Los Angeles Housing Models and Neighborhoods' Role in Supportive Housing Residents' Social Integration

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Introduction

Permanent supportive housing (PSH), which combines affordable permanent housing and supportive services, is known to be effective at ending homelessness and providing housing stability for individuals who have long been on the 'institutional circuit,' unstably housed, and socially marginalized or isolated (Tsemberis, Gulcur & Nakae, 2004). Social integration has been identified as a goal and an indicator of programmatic success in PSH (Wong & Soloman, 2002; Tsemberis, Gulcur, & Nakae, 2004), however research has consistently indicated supportive housing residents face a great deal of difficulty achieving successful social integration (Hawkins & Abrams, 2007; Padgett, Henwood, Abrams & Drake, 2008; Tsai, Mares & Rosenheck, 2012; Yanos, Barrow, & Tsemberis, 2004). Research that elucidates the correlates of social integration may aide providers in developing targeted efforts for this population, however such research has been limited. Studies that have examined social integration among supportive housing residents have largely focused on social participation (Yanos, Barrow, & Tsemberis, 2004; Tsai, Mares & Rosenheck, 2012; Dorvil et al., 2005) best described as an individual's engagement in social interactions within normative contexts, resulting in a deficit of knowledge on residents' social networks, including the extent to which an individual's social network is of adequate size, contains a diversity of social roles, and reflects prosocial relationships (Wong & Soloman, 2002). In addition to this research gap the contextual factors that contribute to social integration remain largely unknown. For example, residents' housing environments, made up of the buildings they live in and neighborhoods they are situated in, may impact residents' social networks (Wong & Soloman, 2002), however to date no studies have examined whether varying models of permanent housing and neighborhoods differentially influence residents' social network makeup. This study presents a distinctive opportunity to develop the understanding of the relationship between the housing environment and social integration, and will be the first to compare multiple PSH housing models (i.e., congregate, single-site, scatter-site) and multiple neighborhoods (i.e., Skid Row, Downtown Los Angeles, Other)

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and determine their associations with supportive housing residents' social network outcomes (i.e., size, diversity, social support, conflict).

PSH may offer the opportunity for formerly homeless individuals to improve their social integration by way of stabilizing their social networks as they become reconnected to prosocial relationships or build new supports (Nelson et al., 2005; Padgett, Henwood, Abrams & Drake, 2008; Tsai, Desai & Rosenehck, 2012). Additionally, the presence of an affordable, stable, and permanent residence may facilitate PSH residents' social integration by way of increased involvement in social settings within the community (Yanos, Barrow, & Tsemberis, 2004; Tsai, Mares & Rosenheck, 2012; Dorvil et al., 2005). In spite of these augmented opportunities, social integration has also been identified as a challenge in PSH (Hawkins & Abrams, 2007; Padgett, Henwood, Abrams & Drake, 2008; Tsai, Mares & Rosenheck, 2012; Yanos, Barrow, & Tsemberis, 2004). Studies have found that among PSH residents perceived social support is low (Tsai, Mares & Rosenheck, 2012) and social network sizes are relatively small (Hawkins & Abrams, 2007). Given their marginalized status while homeless, residents may remain marginalized and consequentially isolated for a number of factors including remaining impoverished following housing (Busch-Geertsema, 2005; Tsai, Mares & Rosenheck, 2012), physical and mental health disabilities (Hawkins & Abrams, 2008; Padgett, Henwood, Abrams & Drake, 2008), attending to past traumas (Coltman et al., 2015), mistrust of others (Padgett, Henwood, Abrams & Drake, 2008), and avoidance of risk (Coltman et al., 2015; Hawkins & Abrams, 2008; Padgett, Henwood, Abrams & Drake, 2008; Yanos, Barrow & Tsemberis, 2004).

Housing Models

There are multiple models of PSH (congregate, scatter-site, single-site; see Table 1 for details), whose characteristics may uniquely influence the social networks of supportive housing residents. A study by Henwood and colleagues (2015) examined the associations between housing models and social networks finding that scattered-site residents had larger social networks when compared to residents in congregate housing, and were more likely to have service providers in their networks, while congregate residents were more likely to maintain relationships that were both supportive and conflicting. Gulcur and colleagues (2007) found that satisfaction with social support and size of neighborhood social networks were greater for individuals living in scatter-site units compared to individuals living in congregate housing settings and other community residences. Although there is research to suggest housing model and social networks are associated, over time there has been an evolution in how people understand different types of supportive housing models, hence further research that incorporates the current characteristics of PSH models is needed.

Initially there was a distinction between supportive and supported housing (the former being people with SMI and/or histories of homelessness living together and the latter being a mainstreaming to 'normalized housing'; Carling, 1990; Hopper & Barrow, 2003; Ridgway & Zipple, 1993). For example, these studies that have examined the relationship between housing model and social network outcomes have compared scattered-site permanent residences to congregate and other non-permanent residences, which may be uniquely different than congregate and single-site housing settings that are intended to be permanent.

Now supportive housing is the umbrella term with the primary distinction made between single-site and scatter-site models, while few have differentiated between congregate and scatter-site, and to our knowledge no studies have examined outcomes across all three types of housing models.

Supportive housing models are believed to play a critical role in residents' social networks because each housing model encompasses a unique combination of structural and social features (Wong & Soloman, 2002). For example, because residents in single-site and congregate housing models are clustered together with other formerly homeless persons with shared lived experiences living in close proximity they may be more likely to know their neighbors and subsequently have larger network sizes, more diverse networks and more social support than those living in scatter-site housing models (Tsemberis, Gulcur & Nakae, 2004; U.S. Department of Housing and Urban Development, 2017; U.S. Department of Veterans Affairs, 2017). However as suggested by several studies, those in congregate settings have also reported more distrust and conflict with neighbors, than those in scatter-site setting which may reduce diversity and support (Henwood et al., 2015; Owczarzak et al., 2013). Single-site housing models tend to be newer and often have onsite services including healthcare facilities located within the building, which may improve the likelihood of having doctors in one's networks and result in more diverse networks than those in congregate or scatter-site housing (Collins, Malone & Clifasefi, 2013; Parsell, Petersen & Motou, 2015). Moreover, scatter-site housing models typically offer more autonomous living conditions, which may limit the notion of a "community" setting (Tsemberis, Gulcur & Nakae, 2004), although what limited empirical evidence exists suggests that scatter-site residents are no more isolated as well as no more integrated than residents in other housing settings (Gulcur et al., 2007, Henwood et al., 2015; Yanos, Felton, Tsemberis & Frye, 2007). With regard to services, scatter-site housing models sometimes provide Assertive Community Treatment teams, however services are also commonly utilized offsite by residents, which may reduce easy access to service providers and, therefore, the diversity of networks (Hwang, Stergiopoulis, O'Campo & Gozdzik, 2012). For the purposes of this study, we have operationalized housing model as described in Table 1.

Neighborhoods

Neighborhoods serve as another important contextual factor in social networks because they serve as spatial structures that encompass social relationships beyond those in one's building. Furthermore, the geographic characteristics that make up neighborhoods play a role in shaping the social environments within them (Berkman & Glass, 2000). Research related to the neighborhood-social network relationship has largely suggested that one's neighborhood social environment influences their own social networks. For example, areas with dense concentrations of homeless persons may facilitate social integration, specifically social network diversity and support, such that these neighborhoods often offer easier access to services and service providers (Wong & Solomon, 2002). Additionally social integration outcomes are improved for residents in neighborhoods where there are more individuals with shared lived experiences and more tolerance for individuals with mental health conditions and histories of homelessness (Wong, Matejkowski & Lee, 2011; Townley & Kloos, 2011; Yanos, Barrow, & Tsemberis, 2004). Contrastingly, other research has

indicated that supportive housing residents who live in neighborhoods where they experience a greater variety of cultural backgrounds and functioning among their neighbors reduces social isolation and offers more opportunities to receive social support (Wong, Metzendorf & Min, 2006).

Several cities across the country have taken grand political steps to address homelessness via housing and targeted services, offering a prime opportunity for research to address the relationship between neighborhood and social integration. Los Angeles, California is one of these metropolises, with the Homelessness Reduction and Prevention Housing and Facilities Bond ("HHH") recently enacted to build PSH across the county along with the Los Angeles County Plan to Prevent and Combat Homelessness ("Measure H") which will increase spending to diversify homeless prevention and intervention efforts (County of Los Angeles, 2017). Los Angeles possesses a unique landscape and has commonly been considered the "archetypal sprawling metropolis". However recent geographical statistics suggest Los Angeles is the nation's city with the least sprawl (Laidley, 2016). This is largely attributed to high density and overall absence of low-population communities, even along the perimeter of the city (Laidley, 2016). Los Angeles also has the largest unsheltered population in the nation (Henry, Cortez & Shivij, 2016) and is home to the nation's neighborhood with the largest concentration of homeless persons and services, *Skid Row* (De Verteuil, May & Von Mahs, 2009). Skid Row lies within the greater Downtown Los Angeles (DTLA) region, an area of the city that has seen enormous growth and gentrification in the past 10 years (Reese, Deverteuil & Thach, 2010). Subsequently this creates an urban dichotomy, with a neighborhood marked by extreme poverty nested within a contrasting neighborhood marked by ongoing development (Reese, Deverteuil & Thatch, 2010).

Supportive housing units in Los Angeles are located within Skid Row, DTLA (outside of Skid Row), and in other neighborhoods across the city, with some housing models more frequently represented in these locations versus others. For example, supportive housing in Skid Row and DTLA is mostly comprised of congregate and single-site housing models while scatter-site housing tends to be located in neighborhoods outside of DTLA and Skid Row (Los Angeles City Controller, 2017). Although location and housing model are likely correlated in nature, it is important to distinguish the two, given the possible role and support from network members that are not affiliated with residents' buildings. Additionally, the uniqueness of Los Angeles' landscape may be associated with distinct social integration outcomes for supportive housing residents as research has suggested congregate and single-site supportive housing models are commonly located on the outskirts or "urban fringes" of metropolitan areas while scatter-site housing tends to be located in the core of the city, however, this may be more applicable to cities with clearly identifiable sprawl such as New York and Chicago, and less so for cities with more atypical urban topographies like Los Angeles (Yanos, 2007).

Social Networks

Social network analysis has been effectively used in various settings and with different populations, including homeless persons, yet it has rarely been applied to PSH settings. Social network research thus far can provide further clarification of the social network

outcomes we examine in this study including size, diversity, social support and conflict. Network size, for example, is an important structural feature of social networks because individuals who report more relationships also report less distress and increased positive affect, as compared to those with fewer social network members (Brissette, Scheier & Carver, 2002). Network diversity, or networks with members that serve a variety of roles (e.g. neighbor, relative, clinician), is important because knowing individuals that serve diverse roles is associated with increased socialization (Morrison, 2002), may increase access to resources (Oh et al., 2004), and may increase information sharing, including health behavior information (Bakshy, Rosenn, Marlow & Adamic, 2012). Additionally, the social support obtained from network ties, including emotional, instrumental, and tangible social support is associated with other health outcomes for supportive housing residents such as improved mental health over time (Hwang et al., 2009). Social support from network members has been identified as a goal for supportive housing residents and is often sought out in the transition to housing (Bird et al., 2017; Hawkins & Abrams, 2007). Diversely relationships that illicit conflict can be particularly detrimental for populations with high rates of mental health and substance use conditions, as research has indicated that conflict is associated with substance use relapse and can serve as emotional triggers (Hawkins & Abrams, 2007; Savage & Russell, 2005).

Drawing upon a sample of 405 supportive housing residents, this study will examine whether housing model (i.e. congregate, scatter-site, single-site) and location (Skid Row, Downtown Los Angeles, Other neighborhoods) are associated with social network measures of social integration (i.e. size, diversity, support). Given previous studies which have suggested living in a more standardized housing setting increases social contact and have demonstrated residents in permanent scatter-site settings have larger social networks (Gulcur et al., 2007; Henwood et al., 2015) than those in congregate non-permanent settings, we hypothesize that scattered-site residents will have larger social networks, compared to congregate residents. As single-site housing is more likely to have providers on-site, and literature has suggested that scatter-site residents have more providers in their networks compared to congregate residents (Henwood et al., 2015), we also believe single-site and scatter-site residents are likely to have more diverse social networks than congregate residents. As congregate and single-site housing residents live in settings with other formerly homeless persons with shared lived experiences we hypothesize these residents are likely to have more social support in their networks than scattered-site residents. However, literature has suggested congregate housing residents also have more conflict in their networks compared to scatter-site residents thus we hypothesize this association will be significant. Given the contrasting literature on the neighborhood-social networks relationship and the novelty of this examination we did not develop hypotheses related to neighborhood and social network outcomes. By identifying these relationships this study aims to provide critical information related to the factors that facilitate and hinder social integration among supportive housing residents. These findings may inform housing agencies and their frontline staff of ways to identify persons to target to increase prosocial social network outcomes, and improve residents' housing environments to achieve successful social integration.

Methods

Procedures

The present study draws from a sample of supportive housing residents (N=405) that moved into PSH in Los Angeles between August 2014 and January 2016. This sample participated in a larger longitudinal study that took place across their initial year transitioning to housing, resulting in four waves of data: baseline (N=421; prior to move in), 3 months (post move in date), 6 months, and 12 months. Data for this study draw primarily from the 3-month interviews, as well as some baseline demographic information. A convenience sampling approach was used with the research team partnering with 26 housing providers in Los Angeles County (LAC) to recruit participants moving into housing via phone referrals and lease-up events. The agencies make up the majority of housing providers in Los Angeles County and encompassed some of the largest PSH providers in LAC. To gain a better understanding of the populations served through specialty programs (e.g. housing placement, treatment services, housing retention) within each partnering agency a component of the parent study involved the collection of descriptive data through telephone surveys with supervisory staff (e.g. program directors) from 23 of the 26 participating agencies. Among those agencies interviewed, 43% (n=10) had a specialty program for individuals with severe mental health conditions, 35% (n=8) had a program for individuals with substance use conditions, 39% (n=9) specialized in services for homeless persons with physical disabilities, 65% (n=15) had specialty services for veterans, and 65% (n=15) had a program specific to chronically homeless individuals.

All participants were screened for eligibility via phone or in person. Participants were eligible for the longitudinal study if they were 39 years old or older (turning 40 during the year of participation in the study), spoke English or Spanish, and were considered currently homeless unaccompanied adults (without minor children). An additional eligibility criterion required a confirmation by agency personnel that the participant moved into PSH within 20 miles of downtown Los Angeles. Given the prevalence of homeless persons moving into PSH in Long Beach, a city in Los Angeles County, an exception was made to include participants moving into this geographic region if it exceeded the 20-mile radius. Whether participants entered scattered or congregate housing models was based on the agency's programs, resources, availability and, sometimes, participant preference. Based on data provided by the Los Angeles Homeless Services Authority (LAHSA), participants that enrolled in this study represented 67% of homeless adults aged 39 or older who were entered into the Los Angeles County Homeless Management Information System (HMIS) in the same zip codes and PSH types (without dependent children) during the time frame of recruitment (Homeless Management Information System, 2016). The mean age of homeless adults placed in PSH in all of Los Angeles County during this time frame was 47.7 (SD = 13.0) years old with 74.3% of those placed being over the age of 39. Age, race and ethnicity were similar across HMIS and our study, our sample was 27.8% female, whereas HMIS had a higher proportion (33.4%) of women. Although chronic homelessness of participants was not a requirement, nor confirmed by study personnel, given that most voucher and rental subsidy programs for homeless persons in Los Angeles target and serve chronically homeless individuals as well as the collaboration with the majority of supportive housing

agencies in Los Angeles, this sample is likely representative of the city's larger efforts which would suggest the sample is primarily made up of persons who meet the criteria for chronic homelessness.

Prior to participating in the study all participants completed the informed consent process in English or Spanish. Each interview was administered by trained study personnel and took approximately 1.5 hours to complete. Interviews across all time points consisted of a questionnaire and social network interview (SNI). Respondents' answers were collected with iPads through Qualtrics survey software for the questionnaire and a social network data collection app designed by the study team (Rice, 2011). Calendars were used to aide participants' recall of information collected in the questionnaire and SNI. Participants were reminded about when their baseline interview had taken place to provide a contextual marker of time. The questionnaire collected information related to participants' demographic characteristics, service utilization, risk behaviors including sexual risk and substance use (although only substance use measures were included in this particular study), health and mental health conditions, neighborhood and building characteristics, and interactional social integration measures. The SNI asked participants to identify any individuals they interacted with during the previous 3 months via phone, in person, online, or through letters. Each form of communication (phone, in person, online, or through letters) was asked separately to allow participants time to reflect on persons they had communicated with in each way. Basic prompts were used as needed to aide in participants recall of past 3-month contact with network members, such as "was there anyone else you talked to online?" However, there was not a minimum or a maximum number of network members required for the SNI. Demographic information was collected for all nominated individuals, referred to as "network members", as was characteristic information regarding participants' relationships with network members, and the social support network members provided to respondents. All study procedures were approved by the [blinded for review] institutional review board. Additionally, the study received a certificate of confidentiality from the National Institutes of Health to protect participant data from subpoena.

Measures

Housing model

Using participants' self-reported addresses, a housing model measure was created to denote whether participants were housed in *scatter-site, single-site, versus congregate housing models*. This measure was created using multiple coders' existing knowledge of their participants' building type, available information through agencies' websites, and confirmation by agency personnel in the rare case of uncertainty about whether the building was a congregate, single-site or scattered-site setting. Additional measures used to confirm whether participants were living in a congregate housing model drew from the "Moving to Opportunity Survey" an instrument used longitudinally in the Moving to Opportunity Study (Leventhal & Brooks-Guns, 2003), an experimental study designed to understand whether moving into higher-income or lower-income communities improves social and economic outcomes for families. The Moving to Opportunity Survey involved a series of questions that asked participants about the condition of their neighborhoods and building conditions. In the

case of this study, a question that inquired about whether participants shared bathrooms and kitchens within their building was used to aide in determining those living in congregate settings (Ludwig et al., 2012).

Neighborhood

Participants' addresses were also used to assess location using Google Maps. Two research team members served as coders, and separately entered participant's address to determine the location and code the corresponding neighborhood. Following this the two coders then simultaneously co-coded each participant's neighborhood for confirmation. The study team developed a measure of location consisting of three levels: *1) Skid Row, 2) Downtown Los Angeles (DTLA), 3) Other*. These levels were established based on city established neighborhood borders for DTLA and prior identification of Skid Row borders (Solari, 2014, Hsu, 2016). These levels were selected because Skid Row serves as the epicenter for homeless persons and homeless services in Los Angeles, while DTLA serves as a stark contrast marked by expansion, gentrification, and a growing upper middle-class population (Reese, Deverteuil & Thach, 2010). Those neighborhoods that did not fall within these two categories were considered part of the "Other" category to mark their distance from Skid Row as well as for purposes of analysis.

Social networks

Social network measures were gathered from previous studies with homeless populations (Green, Tucker, Golinelli, & Wenzel, 2013; Rhoades et al., 2011; Rice, 2011; Tucker et al., 2009). Network members included in these data were individuals the participant had interacted within their first 3 months in housing. The size of one's network was the total number of network members a given participant nominated in the 3-month SNI. Participants were not required to nominate a certain number of network members nor were they limited in the number of network members they could nominate. Following the nomination of network members, participants were asked questions to identify network members' roles, such as "who is a case manager" and "who lives in your building?"

To create an indicator of diversity, we created a summed scale variable measuring the number of different roles within a respondent's network including *romantic partners, relatives, case managers, doctors, emotional health counselors, and network members living in their buildings*. Therefore, if someone had 3 doctors in their network this was considered 1 point within the diversity sum for having at least one doctor in their network. Scored ranged from 0 (no romantic partners, relatives, case managers, doctors, emotional health counselors, and network members living in their buildings) to 6 (at least one of each type). We accounted for potential overlap of these roles, finding that across the sample of nominated network members (n=2,832), 19 network members were both romantic partners and lived in participants' buildings, 3 network members were relatives and lived in residents' buildings, and 2 were case managers and lived in residents' buildings. In the case of network members with overlapping roles 1 point was removed from the diversity sum if this was the only person that served both roles. However, if a participant had an additional network member other than the overlapping network member that could fulfill a given role in the diversity categories the points remained unchanged. For example, if a participant nominated

two individuals that lived in their building and 1 was a romantic partner they would be given 1 point for each of these categories.

Respondents were not required to assign network members to a specific role, therefore we sought to further understand if network members that do not fit into any individual role within the diversity sum, which we referred to as "network members with unknown roles", were associated with housing type and neighborhood. We did this by creating an indicator of network members that were not romantic partners, relatives, case managers, doctors, emotional health counselors, or network members living in their buildings.

Social support indicators (emotional, tangible, and instrumental) drew from the SNI that asked participants who in their social networks they felt these types of support from. Emotional support was derived from a question that asked *"who do you feel emotionally close to most of the time?"* Tangible support drew a measure that asked participants who in their networks *"had provided them with/ assisted with getting money, clothes, food, or a place to stay."* Instrumental support drew from an item that asked participants who in their networks they *"could go to for advice about a problem if they needed it."* These items were individually summed to create a score of the total number of network members that provided each type of support. Conflict was assessed by a question on the SNI that asked participants who is their social networks they *"get into arguments or disagreements with."*

Although there is research to suggest that capturing size, diversity and other characteristics of one's social network is the ideal approach to measuring social integration (Gottlieb & Bergen, 2010), some concerns exist regarding the reliability and validity of social network measures. Generally, assessing the reliability and validity of egocentric network measures is quite challenging given the malleability of social relationships (Wasserman & Faust, 1994). Several steps were taken to improve reliability and validity of egocentric social network measures including a "by questions" approach which asks a given question for all nominated individuals (Kogovšek & Ferligoj, 2005). Additionally, a mixture of behavioral and emotional traits were asked with regard to support, given that emotional content can be less reliable. Last, we did not require a specified number of nominated individuals which resulted in relatively low social network sizes which also aides in improving validity of responses (Kogovšek & Ferligoj, 2005).

Demographics

Several demographic measures were included as covariates in these analyses. Demographic measures used as controls included participants' age, race/ethnicity, gender, sexual orientation, and education. Race/ethnicity categories included *Black/African American, White, Hispanic/Latino, and "Other" (Native American/Alaska Native, Asian, Native Hawaiian/Pacific Islander, and Multiracial*; Wenzel, 2005). Participants' gender identities included *male, female, and male-to-female transgender*. Three participants that identified as male to female transgender were included in the female gender category for analytic purposes. Participants identified their sexual orientation as *heterosexual or straight, gay or lesbian, bisexual, not sure or questioning, asexual, or other*. In analyses heterosexual identifying participants were compared to those not heterosexual. The education measure, adapted from the California Health Interview Survey (UCLA Center for Health and Policy

Research, 2011) assessed participants' highest level of education. Participants that received education beyond a high school degree were compared to those who had education equivalent to or less than a high school degree.

Homelessness

A baseline measure related to participants' homeless histories was included as a covariate in these analyses. At baseline, participants were asked about their history of literal homelessness (i.e., *staying outside on the streets, park, or beach; in a shelter; in an abandoned building, garage, or shed; in an indoor public place; in a car, truck, van, or recreational vehicle; on a bus, subway, or train*; (National Center for Health Statistics, 2014). If participants were not considered literally homeless they reported staying at a home or other indoor place (i.e. *of their own, of a partner or significant other, of a family or friend, or of a stranger*), *a hotel or motel, a temporary emergency shelter, a transitional housing program, a group home, residential substance use treatment facility, a mental health facility, jail, hospital, bathhouse, or church*. The question was asked such that participants could report whether they had stayed at more than one of these locations, as is often the case. The number of years of literal homelessness thus served as the covariate in multivariable models. Baseline literal homelessness in the 3 months prior to entering housing, frequently reported primary places of stay prior to entering housing, and length of time in Los Angeles were assessed for descriptive purposes only.

Mental health, health, and substance use

Participants completed the 14-item Modified Colorado Symptom Index (Conrad et al., 2001) to assess their overall psychological functioning during the previous month. A cutoff score of 16 was used to determine whether participants scored above or below the indicator of psychiatric disability (Boothroyd and Chen, 2008). Additionally, participants completed the 4-item Primary Care PTSD Screen to assess for past-month posttraumatic stress disorder (PTSD) symptoms; a score of 3 or higher indicated symptoms indicative of PTSD (Prins et al. 2003). A measure of current physical health was used as a control and was adopted from the SF-8 Health Survey (Ware et al., 2001). This question asks "how much did physical health problems limit your usual physical activities (such as walking or climbing stairs)" with response options being *no physical activity limitations, limited very little, somewhat limited, limited quite a lot, and could not do the described activity*.

Substance use was assessed using the NIDA-Modified ASSIST (National Institute on Drug Abuse, 2012) and determined participants' past 3 month use of *cocaine, methamphetamine, hallucinogens, street opioids (i.e., heroin, opium) and prescription drug misuse*. A derived measure of any illicit substance use versus no illicit substance use was created if participants endorsed using any of these substances. Additionally, past 3 month binge drinking was assessed using an item adapted from the NIAAA Task Force (National Institute on Alcohol Abuse and Alcoholism, 2003). For purposes of analyses, those that reported any past 3-month binge drinking were compared to those with no past 3-month use.

Analysis

For the purposes of this study a combined dataset of questionnaire measures and social network measures (one row per participant) was created. The descriptive statistics of the sample (Table 2.) and the means of each social network outcome across each housing model and each neighborhood (Table 3.) were initially calculated. Housing model, neighborhood and all covariates were initially tested in univariable models with each social integration outcome (size, diversity, emotional support, tangible support, instrumental support). These results are presented in Table 4. Although housing model and location were correlated (p<. 01) as most scatter-site housing in Los Angeles is located outside of DTLA and Skid Row, there is a substantial amount of single-site housing outside of DTLA and Skid Row, therefore we wanted to understand the ways in which they may be differentially associated with social networks. Thus, if either measure of interest (housing model or location) were associated with a social integration outcome in a univariate test (p<.05) they were then assessed separately in multivariable models with all identified controls (Tables 5 & 6). Ordinary least squares (OLS) regression was used in all univariable and multivariable models. Because egocentric network data more readily meet the requirement of OLS models based on inferential statistics such that hypotheses related to the probability distributions of network properties can be tested, these differing types of data can be combined and analyzed using common statistical packages (Halgin & DeJordy, 2008).

Results

Participants

Formerly homeless residents in this sample were on average aged 55 years old. A little over half the sample identified as Black (55%), and the majority of the sample identified as heterosexual (89%). Respondents in the sample reported an average of 33 years living in Los Angeles County. On average, participants in the sample were literally homeless for 6 years across their lifetime (sd=6.87) and 76% (n=308) of the sample experienced literal homelessness in the 3 months prior to entering housing. The most frequently reported primary places of stay in the 3 months prior to entering housing were shelters (42%), transitional living homes (21%), streets (17%) and in vehicles (7%). Across the sample, 40% met criteria for probable PTSD and 56% met criteria for a current psychiatric disability. With regard to physical limitations, 33% reported health problems limited their usual physical activities quite a lot or they could not do the activities at all. Approximately 18% of the sample reported using illicit substances since they moved into housing. See Table 2 for all descriptive and clinical characteristics of the sample.

With regard to the independent and dependent variables of interest, the most common housing model was single-site (57.9), followed by scatter-site (30.9%) and congregate housing (11.2%). Over half of the sample (57.2%) lived in neighborhoods outside of DTLA or Skid Row, while 21.5% lived in DTLA and 21.3% lived in Skid Row. Of those living in "Other" neighborhoods (n=228), 124 residents were in scatter-site apartments while 104 residents were in single-site housing settings. Among residents in DTLA (n=87), 10 resided in congregate housing settings, while 77 lived in single-site apartments. Among residents living in Skid Row (n=86), 35 of them resided in congregate housing settings while 51

resided in single-site. Across social integration outcomes, residents averaged a score of 3 (sd=1.4) with regard to network diversity (range 0–6). On average residents' networks consisted of 7 network members (sd=4.02), although there was substantial range in their responses (1–29). Participants reported an average of 3 emotionally supportive network members in their networks (sd=2.84), and 2 network members that provided instrumental support (sd=2.39) and 2 that provided tangible support (sd=1.59). The mean and standard deviations of social network outcomes and social network roles across each housing model and each neighborhood are presented in Table 3.

Univariable models

Univariable models indicated individuals living in DTLA reported significantly less emotionally supportive network members (B= −.91, t=−2.11, p=.04) and significantly less network members that provided tangible support (B= −.65, t=−2.67, p<.01) in their networks, as did individuals living in Other neighborhoods (B= −1.13, t=−3.16, p<.01; B= −.43, t=−2.15, p=.03), compared to residents living in Skid Row. Residents living in other neighborhoods also reported significantly fewer network members that provided instrumental support (B= −.60, t=−1.96, p=.05 [p=.048 prior to rounding up]), compared to those living in Skid Row. Residents in single-site housing were significantly more likely to have more emotionally supportive alters (B=.99, t=3.15, p<.01) as were congregate housing residents (B= 1.05, t=2.16, p=03), when compared to scatter-site residents.

Several covariates were associated with social network outcomes in univariable models as well. Latino participants reported smaller network sizes (B= −.27, t=−2.26, p=.03), and less diverse networks (B= −.61, t= −2.68, p<.01) compared to Black participants. Those that fell into the "Other" racial category reported less diverse networks (B= −.77, t= −3.19, p<.01), less emotionally supportive network members (B= −1.07, t= −2.12, p=.04), and less network members that provided tangible support (B= −.57, t= −2.03, p=.04) compared to Black participants. White participants had less diverse networks (B= −.34, t= −2.05, p=.04) and reported less members that provided tangible support (B= −.50, t= −2.56, p=.01) compared to Black participants. Compared to men in the sample, women reported smaller network sizes (B= −.30, t= −3.93, p<.01), less diverse networks (B= −1.06, t= −7.37, p<.01), and more network members they conflicted with (B= .29, t= 2.24, p=.03). However, women also reported more network members that provided instrumental support (B= .53, t= 2.03, p=.04). Individuals with more years of literal homelessness were less likely to have emotionally supportive network members, compared to those with fewer years of literal homelessness (B= −.06, t= −3.28, p<.01). Additionally, participants that had at least a high school diploma reported more instrumentally supportive network members than those with less education (B= .70, t= 2.94, p<.01). Regarding mental health factors, individuals with a psychiatric disability were more likely to have network members that they conflicted with compared to those without a psychiatric disability (B= .44, t= 3.75, p<.01). Participants with probable PTSD also reported more network members they conflicted and were more likely to have diverse networks (B= .28, t= 1.96, p=.05), compared to those without probable PTSD (B= .35, t= 2.92, p<.01). Residents that reported binge drinking in the past 3 months reported more network members that provided tangible support (B= .48, t= 2.14, p=.03).

Of note, housing model was not significantly associated with social network size or diversity in any univariable models. We examined whether housing model or neighborhood were significantly associated with the total number of a given type of network member (romantic partners, relatives, case managers, doctors, emotional health counselors, and network members living in their buildings) included in the diversity sum in additional separate univariable models. None of these tests revealed any statistically significant differences across housing models or location. Additionally, we sought to determine whether network members that not fit into any of the roles included within the diversity sum, referred to as "alters with unknown roles" were associated with housing type and neighborhood. These analyses revealed that residents in DTLA were more likely to have network members with unknown roles in their networks (B= .87, t=−2.19, p=.03) compared to those living in Skid Row. Due to concern about the size of the congregate housing subcategory we also tested whether or not a combined group of congregate and single-site residents compared to scatter-site residents would result in any statistically significant associations not observed when all three categories were compared. When combined there were no changes in significant associations.

Social Support

Given the trend in associations with social support outcomes, additional univariable models were tested to understand the type of network members that provided social support, that is, what network member roles predicted being providers of instrumental, tangible, and emotional support, and conflict. Results from these analyses are presented in Table 2. These analyses indicated that romantic partners were associated with increased emotional support (B= .50, t= 2.61, p<.01), increased tangible support (B= .23, t= 2.14, p=.03), and increased conflict (B= .23, t= 2.91, p<.01). Being a relative was associated with increased emotional support (B= .49, t= 9.05, p<.01), tangible support (B= .18, t= 5.45, p<.01)., instrumental support (B= .13, t= 2.59, p=.01) and conflict (B= .08, t= 3.14, p<.01). Emotional health counselors were positively associated with instrumental support (B= .43, t= 2.17, p=.03), while being a case manager was positively associated with emotional support (B= .57, t= 4.48, p<.01) and instrumental support (B= .29, t= 2.65, p<.01). Network members with unknown roles were associated with increased emotional support (B= .31, t= 6.11, p<.01) and increased instrumental support (B= .25, t= 5.64, p<.01). Being a doctor or a neighbor was not significantly associated with any type of social support, or conflict.

Multivariable models

Results from univariable tests resulted in 4 final multivariable models with the primary predictors of interest. In the model that examined emotional support and housing model, results indicated individuals living in single-site housing reported significantly more emotionally supportive network members in their networks (B=.87, t=2.73, p<.01), as did residents in congregate housing models (B=1.04, t=2.14, p=.03), when compared to scatter-site residents (see Table 3.). Compared to residents living in Skid Row (Table 4.), residents living in Downtown Los Angeles reported fewer emotionally supportive network members in their networks (B= −.86, t= −1.99, p=.04) and fewer network members that provided tangible support (B= −.51, t= −2.04, p=.04). Residents living in other neighborhoods also

reported fewer emotionally supportive network members (B= −1.13, t= −3.04, p<.01), and fewer network members that provided instrumental support (B= −.63, t= −1.95, p=.04).

Nearly all covariates significant in univariable models remained significant in multivariable models. In the model that examined emotional support and housing type the associations between the Other racial category and emotional support (B= −.98, t= −1.82, p=.07) and the association between psychiatric disability and emotional support (B= −.61, t= −1.88, p=.06) were no longer significant. Gender emerged as a significant predictor of tangible support in the model that examined neighborhood and tangible support, with women reporting more network members that provided tangible support (B= .36, t= 1.99, p=.04), while binge drinking merged upon significance in this model (B= .44, t= 1.91, p=.05).

Discussion

This study examined the associations between housing models and neighborhoods with social network outcomes, including network size, diversity, social support and conflict. Our findings identified only one outcome, emotional support, significantly associated with housing model. Following previous literature that has indicated residents in congregate settings report greater emotional support compared to scatter-site residents (Henwood et al., 2015, Gulcur et al., 2007), we hypothesized that congregate and single-site residents would have more emotionally supportive network members in their networks. This hypothesis was supported by our findings. Findings from a study conducted by Henwood and colleagues suggested that a reason for less emotional support within in scatter-site residents' networks was attributed to their fear of being exploited by their network members, particularly former street peers, due to their advantage of having a permanent place of stay (Henwood et al., 2015). This study by Henwood and colleagues compared residents in permanent scatter-site units to those is congregate non-permanent residences. Findings from this present study, which includes only residents in permanent settings, suggest there may be an additional factor contributing to greater rates of emotional support among congregate and single-site residents, which may be the close proximity to individuals with shared lived experiences.

With regard to neighborhood, our findings revealed a trend in greater rates of social support among residents living in Skid Row, compared to residents in DTLA and in other outside neighborhoods. Residents that move in more remote neighborhoods may have greater difficulty receiving support due to their distance, including from the peers they had while homeless. Residents in Skid Row may also have greater ease in maintaining such relationships and sustaining support from these network members once housed. Initial ethnographic research with the homeless population of Skid Row has suggested despite the devastation and disorder that characterize Skid Row, many consider Skid Row "home" as it serves as a shared setting with persons enduring the same hardships and actually facilitates coping mechanisms and aides in overall well-being (Wolch, Rahimian & Koegel, 1993; Wolch & Rowe, 1992). The differences seen in emotional support and tangible support between residents in Skid Row and residents in DTLA are particularly interesting given these are bordering neighborhoods. The high concentration of homeless persons, supportive housing programs, and services (including food and clothing assistance), as well as service providers in this neighborhood, may be the reason for higher rates of social support among

residents living in Skid Row. Chan and colleagues (2014) found that many supportive housing residents sought provider support and resources, as well as socialization, within service centers they used while homeless, however residents who had to travel great distances to access these homeless service centers were also less likely to travel to them (Chan et al., 2014). Given the prevalence of physical health conditions among this population, traveling even a few blocks from DTLA to Skid Row, may be a challenge and may result in diminished contact with supportive network members. Likewise, distance may explain why residents in scatter-site had fewer network members that provided emotional support and instrumental support. Given that residents in Skid Row were not significantly more likely to report any particular type of network member in their networks, this may indicate that proximity to network members and services increases frequency of contact and subsequently increases the receipt of support from network members. However, it is also unlikely that all scatter-site residents were based in Skid Row while homeless and subsequently "uprooted" from their networks upon entry into housing. The lowered rates of support in scatter-site residents' networks may be also attributed to the atypical sprawl of Los Angeles and the deficit of public transportation. Although improving, Los Angeles' transportation system still lacks efficient methods for accessing public transportation and for swift travel to see network members (Frumkin, 2016).

Contradictory to our hypotheses, we did not find significant associations between diversity and size with housing model or neighborhood. The absence of these associations may indicate that residents across housing models and neighborhoods have relatively equal numbers and types of network members. The disparities in social integration outcomes were primarily in the realm of social support from networks members and appear to differ predominantly across locations. This may suggest that while the varying housing models and service structures within them are primarily meeting the social integration needs of residents, the location of one's building nonetheless plays a role in the receipt of support from network members.

There were several covariates associated with social network outcomes, including network size and diversity. These correlates are important for addressing social integration given their co-occurrence with the primary predictors of interest as well as in models where the predictors of interest were not significant as they aide the ability to formulate a more cohesive understanding of factors that may aide in developing targeted efforts to address social integration. One of the most frequent correlates associated with social networks was race. A strong trend was observed with Black participants demonstrating higher rates of network size, diversity and support across the other races of comparison. This may be attributed to the predominance of Black persons experiencing homelessness and subsequent PSH residents in Los Angeles (Henry, Cortez & Shivij, 2016). It may be that increased connection to individuals with shared racial backgrounds play a role in enhancing contact and diversifying networks. The research on social capital has largely suggested that density and composition of neighborhoods plays a role in social exchanges and social interactions (Entwisle, Faust, Rindfuss & Kaneda, 2007). Race is associated with environmental strains and the internalization of strain often elicits gathering and exchange of resources in unique ways (House et al., 2008). This may explain higher rates of social support among Black participants, a racial group that experiences a multitude of systemic strains at

disproportionate rates. It would be important in future research to determine whether network members that provide social support, including case managers and doctors, also share their race. Additionally, a trend was observed in gender difference with regard to social network outcomes with women demonstrating smaller and less diverse networks. Given the high rates of trauma experienced by homeless persons, particularly homeless women (Hamilton, Poza & Washington, 2011; Stump & Smith, 2008), these differences may be attributed to common responses to trauma including mistrust of others and reduced socialization (Guay, Billette & Marchand, 2006). Traumatic histories can also increase conflict within relationships (Ullman et al., 2007) which might also provide an explanation for the positive association between PTSD and conflict.

Although not a pervading trend, the significant positive relationship between binge drinking and network members that provide tangible support raises concerns. Several studies have suggested that relationships characterized by shared substance use behaviors can often reflect prosocial social network constructs (Rice, Milburn & Rotheram-Borus, 2007, Unger et al., 2006, Wenzel et al., 2010). For example, Unger and colleagues (2006) found that intravenous drug users were more likely to share needles with those they felt emotionally supported by (Unger et al., 2006). This finding may indicate residents that binge drink affiliate with receive support from others that binge drink. Tangible support in this case may also include the exchange of such resources for alcohol. Often such tangible items are given in conjunction with or in exchange for other risk behaviors, such as risky sex, which commonly co-occurs with substance use (Kennedy et al., 2010; Kennedy et al., 2013). This finding also highlights the issue of subjectivity in using such measures to reflect prosocial outcomes and points to a need for future research. Specifically, mixed-methods approaches would aide in developing a more comprehensive understanding of residents' social networks, by aiding the ability to identify the role of risk behaviors in these relationships and expanding upon residents' perceptions of their social spheres.

Upon examining the roles of network members associated with social support we found that romantic partners, relatives, emotional health counselors, case managers, and network members with unknown roles were all providers of at least one type of support. Interestingly, doctors and neighbors were not significantly associated with any type of social support. The absence of social support from doctors, specifically the lack of instrumental support is of concern, however may also be a reflection of the time when this data was collected-that being in the third month of housing, when residents may only be beginning to establish their relationships with new doctors. Nonetheless, this could also be said for emotional health counselors and case managers, therefore we recommend that rapport building efforts be made by doctors for residents in the initial months of housing. The finding that neighbors were not associated with any type of support may also be a consequence of time in housing as research has suggested over time relationships with neighbors become established (Curley, 2007). Yet research has also suggested that these established relationships with neighbors can be quite contentious (Henwood et al., 2015; Owczarzak et al., 2013) and have even been identified as one of the primary reasons for residents' departure from supportive housing (Wong et al., 2006). Ethnographic and qualitative research in this area have suggested that for scatter-site residents fitting in with neighbors that do not share their homeless histories is a challenge, while those in single-site and congregate settings struggle

to distance themselves from their homeless identities in a setting where their neighbors still "act homeless" (Yanos et al., 2004; Henwood et al., 2018).

The precise roles of those network members who did not fall unto the 6 diversity categories is unknown, however these network members appear to be critical ties, with regard to support. The group of network members is likely made up of informal network ties, including friends, network members affiliated with faith-based organizations or 12-step groups, and may also include neighborhood acquaintances, such as local store employees. Support from informal ties have been identified as key facilitators of health behavior processes (Hwang et al., 2009). Furthermore, informal ties at the neighborhood level are considered to be particularly influential to increasing socialization and connectedness between network members for individuals living in disadvantaged neighborhoods (Browning & Cagney, 2003). Our inability to confirm the relationship and of these network members points to the limitations of social network methodology and measures. Given the potentially imperative role of informal social network ties it is important that future social network methods gather the nature of all egocentric network relationships.

Conclusion

Findings from this study provide clarification to a long-standing issue of social isolation for a growing population of supportive housing residents living in the current varying models of permanent housing across differing neighborhoods. While findings from this study may be somewhat surprising as they go against the long-standing notion that residents living in housing models that are more integrated within the greater community of non-formerly homeless/ non-mentally ill persons have improved social network and social support outcomes, they also provide an unexpected reassurance that overall differing PSH models may not differentially impact the social networks of PSH residents. Specifically, the absence of a significant association in network size and diversity across housing models suggests networks are not structurally different across PSH models which is reassuring because it indicates there is not significant variation in the number or type of people (e.g. service providers) with whom residents are interacting with. Additionally, the surprising finding that individuals living in Skid Row experience overall higher rates of social support yet have no significant differences in rates of social network size or diversity compared to residents in neighborhoods with less dense concentrations of homeless persons and services perhaps provides some comfort that support is greater for residents living in a neighborhood marked by unrest, risk and poverty. These results offer improved insight for service implications and allow for a more directed focus in efforts to address the social integration of formerly homeless persons by pointing to specific subgroups of residents that may need more assistance in building social support in their lives. We recommend that efforts are made to improve social support from the network members of residents living outside of neighborhoods like Skid Row by way of interventions focused on family reunification, social activities within buildings and neighborhoods, and assistance with phone or other technology access to contact network members that not be easy to see in person. Additionally, future research and service efforts would benefit from measuring the perceived satisfaction with social support from network members among PSH residents in various

housing models and neighborhoods, as well as understanding the mechanisms by which residents feel supported.

Last, some attention should be given to the limitations of this study. To our knowledge this study is the first to examine three models of permanent supportive housing and multiple location levels associated with social integration outcomes for PSH residents. However, there may be more detailed attributes of each building and neighborhood contributing to social integration that were not examined in these analyses. Although great efforts were made to collaborate with the majority of housing agencies providing a variety of housing models in Los Angeles County, another limitation is the ability to generalize to other homeless populations outside of this locale. This sample is made up of homeless adults above the age of 39 therefore these results cannot be generalized to younger populations of homeless adults or homeless youth. Additionally, specialty services, which included housing placement programs, varied across agencies which may limit the representativeness of this sample. Los Angeles has one of the highest rates of homeless populations in the nation, however, it possesses a unique landscape that makes it difficult to compare to other major metropolitan cities with high rates of homelessness. These data drew from a larger longitudinal study, yet data for this study were cross sectional, limiting researchers' ability to infer causation. Additionally, there are limitations to some of the measures used in this study including the social network outcomes which are inherently subjective depictions of prosocial networks and lack the ability to capture the individual nuances, such as whether or not participants are satisfied with their social networks. The SNI also did not assign network members to a given role and thus we cannot be sure the relationship these network members have to participants. Residents place of stay prior to becoming homeless in unknown and the authors did not possess information that would allow us to understand whether or not residents were "uprooted" from their environments when they became homeless or when they moved into housing. The distribution of some demographic characteristics, such as race and sexuality, led to our combining subgroups for analytic purposes which limited our ability to speak to the unique correlations between each subgroup and the social integration outcomes. Last, methods were taken to protect participants' responses, yet this interview inquired about sensitive information and all data were self-reported, which may have contributed to underreporting by respondents. However, research has indicated that homeless persons' accuracy of historical information is quite strong, suggesting the risk of false reporting is low (Hwang, Chambers & Katic, 2016).

Acknowledgments

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Table 1.

Characteristic differences across models of permanent supportive housing.

Single-site	Scatter-Site	Congregate
Apartment building built to serve formerly homeless	Lease of private market or general affordable housing units rental subsidies, not dedicated to formerly homeless persons	Buildings typically converted into supportive housing units (often former SRO hotels, or barracks) for formerly homeless persons
Efficiency style (own bathroom and kitchenette [may not be full kitchen])	Full kitchen and bathroom in unit and not shared with any individuals not living in apartment	Room with shared bathroom and kitchen
Supportive services onsite often with onsite healthcare services	Supportive services can be delivered onsite by ACT teams. In LA most commonly services are utilized offsite	Some supportive services onsite (case management, groups) but healthcare and other services offsite
Newer buildings located in urban fringes	May be newer or older buildings located in various locations across urban cities	Older buildings located in urban fringes

Table 2.

Demographic characteristics, clinical characteristics, and aggregated social network outcomes across the sample.

Demographic Characteristics	N / Mean	% / sd
Age (range: 39–82)	54.64	7.53
Race		
Black	223	55.33
White	98	24.32
Latino	45	11.17
Other	37	9.18
Female	116	28.71
Heterosexual	359	88.86
Education (>high school education)	194	48.02
Lifetime literal homelessness (years; range=<1–44)	6.02	6.87
Baseline literal homelessness (past 3 months)	308	76.00
Primary place of stay (baseline)		
Shelter	176	42.00
Transitional living	88	20.90
Street	72	17.10
Vehicle	30	7.10
Mental Health/ Physical Health		
Probable PTSD (past month)	163	40.35
Psychiatric disability (past month, MCSI > 16)	226	55.94
Physical Activity Limitations (Past Month)		
None	107	26.42
Very little	64	15.8
Somewhat	100	24.69
Quite a lot	102	25.19
Could not do activities	32	7.9
Substance Use (Any/ Past 3 Month)		
Illicit drug use	71	17.53
Binge drinking	59	14.57
Location		
Skid Row	86	21.29
Downtown Los Angeles	87	21.53
Outside of DTLA/ Skid Row	228	57.18
Housing Setting		
Congregate	45	11.22
Scatter-site	124	30.92
Single-site	232	57.86

Demographic Characteristics	N / Mean	% / sd
Social Integration		
Network Diversity (range: 0–6)	2.54	1.39
Network Size (range: 1–29)	7.13	4.02
Emotional Support (range: 0–22)	2.71	2.84
Instrumental support (range 0–13)	1.96	2.39
Tangible support (range: 0–13)	1.03	1.59
Conflict (range: 0–8)	0.90	1.19

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Table 3.

Means and standard deviations of social network outcomes and network member roles across all housing models and neighborhoods.

	Congregate (n=45)		Single-site (n=232)		Scatter-site (n=124)		Skid Row (n=86)		DTLA (n=87)		Other (n=228)	
Social Network Outcomes	**M**	**sd**	**M**	**sd**	**M**	**sd**	**M**	**sd**	**M**	**sd**	**M**	**sd**
Size	2.00	0.73	1.96	0.72	1.89	0.68	1.99	0.74	2.01	0.68	1.92	0.71
Diversity	2.50	1.52	2.57	1.39	2.48	1.35	2.51	1.36	2.48	1.47	2.58	1.36
Tangible support	1.15	1.65	0.96	1.61	1.12	1.56	1.42	2.24	0.77	1.15	0.98	1.42
Emotional support	3.07	3.16	3.00	3.07	2.06	2.08	3.55	3.94	2.64	2.35	2.41	2.45
Instrumental support	2.09	2.64	2.02	2.43	1.73	2.21	2.37	2.64	2.00	2.38	1.77	2.28
Conflict	0.87	0.96	0.84	1.08	1.02	1.43	1.02	1.20	0.77	0.95	0.91	1.26
Network Member Roles												
Romantic partner	0.52	0.59	0.51	0.73	0.45	0.83	0.62	0.60	0.49	0.85	0.45	0.74
Relative	2.54	2.36	2.23	2.45	2.17	2.30	2.64	2.71	1.94	1.90	2.20	2.42
Counselor/ Therapist	0.26	0.54	0.35	0.60	0.36	0.63	0.30	0.56	0.31	0.54	0.37	0.64
Case manager	0.78	1.26	0.74	1.19	0.74	0.81	0.81	1.67	0.55	0.90	0.80	0.86
Doctor	0.28	0.50	0.37	0.64	0.34	0.59	0.27	0.50	0.37	0.55	0.37	0.66
Neighbor	0.50	0.84	0.73	1.32	0.51	0.93	0.46	0.88	0.65	1.07	0.73	1.32
Unknown role	2.48	2.59	2.61	2.70	2.33	2.37	2.40	2.99	3.25	2.63	2.50	2.61

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Table 4.

Results from univariable models examining associations between all independent measures and social network outcomes, and associations between network member roles and social support outcomes.

	Size	Diversity	Social Network Outcomes			
			Social Support			
Independent Variables			Emotional	Tangible	Instrumental	Conflict
Age	0.83	0.45	0.40	0.63	0.92	0.44
Race						
Black (comparison group)	-	-	-	-	-	-
White	0.81	**0.04**	0.34	**0.01**	0.59	0.73
Latino	**0.03**	**<.01**	0.25	0.14	0.28	0.90
Other	0.17	**<.01**	**0.04**	**0.04**	0.21	0.48
Female	**0.01**	**<.01**	0.06	0.06	**0.04**	**0.03**
Heterosexual	0.34	0.67	0.09	0.35	0.61	0.08
Education (<=HS diploma)	0.39	0.53	0.47	0.76	**0.03**	0.27
Literal Homelessness	0.36	0.78	**<.01**	0.59	0.97	0.93
Mental Health/ Physical Health						
Probable PTSD	0.69	**0.05**	0.15	0.42	0.27	**<.01**
Psychiatric disability	0.11	0.94	**<.01**	0.78	0.41	**<.01**
Physical Activity Limitations	0.83	0.36	0.48	0.89	0.64	0.25
Substance Use						
Illicit drug use	0.68	0.18	0.07	0.12	0.35	0.12
Binge drinking	0.32	0.42	0.52	**0.03**	0.27	0.75
Location						
Skid Row (comparison)	-	-	-	-	-	-
DTLA	0.83	0.87	**0.04**	**<.01**	0.31	0.16
Other	0.52	0.69	**<.01**	**0.03**	**0.05**	0.46
Housing Model						
Scatter-site (comparison)	-	-	-	-	-	-
Single-site	0.24	0.85	**<.01**	0.39	0.45	0.13
Congregate	0.81	0.96	**0.03**	0.89	0.50	0.41
Network Member Role						
Romantic partner	-	-	**<.01**	**0.03**	0.16	**<.01**
Relative	-	-	**<.01**	**<.01**	**0.01**	**<.01**
Emotional health counselor	-	-	0.66	0.94	**0.03**	0.73
Case manager	-	-	**<.01**	0.37	**<.01**	0.93
Doctor	-	-	0.65	0.62	0.35	0.50
Neighbor	-	-	0.62	0.99	0.28	0.78
Unknown role	-	-	**<.01**	0.95	**<.01**	0.33

Table 5.

Results from multivariable model examining associations between housing model and emotional support.

Housing Model	Emotional Support		
Demographics	*B*	*t*	*p*
Age	0.01	1.2	
Female	0.57	1.81	
Heterosexual	0.49	1.07	
Education	−0.01	−0.3	
Race (Black comparison)			
White	−0.08	−0.22	
Other	−0.98	−1.82	
Latino	−0.72	−1.54	
Literal homelessness	−0.07	−3.24	**
Mental Health			
Probable PTSD	0.04	0.13	
Psychiatric disability	−0.61	−1.88	
Physical disability	−0.08	−0.69	
Substance Use			
Illicit drug use	−0.51	−1.3	
Binge drinking	0.10	0.25	
Housing Model (Scatter-site comparison)			
Single-site	0.87	2.73	**
Congregate	1.05	2.14	*

*
=<.05

**
=<.01

Table 6.

Results from multivariable models examining associations between location and social support.

Location	Emotional Support			Tangible Support			Instrumental Support		
Demographics	*B*	*t*	*p*	*B*	*t*	*p*	*B*	*t*	*p*
Age	0.01	1.55		0.00	0.11		0.01	0.66	
Female	0.51	1.61		0.36	1.99	*	0.60	2.19	*
Heterosexual	0.39	0.85		0.18	0.7		−0.23	−0.58	
Education	−0.01	−0.24		−0.01	−0.4		0.08	2.39	*
Race (Black comparison)									
White	0.04	0.11		−0.43	−2.15	*	0.18	0.59	
Other	−1.18	−2.21	*	−0.66	−2.13	*	−0.25	−0.54	
Latino	−0.57	−1.21		−0.37	−1.39		−0.44	−1.08	
Literal homelessness	−0.06	−2.99	**	−0.01	−0.78		0.00	0.27	
Mental Health and Health									
Probable PTSD	0.06	0.2		0.10	0.52		0.21	0.76	
Psychiatric disability	−0.69	−2.16	*	−0.09	−0.51		0.08	0.3	
Physical disability	−0.10	−0.85		−0.04	−0.55		0.02	0.2	
Substance Use									
Illicit drug use	−0.65	−1.65		0.28	1.24		−0.04	−0.11	
Binge drinking	0.10	0.25		0.45	1.91	*	0.49	1.36	
Location (Skid Row comparison)									
DTLA	−0.86	−1.99	*	−0.51	−2.04	*	−0.34	−0.9	
Outside	−1.13	−3.04	**	−0.20	−0.93		−0.63	−1.95	*

*
=<.05

**
=<.01