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Effectiveness of Housing First for Non-chronically Homeless Individuals Who Are High Utilizers of Inpatient Psychiatric Treatment

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EFFECTIVENESS OF HOUSING FIRST FOR NON-CHRONICALLY
HOMELESS INDIVIDUALS WHO ARE HIGH UTILIZERS OF INPATIENT
PSYCHIATRIC TREATMENT

A Dissertation

Presented in

Partial Fulfillment of the

Requirements for the Degree of

Doctor of Philosophy

BY

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AUGUST 17, 2012

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VITA

The author was born in Spokane, Washington, on June 11, 1982. She graduated from John R. Rogers High School and received a Bachelor of Science degree in Psychology from the University of Washington in 2004. She received a Master of Arts degree with distinction in Clinical-Community Psychology from DePaul University in 2009.

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CHAPTER I

INTRODUCTION

Homelessness is a pervasive problem in the United States. Approximately 14% of the general U.S. population has reported experiencing at least one period of homelessness (i.e., without stable housing and living with someone temporarily, or staying in shelters or streets) during their lifetime (Link et al., 1994). Further, an estimated 7.4% of the population reports a lifetime instance of literal homelessness in which they slept outside or in a shelter (Link et al., 1994). Despite these staggering rates, homelessness is a temporary condition for most. About 75% are homeless for no longer than 60 days (Metraux et al., 2001), and the median duration of homelessness has been estimated at 270 days (Allgood & Warren, 2003). Finally, the majority of the homeless population has experienced one spell of homelessness, as opposed to repeated episodes of homelessness (Burt et al., 1999).

A minority of the homeless population experiences long-term, or chronic, homelessness. The federal definition of chronic homelessness is “an unaccompanied individual with a disabling condition who has been continuously homeless for a year or more or has experienced four or more episodes of homelessness over the last 3 years.” (Notice of Funding Availability, 2008; p. 79575). Disabling conditions that meet criteria for chronic homelessness include mental illness, physical disability, or substance use disorders. Between 20% and 27% of the homeless population is considered chronically homeless based on the criteria stated the federal definition (Caton et al., 2005; Dennis, Locke, &

Khadduri, 2007). Although chronic homelessness occurs among unique groups, such as youth and families, this review will primarily focus on unaccompanied adults.

Risk Factors for Chronic Homelessness

Homelessness can occur for a variety of reasons. Allgood and Warren (2003) evaluated responses from a large sample of homeless adults regarding their reason for becoming homeless. They found that 34% of individuals lost housing due to job loss or financial reasons, 20% were asked to leave their residence for lease violations, and the remaining 46% left for reasons such as substance abuse, family problems or physical abuse, condemned housing, or medical problems. Longer duration of homelessness was associated with job loss, while shorter duration of homelessness was associated with being asked to leave their residence and if their housing was condemned (Allgood & Warren, 2003). Another study found that insufficient income, lack of employment, and lack of suitable housing were the primary reasons for sustained homelessness (Mojtabai, 2005). Thus, homelessness due to economic reasons may predict a pattern of chronic homelessness, and this indicates a need for subsidized housing programs to prevent the persistence of homelessness.

Individuals who experience long-term homelessness may differ from those who have short-term histories of homelessness on a number of characteristics. Kuhn and Culhane (1998) examined differential characteristics among a shelter population of people who were transitionally (i.e., temporarily homeless due to a transition in living situation), episodically (i.e., have had more than one spell of

homelessness), or chronically homeless. They found that the vast majority (80%) of the shelter population were transitionally homeless and were less likely to have physical or mental illness or substance abuse. In contrast, the chronically homeless group comprised 10% of the shelter population, and was characterized by the highest rates of mental and physical disability and substance abuse. Therefore, people who experience different patterns of homelessness display unique characteristics, with those who experience long-term homelessness having the most disability.

Several studies provide support for different typologies of people who are generally homeless and those who are chronically homeless based on psychiatric status, illness or disability, substance use, involvement in the legal system, and some demographic factors. Rates of homelessness are comparatively high among persons with serious mental illness (e.g., major depressive disorder, bipolar disorder, schizophrenia), with a one-year prevalence rate of homelessness estimated at 15% (Folsom et al., 2005). Mental health issues may be an important risk factor for chronic homelessness, as over 60% of people who are chronically homeless have experienced mental health problems during their lifetime (Burt, Aron, Lee, & Valente, 2001). In contrast, studies of homelessness that do not sample based on duration of homelessness show lower rates of severe mental illness. A sample of homeless adults in Los Angeles found lifetime prevalence rates of schizophrenia of 6.8%, and major depression of 21.2% (Muñoz, Vazquez, Koegel, Sanz, & Burnam, 1998). Interestingly, Allgood and Warren (2003) found that people with a history of mental health issues terminated episodes of

homelessness 32% more quickly than those without mental health issues. The authors suggest that those with mental health issues may be more connected to services, and are therefore more likely to have access to housing. Yet, having shorter episodes of homelessness does not necessarily indicate that individuals with mental illness are not vulnerable to chronic homelessness as they may have repeated patterns of obtaining and losing housing over time.

In terms of medical illness, people who are homeless report significantly higher rates of serious illness, such as HIV and tuberculosis, than non-homeless people (D'Amore, Hung, Chiang, & Goldfrank, 2001). The medical status of individuals who are homeless can be impacted by mental illness. For example, one study found higher rates of several illnesses for people who were homeless with schizophrenia compared to those with depression (Folsom et al., 2002). Chronic homelessness in particular is associated with serious health problems and risk of premature death (Hwang, 2002). A study comparing medical conditions among homeless individuals who found housing at 18-month follow-up and those who remained homeless revealed directionally higher, although not statistically significant, rates of diabetes mellitus, hypertension, and asthma for those who remained homeless (Schanzer, Dominguez, Shrout, & Caton, 2007). Finally, illness and injury account for the vast majority of deaths among the homeless (Hibbs et al., 1994), and duration of homelessness was found to significantly predict mortality (Barrow, Herman, Cordova, & Struening, 1999). In sum, people who are chronically homeless are a medically compromised group and at risk for life threatening illnesses.

Medical problems and fatalities among people who are homeless are perpetuated by substance abuse. Poorer health has been found among people who are homeless and abuse substances compared to those who do not (Struening & Padgett, 1990), and the highest mortality rate within the homeless population is among people who abuse substances (Hibbs et al., 1994). A range of prevalence estimates of drug and alcohol abuse among the homeless have been reported. An early review found that estimates ranged from 2% to 86%, depending on the sample and definition of substance use or abuse (Fisher, 1989). More consistent early estimates suggest that approximately 30% of the homeless population has an alcohol use disorder and about 13% experience drug-related problems (McCarty, Argeriou, Huebner, & Lubran, 1991). A somewhat more recent study with a large, representative sample of participants who were homeless found that 71% had a lifetime diagnosis of substance dependence, 51% had a recent diagnosis, and 67% had chronic problems with substance dependence (Koegel, Sullivan, Burnam, Morton, & Wenzel, 1999). Regardless of differing estimates of substance abuse prevalence, it is clearly a significant problem among this population and is accompanied by major health consequences.

Some research suggests that substance abuse is not a risk factor for long-term homelessness, and the prevalence of substance abuse is equal among those who have been homeless for short and long durations (e.g., Caton et al., 2005; Goering, Tolomiczenko, Sheldon, Boydell, Wasylenki, 2002). However, other studies have found substance abuse to be a risk factor for chronic homelessness (North, Pollio, Smith, & Spitznagel, 1998). Caton et al. (2005) found that a

history of drug or alcohol treatment predicted a longer duration of homelessness. A recent Canadian study utilized an array of health indicators to classify distinct groups within a sample of homeless individuals (Aubry, Klodawsky, & Coulombe, 2012). Aubry et al.'s analysis revealed four classes of homelessness, including those who were considered medically and psychiatrically high functioning, those with primary substance use problems, those dually diagnosed with substance abuse and psychiatric disorders, and those with medical and psychiatric comorbidities. The authors found few differences with regard to housing outcomes among the four classes; however, they found that the class experiencing primary substance abuse issues had the poorest housing trajectories overall.

The association between substance abuse and homelessness duration may be related to the type or severity of the substance abuse problem in particular. For example, research suggests that those who are chronically homeless have more severe substance abuse problems than those who are temporarily homeless (Booth, Sullivan, Koegel, & Burnam, 2002; Kuhn & Culhane; 1998). Findings from Allgood and Warren (2003) revealed that the presence of drug or alcohol abuse did not predict duration of homelessness, but the presence of both drug and alcohol abuse did, which provides additional evidence for increased severity of substance abuse problems among those who experience long-term homelessness. North, Eyrich-Garg, Pollio, and Thirthalli (2010) found that cocaine use was predictive of lower housing attainment among a homeless sample, while alcohol

use was not associated with housing attainment. Therefore, severe substance abuse problems may be an important predictor of chronic homelessness.

Legal problems and incarceration are of additional concern within the homeless population. An estimated 67% of homeless adults report a period of incarceration during their lifetime (Zugazaga, 2004). A recent study found that 15.3% of a national jail sample was homeless at some point within a year before incarceration (Greenberg & Rosenheck, 2008). Furthermore, mental illness and substance abuse were significant predictors of homelessness among those incarcerated (Greenberg & Rosenheck, 2008). A further matter is the occurrence of differential treatment of domiciled versus homeless jail inmates. There is evidence to suggest that the duration of incarceration for similar crimes is longer for those who are homeless (McNiel, Binder, & Robinson, 2005). Regarding duration of homelessness, arrest or incarceration history has been found to strongly predict long-term homeless (Allgood & Warren, 2003; Caton et al., 2005).

Demographic factors also influence the duration of homelessness. Allgood and Warren (2003) used a large, representative sample of homeless adults, of which the average age was 38.5 years; 66% were male; and 41% were White. The authors found a positive relationship between age and duration homeless. In this study, male gender predicted a longer duration of homelessness, with males being 28% less likely than females to transition out of homelessness. However, the positive relationship between age and duration homeless was moderated by gender and race such that longer duration of homelessness for older adults was

particularly strong for whites and males. Although Allgood and Warren did not find a direct relationship between race and duration of homelessness, Culhane and Kuhn (1998) found that Black race predicted longer homeless shelter stays. In general, these findings suggest that older adults and men experience longer periods of homelessness. However, findings are mixed with regard to the association between race and duration of homelessness, and further research is needed to clarify this relationship.

Finally, broader issues of access to services and affordable housing impact on duration of homelessness. One study found that lower rental vacancy rates and higher rental costs were associated with higher rates of homelessness (Quigley & Raphael, 2001). Although the study by Quigley and Raphael did not assess predictors of duration of homelessness, it may be expected that homeless individuals in areas with more constrained housing markets will also require more time to obtain new housing. Further, those who are vulnerable to chronic homelessness have particular needs in terms of managing psychiatric, substance abuse, and medical conditions, and availability of housing services accommodating these needs may be predictive of homelessness duration.

In terms of access to services, McBride, Calsyn, Morse, Klinkenberg, and Allen (1998) examined the amount of time to exit homelessness among homeless individuals with mental illness randomly assigned to four different service types. The authors found that individuals receiving assertive community treatment, a comprehensive community case management model, exited homelessness significantly sooner than those utilizing case management, outpatient treatment,

or drop-in centers. Moreover, more time spent in services seeking housing predicted a shorter duration of homelessness (McBride et al., 1998). Although assertive community treatment is a gold standard approach to serving the homeless population, this service model is not widely available, and those who do not have access may be more prone to extended periods of homelessness.

Service Utilization among the Homeless

Given the range of medical, mental health, substance abuse, and legal problems among individuals who are homeless, it is important to examine this population's patterns of service use. There is little extant data comparing rates of service utilization among those who are chronically homeless versus those who are homeless for a shorter duration. Yet, studies of public service utilization have found that the homeless population, in general, uses services at a high rate. In addition, many of the services used by individuals who are homeless are costly. For example, one study estimated that medical costs for homeless veterans is approximately 13% more than housed veterans due to the increased need for psychiatric, substance use, and medical treatment (Rosenheck & Seibyl, 1998). The following sections discuss patterns of service use among people who are homeless.

Medical Services

Individuals who are homeless frequently utilize emergency medical services. One study found that 12% of emergency department patients and 38.3% of frequent users of the emergency department were homeless (Mandelberg, Kuhn, & Kohn, 2000). In addition, those who are homeless are more likely than

those who are domiciled to be hospitalized for medical illnesses and have significantly longer hospital stays (Salit, Kuhn, Hartz, Vu, & Mosso, 1998). The pattern of utilization of different medical services is unique among the homeless population. Although homeless adults account for disproportionately more emergency and inpatient medical service use, they are significantly less likely than the general population to receive medical treatment from a primary care physician or attend a regular health clinic (D'Amore et al., 2001). Unfortunately, most of the illnesses leading to inpatient hospital stays are preventable such as substance-related medical problems, skin diseases, and infections (Salit et al., 1998). It is evident that people who are homeless are less likely to receive consistent or routine medical care, and this may, in part, lead to the increased severity of medical illnesses experienced by this population.

Some research has examined characteristics of the homeless population who utilize medical services. For example, Piliavin, Westerfelt, Wong, and Afflerbach (1994) found that within a homeless sample, women and those with a history of psychiatric hospitalization were more likely to receive health care. Living situation also influences treatment seeking, as some studies have found that homeless adults staying in shelters were found to use more medical services (emergency and ambulatory) than those in unsheltered conditions (Lim, Andersen, Leake, Cunningham, & Gelberg, 2002; O'Toole, Gibbon, Hanusa, & Fine, 1999). There is likely a subset of the homeless population that rejects both housing and medical services due to persistent mental health issues, which may partially explain the relationship between unsheltered living conditions and low

medical service use. Barriers to access to care may influence patterns of the type of medical care sought, with access to health insurance being found to predict increased outpatient medical care utilization and inpatient medical hospitalization (Kushel, Vittinghoff, & Haas 2001; Lim et al., 2002). These findings highlight the importance of service connections in the receipt of medical care among individuals who are homeless. Furthermore, outreach is indicated for individuals who are prone to declining services due to psychiatric disability.

Psychiatric Services

Despite the preponderance of mental health issues among the homeless population, many people do not receive consistent psychiatric treatment. One study revealed that among homeless individuals with serious mental illness, only about 60% reported receiving some form of mental health treatment during their lifetime, and only about 20% reported receiving treatment in the past 60 days (Koegel et al., 1999). As a consequence of irregular psychiatric treatment, this population tends to be overrepresented in emergency psychiatric settings and have an increased likelihood of repeated hospitalizations (McNiel & Binder, 2005). In comparing housed versus homeless individuals with serious mental illness, Folsom et al. (2005) found that those who were homeless were significantly more likely to utilize emergency psychiatric services and inpatient treatment. Homeless persons with mental illness are also more likely to have poor continuity of care and more time between episodes of mental health treatment than those who are housed (Fortney et al., 2003). High rates of suicidal ideation and attempts are found among the homeless population with serious mental illness (Eynan et al.,

2002), and this may perpetuate emergency service utilization. Moreover, people who are homeless with mental illness were found to have poorer discharge planning upon departure from psychiatric hospitalization than those who never experienced homelessness (Caton, 1995). These patterns of psychiatric service utilization suggest that individuals who are homeless receive less regular and more inadequate mental health treatment, creating a cycle of emergency service use.

Community case management is an approach to regular and consistent mental health treatment among people who are homeless with mental illness. In general, those who engage in no-cost community case management have greater reductions in psychiatric symptoms and use inpatient psychiatric services less often (Wolff et al., 1997). Community-based mental health treatments vary widely in terms of intensity of services, and better engagement and outcomes have been found with more intensive case management services (Nelson, Aubry, & Lafrance, 2007). Given the particular challenges of engaging homeless individuals with serious mental illness in ongoing mental health treatment, it is not surprising that intensive services involving a team of providers for each client would yield better outcomes than services provided by a single case manager (Coldwell & Bender, 2007). Despite potentially positive outcomes with case management, individuals who are homeless with serious mental illness are less likely than those who are domiciled to receive case management (Fortney et al., 2003). It is critical for case managers or treatment teams to establish a strong working alliance with their clients early in the relationship to ensure long-term

engagement in services (Klinkenberg, Calsyn, & Morse, 1998). Community case management may be one form of mental health service utilization that can effectively provide ongoing treatment, however these services may be underutilized due to the challenges of engaging the homeless population with serious mental illness. Unfortunately, community mental health services are extremely vulnerable to state and federal budget cuts (Daly, 2007), and case management services may be unsustainable in the current economy. As a consequence, and without an alternative method of care, the reliance on emergency services among the homeless population will likely persist.

Although it appears that many homeless persons with severe mental illness do not receive regular mental health services, most do report a need for these services (Rosenheck & Lam, 1997). Several factors predict the use of mental health services. In a large sample of homeless adults with mental illness, Koegel et al. (1999) found that those who acknowledged they had mental health issues were more likely to have received mental health services in the past two months. Additionally, those without co-occurring substance abuse issues were more likely to have received services than those with substance abuse (Koegel et al., 1999). Moreover, people with mental illness who live outside tend to have more severe symptomatology and are less likely to engage in community-based mental health services than those living in shelters (Lam & Rosenheck, 1999). Unlike patterns of medical service use, one study found that access to insurance, such as Medicare or Medicaid, did not increase mental health service utilization (Padgett, Struening, & Andrews, 1990). Overall, the severity and lack of acknowledgement of mental

health issues in this population reduces psychiatric treatment seeking. Unfortunately, the poor access to psychiatric treatment may perpetuate homelessness among persons with serious mental illness as well as lead to unnecessary usage of costly emergency services.

Chemical Dependency Services

In terms of substance abuse service utilization, individuals who are homeless account for approximately 25% of annual visits to detoxification facilities (McCarty, Caspi, Panas, Krakow, & Mulligan, 2000). Although individuals who are homeless are overrepresented in detoxification centers, many do not receive substance abuse treatment. One study found that less than one fifth of homeless individuals with recent substance dependence received treatment over the past two months (Koegel et al., 1999). Furthermore, chemical dependency treatment was found to be utilized less often than mental health and medical services (Padgett et al., 1990).

After detoxification, individuals who are homeless particularly benefit from engagement in short-term residential treatment facilities to help prolong abstinence from substance use (Kertesz, Horton, Friedmann, Saitz, & Samet, 2003), and those who are chronically homeless are more likely to use residential drug and alcohol treatment facilities than their housed counterparts (Kertesz et al., 2006). Increased utilization of residential substance abuse treatment may be due to the high severity of substance abuse problems in this population. One study found that homeless individuals who had more severe substance use problems (e.g., both drug and alcohol dependence) and those who acknowledged they had a

problem were more likely to attend substance abuse treatment (Koegel et al., 1999). Consistent with findings of medical and psychiatric service utilization, individuals who are homeless with chemical dependency problems are more likely to seek emergency services, such as detoxification centers, as opposed to long-term, regular treatment.

Other Services

People who are homeless are frequently engaged in other institutions, including jails and shelters. As previously discussed, the majority of homeless people have had at least one experience of incarceration (Zugazaga, 2004). With the establishment of drug courts and mental health courts, many individuals involved in the criminal justice system may be diverted from jails and into substance abuse and mental health treatment (Boothroyd, Poythress, McGaha, & Petrila, 2003). Most people participating in mental health court follow through with treatment requirements (Boothroyd et al., 2003) and are less likely to recidivate if they do so (Herinckx, Swart, Ama, Dolezal, & King, 2005). Even though these court-mandated treatment programs have potential for helping homeless persons connect to much needed treatment services, one study found that among people with mental illness in jail, a large proportion were homeless (McNiel et al., 2005), suggesting that the homeless population may be underrepresented in jail diversion programs such as mental health court. It is evident that few community service connections are made during incarceration as many individuals who enter jails or prisons homeless are likely to return to a homeless shelter upon release (Metraux & Culhane, 2004). Moreover, returning to

a homeless shelter after incarceration was found to predict recidivism in a large sample of people released from prison (Metraux & Culhane, 2004). Given these findings, there is a dearth of opportunities for homeless individuals to engage in community-based services after involvement in the criminal justice system.

Homeless shelters are an obvious source of service utilization among the homeless population. Over 60% of homeless and formerly homeless persons report using shelter services during their most recent episode of homelessness (Allgood & Warren, 2003). Considering that the majority of the homeless population is homeless for a brief duration, it is expected that shelter stays are brief for most. One study found that about half of homeless shelter users stay for 45 days or fewer over a two year period (Culhane & Kuhn, 1998). It is also expected that those who are chronically homeless are the highest utilizers of shelter services. Culhane and Kuhn found that over 18% of shelter users stayed for over 180 days in a single year, consuming the majority of shelter resources. The authors noted several predictors of long-term shelter stays that overlap with risk factors for chronic homelessness, including substance abuse, mental disorders, and illness (Culhane & Kuhn, 1998).

Patterns of shelter use may have begun to change in recent years with increased attention to housing services for the homeless. One study found that long-term shelter dwellers with mental illness were more likely to receive housing services and subsequently have far fewer shelter stays after housing was achieved (Metraux, Marcus, & Culhane, 2003). However, certain portions of the homeless population may continue to have difficulty exiting shelter services. For example,

Allgood, Moore, and Warren (1997) found longer shelter stays among those recently released from jail. Moreover, people without financial public assistance are considerably less likely to leave homeless shelters than those with these benefits (Allgood & Warren, 2003). In sum, long-term homelessness is associated with increased shelter use, although recent housing policies have reduced reliance on shelter services for the particular subpopulation of homeless people with mental illness.

By and large, the homeless population underutilizes potentially beneficial services given the high rates of medical, psychiatric, and substance abuse problems found among this population. They are less likely to use ongoing services than individuals with similar problems who are housed. Still, they are overrepresented in these services compared to the general population, and their overrepresentation is seen in emergency services in particular. Emergency services are associated with extremely high costs, and the provision of comprehensive community services can significantly reduce the cost of services for the homeless, even those with significant problems (Morse et al., 2006). Outreach and engagement with those who are chronically homeless and at risk for frequent visits to emergency departments is necessary for the maintenance of psychiatric and medical health in this population. In addition, many service providers are not designed to treat the multitude of mental health, medical, and substance abuse problems experienced by people who are chronically homeless. As a result, people cycle through a range of services and institutions (Hopper, Jost, Hay, Welber, & Haglund, 1997). As will be discussed in the following

sections, housing programs for vulnerable homeless populations provide opportunities for connections to ongoing services and also help reduce costs associated with the use of emergency services.

Housing Models and Outcomes

Community-based housing programs for people with serious mental illness were promoted after the decline of inpatient psychiatric treatment beds post-deinstitutionalization. Least restrictive alternatives to involuntary hospitalization (i.e., residential treatment facilities) are favored and have demonstrated effectiveness in reducing hospitalization (Hiday & Goodman, 1982). Although several residential treatment programs for people with serious mental illness do not target homeless or chronically homeless individuals, many individuals who are homeless are eligible for therapeutic housing due to psychiatric status. Further, given the increased risk of homelessness among people with serious mental illness, it is necessary to evaluate housing programs currently available for people who do not necessarily have a history of chronic homelessness.

The McKinney-Vento Homeless Assistance Act, passed in 1987, was the first federal legislation mandating funding for homelessness programming. As a result of this legislation several transitional, continuum of care, and subsidized permanent supportive housing programs, as well as enhanced shelter services, have been developed. Programs are targeted at people who are literally homeless (i.e., sleeping in shelters or on the streets) or are about to be discharged from inpatient (psychiatric or medical) treatment and are without a residence to return

to. The rationale for providing housing for the homeless is not only to improve the safety and wellbeing of individuals in need, but also to decrease the reliance on emergency services by the homeless.

A move toward independent and permanent housing models for people with serious mental illness has occurred more recently. Specifically, impaired individuals are considered capable of living independently if support services are provided in conjunction with housing. Major differences in structure and service delivery across permanent supportive housing programs exist (Fakhoury, Murray, Shepherd, & Priebe, 2002). Some programs provide apartments scattered across the city in buildings consisting partially of non-subsidized apartments. “Scattered sites” housing models require collaboration between housing service providers and private landlords. Other housing models are referred to as project-based and use congregate-style buildings in which all apartments are subsidized and support services are provided on-site.

Another point of diversion among permanent supportive housing programs is the type of housing support services provided. For example, some programs refer to support services as “supportive housing” while others use the term “supported housing,” and some use the terms interchangeably (Lipton, Siegel, Hannigan, Samuels, & Baker, 2000). The primary difference between these two programs is whether support services are provided on-site (supportive housing) or off-site (supported housing). In general, supportive housing is the typical service model for project-based programs, while supported housing is the term most often used with scattered-site housing models.

Housing programs for the homeless, with or without mental illness or substance abuse problems, span a wide range of treatment requirements and structure. Some programs require substance abuse or psychiatric treatment prior to obtaining housing (e.g., Murray, Baier, North, Lato, & Eskew, 1997). These programs vary in terms of duration and often require sobriety and compliance with mental health treatment in order to maintain housing. Housing programs such as this are referred to as high demand, as residents are required to be treatment compliant and sober in order to remain housed. In contrast, some housing programs, such as Housing First, are considered low demand and are most often offered on a permanent basis (e.g., Tsemberis & Eisenberg, 2000). Housing First programs do not require sobriety or psychiatric treatment compliance in order to maintain housing, although sobriety and treatment are encouraged of all residents. The following sections will describe the utility of high and low demand housing programs.

High Demand Housing

High demand housing models are wide-ranging and offered to several distinct populations such as individuals in recovery from substance use disorders, those with serious mental illness, or veterans. Although it is likely that many entering high demand housing utilizers do not have stable housing, these programs do not necessarily target the chronically homeless population. Early models of residential treatment facilities for people with serious mental illness provided short-term care in lieu of inpatient hospitalization, and housing typically ended once residents were psychiatrically stable (Mosher & Menn, 1978).

Currently, acute alternative care programs require treatment compliance, and housing is typically provided for less than one month (Fenton, Mosher, Herrell, & Blyler, 1998). Although short-term residential programs are a less restrictive approach and effectively stabilize people experiencing acute psychiatric episodes, information is not available regarding housing stability after discharge from these programs.

Traditional housing programs for the homeless place high demands on residents, such as achieving sobriety and engaging in substance abuse or psychiatric treatment prior to housing. One traditional housing option for people who are homeless is transitional housing. These programs are particularly targeted at people with serious mental illness or those recovering from substance dependence, and they are offered to both homeless and non-homeless individuals. Transitional housing programs often require proof of sobriety for at least one month prior to admission (Murray et al., 1997). The duration of housing in transitional programs varies, but may range from 90 to 210 days (Murray et al., 1997; Wright, Mora, & Hughes, 1990). Abstinence from drugs and alcohol, as well as participation in mental health or substance abuse treatment programs, are required for maintenance of housing. Transitional housing programs provide an opportunity for extended recovery from substance abuse along with integration into the community (Conrad, Hultman, & Lyons, 1993). An array of services is provided in addition to substance abuse recovery, including basic living skills training, employment training, and long-term housing connections (Wright et al., 1990).

As an example of supportive housing for individuals with serious mental illness, the Robert Wood Johnson Foundation (RWJF) Program on Chronic Mental Illness has developed a model in which single room occupancy (SRO) apartments are provided on a permanent basis along with mental health and other support services (Shore & Cohen, 1990). Housing developed in accordance with the RWJF program seeks to integrate housing and treatment services to enhance housing stability and treatment compliance (Shore & Cohen, 1990), as disjointed services are expected to be less successful. RWJF housing is considered high demand because eligibility to maintain housing is typically contingent on maintenance of sobriety (Wong, Poulin, Lee, Davis, & Hadley, 2008). A diagnosed serious mental illness is the primary eligibility criterion for housing in these programs, and homelessness is not necessarily a requirement.

Some cities use a continuum of care approach in which people sequence through a hierarchy of housing services, for example from acute treatment to shelters to transitional housing to permanent housing (Hoch, 2000). Individuals are provided transitional housing with required treatment and are moved into permanent housing when they are deemed housing-ready (Tsemberis & Eisenberg, 2000). Unlike the transitional housing models described, the continuum of care specifically targets the homeless population and is in direct response to the McKinney-Vento Homeless Assistance Act with the goal of better coordination of housing and treatment services, and programs have flourished since that time. However, some research suggests that continuum of care programs remain somewhat fragmented and difficult for the homeless population

to navigate, particularly in terms of the referral process and program requirements (Wong, Park, & Nemon, 2006). Although continuum of care programs are traditionally high demand, there has been a recent trend toward lower demand requirements (Burt et al., 2002).

Alternative forms of high demand approaches include community-based, self-help models of housing. An example of an alternative approach to housing for people in recovery from substance use disorders is Oxford House. Oxford Houses are non-staffed, self-managed, democratically-run residences housing six to 10 same-sex individuals (Jason, Olson, Ferrari, & Lo Sasso, 2006). Oxford Houses are already existing rental homes located in communities across the U.S. and internationally. All residents are responsible for paying rent and contributing to household chores (Jason et al., 1997). Unlike other high demand housing programs, there is no time requirement for sobriety prior to obtaining residence in an Oxford House, although many residents have completed some sort of substance abuse treatment before moving in (Jason et al., 2006). However, sobriety is required for the maintenance of housing, which qualifies this model as high demand. As long as tenants abide by house rules, there is no time limitation of residency. Importantly, Oxford Houses are unique in that professional staff are not involved in the implementation of the housing, nor are connections to other service providers required. Because of the absence of paid professional staff and the lack of need for construction of new buildings or facilities, Oxford House is a cost-effective approach to housing (Olson et al., 2006).

Oxford Houses were not developed specifically for housing individuals who are homeless, rather they were created to promote sobriety among those with a history of substance use disorders. However, many individuals with substance abuse histories have experienced homelessness. Over 50% of Oxford House residents report a prior experience of homelessness, with an average duration of six months homeless (Jason & Ferrari, 2010). An earlier study reported that 10% of those in Oxford House were homeless directly prior to entering the residence (Jason et al., 1997). The rate of chronic homelessness among residents of Oxford House has not yet been evaluated. In terms of psychiatric disorders, over 75% of Oxford House residents were found to meet criteria for at least one psychiatric disorder other than a substance use disorder (Majer, Jason, Ferrari, & North, 2002). The psychiatric diagnoses observed in Majer et al.'s sample included mood and anxiety disorders as well as antisocial personality disorder; and none of the participants met criteria for bipolar disorder, schizophrenia, or schizoaffective disorder. Therefore, it appears that the level of severity of comorbid psychiatric conditions may be less than many of those who experience chronic homelessness.

High demand housing outcomes. Overall, high demand housing programs have demonstrated success in helping individuals maintain sobriety and transition into permanent housing. One study found positive outcomes for treatment completion and sobriety for both high demand supportive housing and inpatient treatment over a short-term follow-up of two months (Schinka, Francis, Hughes, LaLone, & Flynn, 1998). However, the sample consisted of veterans who were seeking drug and alcohol treatment and were not necessarily homeless (Schinka et

al., 1998). Therefore, the findings may not be generalizable to individuals who are homeless and not seeking treatment. In a study of two transitional housing programs with 6- to 12-month durations for veterans with serious mental illness, 79% were considered to have successfully completed the program (i.e., were not admitted for psychiatric inpatient or were not evicted for rule violations; Huffman, 1993). Finally, sustained sobriety was found to be associated with increased housing tenure in high demand housing among a sample with varying homelessness histories but no psychotic disorders (Milby et al., 2010).

Outcomes related to retention in transitional housing have varied across studies. A study of 228 residents of a transitional housing program revealed the average length of stay was three months, with 29% prematurely leaving the program and 23% being evicted (Baier, Murray, North, Lato, & Eskew, 1996). However, the majority of those leaving the program prematurely were assisted in finding alternative housing (Baier et al., 1996), and the majority of those discharged from the program maintained housing at one-year follow-up (Murray et al., 1997).

In an analysis of substance abuse treatment programs for the homeless, which included some transitional housing, Orwin, Garrison-Mogren, Jacobs, and Sonnefeld (1999) found that at least 75% of participants dropped out of treatment prior to completion. Orwin et al. further revealed that while the provision of housing (e.g., transitional housing) increased treatment adherence, programs with stricter rules and higher intensity treatment had a weaker relationship. It is evident

that identifying the most effective amount of service needed for optimal outcomes is a delicate issue.

Many people who are homeless with a history of substance abuse are unable to complete services in transitional high demand housing. Unfortunately, little is known about the outcomes of transitional housing for people who are chronically homeless (Caton, Wilkins, & Anderson, 2007), but it can be anticipated that retention would be particularly challenging for this difficult-to-house population. It has been suggested that transitional housing is problematic for people who are homeless with serious mental illness due to stress related to relocation and inadequate post-transitional housing follow-up care (Carling, 1990). Others recommend meeting people with serious mental illness and substance abuse where they are in terms of recovery, which would mean offering high demand transitional housing for those in recovery and low demand programs for those in pre-recovery (Brunette, Mueser, & Drake, 2004). Research supports this argument in showing that homeless individuals have better long-term housing and employment outcomes if provided either high or low demand transitional housing than if not provided transitional housing (Kertesz et al., 2006). A housing strategy targeting the individual needs of people who are chronically homeless would likely improve the overall outcomes of transitional housing, as people who are treatment-ready may be more successful in completing these programs.

High demand housing programs for people with serious mental illness have demonstrated superior outcomes compared to inpatient psychiatric hospitalization. One study found that supportive housing was associated with

better quality of life outcomes on a number of domains (e.g., global wellbeing, privacy, and social relations) compared to those living in a hospital setting (Brunt & Hansson, 2004). Mental health outcomes are also influenced by housing setting. In a review of housing studies for people with serious mental illness, Newman (2001) found that individuals had better wellbeing in small occupancy residences. Newman further reported that psychiatric symptom outcomes were better for those who reside with others with serious mental illness. Finally, evidence supports the effectiveness of acute alternative care programs in improving mental health outcomes comparable to inpatient hospitalization (Fenton et al., 1998), but with a more cost-effective approach (Fenton et al., 2002).

In terms of permanent housing, among a sample of individuals with serious mental illness living in RWJF housing programs, 65.5% remained housed over the four year study period (Wong et al., 2008). Those who maintained housing were significantly less likely to have used public shelters prior to housing and were less likely to have used inpatient psychiatric treatment. The most common reason for eviction from housing was a violation of sobriety rules (Wong et al., 2008). These findings suggest that while nearly two-thirds of residents were able to maintain housing after four years, high demand permanent supportive housing may be particularly difficult to maintain for individuals with a history of street/shelter homelessness and those with substance abuse problems and suggests a need for an alternative model for some people with serious mental illness.

Homeless individuals living in continuum of care programs experience similar problems in housing retention as those offered on a short-term basis. Due to issues such as substance use, criminal history, and significant mental health issues; many chronically homeless individuals are not eligible for traditional supportive housing programs (Stefancic & Tsemberis, 2007), and many are moved into settings that are increasingly supervised if a relapse occurs (Tsemberis & Eisenberg, 2000). Moreover, residents often perceive the rules in traditional housing programs as too strict, causing many to choose to return to homelessness (Hopper, 2006). Research has demonstrated that people who are formerly homeless are particularly prone to moving out of high demand programs within the first four months (Lipton et al., 2000). Taken together, these findings indicate a need for alternative housing options for people who are homeless, and particularly those who are chronically homeless with serious mental illness or chemical dependency.

Oxford House has shown positive substance use and mental health outcomes overall. One study found significantly lower rates of substance abuse among Oxford House residents compared to a usual care group over a two year period (Jason et al., 2006). Among those with co-occurring mental health issues, individuals with more severe psychiatric symptoms were found to be no more likely to utilize residential psychiatric treatment compared to those with less severe symptoms (Majer et al., 2008), indicating that psychiatric stability can be achieved among Oxford House residents. Furthermore, levels of anxiety were found to decrease over tenure in Oxford House (Aase et al., 2005). Many of the

positive outcomes are attributed to the sense of community established through the mutual help environment of Oxford House (Ferrari, Jason, Olson, Davis, & Alvarez, 2002).

Regarding housing stability in Oxford Houses, one study found that over 70% of a sample of tenants were no longer residing in Oxford House after two years (Bishop, Jason, Ferrari, & Huang, 1998). Of those who left Oxford House, 48% left voluntarily, 30% were evicted after relapse, 13% were evicted due to behavioral problems, and the remaining had an unspecified reason for leaving (Bishop et al., 1998). Although most tenants leave Oxford House over time, few people become homeless after leaving. A randomized study of Oxford House versus usual care found that an equivalent, albeit small, percentage (3%) of participants from both groups were living in homeless shelters at the 24-month follow-up (Jason et al., 2007). A stay of six months or longer in Oxford House has been found to predict better substance use outcomes among residents (Jason et al., 2007); however, the average length of stay among individuals who leave Oxford House was found to be less than six months (Bishop et al., 1998). These findings suggest that while Oxford House is a successful approach to housing for many, there are some residents who are vulnerable to leaving after a short period of time. Due to the low rates of homelessness after leaving Oxford House, even if an eviction occurred, it appears that the research participants recruited for the study are not representative of a chronically homeless population who would more frequently become homeless after housing loss. Nevertheless, Oxford House is a

high demand setting that could be effective for those who are chronically homeless and in recovery from substance use disorders.

Low Demand Housing

The National Alliance to End Homelessness has developed guidelines for a 10-year plan to end homelessness that is being followed by several major U.S. cities in which permanent housing will universally be provided for chronically homeless adults, homeless families, and/or homeless youth (National Alliance to End Homelessness, 2006). Given the majority of the homeless population is temporarily homeless, a focus on housing for smaller, particularly vulnerable groups, such as the chronically homeless, provides a reasonable goal for housing policy (Tucker, 2009). The 10-year-plan to end homelessness promotes the implementation of low demand housing which operates under the harm reduction model in which the safety of highly vulnerable populations is increased simply by providing a place to live. The Corporation for Supportive Housing (2004) defines low demand housing as housing provided with the primary goal of housing retention with few pre- and post-housing treatment requirements. The harm reduction model proposes that by providing individuals with substance use issues with access to basic safety needs, such as shelter, they will experience fewer harmful consequences of substance use (Marlatt, 1996). For example, an individual using heroin and sleeping outside will be in greater danger of victimization than if the individual has a safe place to stay. Additional therapeutic models, such as motivational interviewing, have been applied within a harm reduction framework and have demonstrated reductions in alcohol consumption

(e.g., Borsari & Carey, 2000), despite the lack of emphasis on sobriety within the approach (Marlatt, 1966).

Low demand programs are most often offered on a permanent basis and follow supportive or supported housing models. Many low demand programs are referred to as Housing First and are specifically targeted at chronically homeless populations in accordance with 10-year plans to end homelessness. The term Housing First came from the first such program, Pathways to Housing in New York, NY (Tsemberis & Asmussen, 1999). Although not all Housing First programs follow the specific model of Pathways to Housing, there are common factors across programs. Vulnerable homeless individuals are offered subsidized permanent housing immediately without prior engagement in treatment services (Tsemberis & Eisenberg, 2000). These programs are flexible in the structure of service provision, and adjunct services are based on client preference (Tsemberis & Asmussen, 1999). Most Housing First programs offer housing on a permanent basis. However, some Housing First programs, referred to as Safe Havens, are provided on a transitional basis for individuals who are particularly difficult to engage and resistant to services (Caton et al., 2007).

Although there are minimal treatment and sobriety requirements for tenants of Housing First programs, a range of treatment and support services are offered and encouraged. Similar to high demand permanent housing, Housing First programs can be either project-based or scattered site, supportive or supported housing. The term Housing First will be reserved for discussion of research on programs operating under the title of Housing First. In other cases of

low demand housing, the terms supportive or supported housing will be used. There is little distinction between Housing First and other forms of permanent supportive housing reported in the literature; however, some programs have not yet adopted the label “Housing First,” or did not utilize the terminology in published articles.

Despite differences across programs, Caton et al. (2007) note three unique and largely consistent characteristics of low demand permanent supportive housing: 1) participation in services is voluntary, 2) tenants hold the legally binding lease to their apartment, and 3) there is a collaborative relationship between the housing program and service providers. Residents have a great deal of autonomy and are responsible for aspects of self-care, such as personal hygiene, laundry, cooking, etc. Project-based programs offer 24-hour staffing to ensure the safety of residents and the building (Caton et al., 2007). Support services include case management, payee services, substance abuse counseling, and coordination of medical and psychiatric treatment (Caton et al., 2007). Therefore, residents are given the opportunity to obtain and practice independent living skills while consuming supportive services to promote housing stability.

Housing First programs often target the most vulnerable or highly impaired subgroup of people who are homeless. The U.S. Department of Housing and Urban Development (HUD) reported on sociodemographic and clinical characteristics of people living in three Housing First programs in three U.S. cities (Pearson, Locke, Montgomery, & Buron, 2007). Across the three programs, residents were approximately 75% male, most were between the ages of 36 and

50 years, and most were White; however, it should be noted that these demographic characteristics differed somewhat between programs.

In terms of diagnostic indicators assessed by Pearson et al. (2009), the vast majority of residents (91%) met criteria for a psychiatric diagnosis, with most diagnoses consisting of schizophrenia or other psychotic disorders, followed by mood disorders, and 78% were taking psychiatric medication. Most people in the three programs had substance abuse issues, with 45% experiencing drug and alcohol abuse, 19% with alcohol abuse only, and 11% with drug abuse only; and 25% had no history of substance abuse. Although the majority of residents had a history of substance abuse, most did not have a history of substance abuse treatment (Pearson et al., 2007). To further highlight the significant level of impairment of residents in these Housing First programs, 69% were dually diagnosed with a psychiatric disorder and substance abuse. Further research has shown a preponderance of chronic health conditions among Housing First residents (Weinstein, Henwood, Matejkowski, & Santana, 2011).

Finally, Pearson et al. (2009) noted homelessness and incarceration histories among residents of the three Housing First programs. Chronic homelessness was observed among 89% of the sample, and most were living on the streets or shelters prior to receiving housing. Over half of participants across groups had a previous arrest and about 35% had a previous incarceration. Taken together, these findings show that Housing First programs offer housing to individuals who are particularly difficult to house due to psychiatric disorder, substance abuse, incarceration history, and medical conditions.

The independence promoted in Housing First programs is endorsed by consumers of these programs. Although it would seem that people with high levels of impairment would require more supervision, research suggests that people with psychiatric disabilities prefer settings that promote independence and have low demands (Owen et al., 1996). Among people who are homeless with mental illness, independent living situations are preferred, but supportive services are also desired (Schutt & Goldfinger, 1996). Moreover, people with mental illness perceive mental health treatment as coerced when it is tied to housing rules (Robbins, Petril, LeMelle, & Monahan, 2006). Thus, Housing First provides both the independence and support services that are preferred by this population.

Low demand housing outcomes. Despite challenges in providing stable housing to such a vulnerable segment of the homeless population, particularly in scattered-sites settings with a high level of independence, outcomes of supportive housing programs for people who are formerly homeless have been promising overall. A pilot study of 36 Housing First residents revealed an 84% two-year housing retention rate (Tsemberis, Kent, & Respress, 2012). The sample included individuals who were homeless for at least five years and were dually diagnosed with a serious mental illness and alcohol dependence (Tsemberis et al., 2012). Thus, Housing First promotes achievement of sustained housing among markedly vulnerable populations.

In a further evaluation of the Housing First programs discussed in the report by HUD (Pearson et al., 2007), 84% of the formerly homeless adults remained housed after 12 months (Pearson, Montgomery, & Locke, 2009). Of the

16% that did not maintain housing, 31% had died; 23% left voluntarily; 15% required more intensive treatment; 15% were incarcerated; and 15% were evicted for assaulting other residents (Pearson et al., 2009). One aspect of Housing First programs promoting longer housing tenure is that apartments are held if tenants are hospitalized or incarcerated for short durations, as tenants continue to hold the lease to their apartments. Thus, Pearson et al. found that people who remained housed stayed outside of the program for approximately 30 days over a 12-month period. However, those who left housing spent roughly twice as many days in other places than those who stayed (Pearson et al., 2009). It is important to recognize that not all departures from permanent supportive housing are adverse, as one study found that 21% of people who left supportive housing moved into even more independent living settings (Wong et al., 2006). These studies highlight the success of Housing First programs in providing long-term housing for people who are formerly homeless.

Supportive housing has consistently demonstrated better housing outcomes for the homeless population with mental illness than case management and assertive community treatment (ACT) alone (Nelson et al., 2007). A three year study found that formerly homeless adults with mental illness who were provided supportive housing spent significantly more time housed and less time homeless than those provided case management only or usual care (Rosenheck, Kaspro, Frisman, & Liu-Mares, 2003). A similar study with a sample of formerly homeless veterans yielded comparable results (O'Connell, Kaspro, & Rosenheck, 2008). In a sample of chronically homeless adults in a suburban

community, 78.3% of the Housing First group and 57% of the case management group maintained housing after four years (Stefancic & Tsemberis, 2007). Clark and Rich (2003) compared homeless adults with varying severity of mental illness and substance abuse receiving either supportive housing or case management only. They found that the highly impaired group had significantly better housing outcomes when given supportive housing than case management, but those with low impairment fared just as well with case management as they did with supported housing (Clark & Rich, 2003). These findings suggest that low demand supportive housing enhances housing stability among the formerly homeless compared to community mental health services, and this is particularly important for those with more severe impairment.

Comparing Outcomes in High and Low Demand Housing

Several studies have compared housing tenure among different types of housing programs. In a large sample of formerly homeless adults with mental illness residing in supportive housing programs of various levels of intensity, Lipton et al. (2000) found that approximately 54% in low demand settings remained housed five years after housing entry, while 37% maintained housing in high demand settings. Although the authors found better long-term housing stability for those living in lower demand settings, sociodemographic differences were also observed across the different settings that may have partially explained this finding (Lipton et al., 2000). Tsemberis and Eisenberg (2000) recruited and randomly assigned homeless individuals with mental illness into either Housing First or continuum of care over a 4.5-year period. The authors found that 88% of

the Housing First participants remained housed at the end of the five-year data collection period, while only 47% of those in the continuum of care program maintained housing. After controlling for resident characteristics in the two settings, Tsemberis and Eisenberg concluded that the risk of losing housing was four times greater in continuum of care than in Housing First.

A randomized study comparing Housing First with continuum of care housing found that participants assigned to Housing First were housed more quickly and spent significantly more time housed over a 24-month follow-up period (Tsemberis, Gulcur, & Nakae, 2004). Housing First was found to be effective in improving housing stability for people recruited from the streets and psychiatric hospitals, and was found to be particularly successful for those recruited from the streets (Gulcur, Stefancic, Shinn, Tsemberis, & Fischer, 2003). Even among the most highly impaired homeless subgroup, those who are dually diagnosed, Housing First yields better housing retention outcomes than continuum of care approaches (Padgett, Gulcur, & Tsemberis, 2006).

Low demand and high demand housing programs have been compared using quasi-experimental designs. A two-year quasi-experimental study found that those residing in Housing First spent more days in their own apartment compared to those who participated in residential substance abuse treatment prior to housing (Tsai, Mares, & Rosenheck, 2010). Another study evaluated a Housing First program with a particular emphasis on employment services and revealed significantly better housing and employment outcomes compared to those in the control group, which was primarily offered high demand transitional housing

options (Burt, 2012). Based on these findings, it appears that Housing First programs are better able to meet the goal of housing retention than high demand approaches for vulnerable homeless populations.

Other studies have not found significant differences in housing retention across different housing models. For example, Siegel et al. (2006) utilized propensity scoring to group participants based on the likelihood they would be assigned to supportive housing versus high demand community residences. The baseline characteristics used as covariates to create propensity scores were: sociodemographic indicators, age of entry into the mental health system, psychiatric and substance use indicators, incarceration history, whether they were a recipient of disability benefit, and their housing referral source. The authors found no significant differences in housing tenure over 18 months for formerly homeless adults with varying levels of impairment in supportive housing compared to high demand community residences. Interestingly, they found a trend indicating that the group of residents who were most characteristic of community residence populations actually tended to remain housed for a longer duration when their initial placement was supportive housing (Siegel et al., 2006).

In contrast, one study randomized homeless adults to either independent housing plus case management or group homes plus case management and found that individuals living in group homes had significantly fewer days homeless after placement (Goldfinger et al., 1999). However, the authors did not state whether sobriety requirements were placed on residents of either housing program. Substantial differences in the level of support also varied across the two

programs, with the group homes having 24-hour staffing and the independent apartments only having case management. Further, case management alone is less support than most supportive or supported housing models. Discrepancies found among studies comparing low demand housing to other housing models may be due to inconsistencies in housing program structures and participant characteristics.

Some suggest that the type of housing model does not play an important role in housing retention for people with mental illness (Rog, 2004). Yet, people with mental illness and a history of chronic homelessness may have unique housing needs and may respond better to less intensive settings, such as Housing First. Given that some research suggests that people have generally positive housing outcomes regardless of the type of housing, and other research indicates that Housing First is the model of choice for people who are formerly homeless, a reasonable approach is to provide individuals with the choice of high demand or low demand housing with information about the requirements of each and the best fit for each individual. Some individuals may benefit from the increased autonomy offered in low demand programs, which not only provides people with a better quality of life, it also requires less staffing, making housing more cost-effective. Additionally, program structure may influence housing retention for people who are formerly homeless with mental illness. A randomized trial found that highly integrated mental health and housing services yielded better housing outcomes than housing programs that provided external case management and mental health services (McHugo et al., 2004). Thus, promoting independence and

increasing access to mental health care is important for housing maintenance and overall wellbeing among people with a history of homelessness.

Predictors of Housing Loss in Low Demand Housing

Even though the majority of formerly homeless residents in permanent supportive housing are able to maintain housing for at least five years, some continue to experience difficulty with housing retention even in low demand settings. Several studies have examined predictors of housing loss after placement in supportive housing. In terms of sociodemographic characteristics, women were found to be less at risk for housing loss than men (Pearson et al., 2009).

Inconclusive results have been found regarding the role of race in housing retention (Pearson et al., 2009; Tsemberis & Eisenberg, 2000). Individuals who are older are more likely to stay housed (Lipton et al., 2000; Malone, 2009; Tsemberis & Eisenberg, 2000).

Diagnostically, substance abuse and dual diagnosis has consistently predicted departure from housing (Goldfinger et al., 1999; Hurlburt, Hough, & Wood, 1996; Lipton et al., 2000; Tsemberis & Eisenberg, 2000). However, one low demand housing study compared individuals who were abstinent at housing entry compared to those who were considered frequent users of drugs and/or alcohol and found no difference in housing outcomes (Edens, Mares, Tsai, & Rosenheck, 2011). Regarding psychiatric diagnoses, studies have presented the unexpected finding that non-psychotic psychiatric disorders, such as depression and anxiety, are related to housing tenure, although the relationship is unclear. One study found that the presence of a mood disorder increased rates of housing

over time (Tsemberis & Eisenberg, 2000), while another study found that high scores on depression and anxiety scales at entry into housing predicted housing dissatisfaction over time (Siegel et al., 2006), and a third study found that posttraumatic stress disorder predicted poorer housing retention (O'Connell et al., 2008).

Resource utilization merits examination for the impact on housing tenure. Contrary to what may be expected, criminal history was not found to predict housing status in one study (Malone et al., 2009). Finally, individuals with a history of shelter use were found to be significantly more likely to leave permanent supportive housing than those with no shelter history (Wong et al., 2006). Taken together, these findings suggest that some people remain difficult to house in highly flexible settings, and particular attention should be given to younger residents and those with substance abuse issues as well as mood and anxiety disorders.

Quality of Life Outcomes

Important quality of life outcomes such as psychiatric symptoms and substance abuse have been examined less thoroughly than housing retention in studies of low demand housing. Quality of life outcomes have been evaluated by proxy in cost-effectiveness studies examining reductions in emergency service or psychiatric hospital utilization, and these studies will be discussed in detail in the next section. Yet, relatively few studies have directly evaluated changes in quality of life. Moreover, cost-effectiveness studies often do not explore other indices of

wellbeing such as housing satisfaction, consumer choice, and community integration.

Observed changes in psychiatric symptoms and substance abuse after housing vary widely across studies of housing programs for the formerly homeless. Most studies have not found substantial declines in symptomatology in samples of homeless adults with mental illness. One study utilized case managers' categorical global ratings of client impairment (e.g., no impairment, moderate impairment, severe impairment) related to psychiatric symptoms and substance use among participants residing in Housing First programs and found no significant changes in impairment ratings over 12 months (Pearson et al., 2009). Studies comparing outcomes of people placed in low demand supportive housing compared to case management alone (Clark & Rich, 2003; Rosenheck et al., 2003) or other types of housing (Padgett et al., 2006; Tsai et al., 2010; Tsemberis et al., 2004) have not found significant changes or time by group interaction effects for psychiatric symptomatology and substance abuse.

The lack of evidence for reductions in psychiatric symptoms after housing may be due to the high rates of serious mental illness among residents in Housing First programs. Severe psychiatric disorders tend to be chronic and may fluctuate over brief periods of time but gross improvements in symptoms may not be captured in long-term follow-up evaluations (Pearson et al., 2009). In addition, the reliability of self-reported substance use has been problematic among people with a severe pattern of substance abuse (Larimer et al., 2009), and developing a

more accurate measurement of drug and alcohol consumption may yield more informative results.

Some research does imply positive quality of life outcomes for people provided housing. One study found a significant decrease in psychiatric symptoms after 18 months in supportive housing (McHugo et al., 2004). Siegel et al. (2006) compared supportive housing with sober community residences and found that although psychiatric symptom outcomes did not differ between the housing programs, the use of crisis services decreased significantly more in the supportive housing group. Additionally, Greenwood, Schaefer-McDaniel, Winkel, and Tsemberis (2005) found that psychiatric symptoms significantly decreased after housing for both Housing First and treatment first programs, but the type of housing did not influence these changes. However, the relationship between housing and decreased psychiatric symptoms was found to be mediated by perceived choice and mastery over living circumstances (Greenwood et al., 2005). This suggests that providing housing, regardless of type, can influence symptomatology, but Housing First programs are indicated because they promote more choice in services than treatment first settings.

In terms of substance use, research suggests that Housing First leads to a significant decline in days of intoxication and number of drinks consumed per day among residents compared to the year prior to housing (Larimer et al., 2009). Among formerly chronically homeless individuals with chemical dependency residing in Housing First for two years, the average number of drinks consumed per day decreased by 7% every three months, and life threatening alcohol

withdrawal symptoms decreased by 42% after two years (Collins, Malone, et al., 2012). Padgett, Stanhope, Henwood, and Stefancic (2011) found that individuals living in Housing First were significantly less likely to use drugs or alcohol and use substance detoxification services during the 12 months after housing compared to those residing in high demand programs. Although Padgett et al.'s study was not randomized, residents of the two types of housing programs did not differ in terms of substance use at baseline or psychiatric diagnosis. Overall, studies evaluating changes in mental health and substance abuse indicators have been limited, and these outcomes merit further research.

It should be noted that the Housing First model has not been found to increase substance use and psychiatric symptoms among new residents despite low behavioral demands (Tsemberis et al., 2004). Moreover, patterns of substance use have not been found to significantly differ between residents in Housing First and clean and sober housing programs (Padgett et al., 2006; Tsemberis et al., 2004). However, the methods of detecting substance use that are used by service providers have been problematic, resulting in some instances of substance use going undetected (Wolford et al., 1999). Interestingly, those in treatment first housing have increased rates of substance abuse treatment utilization (Padgett et al., 2006; Tsemberis et al., 2004), which may demonstrate increased motivation to maintain sobriety among those whose housing is contingent on abstinence. This suggests that some people who are formerly homeless with a dual diagnosis may struggle maintaining housing due to ongoing substance use, while others may be

successful in abstinence-based programs and receive more intensive substance abuse treatment to aid in sobriety maintenance.

In an effort to gain additional context regarding substance use in a Housing First program targeted a chronically homeless adults with alcohol dependence, Collins, Clifasefi, et al. (2012) conducted a qualitative study of residents and staff. The authors found that residents were motivated to attain housing because of the harm reduction model implemented, and they would have been unwilling to seek housing otherwise. Residents noted valuing their autonomy in developing individualized goals for alcohol consumption. Reasons for continued alcohol consumption in housing included management of alcohol withdrawal symptoms, short-term relief of psychiatric symptoms, and sense of community. In sum, this qualitative study indicated Housing First was an appropriate method for meeting the needs of the specific population served, and was effective in reducing harm by providing safety.

Housing satisfaction outcomes have shown the most consistent positive outcomes for Housing First programs. People residing in Housing First programs have more perceived choice in housing setting and treatment options than those in high demand models (Greenwood et al., 2005; Tsai et al., 2010; Tsemberis et al., 2004), which is particularly important given the preference for more independence among the mentally ill homeless population (Schutt & Goldfinger, 1996). Weinstein et al. (2011) found that most Housing First residents were interested in services geared toward medical and mental health treatment, but only 23% wanted to reduce substance use behavior, and 25% wanted to adhere to a

psychiatric medication regimen. The low rates of interest in medication management and substance abuse treatment reported by Weinstein et al. highlight potential discrepancies in the services residents prefer and those that may be prioritized by providers. Gulcur et al. (2003) speculate that the increased choice in treatment among Housing First consumers allows them to select treatments necessary to successfully prevent psychiatric hospitalization.

Housing First programs further endeavor to enhance activities of daily living. Residents experience greater independence in completing day-to-day activities, such as self-care, shopping, cleaning, etc. (Yanos, Felton, Tsemberis, & Frye, 2007). Additional findings suggest greater feelings of autonomy in supportive housing, but these programs are also associated with greater feelings of isolation (Siegel et al., 2006). In contrast, Housing First residents were found to report greater social and family relationships compared to those who were homeless (Gilmer, Stefancic, Ettner, Manning, & Tsemberis, 2010). People in Housing First programs perceive that mental health treatment is less coerced than in more traditional supportive housing environments as housing is less contingent on mental health treatment (Robbins, Callahan, & Monahan, 2009). In sum, Housing First is congruent with the preferred autonomy of people with mental illness and reduces perceived coercion for treatment. However, some people may experience increased feelings of isolation as people may have fewer interpersonal interactions living independently than they would living in group home settings.

Although the studies reviewed above revealed overall positive outcomes for housing and other quality of life indicators, research design and programming

varied widely across studies. Only two Housing First studies have been randomized trials (Kertesz & Weiner, 2009), while others have been quasi-experimental and have used methods such as propensity scores to mimic randomization to conditions (Siegel et al., 2006). Further, a range of supportive housing programs was described above, and while the studies reviewed were considered low demand, not all were referred to as Housing First. Given that program characteristics may significantly influence client outcomes (Melnick, DeLeon, Hiller, & Knight, 2000), it is possible that extending findings from low demand supportive housing to what would be expected in Housing First programs is problematic. Differences in definition and service provision even vary among self-proclaimed Housing First programs (George, Chernega, Stawiski, Figert, & Bendixen, 2008). The inconsistency observed across Housing First programs is due to a lack of a clear definition of what Housing First is, aside from low resident demands. Therefore, some caution is necessary when generalizing research findings to different types of programs and populations.

Cost-Effectiveness of Low Demand Housing

As discussed previously, individuals who are chronically homeless have a tendency to use emergency services at a high rate. Costs associated with trauma- and non-trauma-related emergency department visits are significant (Bamezai, Melnick, & Nawathe, 2005). Further, people who are high utilizers of emergency departments are more likely to have public medical coverage, such as Medicare or Medicaid, or not have any form of health insurance (Ruger, Lewis, & Richter, 2006). Consequently, the pattern of service utilization among the homeless

population has a significant economic impact. Due to the provision of support services for residents in Housing First programs, it is expected that residents will have better access to ongoing treatment and utilize fewer emergency services. Although subsidized housing would appear costly, it has been suggested that costs associated with housing would be offset by service use reductions (Martinez & Burt, 2006). As a result, Housing First is considered to be a cost-effective approach, and research has begun evaluating cost reductions associated with providing housing to people who are chronically homeless.

Several studies have used indicators of service utilization to evaluate the cost-effectiveness of supportive housing. For example, Siegel et al. (2006) found that individuals residing in supportive housing used crisis services significantly less often than those staying in other housing programs. Among people with a dual diagnosis, supportive housing is associated with significant reductions in medical and psychiatric emergency department visits and hospitalizations compared to homelessness (Martinez & Burt, 2006). A randomized controlled trial evaluated health care use reductions among a sample of homeless adults with a medical illness who received supportive housing versus usual care, and found a reduction in days hospitalized of 29%, and a reduction of emergency department visits of 24% for those who received supportive housing (Sadowski, Kee, VanderWeele, & Buchanan, 2009). Although studies evaluating service reductions in this manner do not incorporate definitive cost data or report on the cost of housing provision, they do provide evidence that supportive housing can

reduce costly emergency service utilization, which may also indicate better health and mental health outcomes.

Gulcur et al. (2003) conducted the first randomized cost-effectiveness study of Housing First compared with the continuum of care housing model. Participants were required to have a history of homelessness and mental illness and entered the study from either the streets or from psychiatric hospitals. The Housing First program reduced psychiatric hospitalizations more often than the continuum of care program, particularly among those recruited from psychiatric hospitals. Moreover, the Housing First program was associated with fewer costs than the control program (Gulcur et al., 2003). Unfortunately, the authors did not report exact costs incurred by residents in the two housing programs, nor did they report exactly which public services were included in the cost analysis. Regardless, the significant reductions in inpatient psychiatric treatment among the Housing First group indicates a reduction in service use costs.

Some research has failed to reveal statistically significant reductions in service utilization. In a small within-subjects study, Parker (2010) did not observe significant changes six months after entering Housing First; however, the trend-level reductions accounted for substantial cost savings. DeSilva, Manworren, and Targonski (2011) conducted a two-year service utilization study among 18 Housing First residents. The authors found that 94% of residents did not return to homelessness two years after housing, and they demonstrated a trend-level reduction in emergency department visits, detoxification center usage. DeSilva et al. noted a trend-level increase in outpatient mental health services. A larger two-

year study by Kessell, Bhatia, Bamberger, and Kushel (2006) examined utilization of a range of health, psychiatric, and substance abuse services among supportive housing residents, and significant reductions were not found across services. The discrepancies in the impact of low demand housing on service utilization across studies may reflect differences in housing models, populations, or city-to-city differences in the availability or adequacy of services for the chronically homeless.

An early cost-effectiveness study compared low demand group home settings, referred to as evolving consumer households, to low demand, independent supportive housing for formerly homeless adults with mental illness (Dickey, Latimer, Powers, Gonzalez, & Goldfinger, 1997). The authors found that both housing programs yielded similar housing stability outcomes and reductions in treatment costs, but the independent living setting was associated with lower housing costs. Total annual costs, including housing, treatment, and case management costs for independent living were \$29,838 for those in independent living and \$56,434 for those in evolving consumer households (Dickey et al., 1997). Individuals in this sample who did not maintain housing utilized more services than those who did remain housed (Dickey et al., 1996). Although Dickey et al. provided support for the cost-effectiveness of supportive independent housing compared to other models, they did not compare service utilization costs associated with homelessness to costs associated with housing.

Culhane, Metraux, and Hadley (2002) conducted a large cost-effectiveness study of publicly funded permanent supportive housing programs for formerly

homeless adults with mental illness in New York City. A comprehensive cost analysis was conducted accounting for the following services: supportive housing, shelter use, inpatient psychiatric services, Medicaid reimbursements for inpatient and outpatient medical care, hospital records for medical treatment, and jail and prison utilization. Although the study was not randomized, a matched control group was used for comparison. Culhane et al. found that individuals incurred \$40,451 in service costs annually before housing. After housing, the sample's average annual service costs were reduced by \$16,281 per person. However, annual housing costs averaged \$18,190 per housing unit for those who maintained consistent housing, indicating that housing plus other services costs totaled \$42,360, which was about \$1,908 more costly per individual than those who were homeless (Culhane et al., 2002). The authors note that several housing models were evaluated in this study, and after analyzing supportive housing separately they found that the overall cost increase was \$995, which is nearly \$1,000 lower than when calculated across housing programs (Culhane et al., 2002). A later study conducted in New York City also described lower housing costs of supportive housing than community residences (e.g., group homes; Siegel et al., 2006). Findings from these New York studies suggest that supportive housing models are more cost effective than other models of housing for people who are formerly homeless, but the cost of housing is more than the cost of homelessness. Although housing may be more costly in monetary terms, it is also important to factor in the quality of life benefits that can be obtained through the provision of housing.

HUD along with the U.S. Department of Veterans Affairs (VA) developed supportive housing programs for homeless veterans with mental illness (HUD-VASH). In a randomized study, Rosenheck et al. (2003) compared cost outcomes for HUD-VASH, case management, and usual care for homeless veterans with mental illness. They found that those in HUD-VASH incurred significantly more costs in outpatient mental health care and case management than those in the other two groups over the course of three years. It was revealed that HUD-VASH was 18% more costly in terms of health costs than treatment as usual, but the authors concluded that supportive housing was cost-effective given the superior housing outcomes (Rosenheck et al., 2003). The increased use of outpatient mental health care in the HUD-VASH group may be an indicator of greater treatment engagement than those in the other two groups. Although it is more costly, increased treatment engagement is a positive quality of life outcome. Thus, providing supportive housing increased costs by approximately \$45 per day compared to the usual care group, but they received more mental health treatment and maintained stable housing overall.

One study has compared operation costs of Housing First with shelters in a suburban county in New York State (Stefancic & Tsemberis, 2007). Accounting for staff salaries, operation costs, and costs associated with rental fees, the Housing First programs cost approximately \$20,410 annually per resident. This was slightly higher than the New York City supportive housing cost estimates of Culhane et al. (2002). Stefancic and Tsemberis estimated annual shelter costs ranging from \$24,269 to \$43,530 per person. The increased costs associated with

usual care, was likely due to the 24-hour staffing necessary in shelters. The Housing First programs used ACT teams to provide support to residents in scattered site independent housing settings, thus not requiring 24-hour staffing.

Another study evaluated the cost reductions associated with a Seattle Housing First program for formerly homeless men with severe patterns of alcohol use (Larimer et al., 2009). Participants were selected based on their designation of the highest utilization of publicly funded services in King County. Individuals assigned to housing were compared with a wait-list control group recruited from the same pool of potential residents. Cost data included use of the following: jails; sobering centers; emergency department, outpatient, and inpatient services at one hospital; emergency medical services; shelter use; inpatient drug and alcohol treatment; Medicaid reimbursements; and housing program costs. Larimer et al. found that in the first six months, the Housing First residents incurred 53% fewer costs than the wait-list control group. Service use was found to decline as housing tenure increased. The authors estimated that Housing First residents cost \$2,449 less per person per month than the control group. These findings are consistent with those reported by Mares and Rosenheck (2009), who observed a 50% reduction in health service costs in the year after housing. However, the Housing First program evaluated by Larimer et al. was project-based, as opposed to scattered sites, and the initial costs of building construction were not included in this cost analysis (Kertesz & Weiner, 2009). Still, this study was the first to show significant cost reductions associated with Housing First for individuals with severe alcohol dependence who are the highest utilizers of public services.

Gilmer et al. (2010) examined service utilization costs among 209 residents of a supported housing program. The authors found that one year after housing, residents incurred an average increase in outpatient mental health service costs of \$9,180, indicating increased utilization of ongoing, maintenance-based care. Housing costs also increased by an average of \$3,180 over one year. Cost reductions included emergency service use (\$1,721), jail mental health services (\$1,641), and inpatient psychiatric use (\$6,882). Overall, housing and outpatient costs were 18% greater than jail, inpatient, and emergency mental health services. Although not factored into the cost analysis, Gilmer et al. found superior quality of life among those in supported housing compared to a homeless control group.

Due to different methods of conducting cost-effectiveness analyses it is difficult to compare findings across studies. However, it appears that housing increases utilization of outpatient services while decreasing use of emergency services. And although some evidence suggests that the costs associated with housing are not low enough to entirely offset the cost of reduced emergency service utilization, it is clear that the quality of life benefits may be worth the minimally increased costs. True cost-effectiveness analyses factor in quality of life benefits (e.g., decreased days of homelessness, decreased psychiatric symptomatology) converted in to dollar amounts when conducting a cost-benefit analysis (Robinson, 1993). The studies described above were primarily focused on raw dollar amounts pre- and post-housing. Additional research is needed to weigh the costs and benefits of providing permanent housing for formerly homeless adults.

Housing First as an Indicated Prevention Approach to Chronic Homelessness

Research has clearly identified several risk factors for short-term and chronic homelessness, including mental illness, substance abuse, history of housing instability, and lack of financial resources. Furthermore, it is evident that psychiatric and medical problems become compounded through extended bouts of homelessness due to poor engagement with outpatient services, leading to high costs to individual wellbeing and high utilization of costly emergency services. Given this knowledge, it is perplexing that few homelessness prevention programs exist, and research on homelessness prevention has been minimal. Further, most research on housing programs has involved the homeless population, and little research exists to support housing models for people with serious mental illness who do not necessarily have a history of homelessness (Kyle & Dunn, 2008). Some homelessness prevention efforts have been developed to provide services to those considered to be at risk of homelessness.

Current Homelessness Prevention Interventions

One programming effort to prevent homelessness among vulnerable populations is the Critical Time Intervention (CTI). CTIs consist of teams of social workers and mental health professionals who work around a person identified as at risk of homelessness; typically people transitioning into the community from psychiatric hospitals or jails (Herman, Conover, Felix, Nakagawa, & Mills, 2007). The teams assist clients in establishing a residence, stabilizing psychiatric treatment, and obtaining income (Herman et al., 2007). However, the duration of CTI programs is between six and nine months, and

clients are expected to be stabilized and independent by the conclusion of the program. Although CTI programs are unique in their orientation toward prevention of homelessness, many people who are highly vulnerable to homelessness due to psychiatric and/or substance abuse problems may require long-term supportive services in order to maintain residence.

Another example of a homelessness prevention effort is the Philadelphia Community-Based Homelessness Prevention Program (PCHPP). Some of the services provided by PCHPP include provision of case management, referrals to educational and occupational training programs, and emergency rental assistance (Wong et al., 1999). People are eligible for PCHPP services if they are homeless or close to losing housing, and because of the prevention model utilized, services are particularly targeted at people who are at risk of becoming homeless (Wong et al., 1999). In order to increase the accessibility of PCHPP services, most PCHPP offices are located in areas with high proportions of people at risk of homelessness (e.g., low-income neighborhoods; Wong & Hillier, 2001). Similar to CTI, PCHPP provides links to services related to each person or family's unique needs, but PCHPP case management is offered for a duration of six months. PCHPP has clearly demonstrated success in preventing homelessness among clientele, with about 90% reporting resolution to their housing problems. However, there remains a subset of the at-risk population that may benefit from long-term assistance with integrated housing and support services.

Homelessness Prevention for Psychiatric Inpatients

Long-term services have commonly been proposed as an important component of homelessness prevention, particularly for those with the most difficulty living independently (Lindblom, 1991). Several authors have emphasized the provision of permanent housing as a promising approach to preventing homelessness (Burt, 2005; Lindblom, 1991; Shinn & Baumohl, 1999). Yet, the question arises as to who should be targeted for permanent housing and long-term support services if literal homelessness is not a requirement.

Lindblom (1991) proposed a profile for individuals most at risk of homelessness based on characteristics of the homeless population including poverty, mental illness, substance abuse, and legal history. However, targeting those at risk for homelessness has proven to be challenging, with research suggesting that some people considered at risk for homelessness do not become homeless and that others who are overlooked may become homeless (Shinn et al., 1998). As a remedy for inappropriately targeting individuals for homelessness prevention services, comprehensive discharge planning in institutional settings can be used to determine whether those who are characteristically at risk of homelessness will be imminently homeless upon discharge.

Inpatient psychiatric treatment facilities have been identified as important contact points for identifying people who are at risk of becoming homeless, as many individuals do not have a stable living situation to return to after discharge (Lindblom, 1991; Burt, 2005). As a form of homelessness prevention, careful discharge planning at hospitals can identify individuals who need referrals to

permanent supportive housing programs (Burt, 2005). Although targeting psychiatric inpatient hospitals may only identify a small subset of the overall population of at-risk individuals (Shinn & Baumohl, 1999), it would identify a highly vulnerable subset of those at-risk. Moreover, targeting individuals with serious mental illness at risk of homelessness may be particularly important for preventing chronic homelessness.

Characteristics of high utilizers of inpatient psychiatric treatment. One method of specifying a subset of psychiatric inpatients at risk of chronic homelessness is to explore those who tend to utilize inpatient treatment at a high rate. Frequent hospitalization is an indicator of poor community stability and a reliance on intensive treatment services. Examining characteristics of frequently hospitalized adults may provide key information about appropriate homelessness prevention efforts for this population.

Some studies have explored predictors of high utilization of psychiatric hospitalization. One study compared individuals with multiple admissions to psychiatric hospitals, as defined by at least five admissions in a one-year period, with those with one to four admissions (Geller, Fisher, McDermeit, & Brown, 2000). Results found that those with at least five admissions were more likely to be White and female, have a secondary personality disorder, and have a history of substance abuse. Geller et al. further found that those with multiple admissions were more likely to be participating in case management and be recipients of disability benefits.

Another study examined sociodemographic and other predictors of admission to a public psychiatric hospital (Klinkenberg & Calsyn, 1998). Although this study did not specifically explore high inpatient utilization, the authors found that number of previous hospitalizations predicted the present admission. In contrast to Geller et al. (2000), Klinkenberg and Calsyn did not find a relationship between substance use disorder and admission. Also in contrast to Geller et al.'s findings, Klinkenberg and Calsyn found that recency and intensity of outpatient care reduced the likelihood of admission.

In an effort to more clearly define patterns of high rates of contact with psychiatric emergency services, Pasic, Russo, and Roy-Byrne (2005) found a distinct subset of high utilizers whose number of visits exceeded two standard deviations above the average patient, and another distinct subset of high utilizers who had four visits in a three-month period. Similar to the findings of Geller et al. (2000), Pasic et al. found that high utilizers were more likely to be female and possess a mental health benefit plan compared to less frequent utilizers. Further, substance use diagnosis and history of substance abuse treatment were significant predictors of high utilization (Pasic et al., 2005). The authors found homelessness to be another significant association with high psychiatric emergency service utilization. Interestingly, two studies did not observe psychotic disorder as a predictor of hospitalization (Geller et al., 2000; Klinkenberg & Calsyn, 1998). However, Pasic et al. found a primary diagnosis of schizophrenia occurred significantly more frequently among the high psychiatric emergency department utilizers compared to infrequent utilizers.

Based on findings from these studies, it appears that high utilizers of inpatient psychiatric treatment comprise a unique population with specialized needs. These individuals experience greater severity of psychological distress (Geller et al., 2000; Klinkenberg & Calsyn, 1998; Pasic et al., 2005), are more likely to have substance abuse issues (Geller et al., 2000; Pasic et al., 2005), and are more likely to be homeless (Pasic et al., 2005). If permanent supportive housing is indicated for psychiatric inpatients at risk of homelessness (Burt, 2005; Lindblom, 1991; Shinn & Baumohl, 1999), this particular population of high inpatient utilizers may require the services provided through low demand housing programs in order to remain stably housed.

Low demand housing for chronic homelessness prevention. It is recognized that individuals with serious mental illness and substance use issues may not benefit from primary homelessness prevention methods, as this population requires more intensive services (Culhane, Metraux, & Byrne, 2011). Given the promising findings of low demand housing programs for individuals who are already homeless, it is possible that these programs may also be effective for preventing chronic homelessness. Housing First programs have historically been targeted at those demonstrating a history of long-term homelessness. However, individuals discharged from inpatient psychiatric treatment may share many of the same characteristics of those residing in Housing First who have been unsuccessful in other types of housing, such as poor treatment compliance, substance abuse, or a need for ongoing support services. One study found promising housing stability outcomes among a group of participants who were

released from inpatient psychiatric settings into Housing First (Tsemberis et al., 2004). Thus, it can be argued that opening Housing First housing models to individuals with serious mental illness upon discharge from inpatient treatment may provide the long-term services needed to maintain housing stability. In addition, individuals who have not yet demonstrated a chronic pattern of housing instability may demonstrate better housing tenure outcomes as they may have fewer problems leading to housing loss than those with a repeated pattern of housing instability.

The prevention literature has used different terminology to describe levels of prevention efforts. For example, the 1994 Institute of Medicine Report defined prevention interventions as universal (i.e., prevention efforts targeted at the larger population, not based in risk factors), selective (i.e., prevention efforts targeted at those at increased risk), and indicated (i.e., prevention efforts targeted at high risk groups; Muñoz, Mrazek, & Haggerty, 1996). By using appropriate indicators of homelessness risk (e.g., Lindblom, 1991), Housing First could be implemented as an indicated prevention intervention for chronic homelessness. Specifically, indicated prevention methods are for those who are already demonstrating “symptoms,” which, in terms of chronic homelessness risk, could potentially be individuals with serious mental illness who do not have a current residence. This is in contrast to selective prevention in which a broader group would be targeted for Housing First, such as all people who are homeless or all people with serious mental illness. Universal prevention efforts would be broader still. Because only a subset of the population of individuals at risk of homelessness are at risk for

chronic homelessness and in need of the intensive services provided in Housing First programs, current Housing First models may not be appropriate for universal or selective prevention efforts. Therefore, targeting Housing First for those without stable housing who are at high risk of long-term homelessness (e.g., those discharged from inpatient psychiatric treatment with no stable housing) may be an effective indicated prevention intervention for chronic homelessness.

Yet, in order better understand the potential of Housing First as an indicated prevention intervention, more information is needed regarding the appropriateness of these settings for at-risk groups. It is possible that environmental factors in Housing First programs may impact housing outcomes differently for those with varying homelessness histories, such as those who have not been chronically homeless, compared to those that have been chronically homeless. As a result, an evaluation of social ecology is a necessary step in evaluating the effectiveness of Housing First for those who have different experiences with homelessness.

Social Ecological Approach to Understanding Housing Interventions

When examining prevention of chronic homelessness among vulnerable populations, it is evident that housing tenure is a primary outcome of interest. However, an important secondary aim is to enhance the quality of life among residents of housing programs. One method of approaching questions related to quality of life is to understand which aspects of the housing environment are perceived positively or negatively, and whether these perceptions interact with individual factors, such as homelessness history. However, identifying important

environmental components is challenging because housing environment is a multifaceted concept. In fact, Moos (1973) described six different domains of human environments encompassing ecological, organizational, behavioral, reinforcement, personal, and social factors. Moreover, Moos suggested that there is significant transaction and overlap among these dimensions of environment.

In order to better understand the transaction among domains of environments in relation to treatment settings, Moos (1974) proposed a social ecological approach to understanding treatment environments. Moos defined social ecology as “the multidisciplinary study of the impacts on human beings of physical and social environments” (p. 20). Insel and Moos (1974) added that environmental factors impact psychological wellbeing and that identifying the most appropriate environment for an individual is a necessary step in improving psychological factors.

Due to the complexity of human environments it is important to recognize that no two environments are the same (Moos, 1974). Further, the multifaceted nature of human environment may be a deterrent for research in this area (Insel & Moos, 1974), and, as a result, research on human environment often studies one facet while excluding others (Kloos & Shah, 2009). However, Moos stated that multiple aspects of human environments must be evaluated in order to fully understand the social ecology of a setting. There is a need for research in the area of housing for people with severe mental illness that evaluates the impact of multiple individual and environmental factors on housing and mental health outcomes.

Moos (1974) applied the social ecological framework to psychiatric hospital settings and developed measures for assessing human environmental factors in these settings. Moos' research suggests that various aspects of hospital wards such as autonomy, organization, and program clarity influence patient factors such as satisfaction, personal development, and aggression. Although the assessment methods provided by Moos are useful for evaluating some treatment environments, some aspects may be less applicable to less restrictive settings, such as Housing First.

Recently, Kloos and Shah (2009) developed a methodology for studying social ecology in community-based housing programs among individuals with mental illness. Kloos and Shah used qualitative and quantitative methods to translate their social ecological model of housing into a self-report measure, the Housing Environment Survey (HES). The HES is comprised of three domains: physical environment, social environment, and interpersonal relationships. Physical environment includes an assessment of physical quality of the housing and the neighborhood. Social environment is comprised of items measuring the social climate of the neighborhood and neighborhood safety. Finally, interpersonal relationships are assessed in terms of neighbor relations, landlord relations, and roommate relations. This comprehensive model of social ecology could effectively be applied to Housing First settings.

Social Ecology of Housing Across Populations

Given that Housing First has traditionally been applied to individuals with a history of chronic homelessness, it is possible that aspects of housing

environment impact those without a long-term homelessness history differently than typical Housing First residents. According to Moos (1973), personal characteristics, such as homelessness history, are components of social ecology and, thus, can influence outcomes. Aspects of housing and other program environments that influence outcomes will be discussed both for individuals with serious mental illness without a history of chronic homelessness and residents of Housing First (i.e., those with a history of chronic homelessness).

Among individuals with serious mental illness, housing preference has been reported for independent living situations, such as an apartment alone or with a family member or spouse (Tanzman, 1993). One study reported that individuals with serious mental illness reported a preference to not live among others with mental illness (Tanzman, 1993). Other studies have suggested better outcomes among individuals with serious mental illness living independently but among others with mental illness. Early influential research by Fairweather, Sanders, Maynard, Cressler, & Bleck (1967) found that small, community-based residences for people with serious mental illness termed Fairweather Lodges have shown better employment outcomes and reduced hospitalization compared to other community-based treatments. A more recent study revealed better behavioral outcomes were better for individuals living in settings with more individuals with mental illness (Newman, Harkness, Galster, & Reschovsky, 2001). Further, one study found that regardless of the type of housing setting individuals with serious mental illness were living in, they reported a preference for their current living situation over other options (Friedrich, Hollingsworth,

Hradek, Friedrich, & Culp, 1999). More structured environments were preferred over independent living situations among about one-third of individuals with serious mental illness in the sample (Friedrich et al., 1999). These findings suggest that no single housing model is preferred by people with serious mental illness, and that there is likely a more complex social ecological interaction influencing the differences in housing preference across studies.

Several social ecological factors have been found to influence wellbeing among individuals with serious mental illness in residential settings. In a study of residential psychiatric and substance abuse treatment programs, Timko and Moos (1998) found that gaining active support of other residents, personal expression of problems, and orientation of the program toward meeting practical goals such as employment, were associated with better functioning. Timko and Moos also found that more support from other residents was related to better outcomes among those with more severe psychiatric symptoms. Among individuals with schizophrenia in treatment settings, anger of individuals in the treatment milieu was associated with increased subjective distress and lower self-esteem; and more perceived independent living was associated with better self-esteem (Bradshaw & Brekke, 1999). Finally, neighborhood social factors were found to be the most important predictor of overall wellbeing among individuals with serious mental illness living in community-based settings (Wright & Kloos, 2007).

Housing First was related to greater independence and occupational functioning than high demand treatment-as-usual settings (Yanos et al., 2007). As noted earlier, individuals in Housing First report increased perceived choice of

service use compared to those in other programs (Greenwood et al., 2005; Tsemberis et al., 2004), and consumer choice may be an important aspect of social ecology. Consumer choice has also been reported in non-Housing First programs for people with serious mental illness (Wong, Filoromo, & Tennille, 2007).

Social integration is an important social ecological consideration of housing programs for people with serious mental illness with and without a history of chronic homelessness. Research suggests that scattered-site independent supported housing is associated with a higher level of social isolation (Friedrich et al., 1999; Pulice, McCormick, & Dewees, 1995). Despite potential benefits of Housing First, increased community integration has not been found to be associated with scattered-site housing compared to congregate housing (Yanos et al., 2007). However, it has been reported that congregate housing for people with serious mental illness increases the stigmatization of residents of these programs (Wahl, 1993). Consequently, there is a tradeoff of social integration and stigmatization across various housing models.

As can be observed from the studies above, a range of social ecological factors have been evaluated across an array of different populations and settings. To date, research has failed to differentiate important social ecological factors among different populations of residents. Given research has not formally evaluated Housing First outcomes among those at risk of chronic homelessness, an initial approach to understanding social ecological factors is to compare perceptions of the housing environment between chronically homeless and non-

chronically homeless individuals. In line with a social ecological framework, the provision of Housing First is associated with a transaction of physical, social, and personal factors, among others. Homelessness history may be an important personal factor that interacts with other components of social ecology to influence housing outcomes.

Understanding the social ecology of housing settings has important policy implications. Moos (1974) stated that:

Social ecology has an explicit applied value orientation in that it gathers and utilizes knowledge for promoting maximally effective human functioning. The field utilizes basic research and practical techniques for the application of knowledge derived from this research toward the end of increasing the quality of the human environment. (p. 21)

Most, if not all, aspects of housing environments are malleable and can be altered to best promote mental health and housing outcomes of residents. Using social ecological research can inform housing policy and practices. Social ecology-informed research can help determine whether Housing First is a viable indicated prevention intervention for chronic homelessness among individuals with serious mental illness.

Rationale

Chronic homelessness is a problem faced by a subset of the overall homeless population. It is associated with increased illness, disability, psychiatric disorder, and substance abuse. Consequently, individuals who are chronically

homeless utilize high rates of costly emergency services and tend to be less engaged in ongoing services. Additionally, because of the multitude of problems experienced by those who are chronically homeless, many are not successful in maintaining housing in high demand housing settings with strict requirements for housing maintenance. Thus, Housing First programs have been developed to provide permanent housing to individuals who have patterns of housing instability. Housing First has been found to have better housing tenure outcomes than traditional high demand settings for some individuals. Further, Housing First is a cost-effective approach to housing and is associated with decreased emergency service utilization among residents.

Given the effectiveness of Housing First for individuals with serious mental illness who have a history of chronic homelessness, it is expected that these programs would also be effective for people with serious mental illness with varying homelessness histories. Specifically, this housing model may be appropriate as an indicated prevention intervention for groups at increased risk of becoming chronically homeless. Many individuals in inpatient psychiatric settings are discharged into homelessness, while others remain hospitalized for long periods of time because they would otherwise be discharged into homelessness. Neither homelessness nor continued hospitalizations are desirable options for improving the wellbeing of individuals with serious mental illness.

Studies have examined factors associated with housing outcomes in Housing First, such as recruitment source and homelessness history. Gulcur et al. (2003) found that individuals discharged from inpatient psychiatric treatment are

successful in maintaining housing in Housing First. Moreover, in a sample of chronically homeless adults receiving Housing First or an alternative intervention, Burt (2012) found that past-year duration of homelessness influenced housing tenure independent of housing type. Specifically, those who previously spent less time homeless had better housing outcomes (Burt, 2012).

However, studies have not yet distinguished between chronically and non-chronically homeless populations within Housing First. Research evaluating the effectiveness of Housing First for non-chronically homeless individuals with serious mental illness with extensive psychiatric hospitalization histories is warranted. If Housing First is an appropriate option for individuals with serious mental illness who are not chronically homeless, it may be particularly indicated for individuals who would be discharged from psychiatric hospitals into homelessness. By providing housing to a population at risk of chronic homelessness, a pattern of housing instability may be prevented for these individuals. Further, low demand housing opportunities may also lead to decreased need for costly inpatient psychiatric care.

Because Housing First programs have been developed for the chronically homeless population, additional research is needed to determine whether these programs are truly suited for individuals with less extensive histories of homelessness. A social ecological approach to research provides a useful context for understanding housing outcomes. Broadly, housing programs are comprised of both physical and social factors. Personal factors, such as homelessness and psychiatric hospitalization histories, are also related to the functioning of a

housing program. More specific aspects of the social ecology of housing environments could be neighborhood safety or landlord relationships. As discussed above, both broad and specific levels of social ecology can influence outcomes related to housing tenure and satisfaction. If Housing First is to be provided as an option to those without prolonged histories of homelessness, social ecology can inform policy and practice in this area.

The present study used a social ecological framework to understand housing environment and evaluated the effectiveness of Housing First in three ways. First, rates of time homeless and utilization of inpatient psychiatric treatment were evaluated using administrative data among two subsamples of Housing First residents with serious mental illness: those who were chronically homeless and those who were not chronically homeless but were high utilizers of inpatient psychiatric treatment. The two Housing First subsamples were compared to two matched control subsamples of individuals who received usual care. The comparison of Housing First and usual care control groups provided a basis for understanding whether Housing First was associated with better housing and psychiatric hospitalization outcomes than usual care, and determined if homelessness history interacted with Housing First to influence outcomes.

In a similar approach, Gulcur et al. (2003) compared subsamples of participants recruited from the streets and those recruited from psychiatric hospitals living in Housing First compared to a control condition. Based on findings from Gulcur et al., it was expected that individuals who were chronically homeless living in Housing First would demonstrate the least number of days

homeless after housing, while those who were not chronically homeless and have extensive hospitalization histories would show the lowest number of days in inpatient psychiatric treatment after housing, controlling for pre-housing homelessness and hospitalization, respectively. A study by Drake, Wallach, and Hoffman (1989) provided further evidence for the interaction of homelessness and hospitalization history, as individuals who were homeless upon discharge from psychiatric inpatient treatment were significantly more likely to have a subsequent hospitalization. This study differed from that of Gulcur et al. in that even their sample recruited from psychiatric hospitals were required to demonstrate a pattern of homelessness prior to hospitalization. This research subsampled participants based on chronic homelessness status, as opposed to recruitment source.

The second and third portions of the study were exploratory. For the second portion of the study, administrative data were utilized to examine patterns of housing stability for those who were chronically homeless versus not chronically homeless. Burt (2012) revealed an association between past-year homelessness duration and housing tenure within a chronically homeless sample. Given that those who were not chronically homeless had less difficulty with housing stability in the past, it was questioned whether these individuals would maintain housing for longer periods than those who had been chronically homeless in the past.

The final portion of the study looked at more specific social ecological factors among chronically homeless and non-chronically homeless Housing First residents to provide a more comprehensive picture of the social ecology of the

setting. A new data collection utilized the HES to assess perceived social ecological factors of residents in each of the two Housing First subsamples. In contrast to the method suggested by Moos (1974), the physical, social, and interpersonal housing perceptions measured by the HES were not used to predict housing outcomes due to the methodological constraints of the study. However, understanding resident perceptions was meant to provide some clarity about aspects of Housing First work and do not work, and how perceptions are related to homelessness history.

This research endeavored to provide support for the effectiveness of Housing First for an atypical population, such as those who are not chronically homeless, compared to individuals receiving alternative types of care. This study sought to determine whether Housing First is effective in reducing the need for inpatient psychiatric hospitalization among those who are high utilizers of inpatient care, in addition to the reductions in the substantial costs associated with hospitalization that can be extrapolated from these findings. The study also provided a more detailed analysis comparing differences among the two Housing First subsamples in order to gain a better understanding of how the housing process may be unique for those who are not chronically homeless. True to the goal of social ecological research (e.g., Moos, 1974), findings from this study have important policy implications and may provide evidence for broadening the Housing First model to new populations and the prevention of chronic homelessness.

Statement of Hypotheses

Hypothesis I: Residents of Housing First will experience fewer days homeless during the year after housing than individuals receiving usual care.

Hypothesis II: The number of days homeless will vary as a function of housing condition and level of homelessness, such that individuals in Housing First with fewer days of homelessness in the pre-housing year will demonstrate the least number of days homeless in the post-housing year compared to those with more days homeless in the pre-housing year.

Hypothesis III: Residents of Housing First will experience fewer days of inpatient psychiatric care during the year after housing than individuals receiving usual care.

Hypothesis IV: The number of days of inpatient psychiatric care will vary as a function of housing condition and level of homelessness, such that individuals in Housing First who are not chronically homeless will demonstrate the fewest days of inpatient psychiatric care in the post-housing year compared to those who are chronically homeless.

Research Questions

Research Question I: Are there differences in the duration of tenure in Housing First among residents who are chronically homeless and non-chronically homeless?

Research Question II: Are physical, social, and interpersonal aspects of the housing environment perceived differently for chronically homeless and non-chronically homeless Housing First residents?

CHAPTER II

METHOD

This study is a quasi-experimental matched case-control design evaluating the effectiveness of a Housing First program in reducing homelessness and inpatient psychiatric hospitalizations compared to usual care. Matched comparison groups have been used in previous studies of supportive housing (Culhane et al., 2002). In social services research, matched case-control designs have been considered to be medium-low quality, but have nevertheless been used in meta-analyses to evaluate program outcomes (Ziguras & Stuart, 2000). The Housing First program included in this investigation was a permanent supportive housing program named Evans House operated by Downtown Emergency Service Center (DESC), a large non-profit homelessness services provider located in Seattle, WA. The main outcomes compared between Evans House and Control groups were days spent homeless and days of inpatient psychiatric treatment, and these outcomes were examined within the context of homelessness history. A more in-depth comparison of chronically and non-chronically homeless subsamples within Evans House was also conducted to evaluate patterns of housing stability and perceptions of the housing environment.

Research Participants

The intervention group was comprised of individuals currently or previously residing in Evans House, a 75-unit project-based permanent supportive housing program. The Evans House sample used for comparisons with the control group and examination of housing stability patterns included those who obtained

residence in the housing program between the program's opening in October, 2007, and December, 2009. A total of 100 Evans House residents were identified from DESC's database. Nine participants were omitted due to insufficient administrative residential data for determining pre-housing homelessness history, leaving a total of 91 participants in the Evans House group. These 91 Evans House participants were matched with 91 control participants.

Evans House is a unique Housing First program in that residents are referred from two sources. Approximately half of Evans House apartments are reserved for individuals who are typical consumers of Housing First programs (i.e., individuals with serious mental illness who meet the federal definition of chronic homelessness) and are referred from mental health or homelessness service providers. The other half of Evans House apartments are reserved for individuals referred from King County Mental Health, Chemical Abuse and Dependency Services Division (KCMHCADS). Those referred from KCMHCADS were not necessarily chronically homeless but had serious mental illness and were identified by KCMHCADS as high utilizers of inpatient psychiatric treatment and residence at Evans House as an alternative to continued inpatient care or discharge into homelessness. Evans House is diverse in gender, age, and ethnicity.

All Evans House residents are beneficiaries of KCMHCADS services, regardless of their referral source. In determining the level of service available to utilizers of KCMHCADS, an evaluation of functioning is conducted annually. Individuals must have a disabling psychiatric diagnosis covered by Washington

State's Medicaid program. A beneficiary of services must show significant impairment as evidenced by a Global Assessment of Functioning (GAF) score of 60 or below. The level of service awarded must be appropriate to the level of need of the individual. Other issues that are assessed are the length of treatment necessary, intervention modalities that would benefit the individual, dual diagnosis, and environmental supports.

Based on the results of the assessment, individuals are placed into one of three tier levels determining the Medicaid benefit and level of care needed. Individuals in Tier 1 are considered to be the least impaired and in need of a brief intervention. Those in Tier 2 are considered to be in a maintenance phase of mental health treatment. The third tier is for individuals who are the most impaired (i.e., a GAF score of 30 or below is required) and is comprised of two sublevels: Tiers 3A and 3B. Tier 3A is for those in need of rehabilitation services or need services to prevent decompensation, while 3B is for those in need of exceptional care consisting of long-term intensive services.

The Evans House residents who were referred by homelessness or mental health service providers were in Tiers 3A and 3B at the time of move-in, and represent individuals with the most impairment and the greatest need for services. In contrast, the Evans House residents who were referred from KCMHCADS were not tiered by KCMHCADS. These participants demonstrated a high degree of psychiatric impairment as evidenced by their frequent use of inpatient psychiatric care. Therefore, it is unlikely that KCMHCADS-referred residents significantly differ from other Evans House residents in psychiatric status.

Participants in the Evans House sample were divided into two subsamples of “chronically homeless” or “not chronically homeless” based on whether participants met the federal definition for chronic homelessness upon entering Evans House. According to the federal definition, someone who is chronically homeless is “an unaccompanied individual with a disabling condition who has been continuously homeless for a year or more or has experienced four or more episodes of homelessness over the last 3 years.” (Notice of Funding Availability, 2008; p. 79575). According to the federal definition, the term homeless refers to periods of sleeping in the streets or in homeless shelters. Therefore, only periods of living in shelters or on the street were considered episodes of homelessness. The same subsamples were distinguished in the matched control group.

The matched control group was derived from KCMHCADS administrative records. Because all participants in the Evans House group are beneficiaries of KCMHCADS services, KCMHCADS was an appropriate source for the control group. Control group participants were considered “usual care” controls, meaning they did not receive housing at Evans House at any point during the study period. Individuals in this group received treatment based on typical discharge planning from inpatient psychiatric treatment or continued shelter or outpatient mental health services. The move-in date for Evans House cases acted as a proxy for an “intervention” start date in the matched control group. Thus, the timeframe of the administrative data collection is identical for the Evans House and control groups. Participants in the control group were included if they were not housed (i.e., living in shelters/street or inpatient psychiatric treatment) at the “intervention”

start date. Although participants were not be matched on specific psychiatric diagnosis, all controls were in mental health services Tier 3A or 3B at the “intervention” start date. Including only participants in Tiers 3A or 3B ensured that both groups had a similar level of impairment, regardless of whether they have identical psychiatric diagnoses.

KCMHCADS administrative records had the demographic, housing, hospitalization, and clinical records necessary for the matching criteria. The matching procedures were similar to those used by Culhane et al. (2002), however, given the smaller pool of potential controls available for this study, fewer matching criteria were used. Matching criteria were selected based on their importance in predicting housing tenure outcomes in previous supportive housing research. Individuals in the control group were first matched with participants in the Evans House group on the demographic variables age range (≤ 29 years-old / 30 – 49 years-old / ≥ 50 years-old) and gender (male / female). Second, the control group was matched to the Evans House group on substance use disorder (yes / no). Once these matching criteria were applied, each case had a pool of up to five potential controls (range 1-5, mode = 5). Next, cases were matched on level of street/shelter homelessness (chronically homeless / not chronically homeless). Lastly, from this larger pool of potential controls, the final selection was based on which potential control has the most similar rates of homelessness and inpatient psychiatric treatment during the prior year compared to the Evans House case.

The second portion of the study examined perceptions of housing environment among current Evans House residents in June, 2011. A total of 46 residents completed the Housing Environment Survey. The remainder of the 75 residents refused participation, or they were unable to participate due to inability to provide informed consent. Thirteen of the 46 participants did not have complete administrative data, which left 33 participants for analysis in the present study. Participants in this sample were separated into chronically homeless and not chronically homeless subsamples.

Program Description

Evans House is a permanent supportive housing program operating under a low demand, Housing First framework. Rent for apartments is subsidized such that tenants pay approximately one-third of their monthly income in rent. There is no limit on the duration of time residents are allowed to keep their apartments. Residents live independently in apartments and are not required to demonstrate compliance with psychiatric treatment prior to entering housing, nor are they required to be alcohol or drug free. The building includes 24-hour staffing to address resident needs and safety. If a problem arises with a resident that may compromise housing, Evans House staff and program managers develop a plan with the resident to prevent housing loss. A range of additional services are offered to residents including outpatient psychiatric treatment, substance abuse counseling, nursing care, payee services, and assistance with obtaining goods necessary for independent living. However, residents are not required to utilize

these services and are welcome to select the amount and type of service they need.

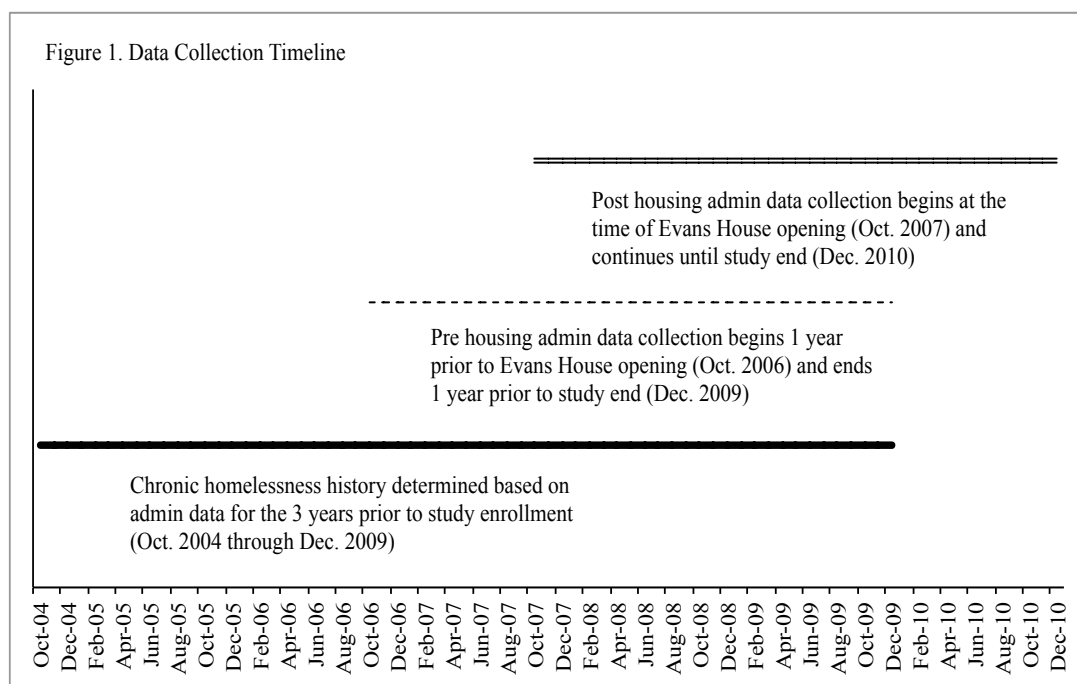
As noted above, approximately half of the residents are referred from KCMHCADS, while others are referred to housing from more traditional routes, such as homelessness service providers. Those who are referred from traditional routes are provided with a DESC-employed case manager who works on-site. Case managers work with DESC's Support, Advocacy, Growth, and Employment (SAGE) program and meet with residents on a regular basis and assist with coordination of services and monitor for changes in psychiatric symptoms or living skills.

Those who were referred from KCMHCADS and were high utilizers of inpatient psychiatric treatment received services from DESC's Program of Assertive Community Treatment (PACT). This program involves a large team of providers working with small client caseloads and is the model used by many scattered-site Housing First programs. The PACT team consists of mental health providers including a psychiatrist or psychiatric nurse practitioner and mental health professionals; nurses to provide medical care; chemical dependency professionals; vocational specialists; social workers; and peer specialists. As for all Evans House residents, those participating in the PACT program are not required to participate in all services provided by their team. Regardless of which services were utilized by a resident, the entire PACT team consults on how to work most effectively with the resident.

Funding for on-site services is provided through mental health system resources. This funding model is a unique aspect of Evans House, as Housing First programs are typically funded through homelessness services funds. SAGE services are funded through Medicaid, while PACT funding is obtained through State Mental Health Division resources.

Materials

This study used both administrative and self-report data for answering research questions and testing the stated hypotheses. Administrative data was used in Evans House and control group comparisons and to examine patterns of housing stability among Evans House residents. Self-report data were used to assess housing environment in a current Evans House sample. See Figure 1 for a timeline of administrative and self-report data collection.



Administrative Data

Medicaid-funded individuals living in King County are eligible for outpatient mental health services with a provider that is contracted with KCMHCADS. Providers that are contracted with KCMHCADS are required to maintain up-to-date information on service recipients that is uploaded daily into a centralized KCMHCADS database. Given that DESC is contracted with KCMHCADS, information that is maintained about Evans House residents mirrors that which is kept by KCMHCADS. Thus, the majority of the administrative data for Evans House and control participants were derived from the KCMHCADS database and used for matching procedures and outcomes.

The following demographic data were derived from the database: age, gender, and race. Clinical indicators were also collected including 3A or 3B tier, psychiatric diagnoses and substance use disorders. These data were collected based on the status of the participant at the Evans House move-in date.

The database also provided information on participant living situations before and after housing. The residential arrangement variable included the following categories: independent housing; supported housing; adult family home; residential drug/alcohol treatment; nursing care facility; congregate care facility; long-term rehabilitative services; jail; psychiatric inpatient facility; street/shelter homeless; and temporary housing (e.g., hotels, with friends, etc.). In order to determine whether or not participants are chronically homeless at the Evans House move-in date, it was necessary to trace their living situations over the three years prior. As can be seen in Figure 1, the earliest housing move-in date

occurred in October, 2007, so living situation data dated back as far as October, 2004. For participants who moved in at the latest date of entry (December, 2009), living situation information beginning in December, 2006 was necessary to make the chronic homelessness categorization. Individuals whose living situation data suggested they stayed on the street or in shelters for one continuous year or four episodes during the three-year interval were categorized as chronically homeless.

Next, administrative data were collected for the one-year period before Evans House move-in. Figure 1 shows that pre-housing data collection occurred between October, 2006, and December, 2009. Pre-housing data included residential situation dates over the past year. For the purposes of this study, days homeless included street or shelter stays. Further, the KCMHCADS database contained information on dates of inpatient psychiatric treatment at a state psychiatric facility, Western State Hospital. The number of days of hospitalization for the pre-housing year was calculated for each participant. The same procedure was used to determine homelessness and psychiatric hospitalizations over the post-housing year. As shown in Figure 1, the timeframe for the post-housing year will begin in October, 2007, and end in December, 2010.

Finally, housing retention for Evans House residents was collected. In order to evaluate patterns of housing retention among Evans House participants, dates of move-in and move-out were necessary for this group. DESC maintains a Client, Housing and Service Entry (and) Reporting System (CHASERS) database containing these service dates for clients. Precise dates of Evans House residence were entered into CHASERS by Evans House staff.

Housing Environment Survey

Housing environment was assessed using the Housing Environment Survey (HES; Appendix A; Kloos & Shah, 2009). The HES is a self-report measure that is based on an ecological model of human environments (Moos, 1973, 1974). An ecological model of housing environments suggests that housing environments are multifaceted, so, accordingly, the HES assesses multiple aspects of housing conditions. Importantly, responses on the HES are based on the perceptions of each resident completing the measure. Thus, it is possible for residents in the same housing environment to have varying responses on the measure.

The HES is comprised of seven quantitative scales assessing physical environment, social environment, and interpersonal relationships. Physical environment is assessed by two scales: Physical Housing Quality Scale (e.g., “I have a working stove or refrigerator in my place”) and Neighborhood Quality Scale (e.g., “There are not enough street lights in my neighborhood”). Evaluation of social environment is comprised of two scales: Neighborhood Social Climate Scale (e.g., “People in my neighborhood are friendly to everybody”) and Neighborhood Safety Scale (e.g., “How often have people had things stolen from their apartment”). Finally, interpersonal relationships are assessed by three scales: Neighbor Scale (e.g., “I can count on a neighbor for help when I need it”), Landlord Scale (e.g., “My landlord/property manager does not respond to my requests”), and Roommate Scale (e.g., “I don’t get along with my roommate”). Given that all individuals living in Evans House have individual apartments, the

Roommate Scale will not be administered. Items related to housing demographics are also included on the HES (e.g., “how many bedrooms do you have?” “What floor do you live on?”). Further, respondents have the opportunity to report qualitative information on the HES (e.g., “What are three advantages of your place?” “What three things do you like most about where you live?”). The HES, with the exception of the Roommate Scale is included in Appendix A.

Scoring of the HES involves averaging scores on each of the quantitative scales. With the exception of the Neighborhood Safety Scale, negative items are reverse scored so that higher scores indicate more positive perceptions of housing environment. Average scores yield a range of one to five on all scales, except for the Neighborhood Safety Scale, which is on a one to six scale.

The HES items were developed through qualitative interviews and previously used housing measures (Kloos & Shah, 2009). The instrument was validated with a population 533 of adults with serious mental illness who were living in their own apartments. All participants were affiliated with community mental health centers. The HES demonstrated adequate internal consistency and one-week test-retest reliability on all scales (Physical Quality $\alpha = .76$, $r = .74$; Neighborhood Quality $\alpha = .65$, $r = .70$; Neighborhood Social Climate $\alpha = .82$, $r = .71$; Neighborhood Safety $\alpha = .78$, $r = .79$; Neighbor Relations $\alpha = .77$, $r = .75$; Landlord Relations $\alpha = .75$, $r = .70$; Roommate Relations $\alpha = .82$, $r = .84$; Kloos & Shah, 2009). Convergent validity was assessed further for four HES subscales (Townley & Kloos, 2011).

Procedure

DESC provided KCMHCADS a list of all Evans House residents who moved in between October, 2007, and December, 2009. Evans House residents were identified based on their KCMHCADS identification number that is shared by both DESC and KCMHCADS. For all Evans House participants, KCMHCADS retrieved demographic, clinical, homelessness, and psychiatric hospitalization administrative data.

Matched Control Group Selection

The matched control group was selected by querying the KCMHCADS database based on requested criteria. For each Evans House participant, the database was queried to find a pool of potential controls based on their status on the following variables as of the Evans House participant's move-in date: 3A or 3B tier, age range (≤ 29 years-old / 30 – 49 years-old / ≥ 50 years-old), gender (male / female), and substance use disorder (yes / no). From this larger group of controls, potential participants were selected if they had housing or homelessness data available in the KCMHCADS database dating back three years prior to the Evans House participant's move-in date, as these data were necessary to determine chronic homelessness. Then, potential control participants were selected if they did not have permanent stable housing (e.g., staying on the streets, in shelters, or in psychiatric hospitals but without stable housing upon discharge) at the Evans House participant's move-in date.

Once KCMHCADS narrowed down the pool of potential controls, databases were provided to the research team at DePaul University with Evans

House and potential control participant data. Data included the matching criteria listed above, year of birth, race, and psychiatric diagnosis. Dates of street or shelter homelessness over the three years prior to Evans House placement were included in the database. Participants were then matched on whether they met criteria for chronic homelessness. Next, the number of days of street/shelter homelessness and the number of days of psychiatric hospitalization over the year prior to and the year after Evans House placement were included. The final control group was selected by the DePaul University research team based on similarities in pre-housing homelessness and hospitalization rates. For each Evans House case, the pool of potential controls for that case was scanned for the control with the most similar number of days homeless and hospitalized over the pre-housing year. Each Evans House participant was matched with one control participant.

New Data Collection

Data collection occurred in June, 2011. Evans House residents completing the HES provided written informed consent for participation in the survey as well as for the use of their administrative data. The HES took approximately 30 minutes to administer. The questionnaire was administered by this writer. The questionnaire was read aloud to participants unable to read. Participants received \$15 grocery store gift cards as honoraria for participation in the study.

Confidentiality

Approval for this study was provided by the following two Institutional Review Boards (IRBs): Washington State's Department of Social and Health

Services, DePaul University, and the KCMHCADS Evaluation and Research Committee. In order to protect confidentiality of study participants, names, social security numbers, dates of birth, addresses, and phone numbers were not collected from the KCMHCADS database. A Waiver of HIPAA Authorization was obtained in order for specific dates of inpatient psychiatric treatment and dates of residence at Evans House could be obtained. In terms of homelessness data, specific dates of street or shelter living over the previous three years were necessary in order to determine whether the participant met the definition for chronic homelessness. However, dates of street or shelter stays did not provide any identifying information in terms of which shelter or other services the participant was receiving. Therefore, informed consent will not be required for control participants or Evans House participants who did not complete the HES.

CHAPTER III

RESULTS

Three main statistical analyses were employed to test study hypotheses and research questions. However, given the quasi-experimental design used in the study, an analysis of group difference was the first step in the analytic plan. Through the matching process Evans House and control participants were similar on many important characteristics, but the two groups may have demonstrated differences in race, psychiatric diagnosis, duration of homelessness or hospitalization prior to housing. Consequently, chi-square and independent samples t-test analyses were used to test for significant differences in demographic, clinical, homelessness, and level of services between the Evans House and control groups. If any baseline sociodemographic characteristics were significantly related to group assignment, they were included as covariates in further analyses. The software package SPSS version 19.0 was used to test hypotheses and explore research questions. Cohen's *d* effect sizes and post hoc power analyses were computed using G*Power version 3.1.3 software.

Sociodemographics

The total sample consisted of 182 participants. The average age was 42.8 years ($SD = 11.1$ years), and the majority of the sample was male (74%). In terms of ethnicity, 56% were European American, 25% were African American, 7% were Asian American, 3% were Native American, and 9% were of other ethnic groups (e.g., Latino/a, multiethnic). Regarding diagnostic variables, 76% had a substance use disorder, 71% had a primary psychotic disorder, 25% had a primary

mood disorder, and 4% had another primary diagnosis (e.g., developmental disorder, anxiety disorder). Finally, 54% were chronically homeless, and 46% were not chronically homeless.

Due to matching procedures, the Evans House and control groups did not significantly differ on sociodemographic variables with the exception of psychiatric diagnosis. The Evans House group had significantly more participants with a primary psychotic disorder, while the control group had significantly more participants with a primary mood disorder, $\chi^2(2, N = 182) = 22.41, p < .001$. Because psychiatric diagnosis may influence study outcomes, this variable was controlled for in subsequent between-group analyses.

For the 91 Evans House participants it was necessary to determine whether the different levels of housing services (i.e., PACT vs. SAGE) were equally distributed across the two chronic homelessness subsamples, as differences may have influenced housing tenure outcomes. A total of 47 participants received SAGE case management, while 44 received PACT. As expected, those who were not chronically homeless were assigned to PACT at a higher rate than those who were chronically homeless, $\chi^2(1, N = 91) = 13.38, p < .001$. Service type was included as a covariate in analyses involving Evans House participants only.

Among the 33 Evans House participants who completed the HES, the average age was 43.2 (SD = 10.5), and 73% were male. In terms of ethnicity, 61% were European American, 24% were African American, 6% were Asian American, and 9% were of other ethnic groups (e.g., Latino/a, multiethnic).

Diagnostically, 82% had a substance use disorder, 82% had a primary psychotic disorder, 15% had a primary mood disorder, and 3% had another primary diagnosis. Regarding homelessness history, 52% were chronically homeless.

Hypotheses I, II, III, and IV

In order to test Hypotheses I through IV, two analyses of covariance (ANCOVA) were conducted for the two outcomes of days homeless and days hospitalized. The data were evaluated for the assumptions of ANCOVA. The homelessness and hospitalization data were not normally distributed, and, therefore, did not meet the assumption of normality for ANCOVA. Consequently, square root transformations were conducted on the variables for number of days homeless, and logarithmic transformations were conducted on the variables for number of days hospitalized (Walker & Shostak, 2010). The assumption of homogeneity of regression was checked through the initial inclusion of independent variable(s) (IV) by covariate interaction terms in the model. These interaction terms were not statistically significant, thus meeting the assumption of homogeneity. For the final two models, the Levene's Tests of Equality of Error Variances were not statistically significant, indicating equality of error variances for the dependent variables across groups.

Homelessness

Hypothesis I states residents of Housing First will experience fewer days homeless during the year after housing than individuals receiving usual care. For the ANCOVA testing group differences in days homeless, days homeless during the post-housing year was the dependent variable (DV). Days homeless in the pre-

housing year and psychiatric diagnosis were entered as covariates. Finally, the independent variables were group (Evans vs. control) and the interaction term for group by pre-housing year days homeless. The results supported Hypothesis I such that Evans House residents spent significantly fewer days homeless in the post-housing year compared to the control group, $F(1, 177) = 96.23, p < .001, d = 1.47$. A post hoc power analysis revealed 99% power to detect a significant difference. Raw (i.e., untransformed) means and standard deviations of pre- and post-housing homelessness data are presented in Table 1.

Hypothesis II states the number of days homeless will vary as a function of housing condition and level of homelessness, such that individuals in Housing First with fewer days of homelessness in the pre-housing year will demonstrate the least number of days homeless in the post-housing year compared to those with more days homeless in the pre-housing year. Hypothesis II was tested using the group by pre-housing year days homeless interaction. Of note, the chronic homelessness categorization could not be utilized for this analysis, as this designation was not independent of the pre-housing homelessness covariate. Results of the analysis did not support Hypothesis II, as the effect of group was not significantly influenced by the number of days homeless during the pre-housing year, $F(1, 177) = 0.85, p = .36, d = 0.14$.

Psychiatric Hospitalization

Hypothesis III states residents of Housing First will experience fewer days of inpatient psychiatric care during the year after housing than individuals receiving usual care. For the ANCOVA testing group differences in days

hospitalized, post-housing days hospitalized was the DV. Days hospitalized during the pre-housing year and psychiatric diagnosis were included as covariates. The independent variables were group (Evans vs. control), chronic homelessness (yes vs. no), and the interaction term for group by chronic homelessness. Results supported Hypothesis III, such that Evans House residents spent significantly fewer days hospitalized after housing compared to the control group, $F(1, 176) = 9.88, p = .002, d = 0.47$. A post hoc power analysis revealed 52% power to detect a significant difference. Raw means and standard deviations of hospitalization data of pre- and post-housing are presented in Table 1.

Hypothesis IV states the number of days of inpatient psychiatric care will vary as a function of housing condition and level of homelessness, such that individuals in Housing First who are not chronically homeless will demonstrate the fewest days of inpatient psychiatric care in the post-housing year compared to those who are chronically homeless. Results of the analysis did not support Hypothesis IV, as the effect of group was not significantly influenced by chronic homelessness, $F(1, 176) = 0.56, p = .46, d = 0.11$.

Table 1. Means (and Standard Deviations) of Days Homeless and Hospitalized for Evans House and Control Groups (N = 182)

	Pre-Housing		Post-Housing	
	Evans	Control	Evans	Control
Homeless	182.29 (164.29)	220.44 (133.35)	21.81 (59.89)	275.92 (112.97)
Hospital	11.93 (24.97)	7.18 (20.06)	6.73 (15.76)	12.16 (26.57)

Research Question I

Research Question I asks whether there are differences in the duration of tenure in Housing First among residents who are chronically homeless and non-chronically homeless. Discrete-time survival analysis was used to answer this research question (Singer & Willett, 1991; Singer & Willett, 1993; Willett & Singer, 1991). First, survival curves were examined to determine the percentage of residents housed at a given timepoint. Next, Cox proportional hazards regression model was employed. For this analysis, the 91 Evans House participants were included, and the number of months they were housed between move-in and the study end (December, 2010) was computed, ranging from zero to 39 months. The hazard function estimated the probability of housing loss during a particular interval of time (Singer & Willett, 1991). In this case, intervals were measured in months, as identifying the probability of leaving housing on a particular day or week would be near zero, while using longer intervals, such as years, may provide less detailed information on housing patterns (Singer & Willett, 1991). Housing loss was defined as the termination of a lease agreement.

An issue in this survival analysis was determining when to end data collection, as not all participants lost housing by December, 2010. It has been suggested that data used in hazard functions be collected for a long enough duration that approximately 50% of the sample will experience the event of interest, in this case, housing loss (Singer & Willett, 1991). In this study, 46% of Evans House residents moved out between their move-in date and December,

2010. Data censoring occurred for participants who did not move out as of December, 2010.

A benefit of using hazard models is that predictors can be included to determine differential patterns associated with the event of interest (Singer & Willett, 1993; Willett & Singer, 1991). In this case, chronic homelessness status was included as a time-invariant predictor of risk of leaving Evans House. If adding the predictor of chronic homelessness status significantly improves the model fit, then it can be ascertained that the predictor is related to risk of housing loss (Willett & Singer, 1991). Given the two service types may have impacted on housing outcomes, the chronic homelessness predictor was evaluated after controlling for the effect of service provision (i.e., PACT vs. SAGE). Further, the chronic homelessness by service type interaction was also included as a covariate. According to Research Question I, the time interval with the greatest probability of housing loss was explored for chronically and non-chronically homeless residents.

The survival curves for the chronically and non-chronically homeless Evans House groups are presented in Figure 2. Time zero represents the month of Evans House move-in, with 100% of participants housed at that timepoint, while time 39 represents the percentage of residents who remained housed for the maximum duration of the study. Each downward step represents one or more episodes of housing loss among the sample during the month. Descriptively, the non-chronically homeless group lost housing more rapidly than the chronically homeless group up to approximately 25 months into housing. Censored data are

denoted in Figure 2, and 51% of the chronically homeless participants were censored, while 57% of the non-chronically homeless participants were censored.

Figure 2. Survival Functions for Chronically and Non-Chronically Homeless Groups

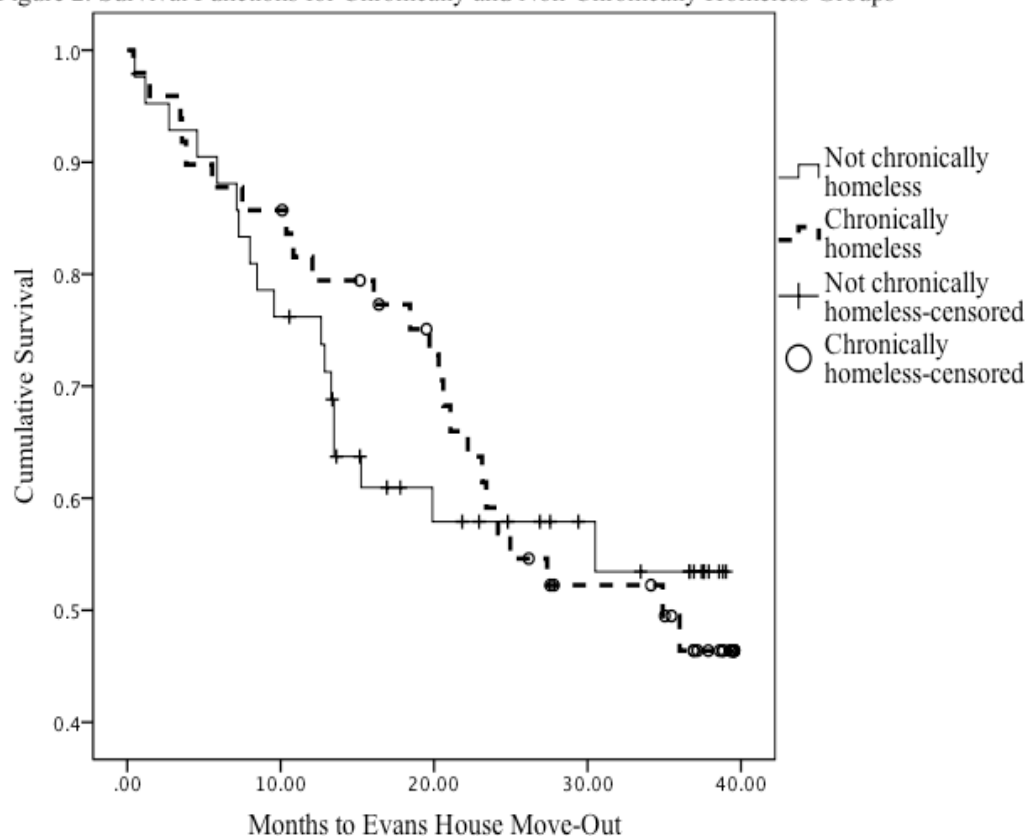
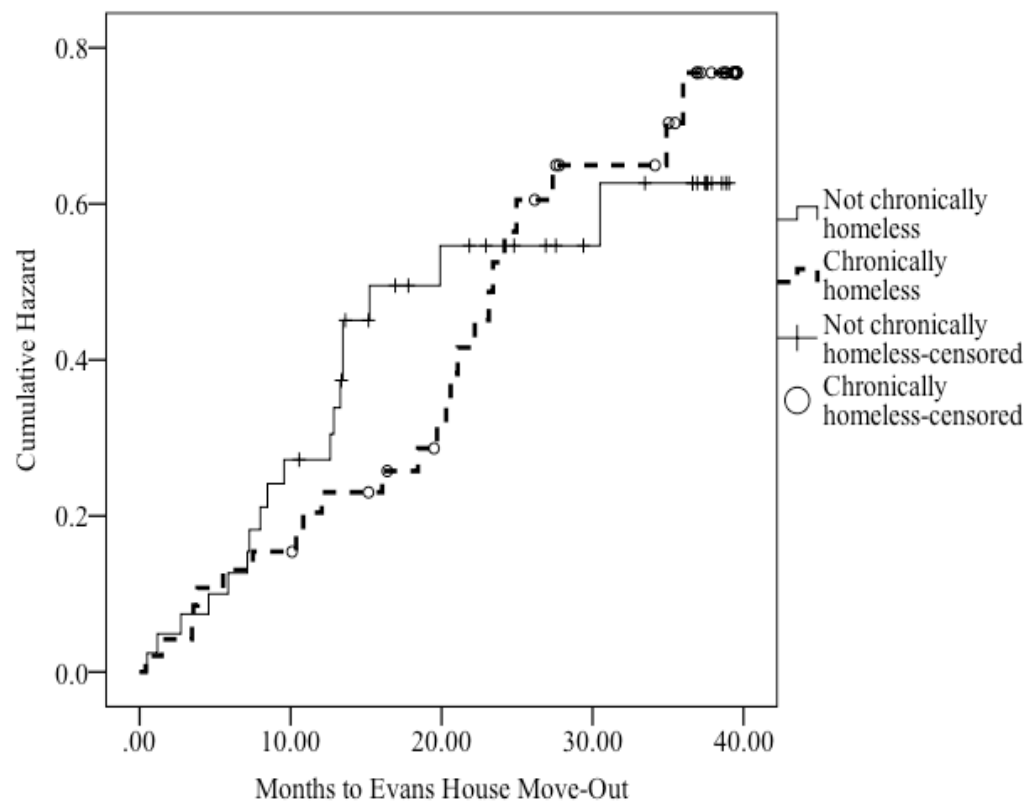


Figure 3 presents the hazard curves for the chronically and non-chronically homeless groups. Upon examination of the hazard functions, it was apparent that the assumption of proportional hazards was violated, as the curves were not parallel, indicating the hazard rate for the chronic homelessness covariate varied over time. Therefore, the data were reanalyzed utilizing a cox regression with a time-dependent covariate (i.e., time by chronic homelessness interaction). Time zero indicates the move-in date and is associated with a zero

probability of housing loss for the two groups at that timepoint. Each upward step in the hazard curves represents an increase in probability of housing loss.

Figure 3. Hazard Functions for Chronically and Non-Chronically Homeless Groups



Results from the Cox non-proportional hazards regression revealed a statistically non-significant effect of service type on hazard rate. Chronic homelessness status was not significantly associated with hazard rate, controlling for support service type and the time by chronic homelessness interaction. Finally, the chronic homelessness by service type interaction was not statistically significant. The model statistics are presented in Table 2.

Table 2. Cox Non-Proportional Hazards Regression Model Results (N = 91)

Predictors	Model 1			Model 2		
	B	SE	Exp(B)	B	SE	Exp(B)
Support Service ¹	-.28	.32	0.76	.10	.45	0.82
Time x Homelessness History ²	.02	.02	1.02	.06	.04	1.06
Homelessness History ²				1.03	.67	2.79
Homelessness History ² x Support Service ¹				-.71	.73	0.49

Notes: SE = Standard Error; ¹PACT vs. SAGE; ²Chronically vs. not chronically homeless; All predictors not statistically significant ($p > .05$)

Research Question II

Research Question II explores whether physical, social, and interpersonal aspects of the housing environment are perceived differently for chronically homeless and non-chronically homeless Housing First residents. In order to examine this research question, HES data gathered from 33 Evans House residents was used. First, internal consistency was evaluated for each of the HES scales. All subscales demonstrated adequate reliability, with Cronbach's alphas ranging from .65 to .83. Next, a series of univariate ANCOVAs were conducted, with homelessness history (chronically homeless vs. not chronically homeless) included as the IV, and the six HES scales included as DVs. The type of support service received (PACT vs. SAGE) was included as a covariate. Results did not reveal a significant effect of homelessness history on HES scales. Table 3

presents the HES means and standard deviations for the two groups, effect sizes, as well as Cronbach's alphas for each scale.

Table 3. Means (Standard Deviations), Effect Size, and Internal Consistency of Housing Environment Survey Scales for Chronically and Non-Chronically Homeless Groups (N = 33)

	CH n = 17	Non-CH n = 16	Sig.	<i>d</i>	α
Neighborhood Safety ¹	2.32 (1.50)	1.55 (1.16)	.49	0.26	.83
Physical Quality ²	3.89 (0.61)	4.01 (0.59)	.92	0.02	.65
Neighborhood Quality ²	3.69 (0.54)	3.60 (0.81)	.18	0.50	.70
Neighborhood Social Climate ²	3.23 (0.83)	3.50 (0.78)	.71	0.14	.79
Neighbor ²	3.38 (0.71)	3.17 (0.81)	.08	0.65	.72
Landlord ²	3.63 (0.97)	3.54 (0.85)	.76	0.11	.78

Notes: CH = Chronically Homeless; Non-CH = Not Chronically Homeless;

¹Scores range 0-6, lower numbers better; ²Scores range 1-5, higher numbers better

Supplemental Analyses

Supplemental analyses were carried out to provide additional context to the main study findings. In order to support the main research questions regarding the effectiveness of Housing First in preventing chronic homelessness, this section outlines further details of housing status at the end of the study period for

the Evans House group and matched control group. The use of descriptive statistics, such as housing retention rate, is consistent with previous Housing First studies presenting housing retention at study end (e.g., Tsemberis & Eisenberg, 2000).

The quasi-experimental design of this study created some threats to internal validity that required additional analyses testing the validity of study findings. Internal validity was compromised due to a lack of a specific comparison intervention. Therefore, details of housing status through the post-housing period for the matched control group are presented to enhance clarity of the types of living situations and programs participants were involved in. Moreover, the observed patterns of increased homelessness and hospitalization among the control group during the second year of the study may suggest that these individuals were selected during a period of time in which these individuals were particularly compromised. Consequently, supplemental analyses were conducted to determine whether the timeframe of selection influenced the main study outcomes. A further threat to internal validity occurred among the Evans House group, as individuals were provided two types of support services (i.e., SAGE or PACT) based on recruitment source, as opposed to random assignment. Thus, analyses were conducted on the two types of services provided at Evans House in order to better understand their potential impact on study findings.

Housing Status

Descriptive data on housing outcomes were evaluated. Of the 91 Evans House participants, 71 (78.0%) remained at Evans House at the end of the post-

housing year, and an additional 11 (12.1%) transferred to other residential arrangements, equaling a total of 82 (90.1%) residents who did not return to homelessness. In contrast, of the 91 controls, 32 (35.2%) were not literally homeless at the end of the post-housing year. The likelihood of leaving Evans House by the end of the post-housing year was not significantly related to chronic homelessness $\chi^2(1, N = 91) = 0.15, p = .44$, nor was it related to service type $\chi^2(1, N = 91) = 0.50, p = .61$.

Given the control group did not receive a specific intervention, it is difficult to determine the nature of the intervention(s) Evans House was compared to. Therefore, percentages of residential arrangements for the control group at the three-month, six-month, nine-month and one-year post-housing timepoints were evaluated to provide some context. Overall, the majority of control participants remained literally homeless at the end of the second year of the study. These descriptive residential data for the control group are reported in Table 4.

Upon examination of patterns of homelessness and hospitalization during the pre- and post-housing years, it was observed that individuals residing in Evans House demonstrated a directional reduction in these two outcomes after housing, while those in the control group evidenced a directional increase in time spent homeless and hospitalized. Several hypotheses can be made regarding the cause of the poor outcomes for the control group. For example, there may have been a shift in available housing during time timeframe of data collection, or these individuals may have experienced a period of particular difficulty in psychiatric functioning during the study timeframe.

Table 4. Control Group Residential Arrangements in the Post-Housing Year
(N = 91)

	3-Month	6-Month	9-Month	1-Year
Literally Homeless ¹	74 (81.3%)	70 (76.9%)	63 (69.2%)	59 (64.8%)
Permanent Housing ²	10 (11%)	16 (17.6%)	18 (19.8%)	22 (24.2%)
Temporary Housing ³	3 (3.3%)	3 (3.3%)	4 (4.4%)	7 (7.7%)
Psychiatric Hospital	3 (3.3%)	1 (1.1%)	5 (5.5%)	2 (2.2%)
Care Facility ⁴	1 (1.1%)	1 (1.1%)	1 (1.1%)	1 (1.1%)

Notes: ¹Includes street or shelter homelessness; ²Includes independent or independent supported housing; ³Includes hotels, with friends, etc.;

⁴Includes long-term rehabilitative services, adult family home, nursing care facility, and congregate care facility; No participants resided in jail or prison or drug or alcohol programs at the four timepoints

Although specific hypotheses related to the differential pattern of homelessness and hospitalization among the Evans House and control groups could not be tested directly with the available data, a supplemental analysis was conducted testing a potential interaction of enrollment date (i.e., move-in date) and group assignment on homelessness and hospitalization outcomes. The Evans House move-in date, or proxy date for control participants, was converted into a numerical value counting the number of days from the first possible enrollment date (i.e., October 1, 2007 = 1) to the final enrollment date (November 25, 2009 = 786); therefore, lower numbers represented an earlier enrollment date and higher

numbers represented a later enrollment date. Two ANCOVAs were conducted for each of the two post-housing outcomes. Covariates included group (i.e., Evans House vs. control), pre-housing days homeless or hospitalized, days to enrollment, and the group by days to enrollment interaction term. Results demonstrated insignificant interaction effects for homelessness, $F(1, 177) = 0.26$, $p = .66$, and hospitalization, $F(1, 177) = 1.19$, $p = .28$. Thus, the timeframe of enrollment did not significantly account for the differential patterns in homelessness and hospitalization among the Evans House and control groups.

SAGE and PACT Comparisons

Evans House was comprised of two different populations (the typical chronically homeless population or high utilizers of inpatient psychiatric treatment), and each population received different support services (SAGE or PACT). As noted earlier, those in SAGE were more likely to be chronically homeless. Participants in SAGE and PACT significantly differed in pre-housing homelessness, $t(89) = 3.08$, $p = .003$, and pre-housing psychiatric hospitalization, $t(89) = 2.97$, $p = .004$, with those in SAGE demonstrating higher rates of days homeless ($M = 231.40$ vs. $M = 129.82$) and lower rates of days hospitalized ($M = 4.72$ vs. $M = 19.64$) compared to those in PACT.

Influence on main outcomes. Additional analyses were carried out in order to better understand potential differential effects of service type on the main study outcomes, homelessness and hospitalization, within the Evans House group ($N = 91$). Two ANCOVAs were conducted with similarity to the approach used to test hypotheses I through IV. However, these analyses were not comparing Evans

House versus control groups as the independent variable. Rather, the independent variable tested was SAGE versus PACT. A further difference was the exclusion of psychiatric diagnosis as a covariate, as the SAGE and PACT groups did not significantly differ on this variable. These two groups did not significantly differ on other sociodemographic or diagnostic indicators.

First, an ANCOVA was carried out testing SAGE versus PACT differences in number of days homeless during the post-housing year. Covariates included days homeless in the pre-housing year and the service type by pre-housing year days homeless interaction. Service type did not significantly influence days homeless post-housing, $F(1, 87) = 1.67, p = .20, d = 0.28$. Moreover, the interaction of service type and pre-housing days homeless was not significant, $F(1, 87) = 0.95, p = .33, d = 0.21$. Next, a second ANCOVA was conducted testing SAGE versus PACT differences in days hospitalized during the post-housing year. Covariates included days hospitalized in the pre-housing year, chronic homelessness category, and the service type by chronic homelessness interaction. Service type did not significantly influence days hospitalized post-housing, $F(1, 86) = 0.46, p = .50, d = 0.14$. The interaction of service type and chronic homelessness was also not significant, $F(1, 86) = 0.17, p = .68, d = 0.09$.

Influence on housing perceptions. It is possible that the two service types may promote differing perceptions of the housing environment. Of the 33 Evans House residents who completed the HES, 21 were enrolled in SAGE and 12 were enrolled in PACT. For the six HES scales, a series of independent-samples t tests were conducted, with group (SAGE versus PACT) included as the independent

variable, and the six HES scales included as dependent variables. The two groups did not significantly differ on the HES scales, with the exception of the Neighborhood Safety Scale in which PACT participants perceived their environment as significantly safer than those in the SAGE group $t(31) = 2.86, p = .008$. The descriptive statistics for the HES scales are presented in Table 5.

Table 5. Means (and Standard Deviations) of Housing Environment Survey Scales for SAGE and PACT Groups (N = 33)

	SAGE n = 21	PACT n = 12	Sig.
Neighborhood Safety ¹	2.42 (1.29)	1.13 (1.18)	.008
Physical Quality ²	3.85 (0.67)	4.11 (0.42)	.56
Neighborhood Quality ²	3.48 (0.72)	3.94 (0.49)	.25
Neighborhood Social Climate ²	3.20 (0.74)	3.65 (0.86)	.73
Neighbor ²	3.10 (0.76)	3.60 (0.67)	.10
Landlord ²	3.58 (0.94)	3.59 (0.87)	.52

Notes: ¹Scores range 0-6, lower numbers better; ²Scores range 1-5, higher numbers better

In sum, participants receiving SAGE and PACT support services were similar in sociodemographic and diagnostic characteristics. However, the two groups were different in terms of homelessness and psychiatric hospitalization histories, with those in SAGE having higher rates of homelessness and lower rates

of hospitalization prior to moving into Evans House compared to those in PACT. Despite the different levels of service provided, it appears that service type did not significantly influence the main outcomes of the study, post-housing homelessness and hospitalization. Service type was unrelated to the likelihood of leaving Evans House within the post-housing year. Finally, SAGE and PACT was unrelated to five of the six HES scales. However, those in PACT perceived the neighborhood as significantly safer than those in SAGE.

CHAPTER IV

DISCUSSION

Chronic homelessness is a significant social issue marked by extended periods of time, or repeated episodes, of living on the streets or in homeless shelters. Long-term homelessness is associated with societal and individual costs, and in 2011, it was estimated that over 100,000 adults were chronically homeless (National Alliance to End Homelessness, 2011). Representative of a particularly vulnerable subset of the overall homeless population, individuals who are chronically homeless are more likely to experience serious mental illness, substance use disorders, and chronic medical problems. Compounding these conditions is the lack of engagement with treatment providers, a pattern commonly observed among the chronically homeless population. Consequently, these individuals tend to over-utilize costly emergency services. The provision of housing to the chronically homeless population is purported to be the optimal approach to ending chronic homelessness and enhancing access to care. The present study implemented a social ecological framework to evaluate a housing program for individuals who are chronically homeless as well as those who are at risk of chronic homelessness in order to determine the appropriateness of a particular housing model to prevent chronic homelessness.

A range of housing models are offered to meet the needs of individuals with psychiatric and substance abuse issues who are unable to maintain unsupported housing in the community. Given the particular needs of individuals who are chronically homeless, low demand, or Housing First, programs were

developed to serve this population. Housing programs that provide consumer-driven support services and do not have requirements for sobriety or treatment participation demonstrate optimal housing tenure compared to programs with more stringent requirements (Lipton et al., 2000; Tsemberis & Eisenberg, 2000). Further, due to decreased emergency service utilization, Housing First is deemed a cost-effective approach (Larimer et al., 2009). However, research has not examined the effectiveness of Housing First for individuals of varying homelessness histories who are vulnerable to becoming chronically homeless.

Major Findings

Quasi-experimental methods were used in this evaluation of Evans House, a project-based Housing First program in Seattle, WA. The first aim of this study was to compare Evans House with usual care on rates of homelessness. Housing tenure is the key outcome of Housing First studies, as the primary goal of these programs is to enhance housing stability. In support of Hypothesis I, those residing in Evans House spent significantly fewer days homeless after housing compared to the control group. In fact, those in Evans House demonstrated a sharp decrease in days homeless from the pre-housing year to the post-housing year, while those in the control group evidenced an increase in time spent homeless.

Of the 91 Evans House residents, 78% remained at the program at the end of the post-housing year and an additional 12.1% transferred to other residential arrangements but did not return to literal homelessness. This is in contrast to the 64.8% of the control group who were literally homeless at the end of the second

year of the study. These retention rates are not substantially different from previous studies showing 84% one-year (Pearson et al., 2009) and 84% two-year (Tsemberis et al., 2012) housing retention rates. Yet, housing retention outcomes have varied across longer-term follow-up studies. Two studies assessed low demand housing outcomes over five-year enrollment periods, and demonstrated 54% (Lipton et al., 2000) and 88% (Tsemberis & Eisenberg, 2000) housing retention.

The variability in housing outcomes across studies is likely due in part to programmatic or population differences. For example, the Housing First approach Tsemberis and Eisenberg (2000) utilized was scattered-sites, while Evans House is project-based. There are no randomized studies to-date comparing project-based and scattered-sites Housing First models; therefore, the impact of housing model on differential outcomes is unclear. Moreover, approximately half of the Evans House sample was comprised of a unique sample in Housing First: those who are high utilizers of inpatient psychiatric treatment who are not necessarily chronically homeless, and Housing First outcomes have not been previously established with such a sample.

The approach to resident recruitment is a potentially important distinction between the Pathways to Housing model described by Tsemberis and Eisenberg (2000) and DESC's model that may influence housing retention outcomes. Pathways to Housing implements a first-come-first-served approach to allocating apartments to individuals who have demonstrated long-term homelessness and have psychiatric disabilities or substance use disorders. In contrast, DESC

prioritizes housing placements based on a Vulnerability Assessment Tool (Ginzler & Monroe-DeVita, 2010). DESC apartments are provided to those who are assessed to be the most vulnerable in terms of survival skills, mental illness, substance abuse, and medical conditions, among other factors. Because Evans House is unique to other DESC housing programs, half of the residents (i.e., those recruited from homelessness services) obtained housing based on vulnerability ratings, while the other half were at increased vulnerability due to frequent use of inpatient psychiatric treatment. Therefore, it is possible that Pathways to Housing, on average, captures a somewhat higher functioning population than DESC. Although studies have not explored this question, it is possible that selecting individuals with greater vulnerability will lead to lower housing retention rates. Despite the vulnerability of Evans House residents, 90.1% of residents did not return to homelessness one year after moving into the program.

The second aim of the study was to determine whether Evans House was associated with fewer days of inpatient psychiatric treatment compared to the matched control group. In support of Hypothesis III, those in Evans House spent significantly less time hospitalized in the post-housing year than those receiving usual care. Similar to the pattern that arose in the homelessness outcome, those in Evans House showed a directional reduction in days hospitalized, while those in the control group experienced an increase in time spent in the hospital. The lower use of psychiatric inpatient services among Evans House residents is consistent with other low demand housing studies evidencing decreased service utilization (Gulcur et al., 2003; Martinez & Burt, 2006; Sadowski et al., 2009; Siegel et al.,

2006). Given the unique population of high inpatient psychiatric treatment utilizers residing in Evans House, findings from this study are promising, as this method of supportive housing appears to improve psychiatric stability and allow residents to remain in the community.

A formal cost analysis was not conducted because a comprehensive evaluation of service use was not a primary aim of this study. However, it is possible that reduced hospitalization among a high-utilization group could partially offset the cost of housing. In a cost-effectiveness study of a DESC housing program similar to Evans House, Larimer et al. (2009) reported the cost of housing plus support services was \$37 per person per day, or \$13,505 per person per year. The cost of one night at Western State Hospital, the source of hospitalization data presented here, is \$499 (Washington State Senate Ways & Means Committee, 2011). Upon examination of a subset of the Evans House sample that had at least one hospitalization at Western State Hospital during the pre-housing year (N = 28), the median number of days hospitalized was 32.5 (range 3 to 121). As a result, the median pre-housing hospitalization cost was \$16,217 and this figure does not account for the cost of shelter or residential treatment facility stays during the remainder of the pre-housing year. For this group in the post-housing year, the median number of days hospitalized was 0 (range 0 to 68). Thus, this study lends additional support for the cost-effectiveness of Housing First.

In order to interpret the main findings of this study, attention must be given to considerations related to the sampling method used. It is possible that the

two groups differed on fundamental unmeasured characteristics. For example, chronically homeless individuals who moved into Evans House may have particular characteristics that made them more housing-ready than those in the control group. Perhaps the Evans House group was more connected with homelessness services than the control group. Better connectedness may be indicative of level of functioning or ability to remain housed in a supportive housing environment. In contrast to this notion, the control group had a higher proportion of primary mood and anxiety disorders and lower proportion of psychotic disorders compared to the Evans House group, and it may be expected that psychosis would be predictive of poorer housing outcomes.

The pattern of homelessness and hospitalization over time for the Evans House and control groups is important. Findings suggest that housing instability and utilization of inpatient psychiatric treatment increase over time in the absence of an appropriate housing intervention. Although the matched control group did not receive a specific intervention, supplemental analyses indicated that the majority remained homeless in the second year of the study. Because the majority of the control group did not obtain stable living conditions over the course of a year, it is evident that unless provided a housing intervention, individuals will remain homeless. It is likely that control participants who were not initially categorized as chronically homeless would have met the federal definition of chronic homelessness by the end of the data collection period.

Future research is needed to examine reasons for sustained homelessness among individuals with mental illness and substance abuse issues when the

number of permanent supportive housing programs is on the rise nationwide (Sermons & Witte, 2011). More specific data on Washington State revealed a 15% decrease in chronic homeless between the years 2008 and 2009 (Sermons & Witte, 2011); a timeframe captured in the present study. Thus, it is possible the control group possessed characteristics that may have been associated with poor housing attainment outcomes.

In an effort to examine personal social ecological factors related to outcomes, a third aim of the study was to explore the impact of homelessness history on post-housing homelessness and psychiatric hospitalization. Based on the findings of past research, it was hypothesized that Evans House versus control group by homelessness history interactions would occur. Hypotheses II and IV were not supported, as significant interactions were not revealed for group by past-year homelessness or chronic homelessness on post-housing homelessness or psychiatric hospitalization, respectively. The lack of interaction effects is promising, as it highlights the comparability in effectiveness of a Housing First intervention among individuals with different homelessness histories on the main study outcomes.

In contrast to findings from the present study, Gulcur et al. (2003) provided evidence for an interaction of recruitment source (psychiatric hospital versus shelters or streets) on outcomes, such that those in Housing First who were recruited from the street demonstrated the greatest reduction in homelessness, while those in Housing First recruited from the hospital had the greatest reduction in hospitalization. Moreover, in a sample of chronically homeless adults, Burt

(2012) found that duration of tenure in Housing First was negatively related with time spent homeless over the past year.

The contrast in findings between the present study and past research may be explained by several factors. First, sampling differences are evident across studies. Both Gulcur et al. (2003) and Burt (2012) utilized stringent homelessness requirements for enrollment into Housing First. This study included a subsample of residents and controls who did not experience sustained homelessness histories in the three years prior to housing. Second, the one-year follow-up period in this study may not have been adequate for interaction effects to emerge, as Gulcur et al. conducted a two-year follow-up. Finally, this study may have been underpowered to detect significant interaction effects, and the sample size was smaller than the samples utilized by Gulcur et al. and Burt. Nevertheless, the small interaction effect sizes indicated homelessness history did not have a meaningful influence on between-group differences in this study.

In order to explore Research Question I and provide additional context for the impact of chronic homelessness status on housing outcomes, a survival analysis was carried out within the Evans House group. Chronic homelessness status did not significantly predict the rate at which residents left housing over the course of 39 months, thus providing further evidence for the success of Housing First for a unique population. Yet, it is important to note that 54% of the survival analysis participants were censored, which is greater than the maximum censoring recommended of 50% (Singer & Willett, 1991). Therefore, potential significant

effects may not have been observed, and future research is needed among a larger sample and longer follow-up period.

It may be argued that a harm reduction approach to housing is not necessary for a non-chronically homeless population, particularly when the identified chronic homelessness risk factor is psychiatric hospitalization. However, 76% of Evans House residents had a substance use disorder, and the rate of substance use was unrelated to housing recruitment source or chronic homelessness status. Studies suggest that substance use is predictive of increased use of psychiatric emergency and hospital services (Geller et al., 2000; Pasic et al., 2005). The present investigation revealed that individuals with substance use disorders who were provided Housing First were hospitalized for less time than those who were not. Consequently, ongoing substance use in housing was not necessarily indicative of poor outcomes.

Potential concerns about increased substance use among residents of Housing First can be discounted by studies demonstrating the opposite trend in substance use (Collins, Malone, et al., 2012; Padgett et al., 2011). Housing First residents may, in fact, prefer to develop personalized harm reduction goals (Collins, Clifasefi, et al., 2012). Severity of substance use was not assessed in the present study, and future studies are needed to examine the impact of housing on substance use among those at risk of chronic homelessness. Nevertheless, harm reduction-based housing is warranted for high inpatient utilizers in order to enhance long-term success in housing.

Findings from the first three aims of this study suggest that Evans House is superior in lowering rates of homelessness and psychiatric hospitalization compared to usual care, and these differences are consistent across individuals of varying homelessness histories. Housing First is the premier evidence-based approach to ending chronic homelessness. The present study suggests the Housing First model holds promise for preventing chronic homelessness among a population of high inpatient psychiatric treatment utilizers who do not have stable housing. Taken together, these findings lend support for identifying individuals who are often psychiatrically hospitalized and offering community-based supportive housing in order to promote community integration through reduced hospitalization and prevent long-term patterns of housing instability.

In an effort to further understand social ecological factors associated with residing at Evans House, Research Question II prompted an exploration of housing perceptions among chronically and non-chronically homeless subgroups. Significant differences did not emerge between groups across the six HES subscales. Nevertheless, significant differences may not have emerged due to the small sample size available. Upon examination of effect sizes, moderate effects were observed for Neighborhood Quality and Neighbor subscales, with a trend toward the chronically homeless group perceiving these qualities as more favorable than the non-chronically homeless group. With regard to neighborhood quality perceptions, Evans House is located in a middle-class residential area of Seattle, and those who have stayed in shelters or on the streets may notice a greater difference in their current neighborhood compared to those who have less

extensive street and shelter histories. These preliminary findings suggest a potential for increased social connectedness among those with a history of chronic homelessness, and future research is needed to clarify this relationship. Still, the lack of significant differences between groups may provide further evidence for the appropriateness of Housing First for non-chronically homeless individuals.

Overall, residents reported moderate ratings on the HES, indicating neither favorable nor unfavorable perceptions. Participants did not appear to perceive their housing environment as unsuitable. Yet, aside from perceiving the environment as safe, residents did not present overtly positive perceptions of the physical, social, and interpersonal domains of their housing environment. Previous studies utilizing the HES have not reported subscale descriptive data (Kloos & Shah, 2009; Townley & Kloos, 2011; Tsai, Mares, & Rosenheck, 2011), so it is unclear how Evans House resident ratings compare to individuals with serious mental illness in other residential settings. Additional research utilizing qualitative methods may be appropriate for better understanding housing perceptions and identifying methods of enhancing the housing environment to improve quality of life among residents.

Limitations

Several limitations can be noted for the present investigation. Primarily, a quasi-experimental, matched case-control design was implemented. A randomized design was not feasible because this was an evaluation of a housing program already in operation. The control group matching method was modeled from the approach used by Culhane et al. (2002). Propensity score matching

would have been an alternative approach, as it is the method purported to be the optimal approach for non-randomized evaluation research (Dehejia & Wahba, 2002), but is also not free of bias (Peikes, Moreno, & Orzol, 2008). Matching characteristics were carefully selected based on past research identifying factors predictive of housing outcomes in Housing First.

Upon examination of baseline data, it is evident the control group tended to spend more time homeless and less time hospitalized, on average, compared to the Evans House group, although these baseline differences were not statistically significant. It is likely that the matching procedures were less effective in capturing a control group similar to the high inpatient utilizers in the Evans House group than the remaining Evans House residents. Despite matching on chronic homelessness status based on homelessness patterns over three years, Evans House residents probably tended to be literally homeless for less time due to spending more time in the hospital. The high utilizer Evans House residents comprised a particularly specified sample, and were, by definition, unique compared to other mental health service recipients in the KCMHCADS administrative database. A previous Housing First study of high public service utilizers implemented a wait-list control group method, such that those not receiving immediate housing were similar to the study group in terms of service utilization (Larimer et al., 2009). Unfortunately, KCMHCADS did not maintain a wait list of high psychiatric utilizers that could be accessed in the administrative database. Future randomized studies are needed to further understand the effectiveness of Housing First versus usual care among high inpatient utilizers.

Another limitation to this study was the lack of a clear comparison condition, thus favoring external validity over internal validity. Most studies have compared Housing First with high demand housing programs (e.g., Tsemberis & Eisenberg, 2000). Usual care was defined as individuals enrolled in King County's mental health system who did not receive housing at Evans House. Essentially, the control group reflected the experience of individuals with mental illness who remained homeless and received the general homelessness services offered in Seattle. It was evident from supplemental analyses that the majority of control participants did not attain stable housing over the course of the second year of the study. It is important to note that these study findings may not generalize outside of Seattle, as the control group may have fared differently across cities with varying homelessness services.

The comprehensiveness and reliability of the administrative records used pose additional limitations to this study. First, data on inpatient hospitalization were gathered from Western State Hospital, the largest inpatient facility King County to which residents are admitted after presenting to area psychiatric emergency departments. Therefore, this study captured reductions in the need for extended hospital care. However, data on psychiatric emergency department visits for more acute episodes were not collected; thus, it is unclear whether Evans House influenced emergency service utilization. Consequently, findings from this study lack comparability with other low demand housing studies reporting on a greater breadth of services (e.g., Gilmer et al., 2010; Larimer et al., 2009; Parker, 2010; Tsai et al., 2010).

Another limitation of using administrative records to establish homelessness and housing patterns was the reliance on community mental health workers to accurately report the residential situations of their clients. It is possible that mental health workers were uncertain of the particular living situations of their clients. Moreover, they may not have updated changes in their clients' living situations immediately after changes occurred. In order to minimize concerns related to the accuracy of living situation data, potential participants were excluded if it was apparent they did not have regular contact with a mental health worker (i.e., their administrative records were not frequently updated). Further, dates of Evans House entry and exit were precise, as these data were obtained from DESC's closely monitored database.

A further limitation to the present investigation was the lack of long-term follow-up. Several previous low demand housing studies have captured two- to five-year timeframes (e.g., Gulcur et al., 2003; Lipton et al., 2000; Tsemberis & Eisenberg, 2000). The goal of Housing First is to provide indefinite housing stability, and examination of long-term housing trajectories would determine whether this goal is met. Additional longitudinal studies are needed to explore housing stability among non-chronically homeless individuals in Housing First.

Finally, it is necessary to address the small sample size included in the HES data collection. Of the 75 residents who were currently residing at Evans House when the data were collected in June, 2011, data on only 33 were available for analysis. The primary reason for low sampling was the level of psychiatric impairment among Evans House residents. Many residents lacked trust in the

research or their psychiatric symptoms were too acute to provide informed consent. Although it is possible more residents would have felt comfortable participating in research if Evans House staff had collected the survey data, the IRB viewed this as a potentially coercive research practice. A final explanation for a loss of participants to survey was the delay between IRB application and approval and the timeframe of administrative data collection. Some participants included in the administrative data collection had already exited Evans House by the time HES data collection occurred.

Implications and Future Directions

Despite potential limitations, results from this study have important implications for the application of the Housing First model to individuals who are vulnerable to chronic homelessness. Housing First is an evidence-based approach to ending chronic homelessness, and this study found that Housing First is equally effective for individuals with varying homelessness histories. Chronically homeless and non-chronically homeless individuals reported equivalent perceptions of the quality of their housing environment, despite the differing backgrounds of the two groups. The unique population of Evans House residents who were high utilizers of inpatient psychiatric treatment were likely appropriate for a low demand housing model due to the preponderance of substance use disorders among residents.

Implications for Theory and Research

Homelessness prevention is increasingly gaining popularity in the widespread effort to end homelessness (Culhane et al., 2011). Prevention theory

suggests the prevention of chronic homelessness among a targeted vulnerable population through the provision of supportive housing is critical for reducing the compounding individual and societal consequences of homelessness. Individuals who are homeless have increased challenges of obtaining regular outpatient care for medical and psychiatric illnesses; and, as a consequence, over-utilization of emergency medical, psychiatric, and substance abuse services occurs. This study clearly demonstrated that most Housing First residents were capable of remaining housed and, therefore, remained connected to outpatient mental health and substance abuse treatment options. In contrast, the majority of the control group remained homeless and likely faced greater challenges in obtaining consistent outpatient treatment services.

Findings from this study, together with previous research, suggest chronic homelessness prevention can influence individual wellness. Housing First is shown to be effective in increasing outpatient mental health service use. Enhanced management of psychiatric symptoms through regular outpatient care has implications for long-term functioning, as untreated mental illness is associated with poor symptom and functioning outcomes over time (Addington, Van Mastrigt, & Addington, 2004). Therefore, stable, supportive housing has important implications for psychiatric recovery. Future studies examining the effect of Housing First on wellness promotion in specific domains, such as psychiatric symptomatology, independent functioning, and quality of life are needed to provide further context to the homelessness and hospitalization outcomes observed in the present study.

This study provides a strong basis for future research in the area of chronic homelessness prevention. First, it is important for research to compare Housing First to other forms of housing on outcomes of housing tenure, service utilization, and quality of life. In a meta-analysis of housing studies, Leff et al. (2009) found that both low and high demand housing programs were associated with more positive outcomes among individuals with mental illness than usual care. However, the two forms of housing were particularly effective on different outcomes, such as low demand housing demonstrating better housing satisfaction outcomes and high demand housing showing better psychiatric symptom outcomes. Therefore, future studies are necessary to identify optimal housing environments for at-risk individuals that will capture a range of superior outcomes.

Many components contribute to the housing environment. The present study endeavored to provide a social ecological context to the study of Housing First as homelessness prevention. Upon examination of the individual-level factor, homelessness history, it is evident that this factor does not influence housing outcomes. This study provided initial data regarding the interaction of homelessness history and perceptions of the housing environment, indicating that perceptions did not differ among chronically and non-chronically homeless residents. However, in an effort to fully understand these interactions in the context of a social ecological framework (Moos, 1974), future research is needed to explore the interaction of homelessness history and housing perceptions over time and determine their influence on housing tenure.

In the exploration of optimal housing environments, it will be important for future studies to examine whether differences in outcomes arise across the varying Housing First models. As previously discussed, many Housing First models operate on a scattered-sites approach in which individuals are provided apartments in mainstream buildings and assertive community treatment teams provide services in the individual's residence (e.g., Tsemberis & Eisenberg, 2000). This is in contrast to the project-based approach to Housing First described here in which residents maintain independent apartments but the setting is supervised and services are provided on-site. It is possible that some individuals will prefer on-site support services, while others may thrive in more community-integrated settings. Studies are needed to determine predictors of success in each type of Housing First model based on consumer preference and functional ability.

Implications for Policy

Given findings from this study promote a broadening of the application of Housing First to individuals who incur great costs to the mental health system, it is possible that a wider scope of funding sources can be tapped. For example, the housing resources offered by DESC are primarily funded through local government, grants, and in-kind donations targeting homelessness services. However, residents at Evans House referred by KCMHCADS are partially funded through the county mental health funding stream. As previously noted, housing costs can be partially offset by reductions in hospitalization among high utilizers, and a more comprehensive cost analysis may provide evidence for even greater mental health cost reductions associated with housing. In sum, Housing First may

be an appropriate inclusion in treatment plans among mental health consumers, and an argument can be posed for changes to mental health policy to include financial contributions for supportive housing programs.

Even though this study implicates a shift in mental health funding to housing programs, it is important to note that the current economic climate will likely create barriers to achieving this goal. Washington State alone suffered an 11% decline in mental health expenditures between 2009 and 2011, and is experiencing significant cuts in federal Medicaid funding (National Alliance on Mental Illness, 2011). Fortunately, the city of Seattle continues to pass levies for funding new supportive housing projects (Seattle PI, 2011). However, the development project-based supportive housing projects costs millions, and many cities across the United States will not have the financial means to provide these programs to all who are in need.

As a consequence of uncertainty surrounding funding availability for Housing First for preventing chronic homelessness, additional measures must be taken in approaching the problem. For example, preliminary findings indicated that a specialized intervention for first-episode psychosis was associated with more independent living and less reliance on supported housing compared to usual care for psychosis (Bertelsen et al., 2008). Individuals vulnerable to chronic homelessness who do not have current substance use issues may thrive in mutual support housing environments that are less reliant on housing development and staffing, such as Fairweather Lodges or Oxford Houses. Ongoing innovation and

research are needed to identify cost-effective approaches to preventing and ending chronic homelessness.

Implications for Intervention

Many current homelessness programs are targeted at individuals whose primary needs are financial or social support for housing maintenance. Among those vulnerable to chronic homelessness, primary needs are shifted to the need for accommodations for psychiatric, medical, and/or substance abuse issues. Those vulnerable to chronic homelessness most often have some history of housing instability but it may not be extensive enough to qualify for housing services offered to those who are chronically homeless. Therefore, individuals at risk of chronic homelessness comprise a small subset of the broader population targeted by homelessness prevention efforts. Participants in this study represented an even narrower subset, and it has been recognized that homelessness prevention approaches for individuals with severe psychiatric disabilities require more intensive community support, such as low demand housing (Culhane et al., 2011).

These study findings fit into the current discourse on homelessness prevention and housing and support needs for the most vulnerable adults in our communities. Given the level of disability observed among individuals at risk of chronic homelessness, it is likely that the support services offered at Evans House contributed to the program's success. However, examination of patterns of support service use was beyond the scope of the current investigation. The Housing First model promotes consumer-driven service use, yet participation in available support services is recommended. Future research is needed to identify

predictors of support service use among Housing First residents in order to inform interventions enhancing motivation to participate in treatment opportunities.

Given the success of the intervention described in this study, it is important to attend to the feasibility of generalizing this intervention to other community based organizations. The Evans House intervention targeting individuals who were high inpatient utilizers was made possible through partnerships among DESC, KCMHCADS, and local psychiatric hospitals. Consequently, a system was in place to seamlessly transition identified individuals from hospital settings into Evans House. The application of this particular prevention approach requires collaboration among Housing First providers and hospital entities.

Importantly, high inpatient utilization may not be the only or primary indicator of chronic homelessness risk among psychiatric populations. The development of homelessness risk assessment tools is necessary. Subsequently, psychiatric hospitals may implement assessment of chronic homelessness to inform discharge planning. Identification of supportive housing opportunities must be a critical component of patient discharge plans among those identified as vulnerable to chronic homelessness.

In sum, this study was a preliminary investigation of Housing First for individuals with varying homelessness histories. Although limitations in this study were evident, findings provide an indication for the broadening of the Housing First model to a unique population. The majority of Evans House residents remained housed, implicating this model as an indicated prevention

intervention for chronic homelessness. Reductions in psychiatric service use provide support for the cost-effectiveness of this model and a shift in mental health policy to provide funding for housing as part of an overall treatment plan for mental health service consumers. These preliminary findings provide a foundation for future research that will identify optimal housing environments for the complex and diverse needs of individuals at risk of chronic homelessness.

CHAPTER V

SUMMARY

A subset of the homeless population in the United States is referred to as chronically homeless because they have significant patterns of housing instability due to the presence of a disabling condition such as mental illness. Individuals who are chronically homeless are particularly vulnerable to poor physical and psychological health and often over-utilize costly emergency services. Programs providing housing and support services, sometimes referred to as Housing First, have been developed to improve housing stability among people who are chronically homeless by offering permanent housing without requiring sobriety or psychiatric treatment compliance.

Housing First is traditionally provided to individuals with a history of chronic homelessness. However, it may also be an effective community-based housing intervention for individuals with serious mental illness who have extensive histories of inpatient psychiatric treatment. Some people are discharged from psychiatric hospitalization into homelessness, placing them at greater risk of experiencing prolonged housing instability. Thus, Housing First may be a preventive approach to chronic homelessness for these individuals. Additionally, Housing First may be a community-based alternative to psychiatric hospitalization, as it is associated with decreased utilization of inpatient treatment (Gulcur et al., 2003).

Moos' (1974) social ecological approach to understanding treatment environments suggests that a transaction of physical, social, and personal factors

influence outcomes in a given setting. Housing First research has not yet differentiated important social ecological factors among different populations of residents, such as those who are chronically homeless versus non-chronically homeless individuals. Examination of differential perceptions of the housing environment will provide further context to the appropriateness of Housing First for non-chronically homeless individuals. The present study implemented a social ecological approach in evaluating the effectiveness of Housing First for preventing chronic homelessness among individuals who were high utilizers of inpatient psychiatric treatment.

Ninety-one residents of a Housing First program were subgrouped based on whether they were chronically homeless upon entering housing. Administrative data were used to examine the number of days homeless and inpatient psychiatric treatment during the year prior to housing and the year after housing for Housing First residents compared to a matched control group of 91 participants receiving usual care. Analysis of covariance was used to test the hypothesis that residents of Housing First will experience fewer days homeless and in inpatient psychiatric treatment after housing than those receiving usual care. Further, it was hypothesized that participants' homelessness history would influence between-group differences. A survival analysis was carried out for participants in Housing First to explore whether chronic homelessness status predicted the rate at which residents exited housing. Finally, new data collection with 33 Housing First residents was carried out to explore whether physical,

social, and interpersonal aspects of the housing environment were perceived differently by chronically homeless versus non-chronically homeless residents.

Results showed that those living in Housing First spent significantly fewer days homeless and in inpatient psychiatric treatment one year after housing compared to those receiving usual care. Homelessness and hospitalization outcomes were not influenced by homelessness history. Overall, 90.1% of Housing First residents did not return to homelessness one year after housing, and chronic homelessness status did not predict the rate at which individuals left the housing program. Finally, perceptions of the housing environment did not differ among chronically and non-chronically homeless residents.

Findings from this study suggest that Housing First is effective for individuals with varying homelessness histories. Individuals who were not chronically homeless were successfully housed for one year, suggesting Housing First may be an appropriate indicated chronic homelessness prevention intervention. These findings have important policy implications and provide evidence for broadening the Housing First model to new populations.

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Appendix A
Housing Environment Survey

Housing Environment Survey

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Physical Housing Quality (HES-PQ)*

These first questions ask for your opinion on different things about your housing. How much do you AGREE or DISAGREE with the following statements about your place (apartment)?

	1 = Strongly Disagree 2 = Disagree 3 = Neither Disagree or Agree 4 = Agree 5 = Strongly Agree				
1. I have enough space in my place	1	2	3	4	5
2. I have plumbing problems in my place (i.e. hot water supply, clogged sinks)	1	2	3	4	5
3. The floors, ceilings, and walls are in good condition in my place	1	2	3	4	5
4. The windows in my place are in good condition	1	2	3	4	5
5. There is a problem with rats, mice or cockroaches in my place	1	2	3	4	5
6. I have a working stove or refrigerator in my place	1	2	3	4	5
7. The locks on the door and windows in my place work well	1	2	3	4	5
8. There are problems with the electrical system in my place (e.g., exposed electrical wiring, interruptions in electricity)	1	2	3	4	5
9. There are strange or unpleasant odors in my place	1	2	3	4	5
10. My place is usually a comfortable temperature	1	2	3	4	5
11. There is not enough sunlight in my place	1	2	3	4	5

**Modified and expanded from the Housing Quality Survey (Newman, Rechovsky, Kaneda, & Hendrick (1994).*

12. What are three advantages of your place?

1. _____
2. _____
3. _____

13. What are three problems with your place?

1. _____
2. _____
3. _____

Neighborhood Quality (HES-NQ)*

For the next questions, I'll ask for your opinion about different things in your neighborhood. How much do you AGREE or DISAGREE with the following statements about your neighborhood?

	1 = Strongly Disagree 2 = Disagree 3 = Neither Disagree or Agree 4 = Agree 5 = Strongly Agree				
1. It is easy to get transportation in my neighborhood	1	2	3	4	5
2. I can get things that I need from stores in my neighborhood (food, clothes, supplies)	1	2	3	4	5
3. There are things to do for fun in my neighborhood (e.g. movie theatre, bowling)	1	2	3	4	5
4. People can find police officers when they are needed in my neighborhood	1	2	3	4	5
5. There are not enough street lights in my neighborhood	1	2	3	4	5
6. My neighborhood looks nice	1	2	3	4	5
7. There is too much noise in my neighborhood	1	2	3	4	5
8. I have good sidewalks in my neighborhood	1	2	3	4	5
9. There are not any parks that I can use in my neighborhood	1	2	3	4	5

**Modified and expanded from the Housing Quality Survey (Newman, Rechovsky, Kaneda, & Hendrick (1994).*

10. What are three advantages of your neighborhood?

1. _____
2. _____
3. _____

11. What are three problems with your neighborhood?

1. _____
2. _____
3. _____

Housing Demographics (HES-D)

Now, I'd like to ask you a few questions about your living situation.

1. What was (is) the most important reason for choosing your place? (circle one)

- 1 To be near family/friends
- 2 Availability of rent subsidy/lower rent
- 3 Availability of on-site support services
- 4 Convenient location
- 5 Safer than previous building/apartment
- 6 Better/larger apartment
- 7 No choice/nowhere else to go
- 8 Other _____

2. How many people live in your household (including you)? __ __

3. How many bedrooms do you have? __ __

4. How many bathrooms do you have? __ __

5. How many other rooms do you have? __ __

6. Approximately how many units (or apartments) are in your housing complex? __ __

7. What floor do you live on? __ __

8. Is there a landlord or property manager who is on site for 8 hrs/day or more? YES NO

9. Is your name on a lease (sublease, mortgage) for the place where you live?
YES NO

10. How is the rent paid?

11. If you receive a subsidy or someone pays your rent, please describe:

12. How long do you want to live in your current residence?

*No longer than
necessary*

*As long as
possible*

1

2

3

4

5

13. Why?

Now I will ask some questions about your neighborhood.

14. How would you describe your neighborhood to someone who is not familiar with it?

**15. What area do you consider to be your neighborhood?
Neighborhood Social Climate (HES-NSC)**

Now I have some questions about what it is like to live in your neighborhood. How much do you *AGREE* or *DISAGREE* with the following statements about your neighborhood?

	1 = Strongly Disagree 2 = Disagree 3 = Neither Disagree or Agree 4 = Agree 5 = Strongly Agree				
1. I feel safe walking in my neighborhood.	1	2	3	4	5
2. People in my neighborhood are friendly to everybody no matter what the person's skin color or ethnic background.	1	2	3	4	5
3. Crime is a problem in my neighborhood	1	2	3	4	5
4. Police treat people differently in my neighborhood because of the color of their skin.	1	2	3	4	5
5. Sometimes, people in my neighborhood hassle me when I'm out walking.	1	2	3	4	5
6. My neighborhood is an easy place to live.	1	2	3	4	5
7. People in my neighborhood treat me as an equal.	1	2	3	4	5
8. I can do things outdoors in my neighborhood	1	2	3	4	5
9. Sometimes I feel unwelcome in my neighborhood because of my disability.	1	2	3	4	5
10. Some people in my neighborhood give me a hard time because of my disability.	1	2	3	4	5

For the next two questions, please answer what you believe is true or your perception of what is true; you do not need to have accurate facts.

11. How many people in your neighborhood have the same race or ethnic background as you?

No One A Few About Half Most Everybody

1 2 3 4 5

12. How many people in your neighborhood have the same disability as you?

No One A Few About Half Most Everybody

1 2 3 4 5

Neighborhood Safety (HES-S)

Next I will ask about activity in your neighborhood. Please think about the area right outside of or in your building.

	0	1	2	3	4	5	6
	Never						
	Few Times a Year						
	Once Per Month or Less						
	2-3 Times a Month						
	Once a Week						
	2-3 Times a Week						
	Once a Day						
1. How often are people attacked right around your building?	1	2	3	4	5	6	
2. How often are people selling drugs?	1	2	3	4	5	6	
3. How often are people using drugs?	1	2	3	4	5	6	
4. How often are people robbed around your building?	1	2	3	4	5	6	
5. How often have people had things stolen from their apartment (place, home)?	1	2	3	4	5	6	
6. How often does destruction of property happen?	1	2	3	4	5	6	
7. How often does new graffiti appear (painting or writing on walls)?	1	2	3	4	5	6	
8. How often are weapons used (guns, knives)?	1	2	3	4	5	6	

Neighbor Scale (HES-N)

Now I have some questions about contact you have with other people where you live.

1. How many of your neighbors do you know well?

For the next section, I am going to ask you about the neighbor that you know the BEST.

2. How long have you known the neighbor you know BEST?

 YEARS MONTHS

3. Thinking about the neighbor that you know BEST, how well do you and this neighbor know each other?

Not at All Slightly Somewhat Pretty Well Very Well

1

2

3

4

5

4. In the last six months, have you had any contact with your landlord? YES

NO

(If NO, skip next table)

For these next questions, I am going to ask how much do you AGREE or DISAGREE with the following statements:

	1 = Strongly Disagree 2 = Disagree 3 = Neither Disagree or Agree 4 = Agree 5 = Strongly Agree
5. My landlord/property manager does not respond to my requests.	1 2 3 4 5
6. My landlord/property manager cares about me and how I am doing.	1 2 3 4 5
7. My landlord/property manager encourages me to get involved in activities.	1 2 3 4 5
8. If I needed someone to talk to about a problem, I could talk with my landlord/property manager.	1 2 3 4 5
9. My landlord/property manager is friendly to tenants here, even if they are not from the same race, ethnic background, or skin color as him/her.	1 2 3 4 5
10. My landlord/property manager complains about me, or my apartment.	1 2 3 4 5

11. How important to you is your relationship with your landlord/property manager?

<i>Not at All</i>	<i>Slightly</i>	<i>Somewhat</i>	<i>Very</i>	<i>Extremely</i>
<i>Important</i>	<i>Important</i>	<i>Important</i>	<i>Important</i>	<i>Important</i>
1	2	3	4	5

12. Overall, how satisfied are you with your relationship with your landlord/property manager? (Choose one)

<i>Very</i>	<i>Dissatisfied</i>	<i>Neither</i>	<i>Satisfied</i>	<i>Very</i>
<i>Dissatisfied</i>	<i>Dissatisfied</i>	<i>Dissatisfied</i>	<i>Satisfied</i>	<i>Satisfied</i>
1	2	3	4	5

Housing Costs (HES-C)

Now I'd like to ask you some questions about your household expenses.

(If they are unsure of the exact amount for any question, use his/her best estimate.)

1. What is the total monthly rent for this unit? \$ _____

2. What is the amount of monthly rent that YOU pay for this unit? \$ _____

3. Do you pay utilities in addition to your rent? YES NO
(If answer is NO, skip next question)

4. How much do you pay for utilities per month (e.g., electricity, gas, water and sewage, phone, cable, etc.)? \$ _____

5. How often do you have enough money to meet your expenses each month?
 (Choose one)

None of the time	Some of the time	Half of the time	Most of the time	All of the time
1	2	3	4	5

Residential Satisfaction (HES-RS)

I'd like to ask you some general questions about your living situation.

1. How satisfied are you with this neighborhood as a place to live?

Very Satisfied	Fairly Satisfied	Neither	Slightly Dissatisfied	Very Dissatisfied
1	2	3	4	5

2. How satisfied are you with your housing as a place to live? (e.g., apartment)

Very Satisfied	Fairly Satisfied	Neither	Slightly Dissatisfied	Very Dissatisfied
1	2	3	4	5

3. How does your current housing (e.g. apt.) compare to your previous living situation?

Better	Same	Worse
1	3	3

4. How does your current neighborhood compare to your previous neighborhood?

Better	Same	Worse
1	3	3

5. What three things do you like most about where you live?

a. _____

b. _____

c. _____