

Project to Evaluate the Impact of Fountain House Programs on Medicaid Utilization and Expenditures

Health Evaluation and Analytics Lab

New York University

December 2016 Analysis

Claudia Solís-Román, M.P.A.

James Knickman, PhD

May 9, 2017

Introduction

Fountain House is a non-profit organization serving individuals with serious mental illness. Its programming engages people who would likely otherwise experience social isolation. Through wellness activities and access to medical and psychiatric care, social relationships, housing, supported education and supported employment programs, Clubhouse Models like Fountain House are expected to improve members' wellbeing and empower them to lead productive lives.¹ Through its Comprehensive Community System of Care, which integrates medical, psychiatric and social supports, Fountain House works to improve health outcomes. At any given time, approximately 900 people are engaged in the Fountain House community on West 47th Street in Manhattan.

Fountain House is the originator of the "Clubhouse" model that has been replicated in over 300 locations worldwide.² The Sidney R. Baer Jr. Center, an integrated health clinic specifically for people with serious mental illness that receives patients from Fountain House, was also the first of its kind. Fountain House receives funding from individuals, foundations, corporations and through federal and local grants and contracts.

This study takes a close look at the medical care utilization patterns of Fountain House members enrolled in the New York State Medicaid Program. Utilization among Fountain House members is compared to utilization among a matched set of similar individuals coping with mental health conditions who do not use Fountain House services. The analysis focuses on Fountain House users who are eligible for Medicaid because comprehensive data are available to track their medical care use and to track the use among a comparison sample, and because the Medicaid population is the focus of several current New York State health policies.

The New York State Medicaid Program is in the process of implementing a broad range of reimbursement approaches for the Medicaid population that create strong incentives to keep people with chronic conditions healthy and to reduce need for expensive medical care services. In particular, there is attention focused on reducing the need for inpatient medical services and emergency room services. A key question addressed by this study is whether Fountain House is the type of population health program that helps people with serious chronic illness stay as healthy and functioning as possible and thus in less need of medical care services. If so, there would be a case for investing in a program like Fountain House not only because it likely improves the lives of people with chronic mental health conditions but also because it makes sense from an economics and health care finance perspective.

The Analytical Approach

The study investigates medical care utilization using detailed Medicaid claim and encounter information to examine the impact of Fountain House. Propensity score matching is used to construct a comparison group. New York University maintains a comprehensive New York State

Medicaid Claims Analysis System which includes information about every medical claim made by care providers for services delivered to every New York State Medicaid eligible person. It was possible to match the Medicaid identifiers for the Fountain House users to identifiers in the claims system creating the ability to take a detailed look at medical care use both before and after individuals with chronic conditions started to use Fountain House services.

New York State Medicaid claims, encounters, and eligibility information for 2010 to 2015 is used in this analysis. This dataset describes institutional and professional services, pharmacy records, demographic information, and Medicaid enrollment. The data capture medical care use for Medicaid eligible New Yorkers served either through managed care programs or through fee for service arrangements. Medicaid enrolled individuals comprise approximately 90% percent of all users of Fountain House services.

The comparison group has matching baseline characteristics (See Table 1 for baseline comparisons of key individual characteristics). Specifically, we use coarsened exact matching and propensity score matching methods to ensure the comparison group matches on key characteristics that could otherwise bias impact measures.³ These include demographics and health care use patterns for the year before starting at Fountain House.

The match is created using a logistic regression propensity score model, and coarsened exact matching on variables including: gender, age, race, geographic residence, history of ER visits, history of health care costs, and history of mental health related hospitalizations (see the Appendix Table for the full match specification). These are equally weighted and assigned maximum allowed deviation to ensure matched individuals are similar in ways that matter for our study.

Constructing a comparable sample allows us to estimate a counterfactual utilization trend and spending pattern for a group similar to Fountain House members. This determines whether participation in Fountain House services affects the trends in medical care use patterns and medical care expense patterns. If Fountain House is affecting medical care use, we would expect to see a larger reduction in costs (or, a smaller increase in costs) for the Fountain House sample than the comparison sample between the “pre” period and the “post” period.

The “pre” period is defined as the 12 month period before a person enrolled at Fountain House and the “post” period is defined as the 12 months after enrollment. We calculated the average monthly Medicaid expenditures in the 12 pre months and the average monthly Medicaid expenditures in the 12 month post period. The Fountain House members studied here had start dates at Fountain House ranging from January 2011 to December 2014.

Each treatment person had about three matched comparison people who had similar baseline characteristics. Monthly Medicaid expenses in the same pre months and the same post months were calculated for these comparison members and the matched treatment members.

Our analysis included substantial effort to test the implications of how we did matching and about characteristics of the data. For example, we explored four distinct match specifications in depth and found little change in the results. Analyses removing outlier costs or looking closely at the highest percentile of health care utilizers also did not impact findings significantly. As with any non-randomized study, there always remains the chance that users of a voluntary program like Fountain House are more motivated and have different unmeasured traits than a comparison sample. These differences could affect the measures of program impact that we observe.

Impacts of Fountain House services are calculated as the difference between the average change (from the baseline period to the follow up period) in outcomes for Fountain House program participants, and the average change in outcomes for the comparison group members. Outcomes include a range of medical care services for both the treatment and comparison groups and measure the relative total medical care expenditures by Medicaid for the two groups.

To analyze associations in the level of engagement in Fountain House activities and Medicaid expenditures among members, clubhouse attendance and total Medicaid expenditures are analyzed. Data on visits to the clubhouse comes from logins that are automatically recorded and entered into a system that organizes visit records by member. Multiple visits on the same day are collapsed to one day of attendance in this analysis, and the average number of visits per month is taken between the first visit and the last visit. Regressions and t tests examine the association between a member's average visits per month and level of Medicaid utilization in the post period controlling for baseline expenditures.

Findings

The tables specify health care utilization and expense patterns of interest and the differences in trends among individuals that participated in Fountain House compared to those with similar medical histories who did not participate.

Among individuals who used Fountain House services, we see a reduction of \$637 per month in medical care expenses from the 12 month period before enrollment to the 12 month period after enrollment (see Table 2). Comparison group members also had a substantial reduction in medical care expenses averaging \$401 per month. Part of the reduction in expenses for both the treatment and comparison samples is due to a normal "regression towards the mean" that would be expected if people entering Fountain House were somewhat more likely than average to have had recent episodes of medical problems associated with their chronic condition. This same higher than normal medical care use would be reflected in the comparison sample because of the stringent propensity matching approach.

The key finding is that the Fountain House sample had a \$236 larger reduction in medical care expenses per month than would have been expected based on the matched comparison group (this is measured as the difference of \$637 for the treatment sample and the difference of \$401 for the comparison sample). This \$236 monthly reduction represents a net monthly savings to the state Medicaid program due to the Fountain House intervention. This is an 11% reduction compared to what would have been expected without the intervention.

Current thinking among health care experts is that prevention-oriented programs like Fountain House might have the largest potential impact on high need patients rather than low need patients.⁴ To explore the effect of severity of need on the outcomes at Fountain House, we divided both the treatment and comparison samples into two subsets: those with expenditures of greater than \$18,000 in the 12 month period before the Fountain House start-date and those with expenditures less than \$18,000 in the pre period. The \$18,000 annual expense level is slightly higher than the median expense in the sample.

The subgroup findings confirm the expectation of larger impacts for high need patients (See Table 2). In fact, Fountain House seems to have a very large expenditure reducing impact on users of its services who have the highest needs but a somewhat expense increasing impact on users with low starting needs.

Medicaid expenses increased by \$286 per month more than would be expected for the 151 low need users of Fountain House services but expenses decreased \$783 more per month than expected for the 134 high need Fountain House users based on patterns of use among the high need comparison sample. This \$783 monthly reduction in Medicaid expenses for the high need users represents a 21% reduction in expected Medicaid expenses.

Another relevant subgroup analysis focuses on whether or not the impacts measured vary depending on how frequently people used Fountain House services. We compared outcomes for people who used Fountain House services less than three times per month to those who used services more than 3 times, 5 times, or 10 times per month. We observed a statistically significant greater reduction in medical care expenditures for Fountain House members who used services 5 times or more per month compared to those who used services less frequently (see Table 3). While it could be that frequent users of Fountain House are more able and motivated than others in the sample, it is a positive sign that more exposure to Fountain House services is linked to enhanced program impact. We also saw that people who use services the most tended to be the most needy part of the sample as measured by health care expenditures the year before entry to Fountain House.

A final analysis looked at what types of services accounted for the expenditure reductions we observed associated with Fountain House participation. The findings reported in the tables indicate that the expense reductions are focused mostly on reduced inpatient utilization and somewhat on reduced emergency department utilization among the high need Fountain

House sample. Expenditures on ambulatory care and pharmaceuticals actually increased slightly more than expected for the high need treatment sample.

Conclusions

Our findings offer promising information pointing to substantial positive impacts associated with Fountain House services. These savings are quite large: \$783 monthly among high need patients. The findings suggest reductions in inpatient and emergency room use associated with the services delivered by Fountain House. This amount far exceeds the monthly costs associated with the Fountain House model. And, more importantly, reduced inpatient services and reduced emergency department visits are good indicators that health outcomes are better for Fountain House users than comparable non-users of Fountain House.

The Fountain House model reflects the type of prevention-oriented and community-based type of services that the health sector is looking for to reduce the use of expensive acute and emergency services. While much attention has been placed on care management services in efforts to reduce avoidable health care use, Fountain House offers a different model—the Clubhouse model—that in essence combines care management with extensive independence-building skill development among people receiving its services.

We use the term “promising” to assess our sense of the findings we report here because the sample we studied is small: just 285 individuals served at Fountain House. Larger sample sizes would offer better statistical significance for our findings because health care utilization is such a highly skewed service item. As is well documented in the literature, most medical care is focused on just 5% to 20% of the highest need people with chronic conditions. This makes the variance in health care expenditure data sets very large and makes it difficult to assess statistical significance with small samples.

In our findings, the statistical significance of our estimate of about \$236 decrease in expected Medicaid monthly expenses is at the 84% confidence level. It would take samples at least double the size we studied to make data as variable as is health care expenditure data to show the standard academically desired significance levels of 95% for the overall sample. Among the high health care utilizer subgroup, however, the reduction of \$783 is statistically significant. We used a range of approaches—as noted in the text above—to test for the stability of our findings. Findings changed only slightly and in no specific direction when we analyzed outliers and alternative approaches to specifying comparison samples.

A more ambitious study adding data from other Clubhouse models or continuing to add additional sample as more people use Fountain House would allow for increased confidence in the findings reported here.

There are many possible policy and reimbursement options to consider for expanding the Fountain House model. Contracting with large health systems that have risk contracts that reward reduced hospital and ER use could lead to expanded resources that could both improve outcomes and reduce medical care expenses for people with chronic mental health conditions. Direct per member per month reimbursements from the State Medicaid Program or from Managed Care Organizations could expand access to Fountain House among people with chronic mental health conditions resulting in saved Medicaid costs. Finally, social impact investing vehicles with payments from Medicaid associated with measured reductions in hospital and ER use by Fountain House members offer an ambitious approach to resource expansion.

Tables

Table 1. Characteristics of Fountain House Members vs. Matched Control Group
General Characteristics and Baseline Health Care Use (Previous Year)

	<u>Control</u>	<u>Treatment</u>	<u>Difference</u>	
	Mean	Mean	Amount	Percent
Demographics				
Gender				
Male	0.54	0.54	0.002	0.4%
Female	0.46	0.46	-0.002	-0.5%
Age	38.34	35.48	-2.857	-8.1%
Race and Ethnicity				
White	0.25	0.25	-0.001	-0.5%
Black	0.27	0.31	0.035	11.5%
Asian	0.04	0.07	0.026	38.3%
Hispanic	0.32	0.29	-0.026	-8.9%
Other	0.12	0.09	-0.033	-38.0%
Geography and Housing				
Boro				
Manhattan	0.51	0.51	0.000	0.0%
Bronx	0.12	0.12	-0.003	-2.4%
Brooklyn	0.17	0.20	0.027	13.6%
Long Island	0.10	0.10	0.000	-0.5%
Staten Island	0.03	0.02	-0.008	-47.4%
Not in NYC	0.07	0.06	-0.016	-27.7%
Ever homeless	0.04	0.03	-0.017	-59.1%
Baseline Utilization				
Total Expenditures	2,476	2,605	128.919	4.9%
Inpatient Expenditures	1,186	1,120	-65.471	-5.8%
Enrollment				
Pre period months	11.08	11.06	-0.028	-0.3%
Post period months	11.36	11.80	0.440	3.7%

Note: Age is at start of program. Utilization costs and visits are monthly rates. Baseline utilization encompasses the 12 months before starting program.

**Table 2. Monthly Medicaid Expenditures
for Fountain House Members vs. Comparison Group**

Per person per month expenditures in year before and after beginning Fountain House

Total Expenditures

	<u>Comparison Group</u>			<u>Fountain House Sample</u>			<u>Impact</u>	
	PRE	POST	POST-PRE	PRE	POST	POST-PRE	Difference in Difference	As % of Expected
Total Expenditures								
Overall Sample	2,476	2,075	(401)	2,605	1,968	(637)	(236)	-10.7%
High Health Care Utilizers	4,743	3,597	(1,146)	4,865	2,936	(1,929)	(783)	-21.1%
Low Health Care Utilizers	637	821	184	633	1,103	470	286	35.0%

Expenditures by Type of Healthcare Service

	<u>Comparison Group</u>			<u>Fountain House Sample</u>			<u>Impact</u>	
	PRE	POST	POST-PRE	PRE	POST	POST-PRE	Difference in Difference	As % of Expected
Overall Sample								
Inpatient Care	1,186	778	(408)	1,120	612	(508)	(100)	-14.0%
Emergency Room Care	18	16	(2)	16	11	(5)	(3)	-20.8%
Pharmaceutical Care	293	296	3	361	381	20	17	4.7%
Ambulatory Care	167	158	(9)	222	225	3	12	5.6%
Other Care	812	826	14	885	739	(146)	(160)	-17.8%
Sample size	Comparison Group:		851	Treatment Group:		285		
Average months enrolled	11.1	11.4	11.2	11.1	11.8	11.4		

	<u>Comparison Group</u>			<u>Fountain House Sample</u>			<u>Impact</u>	
	PRE	POST	POST-PRE	PRE	POST	POST-PRE	Difference in Difference	As % of Expected
High Health Care Utilizers								
Inpatient Care	2,515	1,431	(1,084)	2,356	815	(1,541)	(457)	-35.9%
Emergency Room Care	24	22	(2)	26	13	(13)	(11)	-46.3%
Pharmaceutical Care	497	479	(18)	637	659	22	40	6.5%
Ambulatory Care	216	203	(13)	268	261	(7)	6	2.4%
Other Care	1,490	1,461	(29)	1,579	1,186	(393)	(364)	-23.5%
Sample size	Comparison Group:		381	Treatment Group:		134		
Average months enrolled	11.1	11.5	11.3	11.0	11.9	11.4		

	<u>Comparison Group</u>			<u>Fountain House Sample</u>			<u>Impact</u>	
	PRE	POST	POST-PRE	PRE	POST	POST-PRE	Difference in Difference	As % of Expected
Low Health Care Utilizers								
Inpatient Care	107	241	134	42	430	388	254	144.1%
Emergency Room Care	14	11	(3)	8	9	1	4	75.8%
Pharmaceutical Care	128	145	17	120	132	12	(5)	-3.6%
Ambulatory Care	127	121	(6)	182	192	10	16	9.1%
Other Care	262	303	41	280	340	60	19	5.9%
Sample size	Comparison Group:		470	Treatment Group:		151		
Average months enrolled	11.1	11.3	11.2	11.1	11.8	11.5		

NOTES: Low care utilizers are individuals with annualized health care Expenditures in the past year below 18,000; high utilizers are 18,000 and above. Individuals enrolled in Medicaid during at least three months before and after beginning Fountain House.

**Table 3. Monthly Medicaid Expenditures Trends
for Fountain House Members by Attendance**

Per person per month expenditures in year before and after beginning Fountain House

<u>Visits per month</u>	<u>Sample Size</u>	<u>Expenditures</u>		<u>Change</u> Change in Expenditure	<u>Test</u> P value
		Pre	Post		
3 or fewer	n = 187	2,458	1,981	-477	--
More than 3	n = 84	2,876	1,957	-919	0.32
More than 5	n = 56	3,188	1,879	-1,309	0.09
More than 10	n = 23	3,348	1,617	-1,731	0.10
Missing Attendance	n = 14				

NOTES: Change in expenditure is not a measure of impact, but rather a description of the cost reduction seen among subgroups of Fountain House members. T tests compare members above and below given threshold of visits to Fountain House per Month. Difference is among those with visit information available; there is missing attendance data for 14 Fountain House members that were not active members at the time of this study.

Appendix Table 1

A. Match specification

Variables	Maximum Allowed Deviation
Calendar Month Start	None
Gender	None
Race (White Non-Hispanic and other)	None
Geography (Manhattan and outside Manhattan)	None
Age (Above and below age 40)	None
Medicaid Months Enrolled in Previous Year	None
Emergency Room Visits in Previous Year	2 standard deviations from mean
Mental Health Related Hospital Expenditures in Previous Year	2 standard deviations from mean
All Other Care Expenditures (Total expenditures other than mental health related hospital expenditures)	2 standard deviations from mean

All variables were weighted equally in the match process.

Footnotes

¹ Hwang, Seungyoung, Jason Woody, and William W. Eaton. "Analysis of the association of clubhouse membership with overall costs of care for mental health treatment." *Community mental health journal* 53.1 (2017): 102-106.

McKay, Colleen, et al. "A systematic review of evidence for the clubhouse model of psychosocial rehabilitation." *Administration and Policy in Mental Health and Mental Health Services Research* (2016): 1-20.

² Doyle, Alan, Julius Lanoil, and Kenneth Dudek. *Fountain house: Creating community in mental health practice*. Columbia University Press, 2013.

Hwang, Seungyoung, Jason Woody, and William W. Eaton. "Analysis of the association of clubhouse membership with overall costs of care for mental health treatment." *Community mental health journal* 53.1 (2017): 102-106.

³ Faries, Douglas E., et al. *Analysis of observational health care data using SAS*. SAS Institute, 2010.

lacus, Stefano M., et al. "Causal inference without balance checking: Coarsened exact matching." *Political analysis* (2012): 1-24.

⁴ McCarthy, Douglas, Jamie Ryan, and Sarah Klein. "Models of care for high-need, high-cost patients: an evidence synthesis." *Issue brief (Commonwealth Fund)* 31 (2015): 1-19.

Billings, John, and Tod Mijanovich. "Improving the management of care for high-cost Medicaid patients." *Health Affairs* 26.6 (2007): 1643-1654.