received public mental health services in 2006. We then analyzed all service episodes for these individuals between 2002 and 2007. Based on these records, we examined how employment and housing outcomes related to treatment patterns. According to this analysis, and a review of national literature:

- Employment history, diagnosis, and functioning all predict likelihood of employment after treatment.
- Earnings' levels for employed adults remain low; eligibility guidelines for benefit programs (such as SSI) may also constrain employment decisions.
- Supported employment and permanent supportive housing programs can improve outcomes for consumers, if implemented according to recommended guidelines.

[1] D. M. Norell, J. M. Roll, D. G. Dyck, & M. L. Rodgers (2007). An overview of mental health recovery. *Primary Psychiatry, 14*(12), 76-85.

[2] DMA Health Strategies (2009, April). *Improving care: Options for redesign of Washington's mental health system.* Lexington: MA: DMA Health Strategies, p. 16. Available from: http://dmahealth.com/pdf/wastatefinalrev.pdf

[3] <www.dshs.wa.gov/pdf/hrsa/mh/Strategic_Plan_2006.pdf>

Suggested citation: Mason Burley & Jim Mayfield (2010). *Factors related to employment and housing outcomes of public mental health consumers in Washington State.* Olympia: Washington State Institute for Public Policy, Document No. 10-08-3401.

Mental Health Services

Previous analyses of employment outcomes among Washington's public mental health consumers point out the difficulties of following employment during and after treatment.[4] This difficulty arises because service records do not indicate when treatment has been completed or terminated.

While information about the successful completion of treatment is not available, we can make reasonable estimates about the length and types of mental health treatment episodes. To determine episode history, we selected a group of 32,139 adult consumers who received public mental health services at any time during 2006.

For these individuals, we examined all treatment episodes that occurred between 2002 and 2007. An episode was defined as an inpatient or residential admission or outpatient treatment with no gaps in treatment greater than 90 days. Using this approach, we could construct a lengthy treatment history for our study cohort.[5]

Among the adults selected for the study cohort, nearly half (42 percent) had just one service episode between 2002 and 2007, an additional 40 percent had two episodes, and 18 percent had three or more episodes (Exhibit 1).

Exhibit 1
Number of Service Episodes for Study Cohort (2002–2007)

Number of Episodes Without Break in Services	Persons (Percentage)
One	13,619 (42.4%)
Two	12,866 (40.3%)
Three	4,979 (15.5%)
Four	568 (1.8%)
Five	107 (0.3%)

Note: A single episode may include multiple mental health services.

Once this treatment history was developed, we calculated the most significant (or primary) treatment episode for each consumer. These episodes included the following categories:

1) **Inpatient or Residential Stay** (22.4 percent)
2) **Long-Term, Consistent Treatment** (24.1 percent): One year or more of outpatient treatment with two or more sessions per month (on average)
3) **Periodic Treatment** (18.7 percent): Two months or more of sporadic outpatient treatment, less than two sessions per month (on average)
4) **Short Term, Consistent Treatment** (29.5 percent): Between two and twelve months of outpatient treatment with two or more sessions per month
5) **Temporary** (5.3 percent): Longest outpatient treatment episode lasted less than 60 days (and more than one day)

The service episodes chosen for this analysis included a significant period of mental health treatment for most members of the study cohort. By definition, "temporary" consumers did not have any episodes longer than 60 days. The median number of days for service episodes for other consumers ranged between 147 days (short-term consistent) and 804 days (long-term consistent). One-third of all consumers in the study group had mental health services prior to the start of the primary service episode (Exhibit 2).

[4] J. Hal & G. Hannah (2006). Employment and mental health service utilization in Washington State. *The Journal of Behavioral Health Services & Research, 33*(3), 287-303.

[5] Outpatient service encounters included the following: Individual Treatment, Counseling/Psychotherapy, High Intensity Treatment, and Group Treatment.

Exhibit 2
Length of Service Episode and Prior Services for Study Cohort (2002–2007)

Primary Episode Type	Adults	Median Days in Episode	Percentage With Prior Episode
Inpatient or Residential Stay	7,184	399	38.3%
Long-Term, Consistent	7,749	804	32.8%
Periodic Treatment	6,016	484	38.5%
Short-Term, Consistent	9,497	147	29.9%
Temporary	1,693	19	15.3%
Total	**32,139**	**351**	**33.3%**

PART ONE: EMPLOYMENT OUTCOMES

The Washington State Institute for Public Policy's (Institute) longitudinal study of public mental health consumers in Washington State found that over a five-year period, only 32 percent of these adults worked for any period of time.[6] In addition, only 12 percent worked for more than two years during this period. While this study looked at how length of time in treatment was related to employment, other factors were not considered.

For this analysis, we identified the consumer's last day of mental health service and then merged employment records for two years thereafter. Using follow-up data, we can assess the relationship between service utilization and other variables that may be related to employment outcomes. These variables include:

- Demographics (age, sex, ethnicity, number of dependents)
- Regional Support Network (13 regions)
- Diagnosis and assessment results (functioning scores, diagnosis, comorbid conditions)
- Treatment detail (treatment duration, consistency, intensity, and type)

Characteristics Associated With Employment Outcomes

In addition to the demographic and treatment characteristics of the study cohort, we also examined the consumer's employment history in the two years prior to starting treatment. As expected, one of the strongest indicators of employment levels was the history of prior employment. Among the 12,435 adults with previous employment, 50 percent (6,271) continued working in the two years after leaving treatment (Exhibit 3). For those without previous employment experience at the time they started treatment, only 15 percent (2,872) worked after receiving mental health services.

Exhibit 3
Relationship of Recent Work Experience to Two-Year Employment Outcomes

		Employment Two Years After Treatment		
Work Experience at Start of Treatment		Unemployed (After)	Employed (After)	Total
	Unemployed (Prior)	16,832 (85%)	2,872 (15%)	19,704
	Employed (Prior)	6,164 (50%)	6,271 (50%)	12,435
	Total	22,996 (72%)	9,143 (28%)	32,139

[6] M. Burley (2009). *Outcomes for adult public mental health clients in Washington State: A five-year longitudinal analysis.* Olympia: Washington State Institute for Public Policy, Document No. 09-06-3401.

Employment outcomes also differed based on the consumers primary service episode. As Exhibit 4 (next page) shows, consumers with long-term, consistent treatment episodes had the lowest level of employment (21 percent). The employment rate for these consumers was about half that of individuals with a brief, temporary encounter (46 percent). Of course, many issues other than service utilization play a role in the employment outcomes of mental health consumers. And, individuals who are more likely to engage in long-term mental health treatment may also be less employable, compared with other consumers. Among the study cohort, employment rates did not differ substantially by race, gender, or region. Employment, however, was highest (57 percent) among younger consumers aged 18 to 24, and declined with age.

Measures of functioning or diagnoses have a much stronger relationship to employment, as shown in Exhibit 4. Consumers with a diagnosis of schizophrenia had employment levels of 16.5 percent, significantly below other consumers. Similarly, consumers with low levels of functioning (as indicated by the Global Assessment of Functioning-GAF score) had poor employment outcomes. About 20 percent of individuals assessed with severe functioning impairment were employed, compared with approximately 40 percent of consumers with moderate or mild functioning problems.

In this analysis, we also constructed an indicator of substance use. Consumers with a dual (mental health and substance abuse) diagnosis or a Global Assessment of Individual Needs (GAIN) score showing substance use were identified. Consumers with a substance abuse issue had only slightly lower employment rates than other consumers.

Earnings Differences

Another factor influencing employment outcomes may be how a consumer's decision to work influences other benefits. In most cases, consumers must be low-income (Medicaid-eligible) and meet other disability criteria to qualify for state-funded mental health treatment. Many consumers receive federal Supplemental Security Income (SSI) payments or Social Security Disability Insurance (SSDI) as their primary source of income.[7] In these cases, benefits are reduced if individuals earn over certain amounts.

To be eligible for SSI, individuals must earn less than $1,433 per month ($17,196 per year).[8] Individuals can earn up to $1,180 per month and qualify for the maximum SSI benefit of $674 per month. For every two dollars that a worker earns above this level, the SSI benefit is reduced by one dollar.

Among the 29,425 working-age adults in this study (aged 18 to 64), 69 percent had no wage income in the two years after mental health treatment (Exhibit 5). For those individuals who were employed, we calculated the average quarterly wages earned over two years. The $1,433 monthly limit on earnings for SSI corresponds to $4,300 per quarter; we used this cutoff to determine how many workers had earnings above this limit. Twenty-five percent of all working-age adults earned less than $4,300 per quarter on average following treatment. Only a small number of individuals in the study (6 percent) had average quarterly earnings that exceeded the SSI earnings level.

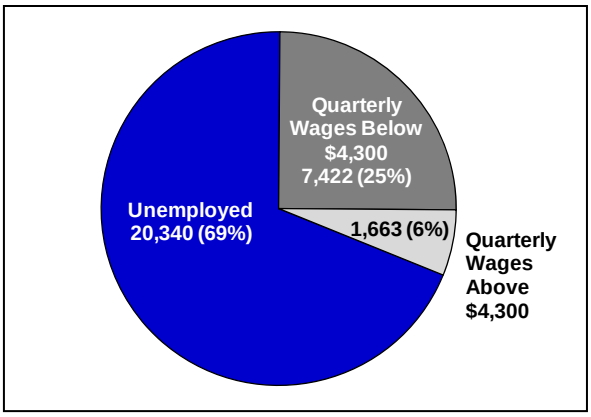
[7] Washington State Department of Social and Health Services (2006). *The voices: 2006 Washington State mental health resource & needs assessment study*. Olympia, WA: DSHS, Research and Data Analysis Division. Available from: http://www.dshs.wa.gov/pdf/ms/rda/research/3/31.pdf.

[8] http://www.ssa.gov/pubs/10003.html

Exhibit 4
Employment Outcomes by Consumer Characteristics

Consumer Category	Unemployed	Employed	Total
All Study Members	22,996 (71.6%)	9,143 (28.4%)	32,139
Primary Service Episode			
Inpatient or Residential Stay	5,456 (75.9%)	1,728 (24.1%)	7,184
Long-Term, Consistent	6,151 (79.4%)	1,598 (20.6%)	7,749
Periodic Treatment	4,557 (75.7%)	1,459 (24.3%)	6,016
Short-Term, Consistent	5,918 (62.3%)	3,579 (37.7%)	9,497
Temporary	914 (54.0%)	779 (46.0%)	1,693
Age			
18 – 24	1,622 (43.4%)	2,112 (56.6%)	3,734
25 – 34	3,799 (56.8%)	2,889 (43.2%)	6,688
35 – 44	5,179 (68.4%)	2,389 (31.6%)	7,568
45 – 54	6,175 (82.2%)	1,333 (17.8%)	7,508
55 – 64	3,565 (90.8%)	362 (9.2%)	3,927
65 plus	2,656 (97.9%)	58 (2.1%)	2,714
Primary Diagnosis			
Adjustment disorders	473 (56.4%)	365 (43.6%)	838
Anxiety disorders	3,082 (67.2%)	1,504 (32.8%)	4,586
Mood disorders	13,064 (68.4%)	6,030 (31.6%)	19,094
Other Diagnosis	918 (84.8%)	165 (15.2%)	1,083
Schizophrenia and other psychotic disorders	5,459 (83.5%)	1,079 (16.5%)	6,538
Global Assessment of Functioning			
1 – 40 SEVERE	7,798 (80.2%)	1,928 (19.8%)	9,726
41 – 50 SERIOUS	10,891 (70.2%)	4,631 (29.8%)	15,522
51 – 60 MODERATE	3,807 (63.0%)	2,238 (37.0%)	6,045
GT 60 MILD	500 (59.1%)	346 (40.9%)	846
Substance Abuse Problem			
Dual Diagnosis/GAIN Indicator	5,280 (73.3%)	1,925 (26.7%)	7,205
No AOD Indicated or Missing	17,716 (71.1%)	7,218 (28.9%)	24,934
Employment Experience			
Worked During Quarter Mental Health Services Started	2,036 (38.3%)	3,276 (61.7%)	5,312

Exhibit 5
Average Quarterly Earnings After Treatment



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Supported Employment

Individuals entering public mental health treatment typically have a history of unemployment and have been assessed with functional impairments that may limit their level and type of employment. This does not mean, however, that employment levels among public mental health consumers cannot be improved. Studies examining the impact of individualized placement and support for clients with mental illness found that increases in competitive employment for those accessing these services were significant.[9]

In order to find and retain employment, some consumers in the public mental health system are likely to need tailored assistance and support. Available evidence indicates that supported employment programs can be highly effective in improving the employment levels of mental health consumers. In a meta-analysis of rigorous supported employment evaluations, we found that on average, these interventions more than doubled the likelihood of competitive employment among severely mentally ill individuals willing to work (see Appendix A). Fidelity, or adherence, to the supported employment model is important for program success, as described by Skinner (2009):

> "…evidence-based supported employment entails a specific, well-researched approach: a team of employment specialists and mental health workers helps clients identify what kind of work they would like to do, find a job as quickly as possible, and succeed on the job or move to another job, while avoiding the lengthy assessments and prevocational training of traditional approaches."[10]

Program Budget

The Division of Behavioral Health and Recovery in Washington State contracts with thirteen Regional Support Networks (RSNs) to provide outpatient mental health services. Federal Medicaid funds are allocated to the RSNs based on a "capitated" (per member per month) system that specifies a base payment rate for approved outpatient treatment services. The Centers for Medicare and Medicaid Services (CMS) must grant a waiver (under title 1915(b) of the Social Security Act) for Washington to deliver mental health services in this manner.

Washington's approved state plan under this waiver outlines fifteen direct service outpatient modalities paid for with Medicaid dollars.[11] Estimated cost savings from these "state plan" services can be allocated to additional services under Section 1915(b)(3) of the federal regulations. These supplementary activities are known as "b3 services" and in Washington State include respite care, mental health clubhouse, and supported employment. These b3 services cannot duplicate other federally funded programs.

[9] R. E. Drake, D. R. Becker, R. E. Clark, R.E., & K. T. Mueser (1999). Research on the individual placement and support model of supported employment. *Psychiatric Quarterly*, *70*(4), 289-301.

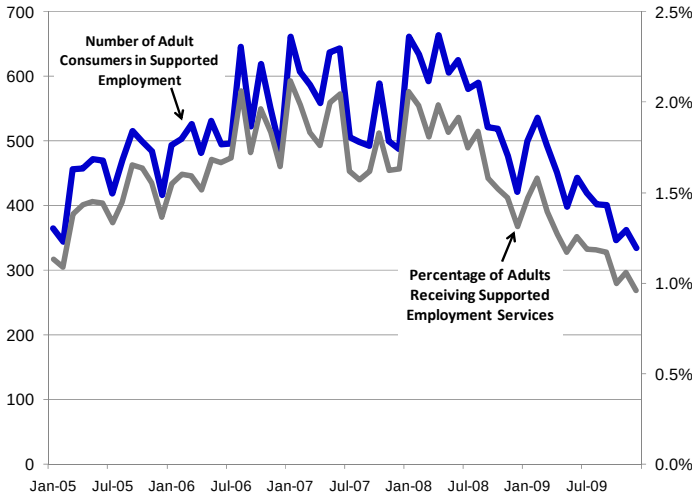
[10] J. S. Skinner, G. R. Bond, H. H. Goldman, & R. E. Drake (2009). Social security and mental illness: Reducing disability with supported employment. *Health Affairs, 28*(3), p. 763.

[11] These services include Brief Intervention Treatment, Day Support, Family Treatment, Group Treatment, High Intensity Treatment, Individual Treatment, Intake Evaluation, Medication Management, Medication Monitoring, Peer Support, Psychological Assessment, Rehabilitation Case Management, Special Population Evaluation, Stabilization Services, and Therapeutic Psychoeducation (see: http://www.dshs.wa.gov/pdf/hrsa/mh/medicaid_state_plan_modalities_&_b3_service_modalities.pdf).

In 2004, these supplementary b3 services represented 7 percent of all dollars spent annually per consumer in Washington State.[12] Supported employment, however, represented the smallest percentage of supplementary services, accounting for 1 percent of total per-consumer dollars.

On a per-person basis, approximately 1 to 2 percent of adult public mental health consumers receive supported employment services (Exhibit 6). This analysis cannot examine the effectiveness of supported employment in Washington without a valid comparison group. We can, however, look at how this service and other factors relate to employment outcomes for our study cohort.

Exhibit 6
Supported Employment Participation



WSIPP, 2010
WSIPP analysis of service data. See: http://www.mhd-pi.com (secure site)

[12] http://mhtransformation.wa.gov/pdf/mhtg/CMHP_With Appendix.pdf (p. 82)

Employment Dynamics

Improving employment outcomes of public mental health consumers will require more detailed knowledge about the characteristics and circumstances of individuals who are able to find and retain competitive employment. To determine how these factors are related, we developed a statistical (regression) model analyzing the likelihood of employment among our study cohort (Appendix B). The factors examined included:

- Employment history
- Treatment episode duration and type
- Service encounters (i.e., supported employment)
- Demographics
- Regional information
- Diagnoses and functioning

The key elements in predicting employment for adults leaving public mental treatment were:

- **Employment History**: For each quarter worked in the time before leaving treatment, the likelihood of employment increased ***67 percent***. If a consumer was working at the time treatment started, the odds of subsequent employment increased by ***31 percent***.
- **Supported Employment**: Consumers who received supported employment services were ***51 percent*** more likely to be employed in the two years following treatment.
- **Inpatient Episodes**: Consumers with an inpatient treatment episode were ***21 percent less likely*** to be employed after treatment, and consumers with a long-term, consistent outpatient episode were ***15 percent less likely*** to be employed.
- **Diagnosis**: A diagnosis of schizophrenia reduced the odds of employment by ***28 percent.*** Lower functioning scores were also related to unemployment.

The employment follow-up period for this analysis occurred in 2006 and 2007, just prior to the beginning of a recession. While we controlled for the worsening employment environment that occurred during this period, the results may still be sensitive to economic fluctuations. Nevertheless, these results provide an instructive picture of the employment prospects for different groups of public mental health consumers. This information can be used to create goals for employment outcomes in the state's public mental health system.

A recent external quality review of Washington's public mental health system found that most RSNs had not developed outcome measures or methods to measure recovery. The review noted that successful employment and permanent housing were two outcome measures that could be tracked.[13] The final section to this report includes a more detailed analysis of housing outcomes for mental health consumers in Washington State.

PART TWO: HOUSING OUTCOMES

While employment measures for consumers can be tracked before, during, and after services, data on an individual's housing status is limited to the information reported during treatment. Every three months (or at a major change in services), mental health consumers provide a report on their current living situation. Reported living situations include:

- Private residence without support
- Private residence receiving support
- Foster home
- 24-hour residential care
- Institutional setting
- Jail/juvenile correction facility
- Homeless/shelter
- Unknown
- Other

These records do not provide a complete picture of the residential status of public mental health consumers following treatment. However, these reports can provide information about housing and homelessness between the times individuals enter and leave services. Ongoing monitoring of a consumer's housing situation offers an important measure of stability. According to national research, "five percent of persons with serious mental illnesses are homeless at any given point in time, as many as two-thirds of all people with serious mental illnesses have experienced homelessness or have been at risk of homelessness at some point in their lives."[14]

[13] Acumentra Health. (2009, December). *2009 external quality review annual report.* Portland, OR: Author. Available from: www.dshs.wa.gov/pdf/dbhr/ExternalQualityReviewAnnualReport2009.pdf

[14] Substance Abuse and Mental Health Services Administration (2003). *Blueprint for change: Ending chronic homelessness for persons with serious mental illnesses and co-occurring substance use disorders* (DHHS Pub. No. SMA-04-3870). Rockville, MD: Center for Mental Health Services. Substance Abuse and Mental Health Services Administration, p. 12.

For the cohort included in this study, we followed housing statuses reported by the consumer during the treatment episode (Exhibit 7). Eighty-one percent of consumers lived independently in a private residence at some point during treatment. Periods of homelessness, however, were also common. During the time in treatment, nearly one in five (18 percent) reported being homeless or living in a shelter. This figure may also underestimate the prevalence of homelessness among the study group. Fifty-three percent of consumers had an "unknown" housing status at some point during treatment, which may indicate lack of stable or permanent housing.

Exhibit 7
Housing Statuses Reported During Treatment

Housing Status	Percentage With Status*
24-hour Residential Care	2,893 (9.0%)
Homeless/Living in Shelter	5,624 (17.5%)
Institutional Setting	1,896 (5.9%)
Jail or Corrections	2,153 (6.7%)
Other	2,057 (6.4%)
Private Residence With No Support	26,000 (80.9%)
Private Residence With Support	5,239 (16.3%)
Unknown	17,162 (53.4%)
Total	**32,139**

* Total percentages exceed 100 percent (and total exceeds 32,139) since each housing status reported by the consumer is included.

Housing Supports

A recent Institute literature review and meta-analysis examined a variety of housing support models for individuals with mental health disorders.[15] Typically, these programs provide other services in addition to housing, such as health care, mental health treatment, and substance abuse treatment. Limiting their review to studies that met high standards of rigor, the authors found nine housing support programs for persons with mental illness that measured outcomes such as homelessness, hospitalization, and crime. Appendix A summarizes our combined analyses of these evaluations and describes the following impacts:

- **The Impact of Housing Supports on Homelessness.** Three studies of seven independent interventions evaluated the impact of supported housing on homelessness. The combined effects from these studies revealed that programs providing housing supports for persons with mental illness significantly reduced homelessness by 34 percent.
- **Impact of Housing Supports on Use of Hospital Services.** Four studies reported the impact of housing supports on the use of hospital services. Measured in admission days or hospital expenses, the combined results of these studies indicated significant reductions in the use of hospital services among mentally ill recipients of housing supports.
- **Impact of Housing Supports on Crime.** Two studies measured the impact of housing supports on crime among homeless people with mental illness. Combined, the studies indicated that the receipt of housing supports significantly reduced crime in that population by 5 percent.

[15] M. Miller & I. Ngugi (2009). *Impacts of housing supports: Persons with mental illness and ex-offenders.* Olympia: Washington State Institute for Public Policy, Document No. 09-11-1901.

In 2006, the Washington State Legislature allocated funds to the Mental Health Division (MHD) of the Department of Social and Health Services to "begin a comprehensive transformation in the delivery of public mental health services to persons with severe and persistent mental illness."[16] This System Transformation Initiative had several major components, and directed MHD to "include preparation of a plan for expanding community housing options for people with persistent mental illness."[17] In October 2007, MHD completed the final Mental Health Housing Action Plan that assessed the need for community-based housing for public mental health consumers. The report noted that "providing community-based permanent supportive housing (PSH) is a cost-effective alternative to the revolving door of the street, shelter, emergency rooms, psychiatric hospitals, jails, and prisons."[18]

At the time of this review, 3,500 units of permanent supportive housing were available statewide. The plan estimated that an additional 5,000 units may be necessary to meet the needs among public mental health consumers in the state. An analysis of the unmet housing needs for this population is beyond the scope of this report. The next section of this report does look at which factors may relate to one being able to retain or gain stable housing.

Based on a thorough review of the research literature, permanent supportive housing appears to be an effective intervention to decrease homelessness, hospitalizations, and criminal justice system involvement among public mental health consumers. In 2010, the federal Substance Abuse and Mental Health Services Administration released a guide to help agencies implement effective Permanent Supportive Housing programs.[19] Key elements of this evidence-based practice include:

- Rights of tenancy
- Voluntary participation in a range of services (not linked to provision of housing)
- Choice in housing and living arrangements
- Housing meets affordability standards
- Housing does not segregate or confine individuals with psychiatric disabilities
- Access to housing and privacy

Unfortunately, data identifying individuals with permanent supportive housing services are not recorded in Washington State. This information is necessary to find out how effective these approaches may be in our region. In the absence of these data, we analyzed other characteristics and services that were associated with independent living. The next section describes these findings.

[16] http://www.leg.wa.gov/JLARC/AuditAnd StudyReports/2007/Documents/07-11.pdf. See: Chapter 372 § 204, SB 6386, laws of 2006, and Chapter 333, 2SSB 6793, laws of 2006.

[17] http://www.dshs.wa.gov/pdf/hrsa/mh/sti_budget_summary_10_17_06.pdf

[18] http://www.dshs.wa.gov/pdf/hrsa/mh/sti_final_mh_housing_action_plan_executive_summary.pdf

[19] http://mentalhealth.samhsa.gov/cmhs/CommunitySupport/toolkits/housing/

Independent Housing Dynamics

As mentioned previously, data available for this study include only an individual's housing status during the time mental health services were received. While longer-term housing outcomes would be of interest, determining which clients can move to independent housing during treatment is also instructive. To answer this question, we developed a statistical model (Appendix C) that assessed the likelihood of living in independent housing at the end of a treatment episode. The following factors were found to be significant:

- ↑ **Dependents in Household**: Older consumers and individuals with dependents were more likely to end treatment in a private residence. Each dependent increased the odds of independent living by ***28 percent***.
- ↑ **Functioning**: Individuals with higher levels on the Global Assessment of Functioning Scales (GAF) were ***57 percent more likely*** to exit treatment living independently.
- ↓ **Comorbid Substance Abuse**: Consumers with substance abuse and mental health disorders were ***9 percent less likely*** to have an independent living status at the conclusion of treatment.
- ↓ **Race**: African-American and Native American consumers were ***16 and 21 percent less likely*** (respectively) to be in independent housing at the end of an episode.
- ↓ **Housing Disruptions**: Consumers who reported a period of homelessness during the treatment episode were ***7 percent less likely*** and consumers who had been in jail were ***18 percent less likely*** to achieve independent living status. Crisis services also reduced the odds of independent living by ***13 percent***.

Individual characteristics and circumstances presented in this analysis show the factors associated with living independently in a private residence. These individuals may be more likely to sustain permanent housing and more likely to receive services meant to support independent living. Without a suitable comparison group, we cannot determine "what works" in helping improve housing outcomes among mental health consumers. However, understanding the dynamics related to both employment and housing stability can lay the groundwork for the successful implementation of evidence-based practices in these areas.

Appendix A
Meta-Analytic Estimates of Standardized Mean Difference Effect Sizes for Housing Support and Supported Employment Programs

Type of Program or Policy (and its effect on outcomes included in the meta-analysis)	Number of Effect Sizes Included in the Analysis (Number of cases in the treatment groups)	*Meta-Analytic Results Before Applying Institute Adjustments*					**Adjusted Effect Size** (estimated effect after adjustments for the methodological quality of the evidence, outcome measure relevance, and researcher involvement)
		Fixed Effects Model			Random Effects Model		
		Weighted Mean Effect Size		Homogeneity Test	Weighted Mean Effect Size		
		ES	p-value	p-value	ES	p-value	ES
Housing Supports for Persons With Mental Illness							
Homelessness	7 (600)	-0.359	.00	ns	na	na	-0.310
Hospitalization	4 (1,195)	-0.189	.00	ns	na	na	-0.120
Crime	2 (3,466)	-0.080	.00	ns	na	na	-0.038
Supported Employment for Persons With Severe Mental Illness							
Competitive Employment	15 (1,050)	na	na	na	.967	na	0.776

Notes: ns=not significant, na=not applicable.

Studies Used in the Meta-Analysis of Housing Supports

Culhane, D. P., Metraux, S., & Hadley, T. (2002). Public service reductions associated with placement of homeless persons with severe mental illness in supportive housing. *Housing Policy Debate, 13*(1), 107-163.

Lipton, F. R., Nutt, S., & Sabatini, A. (1988). Housing the homeless mentally ill: A longitudinal study of a treatment approach. *Hospital & Community Psychiatry, 39*(1), 40-45.

Rosenheck, R., Kasparow, W., Frisman, L, & Liu-Mares, W. (2003). Cost-effectiveness of supported housing for homeless persons with mental illness. *Archives of General Psychiatry, 60*, 940-951.

Sadowski, L. S., Kee, R. A., VanderWeele, T. J., & Buchanan, D. (2009). Effect of a housing and case management program on emergency department visits and hospitalizations among chronically ill homeless adults: A randomized trial. *JAMA: the Journal of the American Medical Association, 301*(17), 1771-1778.

Shern, D. L., Felton, C. J., Hough, R. L., Lehman, A. F., Goldfinger, S., Valencia, E., & Wood, P. A. (1997). Housing outcomes for homeless adults with mental illness: Results from the second-round McKinney Program. *Psychiatric Services, 48*(2), 239-241. [This study provided information on five programs.]

Studies Used in the Meta-Analysis of Supported Employment

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Appendix B

Likelihood of Employment in Two Years After Mental Health Treatment

	Regression Coefficient	Standard Error	Odds Ratio
Intercept	-0.4750*	0.1987	
Number of Quarters Worked in Two Years Before Leaving Treatment	0.5105**	0.00836	1.666
Primary Episode – Inpatient	-0.2406**	0.0830	0.786
Primary Episode – Long Term Consistent	-0.1648*	0.0844	0.848
Primary Episode – Periodic	-0.0549	0.0795	0.947
Primary Episode – Short Term Consistent	-0.0497	0.0704	0.952
Total Number of Episodes	-0.0364	0.0240	0.964
Length of Primary Episode (Months)	-0.00369*	0.00148	0.996
Male	-0.0879**	0.0343	0.916
Age	-0.0338**	0.00938	0.967
Age Squared	-0.00024*	0.000122	0.999
RSN – Chelan Douglas	0.0640	0.1319	1.066
RSN – Columbia	0.00589	0.0699	1.006
RSN – Clark	0.0186	0.0896	1.019
RSN – Grays Harbor	-0.1423	0.1511	0.867
RSN – King	0.1852**	0.0616	1.203
RSN – North Central	-0.0229	0.0943	0.977
RSN – North Sound	0.0544	0.0726	1.056
RSN – Peninsula	-0.0338	0.0872	0.967
RSN – Spokane	-0.0777	0.0847	0.925
RSN – Southwest	0.0801	0.1109	1.083
RSN – Timberland	-0.1537	0.1116	0.857
RSN – Thurston Mason	-0.0728	0.0908	0.930
Primary Diagnosis – Schizophrenia	-0.3314**	0.0596	0.718
Primary Diagnosis – Mood Disorder	0.0554	0.0450	1.057
Primary Diagnosis – Adjustment Disorder	0.1276	0.1037	1.136
GAF Score (Level 1 – 4)	0.1951**	0.0228	1.215
Comorbid (Substance Abuse/MH)	0.0975*	0.0411	1.102
Supported Employment	0.4126**	0.0675	1.511
Clubhouse	-0.1235	0.1475	0.884
Crisis Services	-0.0158	0.0382	0.984
Working at Start of Treatment	0.2688**	0.0448	1.308
Employment Follow-up Began in 2006	0.4488**	0.0471	1.566
Employment Follow-up Began in 2007	0.3657**	0.0439	1.441
	Cases	**Rsq**	**AUC**
	29,425	0.4590	0.862

Notes: **significant at 0.01 level, *significant at 0.05 level. Primary Episode estimates are relative to Temporary episodes, RSN estimates are relative to Pierce.

Appendix C

Likelihood of Ending Mental Health Treatment with Independent Residential Housing

	Regression Coefficient	Standard Error	Odds Ratio
Intercept	-1.4943**	0.1587	
Male	-0.2801**	0.0287	0.756
Age	0.0502**	0.00748	1.051
Age Squared	-0.00068**	0.000092	0.999
Race – Asian	0.1024	0.0823	1.108
Race – African American	-0.1751**	0.0499	0.839
Race – Native American	-0.2284**	0.075	0.796
Race – Other Race	-0.0508	0.0434	0.95
RSN – Chelan Douglas	-0.5147**	0.1066	0.598
RSN – Columbia	0.1699**	0.055	1.185
RSN – Clark	-0.444**	0.0692	0.641
RSN – Grays Harbor	-0.2709*	0.1109	0.763
RSN – King	0.9492**	0.0483	2.584
RSN – North Central	0.0726	0.0748	1.075
RSN – North Sound	0.5503**	0.0581	1.734
RSN – Peninsula	1.2307**	0.084	3.424
RSN – Spokane	-0.0304	0.0646	0.97
RSN – Southwest	-0.5367**	0.0866	0.585
RSN – Timberland	0.6665**	0.099	1.947
RSN – Thurston Mason	0.2322**	0.0725	1.261
Crisis Services	-0.1408**	0.029	0.869
Supported Employment	0.4433**	0.0636	1.558
Primary Diagnosis – Schizophrenia	0.1027*	0.046	1.108
Primary Diagnosis – Mood Disorder	0.2722**	0.0388	1.313
Primary Diagnosis – Adjustment Disorder	-0.8431**	0.0953	0.43
Comorbid (Substance Abuse/MH)	-0.0948**	0.034	0.91
GAF Score (Level 1 – 4)	0.4532**	0.0199	1.573
Homeless Status During Episode	-0.0712**	0.00266	0.931
Jail Status During Episode	-0.1966**	0.013	0.822
Number of Dependents	0.2493**	0.0147	1.283
Average Number of Treatment Sessions per Month	-0.0172**	0.00316	0.983
	Cases	**Rsq**	**AUC**
	29,394	0.2189	0.748

Notes: **significant at 0.01 level, *significant at 0.05 level. Race estimates relative to Caucasian, RSN estimates are relative to Pierce.

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