The Employment of Consumers with Serious Mental Illness

Petris Report # 2010-5

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Summary

Employment is a key recovery goal for many clients in the Full Service Partnership (FSP) program. In this report we evaluate employment issues among clients in the FSP program. Specifically, we address the following questions:

(1) What are the factors that influence the choice of employment as a recovery goal for transition age youth, adults and older adults just entering a FSP program?

(2) What are the factors that influence the employment status of transition age youth, adults and older adults over time in a FSP program?

To predict employment outcomes, we assessed the following factors: demographic factors (age, gender, educational background, current involvement in any education), psychiatric diagnoses, residential status, financial support, legal system involvement, substance abuse problems and their treatment, emergency interventions (physical health related, mental health/substance abuse related), months in a FSP program, whether there was any interruption in a consumer's participation in a FSP program, and whether employment was one of the client's recovery goals. To predict whether a client chose employment as a recovery goal at baseline, we assessed the same factors with the exception of months in a FSP program.

We find that age is inversely proportional to the choice of employment as a recovery goal and employment outcomes. As age increases, both the odds of choosing employment as a recovery goal and the likelihood of being employed decrease. Client factors that positively impact the choice of employment as a recovery goal include having education beyond high school, being non-competitively or competitively employed, being diagnosed with bipolar disorder and/or attention-deficit/hyperactivity disorder (ADHD) or conduct disorder, living in an emergency shelter, and being on probation. Client factors that positively impact being employed include the length of time spent in a FSP program, current involvement in an education program, choosing employment as a recovery goal, being diagnosed with ADHD or conduct disorder, living independently, and receiving financial support.

The key finding of this report is that as the length of time spent in a FSP program increases, the likelihood of being non-competitively or competitively employed also increases. This suggests a positive impact of the FSP program on clients' employment outcomes.

Chapter 1: Introduction

In November 2004, Californians approved the ballot measure Proposition 63 (which became the Mental Health Services Act) to expand public mental health funding and services. This report focuses on one subcomponent of MHSA, the Full Service Partnership (FSP), which is part of Community Services and Supports (CSS) component of MHSA. The CSS component provides funding for direct services and supports to people with a serious mental illness (SMI) or a serious emotional disturbance (SED).

Full Service Partnerships, according to the California Code of Regulations (Title 9, § 3620, 2010), may include the following services for adults:

Full Service Partnership Service Category.

(a) The County shall develop and operate programs to provide services under the Full Service Partnership Service Category. The services to be provided for each client with whom the County has a full service partnership agreement may include the Full Spectrum of Community Services necessary to attain the goals identified in the Individual Services and Supports Plan (ISSP). The services to be provided may also include services the County, in collaboration with the client, and when appropriate the client's family, believe are necessary to address unforeseen circumstances in the client's life that could be, but have not yet been included in the ISSP.

(1) The Full Spectrum of Community Services consists of the following:

(A) Mental health services and supports including, but not limited to:

(i) Mental health treatment, including alternative and culturally specific treatments.
(ii) Peer support.
(iii) Supportive services to assist the client, and when appropriate the client's family, in obtaining and maintaining employment, housing, and/or education.
(iv) Wellness centers.
(v) Alternative treatment and culturally specific treatment approaches.
(vi) Personal service coordination/case management to assist the client, and when appropriate the client's family, to access needed medical, educational, social, vocational rehabilitative and/or other community services.
(vii) Needs assessment.
(viii) ISSP development.
(ix) Crisis intervention/stabilization services.
(x) Family education services.

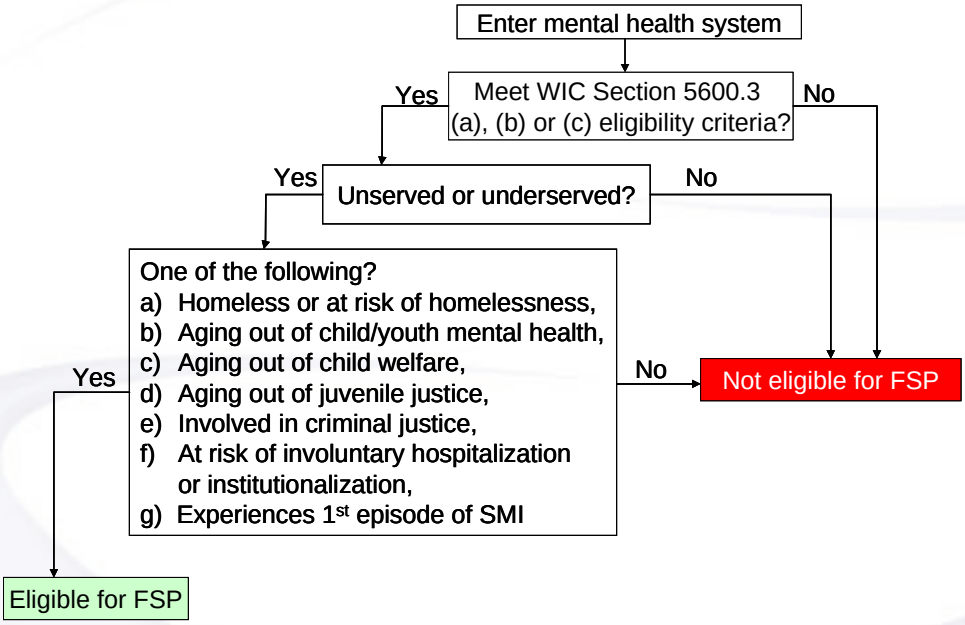
(B) Non-mental health services and supports including, but not limited to:

(i) Food.
(ii) Clothing.
(iii) Housing, including, but not limited to, rent subsidies, housing vouchers, house payments, residence in a drug/alcohol rehabilitation program, and transitional and temporary housing.
(iv) Cost of health care treatment.
(v) Cost of treatment of co-occurring conditions, such as substance abuse.
(vi) Respite care.

(C) Wrap-around services to children in accordance with WIC Section 18250 et. seq.

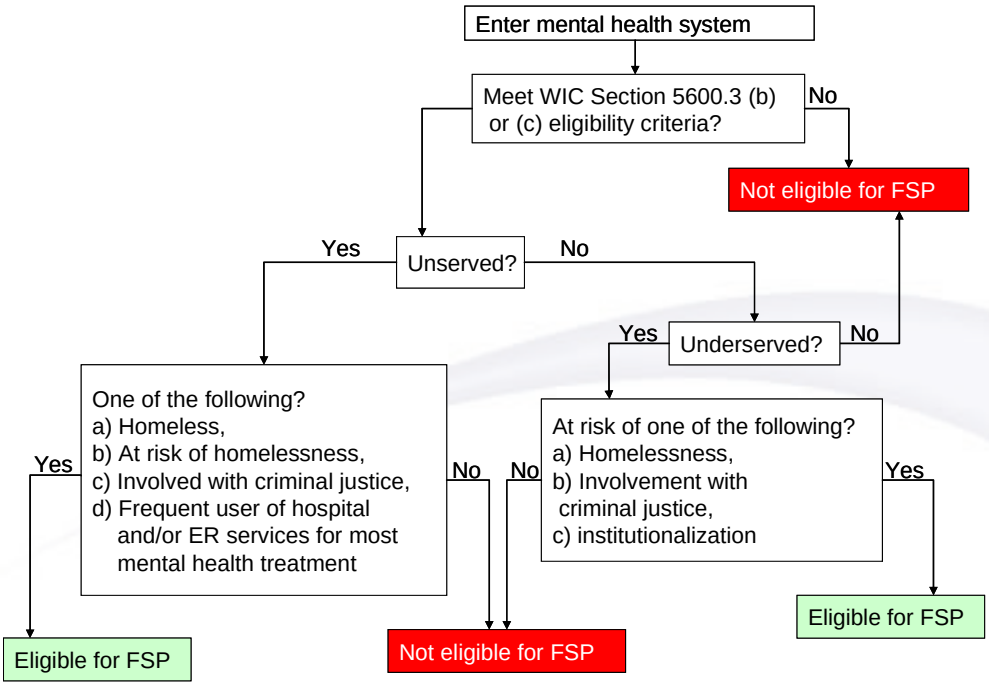
Figures 1.1, 1.2 and 1.3 show the criteria for admission into FSPs for transition age youth, adults and older adults respectively. First, a person must meet the eligibility criteria for mental health services as defined in WIC Section 5600.3 (a), (b) or (c). Next, an individual must be unserved or underserved. Unserved is defined as someone with an SMI or SED who is not receiving mental health services. People who have only had emergency or crisis-oriented contact and/or services are considered unserved. The definition of underserved is broad, including anyone with an SMI or SED who does not receive services to support their wellness, recovery or resilience (California code of regulations, Title 9, § 3200.300, 2010). The last criteria that participants must meet varies by age group but can include: homelessness, at risk of homelessness, involvement or at risk of involvement with the criminal legal system, at risk of institutionalization, frequent users hospitals and/or emergency room treatment for mental health care, or for transition age youth, aging out of the child and youth mental health system, child welfare system or juvenile legal system (California code of regulations, Title 9, § 3620.05, 2010)

Figure 1.1: FSP Criteria for Transition Age Youth



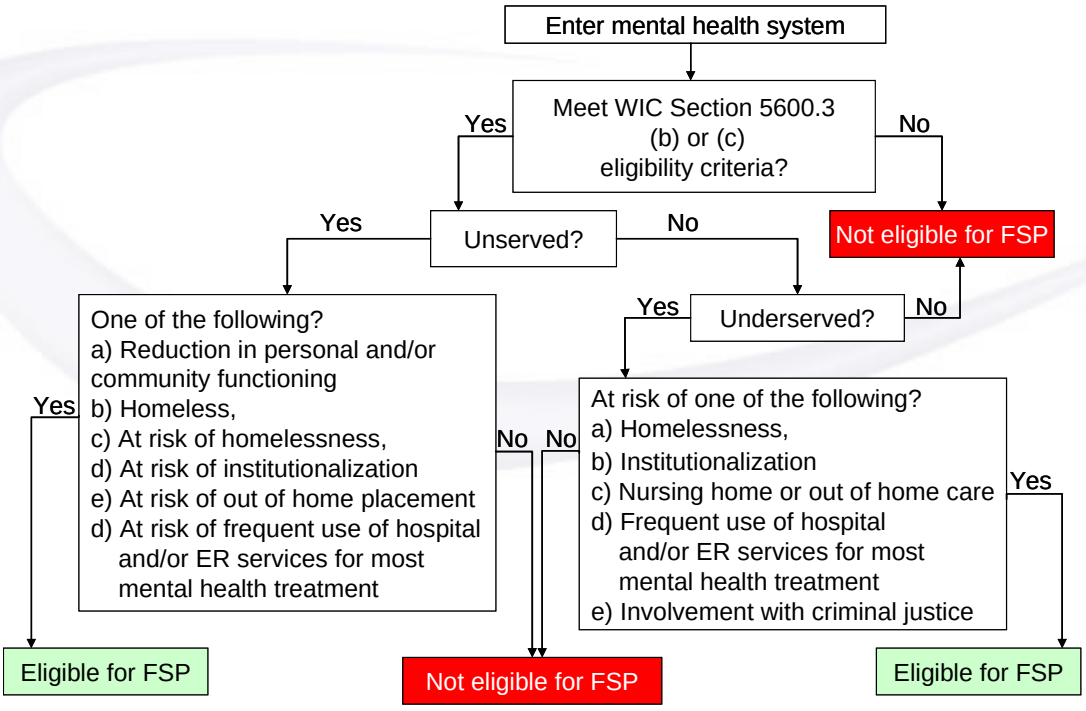
Notes: Petris Center Analysis of the California Code of Regulations, Title 9, Section 3620.05. FSP=Full Service Partnership.

Figure 1.2: FSP Criteria for Adults



Notes: Petris Center Analysis of the California Code of Regulations, Title 9, Section 3620.05. FSP=Full Service Partnership.

Figure 1.3: FSP Criteria for Older Adults



Notes: Petris Center Analysis of the California Code of Regulations, Title 9, Section 3620.05. FSP=Full Service Partnership.

Employment Outcomes

Persons with SMI face a number of obstacles which can hamper their ability to maintain meaningful employment. Aside from providing additional income, employment enhances self esteem and improves quality of life, thereby strengthening the recovery process of consumers (Biegel, Stevenson, Beimers, Ronis, & Boyle, 2010; Bush, Drake, Xie, McHugo, & Haslett, 2009). Yet, only about 10 percent of individuals with SMI are employed (U.S. Department of Health and Human Services, 1999). In this report, we evaluate the factors associated with choosing employment as a recovery goal and the factors associated with employment outcomes of individuals with SMI who enrolled in an FSP.

The specific research questions addressed in this study are as follows:

1) What are the factors that influence the choice of employment as a recovery goal for transition age youth, adults and older adults just entering a FSP program?

2) What are the factors that influence the employment status of transition age youth, adults and older adults over time in a FSP program?

Chapter 2: Data & Methods

Data for this analysis come from several sources. The Data Collection and Reporting System (DCR) serves as the main source of information and the Client and Service Information (CSI) System provides supplementary information. All systems are maintained by the California Department of Mental Health. All results presented are for transition age youth (TAY), adults and older adults participating in the Full Service Partnership (FSP) program.

Data from the DCR were collected using three types of forms: the Partnership Assessment Form (PAF), the Key Event Tracking Form (KET), and the Quarterly Assessment Form (3M) (California Department of Mental Health, 2007). The PAF records each consumer's history and baseline information for the following categories: residency, education status, employment status, source of financial support, legal status, emergency interventions, health status, and substance abuse status. The KET form is used whenever a consumer changes his/her status in the following categories: discontinuation of or reestablishment in a FSP program, residential setting, education, employment, financial support, legal status, and emergency interventions. The 3M is filled out to assess sources of financial support, legal status, health status, and substance abuse use and treatment status every three months regardless of whether there have been any changes. In summary, the PAF provides baseline information on FSP clients, while the KET and the 3M provide follow-up information for each FSP client (California Department of Mental Health, 2008). In addition, we also used demographic information on age, gender, and educational background available in the DCR.

Information on each consumer's psychiatric diagnoses (schizophrenia, bipolar, depression, anxiety and related disorders, attention deficit/hyperactivity disorder (ADHD) or conduct disorders, personality disorder, substance abuse including alcohol abuse disorder, other or undiagnosable disorders) was obtained from the CSI dataset. Psychiatric diagnoses are recorded when an individual seeks services at a county mental health facility. The diagnostic codes follow the formats specified in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) (American Psychiatric Association, 2000). The diagnostic categories were determined in consultation with Dr. Neal Adams, the collaborating psychiatrist for this project. All past psychiatric diagnoses were included in the analysis. This approach was taken primarily to capture the high rates of comorbid psychiatric conditions often found in consumers with SMI (Ciapparelli *et al*., 2007; Pulay *et al*., 2009; Tamam, Karakus, & Ozpoyraz, 2008; Uwakwe & Gureje, 2010).

Sampling

Our analysis included TAY, adults and older adults according to information on the PAF. Age ranges for TAY, adults, and older adults are 16-25 years, 26-59 years, and 60 years or older, respectively. We used DCR data from 2005-2008. A 12-month period was used to follow a consumer from the start of her/his participation in a FSP program, regardless of the calendar year s/he joined a FSP. At the time of this analysis, data were available from 43 of California's 58 counties. These counties include Butte, Calaveras, Colusa, Contra Costa, Del Norte, El Dorado, Fresno, Glenn, Humboldt, Imperial, Inyo, Kern, Lake, Los Angeles, Madera, Mariposa, Merced, Mono, Napa, Nevada, Orange, Plumas, Sacramento, San Benito, San Bernardino, San Diego, San Francisco, San Joaquin, San Luis Obispo, San Mateo, Santa Clara, Santa Cruz, Shasta, Sierra, Siskiyou, Stanislaus, Trinity, Tulare, Tuolumne, Ventura, Yolo, and Sutter/Yuba. The extent to which consumers and FSP programs in the remaining 15 counties are substantially the same as the average consumer and the average FSP program in the 43 counties included in the analysis is the extent to which the findings of this analysis will apply to those 15 counties on which no data was available. Several rules with

respect to missing data, inclusion and exclusion criteria were applied to manage the data. These are listed in the technical appendix.

Variables

The primary outcomes of interest in this report are (1) choosing employment as a recovery goal, and (2) employment outcomes during the first 12 months after entry into a FSP program. Employment as a recovery goal is a dichotomous variable. Information on employment outcomes is recorded in seven categories: competitive employment, supported employment, transitional employment, paid in-house employment, non-paid (volunteer) employment, other gainful employment activity, and unemployment. However, due to small frequencies for employment categories that are not competitive, five of these employment categories (supported employment, transitional employment, paid in-house, non-paid (volunteer) employment, and other gainful employment activity) are collapsed into a single category: non-competitive employment. As a result, the employment variable used in this analysis has three values: competitive employment, non-competitive employment and unemployment.

The following factors that may affect employment outcomes (independent variables) were included: demographics (age, gender, educational background), psychiatric diagnoses (schizophrenia, substance abuse including alcohol abuse, ADHD or conduct disorders, personality disorders, anxiety and anxiety-related disorders, bipolar disorder, depression, other or undiagnosable disorders), residential status (independent living, emergency shelter, homeless, supervised placement, medical hospital, psychiatric hospital, licensed residential, justice placement, other setting), education involvement, financial support status, legal status (prior arrest record,[1] probation, conservatorship, payee), emergency interventions (number of emergency interventions related to physical health, number of emergency interventions related to mental health), substance abuse problem, substance abuse treatment status, and months of participation in a FSP program.

Among the aforementioned independent variables, variables that can change over time (time-dependent covariates) include residential status, education involvement, financial support status, legal status, emergency interventions, substance abuse problem, substance abuse treatment status, and months of participation in a FSP program.

In the study examining the choice of employment as a recovery goal, baseline measures of all of the independent variables were used, except for months of participation in a FSP program which is excluded from the model by definition. The model used to examine employment outcomes included both time-varying variables and non time-varying variables.

All independent variables were coded as dummy variables (either 0 or 1); with the exception of months of participation in a FSP program. Age is grouped into the following four categories: 16-25 years (reference), 26-39 years, 40-59 years, and 60 years and older. The educational background variable has four categories: less than high school or unknown education (reference), high school diploma, some college/vocational training, and college education or more. Race/ethnicity and parole variables were excluded from the model due to a large number of missing values[2].

[1] Note: This variable measures if the client had any arrests prior to the last 12 months and was included only for the analysis on choice of employment as a recovery goal.

[2] 40.96% of observations were missing values for the race/ethnicity variables and 73.64% of observations were missing values for the parole status variable

Statistical Methods

Due to the dichotomous nature of the variable measuring employment as a recovery goal, we used logit (logistic regression) models to determine the factors that predicted clients' choice of employment as a recovery goal.

The employment outcome variable has three degrees of employment: unemployment, non-competitive employment, and competitive employment. Considering these degrees as ordered, the research question of how FSP clients move between different levels of employment as a function of various covariates can be answered with regressions estimated using ordered logit (ordinal logistic regression).

Chapter 3: Results

Baseline characteristics

The baseline characteristics of the individuals in the FSP programs are reported in Table 3.1. Out of a total 9,888 individuals, 92.1 percent were unemployed at the time of entry into a FSP program, 2.5 percent were non-competitively employed, and 3.5 percent had competitive employment. Approximately 43.7 percent of individuals chose employment as a recovery goal.

Employment as a Recovery Goal

Table 3.2 presents the characteristics associated with choosing employment as a recovery goal. Statistically significant factors include age, gender, more than a high school education, current employment, being diagnosed with schizophrenia, bipolar disorder, personality disorder, and/or attention deficit/hyperactivity disorder (ADHD) or conduct disorder, receiving financial support, and being on probation.

Full service partnership clients who were 26-39 years old had 50 percent lower odds of choosing employment as a recovery goal compared with clients 16-25 years old. Similarly, clients 40-59 years old had 67 percent lower odds of choosing employment as a recovery goal compared with clients 16-25 years old. Finally, clients 60 years and older had 90 percent lower odds of choosing employment as a recovery goal compared with clients aged 16-25 years.

Women had 18 percent lower odds of choosing employment as a recovery goal compared to men. As a client's level of education increases, the odds of choosing employment as a recovery goal also increase. Compared to clients with less than a high school education or whose educational background was unknown, those with a high school diploma or the equivalent had 22 percent higher odds of choosing employment as a recovery goal. Clients with a college, associate or vocational degree had 68 percent higher odds of choosing employment as a recovery goal compared to those with less than a high school education or whose educational background was unknown. Similarly, clients with a bachelor's, master's or doctoral degree had 93 percent higher odds of choosing employment as a recovery goal compared to those with less than a high school education or whose level of education was unknown. However, being currently involved in an educational program did not significantly impact choosing employment as a recovery goal.

Having certain psychiatric disorders was significantly associated with choosing employment as a recovery goal. Clients with schizophrenia had 16 percent lower odds and clients with personality disorder had 23 percent lower odds of choosing employment as a recovery goal compared to clients who did not have either of these disorders. In contrast, clients with bipolar disorder had 22 percent higher odds and clients with ADHD or conduct disorders had 47 percent higher odds of choosing employment as a recovery goal compared to those who did not have the corresponding disorders.

The only residential setting that had a significant effect on choosing employment as a recovery goal was shelter. Clients in shelters were 31 percent more likely to choose employment as a recovery goal compared to those who did not live in a shelter.

Current employment status significantly impacted clients' choice of employment as a recovery goal. The odds of choosing employment as a recovery goal for clients who were non-competitively employed were 4.68 times the odds for clients who were unemployed. Similarly, the odds of choosing employment as a recovery goal for clients who were competitively employed were 3.93 times the odds for clients who were unemployed.

Individuals who received financial support had 19 percent lower odds of choosing employment as a recovery goal compared to individuals not receiving any financial support. Justice system involvement was significantly related to choice of employment as a recovery goal. FSP clients who were on probation had 45 percent higher odds of choosing employment as a recovery goal compared with clients who were not on probation. Individuals who had a payee had 21 percent lower odds of choosing employment as a recovery goal compared with those who did not have a payee.

Having a substance abuse problem and/or receiving substance abuse treatment were not significantly related to choosing employment as a recovery goal. Similarly, receiving a physical and/or mental health related emergency intervention was not significantly related to choosing employment as a recovery goal.

Employment Outcomes

Table 3.3 presents the association of individual characteristics and employment outcomes of FSP clients. The employment outcomes include: (1) unemployed, (2) non-competitively employed, and (3) competitively employed. Each entry in this table is a change in the probability that a consumer with a given characteristic will be un/employed relative to the reference group, where all other variables in the sample are at their means. The exception is with the time variable, which is the change in probability in relation to the change in time by one month.

The characteristics that were significantly associated with the probability of being un/employed include: time in a FSP program, age, current involvement in an education program, having employment as a recovery goal at baseline, psychiatric diagnosis, living arrangement, receiving financial support, having a payee, and having a substance abuse problem. Gender, education level, emergency intervention and interruption in participation in a FSP program were not significantly associated with employment outcomes.

Factors Influencing Being Unemployed

Time (duration) in the FSP programs is associated with the probability of employment. For each additional month a consumer spends in a FSP program, his/her probability of being unemployed decreases by 0.18 percentage points.

Compared to consumers aged 16-25 years, the probability of being unemployed was 1.6 percentage points higher among consumers aged 26-39 years, 1.3 percentage points higher among consumers aged 40-59 years, and 2.6 percentage points higher among consumers 60 years and older.

The probability of individuals being unemployed who were currently involved in an educational program was 5.8 percentage points lower than with individuals who were not currently involved in any educational program. The level of education was not significantly associated with employment outcomes. Individuals who chose employment as a recovery goal had lower probabilities of being unemployed (8.9 percentage points) compared with those who did not choose employment as a recovery goal at the baseline.

Consumers who were diagnosed with schizophrenia had higher probabilities (2 percentage points) of being unemployed, compared with consumers without schizophrenia. Similarly, consumers who had a diagnosis of bipolar disorder had higher probabilities (0.94 percentage points) of being unemployed compared to consumers without bipolar disorder. On the other hand, consumers with ADHD or conduct disorder had lower probabilities (3.3 percentage points) of being unemployed compared with consumers without ADHD or conduct disorder. Consumers who had a substance abuse problem had higher probabilities (1.8 percentage points) of being unemployed compared with consumers who did not have any substance abuse problems.

Certain types of living arrangements were predictors of unemployment. Consumers who had an independent living arrangement had a lower probability (1.4 percentage points) of being unemployed compared with those who did not have an independent living arrangement. Consumers who were homeless had higher probabilities (1.9 percentage points) of being unemployed compared with those who were not homeless. Individuals who were placed in psychiatric hospitals had higher probabilities (3.6 percentage points) of being unemployed compared with those who were not placed in psychiatric hospitals. Consumers in the justice system had higher probabilities (2 percentage points) of unemployment compared with those not placed in the justice system. Finally, those in other living arrangements or unknown living arrangements had higher probabilities of being unemployed compared with those who were not in other or unknown living arrangements by 1.8 percentage points.

When compared with consumers who do not receive any financial support, those receiving financial support had lower probabilities (3.1 percent points) of being unemployed. For consumers who were involved in the legal system, having a payee increased the probability of being unemployed by 1.6 percentage points as compared to those not having a payee.

Factors Influencing Non-Competitive & Competitive Employment

Consumers in the FSP programs had a higher probability (0.09 percentage points) of being non-competitively or competitively employed for each additional month they spend in the program. The probability of employment was higher the longer they stayed in the program.

Younger age was a predictor of employment. Compared with FSP clients aged 16-25 years, those in the 26-39 years age group had lower probabilities (0.8 percentage points) of being non-competitively or competitively employed. Clients aged 40-59 years had lower probabilities (0.6 percentage points) of non-competitive employment or competitive employment compared with the reference group (16-25 years). Similarly, clients 60 years and older had lower probabilities (1.3 percentage points) of being non-competitively or competitively employed as compared with clients aged 16-25 years.

Current involvement in an education program was associated with employment outcomes. FSP clients who were currently involved in an education program had higher probabilities (2.8 percentage points) of non-competitive employment and higher probabilities (3 percentage points) of competitive employment compared with those who were not currently involved in an education program. Clients who had chosen employment as a recovery goal upon entry to a FSP program had higher probabilities (4.3 percentage points) of non-competitive employment and higher probabilities (4.6 percentage points) of competitive employment compared with clients who did not choose employment as a recovery goal.

Consumers with schizophrenia had lower probabilities (1 percentage point) of obtaining non-competitive or competitive employment compared with clients who did not have schizophrenia. Similarly, consumers with bipolar disorder had lower probabilities (0.5 percentage points) of non-competitive or competitive employment compared with consumers without bipolar disorder. When compared to those without a diagnosis of ADHD, consumers with ADHD had higher probabilities (1.6 percentage points) of being non-competitively employed and higher probabilities (1.7 percentage points) of being competitively employed.

When living arrangements of FSP clients were analyzed we found that those in independent living had higher probabilities 0.7 percentage points) of being non-competitively employed or competitively employed compared with clients not living independently. FSP clients who were homeless had lower probabilities (1 percentage point) of being non-competitively employed or competitively employed compared with clients who were not homeless. FSP consumers in psychiatric hospital settings had lower probabilities (1.8 percentage

points) of obtaining non-competitive or competitive employment compared to consumers who were not in psychiatric hospitals. Clients who were placed in the justice system had lower probabilities (1 percentage point) of being non-competitively or competitively employed compared with clients who are not placed in the justice system. Finally, individuals who had other living arrangements or whose living arrangements are unknown had lower probabilities (0.9 percentage points) of being non-competitively or competitively employed compared to individuals who did not have other living arrangements or whose living arrangements were unknown.

Receiving financial support was associated with employment. Consumers who received financial support had higher probabilities (1.6 percentage points) of obtaining non-competitive employment and higher probabilities (1.5 percentage points) of obtaining competitive employment compared with FSP consumers who did not receive financial support.

Among FSP clients who were involved with the legal justice system, those who had a payee had lower probabilities (0.8 percentage points) of being non-competitively or competitively employed compared with clients who did not have a payee.

When the association between a current substance abuse problem and employment was examined, we found that those who had a substance abuse problem had lower probabilities (0.9 percentage points) of obtaining non-competitive employment or competitive employment compared to clients who self-reported not having a substance abuse problem.

Employment Outcomes for Specific FSP Client Characteristics

Table 3.4 reports the overall probability of being un/employed for 16 subgroups satisfying the specified characteristics with other variables at their means. The subgroups can be compared on different domains: subgroups (1) through (3) for various psychiatric diagnoses, subgroups (4) and (5) for different education levels, subgroups (6) and (7) for differences in age and diagnoses, and subgroups (8) through (16) for various differences in key independent variables for comparison with subgroup (1). Probabilities of being un/employed after the 1st month in a FSP, at the average length of stay in a FSP (5.4 months), and at the end of 12 months in a FSP are presented. Selected results are discussed in detail below.

Subgroup 1 presents the un/employment probabilities of those diagnosed with depression, schizophrenia, and substance/alcohol abuse; age 26-39, high school diploma; living independently and no other living arrangement; receiving financial support; no legal justice system involvement; no self-reported substance abuse problem; not receiving substance abuse treatment; and no physical or mental health emergency intervention; employment as a recovery goal; and no interruption in FSP participation. All remaining variables were set to their means. Individuals belonging to this subgroup, had a 0.80 probability of being unemployed in the 1st month in a FSP program. The probability of being unemployed reduced to 0.77 after the individual had spent 5.4 months in a FSP program (which represents the average length of stay in the program in this data). By 12 months in a FSP the probability of being unemployed reduced to 0.73. The probability of being non-competitively employed increased from 0.09 during the 1st month in a FSP program, to 0.11 at 5.4 months, to 0.12 at 12 months. Similarly, the probability of bring competitively employed increased from 0.11 during the 1st month in a FSP program, to 0.12 at 5.4 months, to 0.15 at 12 months.

Subgroup (5) presents the un/employment probabilities of those diagnosed with depression, schizophrenia, and substance/alcohol abuse with no other psychiatric diagnoses; age 26-39, college degree or more; living independently and no other living arrangement; receiving financial support; no legal justice system involvement; no current substance abuse problem; not receiving substance abuse treatment; and no

physical or mental health emergency intervention; employment as a recovery goal; and no interruption in FSP participation. All remaining variables were set to their means.

Unemployment probabilities for clients in this group decreased from 0.81 during the 1st month in a FSP program, to 0.79 at the average length of stay in a FSP program, to 0.74 after 12 months in a FSP program. In contrast, the probability of being non-competitively employed increased from 0.09 in the 1st month of a FSP program, to 0.10 at the average length of stay in a FSP program, to 0.11 after 12 months in a FSP program. The probability of competitive employment also increased from 0.10 during the 1st month in a FSP program, to 0.11 at the average length of stay in a FSP program (5.4 months), to 0.12 after 12 months in a FSP program.

The probabilities of un/employment in other subgroups can also be explained in a similar manner. Overall, the results indicate that among subgroups of FSP clients, the probability of being unemployed decreased and the probabilities of being competitively and non-competitively employed increased as the number of months spent in a FSP program increased.

Chapter 4: Discussion

Time in an FSP program was an important predictive factor of employment outcomes. As the time spent in a FSP program increases, the likelihood of being employed also increases. In addition, several factors influence the choice of employment as a recovery goal and the employment outcomes (i.e. non-competitive and competitive employment) of FSP clients. As age increases, the likelihood of both choosing employment as a recovery goal and finding employment decreases. While men were more likely to choose employment as a recovery goal compared to women, gender did not affect employment outcomes.

Education had mixed effects on choosing employment as a recovery goal and on employment outcomes. Clients with higher education levels had higher odds of choosing employment as a recovery goal, but, educational background did not impact employment outcomes. On the other hand, clients who chose education as a recovery goal had a higher likelihood of finding employment. Also, consumers who chose employment as a recovery goal at the start of a FSP program had better employment outcomes. Those who were currently employed had higher odds of choosing employment as a recovery goal.

A range of differing results were found with respect to psychiatric diagnosis. Clients with a diagnosis of schizophrenia had lower odds of choosing employment as a recovery goal and had worse employment outcomes. Clients with a diagnosis of bipolar disorder had higher odds of choosing employment as a recovery goal, but had worse employment outcomes. A diagnosis of personality disorder reduced the odds of choosing employment as a recovery goal, but did not affect employment outcomes. A diagnosis of attention deficit/hyperactivity disorder was associated with higher odds of choosing employment as a recovery goal and better employment outcomes.

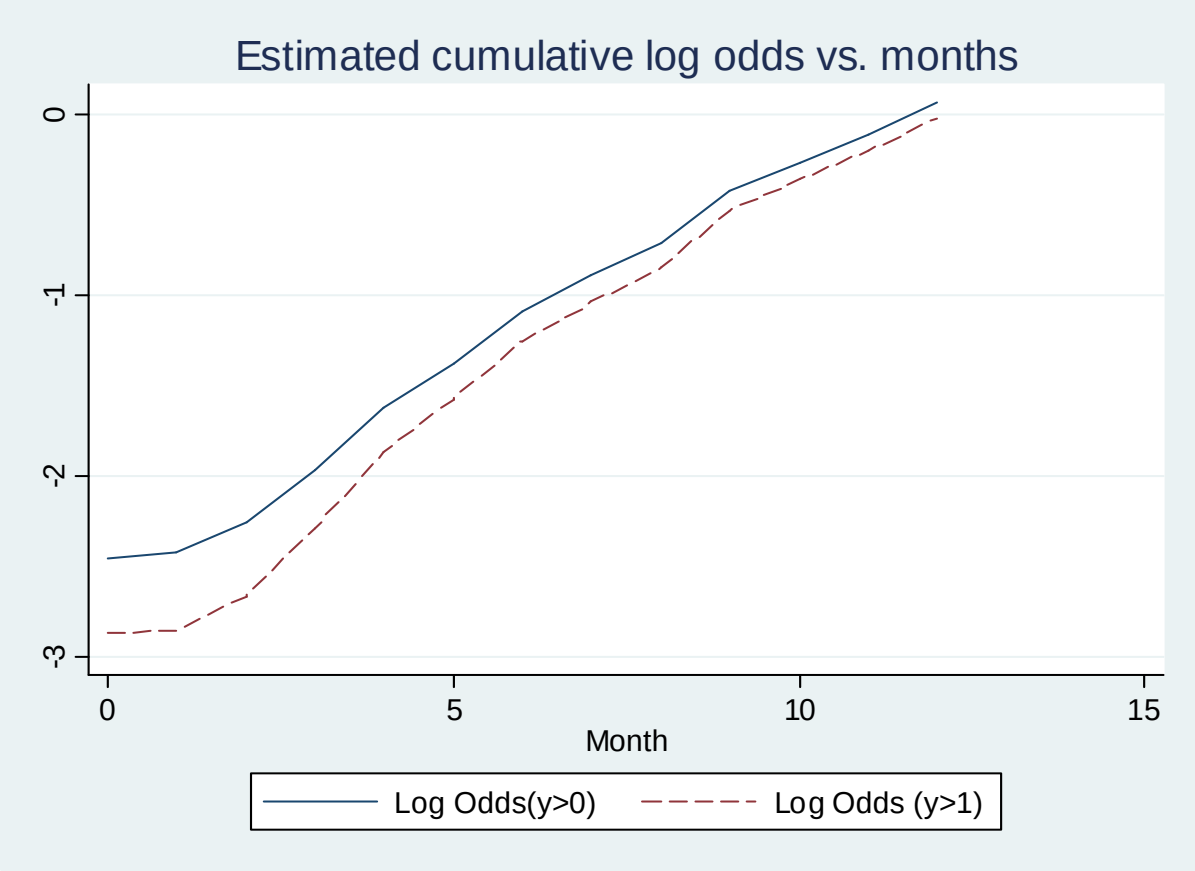
The effect of a client's living arrangement on the choice of employment as a recovery goal and on employment outcomes was not consistent. While independent living did not impact the choice of employment as a recovery goal, it positively influenced employment outcomes. On the other hand, being in a shelter was positively associated with choosing employment as a recovery goal, but it had no effect on employment outcomes. Clients who were in a psychiatric hospital, justice placement or in other/unknown living arrangements had poorer employment outcomes. However, these living arrangements had no influence on the choice of employment as a recovery goal.

Clients who received financial support had lower odds of choosing employment as a recovery goal, but had better employment outcomes. Clients who were involved with the legal system and those on probation had higher odds of choosing employment as a recovery goal. Their probation status had no effect on employment outcomes. Clients having a payee had lower odds of choosing employment as a recovery goal and had worse employment outcomes.

Finally, clients who had a current substance abuse problem were less likely to be employed. No association was found between a current substance abuse problem and choice of employment as a recovery goal.

Tables and Figures

Figure 2.1: Log Odds Employment vs. Months of Time Participating in a FSP Program



Notes: Cumulative log odds are used above in keeping with the ordered logit model. The purpose of this figure was to determine whether it was appropriate to model months of time participating in a FSP program linearly. FSP=Full Service Partnership.

Table 3.1: Summary Statistics of Clients in Full Service Partnerships at Baseline (N=9,888)

VARIABLE	% of FSP CLIENTS	% MISSING
AGE (years)		
16 – 25	27.31	0.00
26 – 39	22.62	0.00
40 – 59	37.02	0.00
60 and Older	11.87	0.00
GENDER		
Male	51.17	7.47
Female	41.35	7.47
EDUCATIONAL BACKGROUND		
No High school/Unknown	36.29	9.74
High School/GED	27.97	9.74
College/Associate/Vocational Degree	21.40	9.74
Bachelor/Master/Doctoral Degree	4.60	9.74
PSYCHIATRIC DIAGNOSIS		
Schizophrenia	50.84	19.57
Substance/Alcohol Abuse	42.84	19.57
ADHD/ODD/Conduct Disorder	2.69	19.57
Personality Disorder	9.02	19.57
Anxiety Disorder	17.29	19.57
Bipolar Disorder	38.37	19.57
Depression Disorder	39.02	19.57
Other/Undiagnosable	19.27	19.57
RESIDENTIAL INFORMATION		
Independent Living	41.63	5.37
Emergency Shelter	12.54	5.37
Homeless	8.99	5.37
Supervised Placement	15.77	5.37
Acute Medical Hospital	0.34	5.37
Psychiatric Hospital	2.86	5.37
Residential Program	7.55	5.37
Justice Placement	2.61	5.37
Other/Unknown	2.34	5.37
EDUCATION	5.88	13.06
EDUCATION AS A RECOVERY GOAL	30.82	11.45
EMPLOYMENT		
Unemployment	92.10	1.91
Non-Competitive Employment	2.53	1.91
Competitive Employment	3.46	1.91
EMPLOYMENT AS A RECOVERY GOAL	43.69	2.47
FINANCIAL SUPPORT	79.74	2.96
JUSTICE SYSTEM INVOLVEMENT		
Probation	24.23	1.98
Conservatorship	7.30	1.81
Payee	25.15	1.59
SUBSTANCE ABUSE		
Current Substance Abuse Problem	40.19	5.30
Receiving Substance Abuse Treatment	24.74	5.14

VARIABLE						
EMERGENCY INTERVENTION (by Month)	Mean	Std. Dev.	Min	Max	Skewness	Missing(%)
Physical Related Emergency Intervention	0.06	(0.25)	0	8.25	15.23	0.02
Mental Related Emergency Intervention	0.11	(0.28)	0	7	8.81	0.16

Table 3.2: Factors Influencing the Choice of Employment as a Recovery Goal

PARAMETER	PARAMETER ESTIMATE	STANDARD ERROR	ODDS RATIO	ODDS-RATIO CONFIDENCE INTERVAL	*p≤0.05, **p≤0.01, ***p≤0.001
INTERCEPT	0.5725	0.1358			***
AGE (years)					
26 – 39	-0.6834	0.0880	0.5049	(0.42, 0.60)	***
40 – 59	-1.1011	0.0830	0.3325	(0.28, 0.39)	***
60 and Older	-2.2643	0.1240	0.1039	(0.08, 0.13)	***
GENDER					
Female	-0.2057	0.0601	0.8141	(0.72, 0.91)	***
EDUCATIONAL BACKGROUND					
High School Diploma/GED	0.1960	0.0703	1.2165	(1.06, 1.40)	**
College/Associate/Vocational Degree	0.5192	0.0768	1.6807	(1.44, 1.95)	***
Bachelor/Master/Doctoral Degree	0.6577	0.1341	1.9304	(1.48, 2.51)	***
CURRENT INVOLVEMENT IN ANY EDUCATION	0.1604	0.1244	1.173943	(0.92, 1.50)	
PSYCHIATRIC DIAGNOSIS					
Schizophrenia	-0.1723	0.0663	0.8417	(0.74, 0.96)	**
Bipolar Disorder	0.1983	0.0591	1.2193	(1.08, 1.37)	***
Depression	0.0429	0.0614	1.0438	(0.92, 1.18)	
Substance/Alcohol Abuse	-0.0279	0.0663	0.9725	(0.85, 1.11)	
Anxiety Disorder	0.0773	0.0706	1.0803	(0.94, 1.24)	
Personality Disorder	-0.2600	0.0888	0.7710	(0.65, 0.92)	**
ADHD/ODD/Conduct Disorder	0.3874	0.1689	1.4731	(1.06, 2.05)	*
Other/Undiagnosable	-0.0112	0.0680	0.9888	(0.86, 1.13)	
RESIDENTIAL INFORMATION					
Independent Living	-0.0827	0.0832	0.9206	(0.78, 1.08)	
Emergency Shelter	0.2699	0.1034	1.3099	(1.07, 1.60)	**
Homeless	-0.0995	0.1170	0.9053	(0.72, 1.14)	
Medical Hospital	-0.1630	0.4793	0.8496	(0.33, 2.17)	
Psychiatric Hospital	-0.2927	0.1727	0.7462	(0.53, 1.05)	
Licensed Residential	0.0369	0.1252	1.0375	(0.81, 1.33)	
Justice Placement	-0.1391	0.1890	0.8701	(0.60, 1.26)	

PARAMETER	PARAMETER ESTIMATE	STANDARD ERROR	ODDS RATIO	ODDS-RATIO CONFIDENCE INTERVAL	*p≤0.05, **p≤0.01, ***p≤0.001
Other/Unknown	-0.0408	0.1855	.9599693	(0.67, 1.38)	
EMPLOYMENT					
Non-Competitive Employment	1.5436	0.1777	4.6812	(3.30, 6.63)	***
Competitive Employment	1.3684	0.1947	3.9290	(2.68, 5.75)	***
RECEIVING FINANCIAL SUPPORT	-0.2169	0.0778	0.8050	(0.69, 0.94)	**
JUSTICE SYSTEM INVOLVEMENT					
Arrested anytime prior to the last 12 months	0.0207	0.1496	1.0209	(0.99, 1.05)	
On-Probation	0.3753	0.0732	1.4554	(1.26, 1.68)	***
On-Conservatorship	0.0790	0.1241	1.0822	(0.85, 1.38)	
Having a Payee	-0.2401	0.0731	0.7865	(0.68, 0.91)	***
SUBSTANCE ABUSE PROBLEM					
Current Substance Abuse Problem	-0.1137	0.0682	0.8925	(0.78, 1.02)	
Receiving Substance Abuse Treatment	0.0238	0.0733	1.0241	(0.89, 1.18)	
EMERGENCY INTERVENTION					
Physical Related Emergency Intervention	0.0116	0.0085	1.0117	(0.99, 1.03)	
Mental Related Emergency Intervention	-0.0037	0.0085	0.9963	(0.98, 1.01)	

Notes: *p≤0.05, **p≤0.01, ***p≤0.001
N=5,989

Table 3.3: Association of Individual Characteristics and Employment: Change in Probabilities

VARIABLES	(1) UNEMPLOYED	SE		(2) EMPLOYED NON-COMPETITIVE	SE		(3) EMPLOYED COMPETITIVE	SE
MONTHS IN FSP PROGRAM	-0.0018***	0.0003		0.0009***	0.0002		0.0009***	0.0002
GENDER								
Female	-0.0069	0.0048		0.0034	0.0024		0.0035	0.0024
AGE (years)								
26-39	0.0155**	0.0059		-0.0077**	0.0030		-0.0078**	0.0030
40-59	0.0127*	0.0061		-0.0063*	0.0030		-0.0064*	0.0032
60+	0.0264***	0.0067		-0.0133***	0.0033		-0.0132***	0.0034
EDUCATIONAL BACKGROUND								
High school	-0.0043	0.0059		0.0021	0.0029		0.0022	0.0030
Some college/vocational training	-0.0017	0.0064		0.0009	0.0032		0.0009	0.0032
College or more	0.0004	0.0113		-0.0002	0.0056		-0.0002	0.0057
CURRENT INVOLVEMENT IN ANY EDUCATION								
Yes	-0.0579***	0.0118		0.0280***	0.0059		0.0299***	0.0061
EMPLOYMENT AS A RECOVERY GOAL AT BASELINE								
Yes	-0.0889***	0.0069		0.0433***	0.0040		0.0457***	0.0038
MENTAL HEALTH CONDITIONS								
Schizophrenia	0.0205***	0.0056		-0.0101***	0.0028		-0.0103***	0.0029
Bipolar disorder	0.0094*	0.0048		-0.0047*	0.0024		-0.0047*	0.0024
Depression	-0.0059	0.0049		0.0029	0.0024		0.0030	0.0025
Substance/alcohol abuse	-0.0067	0.0052		0.0033	0.0026		0.0034	0.0026
Anxiety disorder	0.0010	0.0055		-0.0005	0.0028		-0.0005	0.0028
Personality disorder	0.0002	0.0077		-0.0001	0.0038		-0.0001	0.0039
ADHD/ODD/Conduct Disorder	-0.0328*	0.0143		0.0160*	0.0069		0.0167*	0.0075
Other diagnosis/undiagnosable conditions	-0.0034	0.0054		0.0017	0.0027		0.0017	0.0027
RESIDENTIAL INFORMATION								
Independent living	-0.0142*	0.0059		0.0071*	0.0030		0.0071*	0.0030
Shelter	0.0095	0.0078		-0.0048	0.0039		-0.0048	0.0039

VARIABLES	(1) UNEMPLOYED	SE		(2) EMPLOYED NON-COMPETITIVE	SE		(3) EMPLOYED COMPETITIVE	SE
Homeless	0.0194**	0.0074		-0.0097**	0.0038		-0.0096**	0.0036
Supervised Residential	-0.0055	0.0067		0.0028	0.0033		0.0028	0.0034
Acute medical hospital	0.0179	0.0194		-0.0090	0.0099		-0.0089	0.0096
Psychiatric hospital	0.0359***	0.0056		-0.0181***	0.0030		-0.0177***	0.0028
Licensed Residential	0.0092	0.0084		-0.0046	0.0042		-0.0046	0.0042
Justice placement	0.0205*	0.0090		-0.0103*	0.0046		-0.0102*	0.0045
Other/unknown	0.0185*	0.0083		-0.0093*	0.0042		-0.0092*	0.0041
FINANCIAL SUPPORT								
Receiving financial support	-0.0309***	0.0042		0.0155***	0.0023		0.0154***	0.0021
LEGAL JUSTICE SYSTEM INVOLVEMENT								
On-probation	0.0001	0.0057		-0.0001	0.0028		-0.0001	0.0028
On-conservatorship	0.0077	0.0099		-0.0038	0.0050		-0.0038	0.0049
Having payee	0.0162**	0.0051		-0.0081**	0.0025		-0.0081**	0.0026
SUBSTANCE ABUSE PROBLEM								
Current substance abuse problem	0.0181***	0.0048		-0.0090***	0.0024		-0.0091***	0.0024
Receiving substance abuse services	0.0058	0.0050		-00029	0.0025		-0.0029	0.0025
EMERGENCY INTERVENTION								
Physical health related emergency intervention	0.0108	0.0106		-0.0054	0.0053		-0.0054	0.0054
Mental health related emergency intervention	0.0145	0.0091		-0.0072	0.0045		-0.0073	0.0045
ANY INTERRUPTION IN FSP								
Yes	0.0054	0.0061		-0.0027	0.0030		-0.0027	0.0031

Reference categories: Male, ages 16-25 years, less than high school education/education unknown, no current involvement in education, no schizophrenia, no bipolar disorder, no depression, no substance/alcohol abuse, no personality disorder, no ADHD or conduct disorder, no other diagnosis/undiagnosable conditions, no independent living, no emergency shelter, no homeless, no supervised placement, no acute medical hospital, no psychiatric hospital, no residential program, no justice placement, no other/unknown living arrangement, not receiving financial support, not on probation, not on conservatorship, no payee, no self-reported substance abuse problem, not receiving substance abuse services, no physical health related emergency intervention, no mental health related emergency intervention, employment is not a recovery goal at baseline, no interruption in participation in a FSP program.

Notes:

(1) Each cell is the *change in probability* (marginal probability) that an individual with a given characteristic will be un/employed relative to the reference group, except with the "months" variable, for which it is the change in probability in relation to the change in time by one month.

(2) Observations=66,730, individuals=6,241

(3) *p≤0.05, **p≤0.01, ***p≤0.00

Table 3.4: Overall probability of employment for selected subgroups (variable names in bold)

	1st month in FSP				At the average length of stay in FSP (5.41 months)				12th month in FSP		
	Unempl.	**Empl: non-comp**	**Empl: comp.**		**Unempl.**	**Empl: non-comp**	**Empl: comp.**		**Unempl.**	**Empl: non-comp**	**Empl: comp.**
	Subgroup (1): Those diagnosed with **depression**, **schizophrenia**, and **substance/alcohol abuse**; **age 26-39**, **high school diploma**; **living independently** and no other living arrangement; **receiving financial support**; **no legal system involvement**; **no current substance abuse problem; not receiving substance abuse treatment;** and no physical or mental health emergency intervention; **employment as a recovery goal; no interruption in FSP**										
Probability	0.7976	0.0949	0.1075		0.7708	0.1055	0.1238		0.7262	0.1220	0.1519
95% CI (lower bound)	0.7368	0.0692	0.0702		0.7042	0.0785	0.0815		0.6488	0.0930	0.1000
95% CI (upper bound)	0.8584	0.0702	0.1449		0.8373	0.1325	0.1660		0.8036	0.1000	0.2037
	Subgroup (2): Those diagnosed with **depression**, and **substance/alcohol abuse**; **age 26-39**, **high school diploma**; **living independently** and no other living arrangement; **receiving financial support**; **no legal justice system involvement**; **no current substance abuse problem; not receiving substance abuse treatment;** and no physical or mental health emergency intervention; **employment as a recovery goal; no interruption in FSP**										
Probability	0.7274	0.1215	0.1511		0.6948	0.1326	0.1726		0.6423	0.1486	0.2091
95% CI (lower bound)	0.6489	0.0927	0.0983		0.6109	0.1037	0.1137		0.5486	0.1200	0.1389
95% CI (upper bound)	0.8058	0.1504	0.2039		0.7787	0.1616	0.2315		0.1771	0.1771	0.2794
	Subgroup (3): Those diagnosed with **ADHD or conduct disorder**, and **substance/alcohol abuse**; **age 26-39**, **high school diploma**; **living independently** and no other living arrangement; **receiving financial support**; **no legal justice system involvement**; **no current substance abuse problem; not receiving substance abuse treatment;** and no physical or mental health emergency intervention; **employment as a recovery goal; no interruption in FSP**										
Probability	0.6398	0.1493	0.2110		0.6024	0.1590	0.2386		0.5445	0.1712	0.2843
95% CI (lower bound)	0.5151	0.1124	0.1192		0.4726	0.1246	0.1382		0.4077	0.1418	0.1698
95% CI (upper bound)	0.7645	0.1862	0.3027		0.7322	0.1933	0.3390		0.6813	0.2006	0.3988

	1st month in FSP				At the average length of stay in FSP (5.41 months)				12th month in FSP		
	Unempl.	**Empl: non-comp**	**Empl: comp.**		**Unempl.**	**Empl: non-comp**	**Empl: comp.**		**Unempl.**	**Empl: non-comp**	**Empl: comp.**
	Subgroup (4): Those diagnosed with **depression**, **schizophrenia**, and **substance/alcohol abuse**; **age 26-39**, **some college/vocational training**; **living independently** and no other living arrangement; **receiving financial support**; **no legal justice system involvement**; **no current substance abuse; problem; not receiving substance abuse treatment;** and no physical or mental health emergency intervention; **employment as a recovery goal; no interruption in FSP**										
Probability	0.8058	0.0915	0.1027		0.7797	0.1020	0.1183		0.7363	0.1184	0.1454
95% CI (lower bound)	0.7444	0.0656	0.0651		0.7122	0.0747	0.0757		0.6576	0.0889	0.0931
95% CI (upper bound)	0.8672	0.1174	0.1403		0.8472	0.1293	0.1609		0.8150	0.1478	0.1976
	Subgroup (5): Those diagnosed with **depression**, **schizophrenia**, and **substance/alcohol abuse**; **age 26-39**, **college degree or more**; **living independently** and no other living arrangement; **receiving financial support**; **no legal justice system involvement**; **no current substance abuse problem; not receiving substance abuse treatment;** and no physical or mental health emergency intervention; **employment as a recovery goal; no interruption in FSP**										
Probability	0.8123	0.0888	0.0988		0.7869	0.0991	0.1139		0.7445	0.1154	0.1401
95% CI (lower bound)	0.7305	0.0542	0.0502		0.6970	0.0626	0.0588		0.6409	0.0764	0.0733
95% CI (upper bound)	0.8941	0.1234	0.1475		0.8769	0.1357	0.1690		0.8481	0.1543	0.2070
	Subgroup (6): Those diagnosed with **schizophrenia**, and **substance/alcohol abuse**; **age 40-59**, **some college/vocational training**; **living independently** and no other living arrangement; **receiving financial support**; **no legal justice system involvement**; **no current substance abuse problem; not receiving substance abuse treatment;** and no physical or mental health emergency intervention; **employment as a recovery goal; no interruption in FSP**										
Probability	0.8123	0.0888	0.0988		0.7869	0.0991	0.1139		0.7445	0.1154	0.1401
95% CI (lower bound)	0.7529	0.0624	0.0638		0.7216	0.0711	0.0742		0.6682	0.0850	0.0913
95% CI (upper bound)	0.8718	0.1152	0.1339		0.8523	0.1271	0.1536		0.8208	0.1458	0.1890
	Subgroup (7): Those diagnosed with **schizophrenia**, and **substance/alcohol abuse**; **age 60+**, **some college/vocational training**; **living independently** and no other living arrangement; **receiving financial support**; **no legal justice system involvement**; **no current substance abuse problem; not receiving substance abuse treatment;** and no physical or mental health emergency intervention; **employment as a recovery goal; no interruption in FSP**										
Probability	0.8643	0.0663	0.0694		0.8446	0.0750	0.0803		0.8109	0.0894	0.0997
95% CI (lower bound)	0.8058	0.0388	0.0373		0.7789	0.0449	0.0435		0.7322	0.0551	0.0538
95% CI (upper bound)	0.9229	0.0938	0.1014		0.9104	0.1052	0.1172		0.8896	0.1237	0.1456

	1st month in FSP				At the average length of stay in FSP (5.41 months)				12th month in FSP		
	Unempl.	**Empl: non-comp**	**Empl: comp.**		**Unempl.**	**Empl: non-comp**	**Empl: comp.**		**Unempl.**	**Empl: non-comp**	**Empl: comp.**
	Subgroup (8): Those diagnosed with **schizophrenia**, **depression**, and **substance/alcohol abuse**; **male**, **age 40-59**, **high school diploma**; **homeless**; **receiving no financial support**; **no legal system involvement**; **current substance abuse problem**; **not receiving substance abuse treatment;** and no physical or mental health emergency intervention; **employment as a recovery goal; no interruption in FSP**										
Probability	0.9626	0.0193	0.0181		0.9564	0.0224	0.0212		0.9454	0.0279	0.0267
95% CI (lower bound)	0.9422	0.0089	0.0080		0.9327	0.0104	0.0093		0.9154	0.0129	0.0115
95% CI (upper bound)	0.9829	0.0297	0.0283		0.9801	0.0345	0.0331		0.9753	0.0430	0.0420
	Subgroup (9): Those diagnosed with **depression**, **schizophrenia**, and **substance/alcohol abuse**; **age 26-39**, **high school diploma**; **living independently**; **receiving no financial support**; **no legal system involvement**; **no current substance abuse problem; not receiving substance abuse treatment;** and no physical or mental health emergency intervention; **employment as a recovery goal; no interruption in FSP**										
Probability	0.8959	0.0518	0.0523		0.8801	0.0591	0.0608		0.8527	0.0715	0.0758
95% CI (lower bound)	0.8566	0.0333	0.0307		0.8351	0.0383	0.0356		0.7968	0.0465	0.0436
95% CI (upper bound)	0.9351	0.0704	0.0739		0.9251	0.0800	0.0859		0.9087	0.0965	0.1080
	Subgroup (10): Those diagnosed with **depression**, **schizophrenia**, and **substance/alcohol abuse**; **age 26-39**, **high school diploma**; **having been placed in a psychiatric hospital(s)**; **receiving financial support**; **no legal system involvement**; **no current substance abuse problem; not receiving substance abuse treatment;** and no physical or mental health emergency intervention; **employment as a recovery goal; no interruption in FSP**										
Probability	0.9351	0.0330	0.0319		0.9248	0.0380	0.0372		0.9065	0.0468	0.0467
95% CI (lower bound)	0.8952	0.0132	0.0114		0.8788	0.0156	0.0133		0.8497	0.0196	0.0165
95% CI (upper bound)	0.9750	0.0528	0.0524		0.9707	0.0605	0.0611		0.9634	0.0740	0.0768
	Subgroup (11): Those diagnosed with **depression**, **schizophrenia**, and **substance/alcohol abuse**; **male, age 26-39**, **high school diploma**; **receiving financial support**; **having been arrested**; **no current substance abuse problem; not receiving substance abuse treatment;** and no physical or mental health emergency intervention; **employment as a recovery goal; no interruption in FSP**										
Probability	0.8938	0.0528	0.0534		0.8777	0.0602	0.0621		0.8499	0.0727	0.0774
95% CI (lower bound)	0.8318	0.0235	0.0202		0.8078	0.0278	0.0239		0.7663	0.0354	0.0302
95% CI (upper bound)	0.9557	0.0822	0.0867		0.9476	0.0927	0.1002		0.9335	0.1101	0.1245

	1st month in FSP				At the average length of stay in FSP (5.41 months)				12th month in FSP		
	Unempl.	**Empl: non-comp**	**Empl: comp.**		**Unempl.**	**Empl: non-comp**	**Empl: comp.**		**Unempl.**	**Empl: non-comp**	**Empl: comp.**
	Subgroup (12): Those diagnosed with **depression**, **schizophrenia**, and **substance/alcohol abuse**; **age 26-39**, **high school diploma**; **no current involvement in education; living independently**; **receiving financial support**; **no legal system involvement**; **no current substance abuse problem; not receiving substance abuse treatment;** and no physical or mental health emergency intervention; **employment as a recovery goal; no interruption in FSP**										
Probability	0.8075	0.0908	0.1017		0.7816	0.1013	0.1171		0.7385	0.1176	0.1440
95% CI (lower bound)	0.7489	0.0657	0.0660		0.7172	0.0748	0.0767		0.6630	0.0889	0.0941
95% CI (upper bound)	0.8661	0.1159	0.1373		0.8461	0.1277	0.1576		0.8139	0.1463	0.1938
	Subgroup (13): Those diagnosed with **depression**, **schizophrenia**, and **substance/alcohol abuse**; **age 26-39**, **high school diploma**; **current involvement in education; living independently**; **receiving financial support**; **no legal system involvement**; **no current substance abuse problem; not receiving substance abuse treatment;** and no physical or mental health emergency intervention**; employment as a recovery goal; no interruption in FSP**										
Probability	0.6452	0.1478	0.2071		0.6080	0.1576	0.2344		0.5503	0.1701	0.2796
95% CI (lower bound)	0.5446	0.1153	0.1344		0.5039	0.1269	0.1553		0.4405	0.1428	0.1893
95% CI (upper bound)	0.7457	0.1802	0.2798		0.7122	0.1883	0.3134		0.6601	0.1975	0.3698
	Subgroup (14): Those diagnosed with **depression**, **schizophrenia**, and **substance/alcohol abuse**; **age 26-39**, **high school diploma**; **living independently**; **receiving financial support**; **no legal justice system involvement**; **no current substance abuse problem; not receiving substance abuse treatment;** and no physical or mental health emergency intervention; **employment not as a recovery goal; no interruption in FSP**										
Probability	0.9477	0.0268	0.0256		0.9392	0.0310	0.0298		0.9242	0.0383	0.0375
95% CI (lower bound)	0.9276	0.0167	0.0151		0.9162	0.0195	0.0177		0.8952	0.0242	0.0220
95% CI (upper bound)	0.9677	0.0369	0.0360		0.9622	0.0424	0.0419		0.9531	0.0525	0.0530
	Subgroup (15): Those diagnosed with **depression**, **schizophrenia**, and **substance/alcohol abuse**; **age 26-39**, **high school diploma**; **living independently**; **receiving financial support**; **no legal system involvement**; **no current substance abuse problem; not receiving substance abuse treatment;** and no physical or mental health emergency intervention; **employment as a recovery goal; interruption in FSP**										
Probability	0.8139	0.0882	0.0979		0.7886	0.0985	0.1129		0.7464	0.1147	0.1389
95% CI (lower bound)	0.7623	0.0654	0.0669		0.7328	0.0746	0.0782		0.6821	0.0890	0.0968
95% CI (upper bound)	0.8655	0.1109	0.1290		0.8445	0.1223	0.1476		0.8108	0.1403	0.1810

	1st month in FSP				At the average length of stay in FSP (5.41 months)				12th month in FSP		
	Unempl.	**Empl: non-comp**	**Empl: comp.**		**Unempl.**	**Empl: non-comp**	**Empl: comp.**		**Unempl.**	**Empl: non-comp**	**Empl: comp.**
	Subgroup (16): Those diagnosed with **depression**, **schizophrenia**, and **substance/alcohol abuse**; **age 26-39**, **high school diploma**; **living independently**; **receiving financial support**; **no legal system involvement**; **current substance abuse problem; receiving substance abuse treatment;** and no physical or mental health emergency intervention; **employment as a recovery goal; no interruption in FSP**										
Probability	0.8763	0.0609	0.0628		0.8581	0.0691	0.0728		0.8267	0.0828	0.0905
95% CI (lower bound)	0.8374	0.0423	0.0411		0.8153	0.0492	0.0484		0.7762	0.0602	0.0606
95% CI (upper bound)	0.9153	0.0794	0.0845		0.9009	0.0890	0.0972		0.8772	0.1053	0.1204

Technical Appendix

Data management

In managing data for this project, the following rules have been applied:

1. Any observations with missing identifiers (ID)[3] were deleted.
2. Any duplicate records with regards to ID in the Partnership Assessment Form (PAF) were deleted, and only the last record was kept.
3. The discontinuation and reestablishment of Full Service Partnership (FSP) program status was taken into account and the individuals were coded as missing during the period of discontinuation.
4. Any records with incorrect or inconsistent entry/exit sequences were excluded.
5. When a Key Event Tracking Form (KET) for either an entry into or an exit from any time-dependent variable was duplicated consecutively with different dates, the observation from only the first instance was kept and all subsequent multiple entries or exits were deleted (e.g., if a KET for entry was followed by another KET for entry without a KET for exit, or if a KET for exit is followed by another KET for exit without a KET for entry, the second record was deleted).
6. If a KET was filed on the same day that a client started a FSP program, the record was included.
7. Clients under 16 years old when starting a FSP program were excluded from the analysis.
8. Since the total number of emergency interventions recorded in a PAF is the total number of such interventions occurring during the 12 month period before a consumer participated in a FSP program, this number was divided by 12 (which yields an average monthly value) in order to make it consistent with data that was recorded by month.
9. If a participant was in a FSP program for less than 12 months, the unmeasured data due to non-participation were coded as missing. For instance, if a consumer participated in a FSP program for only 8 months, the values for the months 9 to 12 were coded as missing.
10. After fixing any data entry errors, PAF, KET and 3M were merged by ID to calculate the duration of any specific status, and also to calculate the status at any given month for each consumer.
11. The FSP dataset was merged with CSI dataset, which recorded the consumers' psychiatric diagnoses, by ID.[4]
12. The status for the month was determined by whether or not a client met the criteria for residential information, employment status, *etc*. for at least 15 days. For instance, if a client changed their residential status from homeless to independent living and remained in independent living for at least 15 days, then the independent living was assigned a value of 1, otherwise 0. Consequently, if the consumer changed his/her residential status several times in one month, a random value was be assigned.
13. The dataset was prepared to be a person-period dataset, one record per observation, for longitudinal analyses (Singer & Willett, 2003).
14. If a KET for discontinuation-interruption of FSP was not filed, it was assumed that the consumer was still in a FSP program.

[3] All IDs were encrypted.
[4] About 20% of the population in FSP did not have matching information in the CSI dataset.

15. The various residential settings were collapsed in the following manner:
    1) Independent Living:
        a. In an apartment/house alone/with spouse/partner/minor children/other dependents/ roommate - must hold lease or share in rent /mortgage.
        b. With one or both biological/adoptive parents
        c. With adult family member(s) other than parents
        d. Single room occupancy (must hold lease)
        e. Foster home (with relatives)
        f. Foster home (with non-relatives)
    2) Shelter:
        a. Emergency shelter/temporary housing (includes people living with friends but pay no rent)
    3) Homeless:
        a. Homeless (includes people living in their cars)
    4) Supervised Residential:
        a. Unlicensed but supervised individual placement (includes paid caretakers, personal care attendants)
        b. Assisted living facility
        c. Unlicensed but supervised congregate (includes group living homes, sober living homes)
        d. Licensed community care facility (Board and Care)
    5) Medical Hospital
    6) Psychiatric Hospital:
        a. Acute psychiatric hospital/psychiatric health facility (PHF)
        b. State psychiatric hospital
    7) Residential Program:
        a. Licensed residential treatment (includes crisis, short-term, long-term, substance abuse, dual diagnosis residential programs)
        b. Skilled nursing facility (physical)
        c. Skilled nursing facility (psychiatric)
        d. Long-term institutional care [Institution for Mental Disease (IMD), Mental Health Rehabilitation Center (MHRC)]
        e. Group home (level 0-11)
        f. Group home (level 12-14)
        g. Community treatment facility
    8) Justice Placement:
        a. Jail
        b. Prison
        c. Juvenile hall/camp/ranch
        d. Division of juvenile justice
    9) Other:
        a. Other
        b. Unknown

Variables

Preliminary analyses show that using a linear form of the time variable appears appropriate as shown in Figure 2.1. Due to the non-mutually exclusive nature of the other variables, the rest of the independent variables are included as dummy variables. For example, during each of the 12 months of the follow-up, homeless status was coded as 1 if a consumer was homeless in any given month; otherwise the dummy variable was coded 0. Finally, the county variable was also excluded from the model because of insufficient sample size to support a model with an additional 43 independent variables.

Statistical analysis

(1) Research question one: employment as a recovery goal

A logistic regression model as specified below was used for the analysis with the dichotomous dependent variable: whether clients had employment as a recovery goal or not.

$$\text{Logit}\,[P(\text{employment as a recovery goal}_i = 1 \mid X_i)] = \beta_1 + \beta_2 X_i$$

This model was estimated with the logit command in Stata MP 10.1 (Rabe-Hesketh & Everitt, 2007). Both the coefficient estimates and $\exp(\beta_2)$ are reported. The goodness of fit of the model was tested using the Hosmer-Lemeshow test (Hosmer & Lemeshow, 2000). The Hosmer-Lemeshow test statistic was 10.63 (8 degrees of freedom) and the associated p-value was 0.2236. This test result suggests that the model fits the data fairly well.

(2) Research question two: employment outcomes

An ordered logistic regression model was the most appropriate model for use in analysis since the dependent variable, employment outcomes, is ordinal and takes on three values: unemployed, non-competitive employment, and competitive employment. The model is presented below.

$$\text{Logit}\,[P(\text{employment status}_{ij} > s \mid X_{ij})] = \beta_2 X_{ij} - \kappa_s$$

where employment status_{ij} = 0 if unemployed
1 if employed non-competitively
2 if employed competitively

and i = individual
j = observation ($0 \leq j \leq 12$) and
s=0 or 1

The above model was estimated using the ologit command with Stata MP 10.1 (Rabe-Hesketh & Everitt, 2007). The coefficient estimates of the above model, however, are difficult to directly interpret due to the cut-off values κ_s. As a result, we do not report the coefficient estimates directly, rather we report transformed results. Predicted probabilities were computed to determine employment outcomes for specific characteristics of FSP clients, In addition a sandwich estimator was used to adjust for within-person correlation (Huber, 1967; White, 1982).

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