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Recovery in context: Sober living houses and the ecology of recovery

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Abstract

AIMS: Sober living houses (SLHs) are an increasingly common element of the recovery support services landscape, yet little is known about their neighborhood context. This study describes neighborhoods in which SLHs are located and examines differences by house characteristics.

METHODS: SLHs in Los Angeles County (N=297) were geocoded and linked with US Census, alcohol outlet, recovery resources, and accessibility data. Regression analyses tested differences by house characteristics.

RESULTS: Coed houses were in neighborhoods that were less ethnically diverse and farther away from recovery resources. Larger house capacity was associated with increased density of off-premise alcohol outlets but also increased proximity to treatment. Higher fees were associated with lower neighborhood disadvantage and off-premise alcohol outlet density but greater distance from treatment programs and other recovery resources.

CONCLUSIONS: House characteristics are associated with neighborhood factors that both support recovery and place residents at risk.

Keywords

substance use disorders; recovery; recovery support services; recovery housing; sober living houses; recovery ecology; neighborhood characteristics

Recent estimates place the population prevalence of past-year substance use disorders (SUDs) in the US at 20.3 million people aged 12 or older (Substance Abuse and Mental Health Services Administration, 2019). Most individuals who develop an SUD can come to manage their symptoms, but full remission may take several years (Fleury et al., 2016; White, 2012). A variety of definitions of *recovery* from SUDs have been put forth (el-Guebaly, 2012; Kaskutas et al., 2014; Kelly & Hoepfner, 2015; Substance Abuse and Mental Health Services Administration, 2012; The Betty Ford Institute Consensus Panel, 2007), but most definitions describe a process of personal change that extends beyond stopping substance use (U.S. Department of Health and Human Services & Office of the Surgeon General, 2016). This process for many individuals is often marked by cycles of repeated treatments and relapse (Dennis, Scott, Funk, & Foss, 2005; Grella, Scott, Foss, & Dennis, 2008; Scott, Foss, & Dennis, 2005).

Historically, the substance use treatment system has been organized to address SUDs within an acute episode framework. This mismatch between the treatment system and the chronic nature of SUDs has been posited to contribute to these cycles of relapse (Dennis & Scott, 2007). Contemporary substance use treatment also has largely failed to address factors that individuals prioritize as most important to their recovery. These factors include employment and educational training, family and social support, and housing (Laudet, Stanick, & Sands, 2009; Laudet & White, 2010), as well as environmental or *ecological factors* that may contribute to substance use or otherwise inhibit recovery (Matto, 2004; Mennis & Stahler, 2016).

The Role of Sober Living Houses to Support Individuals in Recovery

A new modality of care is emerging to better address the recovery needs of individuals with SUDs (Laudet & Humphreys, 2013; White, 2010). Recovery support services represent a broad array of *non-clinical* services that provide emotional and practical support as well as daily structure and rewarding alternatives to individuals as they make life changes necessary to recover from SUDs (U.S. Department of Health and Human Services & Office of the Surgeon General, 2016). One common type of recovery support service, recovery housing, has been found to show particular promise (Reif et al., 2014).

By providing social and other types of support (Heslin, Hamilton, Singzon, Smith, & Anderson, 2011; Mericle, Miles, & Cacciola, 2015; Mericle, Polcin, Hemberg, & Miles, 2017; Polcin & Henderson, 2008), recovery residences, such as sober living houses (SLHs) located in California, can increase recovery capital (Cloud & Granfield, 2008), which is generally described as the resources that individuals bring to bear to support their recovery efforts. Three separate longitudinal studies of residents living in California SLHs have found decreased substance use, arrest rates, and other problem severity (Polcin, Korcha, Bond, & Galloway, 2010a; Polcin, Korcha, Bond, & Galloway, 2010b; Polcin, Korcha, Witbrodt, Mericle, & Mahoney, 2018). The importance of recovery capital for persons residing in SLHs was recently illustrated in a study by Witbrodt et al. (Witbrodt, Polcin, Korcha, & Li, 2019), which found that greater recovery capital among residents was associated with better outcomes.

The Neighborhood Context of Recovery

SLHs are community-based services. By virtue of this recovery support service being residential in nature, the context in which SLHs are located may be as important as the service itself. This is because the community location has the potential to enrich or detract from the support being provided within the residence.

Over the past several decades and across diverse fields, there has been growing attention paid to the potentially deleterious effects of neighborhood characteristics on individuals' health and wellbeing. For example, theories of concentrated disadvantage posit that neighborhoods characterized by poverty and social disorder can trap residents in a cycle of poverty that amplifies individual risk for a variety of adverse outcomes (Sampson, Raudenbush, & Earls, 1997). Individuals living in disadvantaged neighborhoods are more

likely to experience stress and depression, with substance use linked to both (Boardman, Finch, Ellison, Williams, & Jackson, 2001; Jackson, Knight, & Rafferty, 2010; Latkin, Curry, Hua, & Davey, 2007). These neighborhoods have also been found to suffer from a proliferation of alcohol outlets (Morrison et al., 2016; Pollack, Cubbin, Ahn, & Winkleby, 2005; Romley, Cohen, Ringel, & Sturm, 2007)--venues that attract heavy drinkers and increase alcohol-related problems (Campbell et al., 2009; Popova, Giesbrecht, Bekmuradov, & Patra, 2009) and crime (Grubestic, Pridemore, Williams, & Philip-Tabb, 2013; Jennings et al., 2014), including drug sales.

Despite recognition of these negative effects, much less attention has been paid to beneficial aspects of communities or to how community-based services may translate into better outcomes for individuals in recovery from SUDs. The availability of community resources may play a critical role in recovery. For example, proximity to mental health and SUD treatment is an important determinant of treatment utilization and the quality of care received (Beardsley, Wish, Fitzelle, O'Grady, & Arria, 2003; Fortney, Rost, Zhang, & Warren, 1999; Fortney, Booth, Blow, Bunn, & Cook, 1995; Lindrooth, Lo Sasso, & Lurie, 2006; Schmitt, Phibbs, & Piette, 2003). Involvement with Alcoholics Anonymous (AA) has been found to predict of abstinence and recovery (Bond, Kaskutas, & Weisner, 2003; Kaskutas et al., 2005; Kaskutas, Bond, & Avalos, 2009; Kaskutas, Turk, Bond, & Weisner, 2003; Roland & Kaskutas, 2002), and one study found that a city's number of weekly self-help meetings was positively related to self-help involvement of male veterans after they attended inpatient treatment (Mankowski, Humphreys, & Moos, 2001).

This gap in the literature is particularly unfortunate because community-based services, like sober living housing, have the potential to enrich the environments in which they are located. They contribute not only to a denser and more comprehensive recovery-oriented system of care (White, 2008) but also to healthier, prosocial neighborhoods (Heslin, Singzon, Aimiuwu, Sheridan, & Hamilton, 2012) which contribute to the wellbeing of all individuals living in them. This idea is reflected in the concept of the "healing forest" (Moore & Coyhis, 2010) developed within the Wellbriety Recovery Community Support Program developed by the White Bison organization. According to this approach, change at the individual level is thought to be best supported within an environment that is seeded with the resources to support personal growth that is cultivated and maintained by actively involved community members.

Study Aims

To better understand the recovery environment or "recovery ecology" of individuals living in SLHs in Los Angeles County, this study sought to describe the neighborhoods where these residences were located in terms of sociodemographic characteristics, density of and proximity to alcohol outlets and recovery resources, as well as general accessibility—all factors which may be detrimental to continued wellness or which may contribute to the healing nature of the environment. To better characterize the SLH landscape and potentially highlight benefits and challenges associated with operating different types of SLHs, this study also sought to examine differences in neighborhood characteristics by house-level characteristics, such as gender served, house size, and monthly fees charged.

Methods

This study involved analysis of data on 297 SLHs in Los Angeles County that were members of the Sober Living Network. SLHs do not provide treatment services, but residents are either encouraged or required to attend 12-step meetings, and they typically can stay as long as they wish, provided they abide by house rules (such as maintaining abstinence from alcohol and drugs) and pay fees for rent, utilities, and other expenses (Polcin & Henderson, 2008). As in other types of recovery housing, SLHs promote a social model philosophy of recovery (Kaskutas, Greenfield, Borkman, & Room, 1998). Social model programs emphasize resident input into house operations and management, sharing experiential knowledge among residents, peer support for recovery, and resident responsibility for maintaining the home (Borkman, 1998; Room, Kaskutas, & Piroth, 1998), all facets that contribute to the inherent therapeutic nature of the setting. Residence information provided by the Sober Living Network included SLH addresses, so the residences could be geocoded and linked with U.S. Census, California Department of Alcohol and Beverage Control (ABC), SAMHSA Behavioral Health Treatment Locator, and Walk Score® data. The study was approved and monitored by the Public Health Institute's Institutional Review Board. Study datasets, measures, and analytic procedures are described below.

Data Sets and Geocoding Procedures

SLH Data.—SLH characteristics were obtained from the Sober Living Network (SLN). The SLN is a nonprofit organization that oversees application, quality control, inspection, and certification procedures for SLHs within its Los Angeles, California county-level coalitions. The Sober Living Network implements housing standards developed by the National Alliance for Recovery Residences (NARR) that are used in recovery residences across the United States. The initial dataset was obtained on October 18, 2017. Updates were made on a continuous basis through October 12, 2018.

U.S Census Data.—The U.S. Census Bureau's American Community Surveys (ACS) 2012-2016 were the primary source of data on neighborhood sociodemographic characteristics. A census tract shapefile was downloaded from the U.S. Census Bureau based on the 2010 Census geographies. Shapefiles are a commonly-used format to store geographic data and associated attribute information. We used shapefiles of Los Angeles County to identify the census tract for each SLH location within county borders.

California ABC Data.—Locations and characteristics of alcohol outlets with active sales licenses were downloaded from the California Department of Alcoholic Beverage Control (ABC). This department maintains a database of information about applicants and individuals and businesses with licenses to sell alcohol in the state of California. Only outlets that were active at the time of download (2018) were included in the dataset. As all active alcohol outlets are required to have a license to sell alcohol in California, we can assume that the outlets included in this study are representative of all active outlets.

SAMHSA Behavioral Health Treatment Locator Data.—A list of treatment and recovery resources was obtained from the Behavioral Health Treatment Services Locator, an online resource for persons seeking treatment facilities in the US for substance use/addiction and/or mental health problems. All information in the Locator is updated annually from SAMHSA's voluntary National Survey of Substance Abuse Treatment Services (N-SSATS) and National Mental Health Services Survey (N-MHSS), that are administered to both public and private facilities. New facilities that have completed an abbreviated survey and met all the qualifications are added monthly. Updates to facility names, addresses, telephone numbers, and services are made weekly for facilities informing SAMHSA of changes. Information on substance use treatment facilities in Los Angeles County was downloaded from the SAMHSA website in 2018. The Treatment Locator also includes a list of self-help groups with a hyperlink to the group's dedicated website. Data were compiled on meeting locations and schedules voluntarily posted on websites for the following self-help groups: Alcoholics Anonymous (AA); Cocaine Anonymous (CA); Crystal Meth Anonymous; Dual Recovery Anonymous; Marijuana Anonymous (MA); Narcotics Anonymous (NA); and SMART Recovery®.

Walk Score Data.—Walk Score is a private company that has created several accessibility metrics to characterize neighborhoods across the country. To protect the confidentiality and maintain the privacy of the SLH addresses, a set of random points offset a specific distance from the original latitude and longitude of each SLH were created within the same Census tract as the original address. The coordinates of these anonymized random points were sent to Walk Score® in 2018; geographic access metrics were returned in an Excel file.

Geocoding Procedures.—Geocoding allows addresses to be assigned latitude and longitude coordinates based on their location; it also provides the capability to calculate proximity measures (distance to nearest and time to nearest) in relation to other geocoded locations. Street addresses for sober living houses, alcohol outlets, treatment programs, and mutual help groups were geocoded using ArcMap 10.6 (ESRI, 2018). All addresses were successfully geocoded, with at least 98% of sober living houses, alcohol outlets, treatment programs and self-help groups matched to the precise street address location.

Measures

SLH Characteristics.—The data provided from the SLN contained information on gender of residents served: men, women, or both (co-ed). It also included information on monthly fees charged and number of residents served. Monthly fees charged ranged from \$300 to \$20,000. Using a cut-point from a prior study conducted in LA County (Mericle, Mahoney, Korcha, Delucchi, & Polcin, 2019), fees were categorized as \$599/month or less and \$600/month or more. House capacity ranged from 3 to 48 residents. We used the cut-point of 7 or fewer residents and 8 or more residents to differentiate smaller from larger houses (Jason et al., 2008). However, because the majority of houses accommodated 8 or more residents, we further distinguished houses that accommodated 8-12 residents from those that accommodated 13 or more.

Neighborhood Sociodemographics.—Neighborhoods were defined by census tracts. Several variables from the US census data were used to characterize neighborhoods in terms of resident education (i.e., percent of adults who are not high school graduates), employment status (i.e., percent of people unemployed, excluding those out of labor force), income (i.e., percent of people below the federal poverty level), and racial/ethnic diversity (i.e., percent of population non-White). We also included a measure of residential instability (i.e., percent of renter-occupied housing units). Finally, in addition to neighborhood resident characteristics, we also included median value of properties in the neighborhood.

Alcohol Outlets.—California ABC data were used to create two different types of density measures within two different distances from the SLHs. We created measures to reflect the number of off-premise (e.g., liquor stores and other retail stores) and on-premise (e.g., bars, restaurants, and taverns) outlets within walking distance, using both a one-mile radius and a half-mile radius from the SHLs.

Treatment and Recovery Resources.—To characterize treatment and recovery resources potentially available to SLH residents, we created density and proximity measures, with proximity measured by both distance and time. We created measures to indicate the number of treatment facilities within both 10 and 15 miles and the number of self-help groups within walking distance (both one-mile radius and half-mile radius). Using the network analysis tool in Arc GIS 10.6, we created measures of distance (in roadway miles) and travel time along the shortest path (in minutes) to the nearest treatment program and self-help group (of any type).

Accessibility.—Accessibility is increasingly regarded as a neighborhood convenience metric, and it may be particularly important for people who have lost driving privileges due to substance use. Walk Score® measures the walking distance to various categories of amenities (schools, retail shops, food, recreation and entertainment) using data sources such as Google and OpenStreetMap. Locations with closer and more amenities within a 1-mile radius are assigned a higher score. Points from each amenity type are summed and normalized to produce a final measure ranging from 0 to 100, and less walkable locations are penalized. Higher scores indicate higher walkability. Walk Score® also provides categories for walkability (i.e., walker's paradise, scores ≥ 90 ; very walkable, scores 70-89; somewhat walkable, scores 50-69; car-dependent for most errands, scores 25-49; and car-dependent for almost all errands, scores 0-24), bike access (i.e., biker's paradise, scores ≥ 90 ; very bikeable, scores 70-89; bikeable, scores 50-69; and somewhat bikeable, scores 0-49), and transit. The transit score measures how well a location is served by public transportation (i.e., rider's paradise, scores ≥ 90 ; excellent transit, scores 70-89; good transit, scores 50-69; some transit, scores 25-49; minimal transit, scores 0-24). Public transportation routes are scored based on distance to the nearest stop on the route, frequency, and type of route. To augment information contained in the transit score, we also used a count of the number of rail stops within a half-mile of the SLH.

Statistical Analyses

Frequencies and measures of central tendency were produced to summarize neighborhood characteristics of the SLHs. Differences in elements of the recovery environment by SLH characteristics (gender served, capacity, and monthly fees charged) were tested using linear regression. The overall effect of various house characteristics was tested using a Wald Chi-square test, and differences by category were assessed by altering the reference group when the overall effect of the characteristic was significant. Missing data was generally minimal (<10%) for most neighborhood characteristics, and complete case analysis was implemented. However, missing data on transit scores was related to house capacity (i.e., SLHs with 13+ beds were less likely to be missing transit scores than smaller houses). Having an additional measure of transit accessibility (i.e., number of rail stops) provided an additional check on potential problems pertaining to missing data on this neighborhood dimension.

Results

SLH and Neighborhood Characteristics

As Table 1 displays, 49% of the SLHs served men, while 25% served women and 26% were co-ed. The majority of houses would be considered large; with 39% having capacity to serve 8-12 residents and 41% with capacity to serve 13 or more residents. The majority of houses (74%) charged monthly fees of \$600 or more. SLHs were in neighborhoods that were largely renter-occupied ($M=53\%$, $SD=25\%$). SLHs had an average of 4 off-premise and 5 on-premise alcohol outlets within a half-mile radius, and an average of 16 off-premise and 21 on-premise alcohol outlets within a one-mile radius from the house location. On average, SLHs were within a 10 mile radius of 50 treatment programs and within a 15 mile radius 92 treatment programs; on average, the nearest treatment program was within 1-2 miles. They were within a mile of 2-3 self-help meetings on average, with the nearest being within less than one mile from the house location. Based on accessibility data, 52% would be categorized as having only some or minimal transit and 54% were in neighborhoods that would be categorized as only somewhat walkable or car-dependent for most errands.

Neighborhood Differences by SLH Characteristics

Gender Served.—Few differences by gender served emerged regarding sociodemographics, alcohol outlets or accessibility. Most differences observed pertained to recovery resources. When differences emerged, they were largely between coed houses and houses that served either men or women. Compared to men's houses, coed SLHs were in neighborhoods with a lower percentage of non-Whites (33% vs 42%) and with higher median property values (876,664.8 vs 640,360.9). They had fewer self-help groups within a mile than women's houses (2.1 vs 3.5) and on average were farther from the nearest self-help group than both men's and women's houses. Coed houses also had lower walkability scores than both men's and women's houses.

Monthly Fees.—Differences by monthly fees charged emerged across all neighborhood dimensions measured (see Table 3), most frequently with respect to neighborhood sociodemographic characteristics. Compared to houses charging less than \$600/month,

houses charging \$600/month or more had a lower percent of neighborhood residents who were not high-school graduates (29% vs 14%); unemployed (7% vs 5%); below the poverty line (23% vs 13%); and of racial/ethnic backgrounds other than non-Hispanic White (52% vs 35%). They were also located in neighborhoods with a lower percent of renter-occupied housing units (62% vs 51%), higher median property values (353,025.8 vs 839,663.8) and, as depicted in Figure 1, they were within a half-mile and a mile of fewer off-premise alcohol outlets (5.5 vs 3.4 and 19.6 vs 15.4, respectively). In terms of distance to recovery resources, compared to houses charging less than \$600/month, those charging \$600 or more were farther away from the nearest treatment program and self-help group (0.9 vs 1.3 miles and 0.6 vs 0.9 miles). They were also in neighborhoods with a fewer number of rail stops within a half-mile (0.3 vs 0.1) and had lower grocery accessibility scores (72.6 vs 58.7).

House Capacity.—Differences by house capacity primarily emerged regarding alcohol outlet density, distance to treatment facilities, and accessibility, but median property values were lower in houses with 13 or more residents than those with 8-12 residents (607,888.1 vs 850,330.1). Regarding alcohol outlet density, distance to treatment facilities, and accessibility, differences were largely between the largest-sized houses (those serving 13 or more residents) and the smaller houses. The largest-sized SLHs had a greater density of off-premise alcohol outlets within a half-mile compared to SLHs that served 8-12 residents (4.4 vs 3.2), as well as a greater density of these outlets within a mile than both groups of smaller-sized houses. However, the largest-sized SLHs also were closer to the nearest treatment program than SLHs serving 8-12 residents (1.0 vs 1.32 miles) and had higher walkability and bikeability scores than the smaller houses, particularly the smallest houses (i.e., those serving 3-7 residents).

Discussion

This study found that SLHs in LA County were generally located in neighborhoods that could be characterized as having both benefits and risk factors for recovery. SLHs were in close proximity to both treatment and recovery resources; a beneficial factor as residents living in SLHs that are affiliated with treatment programs show increased odds of positive outcomes (Mericle et al., 2019). However, SLHs also were in neighborhoods with a high density of alcohol outlets. Further, accessibility based on Walk Score® metrics suggested that they were largely located in neighborhoods with only some or minimal public transit that were only somewhat walkable or were car-dependent, which could prove a significant barrier to meaningful employment and educational opportunities, as well as receipt of other social services. Future work is needed to examine how neighborhood characteristics studied affect resident outcomes and whether this relationship is mediated by residents' recovery capital, as this may be affected by proximity to community and other resources.

We did see differences in neighborhood characteristics by gender served, house capacity, and monthly fees charged. Recovery housing is generally single-sex to discourage romantic relationships forming between residents in the house (Oxford House Inc., 2015), yet over a quarter of the SLHs in LA county housed both men and women. Co-ed houses were located in less diverse and walkable neighborhoods that were more isolated from self-help resources. It is possible that these residences have had to be willing to accept both men and women

because they are more isolated and may be the only recovery resource for both men and women where they are located. Further study of co-ed houses is warranted, given the rationale behind having single-sex residences and findings to suggest that rates of alcohol abstinence are lower in co-ed houses relative to single-sex houses (Mericle et al., 2019).

More affordable houses were generally located in neighborhoods characterized by greater disadvantage with respect to sociodemographics and proximity to alcohol outlets, but they also were closer to key recovery support services and had greater accessibility, which could serve to offset these risks, particularly if operators of these residences consciously supported residents in navigating these risks. Research on interventions to help residents manage their exposure and response to environmental triggers for relapse could be informative in this regard.

Differences between houses based on capacity of residents mirrored those found for monthly fees, likely because expenses can be shared among more residents. Sharing costs among more residents may allow residents to live affordably in “nicer” neighborhoods, however, we did find that houses with larger capacity were located in neighborhoods with lower median property values. This may be related to housing stock that could accommodate large numbers of residents, but it is likely that this about keeping costs down by operating in more affordable neighborhoods. As with more affordable SLHs, those with more residents were also in greater proximity to both risk and protective factors. In addition to addressing these challenges (namely density of off-premise alcohol outlets), operators of larger houses likely also encounter challenges providing recovery support to a greater number of residents. They also may encounter greater community stigma; residences housing eight or more non-related members look less like what outside community members may envisage as a single-family residence. Thus, while there may be benefits to having more residents within SLHs, there are likely other challenges that could offset these benefits.

Study Strengths and Limitations

Although this is one of the few studies that has looked at neighborhood characteristics of SLHs, several key limitations should be noted. This study was limited to houses in LA County that were part of the Sober Living Network. It is unclear how many other residences may provide similar recovery services, as there is no comprehensive listing of such community resources. Another limitation is that resources used to characterize treatment and recovery resources could reflect undercounting because information on these lists is voluntarily offered. Further, we only focused on the association between neighborhood characteristics with a limited number of house characteristics. In addition to studies examining how neighborhood factors may affect recovery capital and resident outcomes, future work also is needed to: examine a wider range of recovery residences and residences in varied geographic regions; develop and test interventions to help residents manage neighborhood risk; and study community-level interventions, like development of recovery housing, and its effect on neighborhoods. This future work will help to refine principles and components of recovery ecology.

Conclusion

Recovery housing is an increasingly popular recovery support service, and the evidence supporting it continues to grow. To date, neighborhood environments and overall ecology in which these residences are located have been understudied. This study found that SLHs in LA County were located in neighborhoods that contained both risk and protective factors, and that these factors were related to residence characteristics. Research on neighborhood characteristics, particularly those that examine their effect on resident-level outcomes, could help operators open residences in environments that may be more conducive to recovery or help residents maintain their recovery when living in houses located in riskier environments. Further, it also would be beneficial to examine whether neighborhood effects on residents are mediated by recovery capital as well as how recovery residences may affect the environments in which they are located.

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Figure 1.
Distribution of Sober Living Residences and Neighborhood Characteristics by Monthly Fees

Table 1.**House and Neighborhood Characteristics (N=297)**

		n	%
House Characteristics			
	Gender Served ¹ (N=288)		
	Men	141	49.0
	Women	72	25.0
	Coed	75	26.0
	Capacity (N=278)		
	3-7	58	20.9
	8-12	107	38.5
	13+	113	40.7
	Monthly Fees (N=260)		
	<=\$599	68	26.2
	\$600+	192	73.9
Neighborhood Characteristics²		M	SD
	Socio-demographics (N=285)		
	Percent of adults (25 or older) who are not high-school graduates	0.17	0.15
	Percent of people unemployed (excludes those out of labor force)	0.06	0.03
	Percent people below poverty	0.15	0.11
	Percent of population non-White	0.38	0.20
	Percent housing units renter occupied	0.53	0.25
	Median property value (N=279)	724925.8	495460.7
	Alcohol Outlets (N=273)		
	Number of off-premises outlets within 0.5 miles	3.82	3.60
	Number of on-premises outlets within 0.5 miles	5.03	7.40
	Number of off-premises outlets within 1 mile	16.06	11.05
	Number of on-premises outlets within 1 mile	21.17	23.86
	Treatment and Recovery Resources (N=273)		
	Number of treatment facilities within 10 miles	50.15	26.18
	Number of treatment facilities within 15 miles	92.10	44.59
	Distance (roadway miles) to nearest treatment program	1.19	0.94
	Time (in minutes) to nearest treatment program	2.73	2.11
	Number of self-help groups within 0.5 miles	0.85	1.41
	Number of self-help groups within 1 mile	2.79	3.12
	Distance (roadway miles) to nearest self-help group (N=269)	0.84	0.78
	Time (in minutes) to nearest self-help program (N=269)	1.84	1.51
	Accessibility		
	Number of rail stops within 0.5 miles (N=297)	0.16	0.51

			n	%
<i>House Characteristics</i>				
		Transit Score® (N=238)	48.71	13.42
		Walk Score® (N=297)	58.85	27.44
		Bike Score® (214)	59.05	19.41
		Parks Score® (N=297)	57.10	33.23
		Grocery Score® (N=297)	61.55	33.57

Notes.

¹Fourteen women's houses and two co-ed houses also accepted children.

²Neighborhood is defined as census tract.

Table 2.

Differences in Neighborhood Characteristics by Gender Served

			Men		Women		Coed		Wald Test		Tests of Differences
		N	M	SE	M	SE	M	SE	p		
Socio-demographics											
	Percent of adults (25 or older) who are not high-school graduates	279	0.18	0.01	0.17	0.02	0.16	0.02	0.457		
	Percent of people unemployed (excludes those out of labor force)	279	0.06	0.00	0.05	0.00	0.06	0.00	0.671		
	Percent people below poverty	279	0.16	0.01	0.15	0.01	0.15	0.01	0.682		
	Percent of population non-White	279	0.42	0.02	0.37	0.02	0.33	0.03	0.006		Coed<M
	Percent housing units renter occupied	279	0.56	0.02	0.52	0.03	0.49	0.03	0.113		
	Median property value	273	640360.9	38565.4	719595.7	53923.3	876664.8	53923.3	0.005		Coed>M
Alcohol Outlets											
	Number of off-premises outlets within 0.5 miles	268	3.75	0.29	3.88	0.41	3.76	0.51	0.966		
	Number of on-premises outlets within 0.5 miles	268	5.27	0.72	6.07	0.91	3.42	0.63	0.103		
	Number of off-premises outlets within 1 mile	268	16.72	0.88	16.03	1.39	14.52	1.51	0.416		
	Number of on-premises outlets within 1 mile	268	21.55	1.96	25.41	3.40	15.55	2.61	0.055		
Treatment and Recovery Resources											
	Number of treatment facilities within 10 miles	268	52.95	2.19	50.12	3.17	45.09	3.47	0.141		
	Number of treatment facilities within 15 miles	268	96.71	3.68	90.75	5.30	84.62	6.14	0.192		
	Distance (roadway miles) to nearest treatment program	268	1.06	0.08	1.26	0.12	1.39	0.12	0.064		
	Time (in minutes) to nearest treatment program	268	2.54	0.19	2.72	0.25	3.13	0.24	0.178		
	Number of self-help groups within 0.5 miles	268	0.79	0.11	1.10	0.21	0.71	0.15	0.222		
	Number of self-help groups within 1 mile	268	2.76	0.25	3.51	0.47	2.12	0.33	0.036		Coed<W
	Distance (roadway miles) to nearest self-help group	265	0.72	0.05	0.72	0.07	1.21	0.15	0.000		Coed>M; Coed>W
	Time (in minutes) to nearest self-help program	265	1.63	0.10	1.62	0.16	2.54	0.26	0.000		Coed>M; Coed>W
Accessibility											
	Number of rail stops within 0.5 miles	288	0.16	0.04	0.21	0.07	0.12	0.05	0.589		
	Transit Score®	232	49.62	1.03	50.36	1.90	45.77	2.17	0.131		
	Walk Score®	288	62.06	2.09	61.63	3.17	51.45	3.47	0.015		Coed<M; Coed<W
	Bike Score®	210	60.54	1.80	59.61	2.79	55.68	2.86	0.317		

			Men		Women		Coed		Wald Test		Tests of Differences
		N	M	SE	M	SE	M	SE		p	
		288	59.30	2.80	61.72	3.67	49.86	3.86	0.060		
	Parks Score®	288	63.78	2.64	64.95	4.01	55.51	4.17	0.150		
	Grocery Score®	288									

Notes. Differences by house gender were test using linear regression. The overall effect of house gender was tested as well as differences by house gender by altering the reference group when the overall effect was significant.

Table 3.

Differences in Neighborhood Characteristics by Monthly Fees

			Fees 1 <=\$599		Fees 2 \$600+		Wald Test		Tests of Differences
		N	M	SE	M	SE	p		
Socio-demographics									
	Percent of adults (25 or older) who are not high-school graduates	253	0.29	0.02	0.14	0.01	0.000		Fees2<Fees1
	Percent of people unemployed (excludes those out of labor force)	253	0.07	0.00	0.05	0.00	0.000		Fees2<Fees1
	Percent people below poverty	253	0.23	0.01	0.13	0.01	0.000		Fees2<Fees1
	Percent of population non-White	253	0.52	0.02	0.35	0.01	0.000		Fees2<Fees1
	Percent housing units renter occupied	253	0.62	0.03	0.51	0.02	0.002		Fees2<Fees1
	Median property value	247	353025.80	13864.25	839663.80	37312.44	0.000		Fees2>Fees1
Alcohol Outlets									
	Number of off-premises outlets within 0.5 miles	242	5.48	0.52	3.38	0.25	0.000		Fees2<Fees1
	Number of on-premises outlets within 0.5 miles	242	4.09	0.68	5.43	0.62	0.231		
	Number of off-premises outlets within 1 mile	242	19.61	1.32	15.39	0.84	0.010		Fees2<Fees1
	Number of on-premises outlets within 1 mile	242	18.22	2.83	22.19	1.89	0.269		
Treatment and Recovery Resources									
	Number of treatment facilities within 10 miles	242	47.67	3.32	51.43	1.98	0.331		
	Number of treatment facilities within 15 miles	242	83.13	5.70	95.63	3.29	0.054		
	Distance (roadway miles) to nearest treatment program	242	0.91	0.08	1.30	0.08	0.004		Fees2>Fees1
	Time (in minutes) to nearest treatment program	242	2.32	0.23	2.88	0.17	0.074		
	Number of self-help groups within 0.5 miles	242	1.05	0.20	0.80	0.10	0.246		
	Number of self-help groups within 1 mile	242	2.91	0.39	2.79	0.24	0.796		
	Distance (roadway miles) to nearest self-help group	239	0.64	0.06	0.88	0.06	0.022		Fees2>Fees1
	Time (in minutes) to nearest self-help program	239	1.56	0.16	1.91	0.11	0.083		
Accessibility									
	Number of rail stops within 0.5 miles	260	0.34	0.10	0.11	0.03	0.002		Fees2<Fees1
	Transit Score®	214	51.16	1.70	48.20	1.11	0.168		
	Walk Score®	260	64.00	2.86	58.22	2.02	0.129		
	Bike Score®	195	62.99	1.83	58.01	1.75	0.131		

		Fees 1 <=\$599		Fees 2 \$600+		Wald Test		Tests of Differences
	N	M	SE	M	SE	p		
Parks Score®	260	63.24	4.10	56.68	2.35	0.159		
Grocery Score®	260	72.55	3.27	58.70	2.52	0.003	Fees2<Fees1	

Notes: Differences by monthly fees were test using linear regression. The overall effect of monthly fees was tested as well as differences by fees by altering the reference group when the overall effect was significant.

Table 4.

Differences in Neighborhood Characteristics by House Capacity

	N	3-7 Residents		8-12 Residents		13+ Residents		Wald Test	Tests of Differences
		M	SE	M	SE	M	SE	p	
Socio-demographics									
Percent of adults (25 or older) who are not high-school graduates	269	0.16	0.02	0.16	0.01	0.19	0.01	0.115	
Percent of people unemployed (excludes those out of labor force)	269	0.05	0.00	0.06	0.00	0.06	0.00	0.919	
Percent people below poverty	269	0.16	0.02	0.15	0.01	0.16	0.01	0.915	
Percent of population non-White	269	0.37	0.03	0.36	0.02	0.42	0.02	0.078	
Percent housing units renter occupied	269	0.50	0.03	0.53	0.02	0.56	0.02	0.294	
Median property value	263	708718.50	64725.06	850330.10	54938.27	607888.10	38517.28	0.001	13+<8-12
Alcohol Outlets									
Number of off-premises outlets within 0.5 miles	258	3.87	0.49	3.17	0.34	4.40	0.35	0.047	13+>8-12
Number of on-premises outlets within 0.5 miles	258	5.32	1.12	4.29	0.79	5.87	0.67	0.324	
Number of off-premises outlets within 1 mile	258	13.47	1.31	14.97	1.15	18.42	1.04	0.011	13+>3-7; 13+>8-12
Number of on-premises outlets within 1 mile	258	18.77	2.72	20.18	2.52	24.02	2.45	0.348	
Treatment and Recovery Resources									
Number of treatment facilities within 10 miles	258	50.06	4.28	48.90	2.43	52.08	2.46	0.681	
Number of treatment facilities within 15 miles	258	87.04	7.30	93.05	4.33	95.35	3.94	0.537	
Distance (roadway miles) to nearest treatment program	258	1.24	0.13	1.32	0.11	1.01	0.07	0.048	13+<8-12
Time (in minutes) to nearest treatment program	258	2.50	0.26	2.96	0.23	2.54	0.20	0.284	
Number of self-help groups within 0.5 miles	258	0.77	0.18	0.73	0.11	1.07	0.17	0.205	
Number of self-help groups within 1 mile	258	2.25	0.30	2.77	0.32	3.25	0.34	0.161	
Distance (roadway miles) to nearest self-help group	255	0.76	0.08	0.93	0.09	0.72	0.05	0.075	
Time (in minutes) to nearest self-help program	255	1.68	0.16	1.99	0.16	1.68	0.12	0.201	
Accessibility									
Number of rail stops within 0.5 miles	278	0.14	0.06	0.15	0.05	0.19	0.05	0.739	
Transit Score@	225	48.24	2.32	47.90	1.64	49.73	1.16	0.637	
Walk Score@	278	54.50	3.82	56.74	2.83	64.74	2.16	0.025	13+>3-7; 13+>8-12
Bike Score@	204	51.66	3.21	58.72	2.48	62.66	1.76	0.016	13+>3-7

		3-7 Residents		8-12 Residents		13+ Residents		Wald Test	Tests of Differences
	N	M	SE	M	SE	M	SE	p	
Parks Score@	278	51.76	4.40	56.16	3.29	63.65	2.87	0.055	
Grocery Score@	278	56.64	4.52	60.25	3.46	66.52	2.86	0.147	

Notes. Differences by house capacity were test using linear regression. The overall effect of house capacity was tested as well as differences by house capacity by altering the reference group when the overall effect was significant.