

## **Housing, Hospitalization, and Cost Outcomes for Homeless Individuals with Psychiatric Disabilities Participating in Continuum of Care and Housing First Programmes**

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### **ABSTRACT**

This article compares two approaches to housing chronically homeless individuals with psychiatric disabilities and often substance abuse. The experimental Housing First programme offered immediate access to independent housing without requiring psychiatric treatment or sobriety; the control Continuum of Care programmes made treatment and sobriety prerequisites for housing. A total of 225 participants were interviewed prior to random assignment and every 6-months thereafter for 2 years. Data were analysed using repeated measures analysis of variance. Participants randomly assigned to the experimental condition spent significantly less time homeless and in psychiatric hospitals, and incurred fewer costs than controls. A sub-sample recruited from psychiatric hospitals ( $n = 68$ ) spent less time homeless and more time hospitalized, and incurred more costs than a sub-sample ( $n = 157$ ) recruited from the streets. Recruitment source by programme interactions showed that the experimental programme had greater effects on reducing hospitalization for the hospital sub-sample and reducing homelessness for the street sub-sample. Three-way interactions including time indicated that in the experimental group, hospitalization and homelessness declined faster for the hospital and street sub-samples, respectively, than for comparable controls. Overall results support the Housing First approach. Copyright © 2003 John Wiley & Sons, Ltd.

*Key words:* homelessness; housing; mental illness; hospitalization; cost; dual diagnosis

### **INTRODUCTION**

Despite the existence of programmes to assist individuals who are homeless, increasing numbers remain on the streets (*New York Times*, 2002). Approximately 31,000 people

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spent each night in a New York City shelter in January 2002, as compared to 21,000 in January 1998 (Coalition for the Homeless, 2002b). Most recently, stays in the municipal shelter system reached 37,000 per night in October 2002—a record-high in the city's history (Coalition for the Homeless, 2002a). These numbers still underestimate, however, the number of homeless individuals overall since they do not account for the many individuals that remain homeless by sleeping in places such as city streets or drop-in centres.

In the United States, people with psychiatric disabilities constitute an estimated 30% of the homeless population (Interagency Council on the Homeless, 1992). Additionally, many members of this extremely vulnerable group are also dually diagnosed, having both a major mental illness and alcohol or substance abuse problems (Drake, Osher, & Wallach, 1991). Few programmes, however, are equipped to successfully address the needs of this group in the early stages of recovery (Osher & Drake, 1996). Much of this segment of the homeless population, therefore, remains chronically homeless—cycling among the streets, shelters, and institutions (Hopper, Jost, Hay, Welber, & Haugland, 1997). Many remain homeless due to either mistrust of the fragmented system that has failed them or preference for the relative independence of life on the streets over restrictive housing programmes (Asmussen, Romano, Beatty, Gasarch, & Shaughnessy, 1994; Howie the Harp, 1990; Osher & Drake, 1996).

The present study evaluates an innovative Housing First programme to house this vulnerable population, and compares it, in a randomized trial, to more typical programmes in the Continuum of Care. It examines the relative success of the two types of approaches for two groups of individuals with serious mental illnesses and often dual diagnoses: those living on the streets, and those who had lived on the streets previously, but who resided in psychiatric hospitals immediately prior to study entry. Success is evaluated in terms of reductions in homelessness, psychiatric hospitalization, and costs over a 2-year follow-up period.

### *Housing programmes*

*Continuum of Care.* The predominant approach to housing homeless individuals with psychiatric disabilities in the US is a collection of programmes that form a Continuum of Care. Clients begin with outreach programmes and drop-in centres that place few demands on them, and then progress through a series of congregate living arrangements with varying levels of on-site support before graduating to independent living arrangements (US Department of Housing and Urban Development, 1997). Enrolment in residential programmes is contingent upon abstinence from alcohol and drugs and participation in mental health treatment, which are seen as critical to 'housing readiness'. Clients' improvements in clinical status, as determined by health professionals, lead to advances along the continuum toward less restrictive housing and service arrangements.

The Continuum of Care approach has brought many homeless individuals indoors, yet others remain on or return to the street. Service providers have pointed to difficulties in engaging individuals with mental illness for services (US Department of Health and Human Services, 1994). Research has also demonstrated low rates of housing stability and frequency of relapse for dually diagnosed individuals in these programmes when compared to those with only a mental illness (Bebout, Drake, Xie, McHugo, & Harris, 1997; Hurlburt, Hough, & Wood, 1996a; Minkoff, 2001). Some researchers suggest that choice in housing and treatment, which has been associated with greater housing satisfaction and improved housing stability, may be critical to engagement and retention (Srebniak, Livingston, Gordon, & King, 1995). Many consumers and consumer advocates endorse

approaches that are more attuned to consumers' stated preferences for independent living (Tanzman, 1993) and separation of housing from treatment (Howie the Harp, 1990; Rosenheck & Lam, 1997). In fact, in a study of mentally ill acute care recidivists, clients were more likely to withdraw from treatment when there were large disparities between clinicians' and patients' assessments of the patients' problems (Santiago, Berren, Beigel, Goldfinger, & Hannah, 1990).

*Housing First.* The Housing First model was designed to remove barriers to housing for the most vulnerable homeless individuals. The Housing First programme evaluated here, Pathways to Housing, Inc., provides consumers with immediate access to independent apartments and supportive services, without prerequisites for sobriety or participation in psychiatric treatment (Tsemberis & Asmussen, 1999). Making independent housing the first service offered to consumers may lead to better engagement and retention because consumers receive the assistance that they feel is most relevant to resolving their current predicament (Cohen & Thompson, 1992; Howie the Harp, 1990).

Additionally, for adults with psychiatric disabilities, supported housing has been associated with increased housing stability and reduced homelessness, as well as decreased days of hospitalization (Brown, Ridgway, Anthony, & Rogers, 1991; Goldfinger et al., 1997). Hurlburt, Wood, and Hough (1996b) also examined the impact of providing rental assistance to low-income, fixed-income, and disabled families and individuals through government issued Section 8 vouchers or certificates, which serve to subsidize recipients' rents. The amount of the subsidy depends on the family and apartment size as well as household income. Hurlburt et al. (1996b) found that access to these Section 8 vouchers increased housing stability and contact with case managers, while intensity of case management did not. Furthermore, access to permanent housing, coupled with access to treatment and social services, has been associated with increased housing stability (Dickey et al., 1996). Erickson, Stevens, McKnight, and Figueredo (1995) have also shown that, for individuals with drug abuse problems, willingness to participate in and complete treatment is correlated with access to housing.

Support services for clients in the Housing First programme are provided through a multi-disciplinary Assertive Community Treatment (ACT) team, a successful model for providing case management services to individuals with severe mental illness (Mowbray, Collins, Plum, Masterton, & Mulder, 1997). ACT has been effective in increasing tenure in community housing (Lehman, Dixon, Kernan, DeForge, & Postrado, 1997; Lehman et al., 1999; Morse et al., 1997), reducing psychiatric hospitalization (Banks, Pandiani, Schacht, & Gauvin, 1999; Dharwadkar, 1994; Hamernik & Pakenham, 1999; Klinkenberg & Calsyn, 1996; Lehman et al., 1997; McGrew, Bond, Dietzen, McKasson, & Miller, 1995), and increasing engagement and retention rates in treatment services (Herinckx, Kinney, Clarke, & Paulson, 1997). Furthermore, programmes with high fidelity to the ACT model (Teague, Bond, & Drake, 1998), compared to those with low fidelity, yield greater reductions in hospital admissions and substance use, and higher retention in treatment (McHugo, Drake, Teague, & Xie, 1999).

ACT teams at Pathways to Housing, like traditional ACT teams, are on-call 24 hours a day, 7 days a week, and provide most services *in vivo* in the community. Unlike traditional ACT teams, teams at Pathways to Housing allow clients to choose the frequency and type of services they receive and integrate a harm reduction philosophy to address the complex needs of individuals with dual diagnosis (Drake et al., 1998; Teague, Bond, & Drake, 1998). The ACT teams offer clients a range of services pertaining to, among others, housing

issues, money management, vocational rehabilitation, and mental health and substance abuse treatment. Consumers may refuse, however, clinical services altogether without any consequences to their housing. The programme has two requirements for clients: that they contribute 30% of their monthly income towards rent by participating in a money management plan and that they meet with a staff member at least twice a month. These criteria are, however, applied flexibly such that prospective clients are not denied housing on the basis of their refusal to comply.

### *Predictions*

*Homelessness and hospitalization.* An examination of archival data showed that Continuum of Care programmes funded by a City-State agreement in New York City achieved a housing retention rate of 47% over a 5-year period, whereas 88% of clients in this Housing First programme remained housed (Tsemberis & Eisenberg, 2000). However, clients were not randomly assigned to the different programmes. We hypothesize that in this randomized trial, the Housing First programme will be more successful than programmes in the Continuum of Care in reducing homelessness for individuals with psychiatric disabilities, and will also reduce time spent in psychiatric hospitals over a 2-year period. Preliminary reports for the first year of the study (Shinn, Tsemberis, Asmussen, Toohey, & Moran, 2003; Tsemberis, Moran, Shinn, Asmussen, & Shern, in press) suggest that the programme is indeed more successful in reducing homelessness, but they did not examine psychiatric hospitalization.

It is also important to understand whether the Housing First and Continuum of Care approaches are differentially effective for different groups of clients or for different outcomes. Because past behaviour is in general a good predictor of future behaviour, in the absence of effective intervention, we would expect participants recruited from psychiatric hospitals to have higher levels of future hospitalization than participants recruited from the street. Previous psychiatric hospitalization is indeed an important predictor of re-admission for people with mental illness (Postrado & Lehman, 1995; Song, Biegel, & Johnsen, 1998). Drake, Wallach, and Hoffman (1989) found that among individuals discharged from hospitals, those who became homeless had greater rates of rehospitalization. Similarly, for clients in supported housing, Lipton, Siegel, Hannigan, Samuels, and Baker (2000) found that referral from a State psychiatric institution was associated with reduced community tenure as compared to referrals from other sources. Thus the Housing First approach could act as a buffer to rehospitalization, with special benefits for this outcome among respondents recruited from psychiatric hospitals. However, the Housing First programme may lead to the greatest reductions in homelessness for participants recruited from the street, whose presence on the streets demonstrates their difficulties in engaging with Continuum of Care programmes. The hospital referrals, who have been primed for the sobriety and psychiatric treatment requirements enforced by continuum providers, may not be as resistant as the street group to these stipulations.

*Costs.* In order to guide public policy, programme models must be cost-effective as well as yield positive client outcomes. We further examine, therefore, the costs associated with each housing model. Culhane, Metraux, and Hadley (2002) found that placing individuals into supportive housing cost little more—\$995 per unit per year or 2.5% of total costs—than leaving them homeless, in large part because individuals who were not housed used psychiatric hospitals, a very expensive service, at higher rates. There are also

data that suggest that permanent independent housing with off-site services costs less than congregate residences with on-site services (Dickey, Latimer, Powers, Gonzalez, & Goldfinger, 1997).

In addition to producing superior client outcomes in certain domains, ACT has been shown to be cost-effective compared to other forms of case management (Essock, Frisman, & Kantos, 1998; Lehman et al., 1999; Wolff et al., 1997). In particular, participation in ACT tends to lead to increased outpatient service use accompanied by decreases in more expensive visits to psychiatric emergency departments and hospital admissions (Banks et al., 1999; Dharwadkar, 1994; Lehman et al., 1997).

To the extent that the experimental programme is more successful than control programmes in reducing hospitalization, while using a cost-effective model of service delivery, it should also have lower costs. If reductions in hospitalization are greater for the group recruited from psychiatric hospitals, then cost savings should also be larger for this group.

## **METHOD**

### *Participants*

A total of 225 participants recruited from two sources—streets and hospitals—were randomized into two groups. One hundred and twenty-six participants (56%) were assigned to the control group who used the Continuum of Care model, and 99 participants (44%) were assigned to the experimental group who then entered the Pathways Housing First model. The uneven assignment ratio reflected the capacity of the experimental programme and our expectation that attrition from the study might be greater from the control group.

The street sample of 157 participants met the following study eligibility requirements by having: (1) spent 15 out of the last 30 days on the street or in other public places (shelters were not included); (2) exhibited a period of housing instability over the past 6 months; (3) an Axis I diagnosis—any major mental illness, such as schizophrenia or bipolar disorder, except personality disorders and mental retardation (American Psychiatric Association, 1994).

With additional funding from New York State, 68 individuals from two State psychiatric hospitals were added to the study. These individuals met the same entry criteria as the street sample immediately prior to hospitalization. Although not an eligibility requirement, most of the participants from both groups also had substance problems.

### *Procedures*

After completion of baseline interviews and random assignment to condition, participants were interviewed every 6 months by trained interviewers who were not blind to the participants' group assignments. In addition, monthly 5-minute telephone calls were conducted primarily to maintain contact with participants and establish their whereabouts. The 6-month interviews were conducted in a variety of locations including the research office, the participant's apartment/residential location, or a public place such as a cafe or restaurant. For participants in psychiatric hospitals and correctional facilities, research interviewers made on-site visits. For out-of-state participants and participants with restricted visitation rights, interviews were conducted over the telephone. Respondents

were reimbursed between \$25–\$40 for completing each interview, depending on the time-point. The questions asked during each interview period remained the same.

The follow-up rate for each time period was as follows: 96% at 6 months, 94% at 12 months, 92% at 18 months, and 90% at 24 months. When a participant did not complete a specific follow-up interview, the missing residential data for that time period were collected during the next completed follow-up interview. Specifically, while 28 participants did not complete their 6-month interviews, the residential data were collected for 19 of those participants at the next follow-up interview. Likewise, residential data were collected at subsequent time points for 16 of the 30 participants who did not complete their 12-month interviews, 21 of the 38 participants who did not complete their 18-month interviews, and 28 of the 50 participants who did not complete their 24-month interviews. The follow-up rates reported here are calculated, therefore, to include those participants whose data were collected at subsequent time points.

Analyses were conducted to determine if random assignment was successful in minimizing differences on baseline demographic characteristics. Specifically, an independent samples *t*-test was conducted to determine if the two study conditions differed by age at baseline, and chi-square and Fisher's exact tests were conducted to determine if group differences existed by gender, race, education, marital status, baseline residence, and psychiatric diagnosis. No differences were found on any of the baseline characteristics between the two study conditions. Further analyses also found no significant differences on these characteristics between the experimental and control groups for the street sub-sample and the hospital sub-sample. Finally, to ensure that results reported in this article were not due to systematic attrition following the baseline assessment, similar analyses were conducted to detect differences between the groups for participants who had completed 24-month residential data collection. No differences in baseline characteristics were found between the two groups at 24-month, which suggests that the attrition observed in the sample over time was not systematic.

### *Measures*

*Residential location.* Days spent homeless and days spent in psychiatric institutions were assessed using the 6-month residential follow-back calendar developed by the New Hampshire Dartmouth Research Center (1995). The interviewer assessed the participant's current residential location and then worked his or her way backward day-by-day to the date and residential location of the last interview. Following the interview, the interviewer coded the participant's residential location(s) into several distinct residential categories. For the purpose of analyses, homelessness was defined as living on the streets, public places or shelter-type accommodations. Psychiatric hospitalization was defined as inpatient status in a State psychiatric hospital, or psychiatric ward in a Health and Hospitals Corporation hospital (public hospital), general hospital or Veterans Administration hospital.

The proportion of time homeless and the proportion of time hospitalized was calculated by summing the number of days spent in any of the homeless location categories, as well as the number of days spent as an inpatient in psychiatric treatment, and dividing the sum by the total number of days reported at the interview.

*Costs.* Costs for, each location were assessed from a variety of sources including estimates based on Jones et al.'s (in press) and Culhane et al.'s (2002) cost-utilization

studies. Using the residential followback calendar, we calculated the total number of days each participant spent in different locations for each time point. We then calculated the cost per person per day by multiplying the number of days in each location with the cost associated with each location, and then by dividing the product by the total number of days. Note however, that costs associated with days spent on the streets, such as costs of outpatient services and societal costs, could not be assessed (e.g. emergency room services, police costs). Consequently, days spent on the street were excluded from the denominator.

### *Data analysis*

Repeated measures analyses of variance were used to examine the main effects of programme assignment (experimental versus control) and sample source (hospital versus street), as well as programme  $\times$  sample interactions for the 24 month period overall. In addition, within group analyses tested the two-way effects of time  $\times$  programme and time  $\times$  sample as well as the three-way effects of time  $\times$  programme  $\times$  sample. Because of statistical difficulties in detecting interaction effects in field experiments (McLelland & Judd, 1993), an alpha level of  $p < 0.1$  was used as a cut-off for the interaction terms.

## **RESULTS**

### *Descriptive statistics*

As can be seen in Table 1, the sample consisted of 173 (76.9%) men and 52 (23.1%) women with an average age of 41.5 years ( $SD = 11.8$ ). Most of the participants (69.2%) had never been married while only 3.6% were currently married. More than half of the participants ( $n = 121$ , 53.8%) were diagnosed with a psychotic disorder. Thirty-nine (17.6%) of the participants reported becoming homeless before the age of 18. The average age at which participants reported experiencing homelessness for the first time was 29.5 years (age range was 5 to 64 years). The longest period of time homeless was an average of 4.4 years with a median of 3 years. The majority (50.1%) of the participants lived on the streets or public place or in a drop-in shelter at time of the baseline interview and 36% ( $n = 81$ ) were living in a psychiatric hospital.

Twenty-four (10.7%) individuals were working at time of baseline, 15 (7.4%) of whom were employed by a hospital. Sixty-three (28%) participants identified their race as Caucasian and 90 (40%) identified their race as African-American. Twenty-three (10.3%) participants did not go beyond eighth grade in their education while four (1.8%) participants received a graduate degree. Despite the fact that substance and alcohol use is often associated with being homeless, only 42 participants (18.7%) admitted to using alcohol or illicit substances at the baseline interview.

### *Proportion of time homeless*

Repeated measures ANOVA results show that there was a significant effect of programme assignment on proportion of time homeless, with the control group spending significantly more time homeless than the experimental group overall ( $F(1, 195) = 19.8$ ,  $p < 0.001$ ). In addition, there was a significant sample effect, with the sample recruited from the streets

Table 1. Participant characteristics

Variable	Number (n)	Percentage (%)
Study group		
Experimental	99	44
Control	126	56
Gender		
Female	52	23.1
Male	173	76.9
Age		
18–30 years	43	19.1
31–40 years	62	27.6
41–50 years	68	30.2
51–60 years	41	18.2
61–70 years	11	4.9
Race		
Caucasian	63	28
African-American	90	40
Hispanic <sup>1</sup>	33	14.7
Mixed/Other <sup>1</sup>	39	17.3
Education		
Some High School or less	94	42
High School Diploma or GED equivalent	55	24.6
Post-secondary education	75	33.5
Marital status		
Married	8	3.6
Separated <sup>2</sup>	20	8.9
Divorced <sup>2</sup>	32	14.3
Widowed <sup>2</sup>	9	4
Never married <sup>2</sup>	155	69.2
Residence at baseline		
Streets/subway/drop-in <sup>3</sup>	114	50.7
Shelter/safe haven <sup>3</sup>	14	6.2
Crisis housing		
With family/friends <sup>4</sup>	11	4.9
Psychiatric hospital	80	35.6
Hotel/motel <sup>4</sup>	5	2.2
Short-term transitional housing <sup>4</sup>	1	0.4
Psychiatric diagnosis		
Psychosis	121	53.8
Bipolar disorder	30	13.3
Major depression	32	14.2
Other <sup>5</sup>	10	4.4
Missing <sup>5</sup>	32	14.2

Note: Some percentages do not add up to 100% due to rounding error. Categories with the same superscripted numbers were combined for analysis of group differences.

spending a significantly larger proportion of time homeless than the sample recruited from hospitals overall ( $F(1, 195) = 63.4, p < 0.001$ ). However, there was also a significant programme  $\times$  sample effect such that assignment to the experimental condition reduced rates of homelessness more for the sample recruited from the streets ( $F(1, 195) = 12.2, p < 0.001$ ).



Table 2. Simple effects of time on proportion of time homeless for four study groups

Source	<i>F</i>	Hypothesis df	Error df	<i>p</i>	Mean difference (baseline – 24 months)	Mean difference <i>p</i>
Experimental-street	54.17	4	192	0.000	0.661	0.000
Control-street	22.75	4	192	0.000	0.333	0.000
Experimental-hospital	0.33	4	192	0.682	0.095	0.889
Control-hospital	3.28	4	192	0.044	-0.094	0.875

Within group analyses further show that there was a significant time  $\times$  programme (Wilk's Lambda = 0.9,  $F(4, 192) = 5.2$ ,  $p < 0.01$ ), time  $\times$  sample (Wilk's Lambda = 0.7,  $F(4, 192) = 17.8$ ,  $p < 0.001$ ), and time  $\times$  programme  $\times$  sample (Wilk's Lambda = 0.9,  $F(4, 192) = 6.10$ ,  $p < 0.001$ ) effect. As can be seen from Table 2, *F*-tests for the multivariate simple effects of time were significant for two of the four groups (i.e. the two hospital sub-samples). In order to further investigate where differences occurred, *post hoc* pairwise comparisons of group means were conducted using a Sidak adjustment, comparing baseline levels with 24-month levels for each of the four sub-samples. As can also be seen from Figure 1, while the experimental and control groups recruited from the streets showed the greatest rate of decline in homelessness as compared to the experimental and control groups recruited from hospitals, the decline was the greatest for the experimental sub-sample. Significant differences favouring the experimental sub-sample also remained at 24 months between the experimental and control samples recruited from the streets (mean difference  $-0.28$ ;  $p < 0.001$ ).

#### Proportion of time hospitalized

Repeated measures ANOVA results show that there was a significant effect of programme assignment on time hospitalized, with the control group spending significantly more time in hospitals than the experimental group overall ( $F(1, 195) = 7.4$ ,  $p < 0.01$ ). In addition, there was a significant sample effect, with the sample recruited from hospitals spending a significantly larger proportion of time in hospitals than the sample recruited from the streets overall ( $F(1, 195) = 184.6$ ,  $p < 0.001$ ). There was also a marginally significant

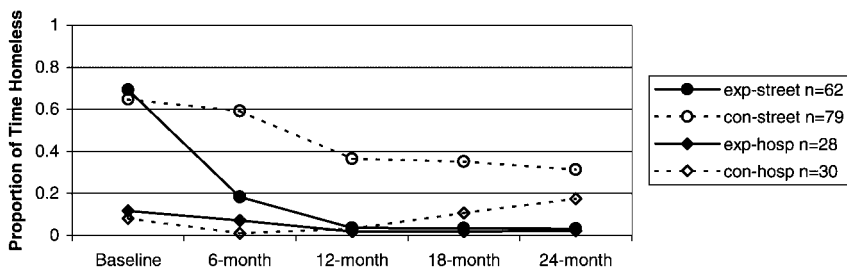


Figure 1. Proportion of time spent homeless.

Table 3. Simple effects of time on proportion of time hospitalized for four study groups

Source	<i>F</i>	Hypothesis df	Error df	<i>p</i>	Mean difference (baseline – 24 months)	Mean difference <i>p</i>
Experimental-street	0.82	4	192	0.515	0.014	1.000
Control-street	0.72	4	192	0.579	0.030	1.000
Experimental-hospital	57.12	4	192	0.000	0.686	0.000
Control-hospital	61.20	4	192	0.000	0.698	0.000

programme  $\times$  sample effect such that assignment to the experimental condition reduced hospitalization more for the sample recruited from hospitals ( $F(1, 195) = 2.7, p = 0.10$ ).

Within group analyses further show that there were significant time  $\times$  programme (Wilk's Lambda = 1.0,  $F(4, 192) = 2.1, p < 0.10$ ), time  $\times$  sample (Wilk's Lambda = 0.4,  $F(4, 192) = 76.0, p < 0.001$ ), and time  $\times$  programme  $\times$  sample (Wilk's Lambda = 0.9,  $F(4, 192) = 3.6, p < 0.01$ ) effects. As can be seen from Table 3, *F*-tests for the multivariate simple effects of time were significant for two of the four groups. In order to further investigate where differences occurred, *post hoc* pairwise comparisons of group means were conducted using a Sidak adjustment, comparing baseline levels with 24-month levels. As can also be seen from Figure 2, while the experimental and control groups recruited from the hospitals showed the greatest rate of decline in hospitalization as compared to the experimental and control groups recruited from the streets, the decline was slightly greater for the control sub-sample. There were no significant differences remaining at 24 months between the experimental and control group recruited from the hospitals (mean difference 0.055;  $p = 0.94$ ).

#### Cost analysis

Repeated measures ANOVA results show that there was a significant effect of programme assignment on costs with the control group costing significantly more than the experimental group overall ( $F(1, 173) = 6.1, p < 0.05$ ). In addition, there was a significant sample

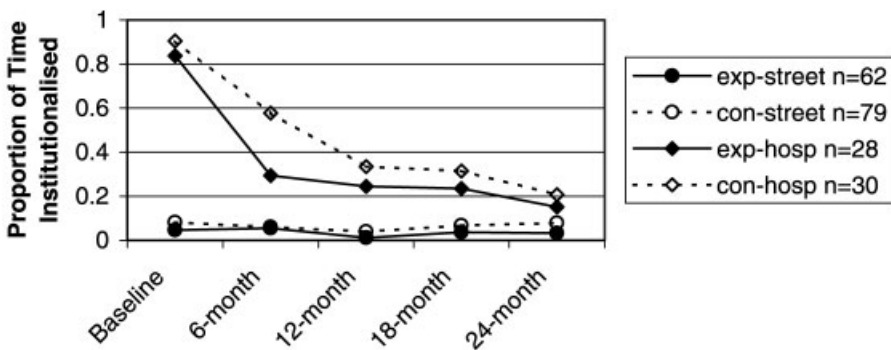


Figure 2. Proportion of time spent in psychiatric institutions.

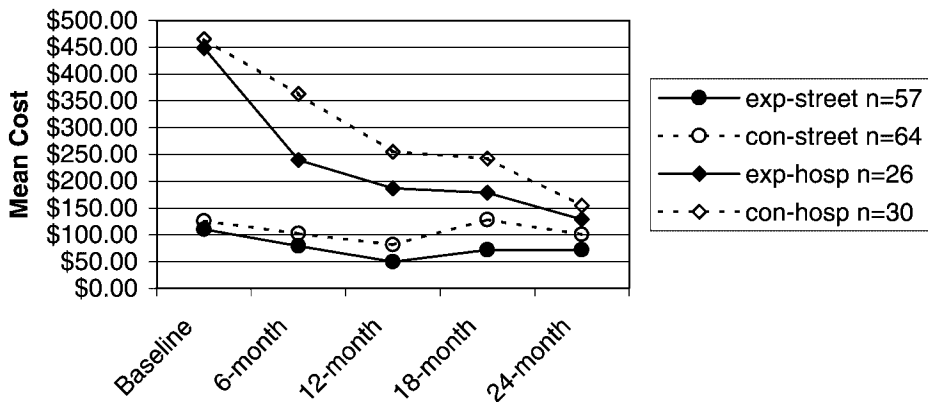


Figure 3. Mean cost per day per person.

effect, with the sample recruited from hospitals costing significantly more than the sample recruited from the streets overall ( $F(1, 173) = 89.8, p < 0.001$ ). There was no significant programme  $\times$  sample effect ( $F(1, 173) = 0.6, p = 0.44$ ).

Within group analyses further show that there was a non-significant time  $\times$  programme (Wilk's Lambda = 1.0,  $F(4, 170) = 1.2, p = 0.30$ ) effect. However, the time  $\times$  sample effect (Wilk's Lambda = 0.6,  $F(4, 170) = 27.1, p < 0.001$ ) was significant. As can be seen from Figure 3, the pattern over time indicates that the sample recruited from hospitals showed a greater rate of decline in costs than the sample recruited from the streets. Finally, the time  $\times$  programme  $\times$  sample effect was non-significant (Wilk's Lambda = 1.0,  $F(4, 170) = 1.0, p = 0.40$ ).

## DISCUSSION

The results show considerable success for the Housing First programme in reducing both homelessness and psychiatric hospitalization for homeless individuals with mental illness. Participants who were randomly assigned to the Pathways to Housing programme were housed earlier and spent more time stably housed than those in Continuum of Care programmes. The Housing First group also spent fewer days hospitalized as compared to individuals assigned to programmes in the Continuum of Care over the 24 months of the study.

It was also the case that individuals recruited from psychiatric hospitals (but with histories of homelessness immediately prior to hospital entry) spent more time in psychiatric hospitals over the course of follow-up than individuals recruited directly from the street. Similarly, those who were recruited from the street spent more time literally homeless than those recruited from hospitals. Unsurprisingly, past behaviour was a good predictor of future behaviour.

Of further interest are the two- and three-way interactions between programme assignment, source of sample, and time. In the case of literal homelessness, both experimental and control group members recruited from psychiatric hospitals spent relatively little time homeless in the first year of the study. Experimental group members remained housed in the second year as well, while for the control group members recruited from the hospital sample, homelessness began to increase in the second year. Members of the control group

recruited from the street gradually reduced the proportion of time they spent literally homeless, but still spent about a third of their time, on average, on the street in the second year of the study. Members of the experimental group recruited from the street came indoors far more quickly. Homelessness was virtually eliminated by the second half of the first year and remained at very low levels for the remainder of the study period. Thus, as predicted, the Housing First programme was best at reducing homelessness for the street sample.

In terms of psychiatric hospitalization, the Housing First programme was most successful for the sample recruited from psychiatric hospitals. These individuals reduced the proportion of time spent hospitalized throughout the study period, but the reduction came faster for the experimental group, where time hospitalized was reduced by more than half in the first year of the study. Thereafter, the two groups showed more similar patterns. Individuals recruited from the street showed low and fairly consistent levels of hospitalization throughout the study period. Assignment to the experimental or control programmes made little difference. Thus, each sample benefited from the experimental programme most in the area where there was most scope for improvement.

With respect to costs of residential placements, there was a small but reliable effect of programme, with participants randomly assigned to the experimental programme costing less. The pattern for costs looked quite similar to the pattern for psychiatric hospitalization, which is not surprising, since costs of days in psychiatric hospitals dwarf costs of other placements. That is, savings were largest in the first year of the study when the most drastic reduction in hospitalization occurred; the groups gradually converged thereafter.

The Housing First programme attained its success without requiring individuals to abstain from substance use or to participate in psychiatric treatment, although such treatments were made readily available to all interested participants. We can speculate that choice, which forms a crucial dimension of the Housing First model, allowed the individuals in this programme to select the treatments they needed. Apparently individuals with psychiatric disabilities, and often substance problems, were able to select the treatments they needed to stay out of hospitals and off the streets, when treatments were under their control. The sustained success of the Housing First programme over the full 2 years of the study is also noteworthy. Proponents of the Continuum of Care have worried that giving homeless individuals apartments directly from the street before they were 'housing ready' was essentially setting them up for failure. The present study provides no evidence for this perspective. The only upturn in homelessness in the second year occurred for individuals in the control group who were recruited from hospitals.

Ironically, individuals who use substances or engage in disruptive behaviours may be more easily housed in private apartments than in congregate settings where their behaviour directly impinges on others.

The experimental programme's requirement that tenants participate in money management was probably critical to its success, although we have no direct evidence for this claim (all tenants participated in money management, so its effects could not be tested). As operated by Pathways to Housing, money management assures that the rent is paid, so that tenants cannot divert rent money to other uses. If tenants who initially receive the rest of their money at the start of the month run out of money for food before the month's end, their case manager negotiates more frequent, smaller disbursements of funds. This is the case whatever the reason for the shortfall, but is consistent with a harm-reduction approach to substance use. If tenants use their money to buy substances, the programme at least assures that this does not interfere with shelter and food.

In sum, the experimental Housing First programme seems quite promising in reducing homelessness, psychiatric hospitalization, and costs relative to Continuum of Care programmes. The differential success of the programmes was greatest in the initial phases; the Housing First approach apparently reduced barriers to bringing homeless individuals indoors. It was also more successful for both samples recruited from the street (in reducing literal homelessness) and samples recruited from psychiatric hospitals (in reducing hospitalization) than programmes in the Continuum of Care.

These results have significant implications for interventions designed to reduce homelessness among individuals with psychiatric disabilities and substance abuse issues. The Housing First programme increased housing tenure and reduced hospitalization at a lower cost than that of Continuum of Care programmes. This suggests that interventions, which offer housing first and focus on client choice, by eliminating treatment requirements, remove barriers to programme entry and thereby successfully engage the chronically homeless population. Furthermore, the present findings demonstrate that homeless individuals with histories of psychiatric hospitalization and literal homelessness can remain stably housed in independent apartments with support services.

It will be important to see whether the differential effects of the programmes are sustained over longer periods. Consequently, the follow-up is currently planned to extend for two more years. Additionally, the experiment should also be replicated elsewhere. If the results shown here continue to hold, however, and if they are replicated, they would provide strong evidence for wider adoption of this novel approach to housing homeless individuals with mental illnesses.

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