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Effects of Distance to Treatment on Subsequent Alcohol Consumption

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Abstract

Background—Distance and travel time are barriers to attending and completing drug and alcohol treatment. Few studies have examined proximity to treatment in relation to long-term outcomes.

Objectives—Aims were to examine effects of distance to treatment on alcohol consumption in the year after treatment intake; assess moderation of distance effects by treatment type; and test mediators of effects of distance to treatment on later alcohol use.

Methods—Data from clients in inpatient and outpatient alcohol treatment programs in California (n=560) were used in linear regression models.

Results—There was a significant interaction between treatment type and distance on later drinking, with a significant positive association of distance to treatment with alcohol use after treatment for inpatient clients only. Among inpatient clients, none of the mediators significantly explained the relationship between a longer distance to treatment and greater subsequent alcohol use.

Conclusion—Inpatient clients may benefit from customized post-treatment recommendations to identify recovery resources near home.

Keywords

alcohol treatment; geographic availability; treatment outcomes

Environmental context, including neighborhood characteristics and geographic convenience (Fortney, Booth, Blow, Bunn, & Cook, 1995; Jacobson, Robinson, & Bluthenthal, 2007; Stahler, Mennis, Cotlar, & Baron, 2009), has been found to influence many aspects of a person's drug and alcohol treatment regimen, including initiation, retention, and a variety of short- and long-term outcomes. Although this area of research is growing, there are still

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Declarations of Interest

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many questions of the geographic nature that remain unanswered in regards to post-treatment outcomes.

Geographic studies of drug and alcohol treatment have shed light on the various ways distance to treatment may affect an individual's outcomes. Mennis et al. (2012) revealed geographic barriers to treatment participation, with every 10-minute increase in driving time reducing the likelihood of attending treatment by half; travelling to treatment in an area with high crime rates further reduced treatment continuity. Beardsley et al. (2003) found urban clients who travelled less than a mile to treatment had increased odds of completing treatment, and travelling a distance farther than 4 miles significantly shortened the treatment stay in comparison to those who travelled 1 mile or less. Fortney et al. (1995) found the farther patients lived from their treatment program, the less likely they were to attend aftercare appointments. Lower odds of treatment completion, shorter length of stay and less engagement with aftercare among clients travelling farther to attend treatment suggest that worse treatment outcomes—including prolonged substance use and abuse—are likely for clients who face geographic barriers to treatment. Although geographic proximity to treatment has been examined in relation to treatment engagement, duration and aftercare, few studies have assessed the relationship between proximity to treatment with long-term substance use outcomes, which is a central focus of our study.

There may be differences in the impact of distance to treatment, and in the mechanism of effect, by treatment type. Inpatient facilities provide a structured environment for clients to live and recover for a fixed period of time. Outpatient programs generally provide more freedom for clients to maintain their everyday responsibilities outside of treatment. Clients visit the facility to participate in treatment at regularly scheduled intervals and then return home for the night. In general, due to travel and other logistical barriers, we assume clients would be less likely to select and then engage in treatment at a site that is far from their place of residence. Given the need to travel back and forth to treatment from home, distance to outpatient treatment may impact initial program engagement, as well as the duration of treatment attendance at a given site. Among inpatient treatment clients, distance to treatment may impact initial program engagement as well as aftercare attendance at the same site, because at that point an inpatient client is likely to be commuting to and from the treatment site to participate in aftercare.

Distance to treatment also may impact post-treatment involvement with community-based support for sobriety, such as Alcoholics Anonymous (AA). Inpatient clients are more commonly exposed to self-help groups held close to (Finney & Moos, 1996), or even within (Michael Gossop et al., 2003), their treatment facilities, while outpatient clients commonly begin attending groups near their homes during treatment (Finney & Moos, 1996; Thomassen, 2002). This difference may result in reduced engagement with AA after treatment among inpatient clients who travel farther to attend residential treatment, which may result in worse long-term outcomes (Michael Gossop, Stewart, & Marsden, 2008; Kaskutas, 2009; Kaskutas et al., 2005; Moos & Moos, 2006).

Using data from a longitudinal sample of clients receiving treatment for alcohol problems, we first examine the effect of distance to the treatment site on alcohol use after treatment.

We hypothesize that travelling greater distances from home to treatment will yield higher alcohol consumption one year later. We further expected that a longer distance from home to treatment would matter more for outpatient clients who must travel to attend each outpatient treatment session; inpatient clients engaged in a program at a given site are not faced with these recurrent travel barriers. Thus, we also examine whether treatment type moderates the relationship between the distance from home to treatment on later alcohol consumption.

We also expected that there would be different mechanisms of effect of distance to treatment according to treatment type. For outpatient clients, we expected treatment duration to be a significant mediator: Longer distance to treatment would significantly reduce outpatient treatment duration, which would result in greater alcohol consumption in the year after treatment. For inpatient clients, we expected participation in aftercare and AA attendance to be significant mediators, with longer distance to treatment significantly reducing inpatient clients' engagement with aftercare and AA in the year after treatment, which would lead to greater alcohol consumption. As such, we present mediation analyses to explore the influence of number of days in treatment for outpatients as well as participation in aftercare and AA attendance among inpatient clients as mediators of the relationship between distance to the treatment site on alcohol consumption in the year after treatment entry.

Materials and Methods

Sample

Participants were from a longitudinal study that recruited clients from 10 public and private alcohol and drug treatment programs in one Northern California county. Clients who were at least 18 years of age and gave consent participated in an in-person structured interview administered by trained interviewers. A total of 926 clients were recruited for the study within three days after entering treatment (80% participation rate); 93% agreed to participate in the follow-up study at time of initial interview (n=864). A second interview was conducted by telephone one year after intake (n=713, 83% response rate among those who agreed to follow-up). All study protocols were approved by the relevant institutional review boards.

Our analyses exclude 89 clients with follow-up data who were recruited from stand-alone detoxification programs that were not part of an inpatient or outpatient treatment program. Of the cases who completed the follow-up interview (65% of inpatient and 90% of outpatient clients), we exclude data from 1 client who was missing the follow-up alcohol consumption measure, 60 clients who reported drinking no alcohol in the year prior to treatment intake and therefore were in treatment for another substance of abuse (12% of inpatient and 9% of outpatient clients who completed the follow-up), and 3 clients who reported they lived in jail or prison prior to entering treatment. Thus, this secondary analysis included 176 inpatient clients (57% of baseline sample) and 384 outpatient clients (82% of baseline sample) who were in treatment for alcohol problems, who were living independently at baseline, and who had data for the primary drinking outcome one year after the baseline assessment.

In the subsample of eligible inpatient and outpatient clients, compared to the analysis sample ($n=560$), those who did not complete the follow-up interview ($n=105$) were significantly more likely to be male (design-based $F(1, 665)=9.44$, $p<.01$) and unemployed ($F(1, 665)=6.31$, $p=.01$). They had lower incomes ($F(1, 651)=4.38$, $p=.04$) and more baseline dependence symptoms ($F(1, 601)=9.14$, $p<.01$), and they were more likely to have received prior drug or alcohol treatment ($F(1, 663)=4.38$, $p=.04$) and to live more than 10 miles from their treatment site ($F(1, 665)=6.84$, $p<.01$). There were no differences between the eligible cases who did and did not complete the follow-up interview on age, race/ethnicity, marital status, level of education, neighborhood poverty, baseline AA attendance or baseline alcohol consumption. Because there was a higher rate of attrition for the inpatient subsample, we reassessed characteristics associated with completion of the follow-up interview and found that inpatient clients who completed the follow-up interview had lower baseline severity ($F(1, 208)=6.85$, $p=.01$) and higher baseline involvement in AA ($F(1, 253)=4.77$, $p=.03$) than those who did not complete follow-up. None of the other comparisons were statistically significant. Demographic control variables included in the multivariate models are described below.

Measures

Alcohol use—Our primary outcome was amount of alcohol consumed in the 12 months after treatment entry. This was assessed using a Graduated Frequency Scale (Greenfield, 2000). The measure is very effective for measuring consumption among individuals who occasionally drink heavily (Rehm et al., 1999), and it has been used in prior analyses of these data (Delucchi, Matzger, & Weisner, 2004; Witbrodt & Delucchi, 2011). Five questions asked about the frequency of drinking in the past 12 months, assessing descending quantity levels ranging from 12 or more drinks to 1 or 2 drinks of any kind of alcoholic beverage in a single day. Frequency was captured on a 9-point scale ranging from “every day or nearly every day” to “never”. The summed cross-product of the frequency and quantity (using midpoint for number of drinks) provides an overall volume measure. Volume obtained from a Graduated Frequency measure correlates strongly with consumption documented in daily diaries ($r>.87$), with particularly good coverage of heavy drinking days (Greenfield, Kerr, Bond, Ye, & Stockwell, 2009). As in prior analyses with these data, we capped the measure at 13 drinks per day, which was the average maximum number of drinks consumed on any single day in the past 12 months. Since the distribution of total volume was positively skewed with an expansive range ($M=677.30$ drinks/year, $SD=1,225.72$ drinks/year), a natural log transformation was applied ($M=3.55$, $SD=3.14$).

Distance to treatment—Distance to the treatment site was defined based on the number of roadway miles between a client’s treatment facility and their self-reported home address at baseline. Each patient’s distance to treatment was calculated using a Geographic Information System (ArcGIS v.10.2, (ESRI, 2013)). Based on the skewed distribution of the continuous variable ($M=53.90$, $SD=281.26$) and preliminary analyses that suggested a non-linear effect of distance on post-treatment alcohol consumption, distance was measured dichotomously, dividing clients into those travelling 10 miles or less (47% with $M=4.58$, $SD=2.85$ miles) or more than 10 miles (53% with $M=98.28$, $SD=366.51$ miles) to the treatment site. The 10-mile cut-point represents a travel time of approximately 30 minutes

given local traffic patterns and road types. A 30-minute travel time is commonly used as a measure of healthcare accessibility (Sherman, Spencer, Preisser, Gesler, & Arcury, 2005). Although just 30% of inpatient and 57% of outpatient clients lived within 10 miles of their treatment site, the majority of the client sample (62% inpatient, 75% outpatient) lived within 20 miles of their treatment site.

Treatment duration—Treatment duration was assessed using a self-report item eliciting the length of time clients stayed at the residential program (for inpatient clients) or participated in the program (for outpatient clients). Duration was coded in terms of the number of days ($M=90.9$, $SD=137.6$ days, with 4.5% missing data). Outpatient clients also reported the number of sessions they attended at the program site ($M=33.2$, $SD=55.9$ sessions), and this was positively correlated with their treatment duration ($r=.37$, $p<.05$).

Participation in aftercare—Most of the inpatient clients (95.5%) reported whether they attended aftercare at the site of the residential program; 39.0% attended at least one aftercare session. A follow-up item ascertained the number of aftercare sessions attended. Participation in aftercare was coded in terms of the number of sessions attended ($M=11.7$, $SD=40.7$ aftercare sessions), with 0 entered for those clients who stated they did not attend aftercare at all.

Engagement with Alcoholics Anonymous—Both inpatient and outpatient clients reported the number of times they went to Alcoholics Anonymous (AA) in the 12 months prior to the baseline interview and after leaving the treatment program. Engagement with AA was coded in terms of the number of meetings attended ($M=26.6$, $SD=59.1$ meetings at baseline; $M=61.8$, $SD=95.1$ meetings at follow-up). AA attendance ranged from 0 to 365 meetings, capped to signify, at most, attending one meeting per day for 12 months prior to the interview. In the full sample, AA attendance in the year after treatment was not significantly correlated with treatment duration ($r = -0.004$). Among the inpatient sample, AA attendance at follow-up was significantly correlated with the number of aftercare sessions attended ($r = 0.29$, $p < .05$).

Control Variables—We controlled for respondent characteristics typically associated with both treatment completion (Mutter, Ali, Smith, & Strashny, 2015) and alcohol use (Karriker-Jaffe et al., 2012): gender, age, ethnicity (Caucasian as reference, Black, and other race/ethnicity), marital status (married as reference, separated/divorced/widowed, and never married), total household income before taxes (less than \$10,000 as reference, \$10,000 to \$19,999, \$20,000 to \$35,000, and more than \$35,000), education (less than high school diploma as reference, high school diploma, and more than high school diploma), employment status (employed versus unemployed/out of workforce), and neighborhood disadvantage. Neighborhood disadvantage was defined as living within a neighborhood where 15% or more of the residents have annual incomes below national poverty standards. This was based on census tract-level data from the 2000 US Decennial Census; 25% of the sample was residing in a disadvantaged neighborhood at baseline.

Control variables also included baseline severity of alcohol problems and prior treatment. Baseline severity was assessed using a 9-item measure of past 30-day symptoms of alcohol

abuse and dependence based on criteria from the American Psychiatric Association's Diagnostic and Statistical Manual-IV (American Psychiatric Association, 2000). Sample items include "felt you should cut down your drinking or stop all together" and "had your hands shake a lot the morning after drinking." Values ranged from 0 to 9 ($M=4.42$, $SD=2.78$), with higher scores indicating more severe alcohol problems in the month prior to initiating treatment. In our sample, this measure is modestly positively correlated ($r=.53$, $p<.05$) with scores on the alcohol problems subscale of the Addiction Severity Index (McLellan et al., 1992), and it is a significant predictor of later remission of alcohol problems (Matzger, Kaskutas, & Weisner, 2005) that has been used in prior analyses using these data (Delucchi & Weisner, 2010; Weisner, Matzger, Tam, & Schmidt, 2002), as well as in studies of general population and other clinical samples (Mertens & Weisner, 2000; Schmidt, Dohan, Wiley, & Zabkiewicz, 2002). Prior alcohol and drug treatment was based on survey items asking respondents if they had participated in inpatient or residential programs, outpatient programs, or methadone or detox programs for alcohol or drug problems prior to their current treatment episode. About half of the sample (53%) reported attending treatment prior to the current episode.

Analysis Strategy

Multivariable linear regression was used to test effects of distance to treatment on alcohol consumption at the one-year follow-up. Interaction terms were added to explore potential moderation of distance to treatment by treatment type. Models were then stratified by treatment type to generate main effects of distance to treatment on subsequent alcohol consumption. These analyses were conducted in Stata version 13 (Stata Corp., 2013). Data were weighted based on payment sector (public and private) and program size to adjust for the probability of selection given differences in client intake rates and the fieldwork periods at each recruitment site, and the sampling weights were combined with nonresponse weights that adjusted for respondent gender and race/ethnicity using the joint distribution of response patterns (Tam, 1997). Cases with missing data on covariates were dropped from the present analyses (analytic sample=501 cases; weighted $n=400$ total, with 139 inpatients and 261 outpatients).

We used mediation models analyzed with ordinary least squares path analysis to test for mediation. We calculated bias-corrected bootstrap confidence intervals for the indirect effects based on 10,000 bootstrap samples. Mediation analyses were conducted in SPSS version 17 (SPSS Inc., Released 2008) using the INDIRECT macro (Preacher & Hayes, 2008); these mediation analyses did not use the sample weights. Path analysis is able to accommodate control variables at each stage in the mediation process (Hayes, 2013) and multiple mediator models provide an efficient and powerful test of mediated effects when the mediators are correlated with each other (Hayes, 2013; Hays, Stacy, Widaman, DiMatteo, & Downey, 1986).

Results

Table 1 displays demographic characteristics of the sample by treatment type. Outpatient programs had a fairly even split on gender, with slightly fewer females than males, while

inpatient programs were comprised of fewer women. Clients' average age at intake ranged from 37 years (outpatient clients) to 40 years (inpatient clients). The majority of clients were Caucasian, with significantly more Black clients in the inpatient programs than in the outpatient sample. More than three-quarters of all clients had at least a high school degree.

Inpatient and outpatient clients differed significantly on marital status, employment, and income. Outpatient programs had a greater proportion of clients who were married or living with a partner, and outpatient clients also reported higher rates of employment and higher yearly incomes. Inpatient and outpatient clients further varied on baseline alcohol problems at treatment intake, with inpatient clients reporting significantly more symptoms of problem drinking, higher alcohol consumption in the year prior to entering treatment and a higher prevalence of at least one prior treatment episode. The average distance travelled to the treatment site from the clients' homes varied slightly by treatment type, with inpatient clients travelling farther than outpatient clients, although this difference was not statistically significant.

Regression models

In multivariable models, there was no significant association of distance to treatment with alcohol consumption in the combined sample (0.21, SE=0.29, $p>.10$). There was a significant interaction between treatment type and distance predicting later alcohol consumption (Table 2 and Figure 1). Stratified models showed the main effect of distance to treatment on alcohol consumption was significant only among inpatient clients (1.60, SE=0.55, $p<.01$): Clients travelling more than 10 miles from their home to attend inpatient treatment reported significantly more alcohol consumed one year after treatment intake than inpatient clients who travelled 10 miles or less. Counter expectations, distance effects were not significant among outpatient clients (−0.42, SE=0.33, $p>.10$).

Mediation analyses

In the multiple mediator model for inpatient treatment clients, distance to treatment greater than ten miles had a significant direct effect on alcohol consumption in the year after treatment (path c' ; see Figure 2 for model coefficients). The bias-corrected bootstrap 95% confidence interval (CI) for the indirect effect showed there were no significant indirect effects through either aftercare participation ($ab_1 = -0.01$; CI = −0.25 to 0.19) or AA attendance ($ab_2 = 0.15$; CI = −0.05 to 0.62). Because of the small sample size, we recalculated this mediation model using a trimmed set of control variables that were significantly associated with alcohol consumption after treatment and found the substantive findings were the same as from the fully-controlled model (data available upon request).

For outpatient clients, distance to treatment was not significantly associated with either treatment duration ($a = -9.09$, SE=17.46, $p>.10$) or alcohol consumption in the year after treatment ($c' = -0.22$, SE=0.33, $p>.10$), although longer treatment duration was significantly associated with reduced alcohol consumption in the year after treatment ($b = -0.003$, SE=0.001, $p<.01$). There was no significant indirect effect of distance to treatment on alcohol consumption through treatment duration for outpatient clients ($ab = 0.03$; CI = −0.06 to 0.20).

Discussion

We assessed the impact of proximity to treatment on subsequent alcohol consumption. Counter to our hypotheses, no main effects were found for distance to the treatment site as a predictor of alcohol consumption in the year after treatment intake, and the interaction model showed distance to treatment was a significant predictor of drinking after treatment only for inpatient clients, which was unexpected. Inpatient clients who travelled more than 10 miles to inpatient treatment consumed significantly more alcohol in the year after treatment than inpatient clients who travelled 10 miles or less. We expected participation in aftercare and AA attendance to be significant mediators of this effect of distance to inpatient treatment on subsequent drinking, but we found no significant mediated effects.

In our inpatient sample, a greater distance to treatment was associated with fewer aftercare sessions attended in the year after treatment, but this effect was not statistically significant. Fortney et al. (1995) showed marked declines in aftercare attendance for male veterans discharged from inpatient treatment that was more than 20 miles from their home compared to their counterparts who lived closer to Veterans Affairs facilities. The self-report data on aftercare attendance available for our analyses may have limited our ability to detect a significant effect of distance to inpatient treatment on participation in aftercare. As such, future studies should seek to replicate these analyses using administrative data from official aftercare attendance records.

In our inpatient sample, a greater distance to treatment also was associated with less AA attendance in the year after treatment, but this effect was not statistically significant either. During the treatment process, inpatient clients often attend self-help groups that are held at their treatment site or nearby in the community (Finney & Moos, 1996; Michael Gossop et al., 2003). Additionally, members of local groups may make regular visits to the inpatient facility, allowing the clients to build an AA-based sobriety network within close proximity to their treatment site (Michael Gossop et al., 2003). Although AA attendance was not a significant mediator of the relationship between distance to the treatment site and subsequent drinking in this small sample of inpatient clients, differences in engagement with community-based support for sobriety according to the distance travelled to attend drug and alcohol treatment deserve further investigation, as AA-based social network contacts are highly influential for successful long-term alcohol outcomes (Bond, Kaskutas, & Weisner, 2003).

In our outpatient sample, we did not see a significant impact of distance to the treatment site of greater than 10 miles on drinking outcomes. Beardsley et al. (2003) found increasing distance to outpatient treatment – particularly distances over 4 miles – to be a significant determinant of treatment completion and length of stay in an urban sample (Baltimore, MD, USA). In our urban and suburban sample, living more than 10 miles from the outpatient facility was associated with a shorter treatment duration in the outpatient sample, but this effect was not statistically significant. Our measure of treatment duration was based on self-report, and it would be informative to replicate these findings in other samples using administrative data from official program attendance records.

Innovation and strengths of the study

The current study is unique in several ways. Geographic analyses of clients' proximity to treatment allowed us to look beyond individual level variables to determine potential ecological barriers to successful post-treatment outcomes. Knowledge of decreased AA attendance after treatment among inpatient clients living farther from treatment (compared to closer) can help inform treatment programs of possible disparities in use of this form of support for sobriety after treatment, with the fundamental goal of encouraging staff and case workers to customize post-treatment recommendations and help establish recovery resource contacts near clients' homes. Our findings are relevant to physicians and social workers delivering referrals to drug and alcohol treatment centers; for clients who may benefit most from an intensive residential treatment, facility location could be an important consideration in regards to their treatment plan, particularly if their long-term plan includes engaging with community-based support for recovery. The study further benefitted from an expansive amount of information regarding clients' baseline characteristics, past treatment episodes, severity of alcohol problems, and self-help attendance, allowing for many potential confounds to be controlled.

Limitations of the study

Although innovative and valuable, a few limitations of our study are important to convey. We had a relatively small sample of inpatient clients for analysis, which may have limited statistical power to detect significant direct and indirect effects of distance to treatment on alcohol consumption. Additionally, only self-report information was available regarding clients' length of stay and engagement with aftercare. Other limitations to consider include reliability of self-report measures of alcohol use. While some may argue that self-reports of alcohol consumption are suspect due to issues of denial or under-reporting, researchers in the alcohol field have verified the validity of these measures (Connors & Volk, 2003; Greenfield et al., 2009). Finally, we did not have information about transportation (either private or public), and future studies should examine whether availability of reliable public transit can ameliorate barriers posed by lengthy distances to treatment sites.

Conclusions

This study adds to the current literature on effects of distance to treatment on substance use. Among inpatient clients, a benefit derived from closer proximity to a program suggests that staying within one's cultural domain, being in a social environment with others who share similar beliefs and experiences, or being near family and other adjunctive community resources may enhance recovery efforts. Once the Mental Health Parity and Addiction Equity Act (Parity Act) and the Affordable Care Act (ACA) are fully implemented in the U.S., it will be essential to monitor service availability as well as the match between client needs, duration of care and types of services received. People who travel longer distances to obtain specialty care for substance use disorders will need to get connected with their local recovery resources to ensure that gains made in treatment can be maintained. Future research should examine ecological and geographic factors that may enhance or hinder treatment continuity and self-help participation among outpatient clients to better address their treatment needs.

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Figure 1.

Total volume of alcohol consumed in year after treatment intake by distance to treatment and treatment type for inpatient (N=176) and outpatient clients (N=384).

Figure 2.

Multiple mediation model for effect of distance to treatment greater than 10 miles on alcohol consumption in the year after treatment among inpatient clients

Note: Unstandardized regression coefficients and standard errors (in parentheses) from unweighted simultaneous multiple mediator model (n=129). Bold lines and bold font indicate significant effects (** $p < .01$); dashed lines and italics indicate effects that were not statistically significant ($p > .10$). Models adjust for respondent sex, age, race/ethnicity, marital status, income, education, residential neighborhood poverty status, baseline alcohol problem severity, past treatment and baseline Alcoholics Anonymous (AA) attendance prior to treatment entry.

R-square = 0.28, $p < .01$.

Table 1

Weighted characteristics of alcohol treatment program clients

	Inpatient	Outpatient	P-value
Weighted N	167	283	
Women (%)	32.2	47.2	< 0.01
Age at treatment intake (mean, SD)	39.6 (10.5)	37.4 (11.5)	0.03
Ethnicity (%)			<0.001
White	57.0	74.6	
Black	27.9	13.5	
Other	15.1	11.9	
Marital status at treatment intake (%)			< 0.01
Married/live with significant other	30.3	44.3	
Separated/Divorced/Widowed	39.4	29.4	
Never Married	30.3	26.3	
Employed at treatment intake (%)	20.4	53.4	< 0.01
Education completed (%)			> 0.10
Less than High School	22.4	15.3	
High School Graduate	51.0	53.5	
More than High School	27.1	31.2	
Yearly income (%)			< 0.01
Less than \$10,000	47.7	16.2	
\$10,000 – \$34,999	26.7	31.0	
More than \$35,000	25.6	52.9	
High-poverty neighborhood (%)	32.9	20.3	<0.01
Distance to treatment (miles; mean, SD)	62.8 (283.9)	48.7 (275.4)	> 0.10
Symptoms of problem drinking at intake (mean, SD)	4.9 (2.5)	4.2 (2.9)	0.01
Prior treatment (lifetime %)	68.2	44.6	< 0.01
Prior AA attendance (meetings in prior 12 months; mean, SD)	35.7(.60)	21.2 (56.5)	0.10
Days in treatment (mean, SD)	50.5 (60.0)	115.5 (168.0)	< 0.01
AA attendance at follow-up (meetings in 12 months; mean, SD)	78.8 (83.3)	52.2 (100.3)	< 0.01
Alcohol consumption at intake (drinks in 12 months; mean, SD)	1,877.4 (1,461.2)	1,493.1 (1,534.0)	0.01 ^a
Alcohol consumption at follow-up (drinks in 12 months; mean, SD)	770.8 (1,263.5)	622.1 (1,176.0)	> 0.10 ^a

Note: SD, standard deviation.

^a Difference between logged values not statistically significant ($p>0.10$).

Table 2

Results of weighted linear regression model testing interactions of treatment type and distance to treatment on alcohol consumption at 1-year follow-up (weighted N=400 based on 501 observations)

Baseline Predictors	Coeff. (95% CI)	P-value
Distance to treatment > 10mi ^a	-0.35 (-1.00, 0.30)	0.29
Inpatient program ^b	-1.91 (-2.90, -.92)	<0.01
Inpatient X Distance > 10mi	1.75 (0.47, 3.03)	0.01
Male ^c	0.74 (0.15, 1.34)	0.01
Age	-0.01 (-0.04, 0.02)	0.47
Black ^d	-0.35 (-1.17, 0.48)	0.41
Other race/ethnicity ^d	-0.47 (-1.34, 0.40)	0.29
Divorced/separated/widowed ^e	0.19 (-0.49, 0.86)	0.58
Never married ^e	0.35 (-0.40, 1.11)	0.36
\$10K-\$19,999 ^f	0.37 (-0.72, 1.46)	0.51
\$20K-\$34,999 ^f	-0.34 (-1.25, 0.58)	0.47
\$35K or more ^f	-0.11 (-0.96, 0.75)	0.81
High school graduate ^g	0.76 (-0.04, 1.57)	0.06
More than high school ^g	0.44 (-0.47, 1.34)	0.35
Employed ^h	-0.02 (-0.67, 0.62)	0.95
Disadvantaged NBH ⁱ	0.53 (-0.21, 1.26)	0.16
Baseline problem severity	0.11 (0.01, 0.22)	0.04
Prior treatment ^j	0.31 (-0.28, 0.89)	0.30
Constant	2.60 (1.10, 4.10)	<0.01

Notes: Coeff., unstandardized regression coefficient; CI, confidence interval; NBH, neighborhood. Reference groups:

^aLess than or equal to 10mi.

^bOutpatient program.

^cFemale.

^dCaucasian.

^eMarried.

^fLess than \$10K/year.

^gLess than high school education.

^hUnemployed or out of workforce.

ⁱNBH less than 15% of residents below poverty level.

^jNo past treatment (lifetime).